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Remedial Action Implementation Technical Memorandum for the APS Prescott Former Manufactured Gas Plant, Prescott, Arizona Former ADEQ VRP Site Code 502701-01

Final

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Arizona Public Service Company

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Acronyms and Abbreviations

A.R.S.	Arizona Revised Statutes
ACM	asbestos-containing material
ADEQ	Arizona Department of Environmental Quality
APS	Arizona Public Service Company
ASAM	Arizona Survey and Mapping
CGP	Construction General Permit
CH2M	CH2M HILL, Inc.
City	City of Prescott
COC	chemical of concern
COVID-19	Coronavirus Disease 2019
DQE	Data quality evaluation
DTSC	California Department of Toxic Substances Control
DU	decision unit
EPA	U.S. Environmental Protection Agency
EPC	exposure point concentration
ERI	Environmental Response, Inc.
GPL	Groundwater Protection Leaching value
HASP	health and safety plan
Hutzel	Hutzel & Associates, Inc.
mg/kg	milligram(s) per kilogram
MGP	manufactured gas plant
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NFA	no further action
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCS	Petroleum-contaminated soil
PID	photoionization detector
PPE	personal protective equipment
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
RAC	Remedial Action Closure Report
RPD	relative percent difference
SAP	Sample and Analysis Plan
Site	Former Prescott Manufactured Gas Plant Site
SRL	soil remediation level

SSO	site safety officer
SWPPP	stormwater pollution prevention plan
TCLP	toxicity characteristic leaching procedure
Tech Memo	Remedial Action Implementation Technical Memorandum
UCL	upper confidence limit
VOC	volatile organic compound
VRP	Voluntary Remediation Program

1. Introduction

This Remedial Action Implementation Technical Memorandum (Tech Memo) has been prepared on behalf of the Arizona Public Service Company (APS) for the Prescott Manufactured Gas Plant (MGP) Site located at 300 North Granite Street in Prescott, Arizona (hereinafter referred to as the "Site"). The Site location is shown on **Figure 1-1**.

The majority of the former MGP Site was previously remediated under the Arizona Department of Environmental Quality (ADEQ) Voluntary Remediation Program (VRP), VRP Site No. 502701-00. A remedial action was completed for the Site in accordance with the Remedial Action Plan (RAP) dated April 2, 1999. The RAP was approved by ADEQ on August 13, 1999. A total of approximately 100,800 tons of contaminated soil were removed from the APS Site during the remedial action and transported offsite for treatment and/or disposal at approved facilities. The previously excavated area is shown on **Figure 1-2**.

In 2013 ADEQ issued a No Further Action (NFA) Determination for surface water and groundwater water chemicals of concern (COCs) at the Site, and a No Further Action Determination for soil COCs at the Site excluding the area under the former substation. APS was unable to excavate soil beneath the former substation due to safety and physical limitations of the active substation, and this area was excluded from the closure request.

The cleanup goals achieved complied with section (A.R.S.) §49-152. In addition, post remediation groundwater and surface water monitoring documented the source of contamination to both the groundwater and surface water was remediated. The data (soil, groundwater and surface water analytical results) demonstrate that that the remedial action undertaken at this Site in 1999-2001 achieved remediation levels that met the requirements of (A.R.S.) §49-175 (B) and as such will not cause or contribute to an exceedance of a surface water quality standard or an aquifer quality standard at or beyond the boundary of the Site. APS was granted a no further action (NFA) determination for soil, surface water and groundwater by ADEQ VRP in 2013.

The 2002 Remedial Action Closure Report (RAC) and Request for No Further Action letter provide details of the site closure and Site background information. The 2002 RAC report, 2010 revised RAC report, APS NFA request, and ADEQ NFA Determination (CH2M HILL, 2002, 2010; APS, 2010; ADEQ, 2013a) are provided in **Appendix A**. The locations of the former substation (indicated as the old substation) and Site closure area are shown as the excavation extent on **Figure 1-3**.

In 2020 APS constructed and energized a new substation, providing access to the previously inaccessible soil at the former substation, thereby allowing excavation and removal of the remaining MGP-impacted soil from Site.

APS decommissioned and removed the old substation prior to excavation of the remaining MGP-impacted soil and concrete by Environment Response Inc (ERI). The locations of the old substation, extent of the excavation, and new substation are shown on **Figure 1-3**.

The VRP site code for the Site is 502701-01. The final remedial action conducted in 2020 to complete remediation for the Site was implemented in accordance with the following documents:

- *Sample and Analysis Plan for the APS Prescott Former Manufactured Gas Plant, Prescott, Arizona*, June 2020 (Jacobs, 2020a)
- *Substation Remediation Plans, APS Former Manufactured Gas Plant Site, Prescott, Arizona*, May 2020. The plans were submitted to the City of Prescott for approval and were approved on July 27, 2020 (Jacobs, 2020b)

- *Arizona Quality Assurance Project Plan* (QAPP), which was transmitted to ADEQ on March 12, 2019, and accepted on March 4, 2020 (Jacobs, 2019)
- Site-specific Health and Safety Plans (HASPs): Jacobs (Jacobs, 2020c) and ERI (ERI, 2020)

The Sample and Analysis Plan (SAP) is included in **Appendix B**, and the QAPP and site-specific HASPs for Jacobs and ERI are provided in **Appendix C**.

The remedial excavation and site restoration activities presented in the SAP were completed in accordance with Arizona Revised Statues (A.R.S.) Section (§) 49-282.06 and other applicable state and local requirements. These remedial action activities are summarized in this report.

1.1 Purpose

The purpose of this Tech Memo is to document the remedial action activities that were completed at the Site, including field activities and offsite waste disposal, and present the confirmation sampling results from the remedial activities. This Tech Memo also provides the documentation to obtain a NFA determination from the ADEQ VRP.

Regulatory risk-based levels (residential soil remediation levels [SRLs]) and groundwater protection leaching (GPL) values were applied to the Site as the cleanup criteria to support existing and proposed future uses and reduce the concentrations of COCs (polynuclear aromatic hydrocarbons [PAHs], volatile organic compound [VOCs], and polychlorinated biphenyls [PCBs]) in soil to below levels that could potentially impact groundwater. Because the ADEQ default GPL values for PAHs have not been established, GPL values calculated at a similar MGP Site (the APS Douglas Arizona MGP Site) have been provided for comparison. It should be noted that calculated PAH GPL values are many orders of magnitude greater than the Arizona residential SRLs due to the low mobility of PAHs in soil. The Arizona residential SRLs have been used as applicable cleanup criteria.

The SAP was developed to support the remediation of soil impacted by historical MGP activities at the Site. The SAP is provided in **Appendix B**. The objective of the remedial action at the Site was to remediate the Site to residential SRLs and GPL values.

The SAP provided the approach and methodology to confirm the reduction of concentrations of COCs related to former MGP operations in soil at the Site to below residential SRLs and GPL values. Sample results for PAHs, VOCs, and PCBs are listed in **Tables 1-1, 1-2,** and **1-3**, respectively. Site COCs include PAHs, PCBs and VOCs. Applicable Site cleanup criteria are listed in **Table 1-4**.

The purpose of the QAPP was to provide specific quality assurance/quality control (QA/QC) requirements for remedial activities (**Appendix C**). The QAPP includes a description of the applicable laboratory methods and associated reporting limits used during the remedial action and the sample management and data validation procedures for each sample and analytical method. Additional site-specific QA/QC sample collection procedures, analytical requirements, and data verification/validation requirements are detailed in the SAP (**Appendix B**).

1.2 Report Organization

This Remedial Action Closure Report is organized as follows:

- **Section 1, Introduction**, presents the purpose of this report and describes the associated SAP and QAPP.
- **Section 2, Remedial Action Strategy**, presents the objectives of the remedial action, a brief summary of the remedial action activities, any deviations from the proposed remedial action, and a list of the subcontractors who performed work during the remedial action.

- **Section 3, Remedial Action Implementation**, presents a comprehensive summary of the remedial action activities performed, including pre-excavation activities, site preparation, soil excavation, waste management, health and safety air monitoring, dust and odor controls, and site restoration.
- **Section 4, Soil Confirmation Sampling**, presents a description of the soil confirmation sampling, results and statistical evaluation of the soil confirmation.
- **Section 5, Data Quality Evaluation**, presents the findings of the QA/QC reviews performed for laboratory analytical data generated during the remedial action.
- **Section 6, Results and Conclusions of Remedial Action,** presents the results and conclusions of the remedial action implementation.
- **Section 7, References**, presents the documents cited in this report.

Supporting tables, figures, and appendices are located at the end of this document.

2. Remedial Action Strategy

The following sections summarize the remedial action strategy.

2.1 Remedial Action Objectives

The remedial action objectives are to reduce concentrations of COCs in soil to levels below appropriate risk-based cleanup criteria and to remove source material to the extent technically feasible. To achieve these objectives, the remedial action selected for the Site was soil excavation with offsite disposal. The remedial action of soil excavation provided permanent removal of impacted soil from the Site down to bedrock, leading to concentrations protective of human health and the environment.

The remedial action included:

- Reducing the concentrations of COCs in soil to below regulatory risk-based levels (residential SRLs).
- Reducing the concentrations of COCs in soil to below levels that could potentially impact groundwater above water quality standards (GPL values).
- Restoring the Site, to the extent necessary, to support proposed future uses.

2.2 Summary of Remedial Action

2.2.1 Schedule and General Chronology of Remedial Action Activities

Remedial action activities, including excavation and confirmation sampling, occurred between July and September 2020. The following is a list of the primary remedial activities and when they occurred:

- APS performed demolition of the Old Substation steel structures the week of June 29, 2020.
- ERI advanced test pit trenches and Jacobs conducted confirmation sampling on July 7 and 8, 2020.
- City of Prescott Grading and Drainage Permit was approval on July 27, 2020.
- Mobilization and site preparation activities, including stormwater protection controls, fence line misting system, and ERI temporary trailer installation took place between July 27 through July 30, 2020.
- Hutzel and Associates was onsite for lead/asbestos testing on July 31 and August 26, 2020.
- Arizona Surveying and Mapping was onsite to survey confirmation sampling locations, site features, excavation depth, and final grade on July 31, September 3, and September 22, 2020.
- Western Technologies was onsite for compaction and materials testing September 9 through 22, 2020.
- Asphalt Paving and Supply was onsite for paving on September 18, 2020.
- Final site restoration activities were completed September 22, 2020.

2.2.2 Remedial Action Approach

Impacted soil was removed outside the old substation footprint during the 1999–2001 remediation activities. During the 1999–2001 remediation, confirmation soil sampling was conducted and clean fill was installed up to the shoring wall outside the old substation footprint and is documented in the RAC (CH2M HILL, 2002), thereby defining the lateral extent of impacts to the shoring wall.

During the 2020 remediation, test pits were advanced to screen the soil using visual, odor, and photoionization detector (PID) readings to evaluate the soil, identify the depth of impacted soil, and collect confirmation soil samples for laboratory analysis. The laboratory results were used to confirm the depth at

which the soil cleanup standards were achieved. During the advancement of the test pits, waste characterization was also conducted to profile the soil for disposal.

The impacted soil was excavated and direct loaded into haul trucks for offsite disposal at a landfill certified to accept Arizona-regulated special waste. Soil was excavated to the depth of confirmation sample collection (or bedrock). Soil was horizontally removed to soldier pile lagging, separating potentially impacted soil under the old substation area to the adjacent clean fill installed in 2001, and vertically to bedrock to be certain all MGP-impacted soil was removed. All confirmation samples were collected at the soil-bedrock interface. During excavation activities, all soil was removed to bedrock within the excavation extent shown on **Figure 1-3**. Confirmation samples were analyzed using a fixed-base Arizona-certified laboratory to verify compliance with the Site cleanup criteria.

All confirmation sample results were below the COC residential SRLs and GPL values.

2.3 Subcontractors

During remedial action activities, all subcontractors operated under the direct supervision of APS's remediation contractor ERI or APS. Jacobs provided third-party oversight of ERI and onsite construction management and engineering services. Hutzel & Associates, Inc. (Hutzel) provided asbestos and lead testing and ERI provided removal of potentially contaminated demolition debris and asbestos-containing material (ACM). Hutzel also provided oversight of ERI during ACM removal activities. The following list provides the subcontractors and function within the remediation:

- Hutzel and Associates: lead and asbestos testing/oversight
- Vanco Trucking: soil hauling
- Asphalt Paving and Supply: soil hauling, embankment/AB supply, grading/paving, asphalt recycle
- Arizona Surveying and Mapping: survey, utility mapping
- Western Technologies: soil/asphalt testing, compaction testing

3. Remedial Action Implementation

The remedial action activities at the Site consisted primarily of soil excavation, confirmation sampling, backfill, disposal of contaminated soil, and site restoration. Approximately 6,072 tons of soil, asphalt, concrete, steel, and miscellaneous debris were removed from the Site and recycled or disposed of during the remedial action.

The following activities were completed at the Site as part of the remedial action:

- Pre-Remediation Activities:
  - Regulatory review and permitting
  - Public notice and Community Outreach
  - Utility clearance and survey
  - Asbestos and lead testing
  - Substation and Control house demolition
- Site Preparation Activities
  - Surveying
  - Site access control and temporary facilities installation
  - Stormwater pollution prevention plan (SWPPP) controls installation
  - Test trenching and sampling
- Excavation Activities
- Waste Management
  - Special waste soil and concrete
  - Construction debris (uncontaminated asphalt, concrete, scrap metal, and wood)
  - ACM
  - Recycled metal
- Air Monitoring
  - Health and safety air monitoring
- Dust and Odor Controls
  - Dust control
  - Fence line misting system and mesh screen
- Backfill and Site Restoration
  - Backfilling and compaction
  - Site restoration activities

3.1 Pre-Remediation Activities

This section summarizes the required permits, public notices, public participation, and utility clearance activities performed before Site mobilization and implementation of the remedial action activities.

3.1.1 Regulatory Review and Permitting

The following local, state, and federal permits, notifications, and/or approvals were secured by APS and ERI, the general contractor, before and during the implementation of the remedial action activities:

- City of Prescott (City) approval of grading and drainage permit and plan approval (July 27, 2020)

  - All remedial action activities were conducted on APS property parcel 113-14-058C. Prior to remediation activities, the City issued Construction Permit ENG2006-012 to ERI, authorizing construction activities to proceed at the APS property. The permit is provided in **Appendix D**.
- National Emissions Standards for Hazardous Air Pollutants (NESHAP) notification for demolition activities (July 31, 2020)
- ADEQ approval of the QAPP (March 4, 2020)

All asbestos found was below NESHAP threshold quantities, however a courtesy NESHAP notification was provided to ADEQ demolition of the Control House and concrete slabs. A Construction General Permit (CGP) was not required due to the small size of the construction site; however, an SWPPP was utilized to conform to the CGP requirements and ensure stormwater pollution protection. Copies of all permits, approvals, and inspection forms are presented in **Appendix D**.

3.1.2 Public Notice and Community Outreach

APS completed public notice and public outreach for this project. A bilingual project newsletter and door hanger fliers were distributed to homes and businesses within an approximately ¼-mile radius around the Site. APS distributed the newsletter on July 29, 2020, to inform the community of the remedial action activities. The newsletter was distributed to the community and interested parties on August 21, 2020. A newsletter regarding the project completion and request for NFA Determination is also included. Once the request for NFA is accepted, the newsletter will be mailed out to the community. Copies of the newsletters are included in **Appendix E**.

3.1.3 Utility Clearance and Survey

Prior to test pit trenching and excavation, known utilities at the Site were located with the assistance of Blue Stake and APS utility personnel. The objective of the utility evaluation was to identify utility locations and potential issues that could impact the remedial design. After the utilities were located, the utilities were surveyed by Arizona Survey and Mapping (ASAM).

3.1.4 Asbestos and Lead Survey

On February 21 and 27, 2020, prior to mobilization, Hutzel performed an ACM, lead containing paint, PCBs, and soil sampling survey at the Site prior to demolition activities. Hutzel also performed asbestos sampling during excavation activities for disposal purposes. The surveys are provided in **Appendix F**. Handling of asbestos and disposal is discussed in Section 3.4.

3.1.5 Substation and Control House Demolition

Prior to the start of excavation activities APS and ERI performed demolition of the old substation and associated Control House structure. Prior to demolition Hutzel collected samples from the control house and substation for proper disposal of the structure, the Hutzel survey is provided in **Appendix F**.

3.2 Site Preparation Activities

The following sections describe the activities that were conducted to prepare the Site for remedial excavation activities.

3.2.1 Surveying

Prior to site mobilization, Arizona Survey and Mapping (ASAM), a licensed surveying firm, was contracted to perform a survey to identify the locations of utilities and structures in and around the Site.

3.2.2 Site Access Control and Temporary Facilities Installation

During remedial action activities, the Site was enclosed by a 6-foot chain-link fence, misting system and privacy screening. Additional snow fencing, and hazard barriers were placed around internal work areas to protect the active work areas. Misting and screening fabric was installed on the fence to ensure zero dust and odor emission offsite during the excavation activities.

Access to the project Site was limited to APS, Jacobs, and contractor personnel. All other visitors, including blue stake utility workers, personnel, and state visitors, were escorted on the Site by an APS or Jacobs representative. Escorted visitors were required to attend a health and safety meeting with the contractor prior to observing Site operations. Only personnel with the proper training and safety equipment who had reviewed and signed the project HASP were allowed access to the work areas. All personnel onsite were subject to Coronavirus Disease 2019 (COVID-19) protocols that included daily temperature checks, wellness checks, and review of travel restrictions prior to work. During work, personnel were required to socially distance when applicable, use face coverings when social distancing was not possible, and use adequate personal hygiene to prevent infection and/or spread of COVID-19 or other transmittable viruses. During nonworking hours, the contractor secured the Site to ensure that no unauthorized personnel entered the Site.

Construction trailers and required utility hookups were placed at the Site and equipped with all equipment listed in the contract specifications.

3.2.3 SWPPP Controls Installation

After installation of the security fencing, stormwater pollution prevention controls consisting of straw wattles were installed at the Site perimeter and at the outfall located within the Site. A silt screen was also installed at the outfall to prevent potential sediment at the Site from migrating offsite. Secondary containment was installed at potential pollution sources (such as portable toilet and generators) per SWPPP requirements. The Site SWPPP and SWPPP inspection documentation are provided in **Appendix D**.

3.2.4 Test Trenching and Sampling

Test trenches were advanced to evaluate the extent of impacted soil within the Site. Test pit locations corresponded to planned sampling locations inside each sector for confirmation sampling and waste characterization purposes. Test pits were also advanced along the east/west centerline to provide complete coverage of the Site and used as part of the confirmation sampling and statistical analysis. All confirmation sample results were below the Arizona residential SRLs and calculated exposure point concentration (EPC). Test pit locations were consistent with planned locations shown on Figures 2-1 and 2-2 of the SAP included in **Appendix B**.

3.3 Excavation Activities

Excavation activities were performed in accordance with the SAP to remove and dispose of the impacted soil efficiently and safely. Excavation activities included the removal of MGP-impacted soil. All impacted soil was removed down to bedrock across the excavation extent. Excavation was completed using large excavators to the depth of bedrock and manual hand digging at the bottom and perimeter of the excavation as needed to remove all MGP-impacted soil. Excavated soil was loaded directly into trucks for hauling to the Waste Management Gray Wolf Regional Landfill in Dewey, Arizona, under waste profile 445727AZ.

During remediation, ASAM surveyed the test pit and sample locations, as well as the extent of excavation. After site restoration, ASAM surveyed the final grade and site restoration.

3.4 Waste Management

Site wastes generated during remediation were segregated into several types of waste to identify disposal streams effectively and efficiently. Materials generated during the remedial action activities included MGP-impacted soil (Arizona special waste petroleum-contaminated soil [PCS]), ACM-containing building materials, metal piping and scrap metals, general construction waste, and non-regulated concrete debris. Wastes were segregated following the procedure set forth in the SAP and shown on the Waste Segregation Flow Chart, Figure 2-3, of the SAP (**Appendix B**). Wastes associated with the remedial action were manifested and transported offsite to an approved disposal, or recycling facility, depending on the type and regulatory classification of the waste. Waste disposal quantities during remediation include the following:

- 5812.03 tons of Arizona Special Waste PCS (MGP-impacted soil and concrete) hauled to Gray Wolf Regional Landfill (profile 445727AZ), Dewey, Arizona.
- 0.05 ton of non-friable ACM (ACM-impacted pipe) hauled to Gray Wolf Regional Landfill (profile 441599AZ) Dewey, Arizona.
- 219.46 tons of non-impacted concrete construction debris hauled to Prescott Landfill, Prescott, Arizona
- 22.22 tons of asphalt construction debris hauled to Prescott Landfill, Prescott, Arizona.
- 4.03 tons of asphalt recycled at Asphalt Paving and Supply Inc., Prescott, Arizona.
- 13.86 tons of metal recycled at S & A Recycling, Phoenix, Arizona.

Copies of the waste disposal tonnage summaries and waste manifests and waste profile approval are included in **Appendix G**.

Specific information on waste management activities is provided in the following subsections.

3.4.1 Special Waste Soil and Concrete

Soil with concentrations of specific petroleum-related constituents, including MGP constituents, greater than non-residential SRLs is considered an Arizona Special Waste PCS. All excavated soil and subsurface concrete exhibiting lampblack staining was managed as an Arizona Special Waste.

A total of 5,812.03 tons of special waste soil and concrete were removed from the Site and transported to the Waste Management Gray Wolf Landfill (State Facility Special Waste ID No. 301275) for disposal under Special Waste Profile No. 445727AZ. Each load of material transported offsite was subject to an inspection before departure. Each shipment of special waste was accompanied by a completed ADEQ Special Waste Manifest signed by an APS representative. Loads were weighed at the Gray Wolf Landfill and the total tonnage was determined from the certified scale tickets obtained from the landfill.

Special Waste Soil TCLP Limits and PCBs

No areas were identified that required segregation due to the potential exceedance of benzene toxicity characteristic leaching procedure (TCLP) limits and PCB residential SRLs. Benzene was not detected above the laboratory reporting limit of 0.015 milligrams per kilogram (mg/kg). PCBs were below the highest laboratory reporting limit of 0.031 mg/kg, with the exception of two results of 0.031 mg/kg and 0.017 mg/kg. No PCB results exceeded the residential SRL of 0.25 mg/kg.

No waste generated during excavation at the Site exceeded TCLP or PCB limits.

3.4.2 Construction Debris

Construction debris from the Site included non-impacted concrete, asphalt and scrap metal removed during the excavation activities.

A total of 219.46 tons of non-impacted concrete and 22.22 tons of asphalt were hauled to Prescott Landfill, 4.03 tons of asphalt was hauled to Asphalt Paving and Supply Inc., Prescott, 13.86 tons of scrap metal was hauled to S & A Recycling Phoenix, Arizona. A small quantity of wooden power pole sections (double wrapped in heavy plastic) and lead impacted insulation (sealed in a drum) were managed for disposal by the APS Transmission and Distribution section under separate APS waste profiles.

3.4.3 ACM

During remedial activities a small amount (0.05 ton) of asbestos pipe wrapping was segregated and sampled on August 26, 2020 by Hutzel. The asbestos was determined to be non-friable and was hauled by ERI on September 19, 2020, to the Gray Wolf Landfill under Waste Management ticket No. 615282.

3.4.4 Recycled Metal

During demolition of surface concrete pads, steel supports, vaults, plates, and conduits, metal was segregated by ERI and stored in steel roll-off bins. The metal was hauled to S & A Recycling in Phoenix, Arizona. A total of 13.86 tons of metal was recycled.

3.5 Air Monitoring

The following sections discuss the health and safety air monitoring that was conducted during the remedial action activities.

3.5.1 Health and Safety Monitoring

Health and safety monitoring during remedial activities was performed in accordance with the project HASPs. The purpose of monitoring was to prevent field personnel from being exposed to airborne concentrations in excess of action levels and verify there were no offsite airborne impacts to surrounding properties. Two HASPs were written for the remedial activities: one by Jacobs and one by ERI. The HASPs are included in **Appendix B**. Monitoring was performed by both Jacobs and ERI using two MultiRae PID meters used for monitoring VOC levels in the air, and by ERI using a Miniram dust meter.

Health and safety monitoring was performed by ERI's designated Site Safety Officer (SSO). The SSO was responsible for performing continuous breathing-zone monitoring in the exclusion zone. Readings remained below the action levels set forth in the HASP, personal protective equipment (PPE) upgrades or engineering controls were not necessary. The SSO was also responsible for walking the perimeter fence line. If odors, dust, or irregular readings were noticed, soil movement activities (excavation, loading, and stockpiling) were stopped and foam was applied to the soil for suppression. The Jacob's site health and safety officer routinely reviewed health and safety activities of ERI to verify monitoring was performed per HASP requirements and dust/odor suppression was effective. Dust and odor control is discussed in Section 3.6.

The excavation activities, including work inside the exclusion zone and loading impacted soil into the trucks for transport, were performed in Level D PPE.

3.6 Dust and Odor Controls

Dust and odor controls were employed at the Site to minimize airborne emissions during excavation activities. Measures used to control fugitive emissions and odors included the following:

- Using water and/or odor suppressant foam (RusFoam OC-AC645) to suppress dust and odor at active excavations and load-out operations.
- Direct loading of soil to reduce onsite stockpiles.
- Limiting the size of the excavation to reduce odor and emission from open face of the excavation.
- Operating a fence-line misting system around the Site at chain-link fenced areas.

- Covering impacted soil with cleaner soil where applicable to control odor.
- Discontinuing excavation activities during windy periods and storm events.

3.6.1 Dust Control

During all excavation activities water was used to reduce the potential for dust generation and to condition the soil at the Site to prevent dust generation during disposal. Water was applied to excavated soil, during soil loading, and a limited amount of water was applied to the paved areas in and adjacent to the Site to control dust.

3.6.2 Fence Line Misting System

A high-pressure misting system was installed along the top of the security fence prior to excavation activities. The misting system controlled potential dust and odors from leaving the Site. The system operated at all times during soil excavation at the Site. Mesh fabric was also installed on the Site fence, which provided additional dust control.

3.7 Backfill and Site Restoration

Following the completion of excavation activities, site restoration was performed, which included the following:

- Excavation backfilling, compaction and grading of embankment and aggregate base.
- Installation of asphalt paving over the entire excavation footprint.

Descriptions of the backfilling and site restoration activities are presented in the following sections.

3.7.1 Backfilling and Compaction

Asphalt Paving and Supply provided backfill soil and aggregate base from Prescott Valley, Arizona. Backfill and compaction were performed following excavation of all MGP-impacted soil to bedrock and upon receipt of soil confirmation sampling results. In accordance with the contract specifications and the SAP (**Appendix B**). A total of 13 samples of imported fill were collected for laboratory analysis to confirm this material was not contaminated. The quantity of sampling required is based on the total imported soil (approximately 4,427 cubic yards) and the California Department of Toxic Substances (DTSC) Control Clean Imported Fill Material fact sheet (DTSC, 2001). ADEQ has previously accepted the DTSC's method for backfill soil. The excavation was then backfilled with uncontaminated material imported from offsite.

Backfill samples were obtained locally from Asphalt Paving and Supply in Prescott Valley, Arizona.

The soil samples were submitted to Xenco Laboratories for the following analysis:

- Total Metals by U.S. Environmental Protection Agency (EPA) 6010D/7471B
- Total petroleum hydrocarbons by Arizona Department of Health Services Method 8015D
- PAHs by EPA Method 8270C SIM
- Polychlorinated biphenyls by EPA Method 8082A
- Organochlorine Pesticides by EPA Method 8081B
- Herbicides by EPA Method 8151
- VOCs by EPA 8260B

Project specifications for backfill were met for the analyses listed above. Analytes were not detected in backfill soil samples at concentrations at or above the laboratory reporting limit specified in the QAPP. Laboratory analytical reports for backfill soil are included in Appendix H.

ERI contracted Western Technologies for soil testing to determine the soil's geotechnical suitability as a backfill source. Western Technologies analyzed the source for the following properties:

- ASTM C 136 Particle-Size Analysis of Soils (gradation testing)
- ASTM D 6938 Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (shallow depth field density)

The results of the gradation testing are presented in **Appendix H**.

Backfilling was initiated on September 4, 2020, and completed on September 17, 2020. The Site was backfilled in accordance with the final grading plan for the Site. The backfill was placed in the excavation in maximum 8-inch lifts and compacted to not less than 95% relative compaction in accordance with ASTM D 6938. Soil compaction was achieved using a combination of a vibratory compactor, a jumping-jack compactor, and an excavator compaction wheel.

Backfill included installation of embankment backfill from bedrock to 16 inches below final grade and installation of aggregate base from 16 inches to 4 inches below final grade. Western Technologies conducted field density testing and certification during all backfill activities. In instances where the field compaction tests failed the compaction requirement, the areas were re-compacted and retested until compaction was per specification. Based on final compaction test results, backfill of the Site excavation was completed to project specifications. The soil compaction field density reports are presented in **Appendix H**.

3.7.2 Site Restoration Activities

Following backfilling activities, site restoration included the installation of a 4-inch-thick compacted layer of asphalt. Site restoration was performed per plan with the exception of adding a drainage swale east of the historical building to divert potential stormwater runoff away from the building. As-built drawings are included in **Appendix I**.

4. Soil Confirmation Sampling

The SAP (**Appendix B**) provides details on the soil confirmation methodology at the Site. A decision unit (DU) grid was used for confirmation sampling and was identified as DU1B. Within the DU, 11 confirmation samples were collected at the soil bedrock interface and were analyzed for PAHs, PCBs, and VOCs for the statistical analysis. The DU was segregated into eight evenly sized sectors. One confirmation sample was collected from within each sector, plus three additional confirmation samples were collected from the area where the sectors intersected for a total of 11 confirmation samples. **Figure 4-1** shows the confirmation sample locations.

The COCs were based on historical operations and results from previous investigations and remedial activities in and around the old substation footprint. All PAH, PCB, and VOC laboratory results for individual samples were below the Arizona residential SRL and ADEQ GPL Model default values (ADEQ, 2013b).

A statistical evaluation was also conducted using the results of the 11 confirmation samples collected at the soil bedrock interface. All calculated EPCs were below the Arizona residential SRLs. A description of the statistical methodology is included in the SAP (**Appendix B**) and outlined below. The results of the statistical analysis are listed in **Table 4-1**. The raw statistics and ProUCL output files are provided in **Appendix J**.

The EPC was calculated as the 95% upper confidence level (UCL) of the arithmetic mean concentration using EPA's ProUCL Version 5.1 statistical software package (EPA, 2015). Calculation of a 95% UCL depended upon data size, data skewness, and data distribution. The ProUCL software computed decision statistics using several parametric and nonparametric methods covering a wide-range of data variability, distribution, skewness, and sample size. The recommendations outlined in the ProUCL software documentation were followed to select the appropriate UCL value. If a data set contained less than four detections, the maximum detected concentration was used as the EPC. If a data set did not have any detections, then the highest non-detect value was used as the EPC.

5. Data Quality Evaluation

The data quality evaluation (DQE) of the laboratory analytical data generated from the remedial action sampling is presented in this section and in **Appendix K**. Data from a total of 11 normal samples, 2 field duplicates, and 3 trip blanks were evaluated.

5.1 Data Evaluation

The final activity in the DQE is an assessment of whether the data meet the data quality objectives. The goal of this assessment demonstrates that a sufficient number of representative samples was collected and the resulting analytical data can be used to support the decision-making process. The following summary highlights the data evaluation findings for the events defined herein:

1. The precision and accuracy of the data, as measured by laboratory QC indicators, indicate that the QAPP goals have been met.
2. No data were rejected. Completeness was 100 percent for all method/matrix/analyte combinations; 100 percent of data are usable for decision making, taking into account any potential biases discussed in this DQE. No data were qualified due to associated laboratory blank contamination.
3. Toluene was detected in two trip blanks; 12 associated results were qualified as estimated.
4. The methanol used to preserve the samples and trip blanks showed possible toluene contamination; 12 associated results were qualified as estimated.
5. Field duplicate relative percent difference (RPD) exceedances were observed for Method SW8270-SIM; 56 results were qualified as estimated.
6. Surrogate recovery exceedances were observed for Method SW8270-SIM; 89 results were qualified as estimated.
7. Matrix Spike/Matrix Spike Duplicate recovery and RPD exceedances were observed for Method SW8270-SIM; 17 results were qualified as estimated.
8. The field crews and laboratory followed QAPP and project documents, thereby assuring representativeness and comparability with previous studies.

5.2 Data Qualifiers

Qualified data are discussed in the data validation report provided in **Appendix K** and identified in **Tables 1-1, 1-2,** and **1-3** using the qualifiers presented in this section. The qualifiers that were used are defined as follows:

J **Estimated Value**: Analyte was present, but the reported value may not be accurate or precise (estimated). The result was estimated due to being less than the referenced reporting limit but greater than the method detection limit or due to a QC exceedance.

U **Not Detected**: Analyte was not detected at the specified detection limit.

UJ **Estimated Not Detected**: Analyte was not detected, and the specified detection limit may not be accurate or precise (estimated). The result was estimated due to being less than the referenced reporting limit but greater than the method detection limit or due to a QC exceedance.

R **Rejected**: The result was unusable due to deficiencies in the ability to analyze the sample and meet QC criteria.

6. Results and Conclusions of Remedial Action

The following section present the results and conclusions from the remedial excavation activities on APS-owned property (the Site).

6.1 Results

Excavation and restoration activities were performed as part of the remedial action completed for the Former APS MGP Site in Prescott, Arizona, in accordance with the SAP (Jacobs, 2020a). The extent of the excavation was completed as planned in the SAP and is shown on Drawing C-3 in **Appendix I**. A total of 6,071.65 tons of material, which included 5,812.03 tons of special waste soil and concrete, 241.68 tons of construction debris (uncontaminated asphalt and concrete), 4.03 tons of recycled asphalt, 13.86 tons of recycled scrap metal (conduit piping, wire, and metal support), and 0.05 ton of ACM were removed from the Site during the remedial action. Wastes generated were transported offsite for disposal at approved facilities, as described in Section 3.4.

Appendix L presents photographs of the remedial activities.

6.2 Conclusions

The soil confirmation sampling results indicate that the Site cleanup has been achieved for soil at the Site. All soil within the excavated area shown on **Figure 1-3** was removed to at least the confirmation sample depth and bedrock. A statistical analysis of the confirmation samples within the excavated area at the Site indicate that the 95% UCL was met for COCs. The area identified for closure is shown on **Figure 1-3**.

APS has completed the final remedial action implementation activities for the Site in accordance with the SAP for the excavated area shown on **Figure 1-3**.

The following is a list of the seven checklist items in the VRP statutes under A.R.S. § 49-181(A):

1. **Specific Remedial Action Contaminants** – PAHs and benzene associated with former MGP activities that occurred at the Site within the excavation area are listed in **Table 1-4**.
2. **Description of the Actions Taken to Achieve Remediation Levels or Controls** – APS has completed remedial excavation and restoration activities as described in the SAP. The remedial activities included excavation and disposal of impacted soil, soil confirmation testing, backfilling, and restoration of the Site. All confirmation soil samples met the Arizona residential SRLs and GPL values. All statistically calculated EPCs, provided in **Table 4-1**, were below the Arizona residential SRLs and GPL values. Detailed descriptions of the remedial activities are included in Section 3.3.
3. **Description of any soil, water, or soil and water treatment systems used as part of the remediation** – Not Required.
4. **Description of Any Institutional Controls and How They Will Be Maintained** – Not Required.
5. **Post-remediation monitoring** – Not Required.
6. **Description of Community Involvement** – APS's community involvement program for this project included distribution of mailers and newsletters to the public within a ¼-mile radius of the Site.
7. **Permits obtained for the remedial action** – A grading and drainage permit from the City of Prescott and NESHAP notification for demolition activities. Details are provided in Section 3.1.1.

7. References

Arizona Department of Environmental Quality (ADEQ). 2013a. *No Further Action Determination, Former APS Manufactured Gas Plant, 300 North Granite Street, Prescott, Arizona, Site Code: 509664-00.*

Arizona Department of Environmental Quality (ADEQ). 2013b. *gpl_model.xls*. Accessed October 28, 2020. https://static.azdeq.gov/wqarf/gpl_guidance.zip.

Arizona Public Service Company (APS). 2010. *Arizona Public Service Company – Former Manufactured Gas Plant, Prescott, Arizona – Request for No Further Action Determination, VRP Site # 502701-00.* May 4.

California Department of Toxic Substances Control (DTSC). 2001. *Department of Toxic Substances Control Information Advisory Clean Imported Fill Material*. October.

CH2M HILL, Inc. (CH2M). 2002. *Remedial Action Closure Report for the APS Former Manufactured Gas Plant, Prescott, Arizona*. August.

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Environmental Response Inc. (ERI). 2020. *Health and Safety Plan APS Prescott Substation Remediation, 300 N. Granite Street, Prescott, Arizona*. May.

Jacobs. 2019. *Arizona Public Service Quality Assurance Project Plan*. March.

Jacobs. 2020a. *Sample and Analysis Plan for the APS Prescott Former Manufactured Gas Plant, Prescott, Arizona.* June.

Jacobs. 2020b. *Substation Remediation Plans, APS Former Manufactured Gas Plant Site, Prescott, Arizona.* May.

Jacobs. 2020c. *Health and Safety Plan, Prescott Former MGP Soil Excavation*. May.

Tables

Table 1-1. Summary of Analytical Data for Confirmation Soil Samples, Polynuclear Aromatic Hydrocarbons
Remedial Action Implementation Tech Memo, Prescott, Arizona

Location	Sample ID	Sample Depth (ft bgs)	Sample Date	Units	1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)Anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)Pyrene	Naphthalene	Phenanthrene	Pyrene
Residential Soil Remediation Level				mg/kg	**NE**	**NE**	**3700**	**NE**	**22000**	**6.9**	**0.69**	**6.9**	**NE**	**69**	**680**	**0.69**	**2300**	**2700**	**6.9**	**56**	**NE**	**2300**
Non-Residential Soil Remediation Level				mg/kg	**NE**	**NE**	**29000**	**NE**	**240000**	**21**	**2.1**	**21**	**NE**	**210**	**2000**	**2.1**	**22000**	**26000**	**21**	**190**	**NE**	**29000**
Groundwater Protection Level [a]				mg/kg	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
DU1B	P-DU1B 01	8.5	08-Jul-20	mg/kg	0.011 UJ	0.017 UJ	0.0065 UJ	**0.018 J**	**0.011 J**	**0.039 J**	**0.095**	**0.1**	**0.14**	**0.035 J**	**0.06 J**	0.007 U	**0.11**	0.0081 UJ	**0.098**	0.016 UJ	**0.13**	**0.15**
DU1B	P-DU1B-2	9	08-Jul-20	mg/kg	0.0011 U	0.0017 U	0.00066 U	**0.0063**	**0.0023 J**	**0.0048**	**0.0089**	**0.01**	**0.013**	**0.003 J**	**0.0065**	**0.00097 J**	**0.013**	0.00082 U	**0.0094**	**0.0017 J**	**0.0081**	**0.019**
DU1B	P-DU1B-3	11	08-Jul-20	mg/kg	0.011 UJ	0.017 UJ	0.0066 UJ	**0.096 J**	**0.098 J**	**0.32 J**	**0.52 J**	**0.58 J**	**0.35 J**	**0.19 J**	**0.41 J**	**0.026 J**	**1.2**	**0.024 J**	**0.31 J**	**0.032 J**	**0.83**	**1.6**
DU1B	P-DU1B-04	15	21-Aug-20	mg/kg	**0.011**	**0.012**	**0.062**	**0.18**	**0.13**	**0.25**	**0.43**	**0.38**	**0.46**	**0.14**	**0.31**	**0.038**	**0.88**	**0.054**	**0.41**	**0.27**	**0.63**	**1.2**
DU1B	P-DU1B-5	2.5	07-Jul-20	mg/kg	**0.0023 J**	**0.002 J**	0.00066 U	**0.006**	**0.0056**	**0.013**	**0.021**	**0.026**	**0.032**	**0.0081**	**0.018**	**0.0025 J**	**0.032**	**0.0011 J**	**0.022**	**0.0069**	**0.028**	**0.046**
DU1B	P-DU1B-6	5	07-Jul-20	mg/kg	0.0011 U	0.0017 U	0.00066 U	**0.00099 J**	0.00054 UJ	**0.0023 J**	**0.0023 J**	**0.003 J**	**0.0031 J**	0.0011 UJ	**0.0094 J**	0.0007 U	**0.005 J**	0.00082 U	**0.0015 J**	0.0016 UJ	**0.002 J**	**0.012 J**
DU1B	FD01-070720	5	07-Jul-20	mg/kg	**0.0014 J**	0.0017 U	**0.00078 J**	**0.012 J**	**0.0082 J**	**0.021 J**	**0.03 J**	**0.034 J**	**0.029 J**	**0.011 J**	**0.028 J**	**0.0028 J**	**0.074 J**	**0.003 J**	**0.025**	**0.008 J**	**0.067 J**	**0.1 J**
DU1B	P-DU1B-7	4	07-Jul-20	mg/kg	**0.27 J**	**0.19 J**	**0.053 J**	**0.0089 J**	**0.023 J**	**0.018 J**	**0.011 J**	**0.017 J**	**0.0099 J**	**0.0012 J**	**0.049 J**	**0.0033 J**	**0.047 J**	**0.075 J**	**0.0039 J**	**0.89 J**	**0.071 J**	**0.066 J**
DU1B	P-DU1B-8	7	07-Jul-20	mg/kg	**0.06 J**	**0.054 J**	**0.03 J**	**0.0072 J**	0.00053 U	0.001 U	**0.0096 J**	**0.013 J**	**0.0082 J**	0.0011 U	0.0013 U	0.00069 U	**0.031 J**	**0.065 J**	0.0013 U	**0.12 J**	**0.025 J**	**0.052 J**
DU1B	P-DU1B-9	5.5	07-Jul-20	mg/kg	0.0011 U	0.0017 U	0.00066 U	**0.0045**	**0.002 J**	**0.0044**	**0.0079**	**0.0099**	**0.015**	**0.003 J**	**0.0059**	**0.0012 J**	**0.0091**	0.00082 U	**0.01**	**0.0018 J**	**0.006**	**0.013**
DU1B	P-DU1B-10	8	07-Jul-20	mg/kg	**0.013**	**0.0039**	**0.035**	**0.037**	**0.057**	**0.14**	**0.24**	**0.26**	**0.27**	**0.079**	**0.18**	**0.022**	**0.38**	**0.033**	**0.23**	**0.018**	**0.18**	**0.57**
DU1B	P-DU1B-11	12	20-Aug-20	mg/kg	**0.023 J**	**0.0047 J**	**0.24 J**	**0.021 J**	**0.087 J**	**0.06 J**	**0.07 J**	**0.059 J**	**0.058 J**	**0.02 J**	**0.073 J**	**0.011 J**	**0.24 J**	**0.11 J**	**0.053 J**	**0.011 J**	**0.045 J**	**0.34 J**
DU1B	FD-01-082020	12	20-Aug-20	mg/kg	**0.054 J**	**0.0062 J**	**0.64 J**	**0.055 J**	**0.25 J**	**0.16 J**	**0.18 J**	**0.14 J**	**0.12 J**	**0.052 J**	**0.19 J**	**0.017 J**	**0.61 J**	**0.33 J**	**0.11 J**	**0.021 J**	**0.12 J**	**0.79 J**

Notes:

[a] Default values from the ADEQ Groundwater Protection Leaching Model (https://static.azdeq.gov/wqarf/gpl_guidance.zip)

Cells highlighted in red indicate that the compound exceeded the Residential Soil Remediation Level and Non-Residential Soil Remediation Level.

Cells highlighted in yellow indicate that the compound exceeded the Residential Soil Remediation Level only.

Detected results are shown in **Bold**.

J = Analyte is present but the reported value might not be accurate or precise (estimate).

U = Analyte was not detected at the specified detection limit.

UJ = Analyte was not detected at the specified detection limit, detection limit is estimated.

ft bgs = foot (feet) below ground surface

ID = identification number

mg/kg = milligram(s) per kilogram

NE = not established

Table 1-2. Summary of Analytical Data for Confirmation Soil Samples, Volatile Organic Compounds
Remedial Action Implementation Tech Memo, Prescott, Arizona

Location	Sample ID	Sample Depth (ft bgs)	Sample Date	Units	Benzene	Ethylbenzene	m,p-Xylenes	o-Xylene	Toluene	Total Xylenes
Residential Soil Remediation Level				mg/kg	**0.65**	**400**	**NE**	**NE**	**650**	**270**
Non-Residential Soil Remediation Level				mg/kg	**1.4**	**400**	**NE**	**NE**	**650**	**420**
Groundwater Protection Level [a]				mg/kg	**0.7**	**82**	**NE**	**NE**	**159**	**31**
DU1B	P-DU1B 01	8.5	08-Jul-20	mg/kg	0.012 U	0.013 U	0.026 U	0.016 U	**0.055 J**	0.043 U
DU1B	P-DU1B-2	9	08-Jul-20	mg/kg	0.011 U	0.012 U	0.026 U	0.016 U	**0.040 J**	0.041 U
DU1B	P-DU1B-3	11	08-Jul-20	mg/kg	0.011 U	0.012 U	0.025 U	0.016 U	**0.051 J**	0.041 U
DU1B	P-DU1B-04	15	21-Aug-20	mg/kg	0.011 U	0.014 U	0.029 U	0.018 U	**0.032 J**	0.047 U
DU1B	P-DU1B-5	2.5	07-Jul-20	mg/kg	0.012 U	0.012 U	0.026 U	0.016 U	**0.053 J**	0.042 U
DU1B	P-DU1B-6	5	07-Jul-20	mg/kg	0.013 U	0.014 U	0.030 U	0.018 U	**0.090 J**	0.048 U
DU1B	FD01-070720	5	07-Jul-20	mg/kg	0.012 U	0.013 U	0.027 U	0.017 U	**0.041 J**	0.044 U
DU1B	P-DU1B-7	4	07-Jul-20	mg/kg	0.013 U	**0.021 J**	0.028 U	0.017 U	**0.075 J**	0.046 U
DU1B	P-DU1B-8	7	07-Jul-20	mg/kg	0.011 U	0.011 U	0.024 U	0.015 U	**0.026 J**	0.038 U
DU1B	P-DU1B-9	5.5	07-Jul-20	mg/kg	0.012 U	0.012 U	0.026 U	0.016 U	**0.044 J**	0.042 U
DU1B	P-DU1B-10	8	07-Jul-20	mg/kg	0.012 U	0.013 U	0.028 U	0.017 U	**0.053 J**	0.045 U
DU1B	P-DU1B-11	12	20-Aug-20	mg/kg	0.012 U	0.012 U	0.026 U	0.016 U	**0.080 J**	0.042 U
DU1B	FD-01-082020	12	20-Aug-20	mg/kg	0.015 U	0.016 U	0.033 U	0.021 U	**0.078 J**	0.054 U

Notes:
[a] Default values from the ADEQ Groundwater Protection Leaching Model (https://static.azdeq.gov/wqarf/gpl_guidance.zip)
Cells highlighted in red indicate that the compound exceeded the Residential Soil Remediation Level and Non-Residential Soil Remediation Level.
Cells highlighted in yellow indicate that the compound exceeded the Residential Soil Remediation Level only.
Detected results are shown in **Bold**.
J = Analyte is present but the reported value might not be accurate or precise (estimate).
U = Analyte was not detected at the specified detection limit.
ft bgs = foot (feet) below ground surface
ID = identification number
mg/kg = milligram(s) per kilogram
NE = not established

Table 1-3. Summary of Analytical Data for Confirmation Soil Samples, Polychlorinated Biphenyls
Remedial Action Implementation Tech Memo, Prescott, Arizona

Location	Sample ID	Sample Depth (ft bgs)	Sample Date	Units	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260
Residential Soil Remediation Level				mg/kg	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**
Non-Residential Soil Remediation Level				mg/kg	**7.5**	**7.5**	**7.5**	**7.5**	**7.5**	**7.5**	**7.5**
Groundwater Protection Level [a]				mg/kg	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
DU1B	P-DU1B 01	8.5	08-Jul-20	mg/kg	0.023 U	0.028 U	0.031 U	0.015 U	0.016 U	0.015 U	0.015 U
DU1B	P-DU1B-2	9	08-Jul-20	mg/kg	0.023 U	0.028 U	0.031 U	0.015 U	0.015 U	0.015 U	0.015 U
DU1B	P-DU1B-3	11	08-Jul-20	mg/kg	0.023 U	0.028 U	0.031 U	0.015 U	0.016 U	0.015 U	**0.031 J**
DU1B	P-DU1B-04	15	21-Aug-20	mg/kg	0.023 U	0.028 U	0.031 U	0.015 U	0.016 U	0.015 U	0.015 U
DU1B	P-DU1B-5	2.5	07-Jul-20	mg/kg	0.023 U	0.028 U	0.031 U	0.015 U	0.016 U	0.015 U	0.015 U
DU1B	P-DU1B-6	5	07-Jul-20	mg/kg	0.023 U	0.028 U	0.031 U	0.015 U	0.015 U	0.015 U	0.015 U
DU1B	FD01-070720	5	07-Jul-20	mg/kg	0.023 U	0.028 U	0.031 U	0.015 U	0.016 U	0.015 U	0.015 U
DU1B	P-DU1B-7	4	07-Jul-20	mg/kg	0.023 U	0.028 U	0.030 U	0.015 U	0.015 U	0.015 U	0.015 U
DU1B	P-DU1B-8	7	07-Jul-20	mg/kg	0.023 U	0.028 U	0.031 U	0.015 U	0.016 U	0.015 U	0.015 U
DU1B	P-DU1B-9	5.5	07-Jul-20	mg/kg	0.023 U	0.028 U	0.031 U	0.015 U	0.016 U	0.015 U	0.015 U
DU1B	P-DU1B-10	8	07-Jul-20	mg/kg	0.023 U	0.028 U	0.031 U	0.015 U	0.015 U	0.015 U	**0.017 J**
DU1B	P-DU1B-11	12	20-Aug-20	mg/kg	0.024 U	0.029 U	0.031 U	0.015 U	0.016 U	0.015 U	0.015 U
DU1B	FD-01-082020	12	20-Aug-20	mg/kg	0.023 U	0.028 U	0.031 U	0.015 U	0.016 U	0.015 U	0.015 U

Notes:

[a] Default values from the ADEQ Groundwater Protection Leaching Model (https://static.azdeq.gov/wqarf/gpl_guidance.zip)

Cells highlighted in red indicate that the compound exceeded the Residential Soil Remediation Level and Non-Residential Soil Remediation Level.

Cells highlighted in yellow indicate that the compound exceeded the Residential Soil Remediation Level only.

Detected results are shown in **Bold**.

J = Analyte is present but the reported value might not be accurate or precise (estimate).

U = Analyte was not detected at the specified detection limit.

ft bgs = foot (feet) below ground surface

ID = identification number

mg/kg = milligram(s) per kilogram

NE = not established

Table 1-4. Applicable Site Cleanup Criteria for COCs

Remedial Action Implementation Tech Memo, Prescott, Arizona

Compound	Residential SRL (mg/kg)			Non-Residential SRL (mg/kg)	Arizona Minimum GPL[d] (mg/kg)	GPL[e] (mg/kg)
	Carcinogen		Non-Carcinogen			
	10E-6 Risk[a]	10E-5 Risk				
PAHs						
Benzo(a)anthracene	0.69	**6.9**	---	21	NE	>1,000,000
Benzo(a)pyrene	0.069	**0.69**	---	2.1	NE	>1,000,000
Benzo(b)fluoranthene	0.69	**6.9**	---	21	NE	>1,000,000
Benzo(k)fluoranthene	6.9	**69**	---	210	NE	>1,000,000
Chrysene	68	**680**		2,000	NE	>1,000,000
Dibenz(a,h)anthracene	0.069	**0.69**	---	2.1	NE	>1,000,000
Flouranthene	---	---	**2,300**	22,000	NE	>1,000,000
Indeno(1,2,3-c,d)pyrene	0.69	**6.9**	---	21	NE	NE
Pyrene	---	---	**2,300**	29,000	NE	>1,000,000
Naphthalene	---	---	**56**	190	NE	113
VOCs						
Benzene	**0.65**	---	---	1.4	0.7	NE
Other Compounds						
PCBs low-risk[b]			3.9	37	NE	NE
PCBs high-risk[c]			**1.1**	7.4	NE	NE

Notes:

Site-specific Human Health Risk Assessment values were not calculated for the Site as residential SRLs are conservative risk-based values and will be used as cleanup criteria.

Site-specific groundwater protection levels were not calculated for the Site as described in Section 3.

[a] If the current or currently intended future use of the contaminated site is a child care facility or school where children below the age of 18 are reasonably expected to be in frequent, repeated contact with the soil, the person conducting remediation shall remediate to a 1×10^{-6} excess lifetime cancer risk.

[b] PCBs, low-risk mixture: Use if laboratory analysis confirms that the total PCB concentration consists of 0.5 percent or less of congeners that contain five or more chlorines and that no dioxin-like congeners are present.

[c] PCBs, high-risk mixture: Use if only total PCB concentration is reported by any ADHS licensed analytical method, or if laboratory analysis confirms that the total PCB concentration consists of more than 0.5 percent congeners that contain five or more chlorines or that dioxin-like congeners are present.

[d] Site specifc data for calculation of site GPLs is not available and minimum GPLs are listed based on the ADEQ GPL model, January 2013.

[e] Because the ADEQ default GPLs for PAHs have not been established, GPL values calculated at another APS MGP site with similar COCs have been provided. It should be noted PAH GPL values are many orders of magnitude greater than the Arizona residential SRLs due to the low mobility of PAHs in soil, with the exception of naphthalene which is approximately twice the SRL.

Bold = applicable cleanup standard

COC = contaminant of concern

GPL = groundwater protection level

mg/kg = milligram(s) per kilogram

NE = Arizona minimum GPL not established using the ADEQ GPL model.

PAH = polynuclear aromatic hydrocarbon

PCB = polychlorinated biphenyl

SRL = Soil Remediation Level

VOC = volatile organic compound

Table 4-1. Statistical Analysis for the Decision Unit

Remedial Action Implementation Tech Memo, Prescott, Arizona

Analyte	Total Samples	Detect Results	Detection Freq. (%)	Minimum Non-Detect Values	Minimum Detect Values	Maximum Non-Detect Values	Maximum Detect Values	Mean	Std. Dev.	UCL95	SRL[a]	UCL Basis[b,c]
PCB	11	2	18.18	0.031	0.031	0.031	0.075	0.053	0.0311	0.075	1.1	NA[c]
Benzene	11	0	0	0.011	--	0.012	--	--	--	0.012	0.65	NA[b]
Benzo(a)anthracene	11	10	90.91	0.001	0.0023	0.001	0.32	0.0852	0.114	0.234	6.9	Gamma Adjusted KM-UCL[f]
Benzo(a)pyrene	11	11	100	--	0.0023	--	0.52	0.129	0.186	0.405	0.69	95% Adjusted Gamma UCL
Benzo(b)fluoranthene	11	11	100	--	0.003	--	0.58	0.133	0.192	0.398	6.9	95% Adjusted Gamma UCL
Benzo(k)fluoranthene	11	9	81.82	0.0011	0.0012	0.0011	0.19	0.0533	0.069	0.0798	69	95% KM (t) UCL
Chrysene	11	10	90.91	0.013	0.0059	0.013	0.41	0.112	0.142	0.29	680	Gamma Adjusted KM-UCL[f]
Dibenz(a,h)Anthracene	11	8	72.73	0.0069	0.0097	0.007	0.038	0.0131	0.014	0.0171	0.69	95% KM (t) UCL
Fluoranthene	11	11	100	--	0.005	--	1.2	0.268	0.405	0.855	2300	95% Adjusted Gamma UCL
Indeno(1,2,3-c,d)Pyrene	11	10	90.91	0.0013	0.0015	0.0013	0.41	0.115	0.148	0.184	6.9	95% KM (t) UCL
Naphthalene	11	9	81.82	0.0016	0.0018	0.0016	0.89	0.152	0.29	0.922	56	95% KM Bootstrap t UCL[f]
Pyrene	11	11	100	--	0.012	--	1.6	0.37	0.545	1.137	2300	95% Adjusted Gamma UCL

Notes:

[a] Residential soil remediation level (SRL) represents a 1 x 10^{-5} risk factor for carcinogens except for naphthalene, benzene, and polychlorinated biphenyls (PCBs). Naphthalene and PCBs have non-carcinogenic residential SRLs, and benzene has a 1 x 10-6 risk factor. All residential SRLs values are lower than Arizona groundwater protection levels.

[b] The highest detection limit was used for analytes that were all non-detect.

[c] The highest detected concentration was used for analytes that had less than four detections.

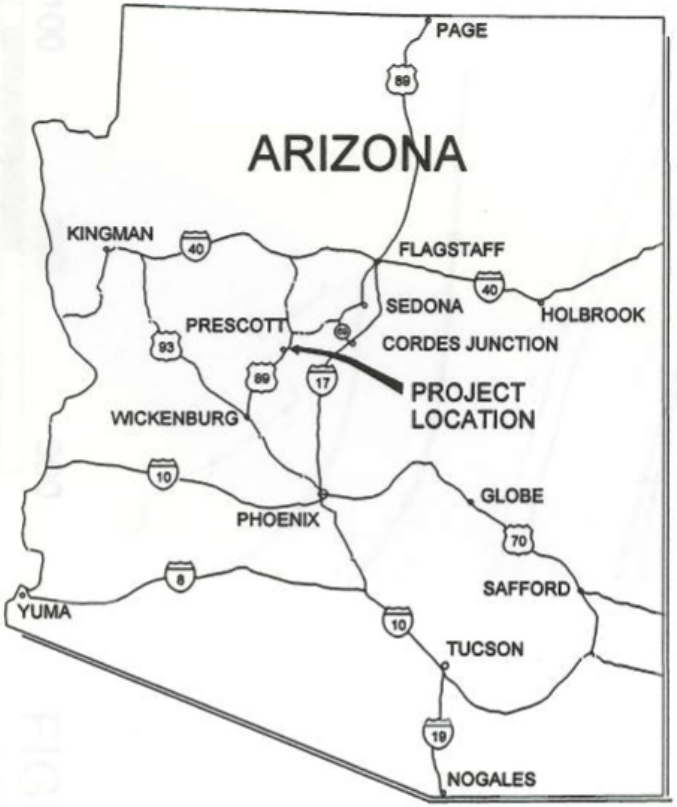
[d] Backup data showing statistical analysis are presented in Appendix J.

[e] The exposure point concentration (EPC) for each decision unit (DU) was calculated as the 95% upper confidence limit (UCL) of the arithmetic mean concentration using U.S. Environmental Protection Agency's (EPA's) ProUCL Version 5.1 statistical software package (EPA, 2015).

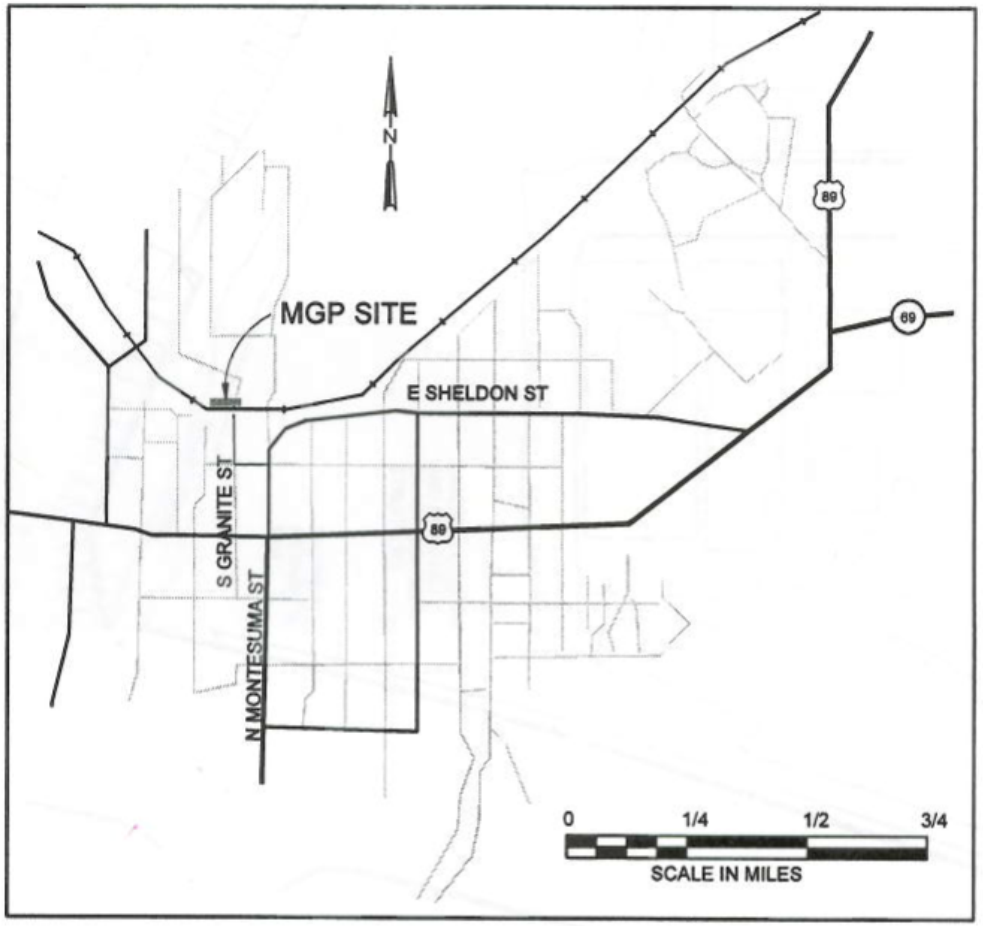
[f] For ProUCL outputs of both the 95% Kaplan-Meier (KM) Bootstrap UCL and the 95% Gamma Adjusted UCL (when identified by ProUCL), the higher UCL is reported for the EPC.

mg/kg = milligram(s) per kilogram (all reported values are in mg/kg)

Figures



LOCATION MAP



VICINITY MAP

Figure 1-1. Site Location Map
APS Former MGP Plant Site
Prescott, Arizona

JACOBS

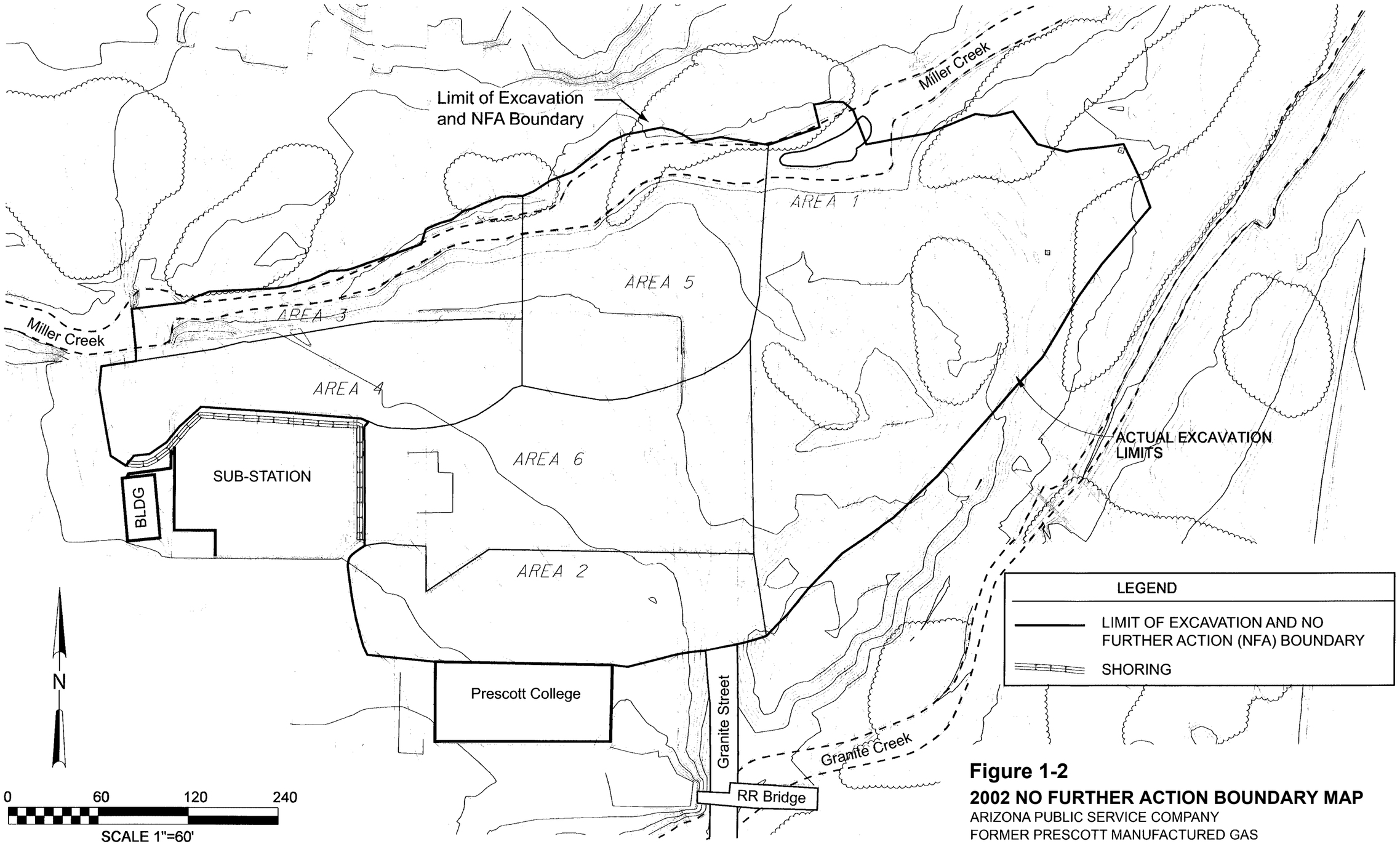


Figure 1-2

2002 NO FURTHER ACTION BOUNDARY MAP

ARIZONA PUBLIC SERVICE COMPANY
FORMER PRESCOTT MANUFACTURED GAS
PLANT SITE

CH2MHILL

25-JUL-2002 \APS◇718\T3 REPORTS\FIGURES\FIG_4-1.DLV

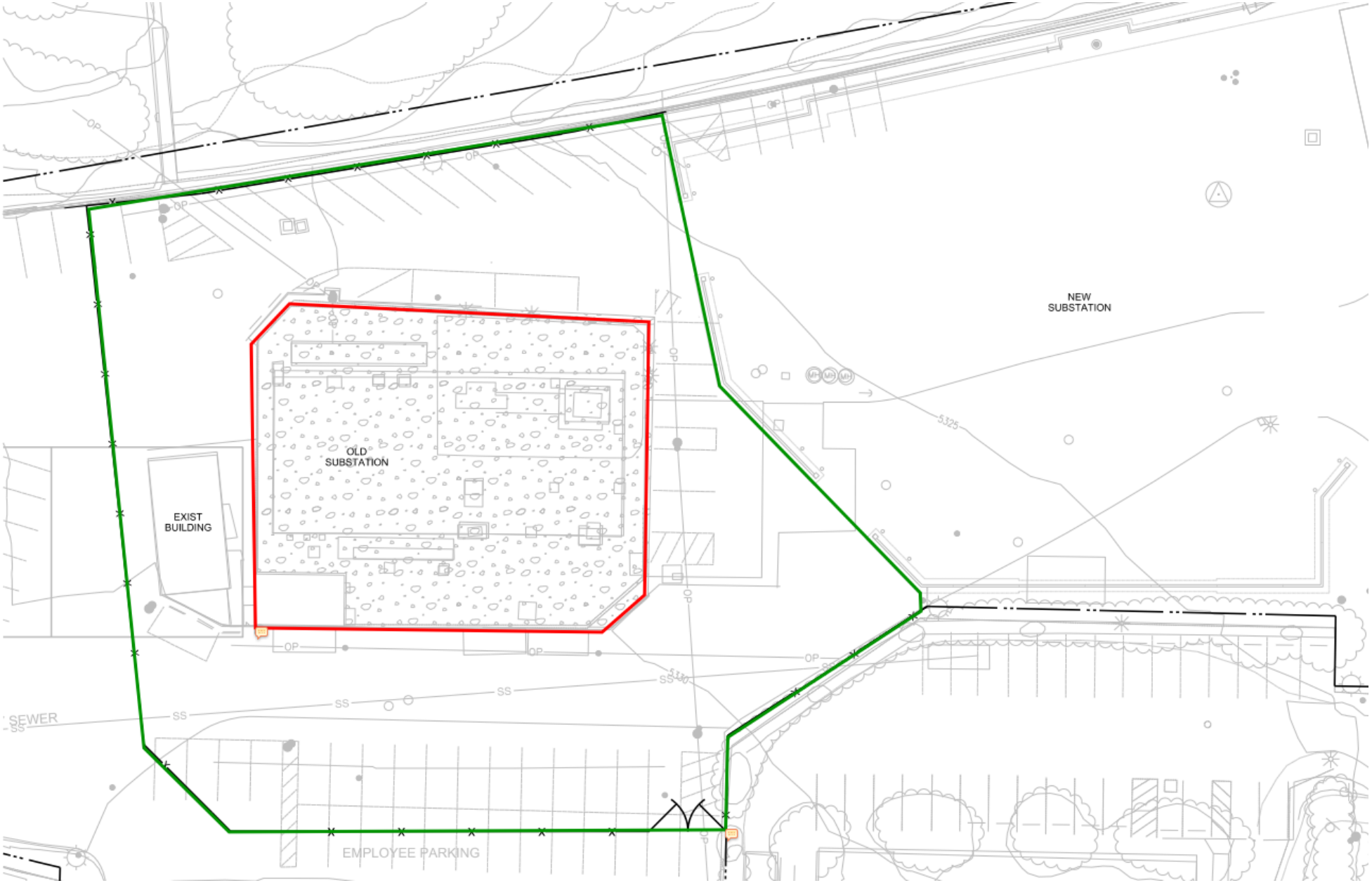


Figure 1-3. 2020 Excavation and Site Extent
APS Former MGP Plant Site
Prescott, Arizona

Notes:

Excavation extent

Construction site extent

JACOBS

PLAN
1"=10'-0"

N

0 10 20 30
Scale In Feet

1 Test pit location

Figure 4-1.
Confirmation Sample Locations

APS Former MGP Plant Site
Prescott, Arizona

JACOBS

Appendix A
Closure Documentation

Appendix A is provided separately.

Appendix B
2020 Sampling and Analysis Plan

Sampling and Analysis Plan for the APS Prescott Former Manufactured Gas Plant, Prescott, Arizona

Final

June 2020

Arizona Public Service Company

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Appendixes

A Prescott Substation Area Residuals Documentation
B DTSC Information Advisory, Clean Imported Fill Material

Acronyms and Abbreviations

°C	degree(s) Celsius
µS/cm	microSiemens per centimeter
ADEQ	Arizona Department of Environmental Quality
ADHS	Arizona Department of Health Services
APS	Arizona Public Service Company
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CH2M	CH2M HILL Engineers, Inc. (a wholly owned subsidiary of Jacobs Engineering Group Inc.)
City	City of Prescott
COC	contaminant of concern
DQO	data quality objective
DU	decision unit
EPA	U.S. Environmental Protection Agency
EPC	exposure point concentration
g	gram(s)
GC	gas chromatography
GPL	groundwater protection level
ID	identification number
Jacobs	Jacobs Engineering Group Inc.
mg/L	milligram(s) per liter
MGP	Manufactured Gas Plant
mL	milliliter(s)
MS	mass spectrometry
NTU	nephelometric turbidity unit
oz	ounces
PAH	polynuclear aromatic hydrocarbon

PCB	polychlorinated biphenyl
PCS	petroleum-contaminated soil
PID	photoionization detector
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RCRA	Resource Conservation and Recovery Act
RL	reporting limit
SAP	Sampling and Analysis Plan
SIM	selective ion monitoring
Site	Prescott Former Manufactured Gas Plant
SRL	soil remediation level
TCLP	toxicity characteristic leaching procedure
TPH	total petroleum hydrocarbon
TSDF	treatment, storage, and disposal facility
UCL	upper confidence limit
VOA	volatile organic analyte
VOC	volatile organic compound

1. Introduction

This Sampling and Analysis Plan (SAP) has been prepared for the remedial activities to be carried out at the Prescott Former Manufactured Gas Plant (MGP) Site (the Site), which include waste and soil characterization sampling. This SAP presents the sampling and analysis procedures that will be followed during final remediation activities at the Prescott Former MGP.

1.1 Site Description and Background

The remaining MGP-impacted portion of the Site occupies approximately 0.25-acre within the 6-acre property of the Arizona Public Service (APS) used for field support and substation operations in the City of Prescott (City). The construction area is less than 1 acre and is enclosed by a security fence.

Previously, from 1909 to 1949, MGP operations were conducted at the Site (CH2M HILL Engineers, Inc [CH2M][1], 2002); Figure 1-1 shows the location of the Site. Prior to 2001, previous remediation work included excavation and removal of all impacted soil except for the inaccessible area under the substation (CH2M, 2002); Figure 1-2 shows the previously excavated area and the location of the substation in 2000. During the previous remediation activities, a shoring wall was installed to protect the substation and delineate the impacted soil under the substation area from the clean fill installed outside of the substation area. In 2019, APS initiated actions for the construction of a new substation further to the east on APS property that provides access to the remaining impacted soil; Figure 1-3 shows the anticipated excavation area at the old substation area and the location of the new substation area.

Based on the results of the previous sampling at the old substation, the remaining compounds above the Arizona soil remediation levels (SRLs) related to former MGP operations include polynuclear aromatic hydrocarbons (PAHs). In the area adjacent to the substation, the impacted soil above SRLs was removed and replaced with clean fill (CH2M, 2002). During the 2001 remediation, prior to the installation of clean fill, benzene was reported in samples adjacent to the substation area above the Arizona residential SRL. Samples collected under the substation in August 1999 were above the laboratory reporting limit and below the Arizona residential SRL for benzene; therefore, benzene is a potential contaminant under the substation. In addition, polychlorinated biphenyls (PCBs) are a potential contaminant of concern (COC) associated with electrical transformers and will be evaluated during sampling activities.

The goal of the final remediation activities is to reduce contaminant concentrations at the Site to levels below the Arizona residential SRLs and groundwater protection levels (GPLs). Excavation activities will include removing concrete substation structures to access any remaining source material above Arizona residential SRLs and GPLs to the extent technically feasible.

The shoring and soldier piles that were installed during the 2001 remediation provide delineation between the remaining impacted soil and the clean backfill installed in 2001 adjacent to the substation. Therefore, the soldier piles provide demarcation of the lateral extent of impacts and extend approximately 25 feet below ground surface (bgs). During construction activities the shoring will be removed only as required to access the impacted soil. Soil sample results from the substation investigation and sampling at the soldier piles during remediation are included in Appendix A.

[1] CH2M HILL Engineers, Inc. (CH2M) is a wholly owned subsidiary of Jacobs Engineering Group Inc.

2. Sampling Approach and Methodology

The SAP has two objectives:

1. Characterize soil for disposal purposes prior to full-scale excavation (waste characterization sampling).

2. Confirm the vertical extent of MGP impacts (confirmation sampling).

Both waste characterization sampling and confirmation soil sampling are planned to be conducted at 11 test pit locations at the substation and will take place prior to full-scale excavation activities. The test pits will be advanced to visibly clean soil or bedrock, whichever occurs first. Waste characterization samples will be collected from soil that is visibly impacted and across the vertical depth of the excavation to adequately characterize soil for disposal purposes. After removal of potentially impacted soil at each test pit, confirmation samples will be collected from the bottom of each excavation pit to vertically delineate impacted soil. To confirm the lateral location of clean fill, the soldier piles will be surveyed either prior to (if accessible) or during full-scale excavation activities. The location of each confirmation sample and the soldier pile locations will be surveyed. If laboratory sample results show that the depths of the test pits have defined the vertical extent of impacted soil, then full-scale excavation will be advanced to at least the surveyed depth of the test pit samples. The lateral extent of MGP-impacted soil has been delineated by sampling the shoring and soldier piles installed in 2001; therefore, only vertical confirmation samples will be required to define the extent of the remaining MGP-impacted soil.

The following is a summary of the work flow:

1. Mark anticipated test pit locations for the contractor based on Figure 2-1 and initiate test pit trenching.

2. Collect 4-point composite waste characterization samples during advancement of each test pit.

3. Note areas of impacted soil during test pit advancement.

4. Collect confirmation soil grab samples from the bottom of each test pit.

5. Survey the soldier piles (if accessible) and bottom sample locations to document the lateral and vertical extent of MGP-impacted soil. If soldier piles cannot be surveyed during test pit trenching, then the soldier piles will be surveyed during full-scale excavation activities to document where the clean fill is delineated from the potentially impacted soil.

6. Field document sample locations by location measurement and staking.

Once the laboratory results of the confirmation samples are available, if the statistical results from the test pit trenching are below the calculated exposure point concentration (EPC), then the excavation will be advanced to the test pit depths during full-scale excavation activities and no further sampling would be necessary. The final excavation depth will be surveyed and compared to the sample depth to confirm the excavation was advanced to an adequate depth. If the statistical result from the test pit trenching is above the calculated EPC, then the excavation will be advanced an additional foot deeper than the depths of the test pits during full-scale excavation activities and another set of 11 bottom samples will be collected at the location of the test pits for laboratory analysis. The EPC will then be calculated from the results of the second set of bottom samples to verify that all impacted soil has been removed. The statistical methodology is discussed in Section 2.2.

The excavation will be laterally advanced to the clean fill delineated by the soldier piles. After full-scale excavation the extent of the excavation will be surveyed to confirm soil has been laterally removed to at least the soldier piles and the clean fill installed in 2001.

Figure 2 1 shows the anticipated locations of the test pits and Figure 2-2 shows the anticipated excavation area decision unit (DU).

2.1 Waste Characterization and Confirmation Sampling Approach

The objective of the waste characterization and confirmation sampling is to determine the waste characteristics of the soil and the vertical extent of soil impacts at the excavation area. A total of 11 test pits are planned to be advanced for collection and analysis of samples after the aboveground components of the old substation have been removed.

2.1.1 Waste Characterization

Waste characterization samples will be collected from the planned 11 test pits as four-point composite samples collected across the depth of the test pits based on visual and odor characteristics and analyzed per the Quality Assurance Project Plan (QAPP) (Jacobs, 2019) procedures and methods. The rationale for collecting 11 waste characterization samples is based on using the California Department of Toxic Substances Control (DTSC) clean fill sampling schedule (DTSC, 2001) testing requirements for clean fill as a conservative surrogate to characterize the soil at the Site. The estimated size and depth of the excavation is anticipated to generate approximately 3,500 cubic yards. Per DTSC guidance, 4 samples are required for the first 1,000 cubic yards plus 1 sample per each additional 500 cubic yards, which results in a minimum of 9 samples for 3,500 cubic yards. To account for potentially having extra excavation volume, a minimum of 11 samples will be collected. If more than 4,500 cubic yards are excavated, additional waste characterization samples will be collected based on the DTSC clean fill guidance (Appendix B).

Waste characterization laboratory analyses to be performed include:

- PAHs using U.S. Environmental Protection Agency (EPA) 8270C Selective Ion Monitoring (SIM)
- Total Resource Conservation and Recovery Act (RCRA) metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) using EPA Methods SW6020/SW7471A.
- Toxicity characteristics leaching procedure (TCLP) RCRA 8 Metals using EPA Methods 1311/6010B/7471A[2]
- Total volatile organic compounds (VOCs) using EPA Gas Chromatography (GC) Method 8021B or GC/Mass Spectrometry (MS) Method 8260B
- TCLP VOCs using EPA Method 1311/8021B or 8260B[2]
- Total petroleum hydrocarbons (TPH) using Arizona Department of Health Services (ADHS) Method 8015AZR1
- PCBs using EPA 8082
- Paint filter using EPA Method 9095
- Ignitability as defined in SW-846 Chapter 7.1.2
- pH using EPA Method 9045B (soil containing free liquids)
- Total cyanide using EPA Method 9014

The following list is a summary of the work flow for waste characterization sampling:

1. Verify with the laboratory (prior to mobilization) that 32 ounces of soil is enough to run all potential analyses and adjust the collected volume of soil based on laboratory requirements.

[2] If the constituents analyzed for total VOCs or RCRA metals meet or exceed 20 times toxicity characteristics levels, then TCLP VOCs or TCLP Metals will be analyzed to verify leaching potential. On the chain-of-custody, add in the comments column “do not analyze TCLP sample volume pending totals results.” If there are no total metals or total VOCs that exceed 20 times the toxicity characteristic, then the sample with the highest metals and VOC results will be analyzed for TCLP.

2. As a test pit is advanced, collect four 8-ounce jars (32 ounces total or what the laboratory requires) across the vertical depth of the pit (Section 3 provides additional sampling details).

    a. Total VOCs will be collected in methanol-preserved VOA vials and composited by the laboratory.

3. Label waste characterization samples as **P-WC##**, where ## = the test pit identifier. Section 4.2.1 provides detailed waste characterization sampling nomenclature.

4. On the chain-of-custody, enter “homogenize jars” in the comments column for each sample; list one composite sample consisting of four jars on one line on the chain-of-custody.

5. In the chain-of-custody comments for TCLP metal and TCLP VOC analysis, enter “do not analyze for TCLP pending totals results.”

6. Maintain a separate chain-of-custody for waste characterization samples. **Waste characterization and confirmation samples will be on a separate chain-of-custody. Confirmation samples will also be collected from the bottom of the test pits (see Section 2.1.2).**

7. When results for total metals and total VOCs are available, use the 20X column in Table 2-1 to determine if the laboratory will need to be notified to run TCLP analyses based on the 20 times rule; notify laboratory which samples require TCLP analysis.

8. If no samples are greater than the 20X column, then notify the laboratory to run one TCLP analyses on the sample with the highest metals and VOC concentrations.

9. After the samples are collected, survey the bottom of the test pits where the samples were collected to confirm the sampling depths and locations.

Table 2-1. Waste Characterization Screening Table

EPA HW No.	Contaminant	CAS No.	Total (mg/kg)	20X (mg/kg)
D004	Arsenic	7440–38–2	5	100
D005	Barium	7440–39–3	100	2000
D018	Benzene	71–43–2	0.5	10
D006	Cadmium	7440–43–9	1	20
D019	Carbon tetrachloride	56–23–5	0.5	10
D020	Chlordane	57–74–9	0.03	0.6
D021	Chlorobenzene	108–90–7	100	2000
D022	Chloroform	67–66–3	6	120
D007	Chromium	7440–47–3	5	100
D023	o-Cresol	95–48–7	200	4000
D024	m-Cresol	108–39–4	200	4000
D025	p-Cresol	106–44–5	200	4000
D026	Cresol		200	4000
D016	2,4-D	94–75–7	10	200
D027	1,4-Dichlorobenzene	106–46–7	7.5	150
D028	1,2-Dichloroethane	107–06–2	0.5	10
D029	1,1-Dichloroethylene	75–35–4	0.7	14
D030	2,4-Dinitrotoluene	121–14–2	0.13	2.6
D012	Endrin	72–20–8	0.02	0.4
D031	Heptachlor (and its epoxide)	76–44–8	0.008	0.16
D032	Hexachlorobenzene	118–74–1	0.13	2.6
D033	Hexachlorobutadiene	87–68–3	0.5	10
D034	Hexachloroethane	67–72–1	3	60
D008	Lead	7439–92–1	5	100
D013	Lindane	58–89–9	0.4	8
D009	Mercury	7439–97–6	0.2	4
D014	Methoxychlor	72–43–5	10	200
D035	Methyl ethyl ketone	78–93–3	200	4000
D036	Nitrobenzene	98–95–3	2	40
D037	Pentrachlorophenol	87–86–5	100	2000
D038	Pyridine	110–86–1	5	100
D010	Selenium	7782–49–2	1	20
D011	Silver	7440–22–4	5	100

Table 2-1. Waste Characterization Screening Table

EPA HW No.	Contaminant	CAS No.	Total (mg/kg)	20X (mg/kg)
D039	Tetrachloroethylene	127–18–4	0.7	14
D015	Toxaphene	8001–35–2	0.5	10
D040	Trichloroethylene	79–01–6	0.5	10
D041	2,4,5-Trichlorophenol	95–95–4	400	8000
D042	2,4,6-Trichlorophenol	88–06–2	2	40
D017	2,4,5-TP (silvex)	93–72–1	1	20
D043	Vinyl chloride	75–01–4	0.2	4

Note: https://www.epa.gov/sites/production/files/2016-01/documents/hw-char.pdf

Previous sampling at the substation indicates the highest concentration of lampblack is located at 11 feet below ground surface (bgs) in the northeast sector of the excavation area. The sample locations and results from previous sampling under the substation and at the shoring wall/soldier piles are included in Appendix A.

Based on the laboratory results from the test pits, soil will be segregated into the following five classifications:

- Non-impacted soil
- Construction debris (such as concrete, plastic, and steel)
- Special Waste Petroleum-contaminated Soil (PCS)
- Special Waste PCS that exceeds TCLP metals
- PCB-contaminated soil

APS will provide roll-off bins if needed to segregate questionable soil generated during soil excavation activities. The soil and debris will be segregated into one of the five site-specific waste classifications based on the waste characterization results. It is anticipated that most soil will be classified as a Special Waste PCS based on previous substation sampling (Appendix A) and will be transported offsite to a licensed Special Waste PCS permitted landfill. Special Waste PCS that exceeds the TCLP regulatory limits will be disposed of at an APS-approved and EPA-permitted hazardous waste treatment, storage, and disposal facility (TSDF) under an Arizona Special Waste manifest. Any TCLP results above the characteristic of toxicity (shown in the Regular column above) for contaminants listed will be treated as hazardous waste and disposed of properly at an EPA permitted TSDF.

All PCB-impacted soil (if present) exceeding non-hazardous disposal limits will be segregated and disposed of separately at a TSDF permitted to accept PCB-impacted soil waste.

Based on the asbestos/lead survey, the control house structure will require a trained asbestos/lead remediation work crew for removal prior to full-scale excavation. The control house location is shown on Figure 2-1 and the test pit locations are shown on Figure 2-2. Aboveground structures and known hazardous materials will be removed prior to advancement of the test pits.

Figure 2-3 provides additional details on the methodology for segregating waste at the Site and should be reviewed prior to generating waste soil and/or debris from remedial activities.

If necessary, samples from roll-off bins or stockpiles will be collected and submitted to the fixed-base laboratory for waste characterization to ensure the proper handling of waste material. Actual analyses required for roll-off or stockpiles is dependent on the sample location and the test pit trenching waste characterization analytical results.

2.1.2 Confirmation Sampling

Confirmation samples will be collected from the bottom of the test pits and analyzed for PAHs, benzene, and PCBs to determine if further excavation is required or if site cleanup criteria for soil have been met. If the potential contaminants benzene and PCBs are below SRLs based on the waste characterization results, these compounds will not require analysis during confirmation sampling. Samples will be collected from the bottom of excavation area as described in Section 3.

The total depth of the test pits will be advanced based on characteristics of visual observation, odor, and PID readings. It is anticipated soil will be removed from between 3 and 12 feet bgs, depending on the extent of impacted soil and the location of bedrock. Test pits are planned at the following locations at the substation:

- Four test pits are planned to be located on the north side of the substation, with samples anticipated to be collected at approximately 10 to 12 feet bgs at the base of the test pits.
- Three test pits are planned to be located at the east, central, and west areas of the substation, with samples anticipated to be collected at approximately 5 to 7 feet bgs.
- Four test pits are planned to be located at the south area of the substation, with samples anticipated to be collected at approximately 3 to 4 feet bgs.

If the statistical EPC result from the 11 confirmation samples is below the Arizona SRLs, then the sample results from the depth of the test pits will be used as confirmation of the extent of impacts under the substation and full-scale excavation will be advanced to this depth to remove all impacted soil. As described above, if the statistical EPC result is above the SRLs, then the full-scale excavation will be advanced at least 1 additional foot below the test pit depths and additional confirmation samples will be collected to confirm that all impacted soil that can be feasibly excavated has been removed.

During full-scale excavation, it is anticipated soil will be excavated using heavy equipment, loaded into haul trucks, and transported to a licensed offsite disposal facility for Arizona PCS Special Waste soil disposal. Any substation concrete and steel encountered will be removed and disposed of properly offsite.

Representative sampling methods, as presented in Section 3, will be used within the excavation area. Based on the analytical results, contaminant EPCs will be calculated statistically across the excavation area. The EPCs will be compared with the applicable site cleanup criteria in Table 2-2 to make a decision regarding the need to excavate deeper. The planned excavation area is shown on Figure 1-3 and includes the area under the old substation.

2.2 Confirmation Sampling Frequency and Rationale

The sampling frequency and rationale is based on the known remaining source area, identified as the excavation area on Figure 1-3, which is approximately 12,000 square feet. Because the remaining source area is generally known and the lateral extent is constrained by clean fill and the soldier piles, an increase in the excavation area is not anticipated. However, if field conditions necessitate an increase to the size of the excavation, additional bottom sectors will be added to accommodate the increase in DU size. The planned sectors shown on Figure 2-2 are approximately 1,500 square feet. For each additional 1,500 square feet requiring excavation beyond the anticipated 12,000-square-foot footprint, one additional bottom sample will be collected at the approximate center of the additional sector. The revision will be documented in the field notes and the reason for the additional excavation area will be provided. If an additional sector is required, additional waste characterization samples will not be required for collection unless the total volume of soil removed exceeds 4,500 cubic yards (described in Section 2.1.1). The planned excavation area with the locations of the test pits is shown on Figure 2-1. The following list outlines the work flow during excavation:

1. If confirmation sampling from test pit trenching has delineated the vertical extent and impacted soil is encountered during full-scale excavation activities, then additional soil will be excavated to remove all impacted soil in the impacted sector and an additional confirmation sample will be collected within the impacted sector.

2. If impacted soil is encountered outside the anticipated excavation footprint during full-scale excavation, then an additional confirmation sample will be collected for each additional 1,500 square feet of excavation.

3. If between 4,500 and 5,000 cubic yards of soil is excavated during full-scale excavation, then one additional waste characterization sample will be collected (12 waste characterization samples total). If more than 5,000 cubic yards of soil is excavated, then one additional soil will be collected per every additional 1,000 cubic yards excavated.

2.2.1 Excavation Bottom Sampling and Evaluation

Number of Samples

A minimum of 11 discrete soil samples will be collected from the bottom of the anticipated excavation area to provide data to determine the EPC.

Sample Locations

The bottom area has been divided into a grid that consists of eight approximately equally sized rectangles (sectors). A confirmation sample will be collected from the base of each sector by advancing a test pit trench to the anticipated total depth of the excavation. Three additional samples will be collected between the sectors to provide a larger data set for statistical analysis. The sectors and test pit locations are shown on Figure 2-2. All sample locations will be surveyed to document the vertical and horizontal position of the sample collection.

Statistical Evaluation

Preliminary analytical results from sampling will be tabulated and sent to the Jacobs project statistician or their designee.

The EPC will be calculated as the 95 percent upper confidence limit (UCL) of the arithmetic mean concentration using EPA's ProUCL Version 5.1 statistical software package (EPA, 2016). The ProUCL results will be evaluated as follows:

- If the DU has all non-detects, the highest non-detect value will be reported for the EPC; ProUCL cannot run a statistical analysis on all non-detected values.
- If the DU has fewer than four detections, the highest detected concentration will be reported for the EPC; ProUCL cannot run a reliable statistical analysis on fewer than four detected values.
- If ProUCL outputs both the 95 percent KM Bootstrap UCL and the 95 percent Gamma Adjusted UCL (when identified by ProUCL), the higher UCL will be evaluated for the EPC.

If the results of the statistical analysis indicate that the 95 percent UCL for the area for each COC presented in Table 2-2 is below the Arizona SRL, this will confirm that the vertical extent of impacts do not extend past the surveyed depths of the test pits and will be used as the excavation extent. During full-scale excavation, the total depth of the excavation will be advanced to at least the depth of the test pits in each sector.

If the 95 percent UCL calculation result is above the cleanup criteria, the excavation will be advanced at least 1 foot deeper during full-scale excavation activities; the bottom of the DU will be resampled, and Steps 1 through 3 will be repeated.

Excavation completion will be determined after the laboratory results have been validated.

2.2.2 Excavation Sampling Analysis

Samples will be analyzed for the following constituents and compared to the Arizona soil remediation levels and groundwater protection levels presented in Table 2-2:

- PAHs (using EPA Method 8270C SIM)
- Potential COCs benzene (8260B) and PCBs (8082 or 8082A)

Based on statistical analysis, only EPC contaminants (PAH, benzene, or PCBs) above the Arizona SRLs will require analysis after additional excavation.

> For example, if PAHs are above the residential SRLs and benzene and PCBs are below the residential SRLs after the first round of sampling, only PAHs will be required for analysis during the second round of sampling if additional excavation is required.

If PAHs, benzene, and PCBs are below the residential SRLs after the first round of sampling, a second round of sampling will not be necessary.

Detailed sampling and analysis procedures, the laboratory analytical methods, and quality assurance/ quality control (QA/QC) procedures can be found in the QAPP (Jacobs, 2019).

A copy of the Prescott sample tracker is provided as Table 2-3 (confirmation sample tracker) and Table 2-4 (waste characterization sample tracker) for reference. An electronic version of the sample tracker should be used during field activities as a living document of sample activities and revised during sample collection.

Table 2-2. Applicable Site Cleanup Criteria for COCs

APS Former MGP Site, Prescott, Arizona

Compound	Residential SRL (mg/kg)			Non-Residential SRL (mg/kg)	Arizona Minimum GPL[d] (mg/kg)
	Carcinogen		Non-Carcinogen		
	10E-6 Risk[a]	10E-5 Risk			
PAH					
Benzo(a)anthracene	0.69	**6.9**	---	21	NE
Benzo(a)pyrene	0.069	**0.69**	---	2.1	NE
Benzo(b)fluoranthene	0.69	**6.9**	---	21	NE
Benzo(k)fluoranthene	6.9	**69**	---	210	NE
Chrysene	68	**680**		2,000	NE
Dibenz(a,h)anthracene	0.069	**0.69**	---	2.1	NE
Flouranthene	---	---	**2,300**	22,000	NE
Indeno(1,2,3-c,d)pyrene	0.69	**6.9**	---	21	NE
Pyrene	---	---	**2,300**	29,000	NE
Naphthalene	---	---	**56**	190	NE
VOC					
Benzene	**0.65**	---	---	1.4	0.7
Other Compounds					
PCBs low-risk[b]			3.9	37	NE
PCBs high-risk[c]			**1.1**	7.4	NE

[a] If the current or currently intended future use of the contaminated site is a child care facility or school where children below the age of 18 are reasonably expected to be in frequent, repeated contact with the soil, the person conducting remediation shall remediate to a 1 x 10^{-6} excess lifetime cancer risk.

[b] PCBs, low-risk mixture: Use if laboratory analysis confirms that the total PCB concentration consists of 0.5 percent or less of congeners that contain five or more chlorines and that no dioxin-like congeners are present.

[c] PCBs, high-risk mixture: Use if only total PCB concentration is reported by any ADHS licensed analytical method, or if laboratory analysis confirms that the total PCB concentration consists of more than 0.5 percent congeners that contain five or more chlorines or that dioxin-like congeners are present.

[d] Minimum GPLs listed in the ADEQ GPL model, January 2013.

Notes:

bold = applicable cleanup standard

Site-specific Human Health Risk Assessment values were not calculated for the Site as residential SRLs are conservative risk-based values and will be used as cleanup criteria.

Site-specific groundwater protection levels were not calculated for the Site as described in Section 3.

COC = contaminant of concern

GPL = groundwater protection level

mg/kg = milligram(s) per kilogram

PAH = polynuclear aromatic hydrocarbon

PCB = polychlorinated biphenyl

SRL = Soil Remediation Level

VOC = volatile organic compound

NE = Arizona minimum GPL not established using the ADEQ GPL model.

Table 2-3. Confirmation Sample Tracker
APS Former MGP Site, Prescott, Arizona

Laboratory Chain-of-Custody Number	Sample ID	Sample Type	Date Collected	Time	Depth	Matrix	Grid Space	PAHs (8207C SIM) [4oz jar]	Benzene (8260B) [2-MeOH VOA]	PCB (8082) [4oz jar]	Turn-Around time (TAT)	Ship Date	Results Received Date	Data Validated	statistics cleared	Surveyed Y/N	Result/Comments
	D-DU1B-1	Regular				Soil	1										
	D-DU1B-2	Regular				Soil	2										
	D-DU1B-3	Regular				Soil	3										
	D-DU1B-4	Regular				Soil	4										
	D-DU1B-5	Regular				Soil	5										
	D-DU1B-6	Regular				Soil	6										
	D-DU1B-7	Regular				Soil	7										
	D-DU1B-8	Regular				Soil	8										
	D-DU1B-9	Regular				Soil	center										
	D-DU1B-10	Regular				Soil	center										
	D-DU1B-11	Regular				Soil	center										
		Sample Pair															
	FD01-mmddyy	D-DU##-#				Soil											
	FD0#-mmddyy	D-DU##-#				Soil											
	MS/MSD	NA				Soil											
		Equipment blank				Water	NA										
		Equipment blank				Water	NA										
		Equipment blank				Water	NA										

Notes:
Duplicates - one duplicate is required (10 percent) based on collection of 11 samples, add duplicates if additonal sampling exceeds 11 samples
MS/MSD - four MS/MSD required (20 percent), add volume if needed or requested by lab
Equipment blanks - if nondedicated equipment is used have laboratory provide bottles for equipment blanks
Trip blanks - include one laboratory provided trip blank in each cooler with 8260B analysi

Table 2-4. Waste Characterization Sample Tracker

APS Former MGP Site, Prescott, Arizona

Laboratory Chain-of-Custody Number	Sample ID	Sample Type	Date Collected	Time	Matrix	VOCs (8260B)	TPH (8015AZR1)	PAHs (8270C-SIM)	Metals (6010/ 7471A)	PCBs (8082)	TCLP* Metals (1311/6010 B/7471A)	TCLP* VOCs (1311/8260B)	Paint Filter (9095)	Ignitability (1010A)	Corrosivity by pH (9045B)	Cyanide (9013/9014)	Results Received?	Comments/Waste Description
	P-WC01																	
	P-WC02																	
	P-WC03																	
	P-WC04																	
	P-WC05																	
	P-WC06																	
	P-WC07																	
	P-WC08																	
	P-WC09																	
	P-WC10																	
	P-WC11																	

Notes:

VOCs, and PCBs results from waste analysis will be used to determine confirmation analysis, see Section 2.1.2 of the sampling and analysis plan

* = analysis required if total metals or VOCs exceed the 20 times rule limit. At least one sample to be analyzed for TCLP analysis on metals and VOCs(sample with highest results

All sample volumes are in glass with teflon lined cap except for VOCs which require MeOH preserved VOAs; verify actual sample volumes needed by lab prior to mobilization

Use four 8 oz. jars for sample volume per Xenco

3. Soil Sampling Types and Collection Methods

Soil samples will be collected using several sampling techniques. The sampling method used in the field will depend on the location of the sample, the depth of the excavation, and the type of sample required. The two types of samples that will be collected during construction activities are (1) waste characterization samples, and (2) confirmation samples. The two types of samples will be recorded on separate chain-of-custodies.

1. Waste characterization samples will be collected as 4-point composite samples. Four jars will be collected and submitted to the laboratory for homogenization prior to analysis. The test pit waste characterization samples will be collected across the vertical depth of the test pit to provide a representative sample across the depth of the test pit. If waste characterization samples are required from a roll-off bin or stockpile, a 4-point composite sample will be collected from the quadrants of the roll-off or stockpile. Section 2.1.1 provides the anticipated work flow for waste characterization sampling during test pit trenching.

2. Confirmation samples will be collected as grab samples from the bottom of the test pits or final excavated depth. Section 2.1.2 provides details about confirmation sampling.

This section describes each of the sampling methods that will be used to collect waste characterization and confirmation samples.

3.1 Hand-collected Samples

When bottom samples are required, and access is available, hand-collected samples will be submitted to the fixed-base laboratory. The following describes the hand-collected sample method:

- The excavation bottom will be cleared of any loose or disturbed soil to ensure a representative sample is collected.
- Soil samples will be collected from the excavation bottom using a decontaminated stainless-steel scoop, disposable scoop, or laboratory-provided pre-cleaned glass jar. A scoop may be used to transfer soil to the glass sampling jar. Alternatively, the jar may be used to scoop soil directly from the excavation into the jar if feasible.
- Methanol extraction will be used for any analysis requiring total benzene and/or VOC analysis performed on confirmation or waste characterization samples. The fixed-base laboratory will supply volatile organic analyte (VOA) vials that contain a pre-measured volume of methanol. At each location a measured amount of soil will be collected using a laboratory-provided sample tee and placed in the vial. The lid will be replaced, and the vial will be shaken gently back and forth for approximately 10 seconds and placed in bubble pack bag inside a zip-lock bag. The laboratory will provide trip blanks to be included with storage/shipment of any samples requiring VOC analysis. A trip blank will be included in any cooler with VOA vials.
- Each sample will be labeled, logged on a chain-of-custody form, jar placed in a bubble pack pouch and zip-lock bag, and placed on ice in a cooler or in a dedicated sample refrigerator to be maintained at approximately 4 degrees Celsius (°C). Samples will be packaged per laboratory instructions for shipment, and at a minimum the cooler will be lined with a heavy-duty plastic bag with sample jars individually wrapped. A temperature blank will be placed into the cooler prior to shipment with the chain-of-custody taped to the underside of the cooler lid. All void space in the coolers will be filled with ice and the cooler sealed with at least one wrap of reinforced tape, custody seal, and two wraps of heavy duty 2-inch clear box tape. Section 5.1.5 provides additional shipping information.

3.2 Backhoe Bucket and Auger Samples

It may be necessary to collect samples from a backhoe bucket or auger flights if the geometry of the excavation prohibits safe access by personnel. The following process describes the sampling technique to be used to collect backhoe bucket samples during the remedial activities:

- Soil samples will be collected from the backhoe bucket or auger flights using a decontaminated stainless-steel or plastic disposable scoop. Collection of soil that is in contact with the backhoe bucket flights will be avoided to ensure collection of a representative sample. The soil will be placed directly into a pre-cleaned 4-ounce (oz) sample jar.
- Each sample will be labeled, logged on a chain-of-custody form, and placed on ice in a cooler or in a sample refrigerator and maintained at approximately 4°C.

3.3 Stockpile or Roll-off Container Samples

If waste characterization soil samples are to be collected from a stockpile or roll-off container, they will be collected as a composite sample. The composite sample will be composed of soil that is collected from a minimum of four separate locations in the stockpile or roll-off container.

- An equal volume of soil will be collected from each of the stockpile or roll-off container sample locations using a decontaminated stainless-steel scoop or a disposable sampler and placed directly into pre-cleaned 4- or 8-oz jar as required by the laboratory for homogenization.
- For stockpile and roll-off container samples, a special note on the chain-of-custody will be made to “homogenize jars” in the comment column for each sample. This will notify the laboratory to homogenize the 4-point composite sample prior to extraction and analysis.
- When VOC analysis is required from a roll-off container sample, each sampling location will be collected individually. The laboratory will be notified on the chain-of-custody to “composite VOC samples” in the comment column prior to analysis.
- Samples will be labeled, logged on a chain-of-custody form, and placed on ice in a cooler or in a sample refrigerator and maintained at approximately 4°C.

3.4 Sample Containers, Preservation, and Holding Times

Table 3-1 presents a summary of the sample containers, preservation methods, and holding times for each analysis and the sample matrix that will be conducted. Waste characterization sampling includes all “Waste Soil” sample matrix analyses and confirmation sampling includes all “Soil” sample matrix listed in Table 3-1. If the excavation area requires additional sampling after excavation, only the applicable “soil” sampling matrix analyses listed in Table 3-1 will be necessary.

Table 3-1. Sample Preservation and Bottle Requirements

Analysis	Analytical Method	Sample Matrix	Sample Container	Preservation	Holding Times
PAHs	SW8270C or D-SIM	Soil	4-oz glass with Teflon-lined cap	≤6°C	14 days to extraction 40 days to analysis
Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX)	SW8260B or C	Soil	VOA vials (refer to QAPP) with Terracore	5 grams (g) soil/5 milliliters (mL) MeOH or larger volume of soil with equal measure of MeOH, ≤6° Celsius	14 days to analysis
PCBs	SW8082	Soil	4-oz glass with Teflon-lined cap	≤6°C	14 days to extraction

Table 3-1. Sample Preservation and Bottle Requirements

Analysis	Analytical Method	Sample Matrix	Sample Container	Preservation	Holding Times
PAHs	SW8270C or D-SIM	Waste Soil	4-oz glass with Teflon-lined cap	≤6°C	14 days to extraction 40 days to analysis
Total RCRA Metals	SW6020/ SW7471A	Waste Soil	4-oz glass with Teflon-lined cap	None	180 days to extraction and analysis (28 days for mercury)
TCLP RCRA[a] Metals	SW1311/SW6010B/ SW7470A	Waste Soil	4-oz glass with Teflon-lined cap	None	180 to leaching, extraction, and analysis (28 days for mercury)
Total VOCs	SW8260B or C	Waste Soil	VOA vials (refer to QAPP) with Terracore	5 g soil/5 ml MeOH or larger volume of soil with equal measure of MeOH, ≤6°C	14 days to analysis
TCLP VOCs[a]	SW1311/SW8260B or C	Waste Soil	4-oz glass with Teflon-lined cap	≤6°C	14 days TCLP extraction 14 days to analysis
TPH Diesel and Motor Oil	SW8015AZR1	Waste Soil	4-oz glass with Teflon-lined cap	≤6°C	14 days to extraction and analysis
PCBs	SW8082	Waste Soil	4-oz glass with Teflon-lined cap	≤6°C	14 days to extraction 40 days to analysis
Paint Filter	SW9095	Waste Soil	4-oz glass with Teflon-lined cap	≤6°C	None
Ignitability	SW1030	Waste Soil	4-oz glass with Teflon-lined cap	≤6°C	None
pH	SW9045B or C	Waste Soil	4-oz glass with Teflon-lined cap	≤6°C	Immediate
Cyanide	SW9014	Waste Soil	4-oz glass with Teflon-lined cap	≤6°C	14 days

[a] Required if total metals or VOCs exceed the 20 times rule limit.

3.5 Decontamination Procedures

Non-disposable materials and equipment used for sample collection will be decontaminated prior to use and after collection of each sample. Sampling equipment will be scrubbed using Alconox and distilled water, followed by a series of distilled water rinses. The sample equipment will be allowed to air-dry before sampling. Using laboratory-provided and/or disposable sampling equipment is preferred over using non-disposable materials to reduce the potential for cross-contamination and reduce the use of chemicals.

4. Data Validation and Management

Field and analytical data will be generated during the field investigation and remediation operations. Documentation of field activities will be completed using field logbooks, standardized field forms, and chains-of-custody.

4.1 Field Documentation

4.1.1 Sample Locations

The location of the samples will be marked in the field with flagging and/or staking. The locations will be surveyed by the remediation contractor's surveyor either prior to or after sampling. The surveyor will provide the location data for inclusion in the final report.

The excavation sectors and test pit locations are provided on Figure 2-2. If the excavation location changes based on sampling results, the confirmation sample locations will be documented on the figures.

4.1.2 Field Logbooks

Field logbooks will be used to document where, when, how, and from whom any vital project information was obtained. Logbook entries will be complete and accurate enough to permit reconstruction of field activities. Logbooks are to be bound with consecutively numbered pages. Each page will be dated, and the time of entry noted in military time. All entries will be legible, written in black or blue ink, and signed by the individual making the entries. Language will be factual, objective, and free of personal opinions or other terminology that might prove inappropriate.

At a minimum, the following information will be recorded during the collection of each sample:

- Sample location and description – Including the excavation and which grid space within the excavation, the sample was collected
- Site sketch showing sample location within the excavation and measured distances, if applicable
- Sampler's name(s)
- Date and time of sample collection
- Designation of sample as composite or grab
- Type of sample (i.e., matrix)
- Type of sampling equipment used
- Onsite measurement data (e.g., temperature, pH, conductivity) (may be collected in a separate field sampling diary)
- Field observations and details important to analysis or integrity of samples (e.g., heavy rains, odors, colors)
- Preliminary sample descriptions (e.g., for soils: clay loam, very wet; for groundwater: clear water with no petroleum-like odor)
- Type(s) of preservation used or present in sample container
- Instrument reading and units of measurement (e.g., pH units, microSiemens per centimeter [µS/cm], nephelometric turbidity units [NTUs], TSP)
- Lot numbers of the sample containers, sample tag numbers, chain-of-custody form numbers, and chain-of-custody seal numbers
- Shipping arrangements (overnight air bill number)

- Recipient laboratory
- In addition to the sampling information, the following specifics will be recorded in the field logbook for each day of sampling:
  - Team members and their responsibilities
  - Time of site arrival/entry onsite and time of site departure
  - Other personnel onsite
  - A summary of any meetings or discussions with APS employees
  - Deviations from sampling plans, site safety plans, and QAPP procedures
  - Changes in personnel and responsibilities as well as reasons for the changes
  - Levels of safety protection
  - Calibration readings for any equipment used and equipment model and serial number

4.1.3 Chain-of-Custody Records

Chain-of-custody records are used to document sample collection and shipment to the laboratory for analysis. Information on the chain-of-custody header (for example the APS PO# and contact information) will be verified by APS prior to shipment. All sample shipments will be accompanied by a chain-of-custody record. Form(s) will be completed and sent with the samples for each laboratory and each shipment (i.e., each day). If multiple coolers are sent to a single laboratory on a single day, form(s) will be completed and sent with the samples for each cooler.

The chain-of-custody record will identify the contents of each shipment and maintain the custodial integrity of the samples. Generally, a sample is considered to be in someone's custody if it is either in someone's physical possession, in someone's view, locked up, or kept in a secured area that is restricted to authorized personnel. The site leader or designee will sign the chain-of-custody record. The site leader or designee will sign the "relinquished by" box and note date, time, and air bill number (if samples are shipped).

4.1.4 Photographs

Photographs will be taken at various sample locations and at other areas of interest onsite. They will serve to verify information entered in the field logbook. When a photograph is taken, the following information will be written in the logbook or will be recorded in a separate field photography log:

- Photograph number
- Time, date, location, and, if appropriate, weather conditions
- Description of the subject photographed
- Name of person taking the photograph

4.1.5 Packaging and Shipment

Most samples will be shipped to a fixed base laboratory. All soil sample containers will be placed in a strong-outside shipping container (a steel-belted or hard-plastic cooler). The following outlines the packaging procedures that will be followed when samples are shipped to a laboratory:

1. When ice is used, secure the drain plug of the cooler with tape to prevent melting ice from leaking out of the cooler and double-bag all ice.
2. Line the bottom of the cooler with bubble wrap to prevent breakage during shipment.
3. Line the entire cooler using a heavy-duty plastic bag.
4. Secure bottle/container tops with custody seals.
5. Wrap all glass sample containers in bubble wrap to prevent breakage.
6. Seal all sample containers in plastic zip-lock bags.
7. Tie the bag lining the cooler into a tight knot.

8. Place the signed chain-of-custody into a gallon zip-lock bag and affix it to the inside lid of the cooler.

All samples will be placed in coolers with the appropriate chain-of-custody forms. All forms will be enclosed in a large plastic bag and affixed to the underside of the cooler lid. Empty space in the cooler will be filled with ice and bubble wrap, where appropriate, to ensure samples remain cold and breakage-free during shipment. Ice used to cool samples may be double-sealed in two zip-closure plastic bags and placed on top and around the samples to chill them to the correct temperature. Each ice chest will be securely taped shut with nylon strapping tape, and custody seals will be affixed to the front, right, and back of each cooler.

Samples will be shipped to: Xenco Laboratories, 2525 W. Huntington Dr Ste 102, Tempe, AZ 85282, or Xenco Laboratories, 4147 Greenbriar Drive, Stafford, TX 77477 using APS FedEx acct 1060-2232-1 billing ref 1459#25-0133. Check with Xenco Laboratories prior to shipment to determine preferred laboratory location or if courier pickup will be provided.

If Xenco/Eurofins provides a courier for sample pickup, samples will be directly relinquished to the courier and will not require packaging for shipment. The chain-of-custody and samples with temperature and trip blanks will be relinquished during pickup.

4.2 Analytical Data

Analytical data will be managed as described in the APS QAPP (Jacobs, 2019) and as summarized in this section.

4.2.1 Waste Characterization Sample Identification

The nomenclature to use for waste characterization samples collected is:

[Site Code]-[Test Pit Location ID]

Where:

Site Code = two-digit site code given for each site managed by APS. The site code for Prescott is “P”.

Location ID = Location that is being sampled and pre-determined before sampling in the field. Waste characterization samples are identified as “WC” (Waste Characterization) and associated with a two-digit numeric value that represents the test pit where the waste characterization sample was collected.

Example Sample ID: ***P-WC09***

Sample collected at the Prescott site (**P**);

Waste characterization sample collected at test pit location 9 (shown on Figure 2-2).

4.2.2 Regular Field Sample Identifications

The nomenclature to use for regular field samples collected is:

[Site Code]-[Location ID]-[Sector Code]

Where:

Site Code = two-digit site code given for each site managed by APS. The site code for Prescott is “P”.

Location ID = Location that is being sampled and pre-determined before sampling in the field. A single DU will be used and all verification samples during excavation will be identified by DU1B.

Sector Code = This will be used to identify the grid space location (Sector) corresponding to confirmation sample locations 1 through 8 within the excavation where the sample was collected (e.g., Sector 8). Confirmation sample locations 9 through 11 are anticipated to be collected at the excavation center boundaries and will be identified as CENTER in the Sector code (IE ***P-DU1B-CENTER#***).

Example Sample ID: ***P-DU1B-8***

Sample collected at the Prescott site (**P**);

At the DU excavation bottom location (***DU1B***);

In Sector 8 (***8***).

Example Sample ID: P-DU1B-CENTER10

Sample collected at the Prescott site (P);

At the excavation bottom location (DU1B);

In center location 10 (shown on Figure 2-2).

If a second round of confirmation samples is required, the second sample identifier will be appended with an 'R'. For example, if the first sample is **P-DU1B-8** and the location needs to be resampled, the second sample will be **P-DU1B-8R**. If a third sample is required, the sample will be **P-DU1B-8R2.**

4.2.3 Field Quality Control Sample Identifications

Field QC samples can include field duplicates, equipment blanks, field blanks, ambient blanks, trip blanks and any other type of field QC samples that may be required for sampling. The field sample identification (ID) nomenclature to use would be:

[Site Code]-[QC Type Code]##-[Sample Date]

Where:

Site Code = two-digit site code given for each site managed by APS. The site code for Prescott is "P".

Field QC Type = two-digit code given for each type of field QC sample that could be collected. Valid values are provided in Table 4-1. This code is followed by a two-digit sequential number starting with 01 to accommodate multiple samples collected on the same day of the same field QC type.

Sample Date = Sample collection date in format of "MMDDYY"

Example Sample ID: P-EB01-061519 {first Equipment Blank of the day collected for Prescott on 06/15/19}

Table 4-1. Quality Control Sample Type Abbreviations

Field QC Type Name	QC Type Code
Field Duplicate	FD
Trip Blank	TB
Field Blank	FB
Ambient Blank	AB
Equipment Blank	EB
Split Sample	SS
Field Spike	FS

4.2.4 Data Verification and Validation

Data verification and data validation will be performed throughout the project on the analytical data reported by the laboratories. Data verification and data validation will be used to ensure, through examination and objective evidence, that the data are of sufficient quality to support decisions based on data quality objectives (DQOs) presented herein and in the QAPP (Jacobs, 2019).

4.2.5 Data Management

Analytical data will be maintained in the Jacobs Prescott Database. The Jacobs project chemist and database manager will upload all analytical data to the database.

A systematic field sample ID nomenclature has been developed for the confirmation samples that will be collected at the Site. Consistent nomenclature has been designed to facilitate entry, management, reporting and organization of field and analytical data for APS.

The field sample ID nomenclature will vary depending on the sampling purpose. Each field sample ID generated must be unique for each environmental sample collected. The field sample ID is limited to 25 characters.

5. Excavation Backfilling

The contractor will be responsible for identifying a fill source of suitable import material free of contamination. Prior to starting excavation activities, APS will review and approve the originating source of the clean fill. All clean fill will be obtained from an offsite source. The soil to be used as backfill at the Site will be sampled and analyzed to confirm that it does not contain COCs associated with the Site or other likely contaminants prior to being delivered to the site. The soil used as backfill will be sampled and analyzed for the following constituents by the contractor:

- PAHs EPA 8270C SIM
- PCBs using EPA Method 8082
- Pesticides using EPA Method 8081A or 8081B
- Herbicides using EPA Method 8151A
- Total VOCs using EPA GC Method 8021B or GC/MS Method 8260B
- TPH using ADHS Method 8015AZR1
- Total Metals using EPA Method 6010B/7170A

The contractor will provide copies of the analytical data to Jacobs and APS. The backfill will be considered acceptable for use if concentrations of the listed analytes, except for metals, are not detected above the reporting limits (RLs) listed in the QAPP (Jacobs, 2019). Metals concentrations must be within the ranges identified in the *Evaluation of Background Metal Concentrations in Arizona Soil* (Earth Technology Corporation, 1991) but below the residential SRLs and groundwater protection levels (GPLs).

Upon approval, the contractor will schedule delivery of the import material to the Site for backfill purposes. The contractor will periodically collect soil samples from the import source and submit samples to a fixed-base laboratory for analysis. Approximately 12 samples will be collected for the first 5,000 cubic yards of fill material and one sample for each additional 1,000 cubic yards (California Department of Toxic Substances Control, 2001; Appendix B). The constituents analyzed and sample frequency may be adjusted based on the source of the backfill (i.e., existing commercial gravel pits). The location from which the backfill originated will also be documented in the site logbook.

The contractor will backfill the excavation as soon as practical to limit the amount of open excavation. The excavation can only be backfilled after confirmation sampling verifies that site cleanup criteria are met. The backfill and asphalt final grade will match the existing topography in accordance with the City-approved grading plan.

6. References

California Department of Toxic Substances Control (DTSC). 2001. *DTSC Information Advisory, Clean Imported Fill Material*. October.

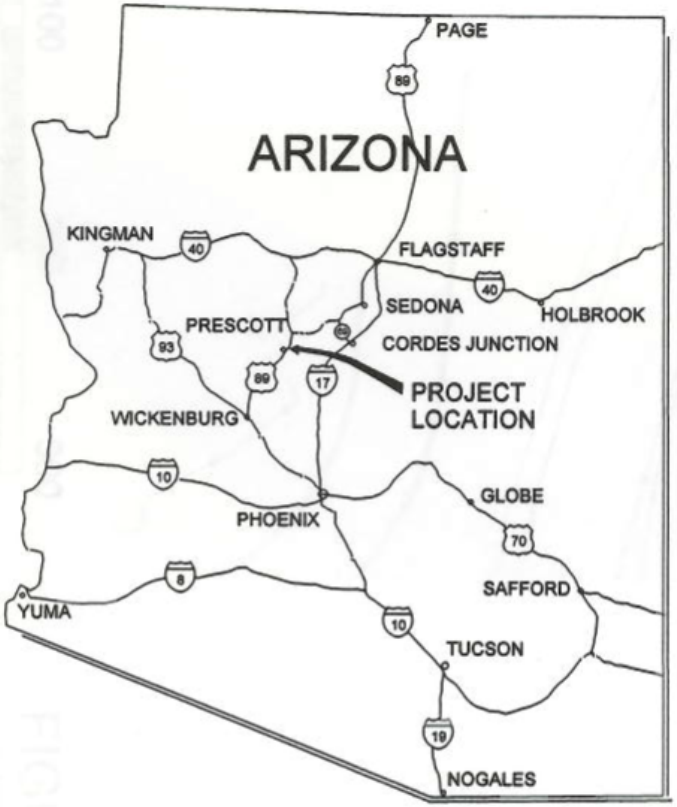
CH2M HILL Engineers, Inc. (CH2M). 2002. *Remedial Action Closure Report for the APS Former Manufactured Gas Plant, Prescott, Arizona*. August.

Earth Technology Corporation. 1991. *Evaluation of Background Metals Concentrations in Arizona Soils*. June.

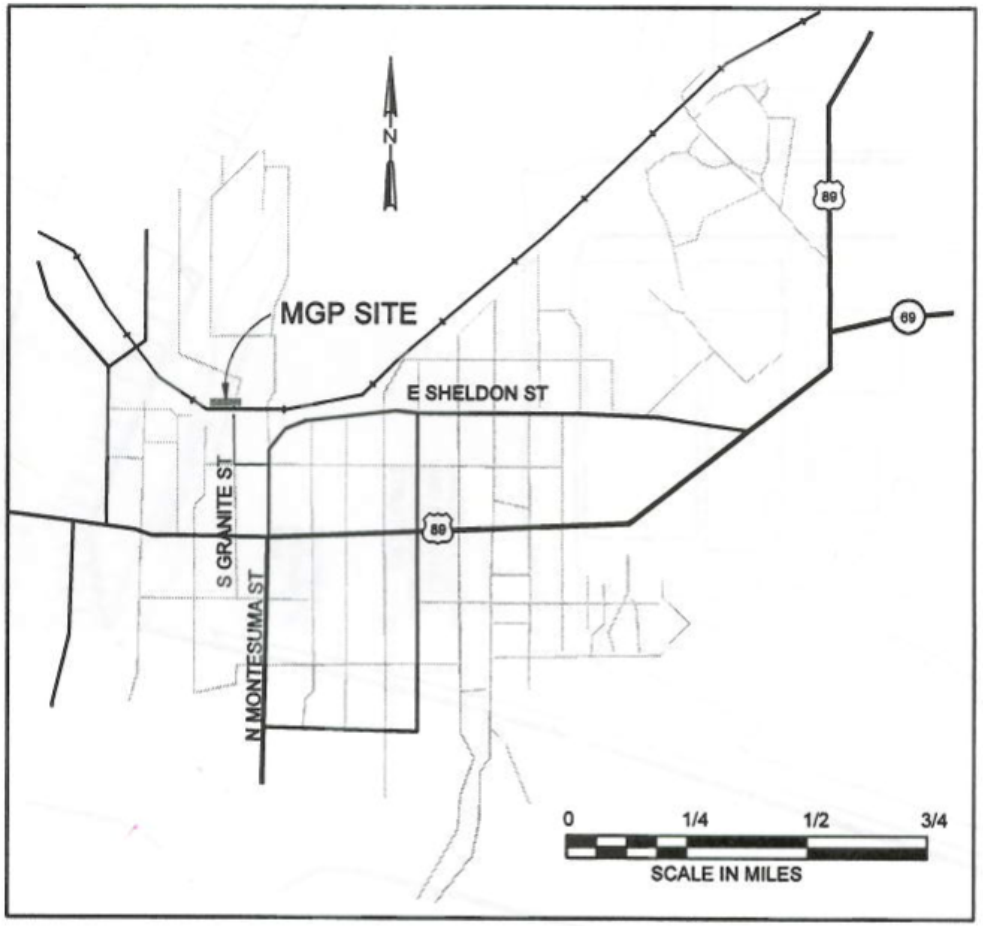
Jacobs Engineering Group Inc. (Jacobs). 2019. *Arizona Public Service Quality Assurance Project Plan*. March.

U.S. Environmental Protection Agency (EPA). 2016. ProUCL Software, Statistical Software ProUCL 5.1.02 for Environmental Applications for Data Sets with and without Nondetect Observations. June. https://www.epa.gov/land-research/proucl-software.

Figures



LOCATION MAP



VICINITY MAP

Figure 1-1. Site Location Map
APS Former MGP Plant Site
Prescott, Arizona

JACOBS

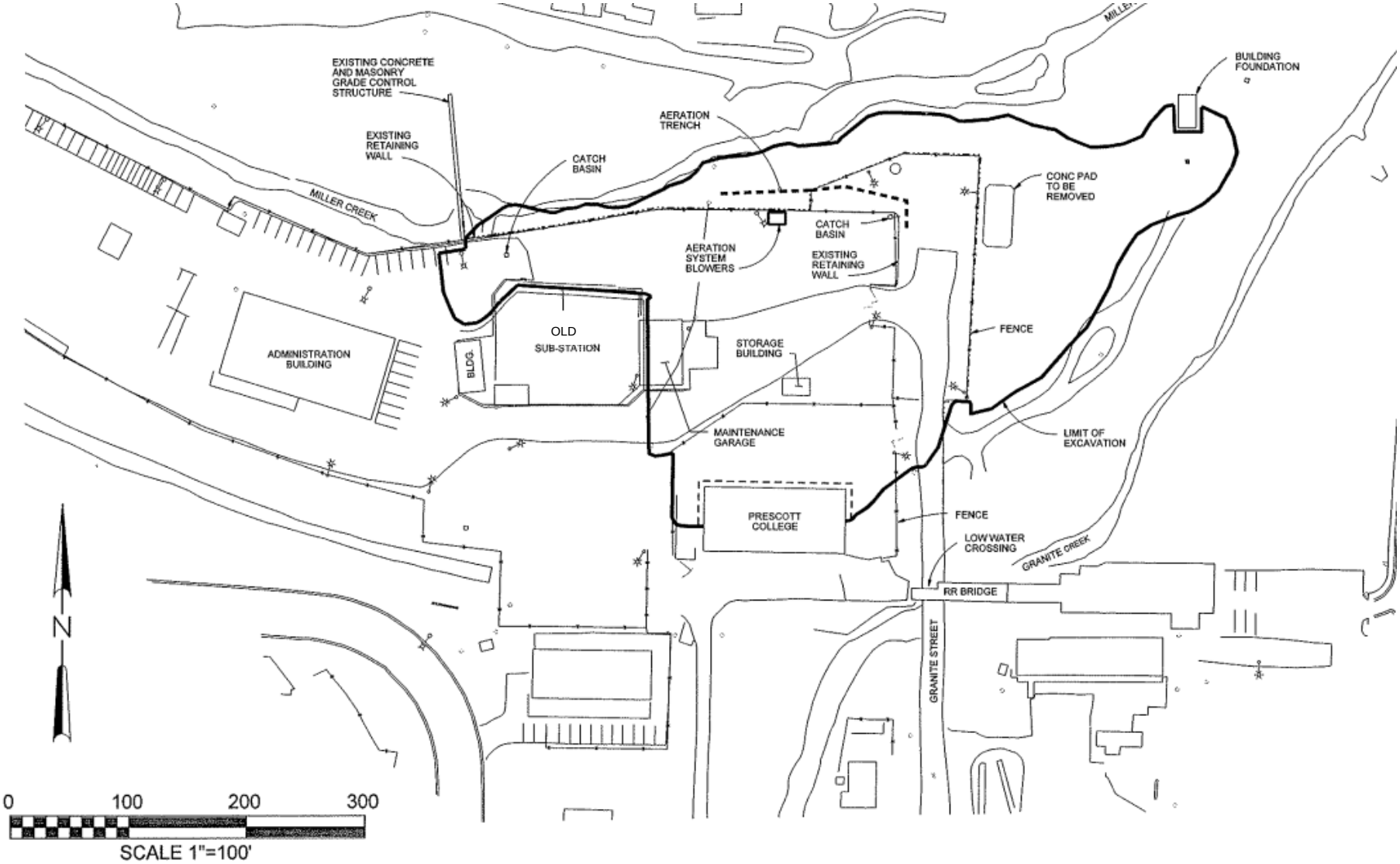
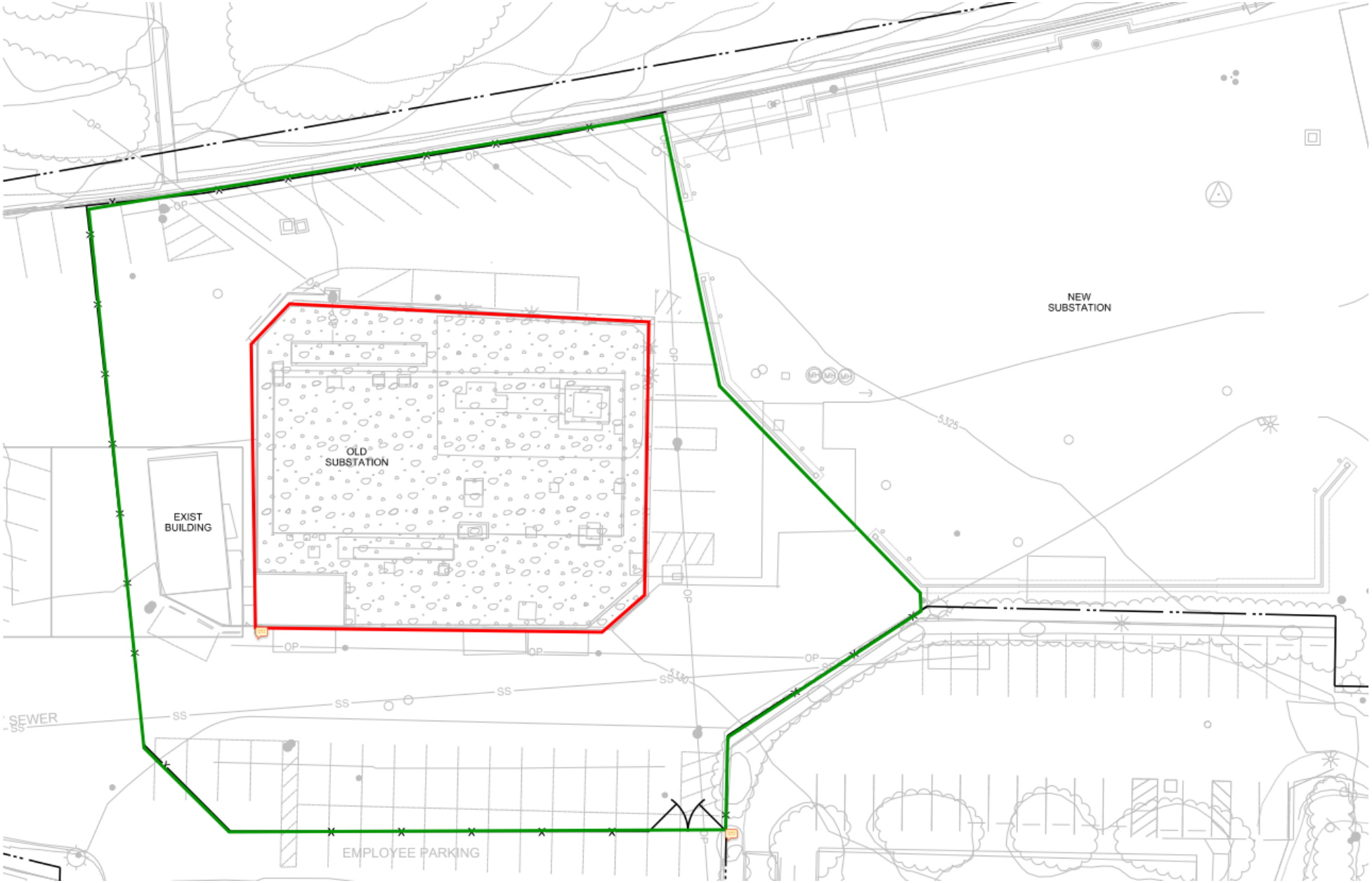


Figure 1-2. Previously Excavated Area and Old Substation Location
APS Former MGP Plant Site
Prescott, Arizona

JACOBS



Notes:

Anticipated excavation area

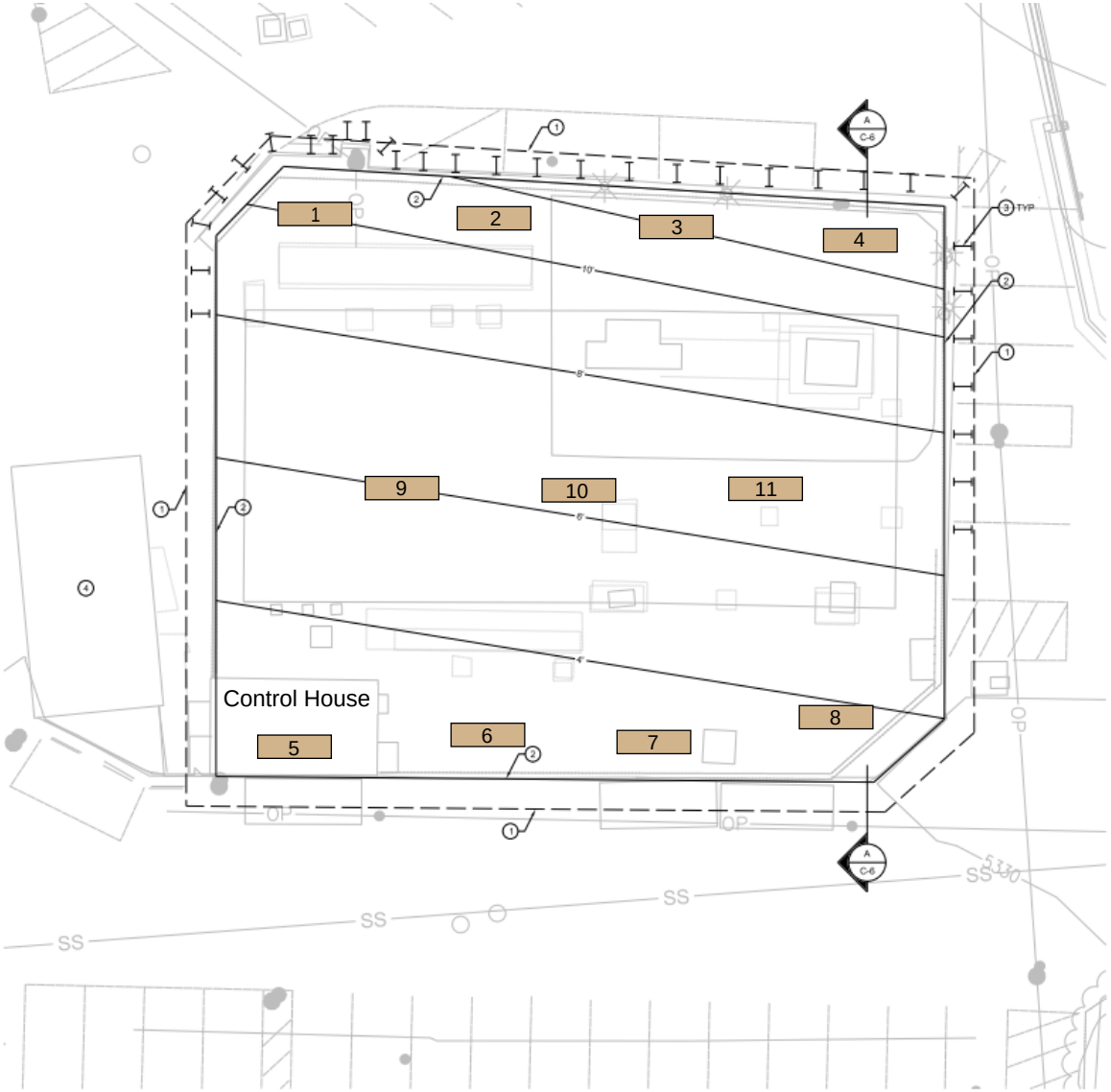
Site extent

Figure 1-3. Anticipated Excavated Area and New Substation Location

APS Former MGP Plant Site

Prescott, Arizona

JACOBS



PLAN
1"=10'-0"

GENERAL NOTES:

1. ALL STRUCTURES AND UTILITIES ARE TO BE SUPPORTED AND PROTECTED IN PLACE DURING REMEDIATION ACTIVITIES UNLESS OTHERWISE INDICATED.
2. MAINTAIN EXISTING SECURITY FENCING WITH FABRIC SCREENING FOR THE DURATION OF THE PROJECT. WHERE FENCE INTERFERES WITH WORK PROVIDE TEMPORARY FENCING WITH FABRIC SCREENING TO MAINTAIN SITE SECURITY.
3. PROVIDE, INSTALL, AND MAINTAIN FENCE LINE MISTING SYSTEMS FOR DUST AND ODOR CONTROL. SYSTEM MUST BE IN OPERATION AT ALL TIMES DURING DEMOLITION, EXCAVATING AND BACKFILLING ACTIVITIES.
4. INSTALL AND MAINTAIN ALL EROSION CONTROL AND STORMWATER MANAGEMENT FACILITIES PRIOR TO BEGINNING EXCAVATION WORK. MAINTAIN DURING DURATION OF WORK. SEE DWG C-2.
5. REMOVE CONCRETE SLABS AND ASPHALT PAVEMENT IN SECTIONS JUST PRIOR TO EXCAVATION IN THE AREA LEAVING THE REMAINING IN PLACE TO CONTROL ODOR AND EROSION.
6. UTILITY LOCATIONS BASED ON HISTORICAL INFORMATION. UTILITY OWNER LOCATION, AND PRIVATE LOCATOR DESIGNATION. CONTRACTOR SHALL VERIFY LOCATION OF UTILITIES PRIOR TO EXCAVATION. OTHER ABANDONED OR ACTIVE UTILITIES MAY BE LOCATED ON SITE.
7. APPROXIMATE EXCAVATION LIMITS ARE SHOWN FOR THE PROPOSED BOTTOM OF EXCAVATION AT THE INDICATED ESTIMATED DEPTH. CONTRACTOR SHALL SLOPE OR SHORE AS REQUIRED FOR SAFETY, STABILITY, AND PROTECTION OF UTILITIES OR STRUCTURES.
8. EXCAVATIONS SHALL USE "SOFT-DIG" UNTIL ALL UTILITIES ARE LOCATED. COORDINATE EXCAVATIONS ADJACENT TO UTILITIES WITH UTILITY OWNERS.

EXCAVATION NOTES:

1. SAW CUT AND REMOVE ASPHALT AS REQUIRED FOR EXCAVATION.
2. REMOVE AND DISPOSE OF RETAINING WALL.
3. EXISTING SOLDIER PILE AND LOGGING EXCAVATION SUPPORT PREVIOUSLY CUT OFF 3 TO 5 FEET BELOW GRADE.
4. PROTECT HISTORIC BUILDING DURING CONSTRUCTION ACTIVITIES.

LEGEND

—12'— APPROXIMATE DEPTH OF EXCAVATION BELOW GRADE SURFACE.

1 TEST PIT LOCATION

Figure 2-1. Test Pit Locations
APS Former MGP Plant Site
Prescott, Arizona

JACOBS

PLAN
1"=10'-0"

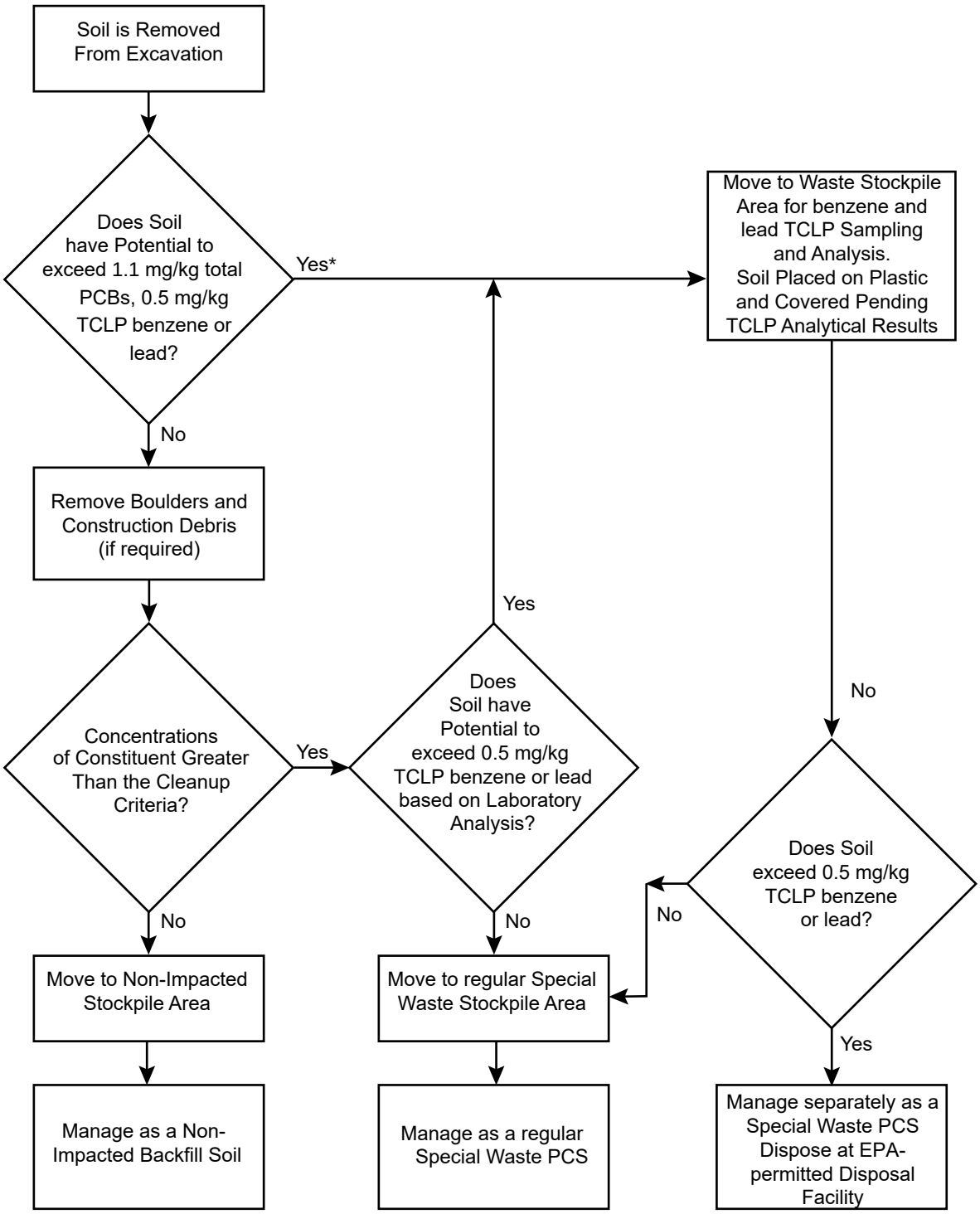
N

0 10 20 30
Scale In Feet

1 Test pit location

Figure 2-2. Excavation Area and Test Pits
APS Former MGP Plant Site
Prescott, Arizona

JACOBS



* = Manage PCB impacted soil separately as a hazardous waste if > or = 50 ppm, with soil disposed at a facility permitted to accept PCB waste; if PCB impacted soil is < 50 ppm, manage soil as a non-hazardous waste.

FIGURE 2-3
Waste Segregation Flow Chart
APS Prescott Former MGP Site
Prescott, Arizona

Appendix A
Prescott Substation Area Residuals Documentation

MEMORANDUM **CH2MHILL**

Environmental Sampling

TO: Judy Heywood/APS

FROM: Dave Allard/CH2MHILL
Mike Lehman/CH2MHILL

DATE: September 21, 1999

Judy,

The purpose of this memo is to summarize the environmental sampling conducted on August 12, 1999 at 300 N. Granite Street in Prescott, Arizona.

The sampling event was conducted in order to further characterize the extent of lamp black contamination around the substation. Soil borings were to be drilled using a conventional drill rig, and environmental samples obtained. However, the inability to access the substation made it necessary to hand auger the borings.

Three soil borings were augered inside the substation, along the north perimeter fencing. The boring locations are identified CB-5 thru CB-7 and located as shown on Figure 1. The borings were positioned based on proximity to overhead hazards, and subsurface conditions. At five locations, (also shown on Figure 1) refusal was met between 20 and 24 inches below ground surface (bgs). It is believed a concrete pad caused each of these refusals.

The borings were advanced using a combination of hand augering and hand pounding. Each boring was drilled until refusal was met. Upon completion, each boring was grouted to the existing ground surface. Waste materials generated during the investigation were drummed, and left onsite pending waste characterization.

Boring CB-5, located near the northwest corner of the substation, was hand drilled to approximately 8 feet bgs. At this depth, decomposed granite was encountered. The upper four feet of soil was clayey sand, with 15% gravel and 20% fines. Occasional pieces of red brick were also found in the soil matrix. From four to eight feet, well graded sand with noticeable lamp black staining was present.

Boring CB-6, located near the center of the substation, was hand drilled to a depth of approximately 12 feet bgs. Again, refusal was met because of the presence of weathered bedrock. The only soil type encountered in CB-6 was well graded sand. From three feet to refusal, occasional lamp black and decomposed red brick was evident. The water table at CB-6 was located 9 feet bgs.

Boring CB-7, located near the northeast corner of the substation, was hand drilled to a depth approximately 12 feet bgs. Well graded sand, with occasional lamp black staining was the primary soil encountered. At approximately 10.5 feet bgs, saturated lamp black was discovered with little or no soil mixed in. Bedrock refusal was met 11.7 feet bgs.

Environmental sampling was conducted at each of three borings by collecting 6-inch brass sleeves every five feet, or where appropriate due to subsurface conditions. The samples were collected by hand pounding an 18-inch sampler containing three 6-inch brass sleeves. Once extracted from the boring, the lower most brass sleeve was covered with Teflon tape and tinfoil, capped, and sealed with electrical tape. The samples were then placed in a cooler and preserved with ice. Each of the samples were analyzed for PAH and cyanide. Additionally, the sample collected from CB-7 at 11 ft bgs was analyzed for benzene because of its high concentration of lamp black.

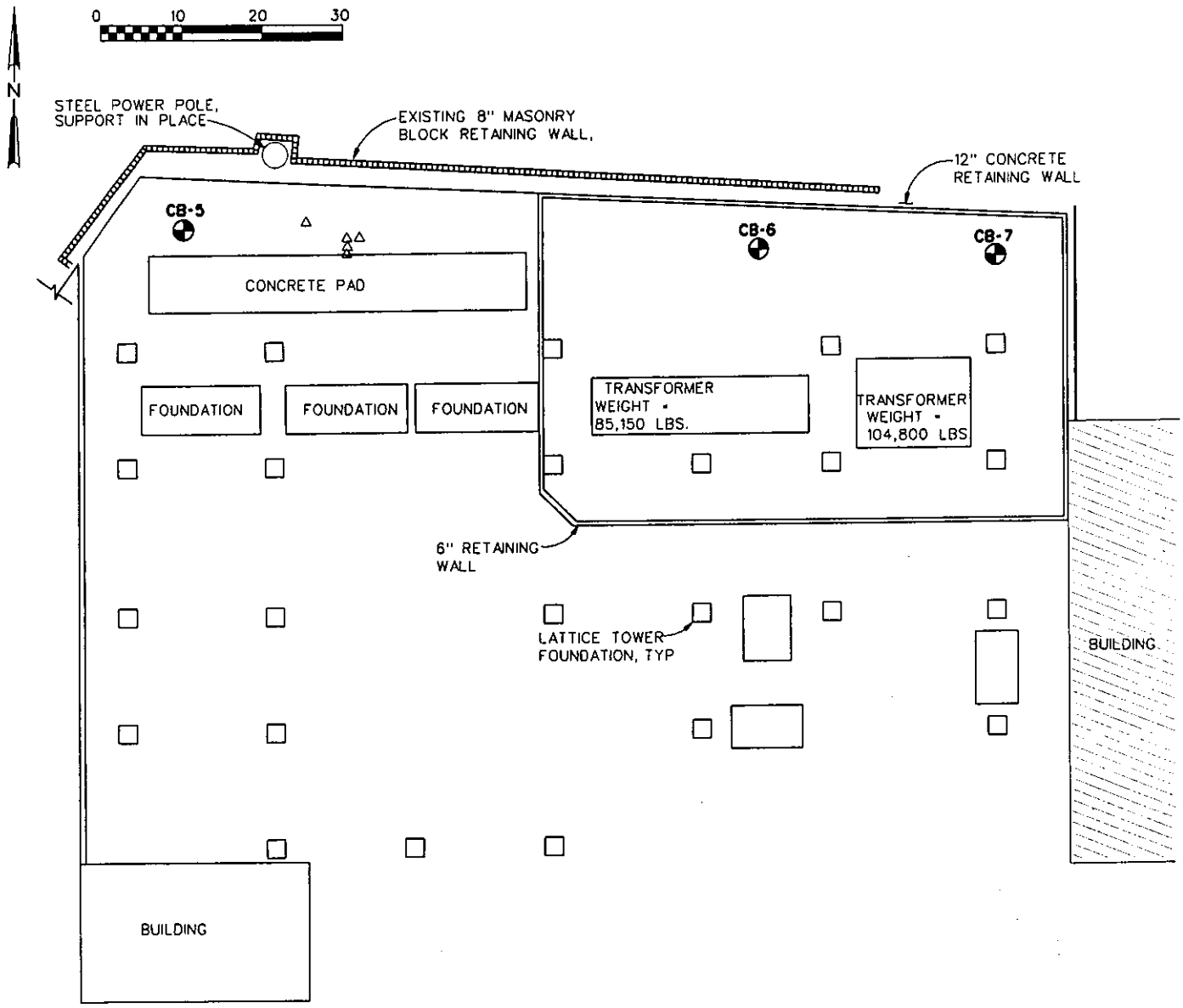
The results of the laboratory testing are summarized in Table1.

Table 1 Summary of Laboratory Test Results for environmental samples
Former APS Prescott MGP

Boring	Sample	Depth (ft)	Total PAHs (µg/kg)	Total Cyanide (mg/kg)	Benzene (mg/kg)
CB-5	1-BS	5	147	ND	-
CB-6	1-BS	5	3140	ND	-
CB-6	2-BS	10	1496	ND	-
CB-7	1-BS	5	712	ND	-
CB-7	2-BS	11	693000	ND	0.084

ND- Analyte(s) not present at or above the reporting limit

Each sampler and brass sleeve used during the sample collection process was decontaminated prior to use. Samplers and brass sleeves were scrubbed using Alconox and water, followed by a series of tap water rinses, and a final rinse in Deionized (DI) water. The samplers and sleeves were then allowed to dry before using.



LEGEND

⊕ .... HOLE LOCATION

△ .... HOLES THAT MET REFUSAL/CONCRETE PAD AT 20" - 24"

FIGURE 1
SOIL BORING LOCATION MAP
APS - MGP SITE
PRESCOTT, AZ.

P:\APS\geotech1.dgn

CH2MHILL

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
153718.T1.1B	CB-5	SHEET 1 OF 1

SOIL BORING LOG

PROJECT Former APS Prescott Manufactured Gas Plant **LOCATION** APS Prescott-Substation

ELEVATION _____ **DRILLING CONTRACTOR** ENVIRO Drill

DRILLING METHOD AND EQUIPMENT Hand Auger 3½" O.D.

WATER LEVELS None **START** 8/12/99 **FINISH** 8/12/99 **LOGGER** M. Lehman

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
					SC, clayey sand with gravel, 15% gravel, 20% fines, 3" gravel, occasional pieces of red brick, moist, light tan	
5.0		1-BS			SW, well graded sand, medium brown to black, moist, hint of lamp black odor, noticeable lamp black staining, ~5-10%	
					decomposd granite – refusal TOTAL DEPTH = 8'	
10.0						
15.0						
20.0						
25.0						

CH2M HILL

PROJECT NUMBER	BORING NUMBER
153718.T1.1B	CB-6 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Former APS Prescott Manufactured Gas Plant **LOCATION** APS Prescott-Substation

ELEVATION _____ **DRILLING CONTRACTOR** ENVIRO Drill

DRILLING METHOD AND EQUIPMENT Hand Auger 3½" O.D.

WATER LEVELS 9' **START** 8/12/99 **FINISH** 8/12/99 **LOGGER** M. Lehman

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
					SW, well graded sand, moist, medium brown, occasional 2" gravel	
					SW, well graded sand, loose, trace lamp black staining	some decomposed red brick present from 4' to 7'
5.0		1-BS				hole is unstable and caving in (from 5'-10.5')
					SAME as above, but not as loose	
						▽
10.0		2-BS				
					tan, weathered, fractured granite/bedrock TOTAL DEPTH = 10.5'	
15.0						
20.0						
25.0						

CH2M HILL

PROJECT NUMBER	BORING NUMBER
153718.T1.18	CB-7 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Former APS Prescott Manufactured Gas Plant **LOCATION** APS Prescott-Substation

ELEVATION _____ **DRILLING CONTRACTOR** ENVIRO Drill

DRILLING METHOD AND EQUIPMENT Hand Auger 3½" O.D.

WATER LEVELS 8' **START** 8/12/99 **FINISH** 8/12/99 **LOGGER** M. Lehman

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
					SW, well graded sand with gravel, 15% gravel, moist, medium brown	
5.0		1-BS			SAME as above, but with trace lamp black staining, increasing with depth to about 10%	
					SAME as above, but no lamp black staining	∇ some red brick present
10.0		2-BS			SW, well graded sand, heavy lamp black staining	
					Pure saturated lamp black, with a strong crude oil odor	
					TOTAL DEPTH = 11' 8"	
15.0						
20.0						
25.0						

Substation

Substation

Additional information on the basis of the remedial action cleanup goals is provided in Section 1.2.3.

The cleanup goal evaluation for the Site includes the comparison of the confirmation sample results to the applicable remediation level on an individual parameter basis. Based on the confirmation sample results, the cleanup goals have been achieved at all six excavation areas. In addition, with the exception of one sample of bedrock in the nonaqueous phase liquid (NAPL) area of Area 6, all confirmation samples were below the residential SRLs. These results are summarized in Table 4-8.

4.2 Sampling at Substation

A total of 28 sidewall soil samples was collected along the shored walls of the substation (between the soldier piles) to assess contaminant levels beneath the substation. The sampling locations are shown in Figure 4-2. The analysis included PAHs, benzene, toluene, ethylbenzene, and xylene (BETX), and cyanide. The cyanide analysis was conducted to allow evaluation of in-situ treatment options and to evaluate the effect of the remaining residual soil on the groundwater. Complete laboratory analytical results for the soil samples are provided in Appendix L. Summaries of the constituents detected in the confirmation samples are presented in Table 4-9. This table also lists the applicable cleanup goals (i.e., nonresidential SRLs).

In 9 of the 28 samples collected along the substation walls, at least one analyte was detected above the cleanup goals for PAHs or benzene. These sample locations were situated at the north (6 samples) and east (3 samples) sides of the substation. The results of the cyanide analysis were all below the Site cleanup goals. Figure 4.2 highlights the location of samples that exceed cleanup goals.

The lateral extent of impacted soil beneath the substation can be estimated based on the results of the sidewall soil sampling results. It appears to be limited to the northeast quarter of the substation. The vertical extent of impacted soil is limited by the depth to bedrock. The depth to bedrock estimated within the substation can be based on the excavations on the east, west, and north sides of the substation and the utility trench excavated in the southeast. During shoring installation activities, the observed depth to bedrock ranged from approximately 7 to 12 feet below ground surface (bgs) along the western and eastern portions of the substation, respectively (9.5 feet bgs average depth). During utility trenching activities performed in the southeastern portion of the substation (refer to Figure 4-2), bedrock was encountered at approximately 2.5 feet bgs. The results of the sampling analysis indicate the impacted soil is present from approximately 8 feet bgs to bedrock. A profile view illustrating the estimated extent of potential soil contamination remaining beneath the substation is provided in Figure 4-3. Based on the above extent of impacted soil, the amount of impacted soil remaining below the substation is conservatively estimated at 600 cubic yards. This is less than 1 percent of the amount of soil excavated from the Site.

A risk assessment was prepared in 1999 to evaluate the preremedial potential exposures at the Site. The risk assessment evaluated potential exposure to specific PAHs through soil, inhalation of soil particles, groundwater, and surface water. The results of the risk assessment calculations indicated that for preremediation Site conditions there was not an unacceptable human health risk to a resident or maintenance worker at the Site. As a result,

the remaining limited amount of impacted soil beneath the substation does not pose a risk to human health to either site workers or nearby residents. The initial round of post-remediation groundwater and surface water sampling indicates the source of the contamination has been successfully removed. The post remediation monitoring will provide documentation of the source removal.

During construction, APS evaluated the feasibility of several treatment options for the residual impacted soils below the substation. These options included source removal, treatment, stabilization, and containment:

1. **Source removal.** This option consisted of removal of soil beneath the substation. This could only be accomplished by removal of the substation. Because this is an active substation serving a large area of Arizona this was not a feasible option.

2. **Treatment of groundwater.** APS contracted with Thermoretec to evaluate the feasibility of in-situ treatment of cyanide in groundwater. Thermoretec's bench scale studies indicated that the cyanide in groundwater could be successfully treated using a iron filing wall. A copy of Thremoretec's report is included in Appendix M. The wall would need to be constructed downgradient of the impacted soil where groundwater would flow through the soil then through the iron-filing wall. Because the impacted soil is above the current groundwater level and the excavation shoring system's lagging and concrete prevent most groundwater flow from beneath the substation, this in-situ treatment is not practical at the Site. In addition, cyanide was not detected above the cleanup goals in any of the sidewall samples at the substation.

3. **In-situ soil stabilization.** This treatment involves shallow soil mixing of the impacted soil with a stabilization agent such as cement. This treatment method has proven successful at other manufactured gas plant (MGP) sites. While it does not remove the impacted soil, it does prevent the soil from impacting groundwater. However, this option is not feasible due to the presence of high-voltage aboveground and belowground electric lines and electrical transformers.

4. **Containment**. This method involves isolating the impacted soil beneath the Site. This was accomplished at the substation with the in place lagging system. As described in Section 3, concrete was place behind the wood lagging of the shoring system virtually encasing the residual soil in the cement. This combination of wood lagging and concrete will contain soil and groundwater and help prevent migration from under the substation.

TABLE 4-9
Soil Sample Data for Substation Shoring
APS Prescott Former MGP Site, Prescott, Arizona

Station ID:					**APS 1620-**	**APS 1650-**	**APS 1660-**	**APS 1670-**	**APS 1680-**	**APS 1690-**	**APS 1700-**	**APS 1710-**	**APS 1720-**	**APS 1730-**
Depth (ft bgs):					04.0	07.0	07.0	07.0	07.0	06.0	09.0	09.0	08.0	08.0
Location:					SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
Sample Type:					TRG	TRG	TRG	TRG	TRG	TRG	TRG	TRG	TRG	TRG
Sample Date:					04/13/00	04/14/00	04/14/00	04/14/00	04/14/00	04/14/00	04/14/00	04/14/00	04/14/00	04/14/00
Analyte Group	**Method**	**Analyte**	**Units**	**Target Cleanup Goals**										
BTEX	EPA 8021B	Benzene	µg/Kg	710	--	--	--	--	--	--	--	--	--	--
BTEX	EPA 8021B	Ethylbenzene	µg/Kg	120,000	--	--	--	--	--	--	--	--	--	--
BTEX	EPA 8021B	Toluene	µg/Kg	400,000	--	--	--	--	--	--	--	--	--	--
BTEX	EPA 8021B	Total Xylenes	µg/Kg	2,200,000	--	--	--	--	--	--	--	--	--	--
CYANIDE	EPA 9014	Total Cyanide	mg/Kg	1,300	500 =	8.4 J	1.7 J	1.7 J	1.3 R	1.3 R	9.5 J	1.4 J	2.5 J	2.1 J
PAH	EPA 8310	Acenaphthene	µg/Kg	4.10E+07	--	--	--	--	--	--	--	--	--	--
PAH	EPA 8310	Acenaphthylene	µg/Kg	NE	--	--	--	--	--	--	--	--	--	--
PAH	EPA 8310	Anthracene	µg/Kg	2.00E+08	--	--	--	--	--	--	--	--	--	--
PAH	EPA 8310	Benz(a)anthracene	µg/Kg	26,000	--	--	--	--	--	--	--	--	--	--
PAH	EPA 8310	Benzo(a)pyrene	µg/Kg	2,600	--	--	--	--	--	--	--	--	--	--
PAH	EPA 8310	Benzo(b)fluoroanthrene	µg/Kg	26,000	--	--	--	--	--	--	--	--	--	--
PAH	EPA 8310	Benzo(g,h,I)perylene	µg/Kg	NE	--	--	--	--	--	--	--	--	--	--
PAH	EPA 8310	Benzo(k)fluoranthene	µg/Kg	260,000	--	--	--	--	--	--	--	--	--	--
PAH	EPA 8310	Chrysene	µg/Kg	2.60E+06	--	--	--	--	--	--	--	--	--	--
PAH	EPA 8310	Dibenz(a,h)anthracene	µg/Kg	2,600	--	--	--	--	--	--	--	--	--	--
PAH	EPA 8310	Fluoranthene	µg/Kg	2.70E+07	--	--	--	--	--	--	--	--	--	--
PAH	EPA 8310	Fluorene	µg/Kg	2.70E+07	--	--	--	--	--	--	--	--	--	--
PAH	EPA 8310	Indeno(1,2,3-cd)pyrene	µg/Kg	26,000	--	--	--	--	--	--	--	--	--	--
PAH	EPA 8310	Naphthalene	µg/Kg	2.70E+07	--	--	--	--	--	--	--	--	--	--
PAH	EPA 8310	Phenanthrene	µg/Kg	NE	--	--	--	--	--	--	--	--	--	--
PAH	EPA 8310	Pyrene	µg/Kg	2.00E+07	--	--	--	--	--	--	--	--	--	--

Notes:
"--" - indicates sample was not analyzed for the analyte
"=" - indicates analyte was detected
µg/Kg - micrograms per kilogram
mg/Kg - milligrams per kilogram
bgs - below ground surface
EB - excavation bottom
EPA - United States Environmental Protection Agency
FD - field duplicates
J - the analyte was positively identified, but the associated numerical value is an estimate.
NE - not established
PAH - polycyclic aromatic hydrocarbon
R - The data are unusable due to a definciencies in the ability to analyze the sample and meet quality control criteria.
SW - side wall
TRG - target sample
U - the analyte was not detected
VOC - volatile organic compound

TABLE 4-9
Soil Sample Data for Substation Shoring
APS Prescott Former MGP Site, Prescott, Arizona

Station ID:					**APS 1740-**	**APS 1750-**	**APS 1760-**	**APS 1790-**	**APS 1800-**	**APS 1830-**	**APS 1840-**	**APS 1850-**	**APS 1860-**	**APS 1870-**
Depth (ft bgs):					08.0	07.0	05.0	06.0	06.0	12.0	14.0	11.0	13.0	11.0
Location:					SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
Sample Type:					TRG	TRG	TRG	TRG	TRG	TRG	TRG	TRG	TRG	TRG
Sample Date:					04/14/00	04/14/00	04/18/00	04/27/00	04/27/00	05/02/00	05/02/00	05/02/00	05/02/00	05/02/00
Analyte Group	**Method**	**Analyte**	**Units**	**Target Cleanup Goals**										
BTEX	EPA 8021B	Benzene	µg/Kg	710	--	--	--	--	--	**1,200 =**	59 U	57 =	53 U	55 U
BTEX	EPA 8021B	Ethylbenzene	µg/Kg	120,000	--	--	--	--	--	4,000 =	120 U	99 U	110 U	110 U
BTEX	EPA 8021B	Toluene	µg/Kg	400,000	--	--	--	--	--	1,100 =	120 U	99 U	110 U	110 U
BTEX	EPA 8021B	Total Xylenes	µg/Kg	2,200,000	--	--	--	--	--	2,500 =	180 U	150 U	160 U	170 U
CYANIDE	EPA 9014	Total Cyanide	mg/Kg	1,300	1.3 UJ	1.3 UJ	75 J	36 =	17 =	0.9 =	0.63 U	12 =	0.63 U	0.63 U
PAH	EPA 8310	Acenaphthene	µg/Kg	4.10E+07	--	--	--	--	--	3,000,000 U	17,000 =	3,000,000 U	100 U	1,000 U
PAH	EPA 8310	Acenaphthylene	µg/Kg	NE	--	--	--	--	--	3,000,000 U	10,000 U	3,000,000 U	100 U	1,000 U
PAH	EPA 8310	Anthracene	µg/Kg	2.00E+08	--	--	--	--	--	910,000 =	2,700 =	300,000 U	10 U	100 U
PAH	EPA 8310	Benz(a)anthracene	µg/Kg	26,000	--	--	--	--	--	**750,000 =**	2,600 =	**310,000 =**	10 U	100 U
PAH	EPA 8310	Benzo(a)pyrene	µg/Kg	2,600	--	--	--	--	--	**1,200,000 =**	**4,100 =**	**980,000 =**	5 U	160 =
PAH	EPA 8310	Benzo(b)fluoroanthrene	µg/Kg	26,000	--	--	--	--	--	**860,000 =**	4,200 =	**720,000 =**	10 U	120 =
PAH	EPA 8310	Benzo(g,h,I)perylene	µg/Kg	NE	--	--	--	--	--	6,000,000 U	5,000 U	6,000,000 U	10 U	220 =
PAH	EPA 8310	Benzo(k)fluoranthene	µg/Kg	260,000	--	--	--	--	--	**360,000 =**	1,200 =	300,000 U	10 U	100 U
PAH	EPA 8310	Chrysene	µg/Kg	2.60E+06	--	--	--	--	--	790,000 =	4,400 =	300,000 U	10 U	100 U
PAH	EPA 8310	Dibenz(a,h)anthracene	µg/Kg	2,600	--	--	--	--	--	3,000,000 U	2,000 U	6,000,000 U	20 U	200 U
PAH	EPA 8310	Fluoranthene	µg/Kg	2.70E+07	--	--	--	--	--	3,500,000 =	11,000 =	1,700,000 =	10 U	240 =
PAH	EPA 8310	Fluorene	µg/Kg	2.70E+07	--	--	--	--	--	810,000 =	2,600 =	300,000 U	10 U	100 U
PAH	EPA 8310	Indeno(1,2,3-cd)pyrene	µg/Kg	26,000	--	--	--	--	--	**810,000 =**	2,800 =	**860,000 =**	10 U	190 =
PAH	EPA 8310	Naphthalene	µg/Kg	2.70E+07	--	--	--	--	--	3,000,000 U	14,000 =	3,000,000 U	100 U	1,000 U
PAH	EPA 8310	Phenanthrene	µg/Kg	NE	--	--	--	--	--	4,500,000 =	12,000 =	290,000 =	5 U	65 =
PAH	EPA 8310	Pyrene	µg/Kg	2.00E+07	--	--	--	--	--	4,500,000 =	17,000 =	1,800,000 =	10 U	310 =

Notes:
"--" - indicates sample was not analyzed for the analyte
"=" - indicates analyte was detected
µg/Kg - micrograms per kilogram
mg/Kg - milligrams per kilogram
bgs - below ground surface
EB - excavation bottom
EPA - United States Environmental Protection Agency
FD - field duplicates
J - the analyte was positively identified, but the associated numerical value is an estimate.
NE - not established
PAH - polycyclic aromatic hydrocarbon
R - The data are unusable due to a definciencies in the ability to analyze the sample and meet quality control criteria.
SW - side wall
TRG - target sample
U - the analyte was not detected
VOC - volatile organic compound

TABLE 4-9
Soil Sample Data for Substation Shoring
APS Prescott Former MGP Site, Prescott, Arizona

Station ID:					**APS 1880-**	**APS 1890-**	**APS 1900-**	**APS 1910-**	**APS 1920-**	**APS 1930-**	**APS 1940-**	**APS 1950-**
Depth (ft bgs):					11.0	09.0	10.0	10.0	10.0	10.0	10.0	10.0
Location:					SW	SW	SW	SW	SW	SW	SW	SW
Sample Type:					TRG	TRG	TRG	TRG	TRG	TRG	TRG	TRG
Sample Date:					05/02/00	05/03/00	05/03/00	05/03/00	05/03/00	05/03/00	05/03/00	05/03/00
Analyte Group	**Method**	**Analyte**	**Units**	**Target Cleanup Goals**								
BTEX	EPA 8021B	Benzene	µg/Kg	710	50 U	50 U	50 U	50 U	50 U	**860 =**	**810 =**	1,000 =
BTEX	EPA 8021B	Ethylbenzene	µg/Kg	120,000	100 U	120 =	100 U	100 U	100 U	5,100 =	5,600 =	6,600 =
BTEX	EPA 8021B	Toluene	µg/Kg	400,000	100 U	100 U	100 U	100 U	100 U	290 =	430 =	900 =
BTEX	EPA 8021B	Total Xylenes	µg/Kg	2,200,000	150 U	540 =	150 U	150 U	150 U	1,700 =	2,400 =	3,800 =
CYANIDE	EPA 9014	Total Cyanide	mg/Kg	1,300	0.63 U	--	--	--	--	--	--	--
PAH	EPA 8310	Acenaphthene	µg/Kg	4.10E+07	100 U	30,000 U	10,000 U	300,000 U	3,000,000 U	3,000,000 U	3,000,000 U	3,000,000 U
PAH	EPA 8310	Acenaphthylene	µg/Kg	NE	100 U	30,000 U	10,000 U	300,000 U	600,000 U	3,000,000 U	3,000,000 U	3,000,000 U
PAH	EPA 8310	Anthracene	µg/Kg	2.00E+08	10 U	3,000 U	1,000 U	30,000 U	300,000 U	560,000 =	440,000 =	480,000 =
PAH	EPA 8310	Benz(a)anthracene	µg/Kg	26,000	10 U	7,500 U	1,200 =	**120,000 =**	**300,000 U**	**520,000 =**	**410,000 =**	**440,000 =**
PAH	EPA 8310	Benzo(a)pyrene	µg/Kg	2,600	5 U	1,500 U	**4,400 =**	**280,000 =**	**550,000 =**	**1,100,000 =**	**860,000 =**	**780,000 =**
PAH	EPA 8310	Benzo(b)fluoroanthrene	µg/Kg	26,000	10 U	13,000 =	3,500 =	**240,000 =**	**380,000 =**	**680,000 =**	**580,000 =**	**560,000 =**
PAH	EPA 8310	Benzo(g,h,I)perylene	µg/Kg	NE	10 U	3,000 U	20,000 U	740,000 =	6,000,000 U	15,000,000 U	6,000,000 U	6,000,000 U
PAH	EPA 8310	Benzo(k)fluoranthene	µg/Kg	260,000	10 U	3,000 U	1,200 =	86,000 =	300,000 U	300,000 U	300,000 U	300,000 U
PAH	EPA 8310	Chrysene	µg/Kg	2.60E+06	10 U	14,000 U	1,500 =	130,000 =	300,000 U	590,000 =	460,000 =	470,000 =
PAH	EPA 8310	Dibenz(a,h)anthracene	µg/Kg	2,600	20 U	6,000 U	3,000 U	300,000 U	600,000 U	1,500,000 U	3,000,000 U	6,000,000 U
PAH	EPA 8310	Fluoranthene	µg/Kg	2.70E+07	10 U	3,000 U	3,500 =	500,000 =	910,000 =	3,100,000 =	2,500,000 =	2,600,000 =
PAH	EPA 8310	Fluorene	µg/Kg	2.70E+07	10 U	3,000 U	1,000 U	60,000 U	300,000 U	300,000 U	300,000 U	490,000 =
PAH	EPA 8310	Indeno(1,2,3-cd)pyrene	µg/Kg	26,000	10 U	3,000 U	5,400 =	**370,000 =**	**470,000 =**	**810,000 =**	**650,000 =**	**610,000 =**
PAH	EPA 8310	Naphthalene	µg/Kg	2.70E+07	100 U	30,000 U	10,000 U	300,000 U	3,000,000 U	3,000,000 U	3,000,000 U	3,000,000 U
PAH	EPA 8310	Phenanthrene	µg/Kg	NE	16 =	1,500 U	810 =	170,000 =	150,000 U	3,400,000 =	2,900,000 =	3,400,000 =
PAH	EPA 8310	Pyrene	µg/Kg	2.00E+07	10 U	5,500 =	5,100 =	610,000 =	1,300,000 =	4,100,000 =	3,200,000 =	2,900,000 =

Notes:
"--" - indicates sample was not analyzed for the analyte
"=" - indicates analyte was detected
µg/Kg - micrograms per kilogram
mg/Kg - milligrams per kilogram
bgs - below ground surface
EB - excavation bottom
EPA - United States Environmental Protection Agency
FD - field duplicates
J - the analyte was positively identified, but the associated numerical value is an estimate.
NE - not established
PAH - polycyclic aromatic hydrocarbon
R - The data are unusable due to a definciencies in the ability to analyze the sample and meet quality control criteria.
SW - side wall
TRG - target sample
U - the analyte was not detected
VOC - volatile organic compound

Shoring

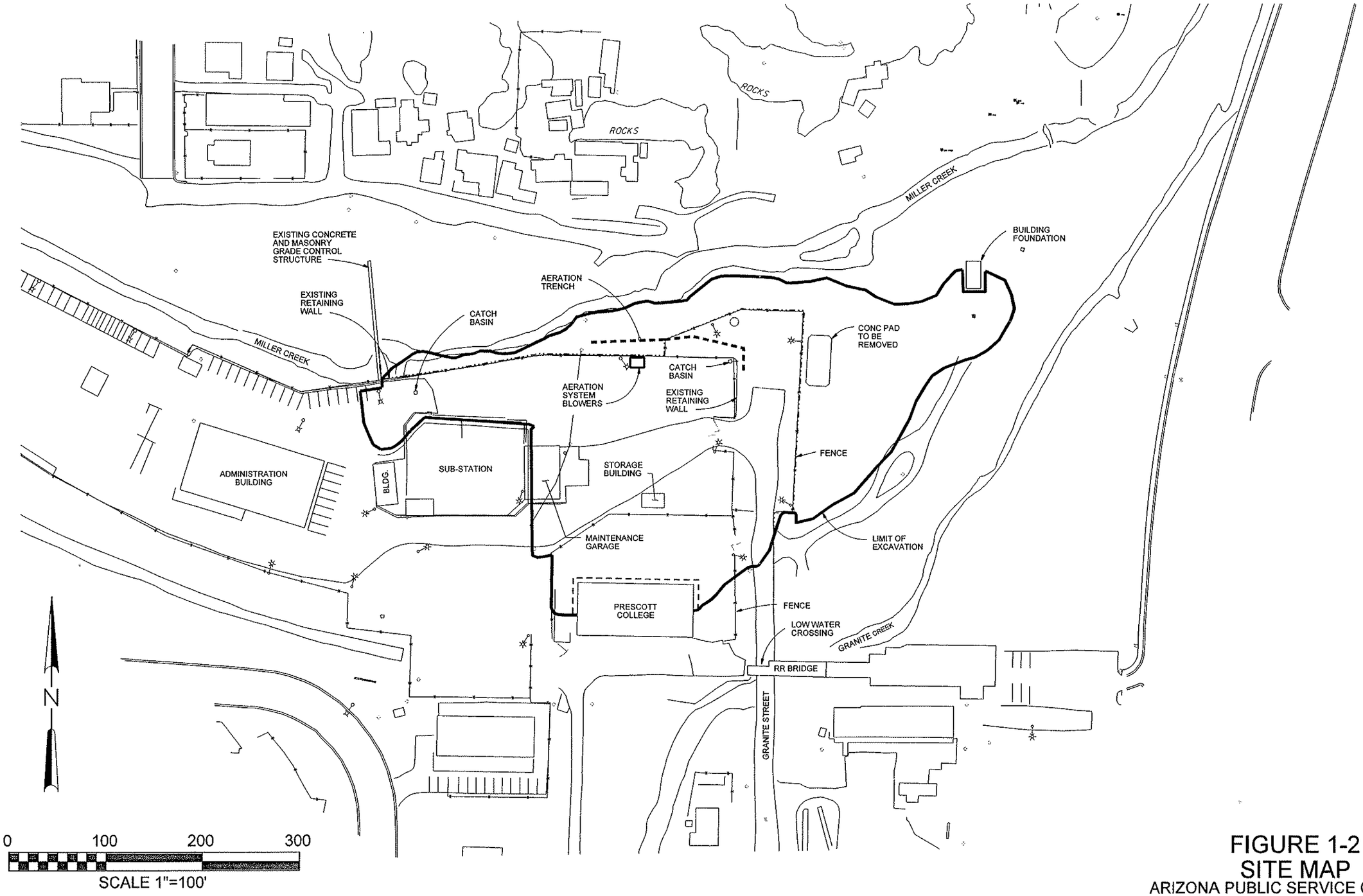


FIGURE 1-2
SITE MAP
ARIZONA PUBLIC SERVICE COMPANY
FORMER PRESCOTT MANUFACTURED GAS
PLANT SITE

CH2MHILL

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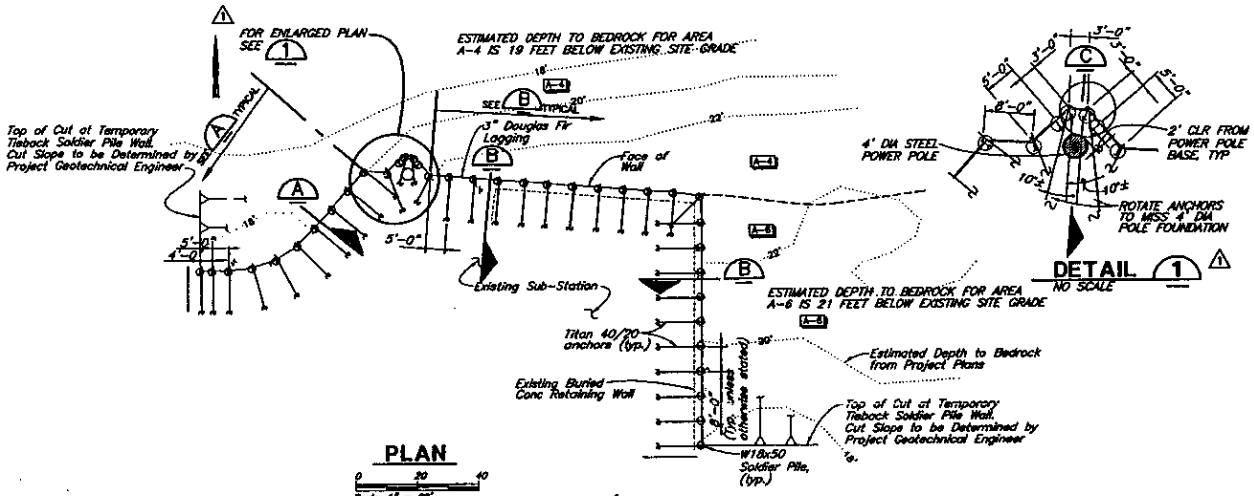
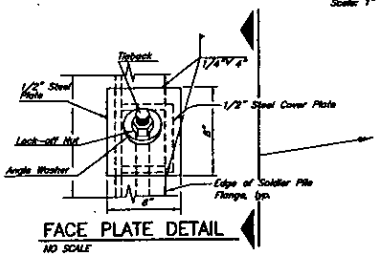


PLAN

Scale: 1" = 20'

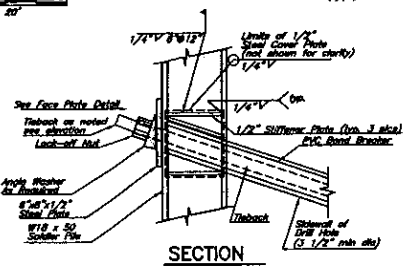
DETAIL 1

NO SCALE



FACE PLATE DETAIL

NO SCALE



SECTION

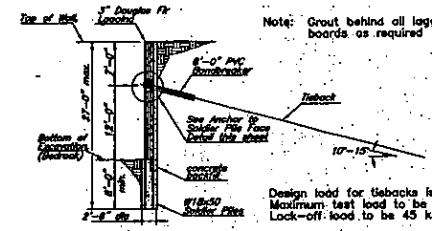
ANCHOR TO SOLDIER PILE WALL, FACE DETAIL

NO SCALE

TIEBACK LENGTH TABLE

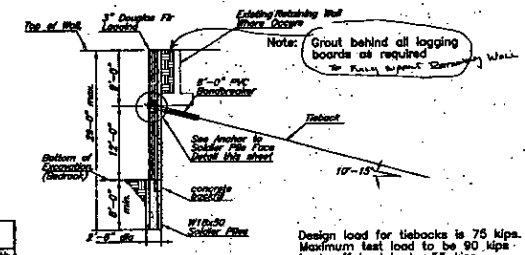
Cross-Section	Soil Type	Total Anchor Length (feet)*
A	Natural Sands & Gravels	36
	Fill Soils	56
B + C	Natural Sands & Gravels	36
	Fill Soils	46

* Includes 8' bondbreaker



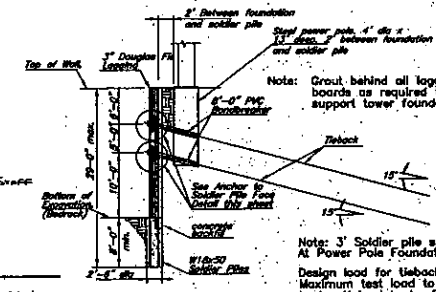
SECTION A

Scale: 1" = 10'



SECTION B

Scale: 1" = 10'



SECTION C

Scale: 1" = 10'

CONSTRUCTION SEQUENCE

1. Drill and install all soldier piling to the required depth from existing grade. Casing may be required into bedrock, and casing may be required to hold hole open during drilling/pile installation.
2. Excavate to a depth not to exceed two feet below the level of the tiebacks, for tieback installation. Lagging to be placed as excavation proceeds, with no more than 3 feet of excavation exposed below the bottom-most lagging board at any time.
3. Install all tiebacks to the required depth, allowing a minimum of three days to complete curing.
4. Following 3-day cure, all tiebacks to be proof- tested to the maximum test load per the wall sections and Item 4 of the General Notes. Following satisfactory completion of testing, anchors to be locked-off at specified lock-off load.
5. Following completion of all testing and anchor lock-off, excavation may be completed to full depth with lagging boards placed as noted above in step 2. *Under no circumstances to the excavation to proceed more than two feet below tieback level until all anchors are satisfactorily tested and lock-off.*

GENERAL NOTES

1. All layout data and location information provided by Arizona Public Service Company Prescott Former Manufactured Gas Plant Site Remediation dated September 8, 1999.
2. All concrete placed in drilled piers above and below excavation base to consist of flowable fill or lean concrete having a minimum 28 day strength of 300 psi.
3. Anchors to be Titan 40/20 self grouting anchors, with minimum bit diameter of 5 inches. Grout to be Portland Cement Type III and have a minimum 28-day strength of 3,000 psi and a water-cement ratio not to exceed 0.4. Due to the lack of subsurface soils information, alternate anchors lengths are presented in the chart based upon the two anticipated soil conditions at the site. Observations of the soils during initial cutting down to anchor level in conjunction with a test anchor may be used to determine which anchor length is appropriate.
4. Anchors design load is as specified. All anchors to be proof-tested to maximum test load and held for 10 minutes. Creep (measurement between reading of first minute and 10 minutes) to be less than 0.04 inches. Passing anchors to be locked off at specified load.
5. Conflicts between these plans and the general project plans to be resolved by Geotechnical Design Services, Inc., and SHN Consulting Engineers & Geologists Inc., whose decision shall be final.
6. All welds to be with E7000X electrodes, in conformance with American Welding Society (AWS) "Structural Welding Code", AWS D1.1.
7. All plate steel and structural steel to be A36 mild steel, or better, and shall be detailed according to AISC Standards.
8. Excavation to be inspected by design engineer during installation. Additional bracing may be installed, at engineer's discretion. Field decision to install additional bracing or other planned bracing shall be made by GDS Inc.
9. All utilities and subsurface structures must be identified prior to shoring installation.
10. GDS and SHN are not responsible for slope stability above the shoring.
11. General shoring layout to be stated by General Contractor prior to shoring installation to verify proposed shoring layout and identify any conflicts.
12. Shoring has not been designed for groundwater. If groundwater is encountered, shoring installation/excavation to be stopped and GDS to be notified prior to continued shoring installation/excavation.
13. Excavation not to exceed depths indicated without express written permission of GDS Inc. and SHN Consulting Engineers & Geologists, Inc.

1. All utility locations to be verified by APS Facility Staff
2. Excavated Soil to be determined, at Depth Will not Contain Groundwater
3. All Construction Sequence & General Notes Shall Be Followed During Installation & Excavation

NOTE: TIEBACK RETAINING WALL IS TEMPORARY FOR CONSTRUCTION PURPOSES ONLY

Review is only for limited purposes set forth in the Contract Documents. Review does not imply approval of details, dimensions, quantities, or compliance with Specifications.

APPROVED: (For Incorporation in the Work)
- ☐ Approved as Submitted
- ☒ Approved as Noted
- ☐ Resubmit

DISAPPROVED: (Resubmittal Required)
- ☐ Make Corrections
- ☐ As Noted, Develop Replacement

INCOMPLETE: (Resubmittal Required)
- ☐ Complete and Resubmit
- ☐ Submit Missing Portions

Expires 9.30.2000

GEOTECHNICAL DESIGN SERVICES INC.
Salt Lake City, Utah (801)562-1047 phone/562-8702 fax

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1
IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

SHN CONSULTING ENGINEERS & GEOLOGISTS, INC.
812 W. Wabash
Eureka, CA 95501
(707)441-8855 FAX (707)441-8877

NO.	DATE	REVISION	BY
1	2-28-00	Rev. Per Review Comments	BAD/TRL

DSGN BAD
DR BAD/TRL
CHK KJN
APVD

BECHO, INC., SALT LAKE CITY, UTAH
APS PRESCOTT SITE REMEDIATION, PRESCOTT, AZ
TEMPORARY TIEBACK SOLDIER PILE WALL
PLAN, SECTIONS, DETAILS & NOTES

SHEET 1 OF 1
DATE 2/2000
PROJ. NO. 099271

099271.DWG

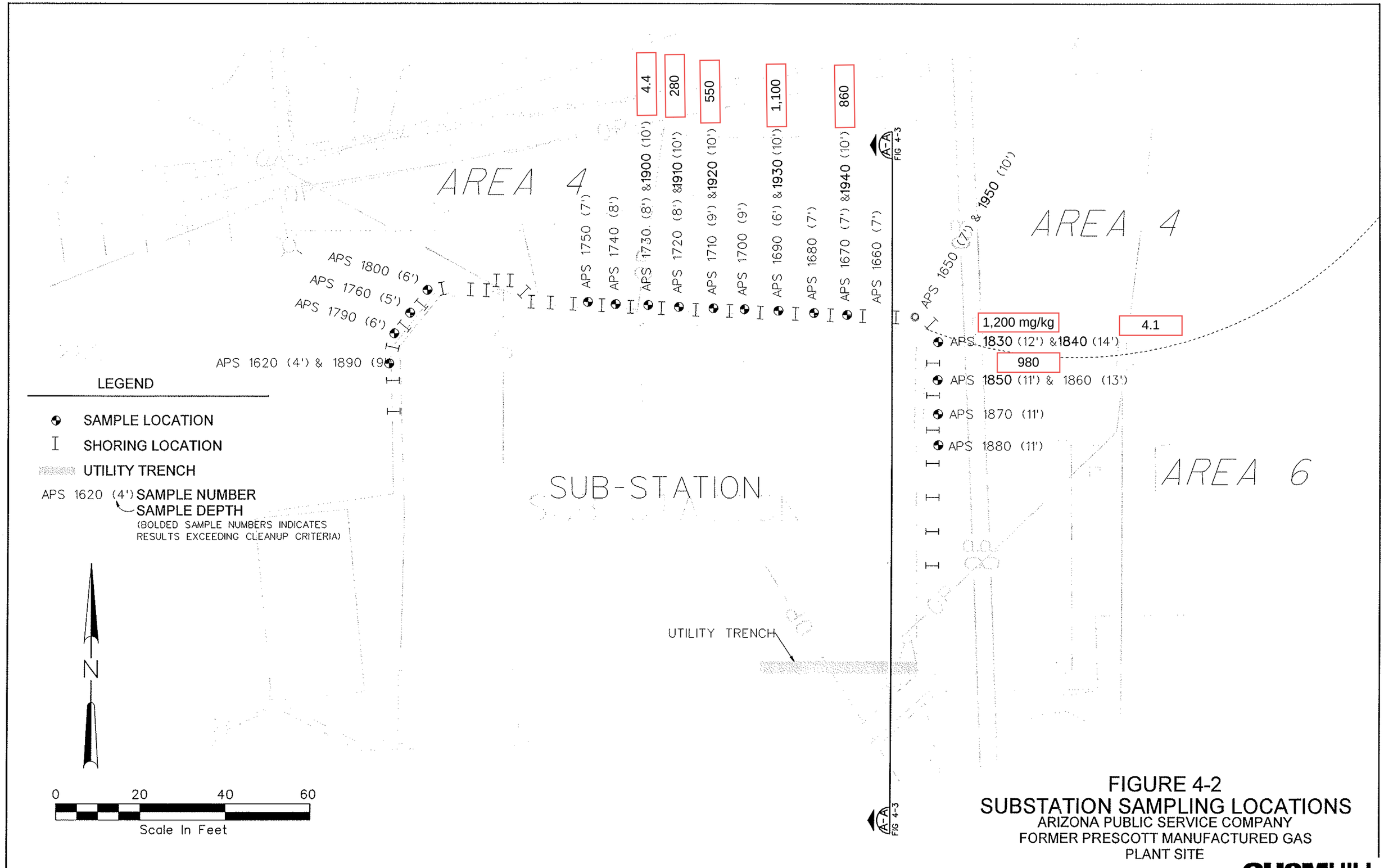


FIGURE 4-2
SUBSTATION SAMPLING LOCATIONS
ARIZONA PUBLIC SERVICE COMPANY
FORMER PRESCOTT MANUFACTURED GAS PLANT SITE

CH2MHILL

I:\PROJECTS\APS\5-24-01\FIG_4-2.DLV

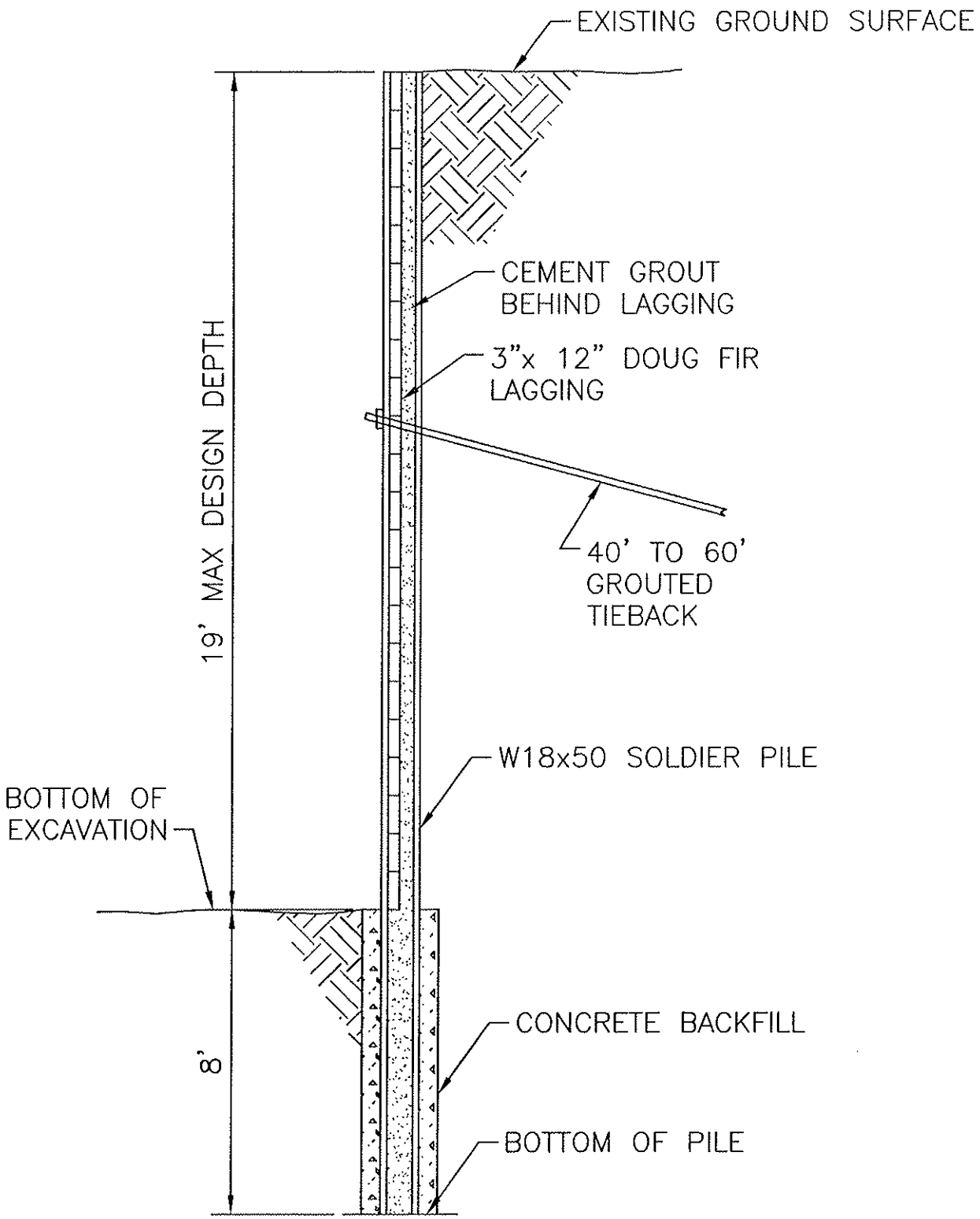


FIGURE 3-4
SHORING SYSTEM
ARIZONA PUBLIC SERVICE COMPANY
FORMER PRESCOTT MANUFACTURED GAS
PLANT SITE

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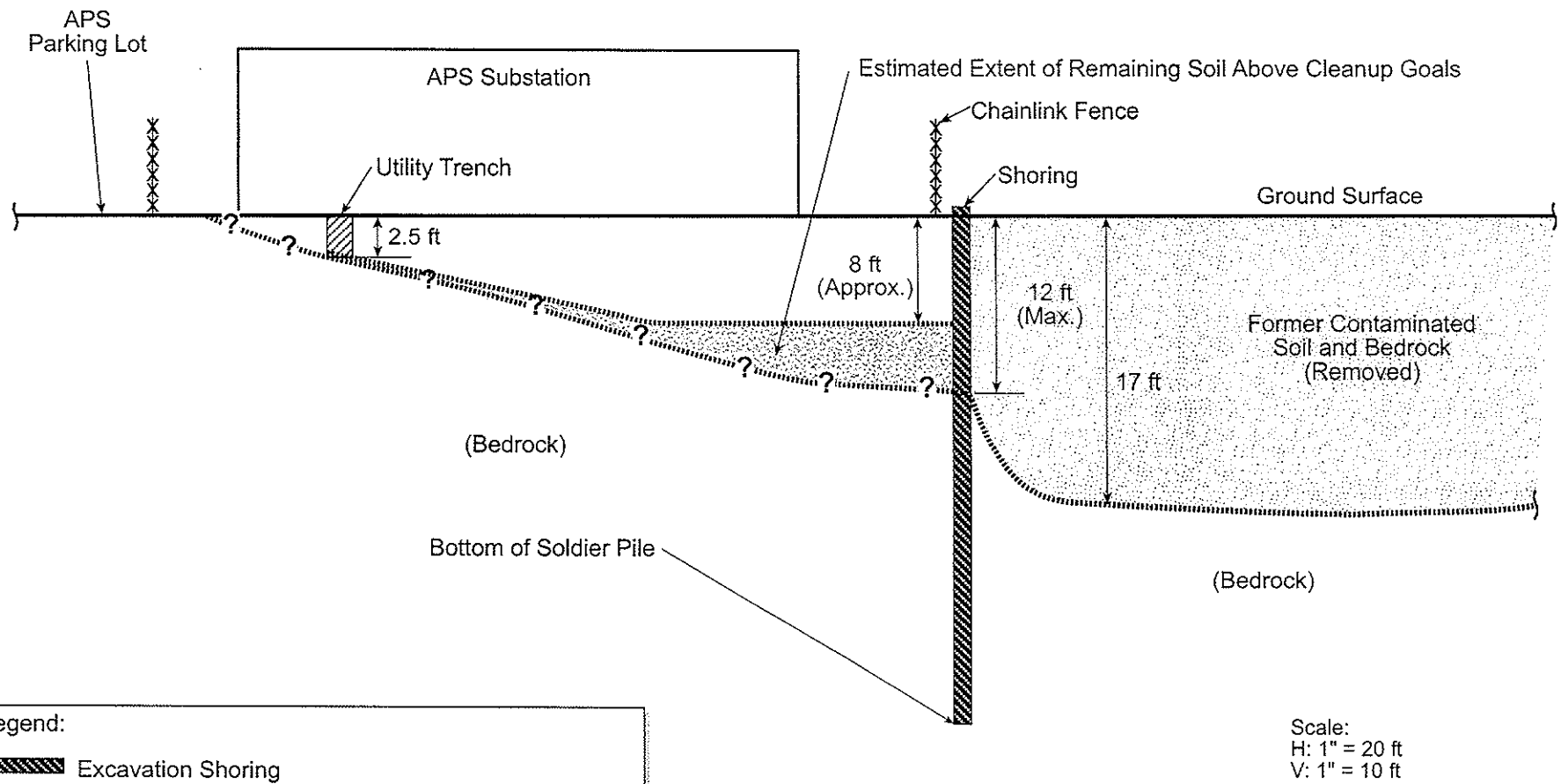

Legend:

- Excavation Shoring
- Former Contaminated Soil and Bedrock (Removed)
- Estimated Extent of Remaining Soil Potentially Above Cleanup Goals
- Estimated Top of Bedrock
- ?……? Unknown Extent of Soil Above Cleanup Goals

Figure 4-3
Profile View of Substation
APS Prescott Former MGP Site

CH2MHILL

SCO153718.T3.1A profile2 fh 4/02

Appendix B
DTSC Information Advisory, Clean Imported Fill Material

Information Advisory
Clean Imported Fill Material

October 2001

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

It is DTSC's mission to restore, protect and enhance the environment, to ensure public health, environmental quality and economic vitality, by regulating hazardous waste, conducting and overseeing cleanups, and developing and promoting pollution prevention.

State of California

California Environmental Protection Agency

Executive Summary

This fact sheet has been prepared to ensure that inappropriate fill material is not introduced onto sensitive land use properties under the oversight of the DTSC or applicable regulatory authorities. Sensitive land use properties include those that contain facilities such as hospitals, homes, day care centers, and schools. This document only focuses on human health concerns and ecological issues are not addressed. It identifies those types of land use activities that may be appropriate when determining whether a site may be used as a fill material source area. It also provides guidelines for the appropriate types of analyses that should be performed relative to the former land use, and for the number of samples that should be collected and analyzed based on the estimated volume of fill material that will need to be used. The information provided in this fact sheet is not regulatory in nature, rather is to be used as a guide, and in most situations the final decision as to the acceptability of fill material for a sensitive land use property is made on a case-by-case basis by the appropriate regulatory agency.

Introduction

The use of imported fill material has recently come under scrutiny because of the instances where contaminated soil has been brought onto an otherwise clean site. However, there are currently no established standards in the statutes or regulations that address environmental requirements for imported fill material. Therefore, the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) has prepared this fact sheet to identify procedures that can be used to minimize the possibility of introducing contaminated soil onto a site that requires imported fill material. Such sites include those that are undergoing site remediation, corrective action, and closure activities overseen by DTSC or the appropriate regulatory agency. These procedures may also apply to construction projects that will result in sensitive land uses. The intent of this fact sheet is to protect people who live on or otherwise use a sensitive land use property. By using this fact sheet as a guide, the reader will minimize the chance of introducing fill material that may result in potential risk to human health or the environment at some future time.

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website at www.dtsc.ca.gov.

Overview

Both natural and manmade fill materials are used for a variety of purposes. Fill material properties are commonly controlled to meet the necessary site specific engineering specifications. Because most sites requiring fill material are located in or near urban areas, the fill materials are often obtained from construction projects that generate an excess of soil, and from demolition debris (asphalt, broken concrete, etc.). However, materials from those types of sites may or may not be appropriate, depending on the proposed use of the fill, and the quality of the assessment and/or mitigation measures, if necessary. Therefore, unless material from construction projects can be demonstrated to be free of contamination and/or appropriate for the proposed use, the use of that material as fill should be avoided.

Selecting Fill Material

In general, the fill source area should be located in nonindustrial areas, and not from sites undergoing an environmental cleanup. Nonindustrial sites include those that were previously undeveloped, or used solely for residential or agricultural purposes. If the source is from an agricultural area, care should be taken to insure that the fill does not include former agricultural waste process byproducts such as manure or other decomposed organic material. Undesirable sources of fill material include industrial and/or commercial sites where hazardous ma-

Potential Contaminants Based on the Fill Source Area

Fill Source:	Target Compounds
Land near to an existing freeway	Lead (EPA methods 6010B or 7471A), PAHs (EPA method 8310)
Land near a mining area or rock quarry	Heavy Metals (EPA methods 6010B and 7471A), asbestos (polarized light microscopy), pH
Agricultural land	Pesticides (Organochlorine Pesticides: EPA method 8081A or 8080A; Organophosphorus Pesticides: EPA method 8141A; Chlorinated Herbicides: EPA method 8151A), heavy metals (EPA methods 6010B and 7471A)
Residential/acceptable commercial land	VOCs (EPA method 8021 or 8260B, as appropriate and combined with collection by EPA Method 5035), semi-VOCs (EPA method 8270C), TPH (modified EPA method 8015), PCBs (EPA method 8082 or 8080A), heavy metals including lead (EPA methods 6010B and 7471A), asbestos (OSHA Method ID-191)

**The recommended analyses should be performed in accordance with USEPA SW-846 methods (1996). Other possible analyses include Hexavalent Chromium: EPA method 7199*

Recommended Fill Material Sampling Schedule

Area of Individual Borrow Area	Sampling Requirements
2 acres or less	Minimum of 4 samples
2 to 4 acres	Minimum of 1 sample every 1/2 acre
4 to 10 acres	Minimum of 8 samples
Greater than 10 acres	Minimum of 8 locations with 4 subsamples per location
Volume of Borrow Area Stockpile	**Samples per Volume**
Up to 1,000 cubic yards	1 sample per 250 cubic yards
1,000 to 5,000 cubic yards	4 samples for first 1000 cubic yards +1 sample per each additional 500 cubic yards
Greater than 5,000 cubic yards	12 samples for first 5,000 cubic yards + 1 sample per each additional 1,000 cubic yards

terials were used, handled or stored as part of the business operations, or unpaved parking areas where petroleum hydrocarbons could have been spilled or leaked into the soil. Undesirable commercial sites include former gasoline service stations, retail strip malls that contained dry cleaners or photographic processing facilities, paint stores, auto repair and/or painting facilities. Undesirable industrial facilities include metal processing shops, manufacturing facilities, aerospace facilities, oil refineries, waste treatment plants, etc. Alternatives to using fill from construction sites include the use of fill material obtained from a commercial supplier of fill material or from soil pits in rural or suburban areas. However, care should be taken to ensure that those materials are also uncontaminated.

Documentation and Analysis

In order to minimize the potential of introducing contaminated fill material onto a site, it is necessary to verify through documentation that the fill source is appropriate and/or to have the fill material analyzed for potential contaminants based on the location and history of the source area. Fill documentation should include detailed information on the previous use of the land from where the fill is taken, whether an environmental site assessment was performed and its findings, and the results of any testing performed. It is recommended that any such documentation should be signed by an appropriately licensed (CA-registered) individual. If such documentation is not available or is inadequate, samples of the fill material should be chemically analyzed. Analysis of the fill material should be based on the source of the fill and knowledge of the prior land use.

Detectable amounts of compounds of concern within the fill material should be evaluated for risk in accordance with the DTSC Preliminary Endangerment Assessment (PEA) Guidance Manual. If

metal analyses are performed, only those metals (CAM 17 / Title 22) to which risk levels have been assigned need to be evaluated. At present, the DTSC is working to establish California Screening Levels (CSL) to determine whether some compounds of concern pose a risk. Until such time as these CSL values are established, DTSC recommends that the DTSC PEA Guidance Manual or an equivalent process be referenced. This guidance may include the Regional Water Quality Control Board's (RWQCB) guidelines for reuse of non-hazardous petroleum hydrocarbon contaminated soil as applied to Total Petroleum Hydrocarbons (TPH) only. The RWQCB guidelines should not be used for volatile organic compounds (VOCs) or semi-volatile organic compounds (SVOCS). In addition, a standard laboratory data package, including a summary of the QA/QC (Quality Assurance/Quality Control) sample results should also accompany all analytical reports.

When possible, representative samples should be collected at the borrow area while the potential fill material is still in place, and analyzed prior to removal from the borrow area. In addition to performing the appropriate analyses of the fill material, an appropriate number of samples should also be determined based on the approximate volume or area of soil to be used as fill material. The table above can be used as a guide to determine the number of samples needed to adequately characterize the fill material when sampled at the borrow site.

Alternative Sampling

A Phase I or PEA may be conducted prior to sampling to determine whether the borrow area may have been impacted by previous activities on the property. After the property has been evaluated, any sampling that may be required can be determined during a meeting with DTSC or appropriate regulatory agency. However, if it is not possible to analyze the fill material at the borrow area or determine that it is appropriate for use via a Phase I or PEA, it is recommended that one (1) sample per truckload be collected and analyzed for all compounds of concern to ensure that the imported soil is uncontaminated and acceptable. (See chart on Potential Contaminants Based on the Fill Source Area for appropriate analyses). This sampling frequency may be modified upon consultation with the DTSC or appropriate regulatory agency if all of the fill material is derived from a common borrow area. However, fill material that is not characterized at the borrow area will need to be stockpiled either on or off-site until the analyses have been completed. In addition, should contaminants exceeding acceptance criteria be identified in the stockpiled fill material, that material will be deemed unacceptable and new fill material will need to be obtained, sampled and analyzed. Therefore, the DTSC recommends that all sampling and analyses should be completed prior to delivery to the site to ensure the soil is free of contamination, and to eliminate unnecessary transportation charges for unacceptable fill material.

Composite sampling for fill material characterization may or may not be appropriate, depending on quality and homogeneity of source/borrow area, and compounds of concern. Compositing samples for volatile and semivolatile constituents is not acceptable. Composite sampling for heavy metals, pesticides, herbicides or PAH's from unanalyzed stockpiled soil is also unacceptable, unless it is stockpiled at the borrow area and originates from the same source area. In addition, if samples are composited, they should be from the same soil layer, and not from different soil layers.

When very large volumes of fill material are anticipated, or when larger areas are being considered as borrow areas, the DTSC recommends that a Phase I or PEA be conducted on the area to ensure that the borrow area has not been impacted by previous activities on the property. After the property has been evaluated, any sampling that may be required can be determined during a meeting with the DTSC.

For further information, call Shahir Haddad, P.E. at (714) 484-5368.

Appendix C
Quality Assurance Project Plan and Project-Specific Health and Safety Plans

Arizona Public Service
Quality Assurance Project Plan

Final

March 2019

Arizona Public Service Company

Jane Dee Hull
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Stephen A. Owens
Director

Quality Assurance Project Plan Review

(NOTE: This QAPP was reviewed in accordance with the October 1998 *EPA Requirements For Quality Assurance Project Plans (QA/R-5)* .

Project:

DEFICIENCIES (Note: Please see attached pages for a description of the categories of deficiencies checked on the table below)

	Title & Approval Sheet		Analytical Methods
	Table of Contents		Quality Control
	Distribution List		Instrument/Equipment Testing
	Project/Task Organization		Instrument Calibration & Frequency
	Problem Definition/Background		Inspection/Acceptance for Supplies
	Project/Task Description		Data Acquisition (Non-Direct)
	Data Quality Objectives		Data Management
	Special Training/Certification		Assessments & Response Actions
	Documentation & Records		Reports to Management
	Sampling Process Design		Data Review, Validation & Verification
	Sampling Method		Validation and Verification Methods
	Sample Handling		Reconciliation with User Requirements

CONCLUSION / RECOMMENDATION FOR THIS QAPP

	Acceptable		Unacceptable; requires minor revisions		Unacceptable; requires major revisions

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Quality Assurance Project Plan Approvals

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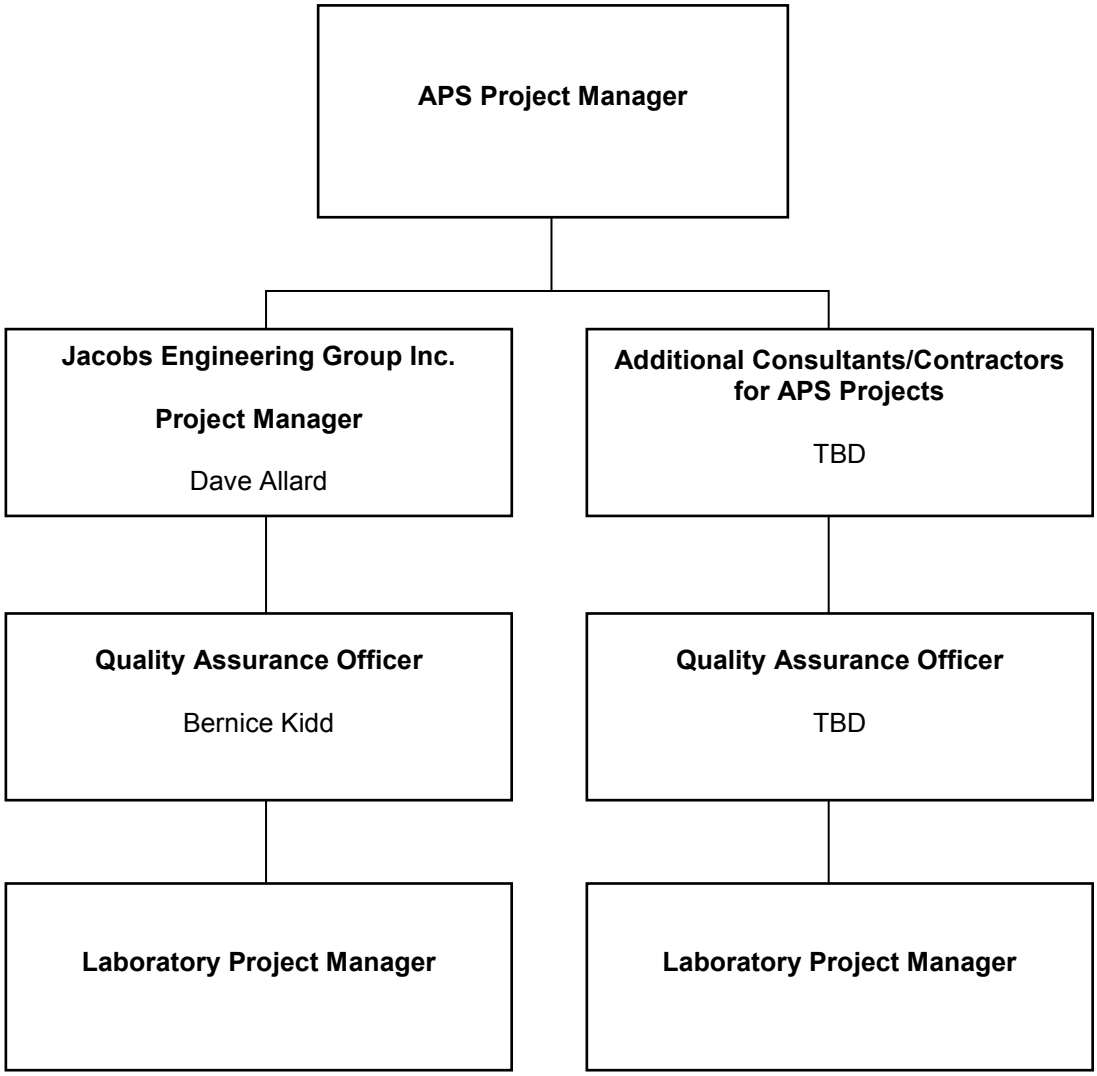
Arizona Department of Environmental Quality

Organization Chart



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Acronyms and Abbreviations

%R	percent recovery
°C	degrees Celsius
4CPP	Four Corners Power Plant
ADEQ	Arizona Department of Environmental Quality
ADHS	Arizona Department of Health Services
APS	Arizona Public Service
AWQS	Aquifer Water Quality Standard
BTEX	benzene, toluene, ethylbenzene, and xylenes
CA	corrective action
COC	chain of custody
DQO	data quality objective
EDa	Exposure Duration-adult
EDc	Exposure Duration-child
EPA	U.S. Environmental Protection Agency
GC/MS	gas chromatography/mass spectrometry
GPL	groundwater protection level
IC	ion chromatography
ICP	inductively coupled plasma
Jacobs	Jacobs Engineering Group Inc.
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
MDL	method detection limit
MGP	manufactured gas plant
MS	matrix spike
MSD	matrix spike duplicate
PAH	polynuclear aromatic hydrocarbon
PRG	preliminary remediation goal
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
RAP	remedial action plan
RL	reporting limit
RPD	relative percent difference
RSL	regional screening level
SAP	sampling and analysis plan
SM	standard method

SRL	soil remediation level
SWQS	Surface Water Quality Standard
TCLP	Toxicity Characteristic Leaching Procedure
TPH	total petroleum hydrocarbon
VOC	volatile organic compound
VRP	Voluntary Remediation Program

1. Introduction

This Quality Assurance Project Plan (QAPP) is intended to serve as a guide to the Arizona Public Service Company (APS), its consultants, and analytical laboratory personnel for sample analysis and laboratory performance evaluations at former APS manufactured gas plants (MGPs), non-MGP-related projects, and field operations in Arizona. The sites covered by this QAPP include the following former MGPs:

- 501/505 South Second Avenue, Phoenix Arizona (501/505 MGP)
- 2919 Latham Boulevard, Miami, Arizona (Miami MGP)
- Douglas, Arizona

Other sites that APS deems appropriate will also be covered by this QAPP. These additional APS sites may include projects that are enrolled, or are anticipated to be enrolled, in the Arizona Department of Environmental Quality (ADEQ) Voluntary Remediation Program (VRP). The current list of non-MGP APS sites in the ADEQ VRP that are using this QAPP include the following:

- Cholla Power Plant, Joseph City, Arizona

In addition, this QAPP may be used during property assessment investigations associated with real estate transactions, during site investigation activities associated with soil and/or groundwater sampling and analysis, or for routine sampling and analytical purposes associated with ongoing compliance. These activities may occur at any APS location.

This QAPP details specific quality assurance (QA) and quality control (QC) requirements that apply to APS sites. These QA/QC requirements are designed to assist in achieving the project data quality objectives (DQOs) and analytical DQOs for all sampling activities, remedial actions, and periodic groundwater and surface water monitoring that will be performed at the former MGPs and additional APS sites. This document will be used as a foundation from which to build site-specific work plans and remedial action plans (RAPs) that address each phase of work to be performed at the former MGPs and additional APS projects. Note that the term “work plan” not only refers to specific documents of that name, but also to permits and other governing regulatory documents, including, but not limited to, the following:

- Compliance plans and documents, including regulatory guidance documents
- Sample plans

The guidelines for preparing this QAPP are presented in the U.S Environmental Protection Agency (EPA) document *EPA Requirement for Quality Assurance Project Plans, EPA QA/R-5* (EPA, 2001). The ADEQ QAPP Review Checklist is included in the front of this document.

The purpose of this QAPP is to provide program QA/QC consistency throughout APS site monitoring, investigation, remedial activities, and waste profiling. Additional information on the data quality review process that may be used during data evaluation and assessment is provided in the following documents:

- *Data Quality Assessment: A Reviewer’s Guide (QA/G-9R)* (EPA, 2006a)
- *Data Quality Assessment: Statistical Methods for Practitioners (QA/G-9S)* (EPA, 2006b)
- *Guidance for Data Quality Assessment: Practical Methods for Data Analysis, EPA QA/G-9* (EPA, 2000)

These documents provide guidance to perform the scientific and statistical evaluation of data to ensure the project data objectives of quality and quantity are met to support project needs and their intended use.

This QAPP presents the guidelines for monitoring the performance of the analytical laboratory and is not intended to supersede the laboratory’s QAPP. All project personnel are required to read the QAPP. A copy of the QAPP will be maintained on the electronic APS Environmental Management System (EMS); a hard copy will also be present at the project location if required by the project manager.

A program QAPP is a living document that will be updated as required. Project managers in conjunction with an environmental consulting firm under contract with APS will be responsible for the QAPP updates and ensuring that the QAPP is kept current. Any questions or comments on the QAPP or suggestions for

future revisions should be presented to the APS project manager. Amendments to the QAPP will be prepared, as necessary, for ongoing project work. These amendments will be incorporated into the next revision of the QAPP.

.

2. Project Management

2.1 Project Description

2.1.1 Problem Definition/Background

This section describes the historical background and activities that have been conducted at the APS sites listed in Section 1. Background information about each site, descriptions of the tasks, any problems and their resolution, and decisions to be made can be found in Appendix A, the site-specific work plan or RAP. An Appendix A form is not required for all projects, but it is a tool designed for project managers to use on an as-needed basis.

2.1.2 Manufactured Gas Plant-Related Projects

Once at the forefront of industrial technology, MGPs provided fuel for streetlights, reading lamps, heating, and cooking throughout the United States from the early 1800s through the middle of the 20th Century. It has been estimated that, at their peak, more than 1,500 MGPs provided manufactured gas to customers in the United States. Manufactured gas was produced by three primary processes: coal carbonization, carbureted water gas, and oil gas. MGP sites often vary significantly in the specific types and quantities of residual wastes present, depending on the types of processes used and the era in which the plant operated. In general, the compounds of interest that could be present at MGP sites can be divided into five chemical types: inorganic compounds, metals, volatile aromatics, phenolics, and polynuclear aromatic hydrocarbons (PAHs). PAH-containing soil represents the largest waste type at most MGP sites. A complete description of each specific MGP site and the constituents of concern based on historical processes at that site will be presented in the site-specific work plan or RAPs.

A description of each project site is presented in the following documents:

- *Site Investigation Report, Former MGP at 505 South 2nd Avenue, Phoenix, Arizona, Volumes I and II* (Brown and Caldwell, 1998)
- *Final Focused Remedial Investigation Report, APS 501, 502 and 505 South 2nd Avenue Properties, Motorola 52nd Street Superfund Site, OU3* (AMEC, 2010)
- *Remedial Action Plan for the APS Former Manufactured Gas Plant, 501 and 505 South 2nd Avenue, Phoenix, Arizona* (CH2M HILL, 2012)
- *Remedial Action Implementation Report for the APS Former Manufactured Gas Plant 501 and 505 South 2nd Avenue, Phoenix, Arizona* (CH2M HILL, 2013)
- *Site Investigation Report at the Former Manufactured Gas Plant, 2919 Latham Blvd., Miami, Arizona* (Brown and Caldwell, 1999)
- *Material Removal Activities Former APS Manufactured Gas Plant Site Douglas, Arizona* (ARCADIS Geraghty & Miller, 1998)

2.1.3 Various APS Locations

Additional APS sites that will use this QAPP are related to the generation, transmission, and distribution of electricity. These sites include power-generation facilities, substations, service centers, construction yards, and parcels acquired by APS. The QAPP will also be used for other property assessment activities.

A description of MGP and non-MGP project sites currently using this QAPP is presented in the following documents:

- *Monitor Well Installation and Groundwater Sampling Report, Diesel Fuel Release, Cholla Power Plant, Joseph City, Arizona* (Mogollon Environmental Services LLC, 2005)

- *Groundwater Sampling Report, Diesel Fuel Release, Cholla Power Plant, Joseph City, Arizona* (Mogollon Environmental Services LLC, 2006a)
- *Monitor Well Installation and Groundwater Sampling Work Plan, Well DR-2 VOC Evaluation, Cholla Power Plant, Joseph City, Arizona* (Mogollon Environmental Services LLC, 2006b)
- *Work Plan for Arizona Public Service Cholla Power Plant, Joseph City, Arizona, VRP #090050-00 and 090050-03* (CH2M HILL, 2015)
- *Monitor Well Installation, Soil and Groundwater Sampling Report, APS Four Corners Power Plant Farmington, New Mexico* (Mogollon Environmental Services LLC, 2013)
- *Field Sampling Plan, Garage Fueling Area, Four Corners Power Plant, Arizona Public Service, Farmington, New Mexico* (AECOM, 2015).
- *Groundwater Sampling and Analysis Program, Cholla Power Plant, Joseph City, Arizona* (Montgomery & Associates, 2015).
- *Sampling and Analysis Plan Coal Combustion Residual (CCR) Groundwater Monitoring, Four Corners Power Plant, Farmington, New Mexico* (APS, 2018).

As additional APS sites using this QAPP are identified, project descriptions and/or applicable document references will be added to Appendix A. Additionally, if new project managers, laboratories, or QA managers are associated with those projects, this information will be included in Appendix A.

2.2 Purpose

The QAPP is intended to provide guidance to field and laboratory personnel for field activities and sample handling activities within the laboratory for each sampling event. The QAPP contains general and specific guidance on sample collection methodology, sample handling, sample containers, and laboratory procedures. The guidelines will be followed by project personnel during each sampling event. This QAPP will be distributed to the project managers and QA officers specified in Section 2.4. Additionally, any personnel responsible for collecting or reviewing data for the project sites will be provided a copy of this QAPP.

2.3 Scope and Objectives

This QAPP is intended to provide guidance for APS, its consultant, and analytical laboratory personnel associated with remedial actions and investigations at the project sites. This QAPP addresses data collected during soil and water sampling and other applicable activities at APS sites. This QAPP is not intended to replace the laboratory's QAPP. It is intended to provide guidance for field QC collection, method selection, DQOs, and program-specific validation guidelines. All participating parties provided input during the preparation of this QAPP.

2.4 Project Management Responsibilities

This section describes the organizational structure of personnel involved with this program, defines the lines of authority, and identifies key personnel assigned to various program activities. The organization is a hierarchical structure. The project manager for each project location will be the key operational manager for project execution and will be primarily responsible for project plan development and implementation of the project tasks. The QAPP-related tasks for which the consultant and contracted laboratory personnel are responsible are described in the following sections.

2.4.1 QAPP Management

This QAPP governs sampling and analysis performed for regulatory compliance, characterization, or remediation-based purposes. An electronic version of the most current QAPP will be accessible from the APS Corporate Environmental web page under the Environmental Process location of the home page. The QAPP will be updated on an as-needed basis; interim updates may occur by appending information

to Appendix A of this document. Project managers are responsible for updating this QAPP if project-specific information is not reflected in the content of this document.

2.4.2 Arizona Public Service Personnel

The APS r project manager will be the primary contact at APS. The APS project manager will be responsible for coordinating onsite activities described in the various program site-specific work plans and RAPs.

All project-related activities will be managed by an APS project manager. If new projects require an additional APS project manager, the project manager's information will be included in Appendix A. Any recommended updates or revisions to the QAPP should be presented to the APS project manager. A listing of APS project managers is provided in Appendix D, APS Project Contact Information.

2.4.3 Consultants

The consultant for each project will appoint a project manager responsible for overall project implementation. The consultant project manager will have the authority to commit the necessary resources to ensure timely completion of project tasks. The consultant project manager reports directly to the APS project manager and is responsible for reviewing project progress and all documents, plans, and drawings before they are sent to the APS project manager. If additional consultants or project managers are assigned to new projects addressed by this QAPP, the project manager's information will be included in Appendix D, APS Project Contact Information.

Each project manager will identify a QA officer for the project. The consultant QA officer will be responsible for oversight of the subcontracted laboratories for all projects contracted to their consulting firm. Other responsibilities for the consultant QA officer may include management of field and laboratory audits, review of field QC sample collection and analytical program designs, validation of field and analytical data, and documentation of the field and analytical results. Additional QA officer contact information will be provided in Appendix D, APS Project Contact Information.

2.4.4 Analytical Laboratories

The analytical laboratory project manager will act as the primary liaison to the consultant during implementation of project activities and will be responsible for reviewing the final analytical reports submitted for the project. The analytical laboratory project manager will also be responsible for coordinating with the laboratory QA officer to implement the DQOs established in this program QAPP and will alert the consultant to DQO and method updates before analysis and data submittal. The analytical laboratory project manager is responsible for overseeing the deliverables submitted by laboratories subcontracted by the originating laboratory. A listing of laboratories is located in Appendix D, APS Project Contact Information.

2.5 Project Goals

2.5.1 Quality Objectives and Criteria for Measurement Data

The DQOs for each sampling activity are discussed in the site-specific work plans or RAPs. The DQOs are the basis of design for the data collection plan and, as such, they specify the type, quality, and quantity of data to be collected and how the data are to be used to make the appropriate decisions for the project. The DQOs are developed through a seven-step process, of which each step derives valuable criteria used to establish the final data collection design. The first five steps of the process identify mostly qualitative criteria, such as what problem initiated the project and what issue needs to be resolved. These steps also define the type of data to be collected, where and when the data will be collected, and how the project decision should be made. The sixth step defines quantitative criteria expressed as limits on decision errors that can be tolerated by the decision maker. The final step is the development of the data collection design using the criteria developed in the previous six steps. The final output of the process is a data collection design that meets the qualitative and quantitative needs of the project.

The general regulatory standards that will be applied to the various APS sites are discussed below. The specific regulatory standards, as well as other standards, that will be used at each site will be a function of the site-specific project DQOs. The site-specific work plans or RAPs will specify which standards to use and how to apply the standards to meet the DQOs. If necessary, addendums to this QAPP will be prepared to support the site-specific standards.

2.5.1.1 Arizona Soil Standards

Table 2.1 summarizes the 2007 Soil Remediation Standards and Arizona GPLs. The Arizona 1996 Soil Remediation Standards were revised and updated in 2007 to be consistent with current scientific data and statutes. The revised rule required the use of 1×10^{-6} excess lifetime cancer risk level for remediation at sites if the current or intended future use is a school or childcare facility where children are reasonably expected to be in frequent and repeated contact with the soil. In addition, the revised rule did not set a single numeric soil remediation level (SRL) value for petroleum hydrocarbons; instead, the revised rule provides for the cleanup of petroleum hydrocarbons by requiring cleanup of all individual petroleum constituents detected in soil that have an SRL (AAC, 2007). These include benzene, toluene, ethylbenzene, and xylenes (BTEX) and PAHs, which are present at some of the APS sites. The sites currently operating under this QAPP are subject to the 2007 SRLs summarized in Table 2.1.

If any of the compounds listed on Table 2.1 have residential SRLs that are lower than the analytical laboratory can reliably achieve, the compound will be evaluated to determine if it is an indicator compound at the specific site. If applicable, alternative analytical methods that can achieve the necessary detection limit will be evaluated. During previous investigations, three compounds (1,2,3-trichloropropane, 1,2-dibromoethane, and vinyl chloride) had residential SRLs lower than the laboratory detection limit; however, these compounds are not expected to be indicator compounds at the current sites. Additionally, the ADEQ approved the laboratory reporting limits (RLs), acknowledging the discrepancy.

2.5.1.2 Arizona Groundwater Standards

Groundwater that has been, or has the potential to be, affected by residual MGP by-products or non-MGP-related compounds will be monitored by periodic sampling. Any constituents detected in groundwater will be compared with their respective Aquifer Water Quality Standard (AWQS) (AAC, 1994). The AWQS are presented in Table 2.2. If any of the compounds listed in Table 2.2 have AWQS that are lower than the analytical laboratory can reliably achieve, the compound will be evaluated to determine if it is an indicator compound at the specific site. If applicable, alternative analytical methods that can achieve the necessary detection limit will be evaluated. During previous investigations, 1,2-dibromoethane had an AWQS that was lower than the analytical laboratory could achieve; however, this compound is not expected to be indicator compound at the current sites. Additionally, the ADEQ previously approved the laboratory RLs, acknowledging the discrepancy.

2.5.1.3 Arizona Surface Water Standards

The ADEQ has established numeric water quality standards, hereafter referred to as Arizona's Numeric Surface Water Quality Standards (SWQS), for designated uses of the state's surface waters (AAC, 2009). Surface water sampling will be conducted to evaluate whether target analytes exceed the SWQS listed in Table 2.3. During previous investigations, concentrations established as the SWQS for several compounds were lower than the laboratory can reliably achieve during routine operations. In these cases, the regulations state that the water quality standard is enforceable at the laboratory RL. Section 3 provides a detailed discussion of RLs.

2.5.1.4 Waste Determination Standards

Selected samples may be analyzed to determine whether the material is considered a hazardous waste. Table 2.4 provides EPA-established concentrations for leachate for comparison in the Toxicity Characteristic Leaching Procedure (TCLP) analysis. If the concentrations in Table 2.4 are exceeded, the soil would be classified a hazardous waste and/or managed and disposed of as if it were hazardous, even

if it meets the MGP TCLP exemption. Additional information on waste characterization and disposal of waste will be provided in the site-specific work plan or RAP for each project.

2.5.1.5 Air Quality Standards

Air samples may be collected periodically as part of remedial activities at each of the former MGP sites. Air monitoring performed for health and safety purposes will be addressed in a site-specific health and safety plan and the site-specific work plan or RAP for each site. Air samples collected in conjunction with remediation system emissions will be compared with permit requirements or the applicable local air quality regulatory requirements. Air samples collected for laboratory analysis in conjunction with perimeter monitoring during excavation activities will be compared with the pre-determined allowable community air monitoring concentrations listed in Table 2.6.

EPA Region 9 Ambient Air Regional Screening Levels (RSLs) are risk-based tools for evaluating and remediating contaminated sites. The EPA RSLs combine the current EPA toxicity values with “standard” exposure factors to estimate contaminant concentrations in environmental media (that is, soil, air, and water). The EPA RSLs for PAHs and benzene presented in Table 2.6 are non-site-specific.

The standard EPA RSL concentrations include the residential exposure duration to calculate the maximum allowable concentration assuming an adult exposure of 26 years for noncarcinogenic inhalation and 70 years for carcinogenic inhalation. To account for exposure scenarios related to limited-duration field activities such as excavation, alternate ambient air RSL concentrations for PAHs have also been determined. To calculate the alternate values, the 1-year maximum allowable concentration is adjusted by multiplying the RSL by 26 (1 year is 1/26 of the 26-year exposure). The calculated 4-month and 6-month values are presented in Table 2.6. These alternate RSLs apply to any APS site where the excavation activities will be completed within 1 year.

Because there is no RSL ambient air value for lead, the Occupational Safety and Health Administration Permissible Exposure Level of 0.05 milligram per cubic meter will be used to evaluate the allowable concentration of lead in the air samples.

Air quality samples may be collected periodically in conjunction with projects other than the MGP and non-MGP projects. For these other projects, the work plan will be used as the guidance document to establish the DQOs.

2.5.1.6 New Mexico Site Standards

The Four Corners Power Plant (4CPP) project site is located in the Navajo Nation in New Mexico. Therefore, Arizona-specific standards do not apply to activities at this project site. The regulatory standards for the 4CPP site for soil, groundwater, and surface water are presented in the following tables:

- Table 2.6, 2018 EPA Soil Regional Screening Levels
- Table 2.2, 2009 EPA Maximum Contaminant Levels
- Table 2.3, 2007 Navajo Nation Surface Water Quality Standards

Additionally, drinking water systems must comply with the monthly maximum contaminant level (MCL) for total coliforms. The fecal indicators (*E. coli*, enterococci, or coliphage) must not be present in more than 5% of the samples collected.

2.6 Project Documentation

The following is a list of documents that may be relevant to sites that are undergoing remediation, compliance-based, or characterization sampling:

- Copies of all appropriate permits or compliance plans to complete the scope of work
- Applicable regulatory guidance documents
- Field notebook

- Periodic water level measurement, as and where appropriate
- Field sampling records for perimeter air monitoring and soil and groundwater sampling, where appropriate, including the sample name, sample location, and purpose of sample
- Sample chain of custody (COC) records from onsite mobile laboratory
- Sample COC records with notation of sample temperature at the time of receipt by laboratory (for samples that are submitted to fixed-base laboratory)
- Final analytical data packages from the analyzing laboratory, completed as required in the site-specific work plan or RAP for the requested data deliverable level, as described in Section 7.3
- Data validation report
- Work plan or RAP, QAPP, and all other site-specific documents, as required

These documents will be included, as appropriate, in the remedial action report following remedial activities or in associated compliance-based reports. These documents will be kept on file by the consultant or APS project manager for the duration of the project. The files will be transferred to the APS project manager at the completion of the project.

2.7 Data Report to the Arizona Department of Environmental Quality

The site-specific work plan, RAP, permit or equivalent document will specify the reports required by ADEQ or other regulatory agency, the frequency for submission of such reports, and the required information to be included the reports. The length of retention for these reports may vary with the regulatory program. Standard laboratory turnaround times will be used for all analytical data unless specified in the site-specific work plan, RAP, or equivalent document.

Construction data for new wells and groundwater monitoring data collected from wells at the project sites will be submitted to ADEQ approximately once per year. Well and groundwater data will be submitted in accordance with the ADEQ *Groundwater Data Submittal Guidance Document* (Version 3.4) (ADEQ, 2010). Sample results for surface water at a project site will also be submitted to ADEQ approximately once per year in accordance with the ADEQ *Surface Water Data Submittal Guidance Document* (ADEQ, 2004).

2.8 Special Training Requirements and Certification

Special training and certification required for personnel to complete tasks for each project will be identified and described in the site-specific work plan, RAP, or equivalent document. Appropriate personnel will be designated to oversee the implementation and documentation of training and certification.

3. Field Measurement and Data Acquisition

3.1 Analytical Method Requirements

The general categories of data that may be collected include characterization sampling data, field screening data, confirmation data, health and safety monitoring data, and monitoring data for soil, water, soil vapor, and air samples. The QAPP presents a comprehensive list of potential measurements and analyses that could be performed for APS. The methods are summarized in Tables 3.1, 3.2, and 3.3. Lists of specific methods and analytes for each site will be included in the site-specific work plan, RAP, or equivalent document. The site-specific documents will also address the work schedule, special personnel training and certification requirements, equipment requirements, and assessment techniques to use to ensure procedures are followed. Laboratory personnel must meet the requirements specified for each method used. Contingency plans must be accessible in the laboratory in the event the analytical system fails. The laboratory project manager is responsible for initiating timely corrective action (CA) and ensuring its effectiveness. Any system failures or deviations from method requirements that have the potential to affect data quality must be properly documented in the case narrative included in the data package.

3.1.1 Soil and Solid Sample Analysis

3.1.1.1 Soil Sample Analysis

At APS sites undergoing soil investigation or remedial activities, additional data will be obtained by submitting soil or solid samples to a laboratory to perform sample analysis. The analytical laboratory will generate quantitative analytical data for soils using the methods presented in Table 3.1 and the DQOs presented in Table 3.4. If additional analytical parameters are required, the consultant will define the parameter DQOs and include the associated DQOs in an addendum to this QAPP.

3.1.2 Water Sample Analyses

Water samples are collected at selected project sites. The analytical laboratory will generate quantitative analytical data for water samples using the methods presented in Table 3.2 and the DQOs presented in Table 3.5. If additional analytical parameters are required, the consultant will define the parameter DQOs and include them in Appendix A to this QAPP.

3.1.3 Air and Soil Vapor Sample Analyses

3.1.3.1 Air and Soil Vapor Sample Analyses

Air or soil vapor samples are collected periodically as part of characterization or remedial activities at APS sites. The air or soil vapor sample analysis is project specific and may not include all methods listed. The analytical laboratory will generate quantitative analytical data for air or soil vapor samples using the methods presented in Table 3.3 and the DQOs presented in Table 3.6. If additional analytical parameters are required, the consultant will define the parameter DQOs and include them in an addendum to this QAPP.

3.2 Sampling Design and Procedures

The sampling design for each site is discussed in the site-specific work plan, sample plan, or RAP. The design addresses the number and location of samples, sampling frequency, sample matrices, and measurement parameters of interest for each sample. The rationale for the sampling design is also described in the site-specific work plan or RAP. The sampling design is a function of the medium sampled, information about the sampling site, the type of data to be collected, and how the data are to be used.

The soil and groundwater samples will be collected for each site as described in the applicable work plan or RAP. The site-specific work plan or RAP will describe the sampling procedures and equipment, the sample containers, sample handling and storage, sampling equipment decontamination, and handling of any investigation-derived waste. The work plan or RAP will also discuss CAs to be taken in the event the sampling system fails, and include names of individuals responsible for implementing those CAs.

3.3 Sample Handling and Custody

General sample handling and custody procedures are described in the following sections. They may be superseded by procedures specified in site-specific documents. If issues associated with sampling methods or handling are identified, the QA officers and project managers from each consulting firm will be responsible for implementing CAs.

3.3.1 Containers and Preservatives

The contracted laboratories will provide required sample containers for all environmental and associated QC samples. All containers will be certified free of the analytes of concern for this project. No sample containers will be reused. The contracted laboratory will add preservatives, if required, before shipping the sample containers to the project site. The laboratory, upon receipt of the samples, will verify the adequacy of preservation and will add preservative, if necessary. For samples requiring temperature control, samples will be shipped to the laboratory on ice to maintain a temperature of less than 6 degrees Celsius (°C). The containers, minimum sample quantities, required preservatives, and maximum holding times are listed in Tables 3.7, 3.8 and 3.9.

3.3.2 Chain of Custody

Collecting data of known quality begins at the point of sample collection. Legally defensible data are generated by adhering to proven evidentiary procedures. These procedures are outlined in the following sections and must be followed to preserve and ensure the integrity of all samples from the time of collection through analysis. Sample custody records must be maintained both in the field and in the subcontractor laboratory. A sample is considered to be in someone's custody if it is in his or her physical possession or view, locked up, or kept in a secured and restricted area. Until shipment, the sample team leader is responsible for the sample in custody. COC records document sample collection and shipment to the laboratory. A COC form will be completed for each sampling event. The original copy will be provided to the laboratory with the sample shipping cooler, and a copy will be retained in the field documentation files. The COC form will identify the contents of each shipment and maintain the custodial integrity of the samples. All COC forms will be signed and dated by the responsible sampling team personnel. The "relinquished by" box will be signed by the responsible sampling team personnel, and the date, time, and air bill number will be noted on the COC form. The laboratory will return an electronic executed copy of the COC with the electronic report.

The shipping coolers containing the samples will be sealed with a custody seal any time the coolers are not in an individual's possession or view before shipping. All custody seals will be signed and dated by the responsible sampling team personnel.

At a minimum, the COC form must contain the following information:

- Site name
- Project manager, project chemist, and data manager's names, telephone numbers, and fax numbers
- Unique sample identification
- Date and time of sample collection
- Source of sample, including name, location, sample type, and matrix
- Number of containers
- Designation of matrix spike (MS)/matrix spike duplicate (MSD)

- Preservative used
- Analyses required
- Name of sampler
- Custody transfer signatures and dates and times of sample transfer from the field to transporters and to the laboratories
- Turnaround time
- Laboratory name, address, and contact information
- Any special instructions

Erroneous entries on COC records will be corrected by drawing a single line through the error and entering the corrected information. The person performing the correction will date and initial each change made on the COC form.

3.3.3 Laboratory Responsibilities

When the samples reach the laboratory, they will be checked against information on the COC form for anomalies. The condition, temperature, and appropriate preservation of samples will be checked and documented on the COC form. Checking an aliquot of the sample using pH paper is an acceptable procedure (precautions must be taken to avoid contamination of the sample). Samples requiring VOC analyses should not undergo preservation verification until the time of analysis. The occurrence of any anomalies in the received samples and their resolution will be documented in laboratory records. All sample information will then be entered into a tracking system and assigned unique analytical sample identifiers. A copy of this information will be reviewed by the laboratory for accuracy.

Sample holding time tracking begins with the collection of samples and continues until the analysis is complete. **Samples not analyzed in accordance with the requirements in this QAPP will be resampled and analyzed at no additional cost to APS.** Laboratory analyses will be documented on the COC form. Procedures ensuring internal laboratory COC will also be implemented and documented by the laboratory. Sample custody will be maintained using an internal custody system that requires samples to be kept in a secured and restricted area when not in use and to be checked out and checked back in by the analysts who use the samples. Internal custody records must be maintained by the laboratory as part of the documentation file for each sample. Specific instructions concerning the analysis specified for each sample will be communicated to the analysts. Analytical batches will be created, and laboratory QC samples will be introduced into each batch.

While samples are stored in the laboratory, they will be stored in limited-access, temperature-controlled areas. Refrigerators, coolers, and freezers will be monitored for temperature 7 days a week. Acceptance criterion for the temperatures of the refrigerators and coolers is 4±2°C. Acceptance criterion for the temperatures of the freezers will be less than 0°C. The cold storage areas will be monitored by thermometers that have been calibrated with a National Institute of Standards and Technology-traceable thermometer. As indicated by the findings of the calibration, correction factors will be applied to each thermometer. Records that include acceptance criteria will be maintained. Samples for VOC determination will be stored separately from other samples, standards, and sample extracts. Samples will be stored after analysis until disposed of in accordance with applicable local, state, and federal regulations. Disposal records will be maintained by the laboratory.

Along with sample receipt documentation, the following information will be documented on sample receipt forms by the sample custodian:

- Date samples received
- Field sample identification number
- Laboratory sample identification number
- Analytical tests requested for the sample batch
- Sample matrix

- Number of samples in the batch
- Container description
- Verification of sample preservation

The laboratory should have a system and procedures for maintaining sample control and custody when the samples are received.

3.3.4 Sample Packaging and Transport

3.3.4.1 Sample Container Preparation

- Labels will be secured to each container with clear tape, if not previously done. For pre-weighed soil VOC containers, containers will be placed in baggies, and labels will be placed on the baggies.
- Container lids will be checked for tightness, and if the container is not full, the outside of the container will be marked with indelible ink at the sample volume level.
- Sample bottles will be double-bagged in heavy-duty plastic, when appropriate. Glass containers will be covered with bubble wrap to prevent breakage.

3.3.4.2 Shipping Cooler Preparation

- All previous labels used on the shipping cooler will be removed.
- Drain plugs will be sealed with fiberglass tape (outside and inside) to prevent melting ice from leaking.
- A cushioning layer of packing material such as bubble wrap will be placed at the bottom of the cooler (approximately 1-inch thick) to prevent breakage during shipment, when appropriate.
- Cooler will be lined with a large plastic bag (same type used to contain samples), when appropriate.
- All ice will be double-bagged in a resealable plastic bag, when appropriate.

3.3.4.3 Placing Samples in the Cooler

- The COC form will be placed in a resealable plastic bag.
- Samples will be placed in an upright position in the cooler.
- Ice will be placed on top of, and between, samples. Ideally, ice will be double-bagged in resealable plastic bags to minimize leakage of ice melt into the cooler.
- Void space between samples will be filled with packing material.

3.3.4.4 Closing the Cooler

- The cooler lid will be taped with strapping tape, encircling the cooler several times, when appropriate.
- Custody seals may also be affixed to the cooler lid to ensure the integrity of the samples.

3.3.4.5 Transport

- Sample coolers will be transported to the laboratory (an overnight courier may be used) immediately after sample collection, as required and as logistics allow. Intermediate stops will be avoided with the exception of emergencies only, in which case, the situation will be noted in the field notebooks.
- If prudent, the laboratory will be notified that samples are being shipped.

3.4 Measurement Performance Criteria

The RL is the lowest concentration of a specific analyte that can be reasonably achieved within the specified limits of precision and accuracy during routine laboratory operations. Analytes that have a concentration greater than or equal to its respective RL will be reported. The RLs for the laboratories are presented in Tables 3.4 through 3.6. If facility permit limits are lower than the RL provided in the tables,

actual laboratory detection and RLs will be used that are capable of demonstrating compliance with the permit.

Soil samples collected for VOC analyses (EPA Method 8260B) will be field-preserved with methanol, or subcored using an EnCore or equivalent sampler, and preserved with methanol in the laboratory within 48 hours of collection (EPA Method 5035). The methanol preservation requires a 50-times dilution before sample analysis, resulting in elevated RLs for all target analytes. The RLs presented in Table 3.4 reflect the elevated values.

3.5 Field Quality Control Sampling

QC samples will be collected in the field to evaluate sample collection and laboratory precision (field duplicates), the effectiveness of sampling equipment decontamination (equipment blanks and field blanks), and sample shipping procedures (trip blanks and temperature blanks). A general description of the required QC samples is presented below along with recommended minimum sampling frequencies. The sampling plan should be flexible enough to allow the collection of field QC samples at lesser or greater frequencies based on the data collected over time. For example, if equipment blank results have repeatedly demonstrated effectiveness of the equipment decontamination procedure, relaxing the frequency of equipment blank collection will not likely compromise data quality. Likewise, unnecessary expense can be avoided by minimizing the frequency of field duplicates when data from an ongoing water monitoring program have continually indicated non-detection of the constituents of concern. Specific field QC sampling requirements, including frequency of collection, will be addressed in site-specific work plans or RAPs.

- **Field Blanks**. Field blanks are samples containing analyte-free water and are collected and processed in the same manner as equivalent environmental samples (that is, clean water is poured into a sample container in the same physical location where the environmental sample is collected and is subsequently handled, processed, and analyzed exactly as an equivalent environmental sample). The field blank is used to identify contamination resulting from field sample collection techniques. Sampling procedures that do not involve the likelihood of contamination from field conditions do not require the collection of field blanks. The source of water used for field and equipment blanks will be identified in the field sampling logs or field notes. Field blanks will be designated as “FB” followed by the sample date (for example, FB081799), or per designation stated in site-specific field sampling plan, and analyzed for the identical parameter set as the field samples.
- **Equipment Blanks.** At a minimum, one equipment blank will be collected before sampling during each sampling event where decontamination of sampling equipment is required. Ideally, two equipment blanks (one collected before sampling and one collected at the completion of sampling) will be collected during each sampling event where decontamination of sampling equipment is required. (Note: A specific case where decontamination may not be required would include groundwater sampling with dedicated or disposable tubing.) The equipment blank samples will be collected by pouring distilled or deionized water through sampling equipment, such as a split-spoon sampler or a hand sampler containing brass sleeve inserts, or a submersible groundwater sampling pump, into the appropriate sample bottles. The equipment blank will be designated as “EB” followed by the sample date (for example, EB081799), or per designation stated in site-specific field sampling plan, and analyzed for the identical parameter set as the field samples.
- **Trip Blanks.** Trip blanks will be provided by the fixed-base laboratory and will accompany each sample cooler containing VOCs (EPA Method 8021B, 601/602 and 8260B) and total petroleum hydrocarbon (TPH) as gasoline (EPA Method 8015D and Arizona Department of Health Services [ADHS] 8015 AZR1 Appendix 1). Trip blanks will be prepared in a clean environment and will consist of organic-free water submitted during groundwater and surface water sampling; and purge and trap grade methanol submitted during soil sampling. The trip blanks will be transported to the sampling site, handled as an environmental sample, and returned to the laboratory for analysis. Trip blanks will be analyzed for the same volatile constituents as requested for the field samples.
- **Temperature Blanks.** Temperature blanks will be provided by the laboratory or made in the field by the field personnel and will accompany each sample cooler. The temperature blanks will be used to evaluate the temperature of the samples that were stored in the cooler between sample collection

and delivery to the laboratory. The temperature of the blanks will be measured upon receipt of the sample cooler at the laboratory and the temperature will be noted on the COC form. If temperature blanks are not used, the laboratory may measure the temperature of the sample bottles upon receipt of the samples.

- **Field Duplicates.** Blind field duplicate samples will be collected at a minimum frequency of 1 duplicate sample per sampling event or a minimum of 1 per 10 samples (10 percent) to assess field precision unless otherwise specified in the site-specific work plan or RAP. The blind duplicate will be collected from a sample point most likely to contain elevated concentrations of the constituents of concern. Duplicate subsurface soil samples will be collected from a second brass sleeve insert within the split-spoon sampler. Duplicate surface soil samples will be collected from a location adjacent to the original sample location. Duplicate groundwater samples will be collected at the same time the primary sample is collected. Field duplicate samples will be analyzed for parameters of concern specified in the site-specific work plan or RAP. Specific labeling designation will be outlined in the site-specific work plan or RAP. Field duplicates may be omitted depending on the final use of the data if approved by the project manager.
- **MS/MSD Samples.** MS/MSD samples, or enough sample volume to perform MS/MSD analyses, will be collected to evaluate the effect of the sample matrix on the analytical method. The MS/MSD samples will be collected at the same time as the primary sample and should be collected from a sampling location not likely to contain elevated concentrations of the constituents of concern. Equipment, field, and trip blanks must not be assigned for MS/MSD analysis. Additional sample volume will be collected for MS/MSD analysis from an APS field sample location during confirmation sampling, compliance sampling, or sampling events for site closure. MS/MSD samples will be collected at a frequency of 1 pair per sample batch or at least 1 per 20 samples during each sampling events. In addition, MS/MSD samples may also be collected during routine sampling events on an as-needed basis. MS/MSD samples will be analyzed for parameters of concern specified in the site-specific work plan or RAP. For smaller projects, using the laboratory's MS/MSD may be appropriate.

4. Instrument Calibration and Frequency

4.1 Field Instrument Calibration

Field equipment will be calibrated before the start of work and at the end of the sampling day. Any instrument drift from before calibration will be recorded in the field notebook. Calibration will be performed according to procedures and schedules outlined in the particular instrument's operations manual and information in the site-specific closure plan or equivalent document. Calibrated equipment will be uniquely identified by using either the manufacturer's serial number or other types of identification. A label with the identification number and the date when the next calibration is due will be placed on the equipment. If this is not possible, records traceable to the equipment (e.g., showing the equipment identification) will be readily available for reference. In addition, the results of calibrations and records of repairs will be recorded in the field notebook. Scheduled periodic calibration of testing equipment does not relieve field personnel of the responsibility of using properly functioning equipment. If an individual suspects an equipment malfunction, the equipment will be removed from service, tagged so that it is not inadvertently used, and the appropriate personnel will be notified so that a recalibration can be performed or substitute equipment can be obtained.

Equipment that fails calibration or becomes inoperable during use will be removed from service and either segregated to prevent inadvertent use or tagged to indicate that it is out of calibration. Such equipment will be repaired and satisfactorily recalibrated. Equipment that cannot be repaired will be replaced.

4.2 Laboratory Instrument Calibration

Qualified personnel will appropriately calibrate laboratory instruments before sample analysis. The requirements specified in each analytical method will be followed. Only certified standards of known purity may be used for calibration. Calibration will be verified at specified intervals throughout the analysis. Calibration records will become part of the analytical documentation. The frequency and acceptance criteria for calibration are specified for each instrument type and analytical method in Tables 4.1 through 4.16. When multipoint calibration is specified, the concentrations of the calibration standards should bracket those expected in the samples. Samples must be diluted, if necessary, to bring analyte responses within the calibration range. The laboratory may report only those data that result from quantitation within the demonstrated working calibration range. Quantitation based on extrapolation is not acceptable.

5. Instrument and Equipment Testing, Inspection, and Maintenance

The field instruments that will be used at each site will be identified in the site-specific work plan or RAP. The document should include procedures for inspecting and testing these instruments. The procedures should also discuss preventive and corrective maintenance to ensure the instruments' availability and performance at all times.

The contracted laboratories must have procedures in place to ensure that all analytical instrumentation is maintained according to the manufacturer's recommendations. Critical spare parts must be available onsite to minimize downtime. All maintenance activities must be documented in a maintenance logbook.

6. Requirements for Supplies and Consumables

Standard materials and reagents must be of known high purity and traceable to an approved source. Pure standards must not exceed the manufacturer's expiration date and must be stored according to the manufacturer's recommendations or method requirements. Each laboratory must assign an expiration date to each solution prepared from the pure standards and the solutions must be used within the expiration date. All other supplies and consumables must be inspected before use to ensure they meet purity standards based on their intended use. The laboratory's inventory and storage system should ensure their use within the manufacturer's expiration date and storage under proper conditions.

The designated contracted laboratory project manager will have the responsibility for meeting the requirements in this section.

7. Analytical Data Quality Assessment

This section presents the established procedures and criteria for assuring data quality and consistency for laboratory QA/QC, laboratory reporting, data evaluation, and database management. This is of particular importance when using more than one analytical laboratory. The analytical DQOs discussed in the following sections will provide guidance for the consultant project manager, the consultant QA officer, and the analytical laboratory personnel.

7.1 Analytical Data Quality Objectives

Analytical DQOs, at a minimum, are used as the basis for data quality assessment. The DQOs are precision, accuracy, representativeness, completeness, and comparability. These qualitative and quantitative objectives ensure the data generated during these investigations are scientifically valid, defensible, and meet the needs of each project. As discussed in *EPA Guidance for the Data Quality Objectives Process, EPA QA/G-4* (EPA, 2006c) and *EPA Requirements for Quality Assurance Project Plans, EPA QA/G-5* (EPA, 2001), the DQOs depend on the intended data usage and are based on the premise that the ultimate use(s) of a particular data set should determine the quantity and quality of these data. A summary of the APS program-specific analytical DQOs for soil, aqueous, air, and soil vapor matrixes are presented in Tables 3.4, 3.5, and 3.6. The precision and accuracy limits for spiked target analytes are to be applied to both laboratory control samples (LCSs) and MSs, unless otherwise specified in the tables.

Precision is a measure of the reproducibility of concentrations reported for duplicate analyses, calculated by determining the relative percent difference (RPD) between the two values. Precision will be reviewed for the following analysis: LCS/laboratory control sample duplicate (LCSD), MS/MSD, laboratory and field duplicate (soil or groundwater samples collected from the same location). The proposed precision objectives for field duplicates are specified in Section 7.4.2.4. Precision objectives for LCS/LCSD and MS/MSD are presented in Tables 3.4 through 3.6.

RPD is calculated as follows:

$$RPD = \frac{D_1 - D_2}{(D_1 + D_2)/2} \cdot 100$$

Where:

D_1 = MS (or LCS) sample concentration
D_2 = MSD (or LCSD) sample concentration

When the RPD between duplicate sample results is calculated, D_1 and D_2 represent the original and duplicate sample concentrations.

Accuracy is the degree to which the measurement data approaches the “true” value for each analyte. For soil samples, accuracy is assessed by calculating the percent recovery (%R) for a sample spiked with the analyte of concern (for example, LCS, surrogates, matrix spike). For soil, water, soil gas, and air samples, the accuracy objectives are in Tables 3.4 through 3.6.

%R is calculated as follows:

$$\%R = (Q_d / Q_a) \cdot 100$$

Where:

Q_d = Spiked sample concentration minus unspiked sample concentration
Q_a = True value of the spike

Representativeness refers to the comparability of the sample collection procedures to those delineated in the sampling and analysis plan (SAP) or RAP and the degree to which the analytical data represent the subsurface contaminant concentrations. Representativeness will be accomplished by adhering to consistent field sampling and analytical procedures for soil samples.

Completeness is defined as the ratio of usable (that is, non-rejected) laboratory measurements to the total number of planned measurements for this investigation.

It is calculated as follows:

$$\text{Percent Completeness} = \frac{\text{Number of Usable Results (that is, non-rejected results)}}{\text{Total Number of Possible Results}} \times 100$$

Comparability is an evaluation of the relative consistency of the laboratory measurement data. Because comparability cannot be measured quantitatively, professional judgment is relied upon. Internal comparability will be achieved for soil by adhering to consistent sample collection procedures and analyses methods throughout each investigation.

7.2 Laboratory Quality Assurance/Quality Control Procedures

QA/QC procedures will be implemented using methods that ensure each project's data needs for precision, accuracy, representativeness, completeness, and comparability are met. Based on these QA/QC objectives, sample analyses will be completed in accordance with EPA-approved methodologies. Laboratory variances to the QA/QC procedures outlined in this QAPP are included in Appendix E.

A preparation batch is a group of samples (not to exceed 20 samples) similar in composition (matrix) and are extracted or digested at the same time with the same lot of reagents. The laboratory QC samples will not count as a part of the 20 samples but will be prepared with each preparation batch. The QC samples will also be employed for samples that do not need separate extraction or digestion, such as VOC analysis by purge and trap.

The laboratory will use QC samples to assess the validity of the analytical results of field samples following the method requirements. The laboratory QC samples will include method blank, LCS, surrogate spikes, MS/MSD (or laboratory duplicate), and all method-specific QC samples. When the acceptance criteria established for the QC samples are not met, the affected sample results are qualified using the Arizona Laboratory Data Qualifiers in Appendix B. The following paragraphs describe the types of laboratory QC samples and/or tests that should be performed to assess the validity of the analytical results of the field samples:

- A method blank is an analyte-free matrix similar to the field samples (solid or liquid), in which all of the reagents are added in the same proportion or concentration as used to process the field samples. Method blank analysis is performed to assess possible laboratory contamination per analytical or preparatory batch, for each method of analysis and at a frequency of at least 1 per 20 samples analyzed. If concentrations of constituents of concern are found to be greater than the RL in the method blank, CA will be performed to identify and eliminate the source of contamination before proceeding with the analyses. The analytical data will not be corrected based on the presence of an analyte in the method blank, and CA is not necessary in the event that the analyte is detected in the method blank but not in the sample. If an analyte continues to be found in the method blank and in the sample, and CAs are not implemented, the affected result will be flagged with the appropriate qualifier.
- The LCS or blank spikes are analyte-free samples, either water or Ottawa sand, which are spiked with a known concentration of specific analytes. The spiking standard must be from a source independent of that used for calibration standards. The LCS is used to evaluate each preparation batch and assess the statistical control of the method at a frequency of at least 1 per 20 samples. CA will be implemented in the event that the LCS is found to be outside the recovery acceptance limits.

- Surrogate spike analysis is used to evaluate the efficiency of the analytical procedure in recovering the true amount of a known compound. The surrogates are organic compounds similar to the target analyte(s) in chemical composition and behavior in the analytical process but do not normally occur in environmental samples. Surrogate spikes are added to all samples, including QC samples. Percent recovery values are provided along with the sample results. CA will be implemented in the event that the surrogate recovery is found to be outside acceptable limits, and the sample will be prepared and analyzed again. If the surrogate continues to be found outside the acceptable QC limits, the affected result will be flagged with the appropriate qualifier.
- MS/MSD samples are used to evaluate the effect of the sample matrix on the analytical method. The spiking standard must be from a source independent of that used for calibration standards. MS/MSD samples are analyzed at a frequency of 1 pair per sample batch or at least 1 pair per 20 samples. The MS/MSD sample analysis will be performed on an APS project sample. Samples designated as field blanks, equipment blanks, and trip blanks must not be used for MS/MSD analyses. The MS/MSD is intended to evaluate the matrix effect on the instrument, not to control the analytical process. If the MS/ MSD is found to be outside the acceptable QC limits, the affected result will be flagged with the appropriate qualifier. Tables 7.1 and 7.2 present the flagging conventions for organic and inorganic analytical methods, respectively.
- A sample duplicate selected by the laboratory is called a laboratory sample duplicate. It is subjected to the same preparation and analytical procedures as the native sample. The RPD between the results of the original sample and laboratory sample duplicate measures the precision of sample results. The data collected could also yield information regarding the homogeneity of the sample matrix. A laboratory duplicate will be analyzed with each analytical batch that does not contain an MS/MSD or LCS/LCSD, or when the analytical method requires it.
- Some methods, such as those for VOCs, require the use of internal standards to compensate for losses during injection or purging. Internal standards are compounds that have similar properties as the analytes of interest but are not expected to occur naturally in the samples. A measured amount of the internal standard is added to the standards, samples, and QC samples following preparation. When the internal standard results are outside the control limits, CA must be taken, including sample re-extraction and reanalysis, if appropriate.
- Retention time windows for gas chromatography (GC) and ion chromatography (IC) analyses must be established by replicate injections of the calibration standard over multiple days. The absolute retention time of the calibration verification standard at the start of each analytical sequence will be used as the centerline of the window. For a target analyte to be reported as positive, its elution time must be within the retention time window.
- The interference check samples are used in inductively coupled plasma (ICP) analyses to verify background and inter-element correction factors. They consist of two solutions: A and B. Solution A contains the interfering analytes, and Solution B contains both the analytes of interest and the interfering analytes. Both solutions are analyzed at the beginning of each analytical sequence. When the interference check samples results are outside the control limits, CA must be taken, including sample reanalysis, if appropriate.
- The dilution test in metals analysis consists of analyzing a 1:10 dilution of a sample. The results of the 1:10 dilution are compared with the original sample results. When the original sample concentration is sufficiently high (at least 50 times the method detection limit [MDL]) for ICP, the result of the 1:10 dilution should agree within ±10 percent of the original sample result. If this criterion is not met, chemical or physical interferences may be indicated for that particular sample matrix.
- When the metal analyte concentrations are not sufficiently high to perform the dilution test, or when the dilution test results are not acceptable, a post-digestion spike analysis (also called recovery test) should be performed. It consists of adding an analyte spike to an aliquot of the prepared sample. The spike addition should result in 2 to 5 times the original sample concentration, or 10 to 20 times the MDL. If the spike is not recovered within the acceptable range, a matrix effect should be suspected.

7.3 Quality Assurance/Quality Control Data Packages

Data package documentation will follow the requirements specified by the APS laboratory contract and the site-specific needs. Three levels of data deliverables are detailed below. The level of deliverables required for a specific project will depend on the extent of the data evaluation effort specified for the project. The deliverables will consist primarily of summary forms in EPA Contract Laboratory Program-like format containing the information specified for each level. In addition, level IV deliverables will also include all raw data. Regardless of the level of deliverables requested, the laboratory must maintain all required documentation associated with each data acquisition to allow re-creation of the sample preparation and analysis and submittal of more extensive deliverables upon request for specific sample delivery groups. In addition to hard copy, electronic deliverables will be expected for each level of documentation.

7.3.1 Level II Data Deliverables

Examples of use of level II data documentation would be for data generated by the mobile laboratory, and analytical data generated by a fixed-base laboratory for continued surface and groundwater monitoring. Data for these examples are usually used for screening or for recurrent monitoring multiple times each year. Level II documentation will include the following information:

- Case narrative – the case narrative will address any QC deficiencies associated with the data set in the associated report and provide a cross reference field and laboratory sample identification
- Analytical results for each parameter requested
- Laboratory-established precision and accuracy limits
- Dates of sample collection, preparation, analysis
- Method blank (matrix-specific) results
- LCS recoveries
- MS/MSD recoveries (or laboratory duplicate results), and calculated RPDs
- Surrogate recoveries

7.3.2 Level III Data Deliverables

Level III data documentation will be requested according to site-specific needs and mostly applies to data collected during confirmation sampling, compliance sampling, and closure sampling. Data documentation for level III reports will include the following information:

- Case narrative – the case narrative will address any QC deficiencies associated with the data set in the associated report and provide a cross reference field and laboratory sample identification
- Analytical results for each parameter requested
- Laboratory-established precision and accuracy limits
- Dates of sample collection, preparation, analysis
- Extraction logs, including methanol preservation logs (sample weight/extraction volume)
- Instrument run logs
- Method blank (matrix-specific) results
- Calibration blank results for inorganic analyses
- LCS recoveries
- MS/MSD recoveries and calculated RPDs (or results and percent differences for laboratory duplicates); provide concentrations of all spike solutions

- Serial dilution results and percent differences for inorganic compounds (if applicable)
- Analytical spike recoveries for graphite furnace atomic absorption
- Surrogate recoveries
- Initial and continuing calibration data summaries, including response factors, average response factors, percent relative standard deviations (or regression equations and correlation coefficients); response factors, percent recoveries, percent differences or percent drifts, for continuing calibration
- Interference check standard recoveries for ICP
- Method of standard addition results (if applicable)
- Tuning summary, including ion abundances and acceptance criteria (if applicable)
- Internal standard summary showing areas and retention times, or recoveries (if applicable)
- Retention times and windows for chromatography methods
- Pesticide breakdown products for pesticides analysis by GC
- Confirmation results and RPDs for chromatography methods
- Analytical sequence log, including analysis dates and times
- All other method-specific QCs

7.3.3 Level IV Data Deliverables

Level IV deliverables will enable full data validation when required by the project. The deliverables will include all items listed under level III and the raw data. The laboratory will be contacted in advance when level IV deliverables are required for a subset of data. Data documentation for level IV reports will include the following information:

- Raw data
  - Organic compounds—chromatograms and quantitation reports for all standards, samples, and QC samples; sample and reference spectra for gas chromatography/mass spectrometry (GC/MS)
  - Inorganic compounds (metals or wet chemistry)—instrument printouts for standards, samples, and QC samples, and analytical worksheets where printouts are not available
- MDL studies for all analytes
- Before and after blowups of all manual integrations that have been performed

7.4 Data Evaluation

The effectiveness of the implementation of the QAPP and the QA/QC procedures will be assessed at various times during each project to ensure that the data needs of each project continue to be met. This evaluation will include conducting data quality assessments on the data as they are received. If the data fall outside the parameters of the DQOs, additional assessments and CAs will be taken. The additional assessments may include a review of the sampling method, sample handling and storage methods, a laboratory audit, a review of the laboratory management system, and/or a performance evaluation.

7.4.1 Data Quality Assessment by the Laboratory

The laboratory personnel should conduct an initial quality assessment of the data to ensure that the analytical DQOs are achieved. The assessment will include ensuring that the sample preparation and analyses were performed within the specified holding times for each analysis, identifying any source of contamination, and performing a review for both internal laboratory QC and the APS program DQOs. The laboratory personnel will note any QC deficiencies in the final laboratory report.

Hold time criteria begin at the time of sample collection. To remain in compliance with each analytical method, the sample extraction or preparation process must be completed as described by each analytical method before any necessary extract cleanup or volume reduction procedures and must be completed within the specified timeframe as presented in Tables 3.9, 3.10, and 3.11. The analysis is considered finished when all analytical runs, including dilutions and any required reanalyses, are completed.

7.4.2 Third-party Data Quality Evaluation

Data evaluation will be performed by the QA Officer, a qualified chemist, or data validation consultant as prescribed for each site-specific program. The evaluation will consist of a review of the supplied data documentation to determine whether the data satisfy the project's DQOs and the data use requirements.

The data evaluation strategies can range from a verification of the batch-related QC performance using summary reports to a validation of the complete analytical run using raw data. The level of effort for data evaluation will be a function of the project's DQOs, familiarity with the laboratory's data quality, analytical techniques employed, nature of the contamination and sample matrix, historical information about the investigation site, and budget and time constraints. For example, definitive data will require a much higher level of effort than screening data. A higher level of effort is usually required when using a laboratory that has not had any experience with the project, or when a site with no historical information is being investigated. Data generated using analytical techniques that require a significant amount of analyst interpretation (such as gas and liquid chromatographies) will require more intense evaluation than those generated using more specific instrumentation (such as ICP and GC/MS). This applies to samples that could have significantly high interfering background. A review of batch-related QC alone would be inadequate in identifying data quality problems when measuring low-level PAHs in samples with high background petroleum fuel contamination.

Three levels of data evaluation are presented in this QAPP. These levels collectively encompass the checks recommended by ADEQ in its data verification and data validation checklists found at its website and included in Appendix C. The data evaluation strategy can be limited to one particular level or can be a combination of two or more levels for pre-determined subsets of data. Full data validation can be focused on data subsets expected to be most complicated or problematic. The strategy should be flexible enough to allow switching to a lower or higher level of effort based on the findings from the initial evaluation. The data evaluation strategy for each project must be addressed in the site-specific QAPP or equivalent document.

The data evaluation at each level will be limited to the data provided at the corresponding level of deliverables. The data will be reviewed and evaluated according to the criteria established in this QAPP and summarized in Tables 4.1 through 4.16. In the case of parameters for which no criteria have been established in this QAPP, the laboratory's control limits will be used.

Issues requiring resolution will be brought to the laboratory project manager's attention by the data QA Manager or designee.

Data qualification will be documented in the validation reports and in the database for access by the data users. Professional judgment assessments will be clearly documented in the data validation reports.

7.4.2.1 Level II

Only batch-related QC will be evaluated at this level. Instrument performance will be assumed to be in-control or out-of-control in a manner that is consistent with the batch-related QC performance.

The following will be evaluated using the summary reports in the data package:

- Case narrative
- Holding time
- Method blank results
- Sample results and RLs

- Field duplicate results
- MS/MSD recoveries and RPDs
- Laboratory duplicate percent differences
- LCS recoveries
- Surrogate recoveries

7.4.2.2 Level III

Data evaluation at this level will include batch-related QC, as well as calibration and other instrument QC performance.

The following will be evaluated using the summary reports in the data package:

- Case narrative
- Holding time
- Method blank results
- Calibration blank results for inorganic analyses
- Sample results and RLs
- Field duplicate results
- MS/MSD recoveries and RPDs (or results and percent differences for laboratory duplicates)
- LCS recoveries
- Serial dilution results and percent differences for inorganic compounds (if applicable)
- Analytical spike recoveries for graphite furnace atomic absorption
- Surrogate recoveries
- Initial and continuing calibration results
- Interference check standard recoveries for ICP
- Method of standard addition results (if applicable)
- Tuning results (GC/MS only)
- Internal standard results (if applicable)
- Retention times and windows for chromatography methods
- Pesticide breakdown products for pesticides analysis by GC
- Confirmation results and RPDs for chromatography methods.
- Analytical sequence log, including analysis dates and times
- All other method-specific QCs

7.4.2.3 Level IV

This level validates the performance of the analytical methodology specific to the samples analyzed to the level of the raw data.

All the items evaluated under level III will be evaluated. The accuracy of a representative amount of raw data, including sample identification and quantitation, will be verified.

7.4.2.4 Primary and Field Duplicate Comparisons

The validator will compare primary and field duplicate sample analysis results to evaluate whether the precision criteria for each analyte have been achieved. This evaluation will be accomplished by comparing the results with the criteria listed below. Data qualifier codes will be assigned based on the results of this comparison. If the primary and field duplicate results do not meet the applicable criteria listed below, the results for both the primary and field duplicate samples for that analyte will be qualified as estimated (UJ or J).

- A control limit of ±20 percent for water, ±35 percent for soil, and ±40 percent for air for the RPD should be used when both the sample and field duplicate results are greater than, or equal to, 5 times the RL.

- A control limit of ±RL for water and ±2 times the RL for soil should be used when at least one of the results is less than 5 times the RL.

7.4.2.5 Evaluations of Detections in Blanks

When an analyte has been detected in a blank sample at a concentration above the RLs (or above the MDL but below the RL), the associated sample data must be assessed to evaluate the impact of the blank contamination. Blank contamination will be evaluated using the 5 times rule or the 10 times rule. The 5 times rule is applied to blank samples that are affected by compounds that are not considered to be common laboratory contaminants. The 10 times rule is applied to the following compounds recognized by EPA as common laboratory contaminants: acetone, 2-butanone, methylene chloride, and each of the common phthalate contaminants. The 10 times rule may also be applied to additional contaminants that are shown to be specific to a particular laboratory. In cases where a field sample requires dilution, the 5 times or 10 times blank detection rule will be evaluated against the field sample concentration before adjustment for dilution. Values determined to be less than the blank concentration will be qualified as "U/Not Detected."

7.4.3 Split Sampling as an Acceptable Alternative to Performing Data Validation

In the absence of performing data validation (which can be cost prohibitive for small numbers of samples analyzed), a percentage of split samples can be collected and analyzed at another laboratory to confirm accuracy. However, this method should be approved by ADEQ in advance to ensure that project requirements can still be achieved. The decision to allow split sampling as an alternative to data validation must be made on a case-by-case basis. The Agency stresses that analyzing split samples should not be viewed as an equivalent substitution for performing data validation. There are, however, conceivably various sites in which the DQOs would not be seriously compromised if split samples were analyzed either in lieu of, or in conjunction with, performing data validation. As the number of samples collected increases, the rationale for analyzing split samples as an alternative to performing data validation must also become more compelling. With prior approval from ADEQ, the QAPP must document the number of samples to be collected and the percentage of split samples anticipated for the project. State the rationale if the percentage of split samples recommended differs from the number of samples collected. Recommended percentages are as follows:

- 1 to 10 samples collected (100% splits)
- 11 to 20 samples collected (50% splits)
- 21 to 35 samples collected (35% splits)
- 36 to 50 samples collected (25% splits)

7.4.4 Corrective Action

Problems identified by the analytical laboratory or data evaluator requiring CA in the laboratory will be documented in a CA report. If a CA form is necessary, a laboratory-signed CA will be placed in the associated analytical data package and the validator will document the CA issue in the final validation report. Depending on the significance of the problem, CAs may include reanalysis of the affected sample, re-sampling and analysis, or a change in procedure or analytical method.

7.4.5 Data Management

Data from all phases of the data collection effort will be stored in a relational project repository database for each site. The database structure must accommodate all matrices, laboratory data qualifiers, and data validation qualifiers. The project database structure established for each site should adequately meet the minimum ADEQ requirements.

Field measurements are collected and catalogued for loading into the database. The analytical data will be submitted as electronic data deliverables and delivered to the data manager in the agreed-upon format. The hard copy and electronic data are entered into their respective physical and electronic placeholders and are tracked, imported, and catalogued, as appropriate. The electronic data are checked

for completeness and consistency with the hard copy. Manual or semi-automated data validation is performed using hard copy and electronic data, and all flags and findings are recorded electronically. Data may be exported to one or more exterior applications for generating summary statistics, required electronic deliverables, or reports.

8. Assessments and Response Actions

Assessment activities consist of laboratory technical systems audits and data quality audits.

Laboratory audits may be performed to evaluate a laboratory before contract award or to provide surveillance once the contract has been awarded. In pre-award audits, the laboratory's capabilities will be evaluated against the project's requirements. Surveillance audits will focus on the laboratory's continued compliance with project requirements. These audits will be unannounced and will be performed at random frequencies, depending on the laboratory's performance.

Data quality audits will take the form of the data quality evaluation discussed in Section 7.4. A surveillance audit of the laboratory may be performed as a consequence of the data quality audit.

The consultant QA officer or their designee will be responsible for performing the assessments and initiating any required CA. They will have the authority to order work stoppage, with the concurrence of the APS remedial project manager, if necessary.

9. Reports to Management

The types of reports that will be submitted to agencies and/or regulatory authorities will vary with each site. These reports will be a function of the environmental or health-based effort being undertaken at the site. They may include regularly scheduled surface and groundwater monitoring reports and periodic technical status reports summarizing project activities and any problems encountered. Significant problems identified during laboratory and data quality audits and the associated actions to remedy the problem will also be reported to management. Specific reports will be identified in the site-specific work plan, RAP, or equivalent document. The following information will be included, as applicable:

- Preparer, recipients, and frequency of reports
- Content and distribution of reports
- Project status
- Results of performance evaluations and audits
- Results of data quality assessments
- Documentation of significant QA problems

10. Reconciliation with User Requirements

Reconciliation of the environmental data with the project objectives will be addressed in the site-specific closure plan or equivalent document. Use of statistical approaches may be discussed if applicable. The documentation should also include how limitations on the use of the data will be communicated to the data users.

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Tables

Table 2.1. 2007 Soil Remediation Levels

APS Quality Assurance Project Plan

Analyte	Residential SRLs (mg/kg)	Non-Residential SRLs (mg/kg)	Minimum GPL (mg/kg)
Volatile Organic Compounds			
1,1,1,2-Tetrachloroethane	32	73	NE
1,1,1-Trichloroethane	1,200	1,200	1.0
1,1,2,2-Tetrachloroethane	4.2	9.3	NE
1,1,2-Trichloroethane	7.4	16	NE
1,1-Dichloroethane	510	1,700	NE
1,1-Dichloroethene	120	410	0.81
1,2,3-Trichloropropane	0.05	0.11	NE
1,2,4-Trichlorobenzene	62	220	NE
1,2,4-Trimethylbenzene	52	170	NE
1,2-Dibromo-3-chloropropane	1.5	6.5	0.015
1,2-Dibromoethane (EDB)	0.29	0.63	0.0033
1,2-Dichlorobenzene	600	600	72
1,2-Dichloroethane	2.8	6.0	0.21
1,2-Dichloropropane	3.4	7.4	0.28
1,3,5-Trimethylbenzene	21	70	NE
1,3-Dichlorobenzene	530	600	NE
1,3-Dichloropropane	100	360	NE
1,4-Dichlorobenzene	35	79	9.3
2-Butanone	23,000	34,000	NE
2-Chlorotoluene	160	510	NE
4-Methyl-2-pentanone	5,300	17,000	NE
Acetone	14,000	54,000	NE
Acrolein	0.10	0.34	NE
Acrylonitrile	2.1	4.9	NE
Benzene	0.65	1.4	0.71
Bromobenzene	28	92	NE
Bromodichloromethane	8.3	18	NE
Bromoform	690	2,200	NE
Bromomethane	3.9	13	NE
Carbon Disulfide	360	720	NE
Carbon Tetrachloride	2.2	5.5	1.6
Chlorobenzene	150	530	22

Table 2.1. 2007 Soil Remediation Levels

APS Quality Assurance Project Plan

Analyte	Residential SRLs (mg/kg)	Non-Residential SRLs (mg/kg)	Minimum GPL (mg/kg)
Chloroethane	30	65	NE
Chloroform	9.4	20	NE
Chloromethane	48	160	NE
cis-1,2-Dichloroethene	43	150	4.9
Dibromochloromethane	11	26	NE
Dibromomethane	67	230	NE
Dichlorodifluoromethane	94	310	NE
Ethylbenzene	400	400	120
Hexachlorobutadiene	18	180	NE
Isopropylbenzene	92	92	NE
Methylene chloride	93	210	NE
Methyl-tert-butyl- ether	320	710	NE
N-Butylbenzene	240	240	NE
N-Propylbenzene	240	240	NE
Naphthalene	56	190	NE
sec-Butylbenzene	220	220	NE
Styrene	1,500	1,500	36
tert-Butylbenzene	390	390	NE
Tetrachloroethene	5.1	13	1.3
Toluene	650	650	400
Total Trihalomethanes	NE	NE	6.8
trans-1,2-Dichloroethene	69	230	8.4
Trichloroethene	17	65	0.61
Trichlorofluoromethane	390	1,300	NE
Vinyl acetate	430	1,400	NE
Vinyl chloride	0.085	0.75	NE
Total xylenes	270	420	2,200
Polynuclear Aromatic Hydrocarbons			
Acenaphthene	3,700	29,000	NE
Anthracene	22,000	240,000	NE
Benz(a)anthracene	6.9	21	NE
Benzo(a)pyrene	0.69	2.1	NE
Benzo(b)fluoranthene	6.9	21	NE

Table 2.1. 2007 Soil Remediation Levels

APS Quality Assurance Project Plan

Analyte	Residential SRLs (mg/kg)	Non-Residential SRLs (mg/kg)	Minimum GPL (mg/kg)
Benzo(k)fluoranthene	69	210	NE
Chrysene	680	2,000	NE
Dibenz(a,h)anthracene	0.69	2.1	NE
Fluoranthene	2,300	22,000	NE
Fluorene	2,700	26,000	NE
Indeno(1,2,3-cd)pyrene	6.9	21	NE
Naphthalene	56	190	NE
Pyrene	2,300	29,000	NE
Pesticides and Polychlorinated Biphenyls			
4,4'-DDD	28	100	NE
4,4'-DDE	20	70	NE
4,4'-DDT	20	70	NE
Aldrin	0.32	1.0	NE
alpha-BHC	1.0	3.6	NE
beta-BHC	3.6	13	NE
gamma-BHC	5.0	17	0.088
Chlordane	19	65	NE
Dieldrin	0.34	1.1	NE
Endrin	18	180	45
Heptachlor	1.2	3.8	NE
Heptachlor Epoxide	0.60	1.9	NE
Methoxychlor	310	3,100	NE
Toxaphene	5.0	16	NE
Aroclor-1016	0.43	1.9	NE
Aroclor-1221	0.43	1.9	NE
Aroclor-1232	0.43	1.9	NE
Aroclor-1242	0.43	1.9	NE
Aroclor-1248	0.43	1.9	NE
Aroclor-1254	0.43	1.9	NE
Aroclor-1260	0.43	1.9	NE
Semivolatile Organic Compounds			
1,2-Diphenylhydrazine	6.8	22	NE
2,4-Dinitrotoluene	120	1,200	NE

Table 2.1. 2007 Soil Remediation Levels

APS Quality Assurance Project Plan

Analyte	Residential SRLs (mg/kg)	Non-Residential SRLs (mg/kg)	Minimum GPL (mg/kg)
2,6-Dinitrotoluene	61	620	NE
2,4,5-Trichlorophenol	6,100	62,000	NE
2,4,6-Trichlorophenol	6.1	62	NE
2,4-Dichlorophenol	180	1,800	NE
2,4-Dimethylphenol	1,200	12,000	NE
2,4-Dinitrophenol	120	1,200	NE
2-Chloronaphthalene	110	110	NE
2-Chlorophenol	63	240	NE
2-Methylphenol	3,100	31,000	NE
2-Nitroaniline	180	1,800	NE
3-Nitroaniline	18	180	NE
3,3'-Dichlorobenzidine	12	38	NE
4-Chloroaniline	240	2,500	NE
3&4-Methylphenol	310	3,100	NE
4-Nitroaniline	180	820	NE
Benzidine	0.0024	0.0075	NE
Benzoic Acid	240,000	1,000,000	NE
Benzyl Alcohol	18,000	180,000	NE
Bis(2-Chloroethyl)Ether	2.3	5.8	NE
Bis(2-Chloroisopropyl)Ether	790	790	NE
Bis(2-Ethylhexyl)Phthalate	390	1,200	NE
Butyl benzyl phthalate	12,000	120,000	NE
Dibenzofuran	140	140	NE
Diethyl phthalate	49,000	490,000	NE
Dimethyl phthalate	610,000	1,000,000	NE
Di-n-Butylphthalate	6,100	62,000	NE
Di-n-Octylphthalate	2,400	25,000	NE
Hexachlorobenzene	3.4	11	NE
Hexachlorocyclopentadiene	370	3,700	NE
Hexachloroethane	61	620	NE
Isophorone	5,800	18,000	NE
Nitrobenzene	20	100	NE
n-Nitrosodimethylamine	0.11	0.34	NE

Table 2.1. 2007 Soil Remediation Levels

APS Quality Assurance Project Plan

Analyte	Residential SRLs (mg/kg)	Non-Residential SRLs (mg/kg)	Minimum GPL (mg/kg)
N-Nitroso-di-n-Propylamine	0.78	2.5	NE
N-Nitrosodiphenylamine	1,100	3,500	NE
Pentachlorophenol	32	90	NE
Phenol	18,000	180,000	NE
Dioxins			
2,3,7,8-TCDD	0.000045	0.00016	NE
Metals			
Aluminum	76,000	920,000	NE
Antimony	31	410	35
Arsenic	10	10	290
Barium	15,000	170,000	12,000
Beryllium	150	1,900	23
Boron	16,000	200,000	NE
Cadmium	39	510	29
Chromium	120,000	1,000,000	590
Hexavalent Chromium	30	65	NE
Cobalt	1,400	13,000	NE
Copper	3,100	41,000	NE
Lead	400	800	290
Lithium	1,600	20,000	NE
Manganese	3,300	32,000	NE
Mercury	23	310	12
Molybdenum	390	5,100	NE
Nickel	1,600	20,000	590
Selenium	390	5,100	290
Silver	390	5,100	NE
Thallium	5.2	67	12
Uranium	16	200	NE
Vanadium	78	1,000	NE
Zinc	23,000	310,000	NE
Cyanide			
Free Cyanide	1,200	12,000	NE

Table 2.1. 2007 Soil Remediation Levels

APS Quality Assurance Project Plan

Analyte	Residential SRLs (mg/kg)	Non-Residential SRLs (mg/kg)	Minimum GPL (mg/kg)

[a] ADEQ, A Screening Method to Determine Soil Concentrations Protective of Groundwater Quality, Minimum GPLs, September 1996.

[b] A.A.C., Title 18, Chapter 7, Article 2, Appendix A. Soil Remediation Levels, update May 2007.

GPL = Groundwater Protection Level [a]

mg/kg = milligram(s) per kilogram

NE = not established

SRL = Soil Remediation Level [b]

Table 2.2. Summary of Groundwater Protection Levels

APS Quality Assurance Project Plan

Analyte	Aquifer Water Quality Standards	EPA MCL
Volatile Organic Compounds (µg/L)		
1,1,1-Trichloroethane	200	200
1,1,2-Trichloroethane	5.0	5.0
1,1-Dichloroethene	7.0	7.0
1,2,4-Trichlorobenzene	70	70
1,2-Dibromo-3-chloropropane	0.20	0.20
1,2-Dibromoethane (EDB)	0.05	0.05
1,2-Dichlorobenzene	600	600
1,2-Dichloroethane	5.0	5.0
1,2-Dichloropropane	5.0	5.0
1,4-Dichlorobenzene	75	75
Benzene	5.0	5.0
Carbon Tetrachloride	5.0	5.0
Chlorobenzene	100	100
cis-1,2-Dichloroethene	70	70
Ethylbenzene	700	700
Methylene chloride	5.0	5.0
Styrene	100	100
Tetrachloroethene	5.0	5.0
Toluene	1,000	1,000
trans-1,2-Dichloroethene	100	100
Total Trihalomethanes	100	80
Trichloroethene	5.0	5.0
Vinyl chloride	2.0	2.0
Total xylenes	10,000	10,000
Semivolatile Organic Compounds (µg/L)		
Benzo(a)pyrene	0.2	0.2
Bis(2-ethylhexyl)phthalate	6.0	6.0
Carbofuran	40	40
Hexachlorobenzene	1.0	1.0
Hexachlorocyclopentadiene	50	50
Pentachlorophenol	1.0	1.0

Table 2.2. Summary of Groundwater Protection Levels

APS Quality Assurance Project Plan

Analyte	Aquifer Water Quality Standards	EPA MCL
Pesticides/Polychlorinated Biphenyls (µg/L)		
Chlordane	2.0	2.0
Endrin	2.0	2.0
Heptachlor	0.40	0.40
Heptachlor Epoxide	0.20	0.20
Gamma-BHC (Lindane)	0.20	0.20
Methoxychlor	40	40
Toxaphene	3.0	3.0
PCBs	0.50	0.50
Metals (µg/L)		
Aluminum	NE	50
Antimony	6.0	6
Arsenic	50	10
Barium	2,000	2000
Beryllium	4.0	4
Cadmium	5.0	5
Chromium	100	100
Copper	NE	1300
Lead	50	15
Mercury	2.0	2
Nickel	100	NE
Selenium	50	50
Thallium	2.0	2
Uranium	NE	30
Cyanide (µg/L)		
Free Cyanide[c]	200	200
Nitrate/Nitrite (µg/L)		
Nitrate/nitrite	10,000	10,000
Nitrate	10,000	10,000
Nitrite	1,000	1,000
Asbestos (fibers/liter)		
Asbestos	7,000,000 (longer than 10mm)	NE

Table 2.2. Summary of Groundwater Protection Levels

APS Quality Assurance Project Plan

Analyte	Aquifer Water Quality Standards	EPA MCL
RA-226 and RA-228 (pCi/L)		
Combined Radium – 226=228	NE	5
Dioxins (µg/L)		
2,3,7,8-TCDD	0.00000003	0.00000003

Source: A.A.C., Title 18, Chapter 11, Article 4, R18-11-406 Numeric Aquifer Water Quality Standards: Drinking Water Protected Use, December 2016 Update.

µg/L = microgram(s) per liter

EPA = U.S. Environmental Protection Agency

MCL = maximum contaminant level

pCi/L = picocurie(s) per liter

Table 2.3. Summary of Regulatory Cleanup Levels for Surface Water

APS Quality Assurance Project Plan

Analyte	DWS[a] (µg/L)	FC[a] (µg/L)	FBC[a] (µg/L)	PCB[a] (µg/L)	A&Wc		A&Ww		A&Wedw		A&We	AgI[a] (µg/L)	AgL[a] (µg/L)
					Acute[b] (µg/L)	Chronic[c] (µg/L)	Acute[b] (µg/L)	Chronic[c] (µg/L)	Acute[b] (µg/L)	Chronic[c] (µg/L)	Acute[b] (µg/L)		
Acenaphthene	420	198	56000	56000	850	550	850	550	850	550	NE	NE	NE
Acrolein	3.5	1.9	467	467	34	30	34	30	34	30	NE	NE	NE
Acrylonitrile	0.06	0.2	3	37333	3800	250	3800	250	3800	250	NE	NE	NE
Aldrin	0.002	0.00005	0.08	28	3	NE	3	NE	3	NE	4.5	0.003	NE
Anthracene	2100	74	280000	280000	NE	NE	NE	NE	NE	NE	NE	NE	NE
Antimony	6	640	747	747	88	30	88	30	1000	600	NE	NE	NE
Arsenic (as As)	10 T	80 T	30 T	280 T	340 D	150 D	340 D	150 D	340 D	150 D	440 D	2000	200
Barium (as Ba)	2000 T	NE	98000 D	98000 D	NE	NE	NE	NE	NE	NE	NE	2000 T	200 T
Benzene	5	140	93	3733	2700	180	2700	180	8800	560	NE	NE	NE
Benzidine	0.0002	0.0002	0.01	2800	1300	89	1300	89	1300	89	10000	0.01	0.01
Benzo (a) anthracene	0.005	0.2	0.2	0.2	NE	NE	NE	NE	NE	NE	NE	NE	NE
Benzo (a) pyrene	0.2	0.02	0.2	0.2	NE	NE	NE	NE	NE	NE	NE	NE	NE
Benzo (k) fluoranthene	0.005	0.02	1.9	1.9	NE	NE	NE	NE	NE	NE	NE	NE	NE
Beryllium	4	84	1867	1867	65	5.3	65	5.3	65	5.3	NE	NE	NE
Bis(2-chloroethyl)ether	0.03	0.5	1	1	120000	6700	120000	6700	120000	6700	NE	NE	NE
Bis(2-chloroisopropyl)ether	280	3441	37333	37333	NE	NE	NE	NE	NE	NE	NE	NE	NE
Bis(2-ethyl hexy)phthalate	6	3	100	18667	400	360	400	360	400	360	3100	NE	NE
Boron	1400	NE	186667	186667	NE	NE	NE	NE	NE	NE	NE	1000 T	NE
Bromodichloromethane	TTHM	17	TTHM	18667	NE	NE	NE	NE	NE	NE	NE	NE	NE
Bromoform	TTHM	133	180	18667	15000	10000	15000	10000	15000	10000	NE	NE	NE
Bromomethane	9.8	299	1307	1307	5500	360	5500	360	5500	360	NE	NE	NE
Butyl Benzyl Phthalate	1400	386	186667	186667	1700	130	1700	130	1700	130	NE	NE	NE
Cadmium (as Cd)	5 T	84 T	700 T	700 T	D	D	D	D	D	D	D	NE	NE
Carbon tetrachloride	5	2	11	980	18000	1100	18000	1100	18000	1100	NE	NE	NE
Chlordane	2	0.0008	4	467	2.4	0.004	2.4	0.2	2.4	0.2	3.2	NE	NE
Chlorobenzene	100	1553	18667	18667	3800	260	3800	260	3800	260	NE	NE	NE
2-Chloroethyl vinyl ether	NE	NE	NE	NE	180000	9800	180000	9800	180000	9800	NE	NE	NE
Chloroform	TTHM	470	230	9333	14000	900	14000	900	14000	900	NE	NE	NE
4-Chloro-3-methylphenol	NE	NE	NE	NE	15	4.7	15	4.7	15	4.7	48000	NE	NE
Chloromethane	NE	NE	NE	NE	270000	15000	270000	15000	270000	15000	NE	NE	NE
2-Chloronaphthalene	560	317	74667	74667	NE	NE	NE	NE	NE	NE	NE	NE	NE
2-Chlorophenol	35	30	4667	4667	2200	150	2200	150	2200	150	NE	NE	NE
Chromium (Total as Cr)	100 T	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	1000	1000
Chromium, Hexavalent	21	150	2800	2800	16	11	16	11	16	11	34	NE	NE
Chrysene	0.005	0.02	19	19	NE	NE	NE	NE	NE	NE	NE	NE	NE
Copper	1300	NE	1300	1300	D	D	D	D	D	D	D	5000	500
Cyanide	200 T	16000 T	18667 T	18667 T	22 T	5.2 T	41 T	9.7 T	41 T	9.7 T	84 T	NE	200 T
Dibenzo (ah) anthracene	0.005	0.02	1.9	1.9	NE	NE	NE	NE	NE	NE	NE	NE	200 T
Dibromochloromethane	TTHM	13	TTHM	18667	NE	NE	NE	NE	NE	NE	NE	NE	NE
1,2-Dibromo-3-chloropropane (DBCP)	0.2	NE	2800	2800	NE	NE	NE	NE	NE	NE	NE	NE	NE
1,2-Dibromoethane (EDB)	0.05	NE	8400	8400	NE	NE	NE	NE	NE	NE	NE	NE	NE
di-n-Butyl Phthalate	700	899	93333	93333	470	35	470	35	470	35	1100	NE	NE
1,2-Dichlorobenzene	600	205	84000	84000	790	300	1200	470	1200	470	5900	NE	NE

Table 2.3. Summary of Regulatory Cleanup Levels for Surface Water

APS Quality Assurance Project Plan

Analyte	DWS[a] (µg/L)	FC[a] (µg/L)	FBC[a] (µg/L)	PCB[a] (µg/L)	A&Wc		A&Ww		A&Wedw		A&We	AgI[a] (µg/L)	AgL[a] (µg/L)
					Acute[b] (µg/L)	Chronic[c] (µg/L)	Acute[b] (µg/L)	Chronic[c] (µg/L)	Acute[b] (µg/L)	Chronic[c] (µg/L)	Acute[b] (µg/L)		
1,3-Dichlorobenzene	NE	NE	NE	NE	2500	970	2500	970	2500	970	NE	NE	NE
1,4-Dichlorobenzene	75	5755	373333	373333	560	210	2000	780	2000	780	6500	NE	NE
3,3-Dichlorobenzidine	0.08	0.03	3	3	NE	NE	NE	NE	NE	NE	NE	NE	NE
4,4-DDD	0.1	0.0002	4	467	1.1	0.001	1.1	0.001	1.1	0.001	1.1	0.001	0.001
4,4-DDE	0.1	0.0002	4	467	1.1	0.001	1.1	0.001	1.1	0.001	1.1	0.001	0.001
4,4-DDT	0.1	0.0002	4	467	1.1	0.001	1.1	0.001	1.1	0.001	1.1	0.001	0.001
1,2-Dichloroethane	5	37	15	186667	59000	41000	59000	41000	59000	41000	NE	NE	NE
1,1-Dichloroethylene	7	7143	46667	46667	15000	950	15000	950	15000	950	NE	NE	NE
1,2-cis-Dichloroethylene	70	NE	70	70	NE	NE	NE	NE	NE	NE	NE	NE	NE
1,2-trans-Dichloroethylene	100	10127	18667	18667	68000	3900	68000	3900	68000	3900	NE	NE	NE
Dichloromethane	5	593	190	56000	97000	5500	97000	5500	97000	5500	NE	NE	NE
2,4-Dichlorophenol	21	59	2800	2800	1000	88	1000	88	1000	88	NE	NE	NE
1,2-Dichloropropane	5	17518	84000	84000	26000	9200	26000	9200	26000	9200	NE	NE	NE
Dieldrin	0.002	0.00005	0.09	47	0.2	0.06	0.2	0.06	0.2	0.06	4	0.003	NE
Diethyl Phthalate	5600	8767	746667	746667	26000	1600	26000	1600	26000	1600	NE	NE	NE
2,4-Dimethylphenol	140	171	18667	18667	1000	310	1000	310	1000	310	150000	NE	NE
Dimethyl Phthalate	NE	NE	NE	NE	17000	1000	17000	1000	17000	1000	NE	NE	NE
4,6-Dinitro-2-methylphenol	28	582	3733	3733	310	24	310	24	310	24	NE	NE	NE
2,4-Dinitrophenol	14	1067	1867	1867	110	9.2	110	9.2	110	9.2	NE	NE	NE
2,4-Dinitrotoluene	14	421	1867	1867	14000	860	14000	860	14000	860	NE	NE	NE
2,6-Dinitrotoluene	0.05	NE	2	3733	NE	NE	NE	NE	NE	NE	NE	NE	NE
di-n-Octyl phthalate	2800	NE	373333	373333	NE	NE	NE	NE	NE	NE	NE	NE	NE
1,2-Diphenylhydrazine	0.04	0.2	1.8	1.8	130	11	130	11	130	11	NE	NE	NE
Endosulfan Sulfate	42	18	5600	5600	0.2	0.06	0.2	0.06	0.2	0.06	3	NE	NE
Endrin	2	0.06	280	280	0.09	0.04	0.09	0.04	0.09	0.04	0.7	0.004	0.004
Endrin Aldehyde	NE	NE	NE	NE	0.09	0.04	0.09	0.04	0.09	0.04	0.7	NE	NE
Ethlybenzene	700	2133	93333	93333	23000	1400	23000	1400	23000	1400	NE	NE	NE
Fluoranthene	280	28	37333	37333	2000	1600	2000	1600	2000	1600	NE	NE	NE
Fluorene	280	1067	37333	37333	NE	NE	NE	NE	NE	NE	NE	NE	NE
Heptachlor	0.4	0.00008	0.4	467	0.5	0.004	0.5	0.004	0.5	0.004	0.8	NE	NE
Heptachlor Epoxide	0.2	0.00004	0.2	12	0.5	0.004	0.5	0.004	0.5	0.004	0.8	NE	NE
Hexachlorobenzene	1	0.0003	1	747	6	3.7	6	3.7	6	3.7	NE	NE	NE
Hexachlorobutadiene	0.4	18	18	187	45	8.2	45	8.2	45	8.2	NE	NE	NE
Alpha-BHC	0.006	0.005	0.22	7467	1600	130	1600	130	1600	130	1600	NE	NE
Beta-BHC	0.02	0.02	0.78	560	1600	130	1600	130	1600	130	1600	NE	NE
Delta-BHC	NE	NE	NE	NE	1600	130	1600	130	1600	130	1600	NE	NE
Gamma-BHC (Lindane)	0.2	1.8	280	280	1	0.08	1	0.28	1	0.61	11	NE	NE
Hexachlorocyclopentadiene	50	580	9800	9800	3.5	0.3	3.5	0.3	3.5	0.3	NE	NE	NE
Hexachloroethane	2.5	3.3	100	933	490	350	490	350	490	350	850	NE	NE
Indeno (1,2,3-cd) pyrene	0.05	0.49	1.9	1.9	NE	NE	NE	NE	NE	NE	NE	NE	NE
Isophorone	37	961	1500	186667	5900	4300	5900	4300	5900	4300	NE	NE	NE
Lead (as Pb)	15 T	NE	15 T	15 T	D	D	D	D	D	D	D	10000 T	100 T
Manganese	980	NE	130667	130667	NE	NE	NE	NE	NE	NE	NE	10000	NE

Table 2.3. Summary of Regulatory Cleanup Levels for Surface Water

APS Quality Assurance Project Plan

Analyte	DWS[a] (µg/L)	FC[a] (µg/L)	FBC[a] (µg/L)	PCB[a] (µg/L)	A&Wc		A&Ww		A&Wedw		A&We	AgI[a] (µg/L)	AgL[a] (µg/L)
					Acute[b] (µg/L)	Chronic[c] (µg/L)	Acute[b] (µg/L)	Chronic[c] (µg/L)	Acute[b] (µg/L)	Chronic[c] (µg/L)	Acute[b] (µg/L)		
Mercury (as Hg)	2 T	NE	280 T	280 T	2.4 D	0.01 D	2.4 D	0.01 D	2.6 D	0.2 D	5.0 D	NE	10 T
Methoxychlor	40	NE	4667	4667	NE	0.03	NE	0.03	NE	0.03	NE	NE	NE
Naphthalene	140	1524	18667	18667	1100	210	3200	580	3200	580	NE	NE	NE
Nickel	140 T	4600 T	28000 T	28000 T	D	D	D	D	D	D	D	NE	NE
Nitrate	10000	NE	3733333	3733333	NE	NE	NE	NE	NE	NE	NE	NE	NE
Nitrite	1000	NE	233333	233333	NE	NE	NE	NE	NE	NE	NE	NE	NE
Nitrate+nitrite	10000	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Nitrobenzene	3.5	138	467	467	1300	850	1300	850	1300	850	NE	NE	NE
4-Nitrophenol	NE	NE	NE	NE	4100	3000	4100	3000	4100	3000	NE	NE	NE
n-Nitrosodimethylamine	0.001	3	0.03	0.03	NE	NE	NE	NE	NE	NE	NE	NE	NE
n-Nitrosodiphenylamine	7.1	6	290	290	2900	200	2900	200	2900	200	NE	NE	NE
n-Nitrosodi-npropylamine	0.005	0.5	0.2	88667	NE	NE	NE	NE	NE	NE	NE	NE	NE
Pentachlorophenol	1	1000	12	28000	NE	NE	NE	NE	NE	NE	NE	NE	NE
Phenanthrene	NE	NE	NE	NE	30	6.3	30	6.3	30	6.3	NE	NE	NE
Phenol	2100	37	280000	280000	5100	730	7000	1000	7000	1000	180000	NE	NE
PCBs	0.5	0.00006	19	19	2	0.01	2	0.02	2	0.02	11	0.001	0.001
Pyrene	210	800	28000	28000	NE	NE	NE	NE	NE	NE	NE	NE	NE
Selenium (as Se)	50 T	667 T	4667 T	4667 T	NE	2.0 T	NE	2.0 T	NE	2.0 T	33 T	NE	NE
Silver (as Ag)	35 T	8000 T	4667 T	4667 T	D	NE	D	NE	D	NE	D	20 T	50 T
Styrene	100	NE	186667	186667	5600	370	5600	370	5600	370	NE	NE	NE
2,3,7,8-TCDD	0.00003	5X10-9	0.00003	0.0009	0.01	0.005	0.01	0.005	0.01	0.005	0.1	NE	NE
1,1,2,2-Tetrachloroethane	0.2	4	7	56000	4700	3200	4700	3200	4700	3200	NE	NE	NE
Tetrachloroethylene	5	261	9333	9333	2600	280	6500	680	6500	680	15000	NE	NE
Thallium	2 T	7.2 T	75 T	75 T	700 D	150 D	700 D	150 D	700 D	150 D	NE	NE	NE
Toluene	1000	201000	280000	280000	8700	180	8700	180	8700	180	NE	NE	NE
Toxaphene	3	0.0003	1.3	933	0.7	0.0002	0.7	0.0002	0.7	0.0002	11	0.005	0.005
1,2,4-Trichlorobenzene	70	70	9333	9333	750	130	1700	300	1700	300	NE	NE	NE
1,1,1-Trichloroethane	200	428571	1866667	1866667	2600	1600	2600	1600	2600	1600	NE	1000	NE
1,1,2-Trichloroethane	5	16	25	3733	18000	12000	18000	12000	18000	12000	NE	NE	NE
Trichloroethylene	5	29	280000	280	20000	1300	20000	1300	20000	1300	NE	NE	NE
2,4,6-Trichlorphenol	3.2	2	130	130	160	25	160	25	160	25	3000	NE	NE
Trihalomethanes, Total	80	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Uranium	30 D	NE	2800	2800	NE	NE	NE	NE	NE	NE	NE	NE	NE
Vinyl chloride	2	5	2	2800	NE	NE	NE	NE	NE	NE	NE	NE	NE
Xylenes (Total)	10000	NE	186667	186667	NE	NE	NE	NE	NE	NE	NE	NE	NE
Zinc	2100 T	5106 T	280000 T	280000 T	D	D	D	D	D	D	D	10000 T	25000 T

Table 2.3. Summary of Regulatory Cleanup Levels for Surface Water

APS Quality Assurance Project Plan

Analyte	DWS[a] (µg/L)	FC[a] (µg/L)	FBC[a] (µg/L)	PCB[a] (µg/L)	A&Wc		A&Ww		A&Wedw		A&We	AgI[a] (µg/L)	AgL[a] (µg/L)
					Acute[b] (µg/L)	Chronic[c] (µg/L)	Acute[b] (µg/L)	Chronic[c] (µg/L)	Acute[b] (µg/L)	Chronic[c] (µg/L)	Acute[b] (µg/L)		

Source: Arizona Administrative Code, Title 18, Chapter 11, Article 1, Appendix A. Numeric Water Quality Standards, updated December 2016.

[a] The numeric standards to protect this use shall not be exceeded

[b] Determination of compliance with acute standards shall be as prescribed in R18-11-120C.

[c] Determination of compliance with chronic standards shall be as prescribed in R18-11-120C.

µg/L = microgram(s) per liter

A&Wc Acute = aquatic and wildlife (cold water fishery)

A&Wc Chronic = aquatic and wildlife (cold water fishery)

A&We Acute = aquatic and wildlife (ephemeral)

A&We Chronic = aquatic and wildlife (ephemeral)

A&Wedw Acute = aquatic and wildlife (effluent dependent water)

A&Wedw Chronic = aquatic and wildlife (effluent dependent water)

A&Ww Acute = aquatic and wildlife (warm water fishery)

A&Ww Chronic = aquatic and wildlife (warm water fishery)

AgI = Agricultural irrigation

AgL = Agricultural livestock watering

D = Dissolved

DWS = Domestic water source

FBC = Full body contact

FC = Fish consumption

NE = Not established

PBC = Partial body contact

T = Total recoverable

TTHM = Indicates that the chemical is a trihalomethane. See trihalomethanes for DWS standard

Table 2.4. Maximum Concentration of Contaminants for the Toxicity Characteristic Leaching Procedure

APS Quality Assurance Project Plan

Analyte	EPA Hazardous Waste Number	CAS Number	Regulatory Level (mg/L)
TCLP Metals			
Arsenic	D004	7440-38-2	5.0
Barium	D005	7440-39-3	100
Cadmium	D006	7440-43-9	1.0
Chromium	D007	7440-47-3	5.0
Lead	D008	7439-92-1	5.0
Mercury	D009	7439-97-6	0.20
Selenium	D010	7782-49-2	1.0
Silver	D011	7440-22-4	5.0
TCLP Semivolatile Organic Compounds			
2,4,5-Trichlorophenol		95-95-4	400
2,4,6-Trichlorophenol		88-06-2	2.0
2,4-Dinitrotoluene		121-14-2	0.13
2-Methylphenol		95-48-7	200
3-Methylphenol		108-39-4	200
4-Methylphenol		106-44-5	200
Hexachlorobenzene		118-74-1	0.13
Hexachlorobutadiene		87-68-3	0.50
Hexachloroethane		67-72-1	3.0
Nitrobenzene		98-95-3	2.0
Pentachlorophenol		87-86-5	100
Pyridine		110-86-1	5.0
TCLP Pesticides			
Chlordane		57-74-9	0.03
Endrin		72-20-8	0.02
Heptachlor		76-44-8	0.008
Heptachlor Epoxide		1024-57-3	0.008
Gamma-BHC (Lindane)		58-89-9	0.40
Methoxychlor		72-43-5	10
Toxaphene		8001-35-2	0.50
TCLP Volatile Organic Compounds			
1,1-Dichloroethene	D029	75-35-4	0.7

Table 2.4. Maximum Concentration of Contaminants for the Toxicity Characteristic Leaching Procedure

APS Quality Assurance Project Plan

Analyte	EPA Hazardous Waste Number	CAS Number	Regulatory Level (mg/L)
1,2-Dichloroethane	D028	107-06-2	0.5
2-Butanone (Methylethyl ketone [MEK])	D035	78-93-3	200.0
Benzene	D018	71-43-2	0.5
Carbon Tetrachloride	D019	56-23-5	0.5
Chlorobenzene	D021	108-90-7	100.0
Chloroform	D022	67-66-3	6.0
Tetrachloroethene	D039	127-18-4	0.7
Trichloroethene	D040	79-01-6	0.5
Vinyl chloride	D043	75-01-4	0.2

Source: Title 40 *Code of Federal Regulations* Section 261.24

EPA = U.S. Environmental Protection Agency

mg/L = milligram(s) per liter

TCLP = Toxicity Characteristic Leachate Procedure

Table 2.5. Pre-determined Allowable Community Air Monitoring Concentrations

APS Quality Assurance Project Plan

Test Method/Equipment	Analyte	Action Level EPA Region IX Preliminary Remediation Goals (PRGs) (ng/m^3)	Maximum Allowable Concentrations Based on a Community Exposure Duration of 1-year (ng/m^3)
Polynuclear Aromatic Hydrocarbons (PAHs)			
EPA Method TO-13A by HPLC with high volume PUF tube (PUF/XAD-2/PUF)	Acenaphthene	220,000	220,000
	Acenaphthylene	NA	NA
	Anthracene	1,100,000	1,100,000
	Benzo(a)anthracene	9.2	105
	Benzo(a)pyrene	0.92	10.5
	Benzo(b)fluoranthene	9.2	105
	Benzo(g,h,i)perylene	NA	NA
	Benzo(k)fluoranthene	92	1,045
	Chrysene	920	25,000
	Dibenzo(a,h)anthracene	0.92	10.5
	Fluoranthene	150,000	150,000
	Fluorene	150,000	150,000
	Indeno(1,2,3-cd)pyrene	9.2	105
	Naphthalene	3,100	3,100
	Phenanthrene	NA	NA
	Pyrene	110,000	110,000
Volatile Organics			
EPA Method TO-15 with SUMMA canister or NIOSH Method 1501 with air monitoring pumps and sorbent tubes	Benzene	250	2,800
Metals			
Filter Cassette NIOSH Method 7300	Arsenic	0.45	5.1
Filter Cassette NIOSH Method 7300	Lead	NA	NA

Table 3.1. Soil and Solid Analytical Methods

APS Quality Assurance Project Plan

Analyses	Preparation Method	Test Method
Soil Samples		
Volatile organic compounds (VOCs)	EPA 3585, 5021, 5032, 5035	EPA 8260B or C
TCLP VOCs	EPA 1311 and 5030B	EPA 8260B or C
Semivolatile organic compounds (SVOCs)	EPA 3540C, 3541, 3545, 3546, 3550	EPA 8270 C or D
TCLP SVOCs	EPA 1311, 3510C, 3520C	EPA 8270C or D
PAHs	EPA 3540C, 3541, 3545, 3546, 3550	SW8270C or D-SIM
Organochlorine Pesticides	EPA 3540C, 3541, 3545, 3546, 3550	EPA 8081A or B
TCLP Pesticides	EPA 1311, 3510C, 3520C	EPA 8081A or B
Polychlorinated Biphenyls	EPA 3540C, 3541, 3545, 3546, 3550 EPA 3665A (acid cleanup) if needed	EPA 8082 or 8082A
TPHg (GRO – C_6 to C_{10})	ADHS 8015 AZR1	ADHS 8015 AZR1
TPHd as (DRO – C_{10} to C_{22})	ADHS 8015 AZR1	ADHS 8015 AZR1
TPHo as (ORO – C_{22} to C_{32})	ADHS 8015 AZR1	ADHS 8015 AZR1
Dioxins/Furans	per analytical method	EPA 1613A or B or EPA 8290
Metals	EPA 3050B, 3051	EPA 6010B or C/SW6020/7471A or B
TCLP/SPLP Metals	EPA 1311, EPA 1312 and 3005A	EPA 6010B or C/SW6020/7471A or B
Hexavalent Chromium	EPA 3060A	EPA 7196A or EPA 7199
Total Cyanide	EPA 9013 (extraction) and EPA 9010 (distillation)	EPA 9014
Extractable Sulfide	-	EPA 9031
Acid-soluble and acid-insoluble Sulfide	EPA 9030B	EPA 9034
Total organic carbon	-	EPA 9060
Ignitability	-	EPA 1030
pH	-	EPA 9045C
Paint filter test	-	EPA 9095B

ADHS = Arizona Department of Health Services

DRO = diesel range organics

EPA = U.S. Environmental Protection Agency

GRO = gasoline range organics

ORO = oil range organics

PAH = polynuclear aromatic hydrocarbon

TCLP = Toxicity Characteristic Leaching Procedure

Table 3.2. Aqueous Analytical Methods

APS Quality Assurance Project Plan

Analyses	Preparation Method	Test Method
Aqueous Samples		
Volatile organic compounds	EPA 5030B, 5031, 5032	EPA 624 or EPA 8260B or C
Semivolatile organic compounds	EPA 3510C or 3520C	EPA 625 or EPA 8270C or D
Polynuclear aromatic hydrocarbons	EPA 3510C, 3520C, 3535	SW8270C or D-SIM
TPHg (GRO – C_6 to C_{10})	EPA 5030B, 5031	EPA 8015B, C or D
TPHd as (DRO – C_{10} to C_{22})	EPA 3510C, 3520C	EPA 8015B, C or D
TPHo as (ORO – C_{22} to C_{32})	EPA 3510C, 3520C	EPA 8015B, C or D
Organochlorine Pesticides	EPA 3510C, 3520C, 3535	EPA 608 or EPA 8081 A or B
Polychlorinated Biphenyls	EPA 3510C, 3520C, 3535 EPA 3665A (sulfuric acid cleanup)	EPA 608 or EPA 8082 or EPA 8082A
Dioxins and Furans	Per analytical method	EPA 1613A or B or SW8290
Metals	EPA 3005A, 3010A, 3015	EPA 6010B or C/SW6020/7470A or B EPA 200.7/200.8[a]/245.1
Hexavalent Chromium	-	EPA 7196A or EPA 7199
Sulfide	EPA 9030B	EPA 9034 or SM4500 S2
Total Cyanide	-	SM4500-CN-E
Total Cyanide	EPA 9010C	EPA 9014
Amenable Cyanide	-	SM4500 CN-G
Weak Acid Dissociable Cyanide	-	SM4500 CN-I
Ammonia	-	SM4500-NH3 B, D, E
Total Kjeldahl Nitrogen	-	SM4500-Norg A, B, C, D
Chloride, Fluoride, Nitrate, Nitrite, Sulfate	-	EPA 300.0, SW9056
Nitrate/nitrite combined methods	-	SM4500NO3, EPA 353.2
Alkalinity (all forms)	-	SM2320B
Total Dissolved Solids (TDS)	-	SM2540C
Total organic carbon	-	SW9060
Asbestos	-	EPA 100.2
Radium 226 and 228 Combined	-	HPGe or EPA 903.1 and 904
fathead minnow, *Pimephales promelas*	-	Larval Survival and Growth Test Method 1000.0
daphnid, *Ceriodaphnia dubia*	-	Survival and Reproduction Test Method 1002.01
green alga, *Selenastrum capricornutum* (also named *Raphidocelis subcapitata)*	-	Growth Test Method 1003.0
Total Coliform	-	SM9223B-2004

Table 3.2. Aqueous Analytical Methods

APS Quality Assurance Project Plan

Analyses	Preparation Method	Test Method
Aqueous Samples		
E. Coli	-	SM9223B-2004

[a] EPA Method 200.8 with collision cell – use to minimize interferences in high TDS waters.

DRO = diesel range organics

EPA = U.S. Environmental Protection Agency

GRO = gasoline range organics

HPGe = High Purity Germanium Radiation Detector

ORO = oil range organics

TDS = total dissolved solids

TPH = total petroleum hydrocarbon

Table 3.3. Air and Soil Vapor Analytical Methods

APS Quality Assurance Project Plan

Analyses	Preparation Method	Test Method
Air Samples and Soil Vapor - Fixed Base Laboratory		
VOCs	EPA TO-15	EPA TO-15
Oxygen, Carbon Dioxide, Methane, and Nitrogen	-	EPA 3C
PAHs	EPA 3540C	EPA TO-13A by HPLC
Lead	NIOSH 7300	NIOSH 7300/EPA 6010B

EPA = U.S. Environmental Protection Agency

NIOSH = National Institute for Occupational Safety and Health

PAH = polynuclear aromatic hydrocarbon

VOC = volatile organic compound

Table 3.4. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Soil and Solid Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]
Volatile Organic Compounds by EPA 8260B or C					
1,1,1,2-Tetrachloroethane	0.25	mg/kg	70	130	30
1,1,1-Trichloroethane	0.1	mg/kg	70	130	30
1,1,2,2-Tetrachloroethane	0.1	mg/kg	70	130	30
1,1,2-Trichloroethane	0.1	mg/kg	70	130	30
1,1-Dichloroethane	0.1	mg/kg	70	130	30
1,1-Dichloroethene	0.25	mg/kg	70	130	30
1,1-Dichloropropene	0.1	mg/kg	70	130	30
1,2,3-Trichlorobenzene	0.25	mg/kg	70	130	30
1,2,3-Trichloropropane	0.5	mg/kg	70	130	30
1,2,4-Trichlorobenzene	0.25	mg/kg	70	130	30
1,2,4-Trimethylbenzene	0.1	mg/kg	70	130	30
1,2-Dibromo-3-chloropropane	0.25	mg/kg	70	130	30
1,2-Dibromoethane	0.1	mg/kg	70	130	30
1,2-Dichlorobenzene	0.1	mg/kg	70	130	30
1,2-Dichloroethane	0.1	mg/kg	70	130	30
1,2-Dichloropropane	0.1	mg/kg	70	130	30
1,3,5-Trimethylbenzene	0.1	mg/kg	70	130	30
1,3-Dichlorobenzene	0.1	mg/kg	70	130	30
1,3-Dichloropropane	0.1	mg/kg	70	130	30
1,4-Dichlorobenzene	0.1	mg/kg	70	130	30
2,2-Dichloropropane	0.1	mg/kg	70	130	30
2-Butanone	0.5	mg/kg	70	130	30
2-Chloroethylvinyl ether	0.25	mg/kg	70	130	30
2-Chlorotoluene	0.25	mg/kg	70	130	30
2-Hexanone	0.5	mg/kg	70	130	30
4-Chlorotoluene	0.25	mg/kg	70	130	30
4-Methyl-2-pentanone	0.25	mg/kg	70	130	30
Acetone	0.5	mg/kg	70	130	30
Acrolein	0.5	mg/kg	70	130	30
Acrylonitrile	0.5	mg/kg	70	130	30

Table 3.4. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Soil and Solid Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]
Benzene	0.1	mg/kg	70	130	30
Bromobenzene	0.25	mg/kg	70	130	30
Bromochloromethane	0.25	mg/kg	70	130	30
Bromodichloromethane	0.1	mg/kg	70	130	30
Bromoform	0.25	mg/kg	70	130	30
Bromomethane	0.25	mg/kg	70	130	30
Carbon Disulfide	0.25	mg/kg	70	130	30
Carbon Tetrachloride	0.25	mg/kg	70	130	30
Chlorobenzene	0.1	mg/kg	70	130	30
Chloroethane	0.25	mg/kg	70	130	30
Chloroform	0.1	mg/kg	70	130	30
Chloromethane	0.25	mg/kg	70	130	30
cis-1,2-Dichloroethene	0.1	mg/kg	70	130	30
cis-1,3-Dichloropropene	0.1	mg/kg	70	130	30
Dibromochloromethane	0.1	mg/kg	70	130	30
Dibromomethane	0.1	mg/kg	70	130	30
Dichlorodifluoromethane	0.25	mg/kg	70	130	30
Ethylbenzene	0.1	mg/kg	70	130	30
Hexachlorobutadiene	0.25	mg/kg	70	130	30
Iodomethane	0.1	mg/kg	70	130	30
Isopropylbenzene	0.1	mg/kg	70	130	30
Methylene chloride	0.5	mg/kg	70	130	30
Methyl-tert-butyl- ether	0.25	mg/kg	70	130	30
N-Butylbenzene	0.25	mg/kg	70	130	30
N-Propylbenzene	0.1	mg/kg	70	130	30
Naphthalene	0.25	mg/kg	70	130	30
p-Isopropyltoluene	0.1	mg/kg	70	130	30
sec-Butylbenzene	0.25	mg/kg	70	130	30
Styrene	0.1	mg/kg	70	130	30
tert-Butylbenzene	0.25	mg/kg	70	130	30
Tetrachloroethene	0.1	mg/kg	70	130	30

Table 3.4. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Soil and Solid Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]
Toluene	0.1	mg/kg	70	130	30
trans-1,2-Dichloroethene	0.1	mg/kg	70	130	30
trans-1,3-Dichloropropene	0.1	mg/kg	70	130	30
Trichloroethene	0.1	mg/kg	70	130	30
Trichlorofluoromethane	0.25	mg/kg	70	130	30
Vinyl acetate	0.25	mg/kg	70	130	30
Vinyl chloride	0.25	mg/kg	70	130	30
Total xylenes	0.3	mg/kg	70	130	30
Surrogates (listed below or equivalent)					
Toluene-D8	--	--	70	130	--
4-Bromofluorobenzene	--	--	70	130	--
1,2-Dichloroethane-d4	--	--	70	130	--
Dibromofluoromethane	--	--	70	130	--
Semivolatile Organic Compounds by 8270C or D					
Acenaphthene	0.33	mg/kg	70	130	30
Acenaphthylene	0.33	mg/kg	70	130	30
Anthracene	0.33	mg/kg	70	130	30
Benz(a)anthracene	0.33	mg/kg	70	130	30
Benzo(a)pyrene	0.33	mg/kg	70	130	30
Benzo(b)fluoranthene	0.33	mg/kg	70	130	30
Benzo(g,h,i)perylene	0.33	mg/kg	70	130	30
Benzo(k)fluoranthene	0.33	mg/kg	70	130	30
Chrysene	0.33	mg/kg	70	130	30
Dibenz(a,h)anthracene	0.33	mg/kg	70	130	30
Fluoranthene	0.33	mg/kg	70	130	30
Fluorene	0.33	mg/kg	70	130	30
Indeno(1,2,3-cd)pyrene	0.33	mg/kg	70	130	30
2-Methylnaphthalene	0.33	mg/kg	70	130	30
Naphthalene	0.33	mg/kg	70	130	30
Phenanthrene	0.33	mg/kg	70	130	30
Pyrene	0.33	mg/kg	70	130	30

Table 3.4. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Soil and Solid Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]
1,2,4-trichlorobenzene	0.33	mg/kg	70	130	30
1,2-Dichlorobenzene	0.33	mg/kg	70	130	30
1,2-Diphenylhydrazine	0.33	mg/kg	70	130	30
1,3-Dichlorobenzene	0.33	mg/kg	70	130	30
1,4-Dichlorobenzene	0.33	mg/kg	70	130	30
2,4-Dinitrotoluene	0.33	mg/kg	70	130	30
2,6-Dinitrotoluene	0.33	mg/kg	70	130	30
2,4,5-Trichlorophenol	1.6	mg/kg	70	130	30
2,4,6-Trichlorophenol	0.33	mg/kg	70	130	30
2,4-Dichlorophenol	0.33	mg/kg	70	130	30
2,4-Dimethylphenol	0.33	mg/kg	70	130	30
2,4-Dinitrophenol	1.6	mg/kg	70	130	30
2-Chloronaphthalene	0.33	mg/kg	70	130	30
2-Chlorophenol	0.33	mg/kg	70	130	30
2-Methylphenol	0.33	mg/kg	70	130	30
2-Nitroaniline	1.6	mg/kg	70	130	30
2-Nitrophenol	0.33	mg/kg	70	130	30
3-Nitroaniline	1.6	mg/kg	70	130	30
2-Methyl-4,6-Dinitrophenol	1.6	mg/kg	70	130	30
3,3'-Dichlorobenzidine	0.33	mg/kg	70	130	30
4-Bromophenyl-phenyl ether	0.33	mg/kg	70	130	30
4-Chlorophenyl-phenyl ether	0.33	mg/kg	70	130	30
4-Chloro-3-methylphenol	1.6	mg/kg	70	130	30
4-Chloroaniline	0.33	mg/kg	70	130	30
3&4-Methylphenol	0.33	mg/kg	70	130	30
4-Nitroaniline	1.6	mg/kg	70	130	30
4-Nitrophenol	1.6	mg/kg	70	130	30
Benzidine	0.33	mg/kg	70	130	30
Benzoic Acid	1.6	mg/kg	70	130	30
Benzyl Alcohol	1.6	mg/kg	70	130	30
Bis(2-Chloroethyl)Ether	0.33	mg/kg	70	130	30

Table 3.4. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Soil and Solid Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]
Bis(2-Chloroisopropyl)Ether	0.33	mg/kg	70	130	30
Bis(2-Ethylhexyl)Phthalate	0.33	mg/kg	70	130	30
Bis(2-chloroethoxy)methane	0.33	mg/kg	70	130	30
Butylbenzylphthalate	0.33	mg/kg	70	130	30
Dibenzofuran	0.33	mg/kg	70	130	30
Diethylphthalate	0.33	mg/kg	70	130	30
Dimethylphthalate	0.33	mg/kg	70	130	30
Di-n-Butylphthalate	0.33	mg/kg	70	130	30
Di-n-Octylphthalate	0.33	mg/kg	70	130	30
Hexachlorobenzene	0.33	mg/kg	70	130	30
Hexachlorobutadiene	0.33	mg/kg	70	130	30
Hexachlorocyclopentadiene	0.33	mg/kg	70	130	30
Hexachloroethane	0.33	mg/kg	70	130	30
Isophorone	0.33	mg/kg	70	130	30
Nitrobenzene	0.33	mg/kg	70	130	30
N-Nitroso-dimethylamine	0.33	mg/kg	70	130	30
N-Nitroso-di-n-Propylamine	0.33	mg/kg	70	130	30
N-Nitrosodiphenylamine	0.33	mg/kg	70	130	30
Pentachlorophenol	1.6	mg/kg	70	130	30
Phenol	0.33	mg/kg	70	130	30
Surrogates (listed below or equivalent)					
2,4,6-Tribromophenol	--	--	70	130	--
Phenol-d5	--	--	70	130	--
2-Fluorobiphenyl	--	--	70	130	--
Nitrobenzene-d5	--	--	70	130	--
2-fluorobiphenol	--	--	70	130	--
Terphenyl-d14	--	--	70	130	--
Polynuclear Aromatic Hydrocarbons by SW8270C or D-SIM					
Acenaphthene	0.1	mg/kg	70	130	30
Acenaphthylene	0.1	mg/kg	70	130	30
Anthracene	0.01	mg/kg	70	130	30

Table 3.4. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Soil and Solid Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]
Benz(a)anthracene	0.01	mg/kg	70	130	30
Benzo(a)pyrene	0.005	mg/kg	70	130	30
Benzo(b)fluoranthene	0.01	mg/kg	70	130	30
Benzo(g,h,i)perylene	0.01	mg/kg	70	130	30
Benzo(k)fluoranthene	0.01	mg/kg	70	130	30
Chrysene	0.01	mg/kg	70	130	30
Dibenz(a,h)anthracene	0.005	mg/kg	70	130	30
Fluoranthene	0.01	mg/kg	70	130	30
Fluorene	0.01	mg/kg	70	130	30
Indeno(1,2,3-cd)pyrene	0.01	mg/kg	70	130	30
Naphthalene	0.1	mg/kg	70	130	30
Phenanthrene	0.01	mg/kg	70	130	30
Pyrene	0.01	mg/kg	70	130	30
Surrogate (listed below or equivalent)					
2-Methylanthracene	--	--	70	130	--
TPH by ADHS 8015AZR1					
Volatile TPH					
GRO (C_6 – C_{10})	20	mg/kg	70	130	30
Volatile surrogate (listed below or equivalent)					
2-Bromofluorobenzene	--	--	70	130	--
Extractable TPH					
DRO (C_{10} – C_{22})	30	mg/kg	70	130	30
ORO (C_{22} – C_{32})	100	mg/kg	70	130	30
Extractable surrogate (listed below or equivalent)					
Docosane	--	--	70	30	--
Organochlorine Pesticides by EPA 8081A or B					
4,4'-DDD	3.3	µg/kg	70	130	30
4,4'-DDE	3.3	µg/kg	70	130	30
4,4'-DDT	3.3	µg/kg	70	130	30
Aldrin	1.7	µg/kg	70	130	30
alpha-BHC	1.7	µg/kg	70	130	30

Table 3.4. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Soil and Solid Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]
beta-BHC	1.7	µg/kg	70	130	30
delta-BHC	1.7	µg/kg	70	130	30
gamma-BHC	1.7	µg/kg	70	130	30
alpha-Chlordane	1.7	µg/kg	70	130	30
gamma-Chlordane	1.7	µg/kg	70	130	30
Chlordane	3.3	µg/kg	70	130	30
Dieldrin	3.3	µg/kg	70	130	30
Endosulfan I	3.3	µg/kg	70	130	30
Endosulfan II	3.3	µg/kg	70	130	30
Endosulfan Sulfate	3.3	µg/kg	70	130	30
Endrin	3.3	µg/kg	70	130	30
Endrin Aldehyde	3.3	µg/kg	70	130	30
Endrin Ketone	3.3	µg/kg	70	130	30
Heptachlor	1.7	µg/kg	70	130	30
Heptachlor Epoxide	1.7	µg/kg	70	130	30
Methoxychlor	17	µg/kg	70	130	30
Toxaphene	170	µg/kg	70	130	30
Surrogates (listed below or equivalent)					
DCBP	--	--	70	130	--
TCMX	--	--	70	130	--
PCBs by EPA 8082 or 8082A					
Aroclor-1016	33	µg/kg	70	130	30
Aroclor-1221	67	µg/kg	70	130	30
Aroclor-1232	33	µg/kg	70	130	30
Aroclor-1242	33	µg/kg	70	130	30
Aroclor-1248	33	µg/kg	70	130	30
Aroclor-1254	33	µg/kg	70	130	30
Aroclor-1260	33	µg/kg	70	130	30
Surrogate (listed below or equivalent)					
DCBP	--	--	70	130	--
Dioxins/Furans by EPA 1613A or B or EPA 8290					

Table 3.4. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Soil and Solid Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]
2,3,7,8-TCDF	1	pg/g	70	130	30
2,3,7,8-TCDD	1	pg/g	70	130	30
1,2,3,7,8-PeCDF	5	pg/g	70	130	30
2,3,4,7,8-PeCDF	5	pg/g	70	130	30
1,2,3,7,8-PeCDD	5	pg/g	70	130	30
1,2,3,4,7,8-HxCDF	5	pg/g	70	130	30
1,2,3,6,7,8-HxCDF	5	pg/g	70	130	30
2,3,4,6,7,8-HxCDF	5	pg/g	70	130	30
1,2,3,7,8,9-HxCDF	5	pg/g	70	130	30
1,2,3,4,7,8-HxCDD	5	pg/g	70	130	30
1,2,3,6,7,8-HxCDD	5	pg/g	70	130	30
1,2,3,7,8,9-HxCDD	5	pg/g	70	130	30
1,2,3,4,6,7,8-HpCDF	5	pg/g	70	130	30
1,2,3,4,7,8,9-HpCDF	5	pg/g	70	130	30
1,2,3,4,6,7,8-HpCDD	5	pg/g	70	130	30
OCDF	10	pg/g	70	130	30
OCDD	10	pg/g	70	130	30
Metals by EPA 6010B or C/SW6020/7471A or B					
Antimony	0.5	mg/kg	80	120	20
Arsenic	5.0	mg/kg	80	120	20
Barium	1.0	mg/kg	80	120	20
Beryllium	0.5	mg/kg	80	120	20
Boron	0.5	mg/kg	80	120	20
Cadmium	0.5	mg/kg	80	120	20
Chromium	2.0	mg/kg	80	120	20
Cobalt	1.0	mg/kg	80	120	20
Copper	0.5	mg/kg	80	120	20
Lead	2.5	mg/kg	80	120	20
Lithium	1.0	mg/kg	80	120	20
Magnesium	10	mg/kg	80	120	20

Table 3.4. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Soil and Solid Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]
Mercury	0.02	mg/kg	80	120	20
Molybdenum	0.5	mg/kg	80	120	20
Nickel	0.5	mg/kg	80	120	20
Potassium	10	mg/kg	80	120	20
Selenium	10	mg/kg	80	120	20
Silver	2.5	mg/kg	80	120	20
Sodium	10	mg/kg	80	120	20
Thallium	0.5	mg/kg	80	120	20
Uranium	0.5	mg/kg	80	120	20
Zinc	0.5	mg/kg	80	120	20
Hexavalent Chromium by EPA 7196A/7199					
Hexavalent Chromium by 7196A	1	mg/kg	80	120	20
Hexavalent Chromium by 7199	0.1	mg/kg	80	120	20
Sulfide by EPA 9031/9034					
Sulfide	1	mg/kg	80	120	20
Cyanide by EPA 9014					
Total cyanide	0.5	mg/kg	70	130	30
Other Methods: EPA 1030, EPA 9045C, EPA 9095B and EPA 9060					
Ignitability (EPA 1030)	NA	Y/N	NA	NA	NA
pH (EPA9045C)	NA	pH units	90	110	10
Paint Filter Free Liquid Test (EPA 9095B)	NA	Y/N	NA	NA	NA
Total organic carbon (SW9060)	1	mg/Kg	80	120	30
TCLP Volatile Organic Compounds EPA 1311/8260B or C					
1,1-Dichloroethene	0.025	mg/L	70	130	30
1,2-Dichloroethane	0.01	mg/L	70	130	30
2-Butanone	0.1	mg/L	70	130	30
Benzene	0.05	mg/L	70	130	30
Carbon Tetrachloride	0.01	mg/L	70	130	30
Chlorobenzene	0.025	mg/L	70	130	30
Chloroform	0.01	mg/L	70	130	30
Tetrachloroethene	0.01	mg/L	70	130	30

Table 3.4. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Soil and Solid Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]
Trichloroethene	0.01	mg/L	70	130	30
Vinyl chloride	0.01	mg/L	70	130	30
Surrogates (listed below or equivalent)					
Toluene-D8	--	--	70	130	--
4-Bromofluorobenzene	--	--	70	130	--
1,2-Dichloroethane-d4	--	--	70	130	--
Dibromofluoromethane	--	--	70	130	--
TCLP Semivolatile Organic Compounds EPA 1311/8270C or D					
2-Methylphenol	0.5	mg/L	70	130	30
3&4-Methylphenol	0.5	mg/L	70	130	30
1,4-Dichlorobenzene	0.5	mg/L	70	130	30
2.4-Dinitrotoluene	0.1	mg/L	70	130	30
Hexachlorobenzene	0.1	mg/L	70	130	30
Hexachlorobutadiene	0.2	mg/L	70	130	30
Hexachloroethane	0.5	mg/L	70	130	30
Nitrobenzene	0.5	mg/L	70	130	30
Pentachlorophenol	0.5	mg/L	70	130	30
Pyridine	0.5	mg/L	70	130	30
2,4,6-Trichlorophenol	0.5	mg/L	70	130	30
2,4,5-Trichlorophenol	0.5	mg/L	70	130	30
Surrogates (listed below or equivalent)					
2,4,6-Tribromophenol	--	--	70	130	--
Phenol-d5	--	--	70	130	--
2-Fluorobiphenyl	--	--	70	130	--
Nitrobenzene-d5	--	--	70	130	--
2-fluorobiphenol	--	--	70	130	--
Terphenyl-d14	--	--	70	130	--
TCLP Organochlorine Pesticides EPA 1311/8081A or B					
gamma-BHC	0.1	mg/L	70	130	30
Endrin	0.01	mg/L	70	130	30
Heptachlor	0.005	mg/L	70	130	30

Table 3.4. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Soil and Solid Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]
Heptachlor Epoxide	0.005	mg/L	70	130	30
Methoxylchlor	0.1	mg/L	70	130	30
Toxaphene	0.1	mg/L	70	130	30
Surrogates (listed below or equivalent)					
DCBP	--	--	70	130	--
TCMX	--	--	70	130	--
TCLP Metals EPA 1311, 6010B or C/SW6020/7470A or B (LCS/LCSD and MS/MSD)					
Arsenic	0.5	mg/L	80	120	20
Barium	10	mg/L	80	120	20
Cadmium	0.05	mg/L	80	120	20
Chromium	0.1	mg/L	80	120	20
Lead	0.5	mg/L	80	120	20
Mercury	0.002	mg/L	80	120	20
Selenium	0.6	mg/L	80	120	20
Silver	0.5	mg/L	80	120	20

[a] If facility permit limits are lower than the reporting limit provided in this table, actual laboratory detection and reporting limits will be used that are capable of demonstrating compliance with the permit

[b] Control limits provided are default, generic limits. In-house statistically derived control limits may be used in lieu of generic limits.

DRO = diesel range organic

GRO = gasoline range organic

LCS/LCSD = laboratory control sample/laboratory control sample duplicate

mg/kg = milligram(s) per kilogram

mg/L = milligram(s) per liter

MS/MSD = matrix spike/matrix spike duplicate

NA = not applicable

ORO = oil range organic

pg/g = pictogram(s) per gram

QAPP = Quality Assurance Project Plan

RL = reporting Limit

TCLP = Toxicity Characteristic Leaching Procedure

Table 3.5. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Aqueous Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]
Volatile Organic Compounds by EPA 8260B or C or EPA 624					
1,1,1,2-Tetrachloroethane	5	µg/L	70	130	30
1,1,1-Trichloroethanec	2	µg/L	70	130	30
1,1,2,2-Tetrachloroethanec	2	µg/L	70	130	30
1,1,2-Trichloroethanec	2	µg/L	70	130	30
1,1-Dichloroethanec	2	µg/L	70	130	30
1,1-Dichloroethenec	5	µg/L	70	130	30
1,1-Dichloropropene	2	µg/L	70	130	30
1,2,3-Trichlorobenzene	5	µg/L	70	130	30
1,2,3-Trichloropropane	10	µg/L	70	130	30
1,2,4-Trichlorobenzenec	5	µg/L	70	130	30
1,2,4-Trimethylbenzene	2	µg/L	70	130	30
1,2-Dibromo-3-chloropropane	5	µg/L	70	130	30
1,2-Dibromoethane	2	µg/L	70	130	30
1,2-Dichlorobenzenec	2	µg/L	70	130	30
1,2-Dichloroethanec	2	µg/L	70	130	30
1,2-Dichloropropanec	2	µg/L	70	130	30
1,3,5-Trimethylbenzene	2	µg/L	70	130	30
1,3-Dichlorobenzenec	2	µg/L	70	130	30
1,3-Dichloropropane	2	µg/L	70	130	30
1,4-Dichlorobenzenec	2	µg/L	70	130	30
2,2-Dichloropropane	2	µg/L	70	130	30
2-Butanone	10	µg/L	70	130	30
2-Chloroethylvinyl etherc	5	µg/L	70	130	30
2-Chlorotoluene	5	µg/L	70	130	30
2-Hexanone	10	µg/L	70	130	30

Table 3.5. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Aqueous Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]
4-Chlorotoluene	5	µg/L	70	130	30
4-Methyl-2-pentanone	5	µg/L	70	130	30
Acetone	20	µg/L	70	130	30
Acroleinc	10	µg/L	70	130	30
Acrylonitrile[c]	10	µg/L	70	130	30
Benzene[c]	2	µg/L	70	130	30
Bromobenzene	5	µg/L	70	130	30
Bromochloromethane	5	µg/L	70	130	30
Bromodichloromethane[c]	2	µg/L	70	130	30
Bromoform[c]	5	µg/L	70	130	30
Bromomethane[c]	5	µg/L	70	130	30
Carbon Disulfide	5	µg/L	70	130	30
Carbon Tetrachloride[c]	5	µg/L	70	130	30
Chlorobenzene[c]	2	µg/L	70	130	30
Chloroethane[c]	5	µg/L	70	130	30
Chloroform[c]	2	µg/L	70	130	30
Chloromethane[c]	5	µg/L	70	130	30
cis-1,2-Dichloroethene	2	µg/L	70	130	30
cis-1,3-Dichloropropene[c]	2	µg/L	70	130	30
Dibromochloromethane[c]	2	µg/L	70	130	30
Dibromomethane	2	µg/L	70	130	30
Dichlorodifluoromethane	5	µg/L	70	130	30
Ethylbenzene[c]	2	µg/L	70	130	30
Hexachlorobutadiene[c]	5	µg/L	70	130	30
Iodomethane	2	µg/L	70	130	30
Isopropylbenzene	2	µg/L	70	130	30

Table 3.5. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Aqueous Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]
Methylene chloride[c]	5	µg/L	70	130	30
Methyl-tert-butyl- ether	5	µg/L	70	130	30
N-Butylbenzene	5	µg/L	70	130	30
N-Propylbenzene	2	µg/L	70	130	30
Naphthalene[c]	5	µg/L	70	130	30
p-Isopropyltoluene	2	µg/L	70	130	30
sec-Butylbenzene	5	µg/L	70	130	30
Styrene	2	µg/L	70	130	30
tert-Butylbenzene	5	µg/L	70	130	30
Tetrachloroethene[c]	2	µg/L	70	130	30
Toluene[c]	2	µg/L	70	130	30
trans-1,2-Dichloroethene[c]	2	µg/L	70	130	30
trans-1,3-Dichloropropene[c]	2	µg/L	70	130	30
Trichloroethene[c]	2	µg/L	70	130	30
Trichlorofluoromethane	5	µg/L	70	130	30
Vinyl acetate	5	µg/L	70	130	30
Vinyl chloride[c]	2	µg/L	70	130	30
Total xylenes	10	µg/L	70	130	30
Surrogates (listed below or equivalent)					
Toluene-D8	--	µg/L	70	130	--
1,2-Dichloroethane-d4	--	µg/L	70	130	--
4-Bromofluorobenzene	--	µg/L	70	130	--
Dibromofluoromethane	--	µg/L	70	130	--
Semivolatile Organic Compounds by EPA 8270C or D or EPA 625					
Acenaphthene[c]	10	µg/L	70	130	30
Acenaphthylene[c]	10	µg/L	70	130	30

Table 3.5. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Aqueous Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]
Anthracene[c]	10	µg/L	70	130	30
Benz(a)anthracene[c]	10	µg/L	70	130	30
Benzo(a)pyrene[c]	10	µg/L	70	130	30
Benzo(b)fluoranthene[c]	10	µg/L	70	130	30
Benzo(g,h,i)perylene[c]	10	µg/L	70	130	30
Benzo(k)fluoranthene[c]	10	µg/L	70	130	30
Chrysene[c]	10	µg/L	70	130	30
Dibenz(a,h)anthracene[c]	20	µg/L	70	130	30
Fluoranthene[c]	10	µg/L	70	130	30
Fluorene[c]	10	µg/L	70	130	30
Indeno(1,2,3-cd)pyrene[c]	20	µg/L	70	130	30
2-Methylnaphthalene	10	µg/L	70	130	30
Naphthalene[c]	10	µg/L	70	130	30
Phenanthrene[c]	10	µg/L	70	130	30
Pyrene[c]	10	µg/L	70	130	30
1,2,4-Trichlorobenzene[c]	10	µg/L	70	130	30
1,2-Dichlorobenzene[c]	10	µg/L	70	130	30
1,2-Diphenylhydrazine[c]	10	µg/L	70	130	30
1,3-Dichlorobenzene[c]	10	µg/L	70	130	30
1,4-Dichlorobenzene[c]	10	µg/L	70	130	30
2,4-Dinitrotoluene[c]	10	µg/L	70	130	30
2,6-Dinitrotoluene[c]	10	µg/L	70	130	30
2,4,5-Trichlorophenol	50	µg/L	70	130	30
2,4,6-Trichlorophenol[c]	10	µg/L	70	130	30
2,4-Dichlorophenol[c]	10	µg/L	70	130	30
2,4-Dimethylphenol[c]	10	µg/L	70	130	30

Table 3.5. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Aqueous Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]
2,4-Dinitrophenol[c]	20	µg/L	70	130	30
2-Chloronaphthalene[c]	10	µg/L	70	130	30
2-Chlorophenol[c]	10	µg/L	70	130	30
2-Methylphenol	50	µg/L	70	130	30
2-Nitroaniline	50	µg/L	70	130	30
2-Nitrophenol[c]	10	µg/L	70	130	30
3-Nitroaniline	50	µg/L	70	130	30
2-Methyl-4,6-Dinitrophenol[c]	20	µg/L	70	130	30
3,3'-Dichlorobenzidine[c]	10	µg/L	70	130	30
4-Chloroaniline	10	µg/L	70	130	30
3&4-Methylphenol	50	µg/L	70	130	30
4-Bromophenyl-phenyl ether[c]	10	µg/L	70	130	30
4-Chlorophenyl-phenyl ether[c]	10	µg/L	70	130	30
4-Chloro-3-methylphenol[c]	50	µg/L	70	130	30
4-Nitroaniline	50	µg/L	70	130	30
4-Nitrophenol[c]	50	µg/L	70	130	30
Benzidine[c]	10	µg/L	70	130	30
Benzoic Acid	100	µg/L	70	130	30
Benzyl Alcohol	20	µg/L	70	130	30
Bis(2-Chloroethyl)Ether[c]	10	µg/L	70	130	30
Bis(2-Chloroisopropyl)Ether[c]	10	µg/L	70	130	30
Bis(2-Ethylhexyl)Phthalate[c]	10	µg/L	70	130	30
Bis-(2-chloroethoxy)methane[c]	10	µg/L	70	130	30
Butyl benzyl phthalate[c]	20	µg/L	70	130	30
Dibenzofuran	10	µg/L	70	130	30
Diethyl phthalate[c]	20	µg/L	70	130	30

Table 3.5. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Aqueous Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]
Dimethyl phthalate[c]	10	µg/L	70	130	30
Di-n-Butylphthalate[c]	20	µg/L	70	130	30
Di-n-Octylphthalate[c]	10	µg/L	70	130	30
Hexachlorobenzene	10	µg/L	70	130	30
Hexachlorobutadiene	10	µg/L	70	130	30
Hexachlorocyclopentadiene[c]	10	µg/L	70	130	30
Hexachloroethane	10	µg/L	70	130	30
Isophorone[c]	10	µg/L	70	130	30
Nitrobenzene[c]	10	µg/L	70	130	30
n-Nitrosodimethylamine[c]	10	µg/L	70	130	30
N-Nitroso-di-n-Propylamine[c]	10	µg/L	70	130	30
N-Nitrosodiphenylamine[c]	10	µg/L	70	130	30
Pentachlorophenol[c]	20	µg/L	70	130	30
Phenol[c]	10	µg/L	70	130	30
Surrogates (listed below or equivalent)					
2,4,6-Tribromophenol	--	--	70	130	--
2-Fluorobiphenyl	--	--	70	130	--
2-Fluorophenol	--	--	70	130	--
Nitrobenzene-d5	--	--	70	130	--
Phenol-d5	--	--	70	130	--
Terphenyl-d14	--	--	70	130	--
Polynuclear Aromatic Hydrocarbons by SW8270C or D-SIM					
Acenaphthene	3.0	µg/L	70	130	30
Acenaphthylene	3.0	µg/L	70	130	30
Anthracene	0.3	µg/L	70	130	30
Benz(a)anthracene	0.3	µg/L	70	130	30
Benzo(a)pyrene	0.15	µg/L	70	130	30

Table 3.5. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Aqueous Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]
Benzo(b)fluoranthene	0.3	µg/L	70	130	30
Benzo(g,h,i)perylene	0.3	µg/L	70	130	30
Benzo(k)fluoranthene	0.3	µg/L	70	130	30
Chrysene	0.3	µg/L	70	130	30
Dibenz(a,h)anthracene	0.15	µg/L	70	130	30
Fluoranthene	0.3	µg/L	70	130	30
Fluorene	0.3	µg/L	70	130	30
Indeno(1,2,3-cd)pyrene	0.3	µg/L	70	130	30
Naphthalene	3.0	µg/L	70	130	30
Phenanthrene	0.3	µg/L	70	130	30
Pyrene	0.3	µg/L	70	130	30
Surrogate (listed below or equivalent)					
2-methylanthracene	--	--	*70*	*130*	--
Total Petroleum Hydrocarbons by EPA 8015B, C or D					
GRO (C_6 – C_{10})	5.0	mg/L	70	130	30
DRO (C_{10} – C_{22})	5.0	mg/L	70	130	30
ORO (C_{22} – C_{32})	5.0	mg/L	70	130	30
Surrogates (listed below or equivalent)					
GRO - 2-bromofluorobenzene			70	130	
DRO and RRO - n-docosane			70	130	
Organochlorine Pesticides by EPA 8081A or B or EPA 608					
4,4'-DDD[c]	0.1	µg/L	70	130	30
4,4'-DDE[c]	0.1	µg/L	70	130	30
4,4'-DDT[c]	0.1	µg/L	70	130	30
Aldrin[c]	0.05	µg/L	70	130	30
alpha-BHC[c]	0.05	µg/L	70	130	30
beta-BHC[c]	0.05	µg/L	70	130	30

Table 3.5. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Aqueous Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]
delta-BHC[c]	0.05	µg/L	70	130	30
gamma-BHC[c]	0.05	µg/L	70	130	30
alpha-Chlordane	0.05	µg/L	70	130	30
gamma-Chlordane	0.05	µg/L	70	130	30
Chlordane[c]	0.1	µg/L	70	130	30
Dieldrin[c]	0.1	µg/L	70	130	30
Endosulfan I[c]	0.1	µg/L	70	130	30
Endosulfan II[c]	0.1	µg/L	70	130	30
Endosulfan Sulfate[c]	0.1	µg/L	70	130	30
Endrin[c]	0.1	µg/L	70	130	30
Endrin Aldehyde[c]	0.1	µg/L	70	130	30
Endrin Ketone	0.1	µg/L	70	130	30
Heptachlor[c]	0.05	µg/L	70	130	30
Heptachlor Epoxide[c]	0.05	µg/L	70	130	30
Methoxychlor	0.5	µg/L	70	130	30
Toxaphene[c]	5	µg/L	70	130	30
Surrogates (listed below or equivalent)					
DCBP	--	--	70	130	--
TCMX	--	--	70	130	--
PCBs by EPA 8082 or EPA 8082A or EPA 608					
Aroclor-1016[c]	0.5	µg/L	70	130	30
Aroclor-1221[c]	1	µg/L	70	130	30
Aroclor-1232[c]	0.5	µg/L	70	130	30
Aroclor-1242[c]	0.5	µg/L	70	130	30
Aroclor-1248[c]	0.5	µg/L	70	130	30
Aroclor-1254[c]	0.5	µg/L	70	130	30
Aroclor-1260[c]	0.5	µg/L	70	130	30
Surrogate (listed below or equivalent)					

Table 3.5. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Aqueous Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]
DCBP	--	--	70	130	--
Dioxins/Furans by EPA 1613A or B or EPA 8290					
2,3,7,8-TCDF	1	pg/L	70	130	30
2,3,7,8-TCDD[c]	1	pg/L	70	130	30
1,2,3,7,8-PeCDF	1	pg/L	70	130	30
2,3,4,7,8-PeCDF	1	pg/L	70	130	30
1,2,3,7,8-PeCDD	1	pg/L	70	130	30
1,2,3,4,7,8-HxCDF	1	pg/L	70	130	30
1,2,3,6,7,8-HxCDF	1	pg/L	70	130	30
2,3,4,6,7,8-HxCDF	1	pg/L	70	130	30
1,2,3,7,8,9-HxCDF	1	pg/L	70	130	30
1,2,3,4,7,8-HxCDD	1	pg/L	70	130	30
1,2,3,6,7,8-HxCDD	1	pg/L	70	130	30
1,2,3,7,8,9-HxCDD	1	pg/L	70	130	30
1,2,3,4,6,7,8-HpCDF	1	pg/L	70	130	30
1,2,3,4,7,8,9-HpCDF	1	pg/L	70	130	30
1,2,3,4,6,7,8-HpCDD	1	pg/L	70	130	30
OCDF	5	pg/L	70	130	30
OCDD	5	pg/L	70	130	30
Metals by EPA 6010B or C/6020/200.7/200.8[d]/245.1					
Antimony[c]	0.001	mg/L	80	120	20
Arsenic[c]	0.05	mg/L	80	120	20
Barium	0.01	mg/L	80	120	20
Beryllium[c]	0.001	mg/L	80	120	20
Boron	0.01	mg/L	80	120	20
Cadmium[c]	0.005	mg/L	80	120	20
Chromium[c]	0.01	mg/L	80	120	20
Cobalt	0.001	mg/L	80	120	20
Copper[c]	0.001	mg/L	80	120	20
Lead[c]	0.05	mg/L	80	120	20

Table 3.5. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Aqueous Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]
Lithium	0.01	mg/L	80	120	20
Magnesium	2.0	mg/L	80	120	20
Mercury[c]	0.0002	mg/L	80	120	20
Molybdenum	0.01	mg/L	80	120	20
Nickel[c]	0.001	mg/L	80	120	20
Potassium	0.5	mg/L	80	120	20
Selenium[c]	0.06	mg/L	80	120	20
Silver[c]	0.05	mg/L	80	120	20
Sodium	0.5	mg/L	80	120	20
Thallium[c]	0.001	mg/L	80	120	20
Uranium	0.01	mg/L	80	120	20
Zinc[c]	0.05	mg/L	80	120	20
Hexavalent Chromium by EPA 7196A/7199					
Hexavalent Chromium by 7196A	0.01	mg/L	80	120	20
Hexavalent Chromium by 7199	0.001	mg/L	80	120	20
Sulfide by EPA 9034 or SM4500 S2					
Sulfide	1	mg/L	80	120	20
Total Cyanide by SM4500-CN-E or EPA 9014					
Total Cyanide[c]	0.02	mg/L	80	120	20
Amenable Cyanide by SM4500-CN-G					
Amenable Cyanide	0.02	mg/L	80	120	20
Weak Acid Dissociable Cyanide by SM4500-CN-I					
Weak Acid Dissociable Cyanide	0.02	mg/L	80	120	20
Ammonia by SM4500-NH3 B, D, E					
Ammonia (LCS)	0.50	mg/L	80	120	20
Nitrate/Nitrite by SM4500NO3 or EPA 353.2					
Nitrate/nitrite	0.01	mg/L	80	120	20
Total Kjeldahl Nitrogen by SM4500Norg A or B or C or D					
Nitrate/nitrite					
Anions by EPA 300.0 or SW9056					
Nitrate	1	mg/L	80	120	20

Table 3.5. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Aqueous Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]
Nitrite	1	mg/L	80	120	20
Sulfate	1	mg/L	80	120	20
Choride	1	mg/L	80	120	20
Fluoride	1	mg/L	80	120	20
Total Dissolved Solids by SM2540C					
Total Dissolved Solids	1	mg/L	80	120	20
Total Organic Carbon by SW9060					
Total Organic Carbon	1	mg/L	80	120	20
Alkalinity by SM2320B					
Alkalinity as $CaCO_3$	1	mg/L	80	120	20
Carbonate as $CaCO_3$	1	mg/L	80	120	20
Bicarbonate as $CaCO_3$	1	mg/L	80	120	20
Asbestos					
Asbestos[c]	NA	mfl	NA	NA	NA
Radium 226 and 228 Combined in Groundwater and Wastewater by EPA 903.1 and 904/HPGe					
Radium 226 and 228 Combined	NA	pCi/L	NA	NA	NA
Whole Effluent Toxicity (WET) by Test Method 1000.0/1002.1/1003.0					
Fathead Minnow, *Pimephales promelas*	NA		NA	NA	NA
Daphnid, *Ceriodaphnia dubia*	NA		NA	NA	NA
Green Alga, *Selenastrum capricornutum*	NA		NA	NA	NA
Microbiology by SM9223B-2004					
Total Coliform	0	CFU/100 mL	NA	NA	NA
E. Coli	0	CFU/100 mL	NA	NA	NA

[a] If facility permit limits are lower than the reporting limit provided in this table, actual laboratory detection and reporting limits will be used that are capable of demonstrating compliance with the permit.

[b] Control limits provided are default, generic limits. In-house statistically derived control limits may be used in lieu of generic limits.

[c] Part of Title 40 *Code of Federal Regulations* Part 423, Appendix A, Priority Pollutants List

[d] Use EPA method 200.8 by collision cell to minimize interferences in poor quality water.

µg/L = microgram(s) per liter

CFU = colony forming unit

EPA = U.S. Environmental Protection Agency

Table 3.5. Summary of Analytes and QAPP Objectives for Laboratory Analyses of Aqueous Samples

APS Quality Assurance Project Plan

Analyte	RL Objective[a]	Units	Lower Control Limit[b] (percent)	Upper Control Limit[b] (percent)	Relative Percent Difference Limit[b]

HPGe = High Purity Germanium Radiation Detector

LCS/LCSD = laboratory control sample/laboratory control sample duplicate

mfl = fiber(s) per liter

mg/L = milligram(s) per liter

MS/MSD = matrix spike/ matrix spike duplicate

PCB = polychlorinated biphenyl

pCi/L = picocurie(s) per liter

pg/L = picogram(s) per liter

QAPP = Quality Assurance Project Plan

RL = reporting limit

SM = standard method

Table 3.6. Summary of Analytes and QAPP Objectives for Air and Soil Vapor Screening Samples

APS Quality Assurance Project Plan

Analyte	PQL	Units	Lower Control Limit (percent)	Upper Control Limit (percent)	RPD (percent)
Volatile Organic Compounds – TO-15					
1,1,1-Trichloroethane*	0.5	µg/m^3	70	130	30
1,1,2,2-Tetrachloroethane*	0.5	µg/m^3	70	130	30
1,1,2-Trichloroethane*	0.5	µg/m^3	70	130	30
1,1-Dichloroethane*	0.5	µg/m^3	70	130	30
1,1-Dichloroethene*	0.5	µg/m^3	70	130	30
1,1,2-Trichlorotrifluoroethane	0.5	µg/m^3	70	130	30
1,2,4-Trichlorobenzene	0.5	µg/m^3	70	130	30
1,2,4-Trimethylbenzene	0.5	µg/m^3	70	130	30
1,2-Dibromoethane (EDB)	0.5	µg/m^3	70	130	30
1,2-Dichlorobenzene	0.5	µg/m^3	70	130	30
1,2-Dichloroethane*	0.5	µg/m^3	70	130	30
1,2-Dichloropropane	0.5	µg/m^3	70	130	30
1,3-Dichlorobenzene	0.5	µg/m^3	70	130	30
1,3,5-Trimethylbenzene	0.5	µg/m^3	70	130	30
1,4-Dichlorobenzene	0.5	µg/m^3	70	130	30
Benzene*	0.5	µg/m^3	70	130	30
Bromomethane	0.5	µg/m^3	70	130	30
Carbon Tetrachloride*	0.5	µg/m^3	70	130	30
Chlorobenzene	0.5	µg/m^3	70	130	30
Chloroethane*	0.5	µg/m^3	70	130	30
Chloroform*	0.5	µg/m^3	70	130	30
Chloromethane	0.5	µg/m^3	70	130	30
cis-1,2-Dichloroethene*	0.5	µg/m^3	70	130	30
cis-1,3-Dichloropropene	0.5	µg/m^3	70	130	30
Dichlorodifluoromethane*	0.5	µg/m^3	70	130	30
Dichlorotetrafluoroethane	0.5	µg/m^3	70	130	30
Ethylbenzene*	0.5	µg/m^3	70	130	30
Hexachlorobutadiene	0.5	µg/m^3	70	130	30
m,p-Xylenes*	0.5	µg/m^3	70	130	30
Methylene chloride*	0.5	µg/m^3	70	130	30
o-Xylene*	0.5	µg/m^3	70	130	30
Styrene	0.5	µg/m^3	70	130	30

Table 3.6. Summary of Analytes and QAPP Objectives for Air and Soil Vapor Screening Samples
APS Quality Assurance Project Plan

Analyte	PQL	Units	Lower Control Limit (percent)	Upper Control Limit (percent)	RPD (percent)
Tetrachloroethene*	0.5	µg/m^3	70	130	30
Toluene*	0.5	µg/m^3	70	130	30
trans-1,2 -Dichloroethene	0.5	µg/m^3	70	130	30
trans-1,3 -Dichloropropene	0.5	µg/m^3	70	130	30
Trichloroethene*	0.5	µg/m^3	70	130	30
Trichlorofluoromethane*	0.5	µg/m^3	70	130	30
Vinyl chloride*	0.5	µg/m^3	70	130	30
Diisopropyl ether (DIPE)	1	µg/m^3	70	130	30
Ethyl-t-butyl ether (ETBE)	1	µg/m^3	70	130	30
t-Amyl-methyl ether (TAME)	1	µg/m^3	70	130	30
t-butanol (TBA)	1	µg/m^3	70	130	30
Leak Check Compound					
1,1-Difluoroethane	10	µg/m^3			
Polynuclear Aromatic Hydrocarbons – TO-13A					
Acenaphthene	0.5	µg/m^3	70	130	30
Acenaphthylene	0.5	µg/m^3	70	130	30
Anthracene	0.5	µg/m^3	70	130	30
Benz(a)anthracene	0.5	µg/m^3	70	130	30
Benzo(a)pyrene	0.5	µg/m^3	70	130	30
Benzo(b)fluoranthene	0.5	µg/m^3	70	130	30
Benzo(g,h,i)perylene	0.5	µg/m^3	70	130	30
Benzo(k)fluoranthene	0.5	µg/m^3	70	130	30
Chrysene	0.5	µg/m^3	70	130	30
Dibenz(a,h)anthracene	0.5	µg/m^3	70	130	30
Fluoranthene	0.5	µg/m^3	70	130	30
Fluorene	0.5	µg/m^3	70	130	30
Indeno(1,2,3-cd)pyrene	0.5	µg/m^3	70	130	30
Naphthalene	0.5	µg/m^3	70	130	30
Phenanthrene	0.5	µg/m^3	70	130	30
Pyrene	0.5	µg/m^3	70	130	30
Oxygen, Carbon Dioxide, Methane, and Nitrogen – EPA 3C					
Oxygen	1	µg/m^3	70	130	30
Carbon Dioxide	1	µg/m^3	70	130	30

Table 3.6. Summary of Analytes and QAPP Objectives for Air and Soil Vapor Screening Samples
APS Quality Assurance Project Plan

Analyte	PQL	Units	Lower Control Limit (percent)	Upper Control Limit (percent)	RPD (percent)
Methane	1	µg/m^3	70	130	30
Nitrogen	1	µg/m^3	70	130	30
Lead – NIOSH 7300					
Lead	1	µg/m^3	70	130	30

Notes:

All values presented are the method control limits (LCS, MS, Surrogates)

* Primary Target Compounds; California Regional Water Quality Control Board Los Angeles Region Interim Guidance for Active Soil Gas Investigation, February 25, 1997

µg/m^3 = microgram(s) per cubic meter

PQL = Practical Quantitation Limit

QAPP = Quality Assurance Project Plan

Table 3.7. Summary of Sample Containers, Preservation, Volumes, and Holding Times for Soil and Solid Sample Analyses

APS Quality Assurance Project Plan

Analytical Method	Container	Preservation	Minimum Sample Weight or Volume	Holding Time
VOCs by EPA 8260B or C	Encore™ sampler	≤6°C	5 g for Encore™	Must be delivered to the laboratory within 24 hours of collection. Laboratory has 48 hours from time of collection to analysis; extrusion and preservation in methanol; or freezing. After methanol preservation or freezing, 14 days to analysis.
	Terracore sampler	≤6°C	5 g soil/5 mL MeOH, or larger volume of soil with equal measure of MeOH	14 days – analysis
TCLP VOCs by EPA1311/8260B or C	4 oz glass with Teflon™-lined cap	≤6°C	100 g	14 days to TCLP extraction/14 days to analysis.
SVOCs by SW8270C or D	4 oz glass with Teflon™-lined cap	≤6°C	100 g	14 days – extraction, 40 days – analysis
TCLP SVOCs by EPA1311/8270C or D	4 oz glass with Teflon™-lined cap	≤6°C	100 g	14 days to TCLP extraction/7 days to extraction from TCLP/40 days to analysis after extraction
PAHs by SW8270C or D-SIM	4 oz glass with Teflon™-lined cap	≤6°C	100 g	14 days – extraction, 40 days – analysis
TPH by ADHS 8015 AZR1 (GRO-C_6 to C_{10})	Encore™ sampler	≤6°C	5 g for Encore™ 5 g soil/5 mL MeOH, or larger volume of soil with equal measure of MeOh	Encore™ 48 hrs to analysis; extrusion and preservation in methanol; or freezing. After methanol preservation or freezing, 14 days to analysis.
	Terracore sampler	≤6°C	10 g/10 mL MeOH or 20 g/20 mL MeOH	14 days – analysis
TPH by ADHS 8015 AZR1 (DRO-C_{10} to C_{22})	4 oz glass with Teflon™-lined cap	≤6°C	100 g	14 days – both extraction and analysis
TPHo by ADHS 8015 AZR1 (ORO-C_{22} to C_{32})	4 oz glass with Teflon™-lined cap	≤6°C	100 g	14 days – both extraction and analysis
Dioxins/Furans by 1613A or 8290	4 oz glass with Teflon™-lined cap	≤6°C	100 g	30 days – extraction, 40 days – analysis
Organochlorine Pesticides by EPA 8081A or B	4 oz glass with Teflon™-lined cap	≤6°C	100 g	14 days – extraction, 40 days – analysis
TCLP Organochlorine Pesticides by EPA 1311/8081A or B	4 oz glass with Teflon™-lined cap	≤6°C	100 g	14 days to TCLP extraction/ 7 days to extraction from TCLP/40 days to analysis after extraction
PCBs by EPA 8082 or 8082A	4 oz glass with Teflon™-lined cap	≤6°C	100 g	14 days – extraction, 40 days – analysis

Table 3.7. Summary of Sample Containers, Preservation, Volumes, and Holding Times for Soil and Solid Sample Analyses

APS Quality Assurance Project Plan

Analytical Method	Container	Preservation	Minimum Sample Weight or Volume	Holding Time
Metals by EPA 6010 B or C/SW6020/7471A or B	4 oz glass with Teflon™-lined cap	NA	50 g	6 months to extraction and analysis, 28 days for mercury
TCLP Metals by EPA 1311/6010B or C/SW7470A or B	4 oz glass with Teflon™-lined cap	NA	100 g	6 months to leach (28 days for mercury); then 6 months to analyze (28 days for mercury)
Hexavalent Chromium by EPA 7196A/7199	4 oz glass with Teflon™-lined cap	≤6°C	10 g	30 days to extract by EPA 3060A; 24 hours to analyze extract
Sulfide by EPA 9031/9034	4 oz glass with Teflon™-lined cap	Add 2N Zinc acetate until sample is moistened; ≤6°C	10 g	7 days
Total Cyanide by EPA 9014	4 oz glass with Teflon™-lined cap	≤6°C	10 g	14 days
Ignitability by EPA 1030	4 oz glass with Teflon™-lined cap	≤6°C	200 g	None
Paint Filter by EPA 9095B	4 oz glass with Teflon™-lined cap	≤6°C	100 g	None
Total Organic Carbon by SW9060	4 oz glass with Teflon™-lined cap	≤6°C	100 g	28 days
pH by EPA 9045C	4 oz glass with Teflon™-lined cap	≤6°C	50 g	Immediate

°C = degrees Celsius

ADHS = Arizona Department of Health Services

DRO = diesel range organics

ENCORETM = sampling device sold by En Novative Technologies, Inc. and approved by EPA

EPA = U.S. Environmental Protection Agency

g = gram(s)

GRO = gasoline range organics

MeOH = methanol

mL = milliliter(s)

ORO = oil range organics

PAH = polynuclear aromatic hydrocarbon

PCB = polychlorinated biphenyl

SM = standard method

SVOC = semivolatile organic compound

TPH = total petroleum hydrocarbon

TRPH = total recoverable petroleum hydrocarbon

VOC = volatile organic compound

Table 3.8. Summary of Sample Containers, Preservation, Volumes, and Holding Times for Aqueous Sample Analyses

APS Quality Assurance Project Plan

Analytical Method	Container	Preservation	Minimum Sample Weight or Volume	Holding Time
VOCs by EPA 624/8260B or C	3 x 40 mL VOA with Teflon™-lined septum	HCl to pH < 2, ≤6°C (Note: 2-chloroethyl vinyl ether , acrolein and acrylonitrile must be collected unpreserved)	3 x 40 mL	14 days – analysis 7 days if unpreserved
SVOCs by EPA 8270C or D or EPA 625	2 x 1 L amber glass, Teflon™-lined cap	≤6°C	2 x 1 L	7 days – extraction, 40 days – analysis
PAHs by SW8270C or D-SIM	2 x 1 L amber glass, Teflon™-lined cap	≤6°C	2 x 1 L	7 days – extraction, 40 days – analysis
TPH by EPA 8015B, C or D (TPH GRO-C6 to C10)	3 x 40 mL VOA with Teflon™-lined septum	HCl to pH < 2, ≤6°C	3 x 40 mL	14 days – analysis
TPH byEPA 8015B, C or D (TPH (DRO-C10 to C22)	2 x 500 mL amber glass, Teflon™-lined cap	≤6°C	2 x 500 mL	7 days – extraction, 40 days – analysis
TPH by EPA 8015B, C or D (TPH ORO-C22 to C32)	2 x 500 mL amber glass, Teflon™-lined cap	≤6°C	2 x 500 mL	7 days – extraction, 40 days – analysis
Organochlorine Pesticides by EPA 8081A or B or EPA 608	2 x 1 L amber glass, Teflon™-lined cap	≤6°C	2 x 1 L	7 days – extraction, 40 days – analysis
Polychlorinated biphenyls by EPA 8082 or 8082A or EPA 608	2 x 1 L amber glass, Teflon™-lined cap	≤6°C	2 x 1 L	7 days – extraction, 40 days – analysis
Dioxins and furans by EPA 1613A or SW8290	2 x 1 L amber glass, Teflon™-lined cap	≤6°C	2 x 1 L	7 days – extraction, 40 days – analysis
Metals by SW6010B or C/SW6020/SW7470A or B/200.7/200.8/245.1	Plastic	HNO_3 to pH < 2	500 mL	6 months (28 days for mercury)
Hexavalent Chromium by EPA 7196A/7199	250 mL amber glass, Teflon™-lined cap	≤6°C	250 mL	24 hours
Total Cyanide by SM4500-CN-C-E, EPA9010C/9014 Amenable Cyanide by SM4500 CN-G; Weak Acid Dissociable Cyanide by SM4500 CN-I	1 L amber glass, Teflon™-lined cap	NaOH to pH > 12, ≤6°C	1 L	14 days
Ammonia by SM4500-NH3 B, D, E	glass or HDPE	H_2SO_4 to pH < 2 ≤6°C	500 mL	28 days
Nitrate/Nitrate by EPA 353.2, SM4500NO3	glass or HDPE	H_2SO_4 to pH < 2 ≤6°C	500 mL	28 days
Anions by EPA 300.0, SW9056	glass or HDPE	≤6°C	500 mL	48 hours for nitrate and nitrite; 28 days for chloride and sulfate

Table 3.8. Summary of Sample Containers, Preservation, Volumes, and Holding Times for Aqueous Sample Analyses

APS Quality Assurance Project Plan

Analytical Method	Container	Preservation	Minimum Sample Weight or Volume	Holding Time
Sulfide by EPA 9030/9034 or SM4500 S2	Glass or HDPE	2N Zinc Acetate and 6N NaOH to pH > 9; ≤6°C	1 L	7 days
Total organic carbon by SW9060	Glass	H_2SO_4 to pH < 2 ≤6°C	500 mL	28 days
Alkalinity by SM2320B	HDPE	≤6°C	500 mL	14 days
Total Dissolved Solids by SM2540C	HDPE	≤6°C	500 mL	7 days
Asbestos by EPA 100.2	HDPE	≤6°C	1 L	48 hours
Radium-226/228 by EPA 903.1 and 904	HDPE	HNO_3 to pH < 2, ≤6°C	1 L	6 months
Total Coliform and *E. Coli*	HDPE	≤6°C	100 mL	24 hours
Larval Survival and Growth Test Method 1000.0	HDPE	≤6°C	Minimum of 2 L	24 hours
Survival and Reproduction Test Method 1002.01	HDPE	≤6°C	Minimum of 2 L	24 hours
Growth Test Method 1003.0	HDPE	≤6°C	Minimum of 2 L	24 hours

°C = degrees Celsius

ADHS = Arizona Department of Health Services

DRO = diesel range organics

EPA = U.S. Environmental Protection Agency

GRO = gasoline range organics

H_2SO_4 = sulfuric acid

HCL = hydrochloric acid

HDPE= high density polyethylene

HNO_3 = nitric acid

L = liter(s)

mL = milliliter(s)

NaOH = sodium hydroxide

ORO = oil range organics

PAH = polycyclic aromatic hydrocarbon

RCRA = Resource Conservation and Recovery Act

SM = standard method

SVOC = semivolatile organic compound

TPH = total petroleum hydrocarbon

VOA = volatile organic analytic

VOC = volatile organic compound

Table 3.9. Summary of Sample Containers, Preservation, Volumes, and Holding Times for Air and Soil Vapor Sample Analyses

APS Quality Assurance Project Plan

Analytical Method	Container	Preservation	Minimum Sample Weight or Volume	Holding Time
VOCs by EPA TO-15	SUMMA canister with fused silica liner	N/A	1 L or 6 L	72 hours
PAHs by EPA TO-13A by HPLC	High volume PUF tube (PUF/XAD-2/PUF)	N/A	300 m3	7 days to extract, 40 days to analyze
Lead by NIOSH 7300	Filter cassette	N/A	960 L	6 months
Carbon Dioxide, Oxygen, Methane, and Nitrogen by EPA 3C	SUMMA canister with fused silica liner (Gas-tight glass syringe or glass bulb wrapped in aluminum foil may also be used.)	N/A	1 L or 6 L	24 hours

EPA = U.S. Environmental Protection Agency

HPLC = high pressure liquid chromatography

L = liter(s)

m^3 = cubic meter(s)

N/A = not applicable

NIOSH = National Institute of Occupational Safety and Health

PAH = polynuclear aromatic hydrocarbon

VOC = volatile organic compound

Table 4-1. Summary of Calibration and Quality Control Procedures for Methods EPA8015B, C or D, ADHS 8015AZR1, EPA 8081A or B, EPA 8082 or 8082A, or EPA 608, or EPA 3C

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
Breakdown check (Endrin/DDT Method 8081 only)	Before sample analysis and at the beginning of each 12-hour shift.	Degradation of DDT and Endrin must each be ≤15%.	Correct problem, then repeat breakdown checks.	No samples shall be run until degradation of DDT and Endrin is each ≤ 15%.
Multipoint ICAL for all analytes including surrogates. Minimum 5 levels for linear and 6 levels for quadratic. Quantitation for multicomponent analytes such as chlordane, toxaphene, and Aroclors must be performed using a 5-point calibration. Results may not be quantitated using a single point.	At instrument set-up and after ICV or CCV failure, prior to sample analysis.	the three options below: Option 1: RSD for each analyte ≤ 20%; Option 2: linear least squares regression for each analyte: r2 ≥ 0.99; Option 3: non-linear least squares regression (quadratic) for each analyte: r2 ≥ 0.99.	Correct problem, then repeat ICAL.	No samples shall be analyzed until ICAL has passed.
Initial Calibration Verification (ICV)	Once after each ICAL, analysis of a second source standard prior to sample analysis.	All reported analytes within established RT windows. All reported analytes within ± 20% of true value.	Correct problem, rerun ICV. If that fails, repeat ICAL.	No samples shall be analyzed until calibration has been verified with a second source.
Continuing Calibration Verification (CCV)	Before sample analysis, after every 10 field samples, and at the end of the analysis sequence with the exception of CCVs for Pesticides multi-component analytes (i.e. Toxaphene, Chlordane), which are only required before sample analysis.	All reported analytes within established RT windows. All reported analytes within ± 20% of true value. (30% for EPA 8015AZR1)	Recalibrate, and reanalyze all affected samples since the last acceptable CCV.	If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to all results for the specific analyte(s) in all samples since the last acceptable calibration verification.
RT window position established for each analyte and surrogate	Each ICAL and at the beginning of the analytical sequence.	Position will be set using the midpoint standard of the ICAL curve. On days when an ICAL is not performed, the initial CCV is used.	NA	NA

Table 4-1. Summary of Calibration and Quality Control Procedures for Methods EPA8015B, C or D, ADHS 8015AZR1, EPA 8081A or B, EPA 8082 or 8082A, or EPA 608, or EPA 3C

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
RT window verification for each analyte and surrogate	Each calibration verification.	Analyte within established window.	Correct problem, then reanalyze all samples analyzed since the last acceptable RT check.	Apply J-flag to all results for the specific analyte(s) in the sample that are outside the established window.
Method blank	One per preparatory batch.	No analytes detected >RL.	Correct problem. If required, reprep and reanalyze method blank and all samples processed with the contaminated blank.	Problem must be corrected. Results may not be reported without a valid method blank. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply B-flag to all associated positive results for the specific analyte(s) in all samples in the associated preparatory batch.
Laboratory control sample (LCS) (must contain all target analytes to be reported, including surrogates)	One per preparatory batch.	Acceptance criteria listed in LCS and MS/MSD Tables.	Correct problem, then reanalyze the LCS and all samples in the associated preparatory batch for the failed analytes.	Problem must be corrected. Results may not be reported without a valid LCS. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to the specific analyte(s) in all samples in the associated preparatory batch.
Surrogate spike	All field and QC samples.	Acceptance criteria listed in LCS and MS/MSD Tables.	Correct problem, then reextract and reanalyze all failed samples for failed surrogates in the associated preparatory batch.	If corrective action fails, apply J-flag to the specific analyte(s) in affected sample. Alternative surrogates are recommended when there is obvious chromatographic interference with surrogate.

Table 4-1. Summary of Calibration and Quality Control Procedures for Methods EPA8015B, C or D, ADHS 8015AZR1, EPA 8081A or B, EPA 8082 or 8082A, or EPA 608, or EPA 3C

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
MS/MSD	One per 20 project samples per matrix as a minimum, and as defined on the chain-of-custody form.	Acceptance criteria listed in LCS and MS/MSD Tables.	Assess data to determine whether there is a matrix effect or analytical error. Communicate potential matrix effects to project chemist so an evaluation can be made regarding DQOs.	For the specific analyte(s) in the parent sample, apply J-flag if acceptance criteria are not met.
Confirmation of positive results (second column)	All positive results must be confirmed (except for single column methods such as TPH by Method 8015 where confirmation is not an option or requirement).	Calibration and QC criteria for second column are the same as for initial or primary column analysis. Results between primary and secondary column RPD ≤ 40%.	NA.	Apply J-flag if RPD > 40%. Discuss in the case narrative.

[a] All corrective actions associated with project work will be documented, and all records will be maintained by the laboratory.

[b] Flagging criteria will be applied when acceptance criteria were not met and corrective action was not successful or corrective action was not performed.

Table 4-2. Summary of Calibration and Quality Control Procedures for Methods EPA 8260B or C, EPA 8270C or D including SIM, EPA 624, EPA 625, TO-15, TO-13A

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
Mass spectrometer tuning check	Prior to ICAL and prior to each 12-hour period of sample analysis.	Specific ion abundance criteria of BFB or DFTPP from method.	Retune instrument and verify.	Not appropriate. No samples shall be analyzed without a valid tune.
GC performance check (SW8270 only) The DDT breakdown and Benzidine/Pentachlorophenol tailing factors are considered overall system checks to evaluate injector port inertness and column performance and are required regardless of the reported analyte list.	At the beginning of each 12-hour period, prior to analysis of samples.	Degradation ≤ 20% for DDT. No visible peak tailing for benzidine or pentachlorophenol	Correct problem, then repeat performance check.	Not appropriate. No samples shall be analyzed until performance check is within criteria.
Multipoint ICAL for all analytes including surrogates. Minimum 5 levels for linear and 6 levels for quadratic.	At instrument set-up, prior to sample analysis.	Each analyte must meet one of the three options below: Option 1: RSD for each analyte ≤ 15%; Option 2: linear least squares regression for each analyte: r2 ≥ 0.99; Option 3: non-linear least squares regression (quadratic) for each analyte: r2 ≥ 0.99.	Correct problem, then repeat ICAL.	Flagging criteria are not appropriate. Problem must be corrected. Samples may not be analyzed until there is a valid ICAL. Calibration may not be forced through the origin.
Initial Calibration Verification (ICV)	Once after each ICAL, analysis of a second source standard prior to sample analysis.	All analytes within ± 30% of expected value.	Correct problem and verify second-source standard. Rerun second-source verification. If that fails, correct problem and repeat ICAL.	Flagging criteria are not appropriate. Problem must be corrected. Samples may not be analyzed until the calibration has been verified.

Table 4-2. Summary of Calibration and Quality Control Procedures for Methods EPA 8260B or C, EPA 8270C or D including SIM, EPA 624, EPA 625, TO-15, TO-13A

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
Continuing Calibration Verification (CCV)	Daily before sample analysis; after every 12 hours of analysis time.	All reported analytes and surrogates within ± 20% of true value.	Recalibrate, and reanalyze all affected samples since the last acceptable CCV.	Problem must be corrected. Samples may not be analyzed until the calibration has been verified. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to all results for the specific analyte(s) in all samples since the last acceptable CCV.
RT window position establishment for each analyte and surrogate	Once per ICAL and at the beginning of the analytical sequence.	Position will be set using the midpoint standard of the ICAL curve. On days when an ICAL is not performed, the CCV is used.	NA	NA
RT window verification for each analyte	Each sample.	RRT of the analyte within ± 0.06 RRT units of ICAL. RRTs may be updated based on the daily CCV. RRTs shall be compared with the most recently updated RRTs.	Correct problem, then reanalyze all samples analyzed since the last RT check.	Apply J-flag to all results for the specific analyte(s) in the sample which are outside the established window.
Method blank	One per preparatory batch.	No analytes detected > RL.	Assess data. Correct problem. If necessary, re-prepare and reanalyze method blank and all samples processed with the contaminated blank.	Problem must be corrected. Results may not be reported without a valid method blank. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply B-flag to all associated positive results for the specific analyte(s) in all samples in the associated preparatory batch.
Laboratory control sample (LCS) (must contain all target analytes to be reported, including surrogates)	One LCS per preparatory batch.	Acceptance criteria listed in LCS and MS/MSD Tables.	Correct problem, then reanalyze the LCS and all samples in the associated preparatory batch for the failed analytes.	Problem must be corrected. Results may not be reported without a valid LCS. If reanalysis cannot be performed, data must be qualified and explained in the case narrative.

Table 4-2. Summary of Calibration and Quality Control Procedures for Methods EPA 8260B or C, EPA 8270C or D including SIM, EPA 624, EPA 625, TO-15, TO-13A

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
				Apply J-flag to the specific analyte(s) in all samples in the associated preparatory batch.
Surrogate spike	All field and QC samples.	Acceptance criteria listed in LCS and MS/MSD Tables.	Correct problem, then re-extract and reanalyze all failed samples for failed surrogates in the associated preparatory batch. If obvious chromatographic interference with surrogate is present, discuss in case narrative.	If corrective action fails, apply J-flag to the specific analyte(s) in affected sample. Alternative surrogates are recommended when there is obvious chromatographic interference with surrogate.
Internal standards (IS)	Each sample, standard, and QC sample.	Retention time within ± 10 seconds from retention time of the midpoint standard in the ICAL; EICP area within - 50% to +100% of ICAL midpoint standard.	Inspect mass spectrometer and GC for malfunctions and make corrections as appropriate. Reanalysis of samples analyzed while the system was malfunctioning is mandatory.	Problem must be corrected. Results may not be reported without a valid IS. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to the specific analyte(s) associated with the non-compliant IS.
MS/MSD	One per 20 samples per matrix as a minimum and as defined on the chain-of-custody form.	Acceptance criteria listed in LCS and MS/MSD Tables.	Assess data to determine whether there is a matrix effect or analytical error. Potential matrix effects should be communicated to project chemist so an evaluation can be made regarding the DQOs.	For the specific analyte(s) in the parent sample, apply J-flag if acceptance criteria are not met.

[a] All corrective actions associated with project work will be documented, and all records will be maintained by the laboratory.

[b] Flagging criteria will be applied when acceptance criteria were not met and corrective action was not successful or corrective action was not performed.

Table 4-3. Summary of Calibration and Quality Control Procedures for Methods EPA 1613A or B, EPA 8290

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Actiona	Laboratory Flagging Criteriab
Resolving Power	Prior to ICAL and at the beginning and the end of each 12-hour period of analysis.	Static resolving power ≥10,000 (10% valley) for identified masses.	Retune instrument and verify. Rerun affected samples.	Not appropriate. No samples shall be analyzed without a valid tune.
Performance Check Use GC column performance check solution If the laboratory operates during consecutive 12-hr periods.	Prior to ICAL or calibration verification. At the beginning of each 12-hr period during which samples or calibration solutions are analyzed.	Peak separation between 2,3,7,8-TCDD and other TCDD isomers: Resolved with a valley of ≤ 25%. Identification of all first and last eluters of the eight homologue retention time windows and documentation by labeling (F/L) on the chromatogram. Absolute retention times for switching from one homologous series to the next ≥ 10 sec. for all components of the mixture.	Correct problem then repeat column performance check.	Flagging is not appropriate. No samples shall be analyzed until performance check is within criteria.
Initial calibration (ICAL) for all analytes identified in method	At instrument setup and after ICV or CCV failure, prior to sample analysis, and when a new lot is used as standard source for HRCC-3, sample fortification (IS), or recovery solutions.	Ion abundance ratios in accordance with the method. S/N ratio ≥ 10 for all reported analyte ions. RSD ≤ 20% for the response factors (RF) for all 17 unlabeled standards. RSD ≤ 20% for the RFs for the 9 labeled IS.	Correct problem, then repeat ICAL.	Flagging is not appropriate. No samples shall be analyzed run until ICAL has passed. Calibration may not be forced through origin.
Initial Calibration Verification (ICV)	Once after each ICAL, analysis of a second source standard prior to sample analysis.	Ion abundance specified in the method must be met; For unlabeled standards, RF within ± 20% D of RF established in ICAL; and For labeled standards, RF within ± 30%D of the mean of RF established in ICAL.	Correct problem. Rerun ICV. If that fails, repeat ICAL.	Flagging is not appropriate. No samples shall be analyzed until calibration has been verified with a second source.

Table 4-3. Summary of Calibration and Quality Control Procedures for Methods EPA 1613A or B, EPA 8290

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Actiona	Laboratory Flagging Criteriab
Calibration Verification (CCV)	At the beginning of each 12-hour period.	Ion abundance specified in the method must be met. For unlabeled standards, RF within ± 20% D of RF established in ICAL; and For labeled standards, RF within ± 30% D of RF established in ICAL.	Immediately analyze two additional consecutive CCVs. If both pass, samples may be reported without reanalysis. If either fails, take corrective action(s) and re-calibrate; then reanalyze all affected samples since the last acceptable CCV.	Results may not be reported without a valid calibration verification. Flagging is only appropriate in cases where the samples cannot be reanalyzed. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to all results for the specific analyte(s) in all samples since the last acceptable CCV.
Internal Standards (IS)	Every field sample, standard, and QC sample.	% Recovery for each IS in the original sample (prior to dilutions) must be within 40 – 135% of the ICAL average RF.	Correct problem, then re-prep and reanalyze the samples with failed IS.	Apply J-flag to results of all affected samples and explain in the case narrative.
Method Blank (MB)	One per preparatory batch, run after calibration standards and before samples.	No analytes detected > RL.	Correct problem. If required, re-prep and reanalyze method blank and all samples processed with the contaminated blank.	Results may not be reported without a valid method blank. Flagging is only appropriate in cases where the samples cannot be reanalyzed. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply B-flag to all results for the specific analyte(s) in all samples in the associated preparatory batch.
Laboratory Control Sample (LCS)	One per preparatory batch.	Acceptance criteria listed in LCS and MS/MSD Tables. If the analyte(s) are not listed, use in-house limits if project limits are not specified.	Correct problem, then reanalyze the LCS and all samples in the associated preparatory batch for the failed analytes.	Problem must be corrected. Results may not be reported without a valid LCS. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to the specific analyte(s) in all samples in the associated preparatory batch.
MS/MSD	One per 20 samples per matrix as a minimum and as defined on the chain-of-custody form.	Acceptance criteria listed in LCS and MS/MSD Tables. If the analyte(s) are not listed, use in-house limits if project limits are not specified.	Assess data to determine whether there is a matrix effect or analytical error. Potential matrix effects should be communicated to project chemist so an evaluation can be made regarding the DQOs.	For the specific analyte(s) in the parent sample, apply J-flag if acceptance criteria are not met.

Table 4-3. Summary of Calibration and Quality Control Procedures for Methods EPA 1613A or B, EPA 8290

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Actiona	Laboratory Flagging Criteriab
Sample Estimated Maximum Possible Concentration (EMPC)	Every sample with a response S/N ≥ 2.5 for both quantitation ions.	Identification criteria per method must be met, and the S/N of response for both quantitation ions must be ≥ 2.5	NA	Flagging is not appropriate.
Sample 2,3,7,8-TCDD toxicity equivalents (TEQ) concentration	All positive detections.	Per method.	NA	Flagging is not appropriate. Recommended reporting convention by the EPA and CDC for positive detections in terms of toxicity of 2,3,7,8- TCDD.

[a] All corrective actions associated with project work will be documented, and all records will be maintained by the laboratory.

[b] Flagging criteria will be applied when acceptance criteria were not met and corrective action was not successful or corrective action was not performed.

Table 4-4. Summary of Calibration and Quality Control Procedures for Methods EPA7470A or B, EPA7471A or B, EPA245.1

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
ICAL for all analytes (minimum five-point)	Daily before sample analysis.	r2 ≥ 0.99.	If applicable, correct problem and repeat ICAL.	Problem must be corrected. Samples may not be analyzed until there is a valid ICAL.
Initial Calibration Verification (ICV)	Once after each ICAL, analysis of a second source standard prior to sample analysis.	All analytes within ± 10% of expected value.	Correct problem and verify second-source standard. Rerun ICV. If that fails, correct problem and repeat ICAL.	Problem must be corrected. Samples may not be analyzed until the calibration has been verified.
Continuing Calibration Verification (CCV)	After every 10 samples.	All analytes within ± 20% of expected value.	Recalibrate, and reanalyze all affected samples since the last acceptable CCV.	Problem must be corrected. Samples may not be analyzed until the calibration has been verified. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to all results for the specific analyte(s) in all samples since the last acceptable CCV.
Initial and Continuing Calibration Blank (ICB/CCB)	Before beginning a sample run, after every 10 field samples, and at end of the analysis sequence.	No analytes detected > RL.	Correct problem and repeat ICAL. All samples following the last acceptable calibration blank must be reanalyzed.	Results may not be reported without a valid blank. Flagging is only appropriate in cases where the samples cannot be re-prepped or reanalyzed. Apply B-flag to all associated positive results for all samples associated with the blank.
Method blank	One per preparatory batch.	No analytes detected > RL.	Assess data. Correct problem. If necessary, re-prepare and reanalyze method blank and all samples processed with the contaminated blank.	Problem must be corrected. Results may not be reported without a valid method blank. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply B-flag to all associated positive results for the specific analyte(s) in all samples in the associated preparatory batch.
LCS (must contain all analytes to be reported)	One per preparatory batch.	Acceptance criteria listed in LCS and MS/MSD Tables.	Correct problem, then reanalyze the LCS and all samples in the associated preparatory batch for the failed analytes.	Problem must be corrected. Results may not be reported without a valid LCS. If reanalysis cannot be performed, data must be qualified and explained in the case narrative.

Table 4-4. Summary of Calibration and Quality Control Procedures for Methods EPA7470A or B, EPA7471A or B, EPA245.1

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
				Apply J-flag to the specific analyte(s) in all samples in the associated preparatory batch.
MS/MSD	One per 20 samples per matrix as a minimum and as defined on the chain-of-custody form.	Acceptance criteria listed in LCS and MS/MSD Tables.	Assess data to determine whether there is a matrix effect or analytical error. Analyze LCS for failed target analytes. Potential matrix effects should be communicated to project chemist so an evaluation can be made regarding the DQOs.	For the specific analyte(s) in the parent sample, apply J-flag if acceptance criteria are not met.

[a] All corrective actions associated with project work will be documented, and all records will be maintained by the laboratory.

[b] Flagging criteria will be applied when acceptance criteria were not met and corrective action was not successful or corrective action was not performed.

Table 4-5. Summary of Calibration and Quality Control Procedures for Methods EPA6010B or C, EPA200.7

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
Linear dynamic range or high-level check standard	At initial set up and checked every 6 months with a high standard at the upper limit of the range.	Within ± 10% of true value.	Dilute samples within the calibration range, or re-establish/ verify the LDR.	Flagging is not appropriate. Data cannot be reported above the high calibration range without an established/passing highlevel check standard.
ICAL for all analytes (minimum one standard and a blank)	Daily before sample analysis.	If more than one standard is used; $r^2 \geq 0.99$	If applicable, correct problem and repeat ICAL.	Problem must be corrected. Samples may not be analyzed until there is a valid ICAL.
Initial Calibration Verification (ICV)	Once after each ICAL, analysis of a second source standard prior to sample analysis.	All analytes within ± 10% of expected value.	Correct problem and verify second-source standard. Rerun ICV. If that fails, correct problem and repeat ICAL.	Problem must be corrected. Samples may not be analyzed until the calibration has been verified.
Continuing Calibration Verification (CCV)	After every 10 samples and at the end of the analysis sequence.	All analytes within ± 10% of expected value.	Recalibrate, and reanalyze all affected samples since the last acceptable CCV.	Problem must be corrected. Samples may not be analyzed until the calibration has been verified. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to all results for the specific analyte(s) in all samples since the last acceptable CCV.
Initial and Continuing Calibration Blank (ICB/CCB)	Before beginning a sample run, after every 10 field samples, and at end of the analysis sequence.	No analytes detected > RL.	Correct problem and repeat ICAL. All samples following the last acceptable calibration blank must be reanalyzed.	Results may not be reported without a valid blank. Flagging is only appropriate in cases where the samples cannot be reprepped or reanalyzed. Apply B-flag to all associated positive results for all samples associated with the blank.
Low-level calibration check standard (at or below RL)	Daily, after ICAL.	All analyte(s) with ± 20% of expected value.	Correct problem, then reanalyze.	Flagging criteria are not appropriate. No samples may be analyzed without a valid low-level calibration check standard.

Table 4-5. Summary of Calibration and Quality Control Procedures for Methods EPA6010B or C, EPA200.7

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
Method blank	One per preparatory batch.	No analytes detected > RL.	Assess data. Correct problem. If necessary, re-prepare and reanalyze method blank and all samples processed with the contaminated blank.	Problem must be corrected. Results may not be reported without a valid method blank. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply B-flag to all associated positive results for the specific analyte(s) in all samples in the associated preparatory batch.
Interference check solutions (ICS-A and ICS-AB)	At the beginning of an analytical run or once during a 12-hour period, whichever is more frequent.	ICS-A: Absolute value of all non-spiked analytes < RL (unless they are a verified trace impurity from one of the spiked analytes). ICS-AB: Within ± 20% of expected value.	Terminate analysis; locate and correct problem; reanalyze ICS; reanalyze all affected samples.	If corrective action fails, apply Q-flag to the specific analyte(s). ICS-AB is not needed if instrument can read negative responses.
LCS (must contain all analytes to be reported)	One per preparatory batch.	Acceptance criteria listed in LCS and MS/MSD Tables.	Correct problem, then reanalyze the LCS and all samples in the associated preparatory batch for the failed analytes.	Problem must be corrected. Results may not be reported without a valid LCS. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to the specific analyte(s) in all samples in the associated preparatory batch.
Dilution test Only applicable for samples with concentrations > 50 x MDL (prior to dilution).	One per preparatory batch if MS or MSD fails.	Five-fold dilution must agree within ± 10% of the original determination.	NA	For the specific analyte(s) in the parent sample, apply J-flag if acceptance criteria are not met.
Post-digestion spike addition Criteria applies for samples with concentrations < 50 x MDL (prior to dilution).	One per preparatory batch if MS or MSD fails.	Recovery within 80 to 120% of expected results.	Run all associated samples in the preparatory batch by method of standard additions, or see flagging criteria.	For the specific analyte(s) in the parent sample, apply J-flag if acceptance criteria are not met.

Table 4-5. Summary of Calibration and Quality Control Procedures for Methods EPA6010B or C, EPA200.7

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
MS/MSD	One per 20 samples per matrix as a minimum and as defined on the chain-of-custody form.	Acceptance criteria listed in LCS and MS/MSD Tables.	Assess data to determine whether there is a matrix effect or analytical error. Analyze LCS for failed target analytes. Potential matrix effects should be communicated to project chemist so an evaluation can be made regarding the DQOs.	For the specific analyte(s) in the parent sample, apply J-flag if acceptance criteria are not met.

[a] All corrective actions associated with project work will be documented, and all records will be maintained by the laboratory.

[b] Flagging criteria will be applied when acceptance criteria were not met and corrective action was not successful or corrective action was not performed.

Table 4-6. Summary of Calibration and Quality Control Procedures for Method SW6020 or EPA200.8

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
Linear dynamic range or high-level check standard	At initial set up and checked every 6 months with a high standard at the upper limit of the range.	Within ± 10% of true value.	Dilute samples within the calibration range, or re-establish/ verify the LDR.	Flagging is not appropriate. Data cannot be reported above the high calibration range without an established/passing highlevel check standard.
Mass spectrometer tuning sample	Before ICAL.	Mass calibration ≤ 0.1 amu from the true value. Resolution < 0.9 amu full width at 10% peak height.	Retune instrument, then reanalyze tuning solution.	Not appropriate. No samples shall be analyzed without a valid tune.
ICAL for all analytes (minimum one standard and a blank)	Daily before sample analysis.	If more than one standard is used; $r^2 \geq 0.99$	If applicable, correct problem and repeat ICAL.	Problem must be corrected. Samples may not be analyzed until there is a valid ICAL.
Initial Calibration Verification (ICV)	Once after each ICAL, analysis of a second source standard prior to sample analysis.	All analytes within ± 10% of expected value.	Correct problem and verify second-source standard. Rerun ICV. If that fails, correct problem and repeat ICAL.	Problem must be corrected. Samples may not be analyzed until the calibration has been verified.
Continuing Calibration Verification (CCV)	After every 10 samples and at the end of the analysis sequence.	All analytes within ± 10% of expected value.	Recalibrate, and reanalyze all affected samples since the last acceptable CCV.	Problem must be corrected. Samples may not be analyzed until the calibration has been verified. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to all results for the specific analyte(s) in all samples since the last acceptable CCV.
Initial and Continuing Calibration Blank (ICB/CCB)	Before beginning a sample run, after every 10 field samples, and at end of the analysis sequence.	No analytes detected > RL.	Correct problem and repeat ICAL. All samples following the last acceptable calibration blank must be reanalyzed.	Results may not be reported without a valid blank. Flagging is only appropriate in cases where the samples cannot be reprepped or reanalyzed. Apply B-flag to all associated positive results for all samples associated with the blank.

Table 4-6. Summary of Calibration and Quality Control Procedures for Method SW6020 or EPA200.8

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
Low-level calibration check standard (at or below RL)	Daily, after ICAL.	All analyte(s) with ± 20% of expected value.	Correct problem, then reanalyze.	Flagging criteria are not appropriate. No samples may be analyzed without a valid low-level calibration check standard.
Method blank	One per preparatory batch.	No analytes detected RL.	Assess data. Correct problem. If necessary, re-prepare and reanalyze method blank and all samples processed with the contaminated blank.	Problem must be corrected. Results may not be reported without a valid method blank. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply B-flag to all associated positive results for the specific analyte(s) in all samples in the associated preparatory batch.
Interference check solutions (ICS-A and ICS-AB)	At the beginning of an analytical run or once during a 12-hour period, whichever is more frequent.	ICS-A: Absolute value of all non-spiked analytes < RL (unless they are a verified trace impurity from one of the spiked analytes). ICS-AB: Within ± 20% of expected value.	Terminate analysis; locate and correct problem; reanalyze ICS; reanalyze all affected samples.	If corrective action fails, apply J-flag to the specific analyte(s). ICS-AB is not needed if instrument can read negative responses.
LCS (must contain all analytes to be reported)	One per preparatory batch.	Acceptance criteria listed in LCS and MS/MSD Tables.	Correct problem, then reanalyze the LCS and all samples in the associated preparatory batch for the failed analytes.	Problem must be corrected. Results may not be reported without a valid LCS. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to the specific analyte(s) in all samples in the associated preparatory batch.
Dilution test Only applicable for samples with concentrations > 50 x MDL (prior to dilution).	One per preparatory batch if MS or MSD fails.	Five-fold dilution must agree within ± 10% of the original determination.	NA	For the specific analyte(s) in the parent sample, apply J-flag if acceptance criteria are not met.

Table 4-6. Summary of Calibration and Quality Control Procedures for Method SW6020 or EPA200.8

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
Post-digestion spike addition Criteria applies for samples with concentrations < 50 x MDL (prior to dilution).	One per preparatory batch if MS or MSD fails.	Recovery within 80 to 120% of expected results.	Run all associated samples in the preparatory batch by method of standard additions, or see flagging criteria.	For the specific analyte(s) in the parent sample, apply J-flag if acceptance criteria are not met.
MS/MSD	One per 20 samples per matrix as a minimum and as defined on the chain-of-custody form.	Acceptance criteria listed in LCS and MS/MSD Tables.	Assess data to determine whether there is a matrix effect or analytical error. Analyze LCS for failed target analytes. Potential matrix effects should be communicated to project chemist so an evaluation can be made regarding the DQOs.	For the specific analyte(s) in the parent sample, apply J-flag if acceptance criteria are not met.
Internal Standards (IS)	Every field sample, standard and QC sample.	IS intensity within 30 to 120% of intensity of the IS in the ICAL or per method.	If recoveries are acceptable for QC samples, but not field samples, the field samples may be considered to suffer from a matrix effect. For failed QC samples, correct problem, and rerun all associated failed field samples.	Flagging criteria are not appropriate. Samples suffering from matrix effect should be diluted until criteria are met, or an alternate IS should be selected.

[a] All corrective actions associated with project work will be documented, and all records will be maintained by the laboratory.

[b] Flagging criteria will be applied when acceptance criteria were not met and corrective action was not successful or corrective action was not performed.

Table 4-7. Summary of Calibration and Quality Control Procedures for Methods EPA7196A, EPA7199

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
Check sample pH (SW7199 only)	Each sample Upon receipt at the laboratory	Sample pH must be 9.3 – 9.7.	Additional adjustment if needed will be performed using one drop a time (as needed) of "verified clean" NaOH	Note in case narrative
ICAL for all analytes (minimum five standards and a blank)	Daily before sample analysis.	r2 ≥ 0.99.	If applicable, correct problem and repeat ICAL.	Problem must be corrected. Samples may not be analyzed until there is a valid ICAL.
RT window position established (SW7199 only)	Each ICAL and at the beginning of the analytical sequence.	Using the retention time of each ICAL standard and continuing calibration verification calculate the average retention time and calculate a retention time window three times the standard deviation or a maximum of ±0.20 minutes.	NA	NA
RT window verification (SW7199 only)	Each calibration verification.	Analyte within established window.	Correct problem, then reanalyze all samples analyzed since the last acceptable RT check.	Problem must be corrected. Results cannot be reported outside of RT windo
Initial Calibration Verification (ICV)	Once after each ICAL, analysis of a second source standard prior to sample analysis.	All analytes within ± 10% of expected value.	Correct problem and verify second-source standard. Rerun ICV. If that fails, correct problem and repeat ICAL.	Problem must be corrected. Samples may not be analyzed until the calibration has been verified.
Continuing Calibration Verification (CCV)	Daily before sample analysis, after every 15 field samples and at the end of the analysis sequence.	All analytes within ± 10% of expected value.	Recalibrate, and reanalyze all affected samples since the last acceptable CCV.	Problem must be corrected. Samples may not be analyzed until the calibration has been verified. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to all results for the specific analyte(s) in all samples since the last acceptable CCV.
Low-level calibration check standard (at or below RL) (SW7199 only)	Daily, after ICAL.	All analyte(s) with ± 30% of expected value.	Correct problem, then reanalyze.	Apply J-flag to all results for the specific analyte(s) in all samples associated with the low level calibration check.

Table 4-7. Summary of Calibration and Quality Control Procedures for Methods EPA7196A, EPA7199

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
Method blank	One per preparatory batch.	No analytes detected > RL.	Assess data. Correct problem. If necessary, re-prepare and reanalyze method blank and all samples processed with the contaminated blank.	Problem must be corrected. Results may not be reported without a valid method blank. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply B-flag to all associated positive results for the specific analyte(s) in all samples in the associated preparatory batch.
LCS (must contain all analytes to be reported)	One per preparatory batch.	Acceptance criteria listed in LCS and MS/MSD Tables.	Correct problem, then reanalyze the LCS and all samples in the associated preparatory batch for the failed analytes.	Problem must be corrected. Results may not be reported without a valid LCS. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to the specific analyte(s) in all samples in the associated preparatory batch.
MS/MSD	One per 20 samples per matrix as a minimum and as defined on the chain-of-custody form.	Acceptance criteria listed in LCS and MS/MSD Tables.	Assess data to determine whether there is a matrix effect or analytical error. Analyze LCS for failed target analytes. Potential matrix effects should be communicated to project chemist so an evaluation can be made regarding the DQOs.	For the specific analyte(s) in the parent sample, apply J-flag if acceptance criteria are not met.
Soluble and Insoluble Pre-Digestion Matrix Spikes (solid matrix samples only for SW7196A)	One soluble and insoluble pre-digestion MS analyzed per preparatory batch prior to analysis.	Recovery within 75 –125%.	Correct problem and rehomogenize, redigest, and reanalyze samples. If that fails, evaluate against LCS results.	Apply J-flag to all results for hexavalent chromium if acceptance criteria are not met and explain in the case narrative.
Post-digestion Matrix Spike (solid matrix samples for SW7196A) Criteria apply for samples with concentrations > 50 X MDL prior to dilution.	One per preparatory batch.	Recovery within 85 -115%.	NA	Apply J-flag to all results for hexavalent chromium if acceptance criteria are not met and explain in the case narrative.

[a] All corrective actions associated with project work will be documented, and all records will be maintained by the laboratory.

[b] Flagging criteria will be applied when acceptance criteria were not met and corrective action was not successful or corrective action was not performed.

Table 4-8. Summary of Calibration and Quality Control Procedures for Methods EPA 9014, SM4500-Cn E/G/I

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
Initial multipoint calibration for all analytes (ICAL) (minimum of three standards)	Daily ICAL prior to sample analysis.	r2 ≥ 0.99.	Correct the problem and repeat the ICAL.	Flagging criteria are not appropriate. Problem must be corrected. Samples may not be analyzed until there is a valid ICAL. Calibration may not be forced through the origin.
Distillation Verification	Once after each ICAL, with two distilled ICAL standards; prior to sample analysis. Not required if all ICAL standards are distilled.	Within ± 10% of non-distilled std value.	Correct problem, rerun distilled standards or repeat ICAL.	Flagging is not appropriate. One high and one low distilled ICAL standard. No samples shall be analyzed until distillation technique has been verified.
Initial Calibration Verification (ICV)	Once after each ICAL, analysis of a second source standard prior to sample analysis.	All analytes within ± 10% of expected value.	Correct problem and verify second-source standard. Rerun ICV. If that fails, correct problem and repeat ICAL.	Problem must be corrected. Samples may not be analyzed until the calibration has been verified.
Continuing Calibration Verification (CCV)	Daily before sample analysis, after every 10 field samples and at the end of the analysis sequence.	All analytes within ± 10% of expected value.	Recalibrate, and reanalyze all affected samples since the last acceptable CCV.	Problem must be corrected. Samples may not be analyzed until the calibration has been verified. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to all results for the specific analyte(s) in all samples since the last acceptable CCV.
Initial and Continuing Calibration Blank (ICB/CCB)	Before beginning a sample run, after every 10 field samples, and at end of the analysis sequence.	No analytes detected > RL.	Correct problem and repeat ICAL. All samples following the last acceptable calibration blank must be reanalyzed.	Results may not be reported without a valid blank. Flagging is only appropriate in cases where the samples cannot be re-prepped or reanalyzed. Apply B-flag to all associated positive results for all samples associated with the blank.

Table 4-8. Summary of Calibration and Quality Control Procedures for Methods EPA 9014, SM4500-Cn E/G/I

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
Method blank	One per preparatory batch.	No analytes detected > RL.	Assess data. Correct problem. If necessary, re-prepare and reanalyze method blank and all samples processed with the contaminated blank.	Problem must be corrected. Results may not be reported without a valid method blank. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply B-flag to all associated positive results for the specific analyte(s) in all samples in the associated preparatory batch.
LCS (must contain all analytes to be reported)	One per preparatory batch.	Acceptance criteria listed in LCS and MS/MSD Tables.	Correct problem, then reanalyze the LCS and all samples in the associated preparatory batch for the failed analytes.	Problem must be corrected. Results may not be reported without a valid LCS. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to the specific analyte(s) in all samples in the associated preparatory batch.
MS/MSD	One per 20 samples per matrix as a minimum and as defined on the chain-of-custody form.	Acceptance criteria listed in LCS and MS/MSD Tables.	Assess data to determine whether there is a matrix effect or analytical error. Analyze LCS for failed target analytes. Potential matrix effects should be communicated to project chemist so an evaluation can be made regarding the DQOs.	For the specific analyte(s) in the parent sample, apply J-flag if acceptance criteria are not met.

[a] All corrective actions associated with project work shall be documented, and all records shall be maintained by the laboratory.

[b] Flagging criteria will be applied when acceptance criteria were not met and corrective action was not successful or corrective action was not performed.

Table 4.9. Summary of Calibration and Quality Control Procedures for Methods EPA 9056, EPA 300.0

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
Multipoint ICAL for all analytes (minimum three standards and one blank)	Before sample analysis.	$r^2 \geq 0.99$.	Correct problem, then repeat ICAL.	Flagging criteria are not appropriate. Problem must be corrected. Samples may not be analyzed until there is a valid ICAL. Calibration may not be forced through the origin.
Initial Calibration Verification (ICV)	Once after each ICAL, analysis of a second source standard prior to sample analysis.	All analytes within ± 10% of expected value.	Correct problem and verify second-source standard. Rerun ICV. If that fails, correct problem and repeat ICAL.	Problem must be corrected. Samples may not be analyzed until the calibration has been verified.
Continuing Calibration Verification (CCV)	Daily before sample analysis, after every 10 field samples.	All analytes within ± 10% of expected value.	Recalibrate, and reanalyze all affected samples since the last acceptable CCV.	Problem must be corrected. Samples may not be analyzed until the calibration has been verified. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to all results for the specific analyte(s) in all samples since the last acceptable CCV.
RT window position established for each analyte	Once per multipoint calibration.	Position shall be set using the midpoint standard of the ICAL curve when ICAL is performed. On days when ICAL is not performed, the initial CCV is used.	NA	NA
Retention Time (RT) window width	At method set-up and after major maintenance (e.g., column change).	RT width is ± 3 times standard deviation for each analyte RT over a 24-hour period.	NA	NA

Table 4.9. Summary of Calibration and Quality Control Procedures for Methods EPA 9056, EPA 300.0

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
RT window verification for each analyte	Each calibration verification.	Analyte within established window.	Correct problem, then reanalyze all samples analyzed since the last acceptable RT check.	Apply J-flag to all results for the specific analyte(s) in the sample that are outside the established window.
Method blank	One per preparatory batch.	No analytes detected > RL.	Assess data. Correct problem. If necessary, re-prepare and reanalyze method blank and all samples processed with the contaminated blank.	Problem must be corrected. Results may not be reported without a valid method blank. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply B-flag to all associated positive results for the specific analyte(s) in all samples in the associated preparatory batch.
LCS (must contain all analytes to be reported)	One per preparatory batch.	Acceptance criteria listed in LCS and MS/MSD Tables.	Correct problem, then reanalyze the LCS and all samples in the associated preparatory batch for the failed analytes.	Problem must be corrected. Results may not be reported without a valid LCS. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to the specific analyte(s) in all samples in the associated preparatory batch.
MS/MSD	One per 20 samples per matrix as a minimum and as defined on the chain-of-custody form.	Acceptance criteria listed in LCS and MS/MSD Tables.	Assess data to determine whether there is a matrix effect or analytical error. Analyze LCS for failed target analytes. Potential matrix effects should be communicated to project chemist so an evaluation can be made regarding the DQOs.	For the specific analyte(s) in the parent sample, apply J-flag if acceptance criteria are not met.

[a] All corrective actions associated with project work will be documented, and all records will be maintained by the laboratory.

[b] Flagging criteria will be applied when acceptance criteria were not met and corrective action was not successful or corrective action was not performed.

Table 4-10. Summary of Calibration and Quality Control Procedures for Methods EPA 9060

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
Multipoint ICAL for all analytes (minimum one standard and one blank)	Before sample analysis.	$r^2 \geq 0.99$.	Correct problem, then repeat ICAL.	Flagging criteria are not appropriate. Problem must be corrected. Samples may not be analyzed until there is a valid ICAL. Calibration may not be forced through the origin.
Initial Calibration Verification (ICV)	Once after each ICAL, analysis of a second source standard prior to sample analysis.	All analytes within ± 10% of expected value.	Correct problem and verify second-source standard. Rerun ICV. If that fails, correct problem and repeat ICAL.	Problem must be corrected. Samples may not be analyzed until the calibration has been verified.
Continuing Calibration Verification (CCV)	Daily before sample analysis, after every 10 field samples.	All analytes within ± 10% of expected value.	Recalibrate, and reanalyze all affected samples since the last acceptable CCV.	Problem must be corrected. Samples may not be analyzed until the calibration has been verified. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to all results for the specific analyte(s) in all samples since the last acceptable CCV.
Method blank	One per preparatory batch.	No analytes detected > RL.	Assess data. Correct problem. If necessary, re-prepare and reanalyze method blank and all samples processed with the contaminated blank.	Problem must be corrected. Results may not be reported without a valid method blank. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply B-flag to all associated positive results for the specific analyte(s) in all samples in the associated preparatory batch.
LCS (must contain all analytes to be reported)	One per preparatory batch.	Acceptance criteria listed in LCS and MS/MSD Tables.	Correct problem, then reanalyze the LCS and all samples in the associated preparatory batch for the failed analytes.	Problem must be corrected. Results may not be reported without a valid LCS. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to the specific analyte(s) in all samples in the associated preparatory batch.

Table 4-10. Summary of Calibration and Quality Control Procedures for Methods EPA 9060

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
MS/MSD	One per 20 samples per matrix as a minimum and as defined on the chain-of-custody form.	Acceptance criteria listed in LCS and MS/MSD Tables.	Assess data to determine whether there is a matrix effect or analytical error. Analyze LCS for failed target analytes. Potential matrix effects should be communicated to project chemist, so an evaluation can be made regarding the DQOs.	For the specific analyte(s) in the parent sample, apply J-flag if acceptance criteria are not met.

[a] All corrective actions associated with project work will be documented, and all records will be maintained by the laboratory.

Table 4-11. Summary of Calibration and Quality Control Procedures for Methods SM4500-NH3 B/D/E, SM4500-Norg A/B/C/D, SM4500-NO3, EPA353.2, EPA 9031, EPA 9034, SM4500 S2

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
Multipoint ICAL for all analytes (minimum one standard and one blank)	Before sample analysis.	$r^2 \geq 0.99$.	Correct problem, then repeat ICAL.	Flagging criteria are not appropriate. Problem must be corrected. Samples may not be analyzed until there is a valid ICAL. Calibration may not be forced through the origin.
Initial Calibration Verification (ICV)	Once after each ICAL, analysis of a second source standard prior to sample analysis.	All analytes within ± 20% of expected value.	Correct problem and verify second-source standard. Rerun ICV. If that fails, correct problem and repeat ICAL.	Problem must be corrected. Samples may not be analyzed until the calibration has been verified.
Continuing Calibration Verification (CCV)	Daily before sample analysis, after every 10 field samples.	All analytes within ± 20% of expected value.	Recalibrate, and reanalyze all affected samples since the last acceptable CCV.	Problem must be corrected. Samples may not be analyzed until the calibration has been verified. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to all results for the specific analyte(s) in all samples since the last acceptable CCV.
Method blank	One per preparatory batch.	No analytes detected > RL.	Assess data. Correct problem. If necessary, re-prepare and reanalyze method blank and all samples processed with the contaminated blank.	Problem must be corrected. Results may not be reported without a valid method blank. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply B-flag to all associated positive results for the specific analyte(s) in all samples in the associated preparatory batch.

Table 4-11. Summary of Calibration and Quality Control Procedures for Methods SM4500-NH3 B/D/E, SM4500-Norg A/B/C/D, SM4500-NO3, EPA353.2, EPA 9031, EPA 9034, SM4500 S2

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
LCS (must contain all analytes to be reported)	One per preparatory batch.	Acceptance criteria listed in LCS and MS/MSD Tables.	Correct problem, then reanalyze the LCS and all samples in the associated preparatory batch for the failed analytes.	Problem must be corrected. Results may not be reported without a valid LCS. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to the specific analyte(s) in all samples in the associated preparatory batch.
Reduction check samples (E353 only)	At start of analytical batch	NO3-N peak response must equal NO2-N peak response within ± 15%	Adjust hydrazine concentration and reanalyze all samples in the associated preparatory batch for the failed reduction check.	If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to the specific analyte(s) in all samples in the associated preparatory batch.
MS/MSD	One per 20 samples per matrix as a minimum and as defined on the chain-of-custody form.	Acceptance criteria listed in LCS and MS/MSD Tables.	Assess data to determine whether there is a matrix effect or analytical error. Analyze LCS for failed target analytes. Potential matrix effects should be communicated to project chemist so an evaluation can be made regarding the DQOs.	For the specific analyte(s) in the parent sample, apply J-flag if acceptance criteria are not met.

[a] All corrective actions associated with project work will be documented, and all records will be maintained by the laboratory.

[b] Flagging criteria will be applied when acceptance criteria were not met and corrective action was not successful or corrective action was not performed.

Table 4-12. Summary of Calibration and Quality Control Procedures for Methods SW9045C

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
Initial calibration	Daily prior to sample analysis	± 0.05 pH unit	Repeat with new buffer solution. If still out, repair meter.	Flagging criteria are not appropriate. Problem must be corrected. Samples may not be analyzed until meter is calibrated.
Continuing calibration verification (CCV) using buffer solution	1 per 10 samples analyzed and at end of batch	± 0.1 pH unit	Repeat CCV. If still out, find and correct problem, then reanalyze all samples since last good CCV.	Apply J-flag to all results for the specific analyte(s) in all samples associated with failing GGA.
Laboratory duplicate	One per preparatory batch.	Acceptance criteria listed in LCS and MS/MSD Tables.	Correct problem, then reanalyze the sample and laboratory duplicate.	Apply J-flag to the specific analyte(s) in the parent sample.

[a] All corrective actions associated with project work will be documented, and all records will be maintained by the laboratory.

[b] Flagging criteria will be applied when acceptance criteria were not met and corrective action was not successful or corrective action was not performed.

Table 4-13. Summary of Calibration and Quality Control Procedures for Method SM2320B

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
Electrode calibration	Daily	Slope = -59.2 mV/pH ± 5 mV/pH	Correct problem and repeat initial calibration.	Flagging criteria are not appropriate. Problem must be corrected. Samples may not be analyzed until electrode is calibrated.
Titrant standardization (in duplicate against sodium carbonate)	Initially upon making the titrant and monthly thereafter.	RPD < 5%	Repeat standardization.	Flagging criteria are not appropriate. Problem must be corrected. Samples may not be analyzed until titrant is standardized.
Standardization verification	At the end of each analytical batch, for autotitration methods.	All analytes within ± 10% of expected value	For performance outside of acceptance criteria: Reanalyze standardization verification. If still out, identify and correct problem. Reanalyze all samples since last valid standardization verification.	Flagging criteria are not appropriate. Problem must be corrected. Samples may not be analyzed until titrant is standardized.
Method blank	One per preparatory batch.	No analytes detected > RL.	Assess data. Correct problem. If necessary, re-prepare and reanalyze method blank and all samples processed with the contaminated blank.	Problem must be corrected. Results may not be reported without a valid method blank. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply B-flag to all associated positive results for the specific analyte(s) in all samples in the associated preparatory batch.
LCS (must contain all analytes to be reported)	One per preparatory batch.	Acceptance criteria listed in LCS and MS/MSD Tables.	Correct problem, then reanalyze the LCS and all samples in the associated preparatory batch for the failed analytes.	Problem must be corrected. Results may not be reported without a valid LCS. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to the specific analyte(s) in all samples in the associated preparatory batch.
Laboratory duplicate	One per preparatory batch.	Acceptance criteria listed in LCS and MS/MSD Tables.	Correct problem, then reanalyze the sample and laboratory duplicate.	If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to the specific analyte(s) in all samples in the associated preparatory batch.

[a] All corrective actions associated with project work will be documented, and all records will be maintained by the laboratory.

[b] Flagging criteria will be applied when acceptance criteria were not met and corrective action was not successful or corrective action was not performed.

Table 4-14. Summary of Calibration and Quality Control Procedures for Method SM2540C

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
Two- point balance calibration	Daily	Accuracy of ±0.1% (greater than 1g) and ±1% weight (1g or less)Calibration MUST meet acceptance criteria prior to sample analysis	Recalibrate. If still out, repair balance and recalibrate.	Flagging criteria are not appropriate. Problem must be corrected. Samples may not be analyzed until balance is calibrated.
Method blank	One per preparatory batch.	No analytes detected > RL.	Assess data. Correct problem. If necessary, re-prepare and reanalyze method blank and all samples processed with the contaminated blank.	Problem must be corrected. Results may not be reported without a valid method blank. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply B-flag to all associated positive results for the specific analyte(s) in all samples in the associated preparatory batch.
LCS (must contain all analytes to be reported)	One per preparatory batch.	Acceptance criteria listed in LCS and MS/MSD Tables.	Correct problem, then reanalyze the LCS and all samples in the associated preparatory batch for the failed analytes.	Problem must be corrected. Results may not be reported without a valid LCS. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to the specific analyte(s) in all samples in the associated preparatory batch.
Laboratory duplicate	One per preparatory batch.	Acceptance criteria listed in LCS and MS/MSD Tables.	Correct problem, then reanalyze the sample and laboratory duplicate.	If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to the specific analyte(s) in all samples in the associated preparatory batch.

[a] All corrective actions associated with project work will be documented, and all records will be maintained by the laboratory.

[b] Flagging criteria will be applied when acceptance criteria were not met and corrective action was not successful or corrective action was not performed.

Table 4-15. Summary of Calibration and Quality Control Procedures for Method HPGe and EPA 903.1 and 904

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
Continuing calibration cell background counts	Prior to each use	≤5 counts/20 minutes	Check the cell, recount. Perform new initial calibration	Flagging criteria are not appropriate. Problem must be corrected.
Thorium 230 check source	Once per day	Within 3 sigma of mean count rate	Evaluate the source for leaks or breaks Observe instrument control chart and evaluate for drifts or trends Reset control limit using 20 most recent standard counts	Flagging criteria are not appropriate. Problem must be corrected.
Method blank	One per preparatory batch.	< minimum detectable activity	Assess data. Correct problem. If necessary, re-prepare and reanalyze method blank and all samples processed with the contaminated blank.	Problem must be corrected. Results may not be reported without a valid method blank. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply B-flag to all associated positive results for the specific analyte(s) in all samples in the associated preparatory batch.
Laboratory duplicates	One per preparatory batch.	RPD ≤ 20% Relative error ratio ≤1	Check calculations, repeat analysis	If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to the specific analyte(s) in all samples in the associated preparatory batch.
LCS (must contain all analytes to be reported)	One per preparatory batch.	Per laboratory control limits	Correct problem, then reanalyze the LCS and all samples in the associated preparatory batch for the failed analytes.	Problem must be corrected. Results may not be reported without a valid LCS. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to the specific analyte(s) in all samples in the associated preparatory batch.

[a] All corrective actions associated with project work will be documented, and all records will be maintained by the laboratory.

[b] Flagging criteria will be applied when acceptance criteria were not met and corrective action was not successful or corrective action was not performed.

Table 4-16. Summary of Calibration and Quality Control Procedures for Method EPA 100.2 and SM9223B-2004

APS Quality Assurance Project Plan

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action[a]	Laboratory Flagging Criteria[b]
Method blank	One per preparatory batch.	< minimum detectable activity	Assess data. Correct problem. If necessary, re-prepare and reanalyze method blank and all samples processed with the contaminated blank.	Problem must be corrected. Results may not be reported without a valid method blank. If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply B-flag to all associated positive results for the specific analyte(s) in all samples in the associated preparatory batch.
Laboratory duplicates	One per preparatory batch.	RPD ≤ 20%	Check calculations, repeat analysis	If reanalysis cannot be performed, data must be qualified and explained in the case narrative. Apply J-flag to the specific analyte(s) in all samples in the associated preparatory batch.

Appendix A
APS Project Descriptions and Requirements

Appendix A Project Description

Project Information
Project Name: APS 501/505 Former MGP Site
Project Type: ☐ Remediation ☐ Permit/Compliance-based ☐ Characterization ☒ Other
Project Description: Submitting revised request for No Further Action with ADEQ. Location: Phoenix, Arizona APS Project Manager: Judy Heywood Consulting Project Manager: David Allard/Jacobs Overseeing Agency and Program, if applicable: _ADEQ VRP_____ Governing Document: ☐ Work Plan ☒ RAP ☐ Permit ☐ Other _____
Laboratory Information
Provide Laboratory Name: ☒ Listed in QAPP ☐ Not listed in QAPP If not already listed in QAPP, ensure QAPP Laboratory listing Table is updated
Do the QAPP Tables cover the scope of work? ☒ Yes ☐ No If no, list the addition Table references:
Data Validation to be completed by: ☒ Consultant ☐ Two Laboratories ☐ Other If Other, provide detail:
Additional Information and/or QAPP Exceptions:
Signature

APS Project Manager:	Date:

Appendix A Project Description

Project Information
Project Name: APS APP Permit Programs
Project Type: ☐ Remediation ☒ Permit/Compliance-based ☐ Characterization ☐ Other
Project Description: Sampling associated with APP program, including drywells Location: various APS locations APS Project Manager: Lori Zito; Michele Robertson; Others Consulting Project Manager: Varies Overseeing Agency and Program, if applicable: ___ADEQ APP program_____ Governing Document: ☐ Work Plan ☐ RAP ☒ Permit ☐ Other _____
Laboratory Information
Provide Laboratory Name: Xenco; Test America; Pace; Others ☒ Listed in QAPP ☐ Not listed in QAPP If not already listed in QAPP, ensure QAPP Laboratory listing Table is updated
Do the QAPP Tables cover the scope of work? ☒ Yes ☐ No If no, list the addition Table references:
Data Validation to be completed by: ☒ Consultant ☒ Laboratories ☐ Other If Other, provide detail:
Additional Information and/or QAPP Exceptions:
Sampling performed in accordance with APP permit requirements
Signature

APS Project Manager:	Date:

Appendix A Project Description

Project Information	
Project Name: APS CCR Program	
Project Type: ☐ Remediation ☒ Permit/Compliance-based ☐ Characterization ☐ Other	
Project Description: CCR Program – GW Monitoring Program; Beneficial Use Demonstrations Location: Cholla and Four Corners APS Project Manager: Michele Robertson; Lori Zito Consulting Project Manager: Natalie Lazarr/ Wood Group; Others Overseeing Agency and Program, if applicable: ___Federal CCR_____ Governing Document: ☐ Work Plan ☐ RAP ☐ Permit ☒ Other Regulatory/ Self-implementing	
Laboratory Information	
Provide Laboratory Name: Test America; Pace; Xenco; Others ☒ Listed in QAPP ☐ Not listed in QAPP If not already listed in QAPP, ensure QAPP Laboratory listing Table is updated	
Do the QAPP Tables cover the scope of work? ☒ Yes ☐ No If no, list the addition Table references:	
Data Validation to be completed by: ☒ Consultant ☒ Laboratories ☐ Other If Other, provide detail:	
Additional Information and/or QAPP Exceptions:	
Signature	
APS Project Manager:	Date:

Appendix A Project Description

Project Information
Project Name: Cholla Power Plant, Joseph City, Arizona
Project Type: ☐ Remediation ☐ Permit/Compliance-based ☐ Characterization ☐ Other
Project Description: Location: APS Project Manager: Consulting Project Manager: Overseeing Agency and Program, if applicable: _____ Governing Document: ☐ Work Plan ☐ RAP ☐ Permit ☐ Other _____
Laboratory Information
Provide Laboratory Name: ☐ Listed in QAPP ☐ Not listed in QAPP If not already listed in QAPP, ensure QAPP Laboratory listing Table is updated
Do the QAPP Tables cover the scope of work? ☐ Yes ☐ No If no, list the addition Table references:
Data Validation to be completed by: ☐ Consultant ☐ Two Laboratories ☐ Other If Other, provide detail:
Additional Information and/or QAPP Exceptions:
Signature

APS Project Manager:	Date:

Appendix A Project Description

Project Information
Project Name: Douglas, Arizona
Project Type: ☒ Remediation ☐ Permit/Compliance-based ☒ Characterization ☐ Other
Project Description: Site characterization, preparation of Remedial Action Plan, preparation of Remedial Design, and remediation of a former manufactured Gas Plant. Location: Douglas, Arizona APS Project Manager: Judy Heywood Consulting Project Manager: David Allard Overseeing Agency and Program, if applicable: __ADEQ VRP_____ Governing Document: ☐ Work Plan ☒ RAP ☐ Permit ☐ Other _____
Laboratory Information
Provide Laboratory Name: ☒ Listed in QAPP ☐ Not listed in QAPP If not already listed in QAPP, ensure QAPP Laboratory listing Table is updated
Do the QAPP Tables cover the scope of work? ☒ Yes ☐ No If no, list the addition Table references:
Data Validation to be completed by: ☒ Consultant ☐ Two Laboratories ☐ Other If Other, provide detail:
Additional Information and/or QAPP Exceptions:
Signature

APS Project Manager:	Date:

Appendix A Project Description

Project Information
Project Name: APS Miami Former MGP Site
Project Type: ☒ Remediation ☐ Permit/Compliance-based ☐ Characterization ☐ Other
Project Description: Preparation of Remedial Action Plan, preparation of Remedial Design and remediation of a former Manufactured Gas Plant Site Location: Miami, Arizona APS Project Manager: Judy Heywood Consulting Project Manager: David Allard Overseeing Agency and Program, if applicable: __ADEQ VRP_____ Governing Document: ☐ Work Plan ☒ RAP ☐ Permit ☐ Other _____
Laboratory Information
Provide Laboratory Name: ☒ Listed in QAPP ☐ Not listed in QAPP If not already listed in QAPP, ensure QAPP Laboratory listing Table is updated
Do the QAPP Tables cover the scope of work? ☒ Yes ☐ No If no, list the addition Table references:
Data Validation to be completed by: ☒ Consultant ☐ Two Laboratories ☐ Other If Other, provide detail:
Additional Information and/or QAPP Exceptions:
Signature

APS Project Manager:	Date:

Appendix A Project Description

Project Information
Project Name: NPDES/AZPDES Permit Programs
Project Type: ☐ Remediation ☒ Permit/Compliance-based ☐ Characterization ☐ Other
Project Description: Various point source and non-point source discharges covered under AZPDES/NPDES permits; Stormwater Permitting Location: various APS locations including projects, generation sites, T&D and Substation locations APS Project Manager: varies with permit and project Consulting Project Manager: Michele Robertson; Lori Zito; Craig Chavet Overseeing Agency and Program, if applicable: EPA NPDES; ADEQ AZPDES Governing Document: ☐ Work Plan ☐ RAP ☒ Permit ☒ Other general permits
Laboratory Information
Provide Laboratory Name: various ☒ Listed in QAPP ☐ Not listed in QAPP If not already listed in QAPP, ensure QAPP Laboratory listing Table is updated
Do the QAPP Tables cover the scope of work? ☒ Yes ☐ No If no, list the addition Table references:
Data Validation to be completed by: ☒ Consultant ☒ Laboratories ☐ Other If Other, provide detail:
Additional Information and/or QAPP Exceptions:
Data validation typically performed by Laboratory (minimum Level 2 data package required by APS); separate project or location-specific data validation may occur by Consultant depending upon nature and scope of work.
Signature

APS Project Manager:	Date:

Appendix B
Arizona Laboratory Data Qualifiers

Arizona Data Qualifiers
Revision 3.0
9/20/2007

Developed by the Sub-committee of the Arizona Environmental Laboratory Advisory Committee

This is an updated list of the Rev. 2.0 Arizona Data Qualifiers dated 11/26/2003, with some new qualifiers added, some obsolete ones deleted and some modified.

Using the following Arizona Data Qualifiers does not automatically denote acceptability to the Regulatory Agency. Arizona Department of Environmental Quality expects that data reported utilizing the following qualifiers, unless stated otherwise, is useable, scientifically valid and defensible. In the laboratory's judgment if the data should not be used for compliance, the T6 qualifier must be used. Other general guidelines for use and application of the following data qualifiers can be found as an attachment to this document (ATTACHMENT A).

Note: For drinking water samples, please use the AZ Drinking Water Data Qualifiers 10/23/2001 [PDF 23K]

Microbiology:

A1 = Too numerous to count.
A2 = Sample incubation period exceeded method requirement.
A3 = Sample incubation period was shorter than method requirement.
A4 = Target organism detected in associated method blank.
A5 = Incubator/water bath temperature was outside method requirements.
A6 = Target organism not detected in associated positive control.
A7 = Micro sample received without adequate headspace.
A8 = Plate count was outside the method's reporting range. Reported value is estimated.

Method/calibration blank:

B1 = Target analyte detected in method blank at or above the method reporting limit.
B2 = Non-target analyte detected in method blank and sample, producing interference.
B3 = Target analyte detected in calibration blank at or above the method reporting limit.
B4 = Target analyte detected in blank at or above method acceptance criteria.
B5 = Target analyte detected in method blank at or above the method reporting limit, but below trigger level or MCL.
B6 = Target analyte detected in calibration blank at or above the method reporting limit, but below trigger level or MCL.
B7 = Target analyte detected in method blank at or above method reporting limit.

Concentration found in the sample was 10 times above the concentration found in the method blank.

Confirmation:

C1 = Confirmatory analysis not performed as required by the method.
C2 = deleted
C3 = Qualitative confirmation performed.
C4 = Confirmatory analysis was past holding time.
C5 = Confirmatory analysis was past holding time. Original result not confirmed.
C6 = deleted
C7 = deleted
C8 = Sample RPD between the primary and confirmatory analysis exceeded 40%. Per EPA Method 8000C, the lower value was reported as there was no evidence of chromatographic problems.

Dilution:

D1 = Sample required dilution due to matrix.
D2 = Sample required dilution due to high concentration of target analyte.
D3 = deleted.
D4 = Minimum Reporting Limit (MRL) adjusted to reflect sample amount received and analyzed.
D5 = Minimum Reporting Limit (MRL) adjusted due to sample dilution; analyte was non-detect in the sample.
D6 = Minimum Reporting Limit (MRL) adjusted due to an automatic 10X dilution performed on this sample for the purpose of reporting traditional drinking water analytes for wastewater requirements.

Estimated concentration:

E1 = Concentration estimated. Analyte exceeded calibration range. Reanalysis not possible due to insufficient sample.
E2 = Concentration estimated. Analyte exceeded calibration range. Reanalysis not performed due to sample matrix.
E3 = Concentration estimated. Analyte exceeded calibration range. Reanalysis not performed due to holding time requirements.
E4 = Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL).
E5 = Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL), but not confirmed by alternate analysis.
E6 = Concentration estimated. Internal standard recoveries did not meet method acceptance criteria.
E7 = Concentration estimated. Internal standard recoveries did not meet laboratory acceptance criteria.

E8 = Analyte reported to MDL per project specification. Target analyte was not detected in the sample.

Hold time:

H1 = Sample analysis performed past holding time.
H2 = Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
H3 = Sample was received and analyzed past holding time.
H4 = Sample was extracted past required extraction holding time, but analyzed within analysis holding time.
H5 = This test is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.

BOD/CBOD:

K1 = The sample dilutions set-up for the BOD/CBOD analysis did not meet the oxygen depletion criteria of at least 2 mg/L. Any reported result is an estimated value.
K2 = The sample dilutions set up for the BOD/CBOD analysis did not meet the criteria of a residual dissolved oxygen of at least 1 mg/L. Any reported result is an estimated value.
K3 = deleted.
K4 = deleted.
K5 = The dilution water D.O. depletion was > 0.2 mg/L.
K6 = Glucose/glutamic acid BOD/CBOD was below method acceptance criteria.
K7 = A discrepancy between the BOD and COD results has been verified by reanalysis of the sample for COD.
K8 = Glucose/glutamic acid BOD/CBOD was above method acceptance levels.

Laboratory fortified blank/blank spike:

L1 = The associated blank spike recovery was above laboratory acceptance limits
L2 = The associated blank spike recovery was below laboratory acceptance limits.
L3 = The associated blank spike recovery was above method acceptance limits.
L4 = The associated blank spike recovery was below method acceptance limits.

Matrix spike:

M1 = Matrix spike recovery was high; the associated blank spike recovery was acceptable.
M2 = Matrix spike recovery was low; the associated blank spike recovery was acceptable.
M3 = The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The associated blank spike recovery was acceptable.

M4 = The analysis of the spiked sample required a dilution such that the spike recovery calculation does not provide useful information. The associated blank spike recovery was acceptable.
M5 = Analyte concentration was determined by the method of standard addition (MSA).
M6 = Matrix spike recovery was high. Data reported per ADEQ policy 0154.000.
M7 = Matrix spike recovery was low. Data reported per ADEQ policy 0154.000.

General:

N1 = See case narrative.
N2 = See corrective action report.
N3 = deleted.
N4 = The Minimum Reporting Limit (MRL) verification check did not meet the laboratory acceptance limit.
N5 = The Minimum Reporting Limit (MRL) verification check did not meet the method acceptance limit.
N6 = Data suspect due to quality control failure, reported per data user's request.

Sample quality:

Q1 = Sample integrity was not maintained. See case narrative.
Q2 = Sample received with head space.
Q3 = Sample received with improper chemical preservation.
Q4 = Sample received and analyzed without chemical preservation.
Q5 = Sample received with inadequate chemical preservation, but preserved by the laboratory.
Q6 = Sample was received above recommended temperature.
Q7 = Sample inadequately dechlorinated.
Q8 = Insufficient sample received to meet method QC requirements. Batch QC requirements satisfy ADEQ policies 0154.000 and 0155.000.
Q9 = Insufficient sample received to meet method QC requirements.
Q10 = Sample received in inappropriate sample container.
Q11 = Sample is heterogeneous. Sample homogeneity could not be readily achieved using routine laboratory practices.

Duplicates:

R1 = RPD/RSD exceeded the method acceptance limit.
R2 = RPD/RSD exceeded the laboratory acceptance limit.
R3 = deleted.
R4 = MS/MSD RPD exceeded the method acceptance limit. Recovery met acceptance criteria.
R5 = MS/MSD RPD exceeded the laboratory acceptance limit. Recovery met acceptance criteria.

R6 = LFB/LFBD RPD exceeded the method acceptance limit. Recovery met acceptance criteria.
R7 = LFB/LFBD RPD exceeded the laboratory acceptance limit. Recovery met acceptance criteria.
R8 = Sample RPD exceeded the method acceptance limit.
R9 = Sample RPD exceeded the laboratory acceptance limit.
R10 = deleted.
R11 = The RPD calculation for MS/MSD does not provide useful information due to the varying sample weights when Encore samplers/methanol field preserved samples are used.

Surrogate:

S1 = Surrogate recovery was above laboratory acceptance limits, but within method acceptance limits.
S2 = deleted.
S3 = Surrogate recovery was above laboratory acceptance limits, but within method acceptance limits. No target analytes were detected in the sample.
S4 = Surrogate recovery was above laboratory and method acceptance limits. No target analytes were detected in the sample.
S5 = Surrogate recovery was below laboratory acceptance limits, but within method acceptance limits.
S6 = Surrogate recovery was below laboratory and method acceptance limits. Reextraction and/or reanalysis confirms low recovery caused by matrix effect.
S7 = Surrogate recovery was below laboratory and method acceptance limits. Unable to confirm matrix effect.
S8 = The analysis of the sample required a dilution such that the surrogate recovery calculation does not provide useful information. The associated blank spike recovery was acceptable.
S9 = deleted.
S10 = Surrogate recovery was above laboratory and method acceptance limits. See case narrative.
S11 = Surrogate recovery was high. Data reported per ADEQ policy 0154.000.
S12 = Surrogate recovery was low. Data reported per ADEQ policy 0154.000.

Method/analyte discrepancies:

T1 = Method approved by EPA, but not yet licensed by ADHS.
T2 = Cited ADHS licensed method does not contain this analyte as part of method compound list.
T3 = Method not promulgated either by EPA or ADHS.
T4 = Tentatively identified compound. Concentration is estimated and based on the closest internal standard.
T5 = Laboratory not licensed for this parameter.
T6 = The reported result cannot be used for compliance purposes.

T7 = Incubator/Oven temperatures were not monitored as required during all days of use.

Calibration verification:

V1 = CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.
V2 = CCV recovery was above method acceptance limits. This target analyte was detected in the sample. The sample could not be reanalyzed due to insufficient sample.
V3 = CCV recovery was above method acceptance limits. This target analyte was detected in the sample, but the sample was not reanalyzed. See case narrative.
V4 = deleted.
V5 = CCV recovery after a group of samples was above acceptance limits. This target analyte was not detected in the sample; acceptable per EPA Method 8000C.
V6 = Data reported from one-point calibration criteria per ADEQ policy 0155.000.
V7 = deleted.
V8 = deleted.
V9 = CCV recovery was below method acceptance limits.

Calibration:

W1= deleted.

W2= deleted.

ATTACHMENT A

"Guidance on the Usage of Data Qualifiers"

These standardized data qualifiers are for use in qualifying analytical results for compliance samples in Arizona to represent events that occurred during analysis. The technical subcommittee has endeavored to develop qualifiers that are succinct and narrow in scope to eliminate broad or multiple interpretations when assessing the impact on data. It must also be noted that due to the specialized nature of the individual qualifiers, it is likely that more than one qualifier may be needed in order to accurately represent the data.

Note:
1. Using the Arizona Data Qualifiers does not automatically denote acceptability to the Regulatory Agency.
2. As specified in the Arizona Adopted Rules, R9-14-615.C.9, *for each parameter tested at the laboratory for which quality control acceptance criteria are not specified in the approved method or by EPA or ADEQ,:*
   a. Use default limits provided in Exhibit II; or
   b. Statistically develop limits from historical data

   The laboratory has an option of using ADHS Default Limits which can be accessed at http://www.azdhs.gov/lab/license/tech/altdefaultlimit.pdf

Microbiology:

None.

Method/calibration blank:

Apply appropriate qualifier to affected analyte in the blank if target analyte is not detected at $\geq$ RL in the samples. If analytes are detected, then all corresponding analytes for the associated samples should also be qualified.

Confirmation:

For methods that require qualitative confirmation. C3 applies to methods that require quantitative confirmation.

Dilution:

If all analytes are reported from the diluted sample, apply qualifier to the entire sample. Otherwise apply qualifier to each analyte that required dilution.

Estimated concentration:

Appropriate qualifier must be used for any analyte result reported outside the calibration range. Affects data reported outside the calibration range or down to the MDL. E8 is only required if additional clarification is necessary.

Hold time:

Qualify samples appropriately when method extraction and/ or analysis holding time have been exceeded.

BOD/CBOD:

Qualifiers K5, K6, & K8 indicate situations that may impact all results in an analytical run and should be used to qualify all affected samples as well as any affected quality control samples when reported.

Laboratory fortified blank/blank spike:

Appropriate qualifier must be applied to the affected analytes in the Laboratory fortified blank/blank spike and to all corresponding analytes in the associated samples.

Matrix spike:

Appropriate qualifier must be applied to the affected analytes in the matrix spike and should also be added to all corresponding analytes in the associated spiked sample. If a batch spike recovery is outside of the acceptable range, it is permissible to only flag the sample that was spiked and not the other samples in the batch. As required in the Arizona Adopted Rules A.A.C. R9-14-617.8.d, clients must always be informed if the batch QC result is unacceptable whether one of their samples was spiked or not. The laboratory can choose how the unacceptable QC is reported to the client (e.g., cover letter or flag).

The ADEQ policy 0154.000 can be accessed at http://www.azdeq.gov/function/business/download/spike8.pdf

General:

None.

Sample quality:

Flag samples with appropriate qualifier when sample quality may be potentially impacted or when method requirements were not met.
The ADEQ policy 0154.000 can be accessed at
http://www.azdeq.gov/function/business/download/spike8.pdf
The ADEQ policy 0155.000 can be accessed at
http://www.azdeq.gov/function/business/download/one_pt3.pdf

Duplicates:

For use with sample, matrix spike, LFB and LFB/blank spike duplicates. Qualify all affected analytes. For MS/MSD or sample duplicates qualify only the original source sample.

Surrogate:

Qualify surrogates appropriately when they do not meet criteria. Surrogate failures in quality control samples will most likely require additional narration. S11 & S12 are used to qualify sample surrogates and only in cases where the Laboratory Fortified Blank/ blank spike has acceptable surrogate recoveries.

Method/analyte discrepancies:

For use with methods or analytes that are not currently approved under the Environmental Laboratory Licensure Rules or for which the lab is not licensed.

Calibration verification:

Appropriate qualifier must be applied to all affected analytes in any samples associated with the calibration verification.
The ADEQ policy 0155.000 can be accessed at
http://www.azdeq.gov/function/business/download/one_pt3.pdf

Calibration:

None.

Appendix C
ADEQ Data Verification and Validation Checklists

Checklist 1
LABORATORY REPORT GOAL: DATA VERIFICATION

Perform data verification on all samples collected to characterize the site, including quarterly groundwater monitoring samples and soil investigation samples. Data verification will be performed by a chemist or other professional with knowledge or experience generating analytical laboratory data. The professional should be familiar with the QC requirements specified for the analytical methods being reviewed. Data verification precedes data validation and is a systematic process for evaluating whether data has been generated with acceptable quality control, as defined in the Project QAPP.

At a minimum, the items listed below must be evaluated as well as completeness of supporting documentation. This is a cursory review of the laboratory's quality control and may suggest that a more thorough validation is needed.

Completed	Review Item
	1. Case Narrative Have any anomalies, deficiencies, and QC problems been identified in the case narrative? What corrective action, if any, was taken?
	2. Chain-of-Custody Documentation Are the original Chain-of-Custody forms with ID numbers and laboratory receipt signatures present?
	Are there copies of internal tracking documents, as applicable?
	3. Sample Analysis Results Are sample analysis results included for environmental samples, with quantitation limits (include dilutions and reanalyses)?
	4. QC Summary Is the following information included? Initial and continuing calibrations
	Method blanks, continuing calibration blanks, and preparation blanks
	Surrogate percent recoveries
	Internal standard percent recoveries

Completed	Review Item
	Matrix spike percent recoveries
	Laboratory duplicate relative percent differences
	Laboratory QC check sample, laboratory control sample recoveries
	Field duplicates, if identified, reproducibility will be evaluated
	Acceptance criteria, if not already established by the method/DQO
	Definitions for any laboratory data qualifiers used
	Method of standard additions (INORGANIC)
	ICP serial dilution (INORGANIC)
	5. Specifically review the following: Was a check for timeliness and errors conducted, including requested deliverables, preservation, holding times, and Chain-of-Custody?
	Was a duplicate sample/matrix spike/matrix spike duplicate/postdigest spike reviewed against precision and accuracy criteria specified by the method or by project DQOs?
	Were compound quantitation and reported detection limits reviewed, checking reporting limits against contract required limits, verifying dry weights, calculations, and dilutions?
	6. Does the Verification Report include the following information?: Case narrative including, but not limited to, an overall summary of data acceptability and comparison to DQOs and DQIs (PARCC), a list of recommended changes, a summary of all laboratory contacts, in which communications with the laboratory, if any, would be identified, and any other problems associated with the actual analysis which might impact the sample integrity or data quality
	Marking of recommended changes directly on copies of the laboratory reports for the client's ease in performing data entry

Completed	Review Item
	Tabulated summary of all data results supplied electronically by email or on 3.5-inch floppy disks in a commonly used software format

Checklist 2
LABORATORY REPORT GOAL: DATA VALIDATION

Experienced chemists will perform full data validation on a data package(s) selected by the contractor Project Manager at the beginning of the project. The package(s) should be a full sample batch (approximately 20 samples), and should be typical of the type of samples expected for the project decision-making. For long-term projects, each analytical method used during the life of the project should be initially validated prior to proceeding with performing data verification on the bulk of the laboratory results. Additionally, during each six-month period that the project is ongoing, the Project Manager will select additional data packages for validation that are representative of the matrix and analyses being performed.

Data validation will consist of a review of sample and QC results, and all accompanying raw data. The ADEQ Project Manager will identify the compounds of concern, and the data validation will include a review of 100% of the QC data and sample data for these compounds in the laboratory report for a sample delivery group. Compounds not identified as contaminants of interest will not be validated unless requested by ADEQ's Project Manager. Data validation will be conducted by the either the consultant's QA officer or an independent data validation contractor. The ADEQ QA Unit will validate a portion of that data previously validated at the ADEQ Project Manager's request to confirm the findings and conclusions regarding the usability of the data. Validation includes all of the following items listed as validation deliverables.

The percentage of data that undergoes full validation may be increased if substantial data quality issues are raised during the initial or subsequent assessments. ADEQ may also require that a larger percent of the data be fully validated for various reasons including, but not limited to, determining the extent of the issue and/or if the issue has been corrected in subsequent analyses, or that additional data be made available for review, besides the validation deliverables mentioned below.

Completed	Review Item
	1. Case Narrative Have any anomalies, deficiencies, and QC problems been identified in the case narrative? What corrective action, if any, was taken?
	2. Chain-of-Custody Documentation Are the original Chain-of-Custody forms with ID numbers and laboratory receipt signatures present?
	Are there copies of internal tracking documents, as

Completed	Review Item
	applicable?
	3. Sample Analysis Results Are sample analysis results included for environmental samples, with quantitation limits (include dilutions and reanalyses)?
	4. QC Summary Is the following information included? Initial and continuing calibrations
	Method blanks, continuing calibration blanks, and preparation blanks
	Surrogate percent recoveries
	Internal standard percent recoveries
	Matrix spike percent recoveries
	Laboratory duplicate relative percent differences
	Laboratory QC check sample, laboratory control sample recoveries
	Field duplicates, if identified, reproducibility will be evaluated
	Acceptance criteria, if not already established by the method/DQO
	Definitions for any laboratory data qualifiers used
	Gas chromatograph breakdown products
	Retention times and acceptance windows (ORGANIC)
	ICP interference check sample (INORGANIC)
	Method of standard additions (INORGANIC)
	ICP serial dilution (INORGANIC)
	5. Raw data, chromatograms, and area quantitation reports (ORGANIC), sequential measurement readout records for ICP, graphite furnace atomic absorption (AA), flame AA, cold vapor mercury, cyanide, and/or other inorganic analyses (INORGANIC), including but not limited to the following: Environmental samples (include dilutions and reanalyses)
	Instrument tuning, for analyses of gas chromatography/mass spectrometry (GC/MS)

Completed	Review Item
	Initial calibration and continuing calibrations
	Method blanks, continuing calibration, and preparation blanks
	Surrogate recoveries and internal standard recoveries, where applicable
	Matrix spike (MS)
	Laboratory duplicate or matrix spike duplicate (MSD)
	Laboratory QC check sample, or laboratory control samples, as applicable
	Retention time windows
	Percent moisture for soil samples
	Sample extraction and cleanup logs (ORGANIC)
	Enhanced spectra of target analytes and tentatively identified compounds (TICs) with the associated best match spectra for MS data
	Sample digestion and/or sample preparation logs (INORGANIC)
	Instrument analysis log for each instrument used (INORGANIC)
	Postdigest spikes (INORGANIC)
	Method of standard additions when applicable (INORGANIC)
	ICP serial dilution (INORGANIC)
	Instrument tuning for ICP/MS, when applicable (INORGANIC)
	6. Specifically review the following: Was a check for timeliness and errors conducted, including requested deliverables, preservation, holding times, and Chain-of-Custody?
	Was a duplicate sample/matrix spike/matrix spike duplicate/post-digest spike reviewed against precision and accuracy criteria specified by the method or by project DQOs?
	Was compound quantitation and reported detection limits reviewed, checking reporting limits against contract required

Completed	Review Item
	limits, verifying dry weights, calculations, and dilutions?
	Was target list compounds identified, indicating proper identification of analytes?
	Was sample result verification conducted, in which the final reports are reviewed against all raw instrumental data and logs and all applicable worksheets to check anomalies, data reduction/calculations, transcription, linear ranges, and dilutions?
	7. OPTIONAL (as requested by ADEQ for data validation on a case-by-case basis) Method detection limits (MDLs)
	Instrument detection limits (IDLs)
	ICP linear range (INORGANIC)
	8. Does the Validation Report include the following information?: Case narrative including, but not limited to, an overall summary of data acceptability and comparison to DQOs (PARCC), a list of recommended changes, a summary of all laboratory contacts, in which communications with the laboratory, if any, would be identified, and any other problems associated with the actual analysis which might impact the sample integrity or data quality
	Marking of recommended changes directly on copies of the laboratory reports for the client's ease in performing data entry
	Tabulated summary of all data results supplied electronically by email or on 3.5-inch floppy disks in a commonly used software format

High Level Data Verification Checklist

Level I data verification of the laboratory analytical data package consists of verification and validation checks for the compliance of sample receipt conditions, sample characteristics, and analytical results. The following checklist can be completed by APS Project Managers to determine if data meet project requirements prior to the submitting the data for validation.

Completed	Review Item
	Have any anomalies, deficiencies, and QC problems been identified in the case narrative?
	Is a copy of the COC forms with ID numbers and laboratory receipt signatures present?
	Is the laboratory receiving and conducting analyses clearly identified, including subcontracted analyses?
	Are all requested analytical methods performed and the preparation/analysis dates present?
	Are all target analytes reported along with the original laboratory data qualifiers and data qualifier definitions for each reported result?
	Are all target analytes reported in the requested units?
	Are the reporting limits for all samples present and are they at or less than the requested reporting limits
	Is the sample receipt information included (preservation, pH and temperature)?
	For radiochemical analyses, are the sample-specific critical values, minimum detectable values, activity or concentration for all samples reported and results at and less than the requested values?
	For radiochemical analyses, is the chemical yield (if applicable to the method) and reference date and time (especially for short lived isotopes) reported for all samples?
	Do sample methods/results meet the requirements and guidelines present in the APS QAPP or NPDES permits?

SPLIT SAMPLING AS AN ACCEPTABLE ALTERNATIVE TO PERFORMING DATA VALIDATION

In the absence of performing data validation (which can be cost prohibitive for small numbers of samples analyzed) a percentage of split samples can be collected and analyzed at another laboratory to confirm accuracy. ***This, however, should be approved by ADEQ in advance to ensure that project requirements can still be achieved****. The decision to allow split sampling as an alternative to data validation must be made on a case-by-case basis. The Agency stresses that analyzing split samples should not be viewed as an equivalent substitution for performing data validation. There are, however, conceivably various sites in which the data quality objectives (DQOs) would not be seriously compromised if split samples were analyzed either in lieu of or in conjunction with performing data validation.*

As the number of samples collected increases, the rationale for analyzing split samples as an alternative to performing data validation must also become more compelling.

With prior approval from ADEQ, the QAPP must document the number of samples to be collected and the percentage of split samples anticipated for the project. State the rationale if the percentage of split samples recommended differs from the number of samples collected. Recommended percentages are as follows:

- *1-10 samples collected (100% splits)*
- *11-20 samples collected (50% splits)*
- *21-35 samples collected (35% splits)*
- *36-50 samples collected (25% splits)*

Appendix D
APS Project Contact Information

APS Project Managers

APS Project Manager	Title	Address	Phone	Email	Associated APS Sites
Judy Heywood	Remediation Project Manager	Mail Station 9303 Post Office Box 53999 Phoenix, Arizona 85072-3999	(602) 250-3850 (office) (602) 818-0259 (cell)	judith.heywood@aps.com	MGP and Remediation
Lori Zito	Waste/Water Consultant	Mail Station 9303 Post Office Box 53999 Phoenix, Arizona 85072-3999	(602) 250-4709 (office) (602) 638-6888 (cell)	lori.zito@aps.com	Fossil generation
Kristina Da Silva	Senior Environmental Scientist	Mail Station 3171 Post Office Box 53999 Phoenix, Arizona 85072-3999	(602) 371-5922 (office) (602) 300-1617 (cell)	Kristina.DaSilva@aps.com	EFO
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Chris Chittester	Environmental Operations Leader	Mail Station 5100 Post Office Box 53999 Phoenix, Arizona 85072-3999	(602) 407-7807 (office) (480) 309-1471 (cell)	Christopher.Chittester@aps.com	Fossil generation

APS Project Consultants

Consulting Firm	Name	Role	Address	Phone	Email	Associated APS Sites
Jacobs Engineering	Dave Allard	Project Manager	1501 West Fountainhead Parkway, Suite 401 Tempe, Arizona 85282	(480) 295-3913 (office) (480) 363-3254 (cell)	dave.allard@jacobs.com	505/501, Miami, Douglas
Jacobs Engineering	Tom Mooney	Project Manager	1501 West Fountainhead Parkway, Suite 401 Tempe, Arizona 85282	(480) 295-3936 (office) (480) 205-6886 (cell)	Tom.mooney@jacobs.com	Yucca
Jacobs Engineering	Rick Edwards	Project Manager	1501 West Fountainhead Parkway, Suite 401 Tempe, Arizona 85282	(480) 295-3922 (office) (480) 570-7162 (cell)	Rick.edwards@jacobs.com	Cholla
AECOM	Daniel Sola	Project Manager	7720 North 16th Street Suite 100 Phoenix AZ 85020	(602) 648-2530 (office) (602) 244-8599 (cell)	Daniel.sola@aecom.com	
WOOD	Natalie Chrisman Lazarr	Project Manager	4600 East Washington Street, Suite 600 Phoenix AZ 85034	(602) 733-6087 (office) (602) 316-1324 (cell)	natalie.chrisman@woodplc.com	
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Errol Montgomery & Associates	Leslie T. Katz, P.G.	Project Manager	1550 E. Prince Road Tucson, AZ 85719	(520) 881-4912 (office) (520) 245-4802 (cell)	lkatz@elmontgomery.com	
Jacobs Engineering	Bernice Kidd	Quality Assurance Officer/Project Chemist	2525 Airpark Drive1 Redding, California 96001	(530) 229-3203 (office) (530) 209-3480 (cell)	bernice.kidd@jacobs.com	Miami, Cholla
AECOM	Marianne Burrus	Quality Assurance Officer	7720 North 16th Street Suite 100 Phoenix AZ 85020	(602) 861-7473 (office) (602) 371-1615 (cell)	marianne.burrus@aecom.com	
Arcadis	Bob Forsberg		410 N 44th St, Suite 1000 Phoneix, Arizona 85008	(602) 363-8729 (cell)	bob.forsberg@arcadis.com	
Hutzel & Associates	Enrique Luviano		1626 E Alicia Drive Phoenix, Arizona 85042	(602) 323-0222 (office) (602) 549-2035 (cell)	eluviano@gmail.com	
EnviroTech, Inc.	Felipe Aragon		5796 US Highway 64 Farmington, New Mexico 87401	(505) 632-0615 (office) (505) 486-6942 (cell)	faragon@envirotech-inc.com	

APS Project Laboratories

Laboratory Name	Mobile/Fixed	Project Manager	Address	Phone	Email	ADHS Certified	APS Sites Using this Laboratory
TestAmerica	Mobile and Fixed	Ken Baker	4645 E. Cotton Center Blvd., Building 3, Suite 189 Phoenix, Arizona 85040	(602) 659-7624	ken.baker@testamericainc.com	Yes	
ESC Lab Sciences	Fixed	Daphne Richards	1206 Lebanon Road Mount Juliet, TN 37122	(615) 758-5858	drichards@esclabsciences.com	Yes	
Legend Technical Services of Arizona, Inc.	Fixed	Kristi McFarlin	17631 N 25th Ave Phoenix, AZ 85023	(602) 324-6100	kmcfarlin@legend-group.com	Yes	
SGS Accutest, Inc.	Fixed	Beth Profitt	2015 Lundy Ave. San Jose, CA 95131	(602) 501-5673 (local) (408) 588-0200 (CA)	elizabeth.proffitt@SGS.com	Yes	
Envirosource Corporation dba Green Analytical Laboratories	Fixed	Debbie Zufelt	75 Suttle Street Durango, CO 81303	(970) 247-4220	dzufelt@greenanalytical.com	No	
Xenco Laboratories	Mobile and Fixed	Skip Harden	2525 West Huntington Drive, Suite 102 Tempe, AZ 85282	(480) 355-0900	skip.harden@xenco.com	Yes	Cholla, Miami, Grant Street
Eurofins Air Toxics LTD	Fixed	Kyle Vagadori	180 Blue Ravine Road Folsom, CA 95630	(916) 985-1000	kylevagadori@eurofinsus.com	Yes	
American Environmental Testing Laboratory	Fixed	Cyrus Razmara	2834 North Naomi Street Burbank, California 91504	(818) 845-8200	cyrus@aetlab.com	No	PAHs only
APS Central Services Laboratory	Fixed	Steve Rice	2121 W Cheryl Drive Phoenix, Arizona	(602) 291-1269	steve.rice@aps.com	Yes	
Fiberquant Analytical Services	Fixed	Michael Breu	5025 S. 33rd Street Phoenix, AZ 85040	(602) 276-6139	michaelb@fiberquant.com	Yes	
Radiation Safety	Fixed	Robert Metzger	3245 N Washington St Chandler, AZ 85225	(480) 897-9459	mmetzger@radsafe.com		
Aquatic Consulting & Testing, Inc.	Fixed	Dave Winters	1525 W. University Dr. Suite 106 Tempe, AZ 85280	(480) 921-8044	dwinters@aquaticconsulting.com	Yes	

Appendix E
Laboratory Variances

Pace National Exceptions – APS QAPP

1. Level II, Level III, and Level IV requirements listed in Section 7.3 on pp. 38-39 of APS QAPP. Requirements can be met except for the following: MDL studies for all analytes required for Level IV. **Exception – MDL studies not included in Level IV data packages.**

   APS understands this comment to mean that MDL's are performed; however, they are not included in the standards Level IV data package. This exclusion is acceptable to APS provided MDL's are performed, and are available upon request.

2. Section 3.3.3 Laboratory Responsibilities (p. 25 of APS QAPP) – "Procedures ensuring internal laboratory COC will also be implemented and documented by the laboratory. Sample custody will be maintained using an internal custody system that requires samples to be kept in a secured and restricted area when not in use and to be checked out and checked back in by the analysts who use the samples. Internal custody records must be maintained by the laboratory as part of the documentation file for each sample". **Exception – Pace National does not maintain internal COCs**.

   APS presumes that an alternative method is used within the laboratory to assure sample tracking. For example, bar coding or an alternative method is acceptable to APS.

3. Special flagging criteria/data qualifier requirements for QC results and calibrations that do not meet acceptance criteria (see "Laboratory Flagging Criteria" in Tables 4.1-4.16 and "Flag" columns in Tables 7.1 and 7-2 in Tables.pdf). **Exception - ESC must report in-house qualifiers, many of which do not match those included in these tables.**

   APS presumes that Pace utilizes internal data flags that are specific to Pace. APS requests that laboratory reports be issued with AZ Data Flags or that internal Pace Data Flags are cross-referenced or otherwise correlated with the respective AZ Data Flag.

4. Fixed control limits are in the tables. 70-130% recovery and 30% RSD for Organics. 80-120% recovery and 20% RSD for Inorganics. Some of Pace National in-house limits are wider than this.

   Items 4 through 7 below are acceptable to APS.

5. Criteria for second source verification in 8260/8270 is ±30%. Pace National allows ±40% for some compounds. **OK**

6. Criteria for un-spiked elements in the ICSA for Metals is <RL. Pace National in-house criteria is <2xRL. **OK**

7. Pace National in-house qualifiers are a bit more extensive than simple J/UJ flags for various types of QC failures. **OK**

8. Exception - Disposal records must be maintained by the laboratory. **OK**

File Name: O:\Variances\2019\0119-001
Profile:
Date: 01/31/19
Initials: ML
Reviewer Initials:

Eurofins Air Toxics, LLC
Variance Requests

Client/Project Name: Jacobs/Arizona Public Service

Documents Reviewed: Arizona Public Service QAPP Draft January 2019

Methods Requested: TO-15, TO-13A, ASTM D1946

Item	Parameter	Scope of Work	Eurofins Air Toxics SOP	Approval
1	APS QAPP Section 2.4.4	Analytical laboratory project manager will be responsible for reviewing final analytical reports submitted for the project	Laboratory supervisor or designee is responsible for reviewing final analytical reports prior to submitting to the client	Accepted
2	APS QAPP Section 3.3.1	No sample containers will be reused	Canisters are reusable and are cleaned after each use	Accepted
3	APS QAPP Section 3.3.2 and throughout	MS/MSD (or laboratory duplicate)	MS/MSDs are not applicable to air analysis; LCS/LCSD is analyzed instead of MS/MSD and lab duplicate	Accepted
4	APS QAPP Section 3.3.3	Samples will be stored after analysis until disposed of in accordance with applicable local, state, and federal regulations	Summa canisters are reusable media and will be released for cleaning after all required analyses have been completed and results reviewed against project requirements	Accepted
5	APS QAPP Section 7.2	CA will be implemented in the event that the LCS is found to be outside the recovery acceptance limits	**TO-15** does not specify acceptance ranges for daily LCS; laboratory applies TO-15 accuracy criteria of 70-130% for 85% of the target compound list, with no compound recovering <50%; **TO-13A** criteria is 60-120%, any exceedance is confirmed with re-analysis and narrated	Accepted but laboratory must check with project chemist if reanalysis is required.
6	APS QAPP Section 7.2	CA will be implemented in the event that the Surrogate recovery is found to be outside the recovery acceptable limits	**TO-15**: If Surrogate recovery is found to be outside the recovery acceptable limits of 70-130% due to matrix interference a CA is not implemented however is narrated in the final report; **TO-13A**: 50-150% for Field	Accepted but laboratory must check with project chemist if reanalysis is required.

File Name: O:\Variances\2019\0119-001
Profile:
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Methods Requested: TO-15, TO-13A, ASTM D1946

			Surrogates and 60-120% for Lab Surrogates, any exceedance is confirmed with re-analysis and narrated	
7	APS QAPP Sections 7.3, 7.3.2 and 7.4.5	Hard copy data deliverables and Level III Data Deliverables	Level 4 reports provided for all Level 3 requests. All data packages are provided as electronic files posted on the secure webportal with relevant QC summaries bookmarked for easy navigation	Accepted
8	APS QAPP Section 7.4.2.5	Evaluations of detections in blank samples using the 5 times or 10 times rule	Blank results shall be below LOQs	Accepted
9	APS QAPP Table 3.3	EPA TO-13A by HPLC	EPA TO-13A by GC/MS	Accepted
10	APS QAPP Table 3.6	PQLs for lists provided; TO-15: Diisopropyl ether, Ethyl-t-butyl ether, t-Amyl-methyl ether, t-butanol ; TO-15: ,1-Difluoroethane; EPA 3C	Please see attached analyte lists with PQL or all methods; These compounds are considered EATL non-standard TO-15 compounds. A 3-point calibration and CCV will be performed. However, a second source verification (ICV/LCS) and MDL will not be performed; This analyte will be reported as a TIC; Eurofins Air Toxics analyzes these analytes via ASTM D1946	Accepted Accepted Accepted
11	APS QAPP Table 3.9	72 hours holding time for TO-15 and 24 hours holding time for 3C	Holding time for canisters is 30 days after the date of collection per EPA method	Accepted
12	APS QAPP	Mass spectrometer tuning	Mass spectrometer tuning check	Accepted

File Name: O:\Variances\2019\0119-001
Profile:
Date: 01/31/19
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Reviewer Initials:

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Methods Requested: TO-15, TO-13A, ASTM D1946

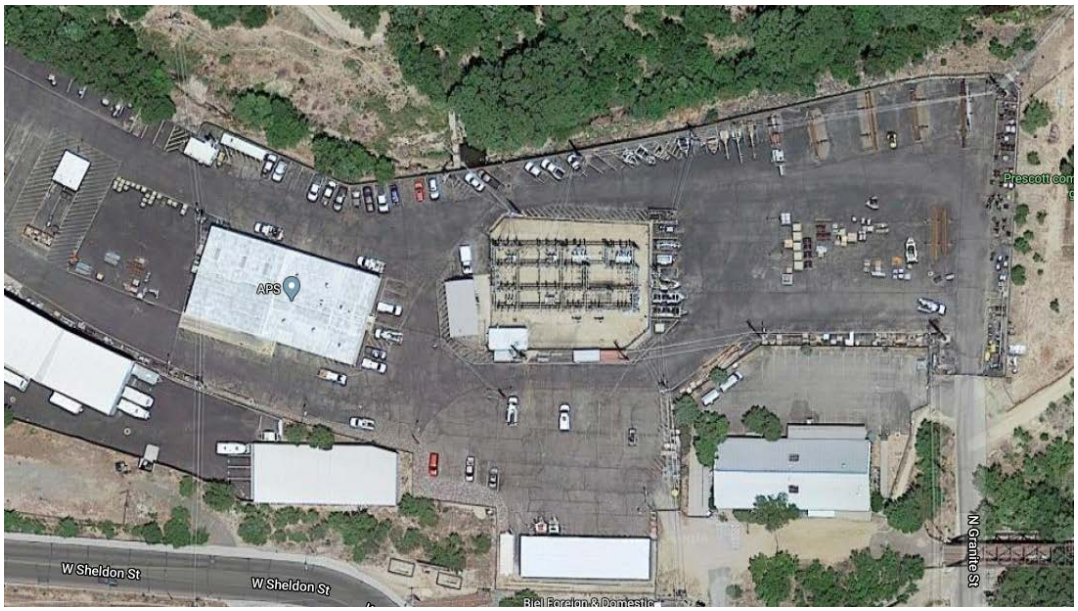
	Table 4.2	check (BFB) analyzed every 12 hours	analyzed every 24 hours per TO-15 EPA method	
13	APS QAPP Table 4.2	ICAL: ≤15% RSD for each analyte	**TO-15** ICAL: ≤30% RSD for each analyte with 2 analytes allowed out to ≤40% per EPA method; **TO-13A** ICAL: ≤30% RSD for each analyte	Accepted
14	APS QAPP Table 4.2	ICV: ±30% of expected value for all analytes	**TO-15**: laboratory applies TO-15 accuracy criteria of 70-130% for 85% of the target compound list, with no compound recovering <50%	Accepted
15	APS QAPP Table 4.2	CCV: analyzed every 12 hours; ±20% of true value for all reported analytes and surrogates	**TO-15** CCV analyzed every 12 hours per EPA method; **TO-15 and TO-13A**: ±30% of true value	Accepted
16	APS QAPP Table 4.2	LCS criteria listed in table	**TO-15**: see item 5 above; **TO-13A**: 60-120% recovery	Accepted

APPROVED
By Greg Laney at 12:31 pm, May 22, 2020

APS Prescott Substation Remediation / Resubmittal 002 Specification 01 29 00
Reviewed, checked and approved for compliance with Contract Documents

Environmental Response, Inc.

HEALTH AND SAFETY PLAN
APS PRESCOTT SUBSTATION REMEDIATION
300 N. GRANITE STREET, PRESCOTT, ARIZONA



MAY 22, 2020

ARIZONA PUBLIC SERVICE
400 N. 5th Street
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Prepared By:
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2202 Medtronic Way, Suite 108
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ERI Project Number 20-209125

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FIGURES

1 Site Location Map
2 Hospital Route Map

APPENDICES

A Safety Data Sheets
B Activity Hazard Analysis (AHA)

HEALTH AND SAFETY PLAN SUMMARY SHEET

Project Name:	APS Prescott Substation Remediation	
Project Location:	300 N. Granite Street, Prescott, Arizona	
ERI Personnel Assignments:	**Name**	**Cell Number**
Project Manager	Eric Smith	602-757-1998
Health and Safety Officer:	Grant DeMars	602-757-5969
Project Supervisor:	Bobby O'Dell	480-757-4400
Work Description:	(1) Demolition of foundation, pavement, concrete slab, and retaining walls (2) Excavate impacted soil (3) Load and transport impacted soil to disposal facility (4) Backfill excavation with import material (5) Site restoration and asphalt pavement	
Chemical Risks:	MGP-related contaminants – volatile organic compounds, polycyclic aromatic hydrocarbons, hydrogen sulfide; silica; asbestos	
On-Site Safety Equipment:	PPE; First Aid Kit	
Fire Extinguisher	Location: On all ERI equipment and trucks Type: ABC dry chemical	
First Aid Kit	Location: ERI Vehicles	
Minimum PPE Required:	Level D – High visibility vest, hard hat, safety glasses, steel-toed safety shoes, and gloves as necessary	
Required Personnel Training:	OSHA 40-hour HAZWOPER with current 8-hour update and medical surveillance	
Designated Safe Area:	To be determined in the field and communicated during daily tailgate safety meetings	
Emergencies:		
Hospital	Yavapai Regional Medical Center 1003 Willow Creek Road Prescott, AZ 86301 (928) 445-2700	
Fire, Ambulance, Police	911	
Poison Control Center	1-800-222-1222	
HASP Reviewed by:	Robyn Steiner, Certified Industrial Hygienist (CIH)	

1. PURPOSE

This Health and Safety Plan (HASP) has been prepared by Environmental Response, Inc. (ERI) to establish policies and procedures to protect workers from the hazards posed by field work carried out for Arizona Public Service (APS) at the Prescott Substation located at 300 N. Granite Street, Prescott, Arizona as shown in Figure 1.

The objective of this HASP is to inform workers of health and safety requirements for their protection at the Site. HASP guidelines are intended to minimize the potential for exposure to hazardous materials, accidents, or physical injury during daily field activities or under adverse conditions.

Site personnel, including ERI personnel and subcontractors who enter the restricted work areas on the Site, must observe the requirements of this HASP. All personnel working at the Site are responsible for understanding and complying with all site safety requirements. If required by Site conditions, as determined by ERI and/or APS, personnel working in control zones will meet the medical surveillance, personal protection, respirator fit-test, and hazardous waste operations and emergency response (HAZWOPER) training requirements specified by the Federal Occupational Safety and Health Administration (OSHA) (Code of Federal Regulations [CFR] Title 29, Section 1910.120). All field participants must read this HASP and sign in agreement to comply with its conditions.

The Health and Safety Officer will conduct initial and daily briefings on anticipated hazards, air monitoring and sampling results, personal protective equipment (PPE) requirements, safety practices, emergency procedures, upwind safe areas (in the event evacuation is necessary), and preferred methods of communication. Daily safety briefings will discuss related topics from the previous day's operation, as well as those anticipated for the current workday.

Subcontractors are responsible for implementing their own health and safety program. As part of their participation on this project, ERI's subcontractors must understand and comply with site safety requirements described in this HASP. ERI will provide overall site direction, air monitoring for its personnel, and decontamination areas for its activities. However, subcontractors and third parties engaged in work at this site are required to supply their own PPE.

If site conditions change during the project, ERI personnel and subcontractors will be required to modify operations as necessary, which may include upgrading or downgrading levels of protection. Copies of modifications to this HASP must be retained on site by the Health and Safety Officer. No changes to this HASP are permitted unless approved by ERI.

This HASP includes descriptions of the following:

- Site background and conditions
- Work objective and scope
- Key personnel and assignment of safety responsibility
- Employee training program information
- Job-site hazard analysis
- Personal Protective Equipment
- Air monitoring
- Medical surveillance program
- Site emergency response plan
- General safe work practices
- Site control and decontamination procedures
- Recordkeeping requirements

ERI's Health and Safety Policy encompasses compliance with applicable Federal, State, and local safety standards as well as health and safety requirements identified in Section 01 11 01 of Hazardous Waste Health and Safety Requirements of the APS Prescott Substation Remediation contract documents. If a conflict arises between the requirements of the contract documents and applicable Federal, State or local safety, health, or industrial regulations or codes, the more stringent requirement shall prevail.

2. SITE BACKGROUND AND ENVIRONMENTAL SETTING

2.1 Site Location

The Project Site is located 300 North Granite Street in the City of Prescott. Prescott is a city in Yavapai County, Arizona, with a population of 43,314 based on the 2018 Census.

2.2 Environmental Setting

Prescott is in the Bradshaw Mountains of central Arizona, at an elevation of 5,400 feet. The city has a Mediterranean climate; however, unlike most other locations in this climate class, there is a pronounced summer wet season due to the North American Monsoon. Monsoon season is June 15th to September 15th, and it brings significant rain, wind, hail, thunderstorms, and flooding to the area. Average daytime temperatures remain above 50 degrees Fahrenheit (°F) the entire year, but temperature variation is large throughout the year, averaging nearly 30 °F annually. Summer temperatures average 85 °F - 89 °F, while 100 °F + readings are uncommon and do not occur every year, much unlike other places in Arizona.

3. SCOPE OF WORK

Arizona Public Service (APS) is the Owner of the property and operated the former manufactured gas plant (MGP). The purpose of the remedial activities at the Site is to remediate soil impacted by the MGP-related constituents to residential soil remediation levels, reduce soil concentrations to below levels that could potentially impact groundwater above water quality standards, and to restore the site to support future use. Remedial activities that could be conducted in and around the Site may include the following activities:

- Perform pre-field activities addressing health and safety and obtaining required permits/approvals;
- Site preparation;
- Stormwater control installation;
- Utility locating, potholing and clearance;

- Demolition of foundation, pavement, concrete slab, and retaining walls;
- Soil excavation;
- Design and permitting of excavation support system;
- Foam odor and dust control;
- Material handling and storage;
- Loading and hauling of special petroleum contaminated soil (PCS) waste to Gray Wolf Landfill;
- Excavation water management;
- Excavation free product management;
- Excavation backfill;
- Asphalt pavement surfacing.

Work associated with the remedial activities will be conducted in phases and different health and safety measures will be needed for each phase. The Health and Safety Officer and Project Manager will identify the safety measures to be implemented for each phase of work to be performed.

4. KEY PERSONNEL AND RESPONSIBILITIES

The following is a description of key personnel and their safety responsibilities for the remedial activities to be conducted at the Site. Specific ERI personnel assignments are identified on the Summary Sheet at the beginning of this HASP.

4.1 Project Manager

The ERI project manager is responsible for planning and overseeing the project from beginning to end. While the health and safety of the employees assigned to the project is of the utmost importance, the project manager is responsible for completing the project on time and within budget.

4.2 Health and Safety Officer

The ERI Health and Safety Officer will implement, monitor and enforce the Site Safety Plan and will have no other duties. The Health and Safety Officer will provide technical consultation and guidance regarding site health and safety issues. He will review air monitoring instrument responses, as necessary, and will update the levels of protection required and arrange additional health and safety measures based on site monitoring. As the Health and Safety Officer, he will evaluate the site conditions and the effectiveness of the HASP and, when necessary, provide changes in the form of addenda. Specific site duties of the Health and Safety Officer include, but are not limited to, conducting health and safety field meetings, conducting daily safety inspections, maintaining a first-aid kit, notifying the proper response agency in the event of an emergency, and performing necessary recordkeeping duties.

4.3 Site Supervisor

ERI's Site Supervisor is responsible for implementation of the site-specific HASP, while maintaining productivity of the project schedule. The Site Supervisor will provide field supervision and coordination of subcontractors, establish and maintain restricted work areas, enforce safe work and hygiene practices and proper use of PPE, and communicate safety requirements to other site personnel. The Site Supervisor will also be the Contractor Quality Control (CQC) System Manager.

5. EMPLOYEE TRAINING AND INFORMATION

ERI personnel are trained in accordance with applicable OSHA regulations. General site workers entering restricted work areas involving handling of contaminated soil are required to be trained in accordance with 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response-40 hours). Documents verifying adequate training will be maintained by the Health and Safety Officer.

Subcontractors working in potentially-contaminated areas will be required to have current 40-hour OSHA (29 CFR 1910.120), CPR, and first-aid training.

Prior to commencing any on-site work, all personnel assigned to this project are required to read the site-specific HASP and verify by signature that they have read and understand the potential hazards and required protection. The Health and Safety Officer will maintain the site-specific HASP and a current information verification sheet.

Safety briefings will be held on a daily basis prior to starting work activities. Topics of discussion and attendees will be documented. All personnel assigned work within the restricted work areas are required to attend the daily safety briefing.

6. JOB-SITE HAZARD ANALYSIS

The Health and Safety Officer will establish control and decontamination zones to protect personnel against hazards and confine contamination to particular areas. These zones will be designated at the beginning of each phase of work on or off the Site. The Health and Safety Officer will also monitor the work site for changing conditions during operations and implement preventative measures in response to these conditions.

The job-site hazard analysis, including evaluation and recognition of potential job-site hazards, is provided below. Personnel working on the project should be aware that other hazards may be present that are not included in the hazard analysis presented below; therefore, the jobsite shall be assessed daily for specific and/or changing conditions. The Health and Safety Officer will regularly conduct job-site hazard analyses, as needed, to evaluate the work site for potential conditions that may contribute to injury. It is the responsibility of each worker to assess the work site and to conduct work activities safely. Unsafe acts are unacceptable and will not be tolerated by ERI.

6.1 Chemical Hazards

Known contaminants at the site include volatile organic compounds (VOC) and polycyclic aromatic hydrocarbons (PAH) in surficial soil. Asbestos containing material may be encountered during excavation from underground piping and/or structures. Exposure to silica can occur during demolition of concrete structures and rock.

Personnel must inform their immediate supervisor, as soon as possible, of any subjective symptoms of chemical exposure. The Health and Safety Officer or the worker's direct

supervisor must arrange immediate first-aid or medical attention, whichever is most appropriate.

6.1.1 Volatile Organic Compounds (VOCs)

The BTEX compounds of benzene, toluene, ethylbenzene, and xylene are the most common VOCs expected to be encountered during remediation. VOCs are released into the air as gas and can create short-term and long-term adverse health effects. The short-term health effects include eye, nose and throat irritation, headaches, loss of coordination and nausea while long-term effects can include damage to liver, kidney and the central nervous system. Some VOCs are suspected to cause cancer. Signs or symptoms associated with exposure to elevated levels of VOCs include eye and respiratory tract irritation, nose and throat discomfort, allergic skin reactions, headaches, dizziness, and fatigue. Historic soil sampling at the site showed benzene levels at .084 mg/kg. If elevated and sustained levels of VOCs are encountered, PPE will be upgraded to a higher protection level as listed in PPE Section 7 based on the air monitoring results listed in Air Monitoring Section 8.

6.1.2 Polycyclic Aromatic Hydrocarbons (PAHs)

Chemicals found in the waste of manufactured gas plants, such as naphthalene, tar acids like phenol and cresol, creosote, and coal tar pitch are known as PAHs. Health effects from chronic or long-term exposure to PAHs may include decreased immune function, cataracts, kidney and liver damage, breathing problems, asthma-like symptoms, and lung function abnormalities and repeated contact with skin may induce redness and skin inflammation. If exposed to PAHs, the harmful effects that may occur largely depend on the way people are exposed. Although unmetabolized PAHs can have toxic effects, a major concern is the ability of the reactive metabolites, such as epoxides and dihydrodiols, of some PAHs to bind to cellular proteins and DNA. The resulting biochemical disruptions and cell damage lead to mutations, developmental malformations, tumors, and cancer. Evidence indicates that mixtures of PAHs are carcinogenic to humans. Historic soil sampling at the site showed total PAH levels up to 693 mg/kg. If elevated levels of PAHs are encountered, PPE will be upgraded to a higher

protection level as listed in PPE Section 7 based on the air monitoring results listed in Air Monitoring Section 8.

6.1.3 Hydrogen Sulfide (H2S)

Hydrogen sulfide (H2S) is an extremely toxic gas that is colorless, flammable, heavier than air, soluble in water and has the smell of rotten eggs at lower concentrations. At higher concentrations, H2S can deaden one's sense of smell. H2S is a by-product formed when organic matter decays. It is generated as a common by-product of industrial and manufacturing processes. H2S is formed under low oxygen conditions when sufficient amounts of sulfur and bacteria are present. H2S can be formed in places such as oil and gas reservoirs, sewers and sewage processing facilities, and dark damp places where bacteria are present. H2S can have an array of health effects on the body depending on exposure concentrations. H2s will enter through the lungs and is considered a chemical asphyxiate. It blocks the transfer of oxygen to the blood cells and causes paralysis of the respiratory system. If elevated levels of H2S are encountered, PPE will be upgraded to a higher protection level as listed in PPE Section 7 based on the air monitoring results listed in Air Monitoring Section 8.

Concentration Levels & Effects:

Concentration	Health Effects
10 ppm	Beginning eye irritation
50-100 ppm	Slight respiratory tract irritation after one-hour exposure
100 ppm	Coughing, eye irritation, loss of sense of smell after 2-15 minutes. Altered respiration, pain in the eyes, and drowsiness after 15-30 minutes followed by throat irritation after one hour. Several hours exposure results in gradual increase in severity of these symptoms and death may occur within the next 48 hours
200-300 ppm	Severe respiratory tract irritation after one hour of exposure. Possible pulmonary edema (fluid in the lungs)
500-700 ppm	Loss of consciousness and possibly death in 30 minutes to one hour
700-1,000 ppm	Rapid unconsciousness, loss of respiration, and death after 1-3 minutes
1,000-2,000 ppm	Unconsciousness immediately, loss of respiration and death in a few minutes. Death may occur even if individual is removed to fresh air at once.

6.1.4 Asbestos Containing Material (ACM)

The most common way for asbestos fibers to enter the body is through breathing. ACM is not generally considered to be harmful unless it is releasing dust or fibers into the air where they can be inhaled or ingested. Many of the fibers will become trapped in the mucous membranes of the nose and throat where they can then be removed, but some may pass deep into the lungs or, if swallowed, into the digestive tract. Once they are trapped in the body, the fibers can cause health problems. Asbestos is most hazardous when it is friable. The term "friable" means that the asbestos is easily crumbled by hand, releasing fibers into the air. Damage and deterioration will increase the friability of asbestos-containing materials. Water damage, continual vibration, aging, and physical impact such as drilling, grinding, buffing, cutting, sawing, or striking can break the materials down making fiber release more likely. Because it is very difficult to destroy asbestos fibers, the body cannot break them down or remove them once they are lodged in lung or body tissues. They remain in place where they can cause diseases including asbestosis, lung cancer, and mesothelioma.

Asbestosis

Asbestosis is a serious, chronic, non-cancerous respiratory disease. Inhaled asbestos fibers aggravate lung tissues which cause them to scar. Symptoms of asbestosis include shortness of breath and a dry crackling sound in the lungs while inhaling. In its advanced stages, the disease may cause cardiac failure.

Lung Cancer

Lung cancer causes the largest number of deaths related to asbestos exposure. The incidence of lung cancer in people who are directly involved in mining, milling, manufacturing and the use of asbestos and its products is much higher than in the general population. The most common symptoms of lung cancer are coughing and a change in breathing. Other symptoms include shortness of breath, persistent chest pains, hoarseness, and anemia.

Mesothelioma

Mesothelioma is a rare form of cancer that most often occurs in the thin membrane lining of the lungs, chest, abdomen, and (rarely) heart. About 200 cases are diagnosed each year in the United States. Virtually all cases of mesothelioma are linked with asbestos exposure. Approximately 2 percent of all miners and textile workers who work with asbestos and 10 percent of all workers who were involved in the manufacture of asbestos-containing gas masks contract mesothelioma.

Level C PPE is required by ERI personnel to alleviate this hazard while performing abatement activities. If underground pipes or other suspect ACM material is detected, work shall be stopped in that area until the material can be tested for asbestos content or the unknown material will be treated as presumed ACM (PACM) and disposed of accordingly.

6.1.5 Silica

Crystalline silica is a common mineral in the earth's crust and is found in many types of rock including sand, quartz, and granite. Silica is present in both work and non-work environments and exposure to crystalline silica dust has long been known to cause a disease called silicosis. When you inhale crystalline silica, the lung tissue reacts by developing fibrous tissue around trapped silica particles, known as silicosis.

Due to the extensive use of concrete and masonry products in buildings today, construction workers have a potential exposure to crystalline silica. Operations such as dumping of rock, jack hammering, abrasive blasting, sawing, drilling or demolition of concrete and masonry structures are some of the activities that could produce this exposure.

Silica sand or other substances containing more than 1% crystalline silica should never be used as abrasive blasting materials. Where silica exceeds 1% of the content, less hazardous materials should be substituted. In addition, always follow safe work practices when there is possible exposure to silica dust.

6.2 COVID-19

The novel coronavirus, COVID-19 is one of seven types of known human coronaviruses. COVID-19, like the MERS and SARS coronaviruses, likely evolved from a virus previously

found in animals. The remaining known coronaviruses cause a significant percentage of colds in adults and children, and these are not a serious threat for otherwise healthy adults.

Patients with confirmed COVID-19 infection have reportedly had mild to severe respiratory illness with symptoms such as fever, cough, and shortness of breath.

Worker Responsibilities

- Frequently wash your hands with soap and water for at least 20 seconds. When soap and running water are unavailable, use an alcohol-based hand rub with at least 60% alcohol. Always wash hands that are visibly soiled.
- Cover your mouth and nose with a tissue when you cough or sneeze or use the inside of your elbow.
- Avoid touching your eyes, nose, or mouth with unwashed hands.
- Avoid close contact with people who are sick.
- Employees who have symptoms (i.e., fever, cough, or shortness of breath) should notify their supervisor and stay home—DO NOT GO TO WORK.
- Sick employees should follow CDC-recommended steps. Employees should not return to work until the criteria to discontinue home isolation are met, in consultation with healthcare providers and state and local health departments.

General Job Site Practices

- Clean AND disinfect frequently touched objects and surfaces such as telephones and tools using products that meet the Environmental Protection Agency's (EPA's) criteria for use against SARS-CoV-2, the cause of COVID-19, and are appropriate for the surface.
- Avoid using other employees' phones, pens or other work tools and equipment, when possible. If necessary to share these items, clean and disinfect them before and after use.

- Meeting should be held outdoors to maintain social distancing of approximately six feet between workers.
- Employees will not be allowed to share PPE for any reason.
- Clean and disinfect frequently used tools and equipment on a regular basis.
    - This includes other elements of the jobsite where possible.
    - Employees should regularly do the same in their assigned work areas.
- Clean shared spaces such as trailers and break/lunch areas at least once per day.
- Disinfect shared surfaces (door handles, machinery controls, etc.) on a regular basis.
- Avoid sharing tools with co-workers if it can be avoided. If not, disinfect before and after each use.
- Arrange for any portable job site toilets to be cleaned by the leasing company at least twice per week and disinfected on the inside.
- Any trash collected from the jobsite must be emptied frequently by someone wearing proper PPE.
- In addition to regular PPE for workers engaged in various tasks (fall protection, hard hats, hearing protection), employers will also provide:
    - Gloves: Gloves should be worn at all times while on-site. The type of glove worn should be appropriate to the task. If gloves are not typically required for the task, then any type of glove is acceptable, including latex gloves. Gloves must not be shared.
    - Eye protection: Eye protection should be worn at all times while on-site.
    - Masks: Face protections covering nose, mouth and chin should be worn at all times while on-site.

6.3 Physical Hazards

Several physical hazards are associated with field work at the Site. The potential physical hazards that can be encountered at the Site will include, but should not be limited to, the following:

6.3.1 Excavation Hazards

Work on the Site will include working in the vicinity of heavy equipment. Excavation hazards include dangers from underground and overhead utility conduits (electrical, phone, water, sewer, fiber optics, cable, etc.), traffic hazards if excavating in public roadways or parking lots, and dangers associated with moving parts and mechanical equipment that can cause blunt trauma, pinch or crush injuries, and slips, trips, and falls. There are also hazards associated with exposure to petroleum and hazardous materials used in operation of mechanical equipment.

6.3.2 Noise Exposure

On-site personnel may have limited, unnecessary exposures to occupational noise during field work activities. The operation of excavation equipment or other equipment such as blowers or generators can cause elevated noise levels in the work area. Hearing protection will be worn at all times during work activities in the immediate proximity of blowers and generators. Hearing protection should be worn whenever normal conversation is impacted when five feet apart. Symptoms of overexposure to noise are stress, tensing of muscles, headache, and temporary or permanent hearing loss.

6.3.3 Slipping, Tripping, or Falling

Personnel may encounter wet or uneven walking surfaces during field activities. Proper footwear and vigilance will help prevent injury. All work areas should be maintained in a neat orderly fashion. All tools and supplies must be properly stored and secured when not in use. Establishment of walking routes will be addressed daily during tailgate safety talks.

6.3.4 Biological Hazards

Exposure to biological hazards (i.e., plants, snakes, and insects) is expected to be minimal at the Site. Indigenous microorganisms may be present. Thorough washing of

any exposed body parts and equipment will help protect against infection. Watch for poisonous plants and wash all exposed skin when work involves contact with biological plant matter.

6.3.5 Dust

Dust can also be present at the Site. Dust can be generated from vehicular traffic, excavation activities, and wind. Dust storms can be common during the late summer months. Vehicles should not be operated on unpaved surfaces at speeds over 15 miles per hour to prevent dust generation. Other dust generating activities should be conducted using methods to suppress and minimize the generation of dust. To reduce inhalation potential, a good rule of thumb is to stand upwind of the source whenever possible.

6.3.6 Smoking Hazards

Smoking will not be permitted in the restricted work areas. Smoking will be permitted only in designated areas in the support zone. Smoking will not be permitted near fuel storage areas or similar potential fire hazards.

6.3.7 Cold Exposure

During field work, personnel may encounter low temperatures, rain, or wind. Exposure to cold must be limited by providing proper clothing, access to warm shelter, and a temperature-dependent work regimen that limits periods of outdoor activity under adverse conditions. Otherwise, cold stress could manifest itself as hypothermia. Hypothermia is a cold-induced decrease in core body temperature that causes shivering, numbness, drowsiness, muscular weakness and, if symptoms are sufficiently severe, death. First-aid for hypothermia includes removing cold, wet clothing, warming the victim by wrapping him or her in blankets or placing him or her in a tub of warm water, and administering hot, nonalcoholic liquids.

6.3.8 Heat Stress

During conditions of high temperatures, personnel should be monitored for conditions of heat stress. The Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, published by the National Institute for Occupational Safety and Health (NIOSH)/OSHA/ United States Coast Guard (USCG)/EPA, provides protocols for

prevention of heat stress (Appendix B). Heat stress monitoring shall commence at temperatures of 70 ºF and above if semi-permeable protective clothing (i.e. coated Tyvek) is worn. Adverse climatic conditions are important considerations in planning and conducting site operations.

The effects of ambient temperature may cause physical discomfort, loss of efficiency, personal injury, and increased accident probability. In particular, heat stress due to protective clothing that decreases evaporative heat loss from sweating and body ventilation is an important factor. One or more of the following recommendations will help reduce heat stress:

- Employees should replace body fluids and electrolytes lost to sweat. Quenching of thirst is not an adequate indicator of replacing liquids or electrolytes sufficiently. Workers should drink a minimum of 16 ounces of water prior to the start of work daily, and throughout the day as needed.
- A work schedule that provides sufficient rest periods is necessary. The need for a shaded rest area may be established.

Heat stress causes minor symptoms, such as heat rash or heat cramps, as well as severe ones such as exhaustion or heat stroke. Heat rash is a skin irritation resulting from prolonged contact with wet clothing. It can be prevented by allowing the skin to dry completely during rest periods and by showering at the end of the workday.

Heat cramps, heat exhaustion, and heat stroke all result from excessive loss of body fluids and electrolytes. Symptoms of heat cramps are spasms in the abdomen or limbs. Heat exhaustion is caused by more severe dehydration; symptoms include pale, clammy skin, profuse perspiration, weakness, headache, and nausea. Heat stroke is a life-threatening condition that occurs when the body's temperature regulating system no longer functions properly; symptoms include hot, dry skin, high fever, dizziness, nausea, rapid pulse, and unconsciousness. Brain damage and death can also occur as a result of heat stroke.

If any of these symptoms occur, remove the victim’s protective clothing, take his or her temperature, and cool the skin’s surface with a light water spray. Encourage the victim to slowly drink cool water, diluted and unsweetened fruit juice, or a sport drink. Rest the

victim until his or her oral temperature is less than 99 ºF; if the temperature measured is over 100 ºF, seek medical attention immediately.

6.3.9 Rain and Electrical Storms

Rain and electrical storms can pose a hazard to the job site. Short-duration heavy rainstorms can increase the potential for flash flooding. The Health and Safety Officer will monitor weather conditions and schedule work appropriately. In the event of heavy rain, personnel are cautioned to remain aware of surrounding conditions and avoid low lying areas. Rain can also impair the ability to work; to avoid injury, personnel will use appropriate clothing (i.e., raincoat) and readily available shelter when necessary. Avoid servicing electrical power distribution equipment during rain events. Rain creates slick conditions at a job site, and all personnel are therefore advised to use caution when working in rainy conditions.

Thunderstorms are often associated with rain and electrical storm conditions. Work at the site will be stopped if lightning hits are within ½ a mile of the site and will remain suspended for 30 minutes after the lightning hits in the area cease. This will be monitored by the Health and Safety Officer. The National Weather Service advises the following actions during a thunderstorm:

- Seek shelter.
- Stay off higher elevations.
- Stay away from metal objects.

6.3.10 Moving Equipment Hazards

Moving equipment or machinery can create potential work-site hazards. All moving equipment and machinery must have the necessary safety devices required by OSHA. Consideration should be given to all moving parts to avoid being struck by, struck against, or caught in, on, or between site materials, structures, or machinery.

6.3.11 Traffic Hazards

At the Site and surrounding areas, traffic hazards are present. Traffic routes will be established on the Site to prevent vehicles from creating further hazard and avoid driving

on impacted soil. Workers must remain aware of their surroundings while working at the Site. On-site traffic may include vehicles, heavy equipment, and commercial truck traffic. The Health and Safety Officer will assess the hazards daily and institute the appropriate controls and routes. Traffic controls to be considered include bright orange vests, flagging, barricades, cones, and lights. Further consideration will be given to establish designated traffic routes to and from the Site.

7. PERSONAL PROTECTIVE EQUIPMENT

7.1 Levels of Protection

The individual components of protective clothing and equipment must be assembled into a full protective ensemble that protects the worker from site-specific hazards and minimizes the hazards and drawbacks of the PPE itself.

7.2 Required Personal Protective Equipment

At a minimum, Level D PPE shall be required at the Site at all times. Changes in the required PPE will be based on changed work conditions, field observations, or air monitoring, and will be assessed daily. Level D protection will include the following:

- Hard Hat: A hard hat must be worn at all times while on the Site by all personnel, unless inside a vehicle or temporary office. Hard hats will meet American National Standards Institute (ANSI) Standard Z89.l.
- Boots: Personnel are required to wear steel toe work boots. No open-toed shoes, sandals or other non-protective footwear will be allowed. Where potential exposures to chemical hazards exist, personnel are required to wear suitable chemical-resistant rubber boots and/or overshoes. All personnel are required to wear steel toe boots. Steel toe boots must meet ANSI Standard Z41.1/75.
- Appropriate clothing: Personnel are to wear clothing appropriate for the work being performed. This means loose hanging clothing, loose jewelry or short pants are not allowed. As a rule, clothing will include long pants, long sleeve shirts, and steel-toed work boots.

- Hand protection: Work gloves will be used when lifting and/or handling equipment or heavy objects. Disposable gloves are to be used for sampling activities.
- Safety vests: Personnel working on Site are to wear orange or fluorescent green safety vests or shirts at all times.
- Personnel are required to wear eye protection. Eye protection will include safety glasses with side shields. Where liquid chemicals are handled, splash protection in the form of goggles is required. All safety eye protection must meet ANSI Standard Z87.1.
- Hearing protection is required when working in proximity to equipment, blower motors, generators, or other equipment that produces sounds in excess of 90 decibels.

Upgrade to Level C PPE may be required based on air monitoring results conducted at the site. Level C PPE will include Level D PPE listed above plus the following:

- Half-face air purifying respirator (OSHA/NIOSH approved) with suitable safety glasses and organic vapor-high efficiency particulate air (OV-HEPA) cartridges (purple-black color)
- Tyvek suits, chemical resistant
- PVC or nitrile gloves with work gloves on outside

Upgrade to Level B PPE may be required based on air monitoring results conducted at the site. Level B PPE will include Level D PPE listed above plus the following:

- Self-Contained Breathing Apparatus (SCBA)
- Tyvek suits, chemical resistant
- PVC or nitrile gloves with work gloves on outside

No changes to the specified PPE will be made without the approval of the Project Manager, in concurrence with the Health and Safety Officer.

8. AIR MONITORING

The Health and Safety Officer will make air monitoring results available to workers.

8.1 Organic Vapor Analyzer

During field activities at the Site, VOC vapors may be present. Organic vapor air monitoring shall be conducted in the work area using a direct reading, properly calibrated Organic Vapor Analyzer (OVA). The OVA will be used to monitor background organic vapor concentrations around the work area and within the worker breathing space. If the organic vapor concentrations at the work area exceed 50 parts per million (ppm) at a distance three inches above the odor source, work shall be stopped until conditions can be brought into compliance.

Concentration	PPE Required
0 – 20 ppm	Level D
20-300 ppm	Level C
300-1000 ppm	Level B

8.2 Hydrogen Sulfide Meter

One of H2S's effects on the body is that it deadens the sense of smell at low concentrations. This can cause a false sense of security and therefore air monitoring equipment to detect H2S will be used within the exclusion zone.

- Permissible Exposure Limit: 10 ppm for an 8-hour period average
- Short Term Exposure Limit: 15 ppm for a 15-minute average
- Immediately Dangerous to Life or Health: 100 ppm

8.3 Dust Meter

A portable dust monitor will be utilized within the Exclusion Zone. The Engineer will conduct additional dust monitoring using high volume samplers for respirable Particulate Matter (PM10) at the perimeter of the Support Zone. If dust PM10 monitoring levels exceed 50 micrograms per cubic meter ($\mu g/m^3$) when determined by simultaneous sampling, as the difference between upwind and downwind samples collected, work shall be stopped until conditions are brought into compliance.

All excavation work shall be suspended during periods of high winds

9. MEDICAL SURVEILLANCE PROGRAM

A medical surveillance program to provide a baseline record of significant biological parameters for surveillance of employee health, to evaluate work restrictions, and to satisfy regulatory requirements may be implemented if Site conditions are such that respiratory protection is required.

Air monitoring results and OSHA regulations may dictate that medical surveillance program requirements be completed prior to commencing work within the restricted work areas. In this case, all personnel assigned to work in, or who are expected to enter, the restricted work areas will be required to consent to physical examination, including completion of a medical history questionnaire, and successful completion of a pulmonary function test, electrocardiogram, blood chemistry profile, urinalysis, chest x-ray (at the discretion of the physician), visual acuity, and eye exams. A signed statement by the examining physician indicating that the worker may wear a respirator while working is required. If an employee suspects they have been exposed to hazardous materials, additional medical monitoring will be available, and the employee must submit an exposure or injury incident report. Employees working at the site will be required to undergo annual follow-up medical examinations.

10. EMERGENCIES

During the site-specific training, workers will be trained in the emergency provisions of this HASP, as well as instructions for use of the communication systems and evacuation routes. In addition, emergency response plan details will be discussed, as necessary, at the daily safety briefings.

Emergencies include accidental releases of gases, chemical spills, fires, explosions, and personal injuries. Time is a critical factor in an emergency. Personnel must try to remain calm in an emergency to ensure clarity of thought for appropriate decision making.

10.1 Emergency Procedures

10.1.1 General

General emergency procedures are as follows:

- The Health and Safety Officer shall be notified immediately of all emergencies. He has the responsibility for responding to and correcting emergency situations. This may include taking appropriate measures to protect the safety of site personnel and the public. Possible actions may involve evacuation of personnel from the area. The Health and Safety Officer is also responsible for notifying appropriate persons, implementing corrective measures, and completing follow-up reports.
- All non-emergency communications will cease when a site emergency warning is sounded. Crew members will proceed to give all pertinent information to the Health and Safety Officer in a systematic and orderly manner.
- Power equipment will be shut down and operators will stand by for instruction.
- Individuals not assigned specific contingency response duties will proceed immediately to a pre-designated safe site.
- Upon arrival at the safe site, a complete head count will be given to the Health and Safety Officer. Individuals will stay at the safe site until the contingency is secured or further instructions are given.
- At least one ABC-type dry-chemical fire extinguisher will be provided in each work area, and additional extinguishers will be in the ERI vehicles. Heavy equipment will

be affixed with an appropriate size and type fire extinguisher as requested by OSHA.

- Additional emergency response equipment such as spill-response materials and tools should be maintained on site.

10.1.2 Accidental Release of a Gas

Underground gas utility lines may be present in the area. If these lines are punctured:

- Notify all personnel within the immediate area of the release and shut down all equipment.
- Evacuate the area if the gas release cannot be secured safely.
- Notify an immediate supervisor.

10.1.3 Fuel Spill

If fuel is spilled, an absorbent will be used to clean up the fuel spill. In addition,

- Notify all personnel within the immediate area of the spill.
- Notify an immediate supervisor.
- Place absorbent on the spill area.
- Evacuate the area if the spill cannot be contained or cleaned up safely until a plan is in place.

10.1.4 Fires

In the case of a fire:

- Notify all personnel within the immediate area of the fire.
- Evacuate the area in the event the fie cannot be extinguished safety.
- Do not attempt to put out the fire unless trained in the use of a portable fire extinguisher.
- Go directly to the closest telephone and summon the fire department by dialing 911.
- Notify the Health and Safety Officer.

10.1.5 Explosion

In the case of an explosion:

- If uninjured, report to the pre-designated area for a head count.
- Stand by for further assignment from the Health and Safety Officer.

10.1.6 Personal Injuries

In the case of a personal injury:

- All personal injuries must be reported as soon as possible to the individual's immediate supervisor.
- Supervisors must report all worker personal injuries to the Health and Safety Officer.
- Personnel trained in first aid should administer first-aid to the injured party. Medical attention may be required beyond first-aid treatment; refer to Figure 2 for the location of the nearest hospital.
- Transport/move the injured only if the injuries will permit.

10.1.7 Medical Emergency

First-aid kits will be located at the site in clearly marked locations and identified during tailgate safety meetings. The first-aid kits should be adequate to support up to five persons and will be maintained by the Health and Safety Officer.

A portable eye wash will be located with the first-aid kit at the site. Chemicals and/or particulates must be immediately flushed from the eyes using copious amounts of water. Particular attention should be given to flushing the chemical or particulate from under the top and bottom of the eyelids.

In the event of a medical emergency, the project Health and Safety Officer will be responsible for contacting the appropriate entity for treatment and relaying the following information:

- Nature of the operation including type of equipment used, number of workers, hazards, etc.

- Expected start date and duration of planned site activities.
- Site location.
- Name and phone number of the Health and Safety Officer.

10.2 Site Emergency Warning Systems

Several warning systems may be utilized, depending on the work site conditions or emergency involved, including:

- Verbal communications,
- Vehicle horns,
- Portable hand-held compressed gas horns, and
- Portable hand-held radios.

When using a horn as a warning system, one long blast will be used to signify emergency evacuation of the immediate restricted work area to a predetermined upwind location, where a head count will be taken, and further instructions given. Repeated short blasts will be used to signify evacuation of all personnel from the entire site to a predetermined upwind location where further instructions will be given after a head count is taken. The predetermined location for both instances will be identified at daily safety briefings.

10.3 Emergency Telephone Location and Call Protocol

10.3.1 Telephone Location

A cellular telephone will be located on site.

10.4 Contacts

In the event of an injury or illness requiring emergency medical care beyond the capabilities of CPR or first-aid trained personnel, the following resources will be utilized:

Hospital/Urgent Care

Yavapai Regional Medical Center

1003 Willow Creek Road

Prescott, AZ 86301

(928) 445-2700

Emergency Medical Information

Poison Control Center - (800) 222-1222

Emergency Transportation System

Ambulance	911
Fire Department	911
Police	911

11. GENERAL SAFE WORK PRACTICES

11.1 Confined Space Entry

Personnel will not enter permit-required confined spaces at any time during the field activities. Should confined space conditions be encountered, the Health and Safety Officer will be notified.

11.2 Contaminant Ingestion

Eating, drinking, chewing gum or tobacco, smoking, or any practice that involves hand to mouth contact increases the probability of contaminant ingestion and is prohibited in any area where the possibility of contamination exists. Smoking will be allowed in designated areas in the support zone only, away from fuel storage areas or other fire hazards.

11.3 Required Safety Equipment

Individuals who do not have, or do not properly wear, the necessary PPE will not be permitted within the work area and may be restricted from the Site.

11.4 Fire Extinguishers

ERI will locate, at a minimum, a sufficient number of ABC-type fire extinguishers within the immediate work area so that the maximum travel distance does not exceed 75 feet. Vehicles and excavation equipment will contain fire extinguishers as required by OSHA regulations.

11.5 Personnel Communication

It is recommended that personnel use the “buddy” system whenever anyone is in the work zone. Communications between members must be maintained at all times. Emergency communication signals will be prearranged. Hand signals used to guide operating equipment or control traffic will be standardized and prearranged.

Where fieldwork involving two or more employees at a work location is performed, at least two trained persons shall be available. For fixed work locations, the number of trained persons available shall be sufficient to enable emergency treatment to begin within four minutes of an accident.

Every ERI employee has the authority and responsibility to stop work or decline to perform an assigned task, without fear of reprisal, to discuss and resolve work and safety concerns. The Stop Work may include discussions with co-workers, supervision, or safety representative to resolve work related issues, address potential unsafe conditions, clarify work instructions, propose additional controls, etc.

11.6 Safety Labeling

Legible and understandable precautionary labels will be prominently affixed to containers of hazardous raw materials, intermediates, products, by-products, mixtures, scrap, wastes, and debris.

11.7 Sanitation

ERI will provide sanitation facilities (bathroom and handwash) for the duration of the project. These sanitation facilities will be decontaminated / cleaned on a regular basis.

12. SITE CONTROL AND DECONTAMINATION PROCEDURES

12.1 Work Areas

Various levels of site control must be implemented to reduce the potential for personal exposures, and to prevent cross contamination by personnel or equipment leaving the Site. Unauthorized personnel will not be allowed access into the Site Work Zone delineated by the chain link fence. Only authorized personnel wearing the required PPE will be permitted within this area.

Access to each specific area will be restricted during work activities and divided into an Exclusion Zone, a Contamination Reduction Zone, and a Support Zone. The exclusion zone will be delineated by orange barrier fencing, barricades, and flagging and communicated to all persons working on site.

12.1.1 Zone 1 – Exclusion Zone

The Exclusion Zone is the contaminated area on the site. It is where the actual cleanup work will be performed. At all times, workers in the Exclusion Zone should be in line-of-sight contact or communications contact with the Site Supervisor. During the field activities at the site, engineering controls will be implemented to reduce the potential exposure of on-site personnel to airborne contaminants.

12.1.2 Zone 2 – Contamination Reduction Zone

The Contamination Reduction Zone is designed to reduce the probability of contamination in the Support Zone. As one moves from the hot line to the Support Zone, the degree of contamination decreases. The decontamination of personnel and equipment shall take place within this area.

12.1.3 Zone 3 – Support Zone

The Support Zone is the location of the administrative and other support functions. Any function that need not or cannot be performed in a hazardous or potentially hazardous area is performed here. Support Zone personnel are responsible for alerting the proper agency in the event of an emergency. All emergency telephone numbers, evacuation route maps, and vehicle keys should be kept in the Support Zone.

12.2 Excavation and Materials Handling

The soil identified for removal will be excavated and loaded into end dump trucks for transportation to the respective disposal facilities. ERI will try to avoid stockpiling materials onsite by only excavating the soil that will be hauled off site each day. During the removal action activities, dust will be controlled by spraying the area with clean water by way of a water truck that will be filled from the water hydrant on site. A Buffalo Turbine® dust controller will also be onsite and will be controlled remotely to direct water mist towards the current excavation. Odor will be controlled during excavation activities by

applying Rusmar® AC-645 foam with a pneumatic foam unit. If needed, the foam will be applied to the open excavation areas at the end of each workday for overnight coverage and odor control. If necessary, the foam will be applied to the top of dump trucks for emission control during transportation to the landfill.

12.3 Contaminated Water Handling

Contaminated water generated from the site will be containerized and stored on site as hazardous waste until determined otherwise. The water will be collected into 55-gallon drums in smaller quantities or into 1,000-gallon tank with secondary containment in larger quantities, as necessary. Drum vacuums and/or diaphragm pumps will be used to collect the contaminated water into the respective containers. Never allow contaminated fluids/liquids or water to drain to the surrounding soils or waterways.

12.4 Decontamination Procedures

In order to reduce the physical transfer of contaminants or suspected contaminants from the restricted work area by personnel and/or equipment, decontamination procedures will be instituted as described in the following sections. All ERI personnel and equipment that come in contact with potentially contaminated material must be decontaminated prior to leaving the Site.

12.4.1 Personnel Decontamination

- Brush off and wipe off boots, gloves, and disposable coveralls with clean, disposable, moistened towels.
- Remove disposable coveralls and place in disposal container.
- Remove gloves and place into disposal container.
- Wash hands and face and other areas as needed with clean water and soap and place drying towels into disposal container.
- Leave area and wash hands and face with soap and water.

12.4.2 Equipment Decontamination

Excavated materials are potentially contaminated and must be handled as contaminated material until determined otherwise. Decontamination procedures for equipment are as follows:

- All equipment decontamination shall take place in the ERI temporary decontamination containment structure
- Scrape and brush loose soil material from equipment and place into roll-off bin
- Steam clean equipment with high pressure water and collect rinse water into 55-gallon drum

13. RECORDKEEPING REQUIREMENTS

ERI will maintain a copy of the site-specific HASP at the Site. ERI and all subcontractors will be responsible for maintaining health and safety records and providing them when necessary or required.

13.1 Accident Reporting

All "near-misses" and incidents resulting in personal injury, exposure to toxic substances, illness, or property damage must be reported by the involved individual(s) to their supervisor immediately. The supervisor must notify the Health and Safety Officer immediately of injuries requiring first-aid or medical attention. The Health and Safety Officer, the injured employee, and supervisor will complete a written injury report as soon as practicable, but no later than 24 hours after the injury or incident is reported. This report will be submitted to the Project Manager and Project Safety Manager within the 24-hour period.

The Project Safety Manager will conduct a follow-up investigation and evaluate what corrective actions are needed to prevent the recurrence of the accident. The results of this investigation will be reported within four (4) working days to the Project Manager. Based on the information provided, a more thorough investigation or additional corrective actions may be required by the Project Safety Manager.

Records of site-specific injuries and incidents will be maintained by each contractor. These records will be made available upon request to the Project Manager and Project Safety Manager.

14. LIMITATIONS

This HASP was prepared by ERI for use on an APS project. No other warranty, expressed or implied, is made as to the professional findings or advice in this plan. Any use of or reliance on the data in this plan by a third party shall be at such a party's sole risk. ERI can offer no assurances and assumes no responsibility for site conditions or activities outside the scope of the plan.

15. REFERENCES

"Industrial Head Protection." American National Standards Institute (ANSI) Z891.1. 2003 ed.

"Occupational and Educational Personal Eye and Face Protection Devices." ANSI Z87.1. 2003 ed.

Occupational Safety and Health Administration. "OSHA Hazard Communication Standard." Code of Federal Regulations Title 29, Subpart Z, Section 1910.1200. 1996 ed.

"USA Standard for Personal Protection - Protective Footwear." ANSI Z41.1. 1991 ed.

16. INFORMATION VERIFICATION

All personnel assigned work at the Site are required to read this HASP and addenda, if applicable. All personnel assigned to work at the Site are required to attend a safety briefing, verified by their signatures on the Safety Briefing and Attendance Sheet included in Appendix C of this HASP. The following site personnel have read the above plan and are familiar with its provisions.

NAME	SIGNATURE	DATE

FIGURES

FIGURE 1
SITE LOCATION MAP
300 N. GRANITE STREET, PRESCOTT, AZ

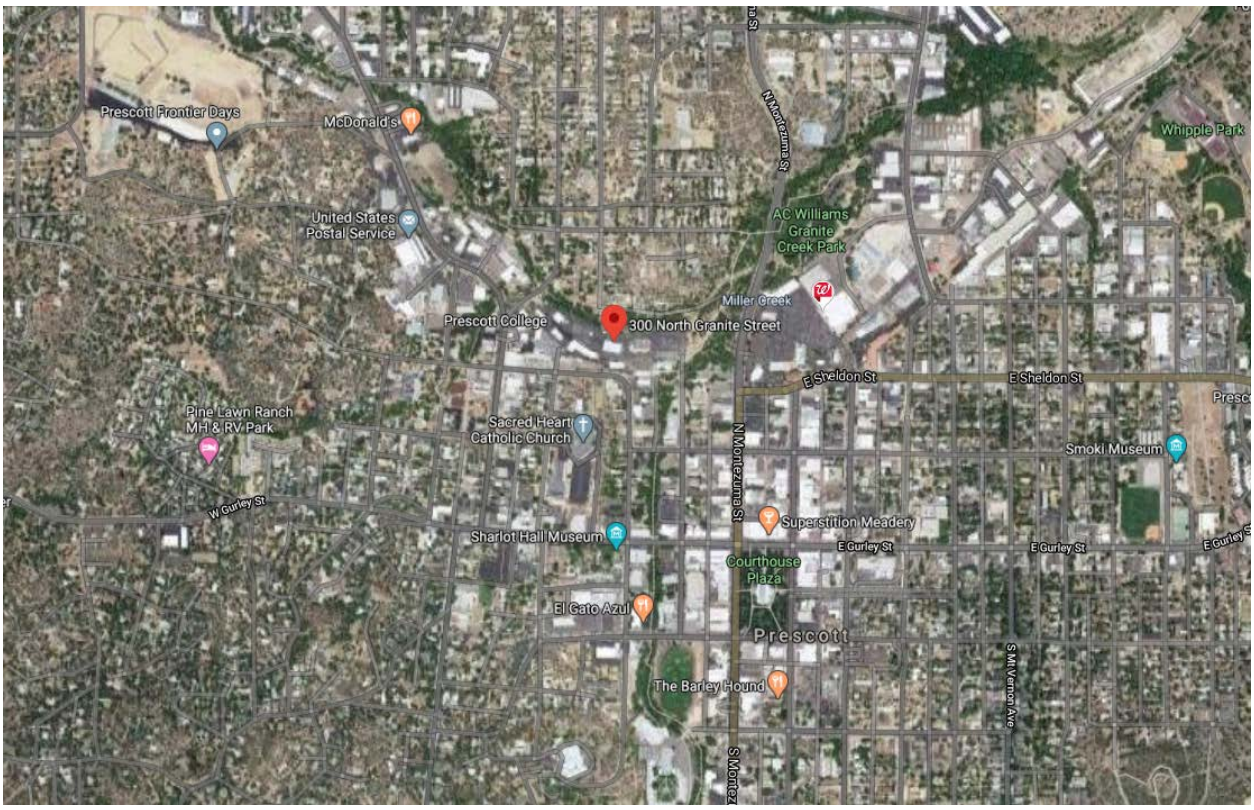
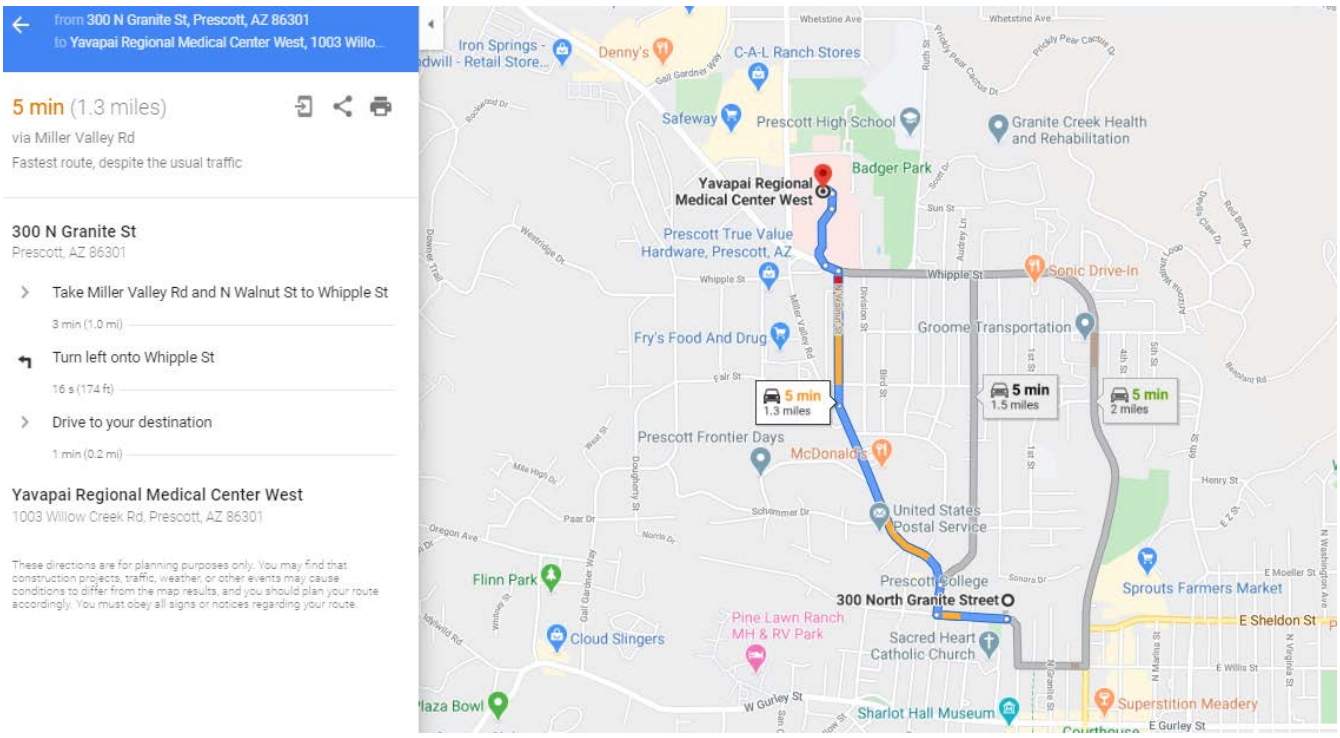


FIGURE 2

DIRECTIONS TO YAVAPAI REGIONAL MEDICAL CENTER

1003 Willow Creek Road
Prescott, AZ 86301
(928) 445-2700



APPENDIX A

SAFETY DATA SHEETS

SAFETY DATA SHEET

SDS ID NO.: 0290MAR019
Revision Date: 06/01/2016

1. IDENTIFICATION

Product Name: Marathon Petroleum No. 2 Ultra Low Sulfur Diesel

Synonym: #2 Diesel; No. 2 Ultra Low Sulfur Diesel 15 ppm Sulfur Max; Ultra Low Sulfur Diesel No. 2 15 ppm Sulfur Max; Ultra Low Sulfur Diesel No. 2 15 ppm Sulfur Max with Polar Plus; No. 2 Diesel, Motor Vehicle Use, Undyed; No. 2 Diesel, Motor Vehicle Use, Undyed, with Polar Plus; ULSD No. 2 Diesel 15 ppm Sulfur Max; ULSD No. 2 Diesel 15 ppm Sulfur Max with Polar Plus; No. 2 MV 15 Diesel; No. 2 MV 15 Diesel with Polar Plus; No. 2 Ultra Low Sulfur Diesel Dyed 15 ppm Sulfur Max; Ultra Low Sulfur Diesel No. 2 Dyed 15 ppm Sulfur Max; Ultra Low Sulfur Diesel No. 2 Dyed 15 ppm Sulfur Max with Polar Plus; No. 2 Diesel, Tax Exempt-Motor Vehicle Use, Dyed; No. 2 Diesel, Tax Exempt-Motor Vehicle Use, Dyed, with Polar Plus; ULSD No. 2 Diesel Dyed 15 ppm Sulfur Max; ULSD No. 2 Diesel Dyed 15 ppm Sulfur Max, with Polar Plus; No. 2 MV 15 Diesel Dyed; #2 MV 15 CFI Diesel; #2 MV 15 CFI Diesel Dyed; No. 2 Low Sulfur Diesel (TxLED); No. 2 MV 15 Diesel Dyed, with Polar Plus; No. 2 NRLM 15 Diesel Dyed; No.2 NRLM Diesel Dyed; No. 2 MV 500 ppm TxLED; No.2 Low Emission Low Sulfur Diesel; No. 2 Low Sulfur Diesel (TxLED) 500 ppm Sulfur Max; No. 2 Heating Oil 5000 NMA Unmarked; NEMA No. 2 Heating Oil; Heating Oil, No. 2 Low Sulfur 5000 ppm; No. 2 Ultra Low Sulfur Diesel Dyed with <6% Renewable Diesel Fuel; Ultra Low Sulfur No. 2 Diesel Dyed with <6% Renewable Diesel Fuel; No. 2 Diesel Dyed with <6% Renewable Diesel Fuel 15 ppm Sulfur Max; No. 2 Ultra Low Sulfur Diesel with <6% Renewable Diesel Fuel; Ultra Low Sulfur No. 2 Diesel with <6% Renewable Diesel Fuel; No. 2 Diesel with <6% Renewable Diesel Fuel 15 ppm Sulfur Max; Garyville Export Diesel; Export Diesel, Garyville; Diesel Fuel, Export Garyville; #2 Motor Vehicle ULSD 15 ppm with 0-5% Renewable Diesel; Marathon No. 2 ULSD with 0-5% Renewable Fuel with R100; Marathon No. 2 ULSD with 0-5% Renewable Fuel with R99; No. 2 Heating Oil 2000 ppm Sulfur Max, Clear (Undyed) Unmarked;Ultra Low Sulfur Heating Oil 15 ppm Sulfur Max, Clear (Undyed) Unmarked; ULS Heating Oil 15 ppm Clear (Undyed) Unmarked; ULS HO 15 ppm CLR; Ultra-Low Sulfur Heating Oil (<= 15ppm, Undyed); No. 2 Heating Oil 2000 ppm Sulfur Max, Dyed Unmarked; No. 2 Heating Oil 2000 ppm Sulfur Max, Dyed Marked; Ultra Low Sulfur Heating Oil 15 ppm Sulfur Max, Dyed Unmarked; Ultra Low Sulfur Heating Oil 15 ppm Sulfur Max, Dyed Marked;15 ppm Sulfur Heating Oil Grade 67; 15 PPM Heating Oil; 15 PPM Dyed Heating Oil; 0291MAR019; 0306MAR019; 0308MAR019; 0334MAR019; 0335MAR019; 0336MAR019; 0337MAR019; 0340MAR019;

Chemical Family: Complex Hydrocarbon Substance

Recommended Use: Fuel.
Restrictions on Use: All others.

Manufacturer, Importer, or Responsible Party Name and Address:

MARATHON PETROLEUM COMPANY LP
539 South Main Street
Findlay, OH 45840

SDS information: 1-419-421-3070

Emergency Telephone: 1-877-627-5463

2. HAZARD IDENTIFICATION

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 3
Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Skin corrosion/irritation	Category 2
Carcinogenicity	Category 2
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 2
Aspiration toxicity	Category 1
Acute aquatic toxicity	Category 2
Chronic aquatic toxicity	Category 2

Hazards Not Otherwise Classified (HNOC)
Static accumulating flammable liquid

Label elements

EMERGENCY OVERVIEW

Danger

FLAMMABLE LIQUID AND VAPOR
May accumulate electrostatic charge and ignite or explode
May be fatal if swallowed and enters airways
Harmful if inhaled
Causes skin irritation
May cause respiratory irritation
May cause drowsiness or dizziness
Suspected of causing cancer
May cause damage to organs (thymus, liver, bone marrow) through prolonged or repeated exposure
Toxic to aquatic life with long lasting effects

Appearance Yellow to Red Liquid **Physical State** Liquid **Odor** Hydrocarbon

Precautionary Statements - Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use only non-sparking tools.
Use explosion-proof electrical/ventilating/lighting/equipment
Take precautionary measures against static discharge
Do not breathe mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear protective gloves/protective clothing/eye protection/face protection

Wash hands and any possibly exposed skin thoroughly after handling
Avoid release to the environment

Precautionary Statements - Response
IF exposed or concerned: Get medical attention
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
If skin irritation occurs: Get medical attention
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor if you feel unwell
IF SWALLOWED: Immediately call a POISON CENTER or doctor
Do NOT induce vomiting
In case of fire: Use water spray, fog or regular foam for extinction
Collect spillage

Precautionary Statements - Storage
Store in a well-ventilated place. Keep container tightly closed
Keep cool
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container at an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

No. 2 Ultra Low Sulfur Diesel is a complex mixture of paraffins, cycloparaffins, olefins and aromatic hydrocarbon chain lengths predominantly in the range of eleven to twenty carbons. May contain up to 5% Renewable Diesel. May contain small amounts of dye and other additives (<0.15%) which are not considered hazardous at the concentration(s) used. May contain a trace amount of benzene (<0.01%). Contains a trace amount of sulfur (<0.0015%)

Composition Information:

Name	CAS Number	% Concentration
No. 2 Diesel Fuel	68476-34-6	50-100
Kerosine, Petroleum	8008-20-6	0-50
Alkanes, C10-C20 branched and linear	928771-01-1	0-5
Naphthalene	91-20-3	0.3-2.6

All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

4. FIRST AID MEASURES

First Aid Measures

General Advice: In case of accident or if you feel unwell, seek medical advice immediately (show directions for use or safety data sheet if possible).

Inhalation: Remove to fresh air. If not breathing, institute rescue breathing. If breathing is difficult, ensure airway is clear, give oxygen and continue to monitor. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). Keep affected person warm and at rest. GET IMMEDIATE MEDICAL ATTENTION.

Skin Contact: Immediately wash exposed skin with plenty of soap and water while removing contaminated clothing and shoes. May be absorbed through the skin in harmful amounts. Get medical attention if irritation persists. Any injection injury from high pressure equipment should be evaluated immediately by a physician as potentially serious (See NOTES TO PHYSICIAN).

Place contaminated clothing in closed container until cleaned or discarded. If clothing is to be laundered, inform the person performing the operation of contaminant's hazardous properties. Destroy contaminated, non-chemical resistant footwear.

Eye Contact: Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Gently remove contacts while flushing. Get medical attention if irritation persists.

Ingestion: Do not induce vomiting because of danger of aspirating liquid into lungs, causing serious damage and chemical pneumonitis. If spontaneous vomiting occurs, keep head below hips, or if patient is lying down, turn body and head to side to prevent aspiration and monitor for breathing difficulty. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. GET IMMEDIATE MEDICAL ATTENTION.

Most important signs and symptoms, both short-term and delayed with overexposure

Adverse Effects: Irritating to the skin and mucous membranes. Symptoms may include redness, itching, and inflammation. May cause nausea, vomiting, diarrhea, and signs of nervous system depression: headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue. Aspiration hazard. May cause coughing, chest pains, shortness of breath, pulmonary edema and/or chemical pneumonitis. Repeated or prolonged skin contact may cause drying, reddening, itching and cracking. Prolonged or repeated exposure may cause adverse effects to the thymus, liver, and bone marrow.

Indication of any immediate medical attention and special treatment needed

Notes To Physician: INHALATION: This material (or a component) sensitizes the myocardium to the effects of sympathomimetic amines. Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in individuals exposed to this material. Administration of sympathomimetic drugs should be avoided.

SKIN: Leaks or accidents involving high-pressure equipment may inject a stream of material through the skin and initially produce an injury that may not appear serious. Only a small puncture wound may appear on the skin surface but, without proper treatment and depending on the nature, original pressure, volume, and location of the injected material, can compromise blood supply to an affected body part. Prompt surgical debridement of the wound may be necessary to prevent irreversible loss of function and/or the affected body part. High pressure injection injuries may be SERIOUS SURGICAL EMERGENCIES.

INGESTION: This material represents a significant aspiration and chemical pneumonitis hazard. Induction of emesis is not recommended.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
For small fires, Class B fire extinguishing media such as CO2, dry chemical, foam (AFFF/ATC) or water spray can be used. For large fires, water spray, fog or foam (AFFF/ATC) can be used. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

Unsuitable extinguishing media
Do not use straight water streams to avoid spreading fire.

Specific hazards arising from the chemical
This product has been determined to be a flammable liquid per the OSHA Hazard Communication Standard and should be handled accordingly. May accumulate electrostatic charge and ignite or explode. Vapors may travel along the ground or be moved by ventilation and ignited by many sources such as pilot lights, sparks, electric motors, static discharge, or other ignition sources at locations distant from material handling. Flashback can occur along vapor trail. For additional fire related information, see NFPA 30 or the Emergency Response Guidebook 128.

Hazardous combustion products
Smoke, carbon monoxide, and other products of incomplete combustion.

Explosion data
Sensitivity to Mechanical Impact No.

Sensitivity to Static Discharge Yes.

Special protective equipment and precautions for firefighters
Firefighters should wear full protective clothing and positive-pressure self-contained breathing apparatus (SCBA) with a full face-piece, as appropriate. Avoid using straight water streams. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Avoid excessive water spray application. Keep surrounding area cool with water spray from a distance and prevent further ignition of combustible material. Keep run-off water out of sewers and water sources.

Additional firefighting tactics
FIRES INVOLVING TANKS OR CAR/TRAILER LOADS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after the fire is out. Do not direct water at source of leak or safety devices; icing may occur. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles: if this is impossible, withdraw from area and let fire burn.

EVACUATION: Consider initial downwind evacuation for at least 1000 feet. If tank, rail car or tank truck is involved in a fire, ISOLATE for 5280 feet (1 mile) in all directions; also, consider initial evacuation of 5280 feet (1 mile) in all directions.

NFPA	Health 1	Flammability 2	Instability 0	Special Hazard -

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Keep public away. Isolate and evacuate area. Shut off source if safe to do so. Eliminate all ignition sources. All contaminated surfaces will be slippery.

Protective equipment: Use personal protection measures as recommended in Section 8.

Emergency procedures: Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate.

Environmental precautions: Avoid release to the environment. Avoid subsoil penetration.

Methods and materials for containment: Contain liquid with sand or soil. Prevent spilled material from entering storm drains, sewers, and open waterways.

Methods and materials for cleaning up: Use suitable absorbent materials such as vermiculite, sand, or clay to clean up residual liquids. Recover and return free product to proper containers. When recovering free liquids ensure all equipment is grounded and bonded. Use only non-sparking tools.

7. HANDLING AND STORAGE

Safe Handling Precautions: NEVER SIPHON THIS PRODUCT BY MOUTH. Use appropriate grounding and bonding practices. Static accumulating flammable liquid. Bonding and grounding may be insufficient to eliminate the hazard from static electricity. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. Vapors may travel along the ground or be moved by ventilation. Flashback may occur along vapor trails. No smoking. Use only non-sparking tools. Avoid breathing fumes, gas, or vapors. Use only with adequate ventilation. Avoid repeated and prolonged skin contact. Use personal protection measures as recommended in Section 8. Exercise good personal hygiene including removal of soiled clothing and prompt washing with soap and water. Do not cut, drill, grind or weld on empty containers since explosive residues may remain. Refer to applicable EPA, OSHA, NFPA and consistent state and local requirements.

Hydrocarbons are basically non-conductors of electricity and can become electrostatically charged during mixing, filtering, pumping at high flow rates or loading and transfer operations. If this charge reaches a sufficiently high level, sparks can form that may ignite the vapors of flammable liquids. Sudden release of hot organic chemical vapors or mists

from process equipment operating under elevated temperature and pressure, or sudden ingress of air into vacuum equipment may result in ignition of vapors or mists without the presence of obvious ignition sources. Nozzle spouts must be kept in contact with the containers or tank during the entire filling operation.

Portable containers should never be filled while in or on a motor vehicle or marine craft. Containers should be placed on the ground. Static electric discharge can ignite fuel vapors when filling non-grounded containers or vehicles on trailers. The nozzle spout must be kept in contact with the container before and during the entire filling operation. Use only approved containers.

A buildup of static electricity can occur upon re-entry into a vehicle during fueling especially in cold or dry climate conditions. The charge is generated by the action of dissimilar fabrics (i.e., clothing and upholstery) rubbing across each other as a person enters/exits the vehicle. A flash fire can result from this discharge if sufficient flammable vapors are present. Therefore, do not get back in your vehicle while refueling.

Cellular phones and other electronic devices may have the potential to emit electrical charges (sparks). Sparks in potentially explosive atmospheres (including fueling areas such as gas stations) could cause an explosion if sufficient flammable vapors are present. Therefore, turn off cellular phones and other electronic devices when working in potentially explosive atmospheres or keep devices inside your vehicle during refueling.

High-pressure injection of any material through the skin is a serious medical emergency even though the small entrance wound at the injection site may not initially appear serious. These injection injuries can occur from high-pressure equipment such as paint spray or grease or guns, fuel injectors, or pinhole leaks in hoses or hydraulic lines and should all be considered serious. High pressure injection injuries may be SERIOUS SURGICAL EMERGENCIES (See First Aid Section 4).

Storage Conditions: Store in properly closed containers that are appropriately labeled and in a cool, well-ventilated area. Do not store near an open flame, heat or other sources of ignition.

Incompatible Materials Strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Name	ACGIH TLV	OSHA PELS:	OSHA - Vacated PELs	NIOSH IDLH
No. 2 Diesel Fuel 68476-34-6	100 mg/m^3 TWA Skin - potential significant contribution to overall exposure by the cutaneous route	-	-	-
Kerosine, Petroleum 8008-20-6	200 mg/m^3 TWA Skin - potential significant contribution to overall exposure by the cutaneous route	-	-	-
Alkanes, C10-C20 branched and linear 928771-01-1	-	-	-	-
Naphthalene 91-20-3	10 ppm TWA Skin - potential significant contribution to overall exposure by the cutaneous route	TWA: 10 ppm TWA: 50 mg/m^3	10 ppm TWA 50 mg/m^3 TWA 15 ppm STEL 75 mg/m^3 STEL	250 ppm

Notes: The manufacturer has voluntarily elected to provide exposure limits contained in OSHA's 1989 air contaminants standard in its SDSs, even though certain of those exposure limits were vacated in 1992.

Engineering measures: Local or general exhaust required in an enclosed area or with inadequate ventilation. Use mechanical ventilation equipment that is explosion-proof.

Personal protective equipment

Eye protection:	Use goggles or face-shield if the potential for splashing exists.
Skin and body protection:	Wear neoprene, nitrile or PVA gloves to prevent skin contact. Glove suitability is based on workplace conditions and usage. Contact the glove manufacturer for specific advice on glove selection and breakthrough times.
Respiratory protection:	Use a NIOSH approved organic vapor chemical cartridge or supplied air respirators when there is the potential for airborne exposures to exceed permissible exposure limits or if excessive vapors are generated. Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 29 CFR 1910.134. Self-contained breathing apparatus should be used for fire fighting.
Hygiene measures:	Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid
Appearance	Yellow to Red Liquid
Color	Yellow to Red
Odor	Hydrocarbon
Odor Threshold	No data available.

Property	**Values (Method)**
Melting Point / Freezing Point	No data available.
Initial Boiling Point / Boiling Range	154-366 °C / 310-691 °F (ASTM D86)
Flash Point	58-76 °C / 136-168 °F (ASTM D93)
Evaporation Rate	No data available.
Flammability (solid, gas)	Not applicable.
Flammability Limit in Air (%):	
Upper Flammability Limit:	No data available.
Lower Flammability Limit:	No data available.
Explosion limits:	No data available.
Vapor Pressure	No data available.
Vapor Density	No data available.
Specific Gravity / Relative Density	0.82-0.86 (ASTM D4052)
Water Solubility	No data available.
Solubility in other solvents	No data available.
Partition Coefficient	No data available.
Decomposition temperature	No data available.
pH:	Not applicable
Autoignition Temperature	No data available.
Kinematic Viscosity	1.90-3.32 cSt @ 40°C (ASTM D445)
Dynamic Viscosity	No data available.
Explosive Properties	No data available.
VOC Content (%)	No data available.
Density	No data available.
Bulk Density	Not applicable.

10. STABILITY AND REACTIVITY

Reactivity	The product is non-reactive under normal conditions.
Chemical stability	The material is stable at 70°F, 760 mmHg pressure.

Possibility of hazardous reactions None under normal processing.

Hazardous polymerization Will not occur.

Conditions to avoid Excessive heat, sources of ignition, open flame.

Incompatible Materials Strong oxidizing agents.

Hazardous decomposition products None known under normal conditions of use.

11. TOXICOLOGICAL INFORMATION

Potential short-term adverse effects from overexposures

Inhalation Harmful if inhaled. May cause irritation of respiratory tract. May cause drowsiness or dizziness. Breathing high concentrations of this material in a confined space or by intentional abuse can cause irregular heartbeats which can cause death.

Eye contact Exposure to vapor or contact with liquid may cause mild eye irritation, including tearing, stinging, and redness.

Skin contact Causes skin irritation. Effects may become more serious with repeated or prolonged contact. May be absorbed through the skin in harmful amounts.

Ingestion May be fatal if swallowed or vomited and enters airways. May cause irritation of the mouth, throat and gastrointestinal tract.

Acute toxicological data

Name	Oral LD50	Dermal LD50	Inhalation LC50
No. 2 Diesel Fuel 68476-34-6	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	>1 - <5 mg/L (Rat) 4 h
Kerosine, Petroleum 8008-20-6	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 5.28 mg/L (Rat) 4 h
Alkanes, C10-C20 branched and linear 928771-01-1	-	-	>1 - <5 mg/l (Rat) 4 h
Naphthalene 91-20-3	490 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 340 mg/m^3 (Rat) 1 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

MIDDLE DISTILLATES, PETROLEUM: Long-term repeated (lifetime) skin exposure to similar materials has been reported to result in an increase in skin tumors in laboratory rodents. The relevance of these findings to humans is not clear at this time. Altered mental state, drowsiness, peripheral motor neuropathy, irreversible brain damage (so-called Petrol Sniffer's Encephalopathy), delirium, seizures, and sudden death have been reported from repeated overexposure to some hydrocarbon solvents, naphthas, and gasoline.

MIDDLE DISTILLATES WITH CRACKED STOCKS: Light cracked distillates have been shown to be carcinogenic in animal tests and have tested positive with in vitro genotoxicity tests. Repeated dermal exposures to high concentrations in test animals resulted in reduced litter size and litter weight, and increased fetal resorptions at maternally toxic doses. Dermal exposure to high concentrations resulted in severe skin irritation with weight loss and some mortality. Inhalation exposure to high concentrations resulted in respiratory tract irritation, lung changes/infiltration/accumulation, and reduction in lung function.

ISOPARAFFINS: Studies in laboratory animals have shown that long-term exposure to similar materials (isoparaffins) can cause kidney damage and kidney cancer in male laboratory rats. However, in-depth research indicates that these findings are unique to the male rat, and that these effects are not relevant to humans.

NAPHTHALENE: Severe jaundice, neurotoxicity (kernicterus) and fatalities have been reported in young children and infants as a result of hemolytic anemia from overexposure to naphthalene. Persons with glucose 6-phosphate dehydrogenase (G6PD) deficiency are more prone to the hemolytic effects of naphthalene. Adverse effects on the kidney have been reported in persons overexposed to naphthalene but these effects are believed to be a consequence of hemolytic anemia, and not a direct effect. Hemolytic anemia has been observed in laboratory animals exposed to naphthalene. Laboratory rodents exposed to naphthalene vapor for 2 years (lifetime studies) developed non-neoplastic and neoplastic tumors and inflammatory lesions of the nasal and respiratory tract. Cataracts and other adverse effects on the eye have been observed in laboratory animals exposed to high levels of naphthalene. Findings from a large number of bacterial and mammalian cell mutation assays have been negative. A few studies have shown chromosomal effects (elevated levels of Sister Chromatid Exchange or chromosomal aberrations) in vitro. Naphthalene has been classified as Possibly Carcinogenic to Humans (2B) by IARC, based on findings from studies in laboratory animals.

DIESEL EXHAUST: The combustion of diesel fuels produces gases including carbon monoxide, carbon dioxide, oxides of nitrogen and/or sulfur, and hydrocarbons that can be irritating and hazardous with overexposure. Long-term occupational overexposure to diesel exhaust and diesel exhaust particulate matter has been associated with an increased risk of respiratory disease, including lung cancer, and is characterized as a “known human carcinogen” by the International Agency for Research on Cancer (IARC), as “a reasonably anticipated human carcinogen” by the National Toxicology Program, and as “likely to be carcinogenic to humans” by the EPA, based upon animal and occupational exposure studies. However, uncertainty exists with these classifications because of deficiencies in the supporting occupational exposure/epidemiology studies, including reliable exposure estimates. Lifetime animal inhalation studies with pulmonary overloading exposure concentrations of diesel exhaust emissions have produced tumors and other adverse health effects. However, in more recent long-term animal inhalation studies of diesel exhaust emissions, no increase in tumor incidence and in fact a substantial reduction in adverse health effects along with significant reductions in the levels of hazardous material emissions were observed and are associated with fuel composition alterations coupled with new technology diesel engines.

Adverse effects related to the physical, chemical and toxicological characteristics

Signs and Symptoms Irritating to the skin and mucous membranes. Symptoms may include redness, itching, and inflammation. May cause nausea, vomiting, diarrhea, and signs of nervous system depression: headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue. Aspiration hazard. May cause coughing, chest pains, shortness of breath, pulmonary edema and/or chemical pneumonitis. Repeated or prolonged skin contact may cause drying, reddening, itching and cracking. Prolonged or repeated exposure may cause damage to organs.

Sensitization Not expected to be a skin or respiratory sensitizer.

Mutagenic effects None known.

Carcinogenicity Suspected of causing cancer.

Cancer designations are listed in the table below

Name	ACGIH (Class)	IARC (Class)	NTP	OSHA
No. 2 Diesel Fuel 68476-34-6	Confirmed animal carcinogen (A3)	Not Classifiable (3)	Not Listed	Not Listed
Kerosine, Petroleum 8008-20-6	Confirmed animal carcinogen (A3)	Not Classifiable (3)	Not Listed	Not Listed
Alkanes, C10-C20 branched and linear 928771-01-1	Not Listed	Not Listed	Not Listed	Not Listed
Naphthalene	Confirmed animal	Possible human carcinogen	Reasonably anticipated to	Not Listed

91-20-3	carcinogen (A3)	(2B)	be a human carcinogen	

Reproductive toxicity None known.

Specific Target Organ Toxicity (STOT) - single exposure Respiratory system. Central nervous system.

Specific Target Organ Toxicity (STOT) - repeated exposure Thymus. Liver. Bone marrow.

Aspiration hazard May be fatal if swallowed or vomited and enters airways.

12. ECOLOGICAL INFORMATION

Ecotoxicity This product should be considered toxic to aquatic organisms, with the potential to cause long lasting adverse effects in the aquatic environment.

Name	Algae/aquatic plants	Fish	Toxicity to Microorganisms	Crustacea
No. 2 Diesel Fuel 68476-34-6	-	96-hr LC50 = 35 mg/l Fathead minnow (flow-through)	-	48-hr EL50 = 6.4 mg/l Daphnia magna
Kerosine, Petroleum 8008-20-6	72-hr EL50 = 5.0-11 mg/l Algae	96-hr LL50 = 18-25 mg/l Fish	-	48-hr EL50 = 1.4-21 mg/l Invertebrates
Alkanes, C10-C20 branched and linear 928771-01-1	-	-	-	-
Naphthalene 91-20-3	-	96-hr LC50 = 0.91-2.82 mg/l Rainbow trout (static) 96-hr LC50 = 1.99 mg/l Fathead minnow (static)	-	48-hr LC50 = 1.6 mg/l Daphnia magna

Persistence and degradability Expected to be inherently biodegradable.

Bioaccumulation Has the potential to bioaccumulate.

Mobility in soil May partition into air, soil and water.

Other adverse effects No information available.

13. DISPOSAL CONSIDERATIONS

Description of Waste Residues
This material may be a flammable liquid waste.

Safe Handling of Wastes
Handle in accordance with applicable local, state, and federal regulations. Use personal protection measures as required. Use appropriate grounding and bonding practices. Use only non-sparking tools. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. No smoking.

Disposal of Wastes / Methods of Disposal
The user is responsible for determining if any discarded material is a hazardous waste (40 CFR 262.11). Dispose of in accordance with federal, state and local regulations.

Methods of Contaminated Packaging Disposal
Empty containers should be completely drained and then discarded or recycled, if possible. Do not cut, drill, grind or weld on empty containers since explosive residues may be present. Dispose of in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

DOT (49 CFR 172.101):

UN Proper Shipping Name:	Fuel Oil, No. 2
UN/Identification No:	NA 1993
Transport Hazard Class(es):	3
Packing Group:	III

TDG (Canada):

UN Proper Shipping Name:	Diesel Fuel
UN/Identification No:	UN 1202
Transport Hazard Class(es):	3
Packing Group:	III

15. REGULATORY INFORMATION

US Federal Regulatory Information:

US TSCA Chemical Inventory Section 8(b): This product and/or its components are listed on the TSCA Chemical Inventory.

EPA Superfund Amendment & Reauthorization Act (SARA):

SARA Section 302: This product does not contain any component(s) included on EPA's Extremely Hazardous Substance (EHS) List.

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs
No. 2 Diesel Fuel	NA
Kerosine, Petroleum	NA
Alkanes, C10-C20 branched and linear	NA
Naphthalene	NA

SARA Section 304: This product may contain component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	Hazardous Substances RQs
No. 2 Diesel Fuel	NA
Kerosine, Petroleum	NA
Alkanes, C10-C20 branched and linear	NA
Naphthalene	100 lb final RQ 45.4 kg final RQ

SARA: The following EPA hazard categories apply to this product:

Acute Health Hazard
Fire Hazard
Chronic Health Hazard

SARA Section 313: This product may contain component(s), which if in exceedance of the de minimus threshold, may be subject to the reporting requirements of SARA Title III Section 313 Toxic Release Reporting (Form R).

Name	CERCLA/SARA 313 Emission reporting:
No. 2 Diesel Fuel	None
Kerosine, Petroleum	None
Alkanes, C10-C20 branched and linear	None
Naphthalene	0.1 % de minimis concentration

State and Community Right-To-Know Regulations:
The following component(s) of this material are identified on the regulatory lists below:

No. 2 Diesel Fuel

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 2444
Pennsylvania Right-To-Know:	Not Listed
Massachusetts Right-To Know:	Not Listed
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Not Listed
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	SN 2444 TPQ: 10000 lb (Under N.J.A.C. 7:1G, environmental hazardous substances in mixtures such as gasoline or new and used petroleum oil may be reported under these categories)
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Kerosine, Petroleum

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1091
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Not Listed
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	SN 1091 TPQ: 10000 lb (Under N.J.A.C. 7:1G, environmental hazardous substances in mixtures such as gasoline or new and used petroleum oil may be reported under these categories)
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Alkanes, C10-C20 branched and linear

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed
Pennsylvania Right-To-Know:	Not Listed
Massachusetts Right-To Know:	Not Listed
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Not Listed
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Naphthalene

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Carcinogen, initial date 4/19/02

New Jersey Right-To-Know:	SN 1322 SN 3758
Pennsylvania Right-To-Know:	Environmental hazard Present (particulate)
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Carcinogen
New Jersey - Environmental Hazardous Substances List:	SN 1322 TPQ: 500 lb (Reportable at the de minimis quantity of >0.1%)
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	100 lb RQ (air); 1 lb RQ (land/water)

Canada DSL/NDSL Inventory: This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

Canadian Regulatory Information: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the (M)SDS contains all the information required by the Controlled Products Regulations.

Name	Canada - WHMIS: Classifications of Substances:	Canada - WHMIS: Ingredient Disclosure:
No. 2 Diesel Fuel	B3,D2A,D2B	0.1%
Kerosine, Petroleum	B3,D2B	1%
Alkanes, C10-C20 branched and linear	B3,D2A,D2B	0.1%
Naphthalene	B4,D2A	0.1%

Note: Not applicable.

16. OTHER INFORMATION

Prepared By Toxicology and Product Safety

Revision Date: 06/01/2016

Revision Note:

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is intended as guidance for safe handling, use, processing, storage, transportation, accidental release, clean-up and disposal and is not considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Safety Data Sheet

Issue Date: 11-Dec-2014 **Revision Date:** 18-May-2015 **Version** 1

1. IDENTIFICATION

Product Identifier

Product Name **Service Pro SAE 15W-40 Heavy Duty Engine Oil API CJ-4/SM**

Other means of identification

SDS # SP-032, SP17090, SPL17090, SPL27090, SPL00305, SPL00306, SPL00307, SPL00308, SPL00243 , SPL00309, SPL00310

Recommended use of the chemical and restrictions on use

Recommended Use Premium heavy duty motor oil.

Details of the supplier of the safety data sheet

Supplier Address
Warren Oil Company
915 E. Jefferson Ave.
West Memphis, AR 72301

Manufactured for:
AIOD
P.O. BOX 1861
Montrose, CO 81402-1861
970-249-6336 www.service-pro.com

Emergency Telephone Number

Company Phone Number 1-800-428-9284
Emergency Telephone (24 hr) Chemtrec 1-800-424-9300 (North America) 1-703-527-3887 (International)

2. HAZARDS IDENTIFICATION

Appearance Light amber, viscous liquid **Physical State** Viscous liquid **Odor** Typical petroleum

Classification

This chemical does not meet the hazardous criteria set f orth by the 2012 OSHA Hazard Communication Standard (29 CF R 1910.1200). However, this Safety Data Sheet (SDS) contains valuable information critical to the saf e handling and proper use of this product. This SDS should be retained and available for employees and other users of this product.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight-%
Petroleum distillates, hydrotreated heavy paraffinic	64742-54-7	70-80

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST-AID MEASURES

First Aid Measures

Eye Contact Flush eyes with large amounts of water, for at least 15 minutes, until irritation subsides. If irritation persists, get medical attention.

Skin Contact No treatment is necessary under ordinary circumstances. Remove contaminated clothing. Wash contaminated area thoroughly with soap and water. If redness or irritation occurs and persists, seek medical attention. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should seek immediate medical attention.

Inhalation Remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Get medical attention.

Ingestion If swallowed, do not induce vomiting. If victim exhibits signs of lung aspiration such as coughing or choking, seek immediate medical attention.

Most important symptoms and effects

Symptoms Expected to be a minor eye irritant. Repeated or prolonged skin contact may cause dermatitis.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Use dry chemical, foam, carbon dioxide or water fog.

Unsuitable Extinguishing Media While carbon dioxide and inert will extinguish the fire, they can also displace oxygen. Use caution when applying carbon dioxide or inert gas in confined spaces.

Specific Hazards Arising from the Chemical
This material can burn but will not readily ignite. This material will release vapors when heated above the flashpoint temperature that can ignite when exposed to a source of ignition. In enclosed spaces, heated vapor can ignite with explosive force. Mists or sprays may burn at temperatures below the flashpoint. Dense smoke may be generated while burning. Carbon monoxide, carbon dioxide, and other oxides may be generated as products of combustion.

Hazardous Combustion Products Carbon monoxide. Carbon dioxide (CO_2). Aldehydes. Ketones. Combustion products of sulfur and nitrogen.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Avoid breathing smoke and vapor. Water may be used to cool containers exposed to heat or flame.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Use personal protective equipment as required.

Methods and material for containment and cleaning up

Methods for Containment Remove sources of ignition. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.

Methods for Clean-Up Take up small spills with absorbent pads. Large spills may be taken up with pump or vacuum.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Storage Conditions Store at ambient conditions. Store at atmospheric pressure. Keep container tightly closed. Store in a cool, well-ventilated place. Keep away from heat, sparks, and flame. Empty containers retain product residues. Store away from incompatible materials.

Incompatible Materials This product may react with strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Appropriate engineering controls

Engineering Controls Use general ventilation and use local exhaust, where possible, in confined or enclosed spaces. If product is heated above 70 C (155 F) in the presence of water, hydrogen sulfide vapors may be released. Ventilation should be sufficient to keep hydrogen sulfide levels below recommended exposure limits. Eye wash fountains are recommended.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Wear safety glasses. Wear chemical goggles or face shield if splash or mist occurs.

Skin and Body Protection Use impervious gloves for prolonged contact. Wear oil-impervious garments if contact is unavoidable.

Respiratory Protection If mist is generated (heating, spraying) and engineering controls are not sufficient, wear approved organic vapor respirator suitable for oil mist.

General Hygiene Considerations Use good hygiene when handling petroleum product. Launder contaminated clothing before reuse. Excessive misting may cause slippery floors - wear appropriate footwear.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Viscous liquid		
Appearance	Light amber, viscous liquid	**Odor**	Typical petroleum
Color	Light amber	**Odor Threshold**	Not available

Property	Values	Remarks • Method
pH	Not available	
Melting Point/Freezing Point	Not available	
Boiling Point/Boiling Range	Not available	
Flash Point	204 °C / 400 °F	ASTM D-92
Evaporation Rate	Not available	
Flammability (Solid, Gas)	Liquid-Not applicable	

Upper Flammability Limits	Not determined	
Lower Flammability Limit	Not determined	
Vapor Pressure	Not available	
Vapor Density	>1	(Air=1)
Specific Gravity	0.88	
Water Solubility	Insoluble in water	
Solubility in other solvents	Not determined	
Partition Coefficient	Not available	
Auto-ignition Temperature	No data available	
Decomposition Temperature	Not determined	
Kinematic Viscosity	Not determined	
Dynamic Viscosity	Not determined	
Explosive Properties	Not determined	
Oxidizing Properties	Not determined	

10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions.

Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization Under normal conditions of storage and use, hazardous polymerization will not occur.

Conditions to Avoid
Avoid formation of mists. Keep away from extreme heat, sparks, open flame and incompatible materials.

Incompatible Materials
This product may react with strong oxidizing agents.

Hazardous Decomposition Products
Decomposition of this product may yield oxides of boron, calcium, magnesium, nitrogen, phosphorus, sulfur including hydrogen sulfide and zinc as well as carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact Avoid contact with eyes.

Skin Contact Avoid contact with skin.

Inhalation Do not inhale.

Ingestion Do not ingest.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Petroleum derived calcium salt 61789-86-4	> 5000 mg/kg (Rat)	> 4000 mg/kg (Rabbit)	-

Information on physical, chemical and toxicological effects

Symptoms Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

Numerical measures of toxicity
Not determined

12. ECOLOGICAL INFORMATION

Ecotoxicity
The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Component Information

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Petroleum distillates, hydrotreated heavy paraffinic 64742-54-7		5000: 96 h Oncorhynchus mykiss mg/L LC50		1000: 48 h Daphnia magna mg/L EC50
Petroleum derived calcium salt 61789-86-4		5.7 - 9.7: 96 h Pimephales promelas mg/L LC50 static 1.0 - 10.0: 96 h Pimephales promelas mg/L LC50 semi-static		6.2 - 12: 48 h Daphnia magna mg/L EC50

Persistence/Degradability
Not determined.

Bioaccumulation
Not determined.

Mobility
Not determined

Other Adverse Effects
Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging Disposal should be in accordance with applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION

Note Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

DOT Not regulated

IATA Not regulated

IMDG Not regulated

15. REGULATORY INFORMATION

International Inventories

Chemical Name	TSCA	DSL	NDSL	EINECS	ELINCS	ENCS	IECSC	KECL	PICCS	AICS
Petroleum distillates, hydrotreated heavy paraffinic	Present	X		Present		Present	X	Present	X	X

Legend:

TSCA *- United States Toxic Substances Control Act Section 8(b) Inventory*

DSL/NDSL *- Canadian Domestic Substances List/Non-Domestic Substances List*

EINECS/ELINCS *- European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances*

ENCS *- Japan Existing and New Chemical Substances*

IECSC *- China Inventory of Existing Chemical Substances*

KECL *- Korean Existing and Evaluated Chemical Substances*

PICCS *- Philippines Inventory of Chemicals and Chemical Substances*

AICS *- Australian Inventory of Chemical Substances*

US Federal Regulations

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

SARA 313

Chemical Name	CAS No	Weight-%	SARA 313 - Threshold Values %
Zinc alkyl dithiophosphate - 113706-15-3	113706-15-3	<1	1.0

CWA (Clean Water Act)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Zinc alkyl dithiophosphate		X		

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Zinc alkyl dithiophosphate 113706-15-3	X		X

16. OTHER INFORMATION

NFPA	**Health Hazards**	**Flammability**	**Instability**	**Special Hazards**
	1	1	0	Not determined
HMIS	**Health Hazards**	**Flammability**	**Physical Hazards**	**Personal Protection**
	1	1	0	Not determined

Issue Date: 20-Apr-2012
Revision Date: 18-May-2015
Revision Note: New format

Disclaimer
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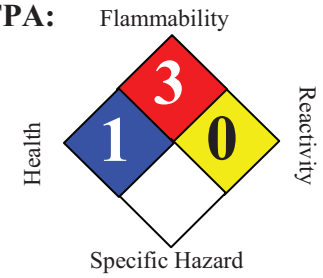
End of Safety Data Sheet

Safety Data Sheet
Gasoline, Unleaded

NFPA:



SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Gasoline, Unleaded			
Synonyms	:	Blend of Highly Flammable Petroleum Distillates, Regular, Mid-Grade, Premium, 888100008809			
SDS Number	:	888100008809	**Version**	:	1.1
Product Use Description	:	Fuel			
Company	:	For: Tesoro Refining & Marketing Co. 19100 Ridgewood Parkway, San Antonio, TX 78259			
Tesoro Call Center	:	(877) 783-7676	**Chemtrec (Emergency Contact)**	:	(800) 424-9300

SECTION 2. HAZARDS IDENTIFICATION

Classifications :
Flammable Liquid – Category 1 or 2 depending on formulation.
Aspiration Hazard – Category 1
Carcinogenicity – Category 2
Specific Target Organ Toxicity (Repeated Exposure) – Category 2
Specific Target Organ Toxicity (Single Exposure) – Category 3
Skin Irritation – Category 2
Eye Irritation – Category 2B
Chronic Aquatic Toxicity – Category 2

Pictograms :

Signal Word : **Danger**

Hazard Statements

Extremely flammable liquid and vapor.
May be fatal if swallowed and enters airways – do not siphon gasoline by mouth.
Suspected of causing blood cancer if repeated over-exposure by inhalation and/or skin contact occurs.
May cause damage to liver, kidneys and nervous system by repeated and prolonged inhalation or skin contact. Causes eye irritation. Can be absorbed through skin.
May cause drowsiness or dizziness. Extreme exposure such as intentional inhalation may cause unconsciousness, asphyxiation and death.
Repeated or prolonged skin contact can cause irritation and dermatitis.

Harmful to aquatic life.

Precautionary statements

Prevention : Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat, sparks, open flames, welding and hot surfaces.
No smoking.
Keep container tightly closed.
Ground and/or bond container and receiving equipment.
Use explosion-proof electrical equipment.
Use only non-sparking tools (if tools are used in flammable atmosphere).
Take precautionary measures against static discharge.
Wear gloves, eye protection and face protection (as needed to prevent skin and eye contact with liquid).
Wash hands or liquid-contacted skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Do not breathe vapors.
Use only outdoors or in a well-ventilated area.

Response : In case of fire: Use dry chemical, CO2, water spray or fire fighting foam to extinguish.
If swallowed: Immediately call a poison center, doctor, hospital emergency room, medical clinic or 911. Do NOT induce vomiting. Rinse mouth.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
If in eye: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If skin or eye irritation persists, get medical attention.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
Get medical attention if you feel unwell.

Storage : Store in a well ventilated place. Keep cool. Store locked up. Keep container tightly closed . Use only approved containers. Some containers not approved for gasoline may dissolve and release flammable gasoline liquid and vapors.

Disposal : Dispose of contents/containers to approved disposal site in accordance with local, regional, national, and/or international regulations.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Weight %
Gasoline, natural; Low boiling point naphtha	8006-61-9	10 - 30%
Toluene	108-88-3	10 - 30%
Xylene	1330-20-7	10 - 30%
Ethanol; ethyl alcohol	64-17-5	0-8.2%
Trimethylbenzene	25551-13-7	1 - 5%
Isopentane; 2-methylbutane	78-78-4	1 - 5%

Naphthalene	91-20-3	1 - 5%
Benzene	71-43-2	Less than 1.3%
Pentane	109-66-0	1 - 5%
Cyclohexane	110-82-7	1 - 5%
Ethylbenzene	100-41-4	1 - 5%
Butane	106-97-8	1 - 20%
Heptane [and isomers]	142-82-5	0.5 - 0.75%
N-hexane	110-54-3	0.5 - 0.75%

SECTION 4. FIRST AID MEASURES

Inhalation : If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention immediately.

Skin contact : In case of contact, immediately flush skin with plenty of water. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before re-use. Contaminated leather, particularly footwear, must be discarded. Note that contaminated clothing may be a fire hazard. Seek medical advice if symptoms persist or develop.

Eye contact : Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Seek medical advice if symptoms persist or develop.

Ingestion : Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Obtain medical attention.

Notes to physician : Symptoms: Dizziness, Discomfort, Headache, Nausea, Kidney disorders, Liver disorders. Aspiration may cause pulmonary edema and pneumonitis. Swallowing gasoline is more likely to be fatal for small children than adults, even if aspiration does not occur.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, CO2, water spray or fire fighting foam. LARGE FIRES: Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers. Keep containers and surroundings cool with water spray.

Specific hazards during fire fighting : Extremely flammable liquid and vapor. This material is combustible/flammable and is sensitive to fire, heat, and static discharge.

Special protective equipment for fire-fighters : Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing.

Further information : Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam. Exposure to decomposition products may be a hazard to health. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool unopened containers. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Evacuate personnel to safe areas. Ventilate the area. Remove all sources of ignition. Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).

Environmental precautions : Discharge into the environment must be avoided. If the product contaminates rivers and lakes or drains inform respective authorities.

Methods for cleaning up : Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations.

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling : Keep away from fire, sparks and heated surfaces. No smoking near areas where material is stored or handled. The product should only be stored and handled in areas with intrinsically safe electrical classification.

Hydrocarbon liquids including this product can act as a non-conductive flammable liquid (or static accumulators), and may form ignitable vapor-air mixtures in storage tanks or other containers. Precautions to prevent static-initated fire or explosion during transfer, storage or handling, include but are not limited to these examples:

(1) Ground and bond containers during product transfers. Grounding and bonding may not be adequate protection to prevent ignition or explosion of hydrocarbon liquids and vapors that are static accumulators.
(2) Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil or diesel) is loaded into tanks previously containing low flash point products (such gasoline or naphtha).
(3) Storage tank level floats must be effectively bonded.

For more information on precautions to prevent static-initated fire or explosion, see NFPA 77, Recommended Practice on Static Electricity (2007), and API Recommended Practice 2003, Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents (2008).

Conditions for safe storage, including incompatibilities : Keep away from flame, sparks, excessive temperatures and open flame. Use approved containers. Keep containers closed and clearly labeled. Empty or partially full product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose containers to sources of ignition. Store in a well-ventilated area. The storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks".

Reports suggest that government-mandated ethanol, if present, may not be compatible with fiberglass gasoline tanks. Ethanol may dissolve fiberglass resin, causing engine damage and possibly allow leakage of explosive gasoline.

Keep away from food, drink and animal feed. Incompatible with oxidizing agents. Incompatible with acids.

No decomposition if stored and applied as directed. Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Store only in containers approved and labeled for gasoline.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

List	Components	CAS-No.	Type:	Value
OSHA	Benzene	71-43-2	TWA	1 ppm
		71-43-2	STEL	5 ppm
		71-43-2	OSHA_ACT	0.5 ppm
OSHA Z1	Xylene	1330-20-7	PEL	100 ppm 435 mg/m3
	Ethanol; Ethyl alcohol	64-17-5	PEL	1,000 ppm 1,900 mg/m3
	Naphthalene	91-20-3	PEL	10 ppm 50 mg/m3
	Cyclohexane	110-82-7	PEL	300 ppm 1,050 mg/m3
	Ethylbenzene	100-41-4	PEL	100 ppm 435 mg/m3
	Heptane [and isomers]	142-82-5	PEL	500 ppm 2,000 mg/m3
	N-hexane	110-54-3	PEL	500 ppm 1,800 mg/m3
ACGIH	Toluene	108-88-3	TWA	50 ppm
	Xylene	1330-20-7	TWA	100 ppm
		1330-20-7	STEL	150 ppm
	Ethanol; Ethyl alcohol	64-17-5	TWA	1,000 ppm
	Trimethylbenzene	25551-13-7	TWA	25 ppm
	Isopentane; 2-Methylbutane	78-78-4	TWA	600 ppm
	Naphthalene	91-20-3	TWA	10 ppm
		91-20-3	STEL	15 ppm
	Benzene	71-43-2	TWA	0.5 ppm
		71-43-2	STEL	2.5 ppm
	Pentane	109-66-0	TWA	600 ppm
	Cyclohexane	110-82-7	TWA	100 ppm
	Ethylbenzene	100-41-4	TWA	100 ppm
		100-41-4	STEL	125 ppm
	Heptane [and isomers]	142-82-5	TWA	400 ppm
		142-82-5	STEL	500 ppm

	N-hexane	110-54-3	TWA	50 ppm

Engineering measures : Use adequate ventilation to keep gas and vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces. Use only intrinsically safe electrical equipment approved for use in classified areas.

Eye protection : Safety glasses or goggles are recommended where there is a possibility of splashing or spraying. Ensure that eyewash stations and safety showers are close to the workstation location.

Hand protection : Gloves constructed of nitrile or neoprene are recommended. Consult manufacturer specifications for further information.

Skin and body protection : If needed to prevent skin contact, chemical protective clothing such as of DuPont TyChem®, Saranex or equivalent recommended based on degree of exposure. Flame resistant clothing such as Nomex ® is recommended in areas where material is stored or handled.

Respiratory protection : A NIOSH/ MSHA-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited. Refer to OSHA 29 CFR 1910.134, ANSI Z88.2-1992, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection. Use a NIOSH/ MSHA-approved positive-pressure supplied-air respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.

Work / Hygiene practices : Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Clear to straw colored liquid

Odor : Characteristic hydrocarbon-like

Odor threshold 0.5 - 1.1 ppm

pH : Not applicable

Melting point/freezing point About -101°C (-150°F)

Initial boiling point & range Boiling point varies: 30 – 200°C (85 – 392°F)

Flash point < -21°C (-5.8°F)

Evaporation rate : Higher initially and declining as lighter components evaporate

Flammability (solid, gas) : Flammable vapor released by liquid

Upper explosive limit	7.6 %(V)
Lower explosive limit	1.3 %(V)
Vapor pressure	345 - 1,034 hPa at 37.8 °C (100.0 °F)
Vapor density (air = 1)	Approximately 3 to 4
Relative density (water = 1)	0.8 g/mL
Solubility (in water)	Negligible
Partition coefficient (n-octanol/water)	2 – 7 as log Pow
Auto-ignition temperature	Approximately 250°C (480°F)
Decomposition temperature	Will evaporate or boil and possibly ignite before decomposition occurs.
Kinematic viscosity	0.64 to 0.88 mm²/s range reported for gasoline
Conductivity (conductivity can be reduced by environmental factors such as a decrease in temperature)	: Hydrocarbon liquids without static dissipater additive may have conductivity below 1 picoSiemens per meter (pS/m). The highest electro-static ignition risks are associated with ”ultra-low conductivities” below 5 pS/m. See Section 7 for sources of information on defining safe loading and handling procedures for low conductivity products.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: Vapors may form explosive mixture with air. Hazardous polymerization does not occur.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	Can react with strong oxidizing agents, peroxides, alkaline products and strong acids. Contact with nitric and sulfuric acids will form nitrocresols that can decompose violently.
Conditions to avoid	: Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources. Avoid static charge accumulation and discharge (see Section 7).
Hazardous decomposition products	: Ignition and burning can release carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

SECTION 11. TOXICOLOGICAL INFORMATION

Skin contact	: Irritating to skin. Can be partially absorbed through skin.
Eye contact	: Irritating to eyes.
Ingestion	: Aspiration hazard if liquid is inhaled into lungs, particularly from vomiting after ingestion. Aspiration may result in chemical pneumonia, severe lung damage, respiratory failure and even death. Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death may occur.

Inhalation and further information

Acute toxicity of benzene results primarily from depression of the central nervous system (CNS). Inhalation of concentrations over 50 ppm can produce headache, lassitude, weariness, dizziness, drowsiness, over excitation. Exposure to very high levels can result in unconsciousness and death.

Repeated over-exposure may cause liver and kidney injuries.
Components of the product may affect the nervous system.

IARC has determined that gasoline and gasoline exhaust are possibly carcinogenic in humans. Inhalation exposure to completely vaporized unleaded gasoline caused kidney cancers in male rats and liver tumors in female mice. The U.S. EPA has determined that the male kidney tumors are species-specific and are irrelevant for human health risk assessment. The significance of the tumors seen in female mice is not known. Exposure to light hydrocarbons in the same boiling range as this product has been associated in animal studies with effects to the central and peripheral nervous systems, liver, and kidneys. The significance of these animal models to predict similar human response to gasoline is uncertain.
This product contains benzene. Human health studies indicate that prolonged and/or repeated overexposure to benzene may cause damage to the blood-forming system (particularly bone marrow), and serious blood disorders such as aplastic anemia and leukemia. Benzene is listed as a human carcinogen by the NTP, IARC, OSHA and ACGIH.

Component:

Gasoline, natural; Low boiling point naphtha	8006-61-9	Acute oral toxicity: LD50 rat Dose: 18.8 mg/kg Acute inhalation toxicity: LC50 rat Dose: 20.7 mg/l Exposure time: 4 h Skin irritation: Classification: Irritating to skin. Result: Mild skin irritation Eye irritation: Classification: Irritating to eyes. Result: Moderate eye irritation
Toluene	108-88-3	Acute oral toxicity: LD50 rat Dose: 636 mg/kg Acute dermal toxicity: LD50 rabbit Dose: 12,124 mg/kg Acute inhalation toxicity: LC50 rat Dose: 49 mg/l Exposure time: 4 h Skin irritation: Classification: Irritating to skin. Result: Mild skin irritation Prolonged skin contact may defat the skin and produce dermatitis. Eye irritation: Classification: Irritating to eyes. Result: Mild eye irritation
Xylene	1330-20-7	Acute oral toxicity: LD50 rat Dose: 2,840 mg/kg Acute dermal toxicity: LD50 rabbit Dose: ca. 4,500 mg/kg Acute inhalation toxicity: LC50 rat Dose: 6,350 mg/l Exposure time: 4 h Skin irritation: Classification: Irritating to skin. Result: Mild skin irritation

		Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product. Eye irritation: Classification: Irritating to eyes. Result: Mild eye irritation
Ethanol; Ethyl alcohol	64-17-5	Acute oral toxicity: LD50 rat Dose: 6,200 mg/kg Acute dermal toxicity: LD50 rabbit Dose: 19,999 mg/kg Acute inhalation toxicity: LC50 rat Dose: 8,001 mg/l Exposure time: 4 h Skin irritation: Classification: Irritating to skin. Result: Mild skin irritation Prolonged skin contact may cause skin irritation and/or dermatitis. Eye irritation: Classification: Irritating to eyes. Result: Mild eye irritation Mild eye irritation
Naphthalene	91-20-3	Acute oral toxicity: LD50 rat Dose: 2,001 mg/kg Acute dermal toxicity: LD50 rat Dose: 2,501 mg/kg Acute inhalation toxicity: LC50 rat Dose: 101 mg/l Exposure time: 4 h Skin irritation: Classification: Irritating to skin. Result: Mild skin irritation Eye irritation: Classification: Irritating to eyes. Result: Mild eye irritation Carcinogenicity: N11.00422130
Benzene	71-43-2	Acute oral toxicity: LD50 rat Dose: 930 mg/kg Acute inhalation toxicity: LC50 rat Dose: 44 mg/l Exposure time: 4 h Skin irritation: Classification: Irritating to skin. Result: Mild skin irritation Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product. Eye irritation: Classification: Irritating to eyes. Result: Risk of serious damage to eyes.
Pentane	109-66-0	Acute oral toxicity: LD50 rat Dose: 2,001 mg/kg Acute inhalation toxicity: LC50 rat Dose: 364 mg/l Exposure time: 4 h Skin irritation: Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product. Eye irritation: Classification: Irritating to eyes. Result: Mild eye irritation
Cyclohexane	110-82-7	Acute dermal toxicity: LD50 rabbit Dose: 2,001 mg/kg Acute inhalation toxicity: LC50 rat Dose: 14 mg/l Exposure time: 4 h

		Skin irritation: Classification: Irritating to skin. Result: Skin irritation Eye irritation: Classification: Irritating to eyes. Result: Mild eye irritation
Ethylbenzene	100-41-4	Acute oral toxicity: LD50 rat Dose: 3,500 mg/kg Acute dermal toxicity: LD50 rabbit Dose: 15,500 mg/kg Acute inhalation toxicity: LC50 rat Dose: 18 mg/l Exposure time: 4 h Skin irritation: Classification: Irritating to skin. Result: Mild skin irritation Eye irritation: Classification: Irritating to eyes. Result: Risk of serious damage to eyes.
Heptane [and isomers]	142-82-5	Acute oral toxicity: LD50 rat Dose: 15,001 mg/kg Acute inhalation toxicity: LC50 rat Dose: 103 g/m3 Exposure time: 4 h Skin irritation: Classification: Irritating to skin. Result: Skin irritation Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product. Eye irritation: Classification: Irritating to eyes. Result: Mild eye irritation
N-hexane	110-54-3	Acute oral toxicity: LD50 rat Dose: 25,000 mg/kg Acute dermal toxicity: LD50 rabbit Dose: 2,001 mg/kg Acute inhalation toxicity: LC50 rat Dose: 171.6 mg/l Exposure time: 4 h Skin irritation: Classification: Irritating to skin. Result: Skin irritation Eye irritation: Classification: Irritating to eyes. Result: Mild eye irritation Teratogenicity: N11.00418960

Carcinogenicity

NTP	:	Naphthalene (CAS-No.: 91-20-3) Benzene (CAS-No.: 71-43-2)
IARC	:	Gasoline, natural; Low boiling point naphtha (CAS-No.: 8006-61-9) Naphthalene (CAS-No.: 91-20-3) Benzene (CAS-No.: 71-43-2) Ethylbenzene (CAS-No.: 100-41-4)
OSHA	:	Benzene (CAS-No.: 71-43-2)
CA Prop 65	:	WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. Toluene (CAS-No.: 108-88-3)

Benzene (CAS-No.: 71-43-2)

SECTION 12. ECOLOGICAL INFORMATION

Additional ecological information : Keep out of sewers, drainage areas, and waterways. Report spills and releases, as applicable, under Federal and State regulations.

Component:

Toluene	108-88-3	Toxicity to fish: LC50 Species: Carassius auratus (goldfish) Dose: 13 mg/l Exposure time: 96 h Acute and prolonged toxicity for aquatic invertebrates: EC50 Species: Daphnia magna (Water flea) Dose: 11.5 mg/l Exposure time: 48 h Toxicity to algae: IC50 Species: Selenastrum capricornutum (green algae) Dose: 12 mg/l Exposure time: 72 h
Ethanol; Ethyl alcohol	64-17-5	Toxicity to fish: LC50 Species: Leuciscus idus (Golden orfe) Dose: 8,140 mg/l Exposure time: 48 h Acute and prolonged toxicity for aquatic invertebrates: EC50 Species: Daphnia magna (Water flea) Dose: 9,268 - 14,221 mg/l Exposure time: 48 h
Isopentane; 2-Methylbutane	78-78-4	Toxicity to fish: LC50 Species: Oncorhynchus mykiss (rainbow trout) Dose: 3.1 mg/l Exposure time: 96 h Acute and prolonged toxicity for aquatic invertebrates: EC50 Species: Daphnia magna (Water flea) Dose: 2.3 mg/l Exposure time: 96 h
Naphthalene	91-20-3	Toxicity to algae: EC50 Species: Dose: 33 mg/l Exposure time: 24 h
Pentane	109-66-0	Acute and prolonged toxicity for aquatic invertebrates: EC50 Species: Daphnia magna (Water flea) Dose: 9.74 mg/l Exposure time: 48 h
Cyclohexane	110-82-7	Acute and prolonged toxicity for aquatic invertebrates: EC50 Species: Daphnia magna (Water flea) Dose: 3.78 mg/l Exposure time: 48 h

Heptane [and isomers]	142-82-5	Toxicity to fish: LC50 Species: Carassius auratus (goldfish) Dose: 4 mg/l Exposure time: 24 h Acute and prolonged toxicity for aquatic invertebrates: EC50 Species: Daphnia magna (Water flea) Dose: 1.5 mg/l Exposure time: 48 h
N-hexane	110-54-3	Toxicity to fish: LC50 Species: Pimephales promelas (fathead minnow) Dose: 2.5 mg/l Exposure time: 96 h Acute and prolonged toxicity for aquatic invertebrates: EC50 Species: Daphnia magna (Water flea) Dose: 2.1 mg/l Exposure time: 48 h

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal : Dispose of container and unused contents in accordance with federal, state and local requirements.

SECTION 14. TRANSPORT INFORMATION

CFR

Proper shipping name	: Petrol
UN-No.	: 1203
Class	: 3
Packing group	: II

TDG

Proper shipping name	: Gasoline
UN-No.	: UN1203
Class	: 3
Packing group	: II

IATA Cargo Transport

UN UN-No.	: UN1203
Description of the goods	: Gasoline
Class	: 3
Packaging group	: II
ICAO-Labels	: 3
Packing instruction (cargo aircraft)	: 364
Packing instruction (cargo aircraft)	: Y341

IATA Passenger Transport

UN UN-No.	: UN1203
Description of the goods	: Gasoline
Class	: 3

Packaging group	:	II
ICAO-Labels	:	3
Packing instruction (passenger aircraft)	:	353
Packing instruction (passenger aircraft)	:	Y341

IMDG-Code

UN-No.	:	UN 1203
Description of the goods	:	Gasoline
Class	:	3
Packaging group	:	II
IMDG-Labels	:	3
EmS Number	:	F-E S-E
Marine pollutant	:	No

SECTION 15. REGULATORY INFORMATION

OSHA Hazards : Flammable liquid
Highly toxic by ingestion
Moderate skin irritant
Severe eye irritant
Carcinogen

TSCA Status : On TSCA Inventory

DSL Status : . All components are on the Canadian DSL list.

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard
Chronic Health Hazard

CERCLA SECTION 103 and SARA SECTION 304 (RELEASE TO THE ENVIROMENT)
The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts crude oil. Fractions of crude oil, and products (both finished and intermediate) from the crude oil refining process and any indigenous components of such from the CERCLA Section 103 reporting requirements. However, other federal reporting requirements, including SARA Section 304, as well as the Clean Water Act may still apply.

California Prop. 65 : WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Toluene	108-88-3
Benzene	71-43-2

SECTION 16. OTHER INFORMATION

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Revision Date : 08/09/2012

6, 8, 10, 12, 14, 16, 64, 68, 91, 112, 306, 1092, 1106, 1500, 1570, 1571, 1651, 1652, 1654, 1700, 1701, 1702, 1710, 1711, 1714, 1726, 1729, 1730, 1732, 1733, 1826, 1848, 1880, 1950

Safety Data Sheet
All Purpose Grease APG#2

SDS Revision Date: **12/19/2014**

1. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product Identity	All Purpose Grease APG#2
Alternate Names	All Purpose Grease APG#2

1.2. Relevant identified uses of the substance or mixture and uses advised against

Intended use	See Technical Data Sheet.
Application Method	See Technical Data Sheet.

1.3. Details of the supplier of the safety data sheet

Company Name	Donnelly Bros, Inc. 100 Garlington Street Laurens, SC 29360. USA
Emergency	
CHEMTREC (USA)	(800) 424-9300
24 hour Emergency Telephone No.	Medical Emergency: (864) 984-4400
Customer Service: Donnelly Bros, Inc.	864) 984-4400

2. Hazard identification of the product

2.1. Classification of the substance or mixture

Acute Tox. 5;H303	May be harmful if swallowed. (Not adopted by US OSHA)
Acute Tox. 5;H313	May be harmful in contact with skin. (Not adopted by US OSHA)

2.2. Label elements

Using the Toxicity Data listed in section 11 and 12 the product is labeled as follows.

Warning

H303 May be harmful if swallowed.
H313 May be harmful in contact with skin.

[Prevention]:
No GHS prevention statements
[Response]:
P312 Call a POISON CENTER or doctor / physician if you feel unwell.
[Storage]:
No GHS storage statements

[Disposal]:
No GHS disposal statements

3. Composition/information on ingredients

This product contains the following substances that present a hazard within the meaning of the relevant State and Federal Hazardous Substances regulations.

Ingredient/Chemical Designations	Weight %	GHS Classification	Notes
Mineral oil **CAS Number: 0008042-47-5**	**25 - 50**		**[1]**
Amorphous silica, hydrophobic **CAS Number: 0067762-90-7**	**25 - 50**		**[1]**
Ptfe **CAS Number: 0009002-84-0**	**10 - 25**		**[1]**

[1] Substance classified with a health or environmental hazard.
[2] Substance with a workplace exposure limit.
[3] PBT-substance or vPvB-substance.
*The full texts of the phrases are shown in Section 16.

4. First aid measures

4.1. Description of first aid measures

General In all cases of doubt, or when symptoms persist, seek medical attention.
Never give anything by mouth to an unconscious person.

Inhalation Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention. Keep person warm, quiet and get medical attention.

Eyes Immediately flush eyes with water for 15 minutes while holding eye lids apart. Get immediate medical attention.

Skin Remove contaminated clothing. Wash skin with soap and water. If irritation persists, get medical attention. Wash any contaminated clothing before reuse.

Ingestion Do not induce vomiting. Keep person warm, quiet and get medical attention. If possible do not leave person unattended. Aspiration of material into the lungs due to vomiting can cause chemical pneumonitis which can be fatal. Call a physician.

4.2. Most important symptoms and effects, both acute and delayed

Overview Effects of Acute Overexposure:
Eyes: Eye irritation. Signs/symptoms may include: stinging, tearing, redness and swelling. Impact hazard from pressure.
Skin: Mild skin irritation. Repeated or prolonged contact can dry the skin. Signs/symptoms may include: redness, burning, drying, cracking and skin burns.
Breathing: Exposure to vapors or mist is possible. Breathing small amounts incidental to normal handling and use is not likely to cause adverse health effects. Large amounts may be harmful.
Signs/symptoms are associated with exposure above the recommended exposure limits. These signs and symptoms may include: central nervous system effects such as drowsiness, weakness, fatigue, nausea, headache, unconsciousness, coma and death.

Exposure to thermal decomposition products generated by temperatures above 1000° F can cause polymer fume fever with symptoms of fever chills, cough and general malaise. This is generally a temporary condition.
Swallowing: Due to the nature of this material it is difficult to swallow. Small amounts incidental to normal handling and use are unlikely to cause harmful effects. Large amounts may be harmful. The petroleum based component in this products is considered to be an aspiration hazard. During swallowing or vomiting this material can enter the lungs and cause inflammation and/or damage. The liquid may also be absorbed through the lungs and result in injury to other body systems.
Primary Route(s) of Entry: Eye contact, skin contact, skin absorption, and inhalation.
Medical Conditions Aggravated by Exposure: Skin contact may aggravate existing dermatitis or other significant skin conditions. Inhalation may aggravate known respiratory conditions.
Reproductive/Developmental Toxins: None known.
See section 2 for further details.

Skin May be harmful in contact with skin. (Not adopted by US OSHA)

Ingestion May be harmful if swallowed. (Not adopted by US OSHA)

5. Fire-fighting measures

5.1. Extinguishing media

Carbon dioxide, dry chemical water spray (fog) or regular foam.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition: Carbon monoxide, carbon dioxide, various hydrocarbons and trace amounts of COF2 and CF4 at temperatures above 1200° F.

5.3. Advice for fire-fighters

Vapors are heavier than air. They can travel along the ground on be moved by ventilation ant hen ignited by heat, pilot lights, open flames and other ignition sources at locations distant from the material handling point when the material is released from the container. Never use welding or cutting torch on the product containers (even empty) because product (even minute amounts of residue) can ignite explosively. Container is under pressure and may rupture or explode due to pressure build up when exposed to extreme heat.

Containers exposed to heat may burst

ERG Guide No. ----

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Put on appropriate personal protective equipment (see section 8).

6.2. Environmental precautions

Do not allow spills to enter drains or waterways.

Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

6.3. Methods and material for containment and cleaning up

Spill Response: Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. Ventilate area. Absorb residue on vermiculite, floor absorbent or other absorbent material. Eliminate all ignition sources (flames including pilot lights, forklift engines, electrical sparks and machine engines). Persons not wearing personal protective equipment should be excluded from the spill area until clean-up has been completed. Only trained personnel in spill clean-up under 29 CFR 1910.120 should be involved with spill clean-up procedures beyond the foreseeable emergency stage. Prevent material from entering drains, sewers, streams or other bodies of water. Prevent from spreading. If run off occurs, notify appropriate authorities as required. Pump or vacuum spilled materials to recovery containers. Transfer contaminated soil and other materials to containers for disposal.

7. Handling and storage

7.1. Precautions for safe handling

See section 2 for further details. - [Prevention]:

7.2. Conditions for safe storage, including any incompatibilities

Storage in a cool, dry, well ventilated area. Keep out of the reach of children.

Incompatible materials: Avoid contact with strong oxidizers, sodium -potassium allow heat, and open flame. Avoid conditions such as temperature above 1000 F

See section 2 for further details. - [Storage]:

7.3. Specific end use(s)

No data available.

8. Exposure controls and personal protection

8.1. Control parameters

Exposure

CAS No.	Ingredient	Source	Value
0008042-47-5	Mineral oil	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit
0009002-84-0	Ptfe	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit
0067762-90-7	Amorphous silica, hydrophobic	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit

Contains mineral oil. The exposure limits for oil mist are 5 mg/m3 OSHA PEL and 10 mg/m3 ACGIH.

Carcinogen Data

CAS No.	Ingredient	Source	Value
0008042-47-5	Mineral oil	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0009002-84-0	Ptfe	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: Yes; Group 4: No;
0067762-90-7	Amorphous silica, hydrophobic	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;

8.2. Exposure controls

Respiratory Usually not required. Canister or self-contained if TLV is exceeded. If workplace exposure limits of any component are exceeded use a NIOSH/MSHA approved air supplied respirator in the absence of proper environmental controls. OSHA regulations permit other respiratory use under the specific conditions as stated in 29 CFR 1910.134. Engineering and administrative controls should be implemented to reduce exposure.

Eyes Chemical splash goggles in compliance with OSHA regulations are advised. Contact your safety equipment supplier.

Skin To prevent repeated or prolonged skin contact wear impervious clothing and boots. Suitable to protect bare skin. Wear chemical resistant gloves. Contact your safety equipment supplier.

Engineering Controls Ventilation: Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below PEL/TLV.

Other Work Practices Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

See section 2 for further details. - [Prevention]:

9. Physical and chemical properties

Appearance	White Paste
Odor	Slight
Odor threshold	Not Measured
pH	Not Measured
Melting point / freezing point	Unknown
Initial boiling point and boiling range	650 F (component) @760 mmHg
Flash Point	445 F TCC (component)
Evaporation rate (Ether = 1)	Slower than ether
Flammability (solid, gas)	Not Applicable
Upper/lower flammability or explosive limits	**Lower Explosive Limit:** N/A **Upper Explosive Limit:** N/A

Vapor pressure (Pa)	>1 mmHg (component) @ 70 F
Vapor Density	Not available
Specific Gravity	0.8275 (component) @ 77 F
Solubility in Water	Unknown
Partition coefficient n-octanol/water (Log Kow)	Not Measured
Auto-ignition temperature	Not Determined
Decomposition temperature	Not Measured
Viscosity (cSt)	Not Measured
% Volatile	approximately 84%

9.2. Other information

No other relevant information.

10. Stability and reactivity

10.1. Reactivity

Hazardous Polymerization will not occur.

10.2. Chemical stability

Stable under normal circumstances.

10.3. Possibility of hazardous reactions

No data available.

10.4. Conditions to avoid

No data available.

10.5. Incompatible materials

Avoid contact with strong oxidizers, sodium -potassium allow heat, and open flame. Avoid conditions such as temperature above 1000 F

10.6. Hazardous decomposition products

Carbon monoxide, carbon dioxide, various hydrocarbons and trace amounts of COF2 and CF4 at temperatures above 1200° F.

11. Toxicological information

Acute toxicity

Ingredient	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LD50, mg/L/4hr	Inhalation Dust/Mist LD50, mg/L/4hr	Inhalation Gas LD50, ppm
Mineral oil - (8042-47-5)	5,000.00, Rat - Category: 5	No data available	No data available	No data available	No data available
Amorphous silica, hydrophobic - (67762-90-7)	1,000.00, Rat - Category: 4	2,000.00, Rat - Category: 4	No data available	No data available	No data available
Ptfe - (9002-84-0)	No data available	No data available	No data available	No data available	No data available

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

Classification	Category	Hazard Description
Acute toxicity (oral)	5	May be harmful if swallowed. (Not adopted by US OSHA)
Acute toxicity (dermal)	5	May be harmful in contact with skin. (Not adopted by US OSHA)
Acute toxicity (inhalation)	---	Not Applicable
Skin corrosion/irritation	---	Not Applicable
Serious eye damage/irritation	---	Not Applicable
Respiratory sensitization	---	Not Applicable
Skin sensitization	---	Not Applicable
Germ cell mutagenicity	---	Not Applicable
Carcinogenicity	---	Not Applicable
Reproductive toxicity	---	Not Applicable
STOT-single exposure	---	Not Applicable
STOT-repeated exposure	---	Not Applicable
Aspiration hazard	---	Not Applicable

12. Ecological information

12.1. Toxicity

No additional information provided for this product. See Section 3 for chemical specific data.

Aquatic Ecotoxicity

Ingredient	96 hr LC50 fish, mg/l	48 hr EC50 crustacea, mg/l	ErC50 algae, mg/l
Mineral oil - (8042-47-5)	Not Available	Not Available	Not Available
Amorphous silica, hydrophobic - (67762-90-7)	Not Available	Not Available	Not Available
Ptfe - (9002-84-0)	Not Available	Not Available	Not Available

12.2. Persistence and degradability

There is no data available on the preparation itself.

12.3. Bioaccumulative potential

Not Measured

12.4. Mobility in soil

No data available.

12.5. Results of PBT and vPvB assessment

This product contains no PBT/vPvB chemicals.

12.6. Other adverse effects

No data available.

13. Disposal considerations

13.1. Waste treatment methods

Observe all federal, state and local regulations when disposing of this substance.

14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
14.1. UN number	Not Applicable	Not Regulated	Not Regulated
14.2. UN proper shipping name	Not Regulated	Not Regulated	Not Regulated
14.3. Transport hazard class(es)	**DOT Hazard Class:** Not Applicable **DOT Label:** ---	**IMDG:** Not Applicable **Sub Class:** Not Applicable	**Air Class:** Not Applicable
14.4. Packing group	Not Applicable	Not Applicable	Not Applicable

14.5. Environmental hazards

IMDG Marine Pollutant: No

14.6. Special precautions for user

No further information

15. Regulatory information

Regulatory Overview The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.

Toxic Substance Control Act (TSCA) All components of this material are either listed or exempt from listing on the TSCA Inventory.

WHMIS Classification Not Regulated

US EPA Tier II Hazards

Fire: No
Sudden Release of Pressure: No
Reactive: No
Immediate (Acute): Yes
Delayed (Chronic): No

EPCRA 311/312 Chemicals and RQs:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

EPCRA 302 Extremely Hazardous :
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

EPCRA 313 Toxic Chemicals:
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Carcinogens (>0.0%):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Developmental Toxins (>0.0%):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Female Repro Toxins (>0.0%):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Male Repro Toxins (>0.0%):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

N.J. RTK Substances (>1%) :
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Penn RTK Substances (>1%):

Ptfe

16. Other information

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

The full text of the phrases appearing in section 3 is:

This is the first version in the GHS SDS format. Listings of changes from previous versions in other formats are not applicable.

Disclaimer: The information accumulated and reflected in this Material Safety Data Sheet is believed to be accurate but is not warranted to be, whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.

End of Document

Safety Data Sheet

Issue Date: 22-Oct-2012 **Revision Date:** 28-May-2015 **Version** 1

1. IDENTIFICATION

Product Identifier

Product Name **NAPA Quality AW Hydraulic Oil**

Other means of identification AW-22, AW-32, AW-46, AW-68

SDS # NAP-009

Recommended use of the chemical and restrictions on use

Recommended Use Hydraulic oil

Details of the supplier of the safety data sheet

Supplier Address

Warren Oil Company
915 E. Jefferson Ave.
West Memphis, AR 72301

Emergency Telephone Number

Company Phone Number 1-800-428-9284

Emergency Telephone (24 hr) CHEMTREC 1-800-424-9300 (North America) 1-703-527-3887 (International)

2. HAZARDS IDENTIFICATION

Appearance Light amber, liquid **Physical State** Liquid **Odor** Typical petroleum

Classification

This chemical does not meet the hazardous criteria set forth by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). However, this Safety Data Sheet (SDS) contains valuable information critical to the safe handling and proper use of this product. This SDS should be retained and available for employees and other users of this product.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight-%
Petroleum distillates, hydrotreated heavy paraffinic	64742-54-7	90-100
Severely Hydrotreated Heavy Naphthenic Petroleum Oil	64742-52-5	90-100

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST-AID MEASURES

First Aid Measures

Eye Contact Flush eyes with large amounts of water, for at least 15 minutes, until irritation subsides. If irritation persists get medical attention.

Skin Contact No treatment is necessary under ordinary circumstances. Remove contaminated clothing and shoes. Wash contaminated area thoroughly with soap and water. If redness or irritation occurs and persists, seek medical attention. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should seek immediate medical attention.

Inhalation Remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Get medical attention.

Ingestion If swallowed, do not induce vomiting. If victim exhibits signs of lung aspiration such as coughing or choking, seek immediate medical attention.

Most important symptoms and effects

Symptoms Expected to be a minor eye irritant. Repeated or prolonged skin contact may cause dermatitis.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Use dry chemical, foam, carbon dioxide or water fog.

Unsuitable Extinguishing Media While carbon dioxide and inert will extinguish the fire, they can also displace oxygen. Use caution when applying carbon dioxide or inert gas in confined spaces.

Specific Hazards Arising from the Chemical
This material can burn but will not readily ignite. This material will release vapors when heated above the flashpoint temperature that can ignite when exposed to a source of ignition. In enclosed spaces, heated vapor can ignite with explosive force. Mists or sprays may burn at temperatures below the flashpoint. Dense smoke may be generated while burning.

Hazardous Combustion Products Carbon monoxide. Carbon dioxide (CO_2). Aldehydes. Ketones. Combustion products of sulfur and nitrogen.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Avoid breathing smoke and vapor. Water may be used to cool containers exposed to heat or flame.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Use personal protective equipment as required.

Methods and material for containment and cleaning up

Methods for Containment Remove sources of ignition. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.

Methods for Clean-Up Take up small spills with absorbent pads. Large spills may be taken up with pump or vacuum.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Storage Conditions Store at ambient conditions. Store at atmospheric pressure. Keep container tightly closed. Store in a cool, well-ventilated place. Keep away from heat, sparks, and flame. Empty containers retain product residues.

Incompatible Materials This product may react with strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Severely Hydrotreated Heavy Naphthenic Petroleum Oil 64742-52-5	TWA: 5 mg/m^3 (oil mist) STEL: 10 mg/m^3 (oil mist)	TWA: 5mg/m^3 (oil mist) STEL: none estab.	TWA: none estab. STEL: none estab.
Severely Hydrotreated Heavy Naphthenic Petroleum Oil 64742-52-5	TWA: 5 mg/m^3 (oil mist) STEL: 10 mg/m^3 (oil mist)	TWA: 5mg/m^3 (oil mist) STEL: none estab.	TWA: none estab. STEL: none estab.

Appropriate engineering controls

Engineering Controls Use general ventilation and use local exhaust, where possible, in confined or enclosed spaces. If product is heated above 70 C (155 F) in the presence of water, hydrogen sulfide vapors may be released. Ventilation should be sufficient to keep hydrogen sulfide levels below recommended exposure limits. Eye wash fountains are recommended.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Wear safety glasses. Wear chemical goggles or face shield if splash or mist occurs.

Skin and Body Protection Use impervious gloves for prolonged contact. Wear oil-impervious garments if contact is unavoidable.

Respiratory Protection If mist is generated (heating, spraying) and engineering controls are not sufficient, wear approved organic vapor respirator suitable for oil mist.

General Hygiene Considerations Use good hygiene when handling petroleum product. Launder contaminated clothing before reuse. Excessive misting may cause slippery floors - wear appropriate footwear.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Viscous liquid		
Appearance	Light amber, viscous liquid	**Odor**	Typical petroleum
Color	Light amber	**Odor Threshold**	Not determined

Property	Values	Remarks • Method
pH	Not available	
Melting Point/Freezing Point	Not available	
Boiling Point/Boiling Range	Not available	
Flash Point	202 °C / 396 °F	ASTM D-92
Evaporation Rate	Not available	
Flammability (Solid, Gas)	Liquid-Not applicable	
Upper Flammability Limits	Not determined	
Lower Flammability Limit	Not determined	
Vapor Pressure	Not available	
Vapor Density	>1	(Air=1)
Specific Gravity	0.87	
Water Solubility	insoluble	
Solubility in other solvents	Not determined	
Partition Coefficient	Not available	

Property	Values	Remarks • Method
Auto-ignition Temperature	No data available	
Decomposition Temperature	Not determined	
Kinematic Viscosity	Not determined	
Dynamic Viscosity	Not determined	
Explosive Properties	Not determined	
Oxidizing Properties	Not determined	

10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions.

Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization Under normal conditions of storage and use, hazardous polymerization will not occur.

Conditions to Avoid
Avoid formation of mists. Extreme heat, open flames or sparks. Keep separated from incompatible substances.

Incompatible Materials
This product may react with strong oxidizing agents.

Hazardous Decomposition Products
Decomposition of this product may yield oxides of boron, calcium, magnesium, nitrogen, phosphorus, sulfur including hydrogen sulfide and zinc as well as carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact Avoid contact with eyes.

Skin Contact Avoid contact with skin.

Inhalation Do not inhale.

Ingestion Do not ingest.

Component Information

Information on physical, chemical and toxicological effects

Symptoms Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

Numerical measures of toxicity
Not determined

12. ECOLOGICAL INFORMATION

Ecotoxicity
The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Component Information

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Petroleum distillates, hydrotreated heavy paraffinic 64742-54-7		5000: 96 h Oncorhynchus mykiss mg/L LC50		1000: 48 h Daphnia magna mg/L EC50
Severely Hydrotreated Heavy Naphthenic Petroleum Oil 64742-52-5		5000: 96 h Oncorhynchus mykiss mg/L LC50		1000: 48 h Daphnia magna mg/L EC50

Persistence/Degradability
Not determined.

Bioaccumulation
Not determined.

Mobility
Not determined

Other Adverse Effects
Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging Disposal should be in accordance with applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION

Note Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

DOT Not regulated

IATA Not regulated

IMDG Not regulated

15. REGULATORY INFORMATION

International Inventories

Chemical Name	TSCA	DSL	NDSL	EINECS	ELINCS	ENCS	IECSC	KECL	PICCS	AICS
Petroleum distillates, hydrotreated heavy paraffinic	Present	X		Present		Present	X	Present	X	X
Chemical Name	**TSCA**	**DSL**	**NDSL**	**EINECS**	**ELINCS**	**ENCS**	**IECSC**	**KECL**	**PICCS**	**AICS**
Severely Hydrotreated Heavy Naphthenic Petroleum Oil	Present	X		Present		Present	X	Present	X	X

Legend:

TSCA *- United States Toxic Substances Control Act Section 8(b) Inventory*

DSL/NDSL *- Canadian Domestic Substances List/Non-Domestic Substances List*

EINECS/ELINCS *- European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances*

ENCS *- Japan Existing and New Chemical Substances*

IECSC *- China Inventory of Existing Chemical Substances*

KECL *- Korean Existing and Evaluated Chemical Substances*

PICCS *- Philippines Inventory of Chemicals and Chemical Substances*

AICS *- Australian Inventory of Chemical Substances*

US Federal Regulations

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations
This product does not contain any substances regulated under applicable state right-to-know regulations

16. OTHER INFORMATION

NFPA	**Health Hazards**	**Flammability**	**Instability**	**Special Hazards**
	0	1	0	Not determined
HMIS	**Health Hazards**	**Flammability**	**Physical Hazards**	**Personal Protection**
	1	1	0	Not determined

Issue Date: 22-Oct-2012
Revision Date: 28-May-2015
Revision Note: New format

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

SAFETY DATA SHEET

LONG DURATION FOAM AC-645

Section 1. Identification

GHS product identifier : LONG DURATION FOAM AC-645

Chemical name : Proprietary Surfactant.

Other means of identification : Aqueous anionic surfactant mixture.

Product type : Liquid.

Relevant identified uses of the substance or mixture and uses advised against

Product use : Aqueous Surfactant. Spray application for VOC and Odor control.

Area of application : Industrial applications.

Supplier/Manufacturer : Rusmar, Inc.
216 Garfield Avenue
West Chester, PA 19380
Phone: 610-436-4314
Fax: 610-436-8436

e-mail address of person responsible for this SDS : info@rusmarinc.com
Website: www.rusmarinc.com

Emergency telephone number (with hours of operation) : 888 488 8044 or 212 682 1200
CHEMTREC 800 424 9300

Section 2. Hazards identification

OSHA/HCS status : While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture : Not classified.

GHS label elements

Signal word : No signal word.

Hazard statements : No known significant effects or critical hazards.

Precautionary statements

Prevention : Not applicable.

Response : Not applicable.

Storage : Not applicable.

Disposal : Not applicable.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : Proprietary Surfactant.

Other means of identification : Aqueous anionic surfactant mixture.

CAS number/other identifiers

CAS number : Not available.

Product code : Not available.

Ingredient name	Other names	%	CAS number
Proprietary Surfactant.	-	100	-

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health and hence require reporting in this section.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Ingestion : Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Section 4. First aid measures

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
sulfur oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

Large spill : Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Section 8. Exposure controls/personal protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear viscous liquid.]

Color : Translucent. White.

Odor : Odorless.

Odor threshold : Not available.

pH : Not available.

Melting point : Not available.

Boiling point : 99°C (210.2°F)

Flash point : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Not applicable.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : 3.3 kPa (25 mm Hg) [room temperature]

Vapor density : Not available.

Relative density : 1.01 to 1.06

Solubility : Easily soluble in the following materials: cold water and hot water.

Solubility in water : Easily soluble.

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

SADT : Not available.

Viscosity : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Under normal conditions of storage and use, hazardous polymerization will not occur.

Conditions to avoid : Keep away from heat.

Incompatible materials : No specific data.

Hazardous decomposition products : Low levels of sulfur oxides on exposure to high temperatures (concentrate).

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Not available.

Conclusion/Summary : Not expected.

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Section 11. Toxicological information

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Section 12. Ecological information

Bioaccumulative potential

Not available.

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-
Transport hazard class(es)	-	-	-
Packing group	-	-	-
Environmental hazards	No.	No.	No.
Additional information	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **United States inventory (TSCA 8b)**: Not determined.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Not applicable.

Composition/information on ingredients

No products were found.

SARA 313

Not applicable.

State regulations

Massachusetts : This material is not listed.

New York : This material is not listed.

New Jersey : This material is not listed.

Pennsylvania : This material is not listed.

California Prop. 65

None of the components are listed.

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Inform Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health	0
Flammability	0
Physical hazards	0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on SDSs under 29 CFR 1910. 1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)

Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
Not classified.	

History

Date of issue/Date of revision	:	05/28/2015
Date of previous issue	:	No previous validation
Version	:	1
Prepared by	:	IHS
Key to abbreviations	:	ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) UN = United Nations

Section 16. Other information

References : HCS (U.S.A.)- Hazard Communication Standard
International transport regulations

Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Section 1: IDENTIFICATION

Product Name: Simple Green® All-Purpose Cleaner
Additional Names:

Manufacturer's Part Number: **Please refer to Section 16*

Recommended Use: Cleaner & Degreaser for water tolerant surfaces.
Restrictions on Use: Do not use on non-rinsable surfaces.

Company: Sunshine Makers, Inc.
15922 Pacific Coast Highway
Huntington Beach, CA 92649 USA
Telephone: 800-228-0709 ● 562-795-6000 *Mon – Fri, 8am – 5pm PST*
Fax: 562-592-3830
Email: info@simplegreen.com
Emergency Phone: Chem-Tel 24-Hour Emergency Service: 800-255-3924

Section 2: HAZARDS IDENTIFICATION

This product is not classified as hazardous under 2012 OSHA Hazard Communication Standards (29 CFR 1910.1200).

OSHA HCS 2012
Label Elements
Signal Word: None **Hazard Symbol(s)/Pictogram(s):** None required

Hazard Statements: None
Precautionary Statements: None
Hazards Not Otherwise Classified (HNOC): None
Other Information: None Known

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS Number	Percent Range
Water	7732-18-5	> 84.8%*
Ethoxylated Alcohol	68439-46-3	< 5%*
Sodium Citrate	68-04-2	< 5%*
Tetrasodium *N,N*-bis(carboxymethyl)-L-glutamate	51981-21-6	< 1%*
Sodium Carbonate	497-19-8	< 1%*
Citric Acid	77-92-9	< 1%*
Isothiazolinone mixture	55965-84-9	< 0.2%*
Fragrance	Proprietary Mixture	< 1%*
Colorant	Proprietary Mixture	< 1%*

**specific percentages of composition are being withheld as a trade secret*

Section 4: FIRST-AID MEASURES

Inhalation: Not expected to cause respiratory irritation. If adverse effect occurs, move to fresh air.
Skin Contact: Not expected to cause skin irritation. If adverse effect occurs, rinse skin with water.
Eye Contact: Not expected to cause eye irritation. If adverse effect occurs, flush eyes with water.
Ingestion: May cause upset stomach. Drink plenty of water to dilute. See section 11.

Most Important Symptoms/Effects, Acute and Delayed: None known.

Indication of Immediate Medical Attention and Special Treatment Needed, if necessary: Treat symptomatically

Section 5: FIRE-FIGHTING MEASURES

Suitable & Unsuitable Extinguishing Media: Use Dry chemical, CO2, water spray or "alcohol" foam. Avoid high volume jet water.
Specific Hazards Arising from Chemical: In event of fire, fire created carbon oxides may be formed.
Special Protective Actions for Fire-Fighters: Wear positive pressure self-contained breathing apparatus; Wear full protective clothing.

This product is non-flammable. See Section 9 for Physical Properties.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: *For non-emergency and emergency personnel:* See section 8 – personal protection. Avoid eye contact. Safety goggles suggested.

Environmental Precautions: Do not allow into open waterways and ground water systems.

Methods and Materials for Containment and Clean Up: Dike or soak up with inert absorbent material. See section 13 for disposal considerations.

Section 7: HANDLING AND STORAGE

Precautions for Safe Handling: Ensure adequate ventilation. Keep out of reach of children. Keep away from heat, sparks, open flame and direct sunlight. Do not pierce any part of the container. Do not mix or contaminate with any other chemical. Do not eat, drink or smoke while using this product.

Conditions for Safe Storage including Incompatibilities: Keep container tightly closed. Keep in cool dry area. Avoid prolonged exposure to sunlight. Do not store at temperatures above 109°F (42.7°C). If separation occurs, mix the product for reconstitution.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limit Values: No components listed with TWA or STEL values under OSHA or ACGIH.

Appropriate Engineering Controls: Showers, eyewash stations, ventilation systems

Individual Protection Measures / Personal Protective Equipment (PPE)
Eye Contact: Use protective glasses or safety goggles if splashing or spray-back is likely.
Respiratory: Use in well ventilated areas or local exhaust ventilations when cleaning small spaces.
Skin Contact: Use protective gloves (any material) when used for prolonged periods or dermally sensitive.
General Hygiene Considerations: Wash thoroughly after handling and before eating or drinking.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Green Liquid
Odor: Added sassafras odor
Odor Threshold: Not determined
pH ASTM D-1293**:** 8.5 – 9.5
Freezing Point ASTM D-1177**:** 0-3.33°C (32-38°F)
Boiling Point & Range ASTM D-1120**:** 101°C (213.8°F)
Flash Point ASTM D-93**:** > 212°F
Evaporation Rate ASTM D-1901**:** ½ Butyl Acetate @ 25°C
Flammability (solid, gas): Not applicable
Upper/Lower Flammability or Explosive Limits: Not applicable
Vapor Pressure ASTM D-323**:** 0.60 PSI @77°F, 2.05 PSI @100°F
Vapor Density: Not determined

Partition Coefficient: n-octanol/water: Not determined
Autoignition Temperature: Non-flammable
Decomposition Temperature: 109°F
Viscosity: Like water
Specific Gravity ASTM D-891**:** 1.01 – 1.03
VOCs: ***Water & fragrance exemption in calculation*

SCAQMD 304-91 / EPA 24:	0 g/L	0 lb/gal	0%
CARB Method 310**:	2.5 g/L	0.021 lb/gal	0.25%
SCAQMD Method 313:	Not tested		

VOC Composite Partial Pressure: Not determined
Relative Density ASTM D-4017**:** 8.34 – 8.42 lb/gal
Solubility: 100% in water

Section 10: STABILITY AND REACTIVITY

Reactivity: Non-reactive.
Chemical Stability: Stable under normal conditions 70°F (21°C) and 14.7 psig (760 mmHg).
Possibility of Hazardous Reactions: None known.
Conditions to Avoid: Excessive heat or cold.
Incompatible Materials: Do not mix with oxidizers, acids, bathroom cleaners, or disinfecting agents.
Hazardous Decomposition Products: Normal products of combustion - CO, CO2.

Section 11: TOXICOLOGICAL INFORMATION

Likely Routes of Exposure:
Inhalation - Overexposure may cause headache.
Skin Contact - Not expected to cause irritation, repeated contact may cause dry skin.
Eye Contact - Not expected to cause irritation.
Ingestion - May cause upset stomach.

Symptoms related to the physical, chemical and toxicological characteristics: no symptoms expected under typical use conditions.
Delayed and immediate effects and or chronic effects from short term exposure: no symptoms expected under typical use conditions.
Delayed and immediate effects and or chronic effects from long term exposure: headache, dry skin, or skin irritation may occur.
Interactive effects: Not known.

Numerical Measures of Toxicity

Acute Toxicity:
Oral LD_{50} (rat) > 5 g/kg body weight
Dermal LD_{50} (rabbit) > 5 g/kg body weight
Calculated via OSHA HCS 2012 / Globally Harmonized System of Classification and Labelling of Chemicals

Skin Corrosion/Irritation: Non-irritant per Dermal Irritection® assay modeling. No animal testing performed.
Eye Damage/Irritation: Minimal irritant per Ocular Irritection® assay modeling. No animal testing performed.
Germ Cell Mutagenicity: Mixture does not classify under this category.
Carcinogenicity: Mixture does not classify under this category.
Reproductive Toxicity: Mixture does not classify under this category.
STOT-Single Exposure: Mixture does not classify under this category.
STOT-Repeated Exposure: Mixture does not classify under this category.
Aspiration Hazard: Mixture does not classify under this category.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity: Volume of ingredients used does not trigger toxicity classifications under the Globally Harmonized System of Classification and Labelling of Chemicals.
Aquatic: Aquatic Toxicity - Low, based on OECD 201, 202, 203 + Microtox: EC_{50} & IC_{50} ≥100 mg/L. Volume of ingredients used does not trigger toxicity classifications under the Globally Harmonized System of Classification and Labelling of Chemicals.
Terrestrial: Not tested on finished formulation.

Persistence and Degradability: Readily Biodegradable per OCED 301D, Closed Bottle Test
Bioaccumulative Potential: No data available.
Mobility in Soil: No data available.
Other Adverse Effects: No data available.

Section 13: DISPOSAL CONSIDERATIONS

Unused or Used Liquid: May be considered hazardous in your area depending on usage and tonnage of disposal – check with local, regional, and or national regulations for appropriate methods of disposal.

Empty Containers: May be offered for recycling.

Never dispose of used degreasing rinsates into lakes, streams, and open bodies of water or storm drains.

Section 14: TRANSPORT INFORMATION

U.N. Number:	Not applicable	**U.N. Proper Shipping Name:**	Cleaning Compound, Liquid NOI
Transport Hazard Class(es):	Not applicable	**NMFC Number:**	48580-3
Packing Group:	Not applicable	**Class:**	55
Environmental Hazards:	Marine Pollutant - NO		

Transport in Bulk (according to Annex II of MARPOL 73/78 and IBC Code): Unknown.
Special precautions which user needs to be aware of/comply with, in connection with transport or conveyance either within or outside their premises: None known.

U.S. (DOT) / Canadian TDG:	Not Regulated for shipping.	**ICAO/ IATA:**	Not classified as Hazardous
IMO / IDMG:	Not classified as Hazardous	**ADR/RID:**	Not classified as Hazardous

Section 15: REGULATORY INFORMATION

All components are listed on: TSCA and DSL Inventory.

SARA Title III: Sections 311/312 Hazard Categories – Not applicable.
Sections 313 Superfunds Amendments and Reauthorizations Act of 1986 – Not applicable.
Sections 302 – Not applicable.

Clean Air Act (CAA): Not applicable
Clean Water Act (CWA): Not applicable

State Right To Know Lists: No ingredients listed
California Proposition 65: No ingredients listed
Texas ESL:

Ethoxylated Alcohol	68439-46-3	60 µg/m³ long term	600 µg/m³ short term
Sodium Citrate	68-04-2	5 µg/m³ long term	50 µg/m³ short term
Sodium Carbonate	497-19-8	5 µg/m³ long term	50 µg/m³ short term
Citric Acid	77-92-9	10 µg/m³ long term	100 µg/m³ short term

Section 16: OTHER INFORMATION

Size	UPC	Size	UPC
2 oz. Pump	043318130366	1 Gallon w/ Dilution Bottle	043318000669
2 oz. Pump	043318131035	1 Gallon	043318000799
4 oz. Pump	043318130014	1 Gallon w/ Dilution Bottle	043318001383
16 oz. Trigger	043318130021	1 Gallon w/ Dilution Bottle	043318002021
22 oz. Trigger	043318130229	1 Gallon	043318130052
24 oz. Trigger, 12 per case	043318000034	1 Gallon w/ Dilution Bottle, 112 per case	043318480140
24 oz. Trigger	043318000300	1 Gallon w/ Dilution Bottle, 4 per case	043318480416
24 oz. Trigger	043318130137	1 Gallon w/ Dilution Bottle, 24 per case	043318480492
32 oz. Trigger	043318000652	1 Gallon w/ laundry	043318002052
32 oz. Trigger	043318130335	1 Gallon w/ towel	043318001222
67.6 oz	043318000393	140 oz.	043318001390
67.6 oz.	043318130144	140 oz., 168 per case	043318561405
1 Gallon w/ Dilution Bottle	043318000539	140 oz. w/ Dilution Bottle	043318001468
1 Gallon w/ Dilution Bottle	043318000645		

USA items listed only. Not all items listed. USA items may not be valid for international sale.

Section 16: OTHER INFORMATION - continued

NFPA:

Health – None
Flammability – Non-flammable
Stability – Stable
Special - None

Acronyms

NTP	National Toxicology Program	IARC	International Agency for Research on Cancer
OSHA	Occupational Safety and Health Administration	CPSC	Consumer Product Safety Commission
TSCA	Toxic Substances Control Act	DSL	Domestic Substances List

Prepared / Revised By: Sunshine Makers, Inc., Regulatory Department.
This SDS has been revised in the following sections: Revised SDS layout

DISCLAIMER: The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Safety Data Sheet

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Document Group:	16-3472-4	**Version Number:**	38.00
Issue Date:	04/07/16	**Supercedes Date:**	02/16/16

SECTION 1: Identification

1.1. Product identifier
3M(TM) Super 77(TM) Multipurpose Adhesive (Aerosol)

Product Identification Numbers
62-4977-2924-4, 62-4977-2928-5, 62-4977-4730-3, 62-4977-4922-6, 62-4977-4925-9, 62-4977-4929-1, 62-4977-4930-9, 62-4977-4935-8

1.2. Recommended use and restrictions on use

Recommended use
Adhesive aerosol, General Purpose Aerosol adhesive

1.3. Supplier's details

MANUFACTURER:	3M
DIVISION:	Industrial Adhesives and Tapes Division
ADDRESS:	3M Center, St. Paul, MN 55144-1000, USA
Telephone:	1-888-3M HELPS (1-888-364-3577)

1.4. Emergency telephone number
1-800-364-3577 or (651) 737-6501 (24 hours)

SECTION 2: Hazard identification

2.1. Hazard classification
Flammable Aerosol: Category 1.
Gas Under Pressure: Liquefied gas.
Serious Eye Damage/Irritation: Category 2A.
Reproductive Toxicity: Category 2.
Simple Asphyxiant.
Specific Target Organ Toxicity (single exposure): Category 1.
Specific Target Organ Toxicity (central nervous system): Category 3.

2.2. Label elements
Signal word
Danger

Symbols

Flame | Gas cylinder | Exclamation mark | Health Hazard |

Pictograms

Hazard Statements
Extremely flammable aerosol.
Contains gas under pressure; may explode if heated.

Causes serious eye irritation.
May cause drowsiness or dizziness.
Suspected of damaging fertility or the unborn child.
May displace oxygen and cause rapid suffocation.

Causes damage to organs:
cardiovascular system |

Precautionary Statements
General:
Keep out of reach of children.

Prevention:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Do not spray on an open flame or other ignition source.
Pressurized container: Do not pierce or burn, even after use.
Do not breathe dust/fume/gas/mist/vapors/spray.
Use only outdoors or in a well-ventilated area.
Wear protective gloves and eye/face protection.
Do not eat, drink or smoke when using this product.
Wash thoroughly after handling.

Response:
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
IF exposed or concerned: Get medical advice/attention.
Specific treatment (see Notes to Physician on this label).

Storage:
Protect from sunlight. Do not expose to temperatures exceeding 50C/122F.
Keep container tightly closed.
Store locked up in a well-ventilated place.

Disposal:
Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

Notes to Physician:
Exposure may increase myocardial irritability. Do not administer sympathomimetic drugs unless absolutely necessary.

2.3. Hazards not otherwise classified
Intentional misuse by deliberately concentrating and inhaling contents can be harmful or fatal.

SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
Acetone	67-64-1	20 - 30 Trade Secret *
Non-volatile components (N.J.T.S. Registry No. 04499600-6433P)	Trade Secret*	20 - 30 Trade Secret *
Propane	74-98-6	15 - 25 Trade Secret *
Cyclohexane	110-82-7	10 - 20 Trade Secret *
Petroleum distillates	64742-49-0	10 - 20 Trade Secret *
Hexane	110-54-3	< 0.5

*The specific chemical identity and/or exact percentage (concentration) of this composition has been withheld as a trade secret.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
Remove person to fresh air. Get medical attention.

Skin Contact:
Wash with soap and water. If signs/symptoms develop, get medical attention.

Eye Contact:
Immediately flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. Get medical attention.

If Swallowed:
Rinse mouth. If you feel unwell, get medical attention.

4.2. Most important symptoms and effects, both acute and delayed
See Section 11.1. Information on toxicological effects.

4.3. Indication of any immediate medical attention and special treatment required
Exposure may increase myocardial irritability. Do not administer sympathomimetic drugs unless absolutely necessary.

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media
Use a fire fighting agent suitable for the surrounding fire.

5.2. Special hazards arising from the substance or mixture
Closed containers exposed to heat from fire may build pressure and explode.

Hazardous Decomposition or By-Products

Substance	Condition
Aldehydes	During Combustion
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion

5.3. Special protective actions for fire-fighters
Water may not effectively extinguish fire; however, it should be used to keep fire-exposed containers and surfaces cool and prevent explosive rupture.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Evacuate area. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use only non-sparking tools. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice. Warning! A motor could be an ignition source and could cause flammable gases or vapors in the spill area to burn or explode. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

6.2. Environmental precautions
Avoid release to the environment.

6.3. Methods and material for containment and cleaning up
If possible, seal leaking container. Place leaking containers in a well-ventilated area, preferably an operating exhaust hood, or if necessary outdoors on an impermeable surface until appropriate packaging for the leaking container or its contents is available. Contain spill. Cover spill area with a fire-extinguishing foam. An appropriate aqueous film forming foam (AFFF) is recommended. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Remember, adding an absorbent material does not remove a physical, health, or environmental hazard. Collect as much of the spilled material as possible using non-sparking tools. Place in a metal container approved for transportation by appropriate authorities. Clean up residue with an appropriate solvent selected by a qualified and authorized person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and SDS. Seal the container. Dispose of collected material as soon as possible.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Keep out of reach of children. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not spray on an open flame or other ignition source. Do not pierce or burn, even after use. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Avoid release to the environment. Avoid contact with oxidizing agents (eg. chlorine, chromic acid etc.) Use personal protective equipment (gloves, respirators, etc.) as required.

7.2. Conditions for safe storage including any incompatibilities
Store in a well-ventilated place. Keep container tightly closed. Protect from sunlight. Do not expose to temperatures exceeding 50C/122F. Store away from heat. Store away from acids. Store away from oxidizing agents.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits
If a component is disclosed in section 3 but does not appear in the table below, an occupational exposure limit is not available for the component.

Ingredient	C.A.S. No.	Agency	Limit type	Additional Comments
Hexane	110-54-3	ACGIH	TWA:50 ppm	Skin Notation
Hexane	110-54-3	OSHA	TWA:1800 mg/m3(500 ppm)	
Cyclohexane	110-82-7	ACGIH	TWA:100 ppm	
Cyclohexane	110-82-7	OSHA	TWA:1050 mg/m3(300 ppm)	

Petroleum distillates	64742-49-0	CMRG	TWA:50 ppm	
Acetone	67-64-1	ACGIH	TWA:250 ppm;STEL:500 ppm	A4: Not class. as human carcin
Acetone	67-64-1	OSHA	TWA:2400 mg/m3(1000 ppm)	
Propane	74-98-6	ACGIH	Limit value not established:	
Propane	74-98-6	OSHA	TWA:1800 mg/m3(1000 ppm)	

ACGIH : American Conference of Governmental Industrial Hygienists
AIHA : American Industrial Hygiene Association
CMRG : Chemical Manufacturer's Recommended Guidelines
OSHA : United States Department of Labor - Occupational Safety and Health Administration
TWA: Time-Weighted-Average
STEL: Short Term Exposure Limit
CEIL: Ceiling

8.2. Exposure controls

8.2.1. Engineering controls
Do not remain in area where available oxygen may be reduced. Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment.

8.2.2. Personal protective equipment (PPE)

Eye/face protection

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:
Indirect Vented Goggles

Skin/hand protection
Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing.
Gloves made from the following material(s) are recommended: Butyl Rubber
Nitrile Rubber

Respiratory protection

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:
Half facepiece or full facepiece supplied-air respirator

For questions about suitability for a specific application, consult with your respirator manufacturer.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

General Physical Form:	Liquid aerosol
Specific Physical Form:	Aerosol
Odor, Color, Grade:	Clear, sweet, fruity odor
Odor threshold	*No Data Available*
pH	*No Data Available*
Melting point	*No Data Available*
Boiling Point	*Not Applicable*

Flash Point	-42.00 ºF [*Test Method:* Tagliabue Closed Cup]
Evaporation rate	1.9 [*Ref Std:* ETHER=1]
Flammability (solid, gas)	Not Applicable
Flammable Limits(LEL)	*No Data Available*
Flammable Limits(UEL)	*No Data Available*
Vapor Density	2.97 [*Ref Std:* AIR=1]
Density	0.726 g/ml
Specific Gravity	0.726 [*Ref Std:* WATER=1]
Solubility in Water	Nil
Solubility- non-water	*No Data Available*
Partition coefficient: n-octanol/ water	*No Data Available*
Autoignition temperature	*No Data Available*
Decomposition temperature	*Not Applicable*
Viscosity	*Not Applicable*
Hazardous Air Pollutants	<=0.4 % weight [*Test Method:* Calculated]
VOC Less H2O & Exempt Solvents	<=51 % [*Test Method:* calculated SCAQMD rule 443.1]
Solids Content	>=22.4 %

SECTION 10: Stability and reactivity

10.1. Reactivity
This material may be reactive with certain agents under certain conditions - see the remaining headings in this section.

10.2. Chemical stability
Stable.

10.3. Possibility of hazardous reactions
Hazardous polymerization will not occur.

10.4. Conditions to avoid
Heat

10.5. Incompatible materials
Strong oxidizing agents

10.6. Hazardous decomposition products

Substance	Condition
None known.	

Refer to section 5.2 for hazardous decomposition products during combustion.

SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

11.1. Information on Toxicological effects

Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

Inhalation:
Intentional concentration and inhalation may be harmful or fatal.

Simple Asphyxiation: Signs/symptoms may include increased heart rate, rapid respirations, drowsiness, headache, incoordination, altered judgement, nausea, vomiting, lethargy, seizures, coma, and may be fatal.

Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

May cause additional health effects (see below).

Skin Contact:
Dermal Defatting: Signs/symptoms may include localized redness, itching, drying and cracking of skin.

Eye Contact:
Severe Eye Irritation: Signs/symptoms may include significant redness, swelling, pain, tearing, cloudy appearance of the cornea, and impaired vision.

Ingestion:
Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

May cause additional health effects (see below).

Additional Health Effects:

Single exposure may cause target organ effects:
Central Nervous System (CNS) Depression: Signs/symptoms may include headache, dizziness, drowsiness, incoordination, nausea, slowed reaction time, slurred speech, giddiness, and unconsciousness.

Single exposure, above recommended guidelines, may cause:
Cardiac Sensitization: Signs/symptoms may include irregular heartbeat (arrhythmia), faintness, chest pain, and may be fatal.

Reproductive/Developmental Toxicity:
Contains a chemical or chemicals which can cause birth defects or other reproductive harm.

Toxicological Data
If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

Acute Toxicity

Name	Route	Species	Value
Overall product	Dermal		No data available; calculated ATE > 5,000 mg/kg
Overall product	Inhalation-Vapor(4 hr)		No data available; calculated ATE > 50 mg/l
Overall product	Ingestion		No data available; calculated ATE > 5,000 mg/kg
Propane	Inhalation-Gas (4 hours)	Rat	LC50 > 200,000 ppm
Acetone	Dermal	Rabbit	LD50 > 15,688 mg/kg
Acetone	Inhalation-Vapor (4 hours)	Rat	LC50 76 mg/l
Acetone	Ingestion	Rat	LD50 5,800 mg/kg
Cyclohexane	Dermal	Rat	LD50 > 2,000 mg/kg
Cyclohexane	Inhalation-Vapor (4	Rat	LC50 > 32.9 mg/l

	hours)		
Cyclohexane	Ingestion	Rat	LD50 6,200 mg/kg
Petroleum distillates	Dermal	Rabbit	LD50 > 3,160 mg/kg
Petroleum distillates	Inhalation-Vapor (4 hours)	Rat	LC50 > 14.7 mg/l
Petroleum distillates	Ingestion	Rat	LD50 > 5,000 mg/kg
Non-volatile components (N.J.T.S. Registry No. 04499600-6433P)	Dermal		LD50 estimated to be > 5,000 mg/kg
Non-volatile components (N.J.T.S. Registry No. 04499600-6433P)	Ingestion		LD50 estimated to be 2,000 - 5,000 mg/kg
Hexane	Dermal	Rabbit	LD50 > 2,000 mg/kg
Hexane	Inhalation-Vapor (4 hours)	Rat	LC50 170 mg/l
Hexane	Ingestion	Rat	LD50 > 28,700 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Propane	Rabbit	Minimal irritation
Acetone	Mouse	Minimal irritation
Cyclohexane	Rabbit	Mild irritant
Petroleum distillates	Rabbit	Irritant
Non-volatile components (N.J.T.S. Registry No. 04499600-6433P)	Professional judgement	Minimal irritation
Hexane	Human and animal	Mild irritant

Serious Eye Damage/Irritation

Name	Species	Value
Propane	Rabbit	Mild irritant
Acetone	Rabbit	Severe irritant
Cyclohexane	Rabbit	Mild irritant
Petroleum distillates	Rabbit	Mild irritant
Hexane	Rabbit	Mild irritant

Skin Sensitization

Name	Species	Value
Petroleum distillates	Guinea pig	Not sensitizing
Hexane	Human	Not sensitizing

Respiratory Sensitization

For the component/components, either no data are currently available or the data are not sufficient for classification.

Germ Cell Mutagenicity

Name	Route	Value
Propane	In Vitro	Not mutagenic
Acetone	In vivo	Not mutagenic
Acetone	In Vitro	Some positive data exist, but the data are not sufficient for classification
Cyclohexane	In Vitro	Not mutagenic
Cyclohexane	In vivo	Some positive data exist, but the data are not sufficient for classification
Petroleum distillates	In Vitro	Not mutagenic
Hexane	In Vitro	Not mutagenic

Hexane	In vivo	Not mutagenic

Carcinogenicity

Name	Route	Species	Value
Acetone	Not Specified	Multiple animal species	Not carcinogenic
Petroleum distillates	Inhalation	Mouse	Some positive data exist, but the data are not sufficient for classification
Hexane	Dermal	Mouse	Not carcinogenic
Hexane	Inhalation	Mouse	Some positive data exist, but the data are not sufficient for classification

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test Result	Exposure Duration
Acetone	Ingestion	Some positive male reproductive data exist, but the data are not sufficient for classification	Rat	NOAEL 1,700 mg/kg/day	13 weeks
Acetone	Inhalation	Some positive developmental data exist, but the data are not sufficient for classification	Rat	NOAEL 5.2 mg/l	during organogenesis
Cyclohexane	Inhalation	Not toxic to female reproduction	Rat	NOAEL 24 mg/l	2 generation
Cyclohexane	Inhalation	Not toxic to male reproduction	Rat	NOAEL 24 mg/l	2 generation
Cyclohexane	Inhalation	Some positive developmental data exist, but the data are not sufficient for classification	Rat	NOAEL 6.9 mg/l	2 generation
Hexane	Ingestion	Not toxic to development	Mouse	NOAEL 2,200 mg/kg/day	during organogenesis
Hexane	Inhalation	Some positive developmental data exist, but the data are not sufficient for classification	Rat	NOAEL 0.7 mg/l	during gestation
Hexane	Ingestion	Toxic to male reproduction	Rat	NOAEL 1,140 mg/kg/day	90 days
Hexane	Inhalation	Toxic to male reproduction	Rat	LOAEL 3.52 mg/l	28 days

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Propane	Inhalation	cardiac sensitization	Causes damage to organs	Human	NOAEL Not available	
Propane	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	
Propane	Inhalation	respiratory irritation	All data are negative	Human	NOAEL Not available	
Acetone	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	
Acetone	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	
Acetone	Inhalation	immune system	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL 1.19 mg/l	6 hours
Acetone	Inhalation	liver	Some positive data exist, but the data are not sufficient for classification	Guinea pig	NOAEL Not available	
Acetone	Ingestion	central nervous	May cause drowsiness or	Human	NOAEL Not	poisoning

		system depression	dizziness		available	and/or abuse
Cyclohexane	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human and animal	NOAEL Not available	
Cyclohexane	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Human and animal	NOAEL Not available	
Cyclohexane	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Professional judgement	NOAEL Not available	
Petroleum distillates	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human and animal	NOAEL Not available	
Petroleum distillates	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification		NOAEL Not available	
Petroleum distillates	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Professional judgement	NOAEL Not available	
Hexane	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	not available
Hexane	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Rabbit	NOAEL Not available	8 hours
Hexane	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 24.6 mg/l	8 hours

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Acetone	Dermal	eyes	Some positive data exist, but the data are not sufficient for classification	Guinea pig	NOAEL Not available	3 weeks
Acetone	Inhalation	hematopoietic system	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL 3 mg/l	6 weeks
Acetone	Inhalation	immune system	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL 1.19 mg/l	6 days
Acetone	Inhalation	kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Guinea pig	NOAEL 119 mg/l	not available
Acetone	Inhalation	heart | liver	All data are negative	Rat	NOAEL 45 mg/l	8 weeks
Acetone	Ingestion	kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 900 mg/kg/day	13 weeks
Acetone	Ingestion	heart	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 2,500 mg/kg/day	13 weeks
Acetone	Ingestion	hematopoietic system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 200 mg/kg/day	13 weeks
Acetone	Ingestion	liver	Some positive data exist, but the data are not sufficient for classification	Mouse	NOAEL 3,896 mg/kg/day	14 days
Acetone	Ingestion	eyes	All data are negative	Rat	NOAEL 3,400 mg/kg/day	13 weeks
Acetone	Ingestion	respiratory system	All data are negative	Rat	NOAEL 2,500 mg/kg/day	13 weeks
Acetone	Ingestion	muscles	All data are negative	Rat	NOAEL 2,500 mg/kg	13 weeks

Acetone	Ingestion	skin | bone, teeth, nails, and/or hair	All data are negative	Mouse	NOAEL 11,298 mg/kg/day	13 weeks
Cyclohexane	Inhalation	liver	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 24 mg/l	90 days
Cyclohexane	Inhalation	auditory system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 1.7 mg/l	90 days
Cyclohexane	Inhalation	kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Rabbit	NOAEL 2.7 mg/l	10 weeks
Cyclohexane	Inhalation	hematopoietic system	Some positive data exist, but the data are not sufficient for classification	Mouse	NOAEL 24 mg/l	14 weeks
Cyclohexane	Inhalation	peripheral nervous system	All data are negative	Rat	NOAEL 8.6 mg/l	30 weeks
Hexane	Inhalation	peripheral nervous system	Causes damage to organs through prolonged or repeated exposure	Human	NOAEL Not available	occupational exposure
Hexane	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Mouse	LOAEL 1.76 mg/l	13 weeks
Hexane	Inhalation	liver	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL Not available	6 months
Hexane	Inhalation	kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Rat	LOAEL 1.76 mg/l	6 months
Hexane	Inhalation	hematopoietic system	Some positive data exist, but the data are not sufficient for classification	Mouse	NOAEL 35.2 mg/l	13 weeks
Hexane	Inhalation	auditory system | immune system | eyes	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	occupational exposure
Hexane	Inhalation	heart | skin | endocrine system	All data are negative	Rat	NOAEL 1.76 mg/l	6 months
Hexane	Ingestion	peripheral nervous system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 1,140 mg/kg/day	90 days
Hexane	Ingestion	endocrine system | hematopoietic system | liver | immune system | kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL Not available	13 weeks

Aspiration Hazard

Name	Value
Cyclohexane	Aspiration hazard
Petroleum distillates	Aspiration hazard
Hexane	Aspiration hazard

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

SECTION 12: Ecological information

Ecotoxicological information

Please contact the address or phone number listed on the first page of the SDS for additional ecotoxicological information on this material and/or its components.

Chemical fate information

Please contact the address or phone number listed on the first page of the SDS for additional chemical fate information on this material

and/or its components.

SECTION 13: Disposal considerations

13.1. Disposal methods
Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Dispose of waste product in a permitted industrial waste facility. Facility must be capable of handling aerosol cans.

EPA Hazardous Waste Number (RCRA): D001 (Ignitable)

SECTION 14: Transport Information

For Transport Information, please visit http://3M.com/Transportinfo or call 1-800-364-3577 or 651-737-6501.

SECTION 15: Regulatory information

15.1. US Federal Regulations
Contact 3M for more information.

311/312 Hazard Categories:

Fire Hazard - Yes Pressure Hazard - Yes Reactivity Hazard - No Immediate Hazard - Yes Delayed Hazard - Yes

Section 313 Toxic Chemicals subject to the reporting requirements of that section and 40 CFR part 372 (EPCRA):

Ingredient	C.A.S. No	% by Wt
Cyclohexane	110-82-7	Trade Secret 10 - 20

15.2. State Regulations
Contact 3M for more information.

15.3. Chemical Inventories
The components of this product are in compliance with the chemical notification requirements of TSCA.

Contact 3M for more information.

15.4. International Regulations
Contact 3M for more information.

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: Other information

NFPA Hazard Classification
Health: 2 **Flammability:** 4 **Instability:** 0 **Special Hazards:** None
Aerosol Storage Code: 3

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include

the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

HMIS Hazard Classification
Health: *2 **Flammability:** 4 **Physical Hazard:** 0 **Personal Protection:** X - See PPE section.

Hazardous Material Identification System (HMIS® IV) hazard ratings are designed to inform employees of chemical hazards in the workplace. These ratings are based on the inherent properties of the material under expected conditions of normal use and are not intended for use in emergency situations. HMIS® IV ratings are to be used with a fully implemented HMIS® IV program. HMIS® is a registered mark of the American Coatings Association (ACA).

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APPENDIX B

ACTIVITY HAZARD ANALYSIS (AHA)

Environmental Response, Inc.

Activity Hazard Analysis

AHA Type: □SAR Operations □Transport □Office X Construction	**X New □ Revised**	**Date: 5/13/20**
ERI Office: 2202 West Medtronic Way, Tempe, Arizona 85281 480-967-2802 Client: APS / JACOBS **Job Location: Prescott Substation**		
Work Type: Air Monitoring	**Work Activity: Perform air monitoring with portable meters in exclusion zone**	
P.O. #: 700744227	**ERI Job #: 20-209125**	

Personal Protective Equipment (PPE):

- **Minimum PPE is Level D including: hard hat, safety glasses or goggles, steel-toed boots, hearing protection and gloves (type dependent on job-specific requirements)**
- **Additional PPE may be required in the Health & Safety Plan (HASP). Also refer to the HASP for required traffic control, air monitoring and emergency procedures.**

Development Team	Position/Title	Reviewed By	Position/Title	Date
Eric Smith	Project Manager	Greg Laney	CEO	5/13/20

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each work day. Safe Performance Self-Assessment (SPSA) procedures must be used during field activities. Weather conditions (heat, cold, rain, lightning) must also be considered.

❶ Job Steps	❷ Potential Hazard	❸ Critical Actions	
1. Personal health and safety	• Heat stress and heat stroke • Snakes, scorpions, spiders	• Drink plenty of fluids and have plenty of fluids available (water and sports drinks are recommended; coffee and soda may actually cause further dehydration) • Wear loose, non-restrictive clothing • Stay in shade as much as possible to keep cool (use vehicle and air-conditioning if necessary) • Use sunscreen to prevent sunburn and lip balm to prevent chapped lips • Be aware of faintness, dizziness, unconsciousness, paleness and profuse sweating in site personnel (contact PM or if severe, contact emergency personnel) • Redness to the face, high body temperature and lack of sweating may indicate heat stroke (contact emergency personnel immediately) • Be aware of snakes, scorpions and spiders beneath drums and in brush	
2. Conduct air monitoring with portable meters	• Exposure to work place hazards, including the items listed below: • Dust • Noise • Slip, trip, fall hazard • Heavy equipment operation • Pinching, crushing hazard • Improper manual lifting/moving methods • Tool misuse	• Wear proper PPE for potential hazards, including hard hats, safety glasses, steel-toed boots, gloves, high visibility safety vests, and hearing protection • Keep walkways and work area clear of debris • Maintain eye contact with operator during equipment operation; Never enter swing radius unless equipment is grounded, and operator acknowledges your wish to enter swing radius • Maintain visual communication with the drivers • Use proper manual work methods • Use proper tool and method for each job	

Environmental Response, Inc.

Activity Hazard Analysis

AHA Type: □SAR Operations □Transport □Office X Construction	**X New □ Revised**	**Date: 5/13/20**
ERI Office: 2202 West Medtronic Way, Tempe, Arizona 85281 480-967-2802 Client: APS / JACOBS **Job Location: Prescott Substation**		
Work Type: Concrete pad demolition	**Work Activity: Demolish concrete pads with hydraulic breaker on excavator**	
P.O. #: 700744227	**ERI Job #: 20-209125**	

Personal Protective Equipment (PPE):

- **Minimum PPE is Level D including: hard hat, safety glasses or goggles, steel-toed boots, hearing protection and gloves (type dependent on job-specific requirements)**
- **Additional PPE may be required in the Health & Safety Plan (HASP). Also refer to the HASP for required traffic control, air monitoring and emergency procedures.**

Development Team	Position/Title	Reviewed By	Position/Title	Date
Eric Smith	Project Manager	Greg Laney	CEO	5/13/20

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each work day. Safe Performance Self-Assessment (SPSA) procedures must be used during field activities. Weather conditions (heat, cold, rain, lightning) must also be considered.

❶ Job Steps	❷ Potential Hazard	❸ Critical Actions	
1. Personal health and safety	• Heat stress and heat stroke • Snakes, scorpions, spiders	• Drink plenty of fluids and have plenty of fluids available (water and sports drinks are recommended; coffee and soda may actually cause further dehydration) • Wear loose, non-restrictive clothing • Stay in shade as much as possible to keep cool (use vehicle and air-conditioning if necessary) • Use sunscreen to prevent sunburn and lip balm to prevent chapped lips • Be aware of faintness, dizziness, unconsciousness, paleness and profuse sweating in site personnel (contact PM or if severe, contact emergency personnel) • Redness to the face, high body temperature and lack of sweating may indicate heat stroke (contact emergency personnel immediately) • Be aware of snakes, scorpions and spiders beneath drums and in brush	
2. Pre-construction site meeting	• Site specific conditions	• Review approved AHA and HASP • Perform tailgate safety meeting • Discuss hazards, route to hospital	
3. Conduct demolition of concrete structures with hydraulic hammer on excavator	• Exposure to work place hazards • Dust / Silica • Slip, trip, fall hazard • Heavy equipment operation • Pinching, crushing hazard • Falling object hazard • Noise • Vibration	• Wear proper PPE for potential hazard • Make eye contact with operator prior to entering zone of equipment operations • Maintain eye contact with operator during equipment operations • Keep ground personnel clear of equipment work • Keep concrete wet to avoid dust generation • Use barricades and/or snow fence around areas with potential flying debris • Use proper manual work methods • Use proper tool and method for each job	

Environmental Response, Inc.

Activity Hazard Analysis

AHA Type: □SAR Operations □Transport □Office X Construction	**X New □ Revised**	**Date: 5/13/20**
ERI Office: 2202 West Medtronic Way, Tempe, Arizona 85281 480-967-2802 Client: APS / JACOBS **Job Location: Prescott Substation**		
Work Type: Soil excavation and loading trucks	**Work Activity: Excavate soil with heavy equipment and load into dump trucks for transport offsite**	
P.O. #: 700744227	**ERI Job #: 20-209125**	

Personal Protective Equipment (PPE):

- **Minimum PPE is Level D including: hard hat, safety glasses or goggles, steel-toed boots, hearing protection and gloves (type dependent on job-specific requirements)**
- **Additional PPE may be required in the Health & Safety Plan (HASP). Also refer to the HASP for required traffic control, air monitoring and emergency procedures.**

Development Team	Position/Title	Reviewed By	Position/Title	Date
Eric Smith	Project Manager	Greg Laney	CEO	5/13/20

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each work day. Safe Performance Self-Assessment (SPSA) procedures must be used during field activities. Weather conditions (heat, cold, rain, lightning) must also be considered.

❶ Job Steps	❷ Potential Hazard	❸ Critical Actions	
1. Personal health and safety	• Heat stress and heat stroke • Snakes, scorpions, spiders	• Drink plenty of fluids and have plenty of fluids available (water and sports drinks are recommended; coffee and soda may actually cause further dehydration) • Wear loose, non-restrictive clothing • Stay in shade as much as possible to keep cool (use vehicle and air-conditioning if necessary) • Use sunscreen to prevent sunburn and lip balm to prevent chapped lips • Be aware of faintness, dizziness, unconsciousness, paleness and profuse sweating in site personnel (contact PM or if severe, contact emergency personnel) • Redness to the face, high body temperature and lack of sweating may indicate heat stroke (contact emergency personnel immediately) • Be aware of snakes, scorpions and spiders beneath drums and in brush	
2. Pre-construction site meeting	• Site specific conditions	• Review approved AHA and HASP • Perform tailgate safety meeting • Discuss hazards, route to hospital	
3. Locate and mark out visible underground and overhead utilities	• Exposure to work place hazards • Accidental contact/damage with utilities	• Wear proper PPE for potential hazards • Coordinate with facilities personnel for help in locating utilities in/near excavation(s) • Get procedures to use in case of accident from facility personnel • Mark out and secure any exposed utilities. • Mark out suspected locations/routes of underground utilities	

4. Prepare site for excavation operations	• Exposure to work place hazards • Excavation crosses buried utilities • Accidental contact/damage with utilities • Electrocution • Explosion/fire • Slip, trip, fall hazard • Heavy equipment operation • Pinching, crushing hazard • Puncture hazard • Improper manual lifting/moving methods • Tool misuse	• Wear proper PPE for potential hazards • Identify areas where contact/damage could occur and coordinate with client/facility to resolve conflicts • Keep walkways and work area clear of debris • Wear safety vests • Make eye contact with operator prior to entering zone of equipment operations • Maintain eye contact with operator during equipment operations • Maintain visual communication with the driver and direct with hand signals at all times • Shut off engine and set parking brake • Use proper manual work methods • Use proper tool and method for each job	
5a. Conduct soft dig excavation operations	• Exposure to work place hazards • Exposure to hazardous materials/dust • Slip, trip, fall hazard • Vacuum excavator • Pinching, crushing hazard • Flying object hazard • Improper manual lifting/moving methods • Tool misuse	• Wear proper PPE for potential hazard • Keep walkways and work area clear of debris • Wear safety vests • Wear safety glasses and face shield, if necessary • Keep hands away from vacuum hose suction point • Keep ground personnel clear of equipment work/travel zones • Use proper manual work methods • Use proper tool and method for each job	
5b. Conduct excavation operations with heavy equipment	• Exposure to work place hazards • Exposure to hazardous materials/dust • Slip, trip, fall hazard • Heavy equipment operation - Excavator • Open excavation/fall hazard • Pinching, crushing hazard • Falling object hazard • Improper manual lifting/moving methods	• Wear proper PPE for potential hazard • Keep walkways and work area clear of debris • Wear safety vests • Make eye contact with operator prior to entering zone of equipment operations • Maintain eye contact with operator during equipment operations • Keep ground personnel clear of equipment work/travel zones • Use proper trenching and excavation safety practices • Use barricades and/or snow fence around any excavation left open and unattended • Use proper manual work methods • Use proper tool and method for each job	
6. Load dump trucks / roll off bins	• Vehicle traffic • Heavy Equipment operation - Loader • Low clearance • Limited views	• Make eye contact with operator prior to entering zone of equipment operations • Maintain eye contact with operator during equipment operations • Maintain visual communication with the driver and direct with hand signals at all times • Spot trucks when reversing • Distribute load in bin so that mounding/overfilling does not occur • Exercise caution when closing container tops and doors	

7. Conduct backfill and compaction and site restoration operations	• Exposure to work place hazards • Dust hazard • Slip, trip, fall hazard • Heavy equipment operations – Loader, compactor • Pinching or crushing hazard • Improper manual lifting/moving methods	• Wear proper PPE for potential hazard • Use appropriate dust control measures • Keep walkways and work area clear of debris • Wear safety vests • Make eye contact with operator prior to entering zone of equipment operations • Maintain eye contact with operator during equipment operations • Maintain visual communication with the driver • Use proper manual work methods • Use proper tool and method for each job	

Health and Safety Plan

APS Former Manufactured Gas Plant Site, Prescott, Arizona

Prepared for

APS

300 North Granite Street
Prescott, Arizona

May, 2020

JACOBS

PHX

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Approval

This site-specific Health and Safety Plan (HSP) has been written for use by JACOBS only. JACOBS claims no responsibility for its use by others unless that use has been specified and defined in project or contract documents. The plan is written for the specific site conditions and identified scope(s) of work and must be amended if those conditions or scope(s) of work change.

By approving this HSP, the Responsible Health and Safety Manager (RHSM) certifies that the personal protective equipment has been selected based on the project-specific hazard assessment.

Original Plan

RHSM Approval: Jeffrey T Hilgaertner **Date**: April 28, 2020

Field Operations Manager Approval: **Date:**

Revisions

Revisions Made By: **Date:**

Description of Revisions to Plan:

Revisions Approved By: **Date:**

Revisions Approved By: **Date:**

1.0 Introduction

1.1 JACOBS Policy and Commitment

1.1.1 Safe Work Policy

It is the policy of JACOBS to perform work in the safest manner possible. Safety must never be compromised. To fulfill the requirements of this policy, an organized and effective safety program must be carried out at each location where work is performed.

JACOBS believes that all injuries are preventable, and we are dedicated to the goal of a safe work environment. To achieve this goal, every employee on the project must assume responsibility for safety.

Every employee is empowered to:

- Conduct their work in a safe manner;
- Stop work immediately to correct any unsafe condition that is encountered; and
- Take corrective actions so that work may proceed in a safe manner.

Safety, occupational health, and environmental protection will not be sacrificed for production. These elements are integrated into quality control, cost reduction, and job performance, and are crucial to our success.

1.1.2 Health and Safety Commitment

JACOBS has embraced a philosophy for health and safety excellence. The primary driving force behind this commitment to health and safety is simple: employees are JACOBS's most significant asset and JACOBS management values their safety, health, and welfare. Also, top management believes that all injuries are preventable. JACOBS's safety culture empowers employees at all levels to accept ownership for safety and take whatever actions are necessary to eliminate injury. Our company is committed to world-class performance in health and safety and also understands that world-class performance in health and safety is a critical element in overall business success.

JACOBS is committed to the prevention of personal injuries, occupational illnesses, and damage to equipment and property in all of its operations; to the protection of the general public whenever it comes in contact with the Company's work; and to the prevention of pollution and environmental degradation.

Company management, field supervisors, and employees plan safety into each work task in order to prevent occupational injuries and illnesses. The ultimate success of JACOBS's safety program depends on the full cooperation and participation of each employee.

JACOBS management extends its full commitment to health and safety excellence.

1.1.3 Project-Specific Health, Safety, and the Environment Goals

All management and employees are to strive to meet the project-specific Health, Safety, and the Environment (HSE) goals outlined below. The team will be successful only if everyone makes a concerted effort to accomplish these goals. The goals allow the project to stay focused on optimizing the health and safety of all project personnel and, therefore, making the project a great success.

The Project has established eleven specific goals and objectives:

- Create an injury-free environment;

- Have zero injuries or incidents;
- Provide management leadership for HSE by communicating performance expectations, reviewing and tracking performance, and leading by example;
- Ensure effective implementation of the HSP through education, delegation, and team work;
- Ensure 100 percent participation in HSE compliance;
- Continuously improve our safety performance;
- Maintain free and open lines of communication;
- Make a personal commitment to safety as a value;
- Focus safety improvements on high-risk groups;
- Continue strong employee involvement initiatives; and
- Achieve health and safety excellence.

2.0 Applicability

This HSP applies to:

- All JACOBS staff, including subcontractors and tiered subcontractors of JACOBS working on the site; and
- All visitors to the construction site in the custody of JACOBS (including visitors from the Client, the Government, the public, and other staff of any JACOBS company).

This HSP does not apply to the third-party contractors, their workers, their subcontractors, their visitors, or any other persons not under the direct control or custody of JACOBS.

This HSP defines the procedures and requirements for the health and safety of JACOBS staff and visitors when they are physically on the work site. The work site includes the project area (as defined by the contract documents) and the project offices, trailers, and facilities thereon.

This HSP will be kept onsite during field activities and will be reviewed as necessary. The HSP will be amended or revised as project activities or conditions change or when supplemental information becomes available. The HSP adopts, by reference, the Enterprise-wide Core Standards and Standard Operating Procedures (SOPs), as appropriate. In addition, the HSP may adopt procedures from the project Work Plan and any governing regulations. If there is a contradiction between this HSP and any governing regulation, the more stringent and protective requirement shall apply.

All JACOBS staff and subcontractors must sign the employee sign-off form included in this document as Attachment 1 to acknowledge review of this document. Copies of the signature page will be maintained onsite by the Safety Coordinator (SC).

3.0 General Project Information

3.1 Project Information and Background

Project Number: D3285500 A.CS.EV.01.05-02

Client: APS, Judy Heywood, 602-250-3850

Project/Site Name: APS Former Manufactured Gas Plant Site, Prescott, Arizona

Site Street Address: 300 North Granite Street

Site City, State: Prescott, Arizona

JACOBS Office: PHX

DATE HSP Prepared: May, 2020

Date(s) of Site Work: May 2020 to September 2020 (start date dependent of Covid-19 status)

3.2 Site Background and Setting

The former Manufactured Gas Plant (MGP) is located adjacent to the APS Prescott field office at 300 North Granite Street, Prescott, Arizona (site). The site is approximately a quarter acre situated at the former substation area east of APS Prescott field office. The Site consists of above ground concrete substation support structures and subsurface structures associated with the former substation. The site is owned by APS.

3.3 Description of Tasks

Oversee environmental contractor during excavation in the field to confirm vertical extent of impacted soil and perform soil sampling for waste characterization.

The scope of work includes trenching and excavation activities to remove impacted soil within the former substation area. The remedial action includes:

- Advancing soil excavation within the existing sheet pile at the former substation area
- Soil load-out directly from excavation to haul trucks or roll-off bin
- Collection of confirmation soil samples as necessary
- Community air monitoring
- Backfilling of excavations
- Site restoration including asphalt surfacing and drainage features as necessary

Waste materials management and transport and disposal refer also to project documents (i.e., Work Plan) for detailed task information. Tasks other than those listed above require an approved amendment or revision to this plan before tasks begin.

All JACOBS and Subcontractor employees engaging in hazardous waste operations (HAZWOPER) or emergency response shall receive appropriate training as required by 29 CFR 1910.120 and 29 CFR 1926.65 (or if required by Subcontract). Personnel who have not met these training requirements shall not be allowed to engage in hazardous waste operations or emergency response activities. See the following tasks that fall under HAZWOPER requirements.

3.3.1 HAZWOPER-Regulated Tasks

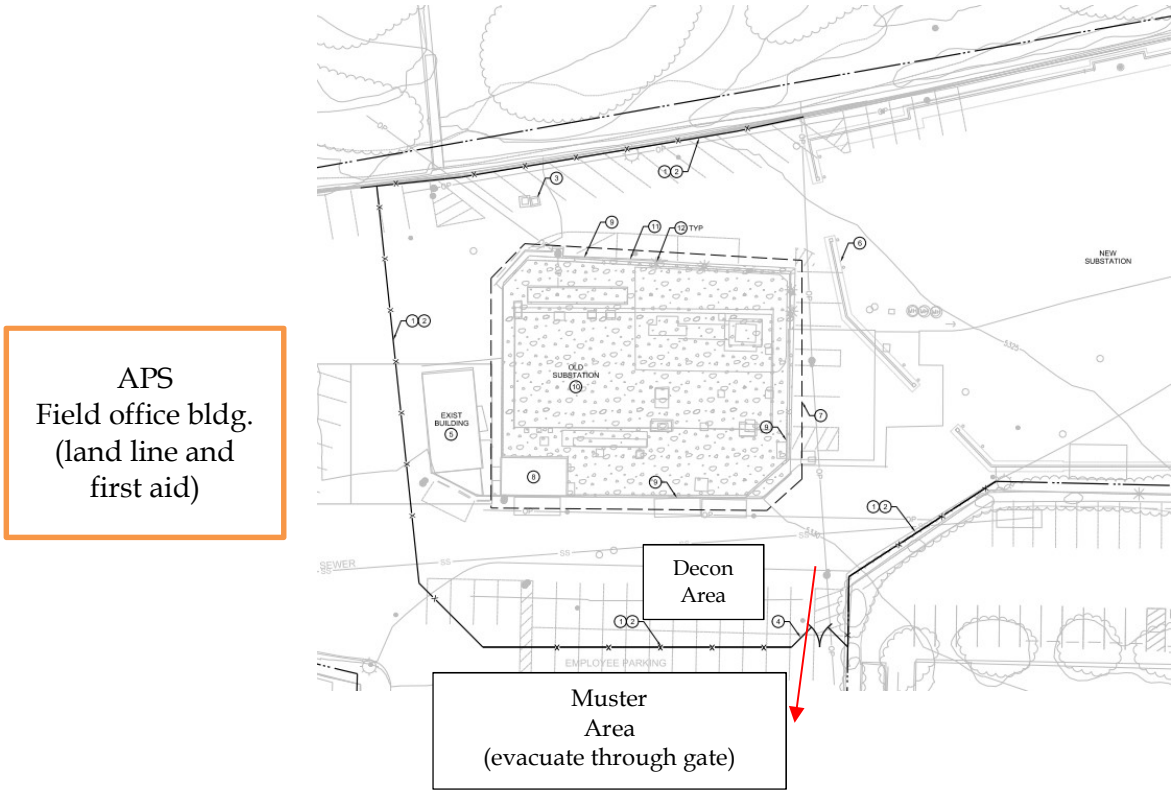
- Trenching for site characterization
- Decontamination of equipment
- Soil load-out
- Soil sampling
- Air monitoring

3.3.2 Non-HAZWOPER-Regulated Tasks

Under specific circumstances, the training and medical monitoring requirements of federal or state Hazwoper regulations are not applicable. The following tasks do not involve exposure to safety or health hazards associated with the hazardous waste operations. Hazwoper training or medical requirements do not apply for the tasks listed below.

TASKS	CONTROLS
• Mobilization/demobilization • Packing samples for shipment to laboratory • Transportation and disposal of waste • Survey and compaction testing	• Brief on hazards, limits of access, and emergency procedures. • Post areas of contamination as appropriate. • Perform air sampling/monitoring as specified in this HSP.

Site Map



Notes:

- - - - = Exclusion zone inside excavation area

***exclusion zone may be increased and shall be delineated with temporary steel fencing, snow fencing, or candlestick delineators with caution tape.**

-x-x-x = Support zone outside fence area

→ = Evacuation route to Muster Area

4.0 Project Organization and Responsibilities

4.1 Client

Contact Name: APS, Judy Heywood
Phone: 602-250-3850

4.2 JACOBS

4.2.1 Project Manager

PM Name: Dave Allard
JACOBS Office: PHX
Telephone Number: 480.295.3913
Cell Phone Number: 480.363.3254

The project manager (PM) is responsible for providing adequate resources (budget and staff) for project-specific implementation of the HSE management process. The PM has overall management responsibility for the tasks listed below. The PM may explicitly delegate specific tasks to other staff, as described in sections that follow, but retains ultimate responsibility for completion of the following in accordance with this document:

- Incorporate standard terms and conditions, and contract-specific HSE roles and responsibilities in contract and subcontract agreements (including flow-down requirements to lower-tier subcontractors).
- Select safe and competent subcontractors by:
  - Choosing potential subcontractors based on technical ability and HSE performance;
  - Implementing the subcontractor prequalification process;
  - Ensuring that acceptable certificates of insurance, including JACOBS as named additional insured, are secured as a condition of subcontract award; and
  - Ensuring HSE submittals, subcontract agreements, and appropriate site-specific safety procedures are in place and accepted prior field mobilization.
- Ensure copies of training and medical monitoring records, and site-specific safety procedures are being maintained in the project file accessible to site personnel.
- Provide oversight of subcontractor HSE practices per the site-specific safety plans and procedures.
- Manage the site and interfacing with 3rd parties in a manner consistent with the contract and subcontract agreements and the applicable standard of reasonable care.
- Ensure that the overall, job-specific, HSE goals are fully and continuously implemented.
- Provide visible support and motivation for HSE programs, rules, procedures, processes, and training, leading by example and encouraging JACOBS employees to take ownership of HSE issues.
- Intervene or stop work when an unsafe condition or behavior is observed, and/or when an environmentally compromising condition is encountered.
- Make available to and require JACOBS employees to complete required HSE training within established timelines and provide project numbers for such training.
- Consistently and even-handedly enforce HSE rules, procedures, and requirements at the office and/or on project work sites.

- Promptly report all work-related HSE incidents or near misses.
- Wear any required personal protective equipment.
- Ensure JACOBS employees complete required HSE training within established timelines.
- Conduct, cooperate, or assist with HSE incident investigations.
- Consult with the Human Resources Delivery Partner before taking any disciplinary action (other than verbal counseling) associated with JACOBS Policy 203 and/or HSE programs rules, procedures, processes and training.

4.2.2 JACOBS Responsible Health and Safety Manager

RHSM Name: Jeffrey T. Hilgaertner
JACOBS Office: PHX
Cellular Number: 714-552-1971

The RHSM is responsible for the following:

- Review and evaluate subcontractor HSE performance using the pre-qualification process;
- Approve HSP and its revisions as well as Activity Hazard Analyses (AHA);
- Review and evaluate subcontractor site-specific safety procedures for adequacy prior to start of subcontractor's field operations;
- Support the oversight (or SC's direct oversight) of subcontractor and tiered subcontractor HSE practices;
- Permit upgrades and downgrades in respiratory protection after reviewing analytical data;
- Conduct audits as determined by project schedule and coordination with PM; and
- Participate in incident investigations, lessons learned, loss and near loss reporting.

4.2.3 JACOBS Project Environmental Manager

EM Name: Liz Luecker

JACOBS Office: SEA
Telephone Number: 425-233-3585

The Project EM is responsible for the following:

- Provide environmental program support in areas such as training, auditing, planning, permit tracking, and subcontractor oversight as needed or as specified in the project environmental plan;
- Review and evaluate qualifications for subcontractors with a history of environmental non-compliance and for waste transportation and disposal subcontractors;
- Evaluate any spills, releases, or environmental permit incidents for appropriate follow-up actions, notifications, and recordkeeping requirements; and
- Provide environmental compliance and environmental management expertise and advice to the project team as needed during the course of the project.

4.2.4 JACOBS Safety Coordinator

SC Name: Matt Branche
JACOBS Office: PHX

Telephone Number: 480-273-4084

The SC is responsible for verifying that the project is conducted in a safe manner including the following specific obligations:

- Verify this HSP is current and amended when project activities or conditions change;
- Verify JACOBS site personnel and subcontractor personnel read the HSP and sign the Employee Sign-Off Form, prior to commencing field activities;
- Verify JACOBS site personnel have completed any required specialty training (for example, fall protection, confined space entry, among others) and medical surveillance as identified in this HSP;
- Verify that project files include copies of subcontractor training and medical monitoring records, and accepted site-specific safety procedures prior to start of subcontractor's field operations;
- Act as the project "Hazard Communication Coordinator" and perform the responsibilities outlined in the HSP;
- Act as the project "Emergency Response Coordinator" and perform the responsibilities outlined in the HSP;
- Post the Occupational Safety and Health Administration (OSHA) job-site poster; the poster is required at sites where project field offices, trailers, or equipment-storage boxes are established. If you work in a state with an OSHA State Plan, make sure the State Plan poster is posted, if required;
- Hold and/or verify that safety meetings are conducted and documented in the project file initially and as needed throughout the course of the project (as tasks or hazards change);
- Verify that project health and safety forms and permits are being used as outlined this HSP;
- Perform oversight and assessments of subcontractor HSE practices per the site-specific safety plan and verify that project activity self-assessment checklists are being used as outlined this HSP;
- Coordinate with the RHSM regarding JACOBS and subcontractor operational performance, and 3rd party interfaces;
- Verify appropriate personal protective equipment (PPE) use, availability, and training;
- Ensure that the overall, job-specific, HSE goals are fully and continuously implemented;
- Conduct accident investigations including root cause analysis;
- Calibrate and conduct air monitoring in accordance with the HSP; maintain all air monitoring records in project file;
- Maintain HSE records and documentation;
- Facilitate OSHA or other government agency inspections including accompanying inspector and providing all necessary documentation and follow-up;
- Deliver field HSE training as needed based on project-specific hazards and activities;
- Consistently and even-handedly enforce HSE rules, procedures, and requirements at the office and/or on project work sites;
- Wear any required personal protective equipment;
- Conduct, cooperate, or assist with HSE incident investigations;
- Contact the PM and RHSM when standards of conduct or JACOBS Policy 203 has been violated by a JACOBS employee;

- Contact the RHSM and PM in the event of an incident;
- When an apparent imminent danger exists, immediately remove all affected JACOBS employees and subcontractors, notify subcontractor safety representative, stop affected work until adequate corrective measures are implemented, and notify the PM and RHSM as appropriate; and
- Document all oral health and safety-related communications in project field logbook, daily reports, or other records.

4.3 JACOBS Subcontractors

(Reference SOP HSE-215, *Contracts and Subcontracts)*

Subcontractor: NA
Subcontractor Contact Name:
Telephone:

Subcontractors must comply with the following activities, and are responsible to:

- Comply with all local, state, and federal safety standards;
- Comply with project and owner safety requirements;
- Actively participate in the project safety program and either hold or attend and participate in all required safety meetings;
- Provide a qualified safety representative to interface with JACOBS;
- Maintain safety equipment and PPE for their employees;
- Maintain and replace safety protection systems damaged or removed by the subcontractor's operations;
- Notify the SC of any accident, injury, or incident (including spills or releases) immediately and submit reports to JACOBS within 24 hours;
- Install contractually required general conditions for safety (for example, handrail, fencing, fall protection systems, floor opening covers);
- Conduct and document weekly safety inspections of project-specific tasks and associated work areas;
- Conduct site-specific and job-specific training for all subcontractor employees, including review of the JACOBS HSP, subcontractor HSPs, and subcontractor AHAs and sign appropriate sign-off forms; and
- Determine and implement necessary controls and corrective actions to correct unsafe conditions.

The subcontractors listed above may be required to submit their own site-specific HSP and other plans such as lead or asbestos abatement compliance plans. Subcontractors are responsible for the health and safety procedures specific to their work, and are required to submit their plans to JACOBS for review and acceptance before the start of field work.

Subcontractors are also required to prepare AHAs before beginning each activity posing hazards to their personnel. The AHA shall identify the principle steps of the activity, potential health and safety hazards for each step and recommended control measures for each identified hazard. In addition, a listing of the equipment to be used to perform the activity, inspection requirements, and training requirements for the safe operation of the equipment listed must be identified.

4.4 Employee Responsibilities

All personnel are assigned responsibility for safe and healthy operations. This concept is the foundation for involving all employees in identifying hazards and providing solutions. For any operation, individuals have full authority to stop work and initiate immediate corrective action or control. In addition, each worker has a right and responsibility to report unsafe conditions or practices. This right represents a significant facet of worker empowerment and program ownership. Through shared values and a belief that all accidents are preventable, our employees accept personal responsibility for working safely.

Each employee is responsible for the following performance objectives:

- Understanding and abiding by JACOBS and client HSE programs, rules, procedures, processes, and training, including any that are project-specific;
- Completing all required HSE training made available and accessible within established timelines;
- Always wearing any required personal protective equipment;
- Intervening or stopping work for you or other JACOBS employees when an unsafe condition or behavior is encountered or observed, and/or when an environmentally compromising condition exists;
- Promptly notifying a supervisor, PM, SC, or RHSM when an unsafe condition or behavior is observed, and/or when an environmentally compromising condition exists;
- Promptly reporting a supervisor, PM, SC, or RHSM all work-related health, safety , and environmental incidents or near misses;
- Attending required project HSE pre-task briefings and meeting prior to performing work; and
- Cooperating or assisting with HSE incident investigations.

4.4.1 Employee Authority

Each employee on the project has the obligation and authority to shut down any perceived unsafe work and during employee orientation, each employee will be informed of their authority to do so.

4.5 Client Contractors

(Reference SOP HSE-215, *Contracts, Subcontracts and HSE Management Practices*)

Contractor:

Contact Name: Environmental Response Inc

Contact: Eric Smith
Telephone: 602-757-1998
Contractor Task(s):

Contractor:
Contact Name:
Telephone:
Contractor Task(s):

This HSP does not cover contractors that are contracted directly to the client or the owner. JACOBS is not responsible for the health and safety or means and methods of the contractor's work, and we must never assume such responsibility through our actions (such as advising on health and safety issues). In addition to these instructions, JACOBS team members should review contractor safety plans so that we remain aware of appropriate precautions that apply to us. Self-assessment checklists are to be used by

the SC and JACOBS team members to review the contractor's performance only as it pertains to evaluating JACOBS exposure and safety. The RHSM is the only person who is authorized to comment on or approve contractor safety procedures.

Health and safety-related communications with contractors should be conducted as follows:

- Request the contractor to brief JACOBS team members on the precautions related to the contractor's work;
- When an apparent contractor non-compliance or unsafe condition or practice poses a risk to JACOBS team members:
  - Notify the contractor safety representative;
  - Request that the contractor determine and implement corrective actions;
  - If necessary, stop affected JACOBS work until contractor corrects the condition or practice; and
  - Notify the client, PM, and RHSM as appropriate.

If apparent contractor non-compliance or unsafe conditions or practices are observed, inform the contractor safety representative (JACOBS's obligation is limited strictly to informing the contractor of the observation; the contractor is solely responsible for determining and implementing necessary controls and corrective actions).

If an apparent imminent danger is observed, immediately warn the contractor employee(s) in danger and notify the contractor safety representative (JACOBS's obligation is limited strictly to immediately warning the affected individual(s) and informing the contractor of the observation; the contractor is solely responsible for determining and implementing necessary controls and corrective actions).

All verbal health and safety-related communications will be documented in project field logbook, daily reports, or other records.

5.0 Standards of Conduct

All individuals associated with this project must work injury-free and drug-free and must comply with the following standards of conduct, the HSP, and the safety requirements of JACOBS. Commonly accepted standards of conduct help maintain good relationships between people. They promote responsibility and self-development. Misunderstandings, frictions, and disciplinary action can be avoided by refraining from thoughtless or wrongful acts.

5.1 Standards of Conduct Violations

All individuals associated with this project are expected to behave in a professional manner. Violations of the standards of conduct would include, but not be limited to:

- Failure to perform work;
- Inefficient performance, incompetence, or neglect of work;
- Willful refusal to perform work as directed (insubordination);
- Negligence in observing safety regulations, poor housekeeping, or failure to report on-the-job injuries or unsafe conditions;
- Unexcused or excessive absence or tardiness;
- Unwillingness or inability to work in harmony with others;
- Discourtesy, irritation, friction, or other conduct that creates disharmony;
- Harassment or discrimination against another individual;
- Failure to be prepared for work by wearing the appropriate construction clothing or bringing the necessary tools; or
- Violation of any other commonly accepted reasonable rule of responsible personal conduct.

5.2 Disciplinary Actions

The Environmental Services (ES) business group employees, employees working on ES business group projects, and subcontractor employees are subject to disciplinary action for not following HSE rules and requirements. Potential disciplinary action is equally applicable to all employees including management and supervision. Disciplinary action may include denial of access to the worksite, warnings, reprimands, and other actions up to and including termination depending on the specific circumstances.

5.3 Subcontractor Safety Performance

JACOBS should continuously endeavor to observe subcontractors' safety performance and adherence to their plans and AHAs. This endeavor should be reasonable and include observing for hazards or unsafe practices that are both readily observable and occur in common work areas. JACOBS is not responsible for exhaustive observation for hazards and unsafe practices. JACOBS oversight does not relieve subcontractors of their responsibility for effective implementation and compliance with the established plan(s).

5.3.1 Observed Hazard Form

When apparent non-compliance or unsafe conditions or practices are observed, notify the subcontractor's supervisor or safety representative verbally, and document using the Observed Hazard Form, included as an attachment to this HSP, and require corrective action.

If necessary, stop subcontractor's work using the Stop Work Order Form until corrective actions is implemented for observed serious hazards or conditions. Update the Observed Hazard Form to document corrective actions have been taken. The subcontractor is responsible for determining and implementing necessary controls and corrective actions.

5.3.2 Stop Work Order

JACOBS has the authority, as specified in the contract, and the responsibility to stop work in the event any JACOBS employee observes unsafe conditions or failure of the subcontractor to adhere to its safe-work practices or observes a condition or practice that may result in a release or violation of an environmental requirement. This authority and action does not in any way relieve the subcontractor of its responsibilities for the means and methods of the work or, therefore, of any corrective actions. Failure to comply with safe work practices can be the basis for restriction or removal of the subcontractor staff from the job site, termination of the subcontract, restriction from future work, or all three.

When an apparent imminent danger is observed, immediately stop work and alert all affected individuals. Remove all affected JACOBS employees and subcontractor staff from the danger, notify the subcontractor's supervisor or safety representative, and do not allow work to resume until adequate corrective measures are implemented. Notify the PM, Contract Administrator (KA) and RHSM.

When repeated non-compliance or unsafe conditions are observed, notify the subcontractor's supervisor or safety representative and stop affected work by completing and delivering the Stop Work Order Form (attached to this HSP) until adequate corrective measures are implemented. Consult the KA to determine what the contract dictates for actions to pursue in event of subcontractor non-compliance including work stoppage, back charges, progress payments, removal of subcontractor manager, monetary penalties, or termination of subcontractor for cause.

5.4 Incentive Program

Each project is encouraged to implement a safety incentive program that rewards workers for exhibiting exemplary safety behaviors. Actions that qualify are those that go above and beyond what is expected. Actions that will be rewarded include spotting and correcting a hazard, bringing a hazard to the attention of your foreman, telling your foreman about an incident, coming up with a safer way to get the work done, or stopping a crew member from doing something unsafe. The program will operate throughout the project, covering all workers. The incentive program will be communicated to all employees during the project employee orientation and project safety meetings.

5.5 Reporting Unsafe Conditions/Practices

Responsibility for effective health and safety management extends to all levels of the project and requires good communication between employees, supervisors, and management. Accident prevention requires a pro-active policy on near misses, close calls, unsafe conditions, and unsafe practices. All personnel must report any situation, practice, or condition which might jeopardize the

safety of our projects. All unsafe conditions or unsafe practices will be corrected immediately. JACOBS has zero tolerance of unsafe conditions or unsafe practices.

No employee or supervisor will be disciplined for reporting unsafe conditions or practices. Individuals involved in reporting the unsafe conditions or practices will remain anonymous.

The following reporting procedures will be followed by all project employees:

- Upon detection of any unsafe condition or practice, the responsible employee will attempt to safely correct the condition;
- The unsafe condition or practice will be brought to the attention of the worker's direct supervisor, unless the unsafe condition or practice involves the employee's direct supervisor. If so, the SC needs to be notified at once by the responsible employee;
- Either the responsible employee or responsible employee's direct supervisor is responsible for immediately reporting the unsafe condition or practice to the SC;
- The SC will act promptly to correct the unsafe condition or practice; and
- Details of the incident or situation will be recorded by the SC in the field logbook or use the Observed Hazard Form if subcontractor was involved.

6.0 Safety Planning and Change Management

6.1 Daily Safety Meetings and Pre-Task Safety Plans

Daily safety meetings are to be held with all project personnel in attendance to review the hazards posed and required HSE procedures and AHAs that apply for each day's project activities. The Pre-Task Safety Plans (PTSPs) serve the same purpose as these general assembly safety meetings, but the PTSPs are held between the crew supervisor and their work crews to focus on those hazards posed to individual work crews.

At the start of each day's activities, the crew supervisor completes the PTSP, provided as an attachment to this HSP, with input from the work crew, during their daily safety meeting. The day's tasks, personnel, tools and equipment that will be used to perform these tasks are listed, along with the hazards posed and required HSE procedures, as identified in the HSP and AHA. The use of PTSPs promotes worker participation in the hazard recognition and control process while reinforcing the task-specific hazard and required HSE procedures with the crew each day.

6.2 Change Management

This HSP addresses all known activities and associated hazards. As work progresses, if significant changes are identified which could affect health and safety at the site, coordinate with the RHSM to determine whether a HSP update is necessary.

The following are examples of changes that may require a revision to the plan:

- Change in JACOBS staff;
- New subcontractor to perform work;
- New chemicals brought to site for use;
- Change in scope or addition of new tasks;
- Change in contaminants of concern (COCs) or change in concentrations of COCs; and
- New hazards or hazards not previously identified that are not addressed in this HSP.

6.3 Agency Inspection Guidance

(Reference SOP HSE-201, *Agency Inspections and Communications*)

Agency inspections (e.g., OSHA, EPA, other regulatory agencies) are on the rise. JACOBS implements safety and environmental programs in order to ensure safety to workers, the public, and the environment. This plan addresses things like labeling containers, completing the hazard communication training using the attachments to this HSP, listing training requirements and PPE requirements, and addressing project-specific hazards. Field personnel need to contact the RHSM to update this plan if hazards are encountered that are not addressed.

SOP HSE-201 addresses agency inspections in detail, and the attached **Target Zero Bulletin on Agency Inspections** provides a good summary of the inspection process and what to do if an agency such as OSHA or EPA shows up at the site. It is critical to make immediate notification to the RHSM if an inspector arrives (and EM if it is environmental-related); they can help facilitate and make additional notifications.

Review the Target Zero Bulletin and keep it with your Health and Safety Plan/Environmental Plan. Make it a topic at a safety meeting and keep it readily available in the event of an inspection.

7.0 Project Hazard Analysis

A health and safety risk analysis (Table 1) has been performed for each task. In the order listed below, the RHSM considers the various methods for mitigating the hazards. Employees are trained on this hierarchy of controls during their hazardous waste training and reminded of them throughout the execution of projects:

- Elimination of the hazards (use remote sampling methodology to avoid going into a confined space);
- Substitution (reduce exposure to vapors by using of a geoprobe instead of test pitting);
- Engineering controls (ventilate a confined space to improve air quality);
- Warnings (establish exclusion zones to keep untrained people away from hazardous waste work);
- Administrative controls (implement a work-rest schedule to reduce chance of heat stress); or
- Use of PPE (use of respirators when action levels are exceeded).

The hazard controls and safe work practices are summarized in the following sections of this HSP:

- General hazards and controls;
- Project-specific hazards and controls;
- Physical hazards and controls;
- Biological hazards and controls; and
- Contaminants of concern.

7.1 Activity Hazard Analysis

An AHA must be developed for each JACOBS job activity. The AHA shall define the work tasks required to perform each activity, along with potential HSE hazards and recommended control measures for each hazard. In addition, a listing of the equipment to be used to perform the activity, inspection requirements to be performed and training requirements for the safe operation of the equipment listed must be identified. Workers are briefed on the AHA before performing the work and their input is solicited prior, during, and after the performance of work to further identify the hazards posed and control measures required. The AHA shall identify the work tasks required to perform each activity, along with potential HSE hazards and recommended control measures for each hazard.

The following hazard controls and applicable JACOBS core standards and SOPs should be used as a basis for preparing AHAs.

AHAs prepared for JACOBS activities are included as an attachment to this HSP.

7.2 Subcontractor Activity Hazard Analysis

JACOBS subcontractors are required to provide AHAs specific to their scope of work on the project for acceptance by JACOBS. Each subcontractor shall submit AHAs for their field activities, as defined in their scope of work, along with their project-specific safety plan and procedures. Additions or changes in field activities, equipment, tools, or material used to perform work or hazards not addressed in existing AHAs requires either a new AHA to be prepared or an existing AHA to be revised.

Table 1 – General Activity Hazard Analysis

Associated Hazard Section / Project Activity	Mobilization/ Demobilization	Soil sampling	Trenching for site characterization	Waste load-out	Decontamination of equipment	Preparation of samples for shipment to laboratory				
Refer to Section 8.0 – General Hazards and Controls										
Blood Borne Pathogens	X	X	X	X	X	X				
Chemical Storage			X	X	X	X				
Driving	X									
Electrical Safety										
Field Vehicles	X									
Fire Prevention	X	X	X	X	X	X				
General Practices and Housekeeping	X	X	X	X	X	X				
Hazardous Communication	X	X	X	X	X	X				
Knife Use	X	X	X	X	X	X				
Lighting	X	X	X	X	X	X				
Manual Lifting	X	X	X	X	X	X				
Personal Hygiene	X	X	X	X	X	X				
Shipping and Transportation of Hazardous Materials				X		X				
Substance Abuse	X	X	X	X	X	X				
Refer to Section 9.0 – Project Specific Hazards and Controls										
Benzene		X	X	X	X					
Drum & Portable Tank Handling			X	X						
Drum Sampling Safety			X	X						
Hand & Power Tools		X	X	X						
Portable Generator			X	X	X					
Pressure Washing Operations			X	X	X					
Stairways and Ladders		X	X	X						
Traffic Control		X	X	X	X					
Utilities (underground)		X	X	X						
Utilities (overhead)		X	X	X						
Visible Lighting		X	X	X	X					
Refer to Section 10.0 – Physical Hazards and Controls										

Associated Hazard Section / Project Activity	Mobilization/ Demobilization	Soil sampling	Trenching for site characterization	Waste load-out	Decontamination of equipment	Preparation of samples for shipment to laboratory				
Noise		X	X	X	X					
Ultraviolet Light exposure (sunburn)	X	X	X	X	X					
Temperature Extremes	X	X	X	X	X					
Refer to Section 11.0 – Biological Hazards and Controls										
Bees and Other Stinging Insects		X	X	X	X					
Bird Droppings		X	X	X	X					
Feral Dogs		X	X	X	X					
Fire Ants		X	X	X	X					
Hantavirus		X	X	X	X					
Covid-19 Virus	X	X	X	X	X	X				
Mosquito Bites		X	X	X	X					
Poison Ivy, Sumac and Oak		X	X	X	X					
Snakes		X	X	X	X					
Spiders – Brown Recluse and Black Widow		X	X	X	X					
Ticks		X	X	X	X					

8.0 General Hazards and Controls

This section provides safe work practices and control measures used to reduce or eliminate potential hazards. It is a summarized list of requirements. Always consult the appropriate SOP to ensure all requirements are implemented.

8.1 Bloodborne Pathogens

(Reference SOP HSE-202, *Bloodborne Pathogens*)

Exposure to bloodborne pathogens may occur when rendering first aid or cardiopulmonary resuscitation (CPR), or when coming into contact with landfill waste or waste streams containing potentially infectious material (PIM).

Employees trained in first-aid/CPR or those exposed to PIM must complete JACOBS's 1-hour bloodborne pathogens computer-based training module annually. When performing first-aid/CPR the following shall apply:

- Observe universal precautions to prevent contact with blood or other PIMs. Where differentiation between body fluid types is difficult or impossible, consider all body fluids to be potentially infectious materials;
- Always wash your hands and face with soap and running water after contacting PIMs. If washing facilities are unavailable, use an antiseptic cleanser with clean paper towels or moist towelettes; and
- If necessary, decontaminate all potentially contaminated equipment and surfaces with chlorine bleach as soon as possible. Use one part chlorine bleach (5.25 percent sodium hypochlorite solution) diluted with 10 parts water for decontaminating equipment or surfaces after initially removing blood or other PIMs. Remove contaminated PPE as soon as possible before leaving a work area.

JACOBS will provide exposed employees with a confidential medical examination should an exposure to PIM occur. This examination includes the following procedures:

- Documenting the exposure;
- Testing the exposed employee's and the source individual's blood (with consent); and
- Administering post-exposure prophylaxis.

8.2 Chemical Storage

The following are general guidelines for storing chemicals and other hazardous materials:

- Keep acids away from bases;
- Keep oxidizers (nitric acid, nitrates, peroxides, chlorates) and organics away from inorganic reducing agents (metals);
- Keep flammables and corrosives in appropriate storage cabinets;
- Do not store paper or other combustibles near flammables;
- Use secondary containment and lipped shelving that is secured; and
- Have a fire suppression system available.

8.2.1 Storage of Flammable/Combustible Liquids

- Only approved containers and portable tanks shall be used for storage and handling of flammable and combustible liquids.

- Approved safety cans shall be used for the handling and use of flammable liquids in quantities of 5 gallons (19 liters) or less. Do not use plastic gas cans.
- For quantities of 1 gallon (3.78 liters) or less, the original container may be used for storage and use of flammable liquids.
- Flammable or combustible liquids shall not be stored in areas used for stairways or normally used for the passage of people.

8.2.2 Indoor Storage of Flammable/Combustible Liquids

- No more than 25 gallons (95 liters) of flammable or combustible liquids shall be stored in a room outside of an approved storage cabinet.
- Quantities of flammable and combustible liquids in excess of 25 gallons (95 liters) shall be stored in an acceptable or approved cabinet.
- Cabinets shall be conspicuously lettered: "FLAMMABLE: KEEP FIRE AWAY."
- Not more than 60 gallons (228 liters) of flammable or 120 gallons (456 liters) of combustible liquids shall be stored in any one storage cabinet. Not more than three such cabinets may be located in a single storage area.

8.2.3 Outside Storage of Flammable/Combustible Liquids

- Storage of containers (not more than 60 gallons [228 liters] each) shall not exceed 1,100 gallons (4180 liters) in any one area. No area shall be within 20 feet (6.1 meters) of any building.
- Storage areas shall be graded to divert spills away from buildings and surrounded by an earthen dike.
- Storage areas may not be located near a storm drain. Overflow and spills must be diverted away from storm drains or surface waters.
- Storage areas shall be free from weeds, debris, and other combustible materials.
- Outdoor portable tanks shall be provided with emergency vent devices and shall not be closer than 20 feet (6.1 meters) to any building.
- Signs indicating no smoking shall be posted around the storage area.

8.2.4 Storage of Hazardous Waste

- All facilities storing ignitable and combustible liquids and hazardous wastes must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any release of hazardous constituents.
- Flammable wastes should be stored more than 50 feet from the property line.

8.2.5 Storage of Chemical Injection Chemicals/Materials

When chemical injection remediation technologies are being used at a site, the following storage guidelines must be followed:

- Some injection chemicals, such as strong oxidizers, may have stringent storage requirements per local or National Fire Codes. Verify that appropriate storage provisions are in place prior to starting work.

  NOTE: Counties and cities may have requirements specific to storing these chemicals. Also, storage and use of certain chemicals such as potassium permanganate and hydrogen peroxide may be subject to the new Chemical Facility Anti-Terrorism Standards of the Department of Homeland Security – the applicability depends on the chemical, quantity/concentration, and type of facility.

Please contact the project Environmental Manager to determine whether chemicals are subject to these standards.

- Injection chemicals must be stored in a designated, secured area with spill prevention capabilities. Review MSDS or other information to determine potential incompatible materials. Incompatible materials shall not be stored together. Ensure all containers are labeled.

8.3 Driving Safety

Follow the guidelines below when operating a vehicle:

- Refrain from using a cellular phone while driving. Pull off the road, put the vehicle in park and turn on flashers before talking on a cellular phone;
- Never operate a personal digital assistant (PDA), or other device with e-mail, internet, or text messaging function while driving a vehicle;
- Obey speed limits; be aware of blind spots or other hazards associated with low visibility. Practice defensive driving techniques, such as leaving plenty of room between your vehicle and the one ahead of you;
- Do no drive while drowsy. Drowsiness can occur at any time, but is most likely after 18 hours or more without sleep;
- Maintain focus on driving. Eating, drinking, smoking, adjusting controls can divert attention from the road. Take the time to park and perform these tasks when parked rather than while driving; and
- Ensure vehicle drivers are familiar with the safe operation of vehicles of the type and size to be operated. Large vehicles such as full size vans and pick-ups have different vision challenges and handling characteristics than smaller vehicles.

8.4 Electrical Safety

(Reference SOP HSE-206, *Electrical Safety*)

Below are the hazard controls and safe work practices to follow when using electrical tools, extension cords, and/or other electrical-powered equipment or when exposed to electrical hazards. Ensure the requirements of the referenced SOP are followed:

- Only qualified personnel are permitted to work on unprotected energized electrical systems;
- Only authorized personnel are permitted to enter high-voltage areas;
- JACOBS employees who might from time to time work in an environment influenced by the presence of electrical energy must complete Awareness Level Electrical Safety Training located on the JACOBS Virtual Office;
- Do not tamper with electrical wiring and equipment unless qualified to do so. All electrical wiring and equipment must be considered energized until lockout/tagout procedures are implemented;
- Inspect electrical equipment, power tools, and extension cords for damage prior to use. Do not use defective electrical equipment, remove from service;
- JACOBS has selected Ground Fault Circuit Interrupters (GFCIs) as the standard method for protecting employees from the hazards associated with electric shock;
    - GFCIs shall be used on all 120-volt, single phase 15 and 20-amphere receptacle outlets which are not part of the permanent wiring of the building or structure.
- An assured equipment grounding conductor program may be required under the following scenarios:

  - GFCIs cannot be utilized;
  - Client requires such a program to be implemented; or
  - Business group decides to implement program in addition to GFCI protection.
- Extension cords must be equipped with third-wire grounding. Cords passing through work areas must be covered, elevated or protected from damage. Cords should not be routed through doorways unless protected from pinching. Cords should not be fastened with staples, hung from nails, or suspended with wire;
- Electrical power tools and equipment must be effectively grounded or double-insulated and Underwriters Laboratory (UL) approved;
- Operate and maintain electric power tools and equipment according to manufacturers' instructions;
- Maintain safe clearance distances between overhead power lines and any electrical conducting material unless the power lines have been de-energized and grounded, or where insulating barriers have been installed to prevent physical contact. Maintain at least 10 feet (3 meters) from overhead power lines for voltages of 50 kV or less, and 10 feet (3 meters) plus 0.4 inches (1.0 cm) for every 1 kV over 50 kV;
- Temporary lights shall not be suspended by their electric cord unless designed for suspension. Lights shall be protected from accidental contact or breakage; and
- Protect all electrical equipment, tools, switches, and outlets from environmental elements.

8.5 Field Vehicles

- Field vehicles may be personal vehicles, rental vehicles, fleet vehicles, or project vehicles.
- Maintain a first aid kit, bloodborne pathogen kit, and fire extinguisher in the field vehicle at all times.
- Utilize a rotary beacon on vehicle if working adjacent to active roadway.
- Familiarize yourself with rental vehicle features prior to operating the vehicle:
  - Vision Fields and Blind Spots
  - Vehicle Size
  - Mirror adjustments
  - Seat adjustments
  - Cruise control features, if offered
  - Pre-program radio stations and Global Positioning System (GPS), if equipped
- Always wear seatbelt while operating vehicle.
- Adjust headrest to proper position.
- Tie down loose items if utilizing a van or pick-up truck.
- Close car doors slowly and carefully. Fingers can get pinched in doors.
- Park vehicle in a location where it can be accessed easily in the event of an emergency. If not possible, carry a phone.
- Have a designated place for storing the field vehicle keys when not in use.
- Ensure back-up alarms are functioning, if equipped. Before backing a vehicle, take a walk around the vehicle to identify obstructions or hazards. Use a spotter when necessary to back into or out of an area.

- See the Vehicle Accident Guidance attached to this HSP, if a vehicle incident is experienced in a rental or fleet vehicle.

8.6 Fire Prevention

(Reference SOP HSE-403, *Hazardous Material Handling*)

Follow the fire prevention and control procedures listed below.

8.6.1 Fire Extinguishers and General Fire Prevention Practices

- Fire extinguishers shall be provided so that the travel distance from any work area to the nearest extinguisher is less than 100 feet (30.5 meters). When 5 gallons (19 liters) or more of a flammable or combustible liquid is being used, an extinguisher must be within 50 feet (15.2 meters). Extinguishers must:
  - be maintained in a fully charged and operable condition;
  - be visually inspected each month; and
  - undergo a maintenance check each year.
- The area in front of extinguishers must be kept clear.
- Post "Exit" signs over exiting doors, and post "Fire Extinguisher" signs over extinguisher locations.
- Combustible materials stored outside should be at least 10 feet (3 meters) from any building.
- Solvent waste and oily rags must be kept in a fire resistant, covered container until removed from the site.
- Keep areas neat. Housekeeping is important.

8.6.2 Dispensing of Flammable/Combustible Liquids

- Areas in which flammable or combustible liquids are dispensed in quantities greater than 5 gallons (22.7 liters) (shall be separated from other operations by at least 25 feet (7.6 meters).
- Drainage away from storm drains or surface waters or other means of containment shall be provided to control spills.
- Adequate natural or mechanical ventilation shall be provided to maintain the concentration of flammable vapor at or below 10 percent of the lower flammable limit.
- Dispensing of flammable liquids from one container to another shall be done only when containers are electrically interconnected (bonded).
- Dispensing flammable or combustible liquids by means of air pressure on the container or portable tanks is prohibited.
- Dispensing devices and nozzles for flammable liquids shall be of an approved type.

8.7 General Practices and Housekeeping

The following are general requirements applicable to all portions of the work:

- Site work should be performed during daylight hours whenever possible;
- Good housekeeping must be maintained at all times in all project work areas;
- Common paths of travel should be established and kept free from the accumulation of materials;
- Keep access to aisles, exits, ladders, stairways, scaffolding, and emergency equipment free from obstructions;

- Provide slip-resistant surfaces, ropes, or other devices to be used;
- Specific areas should be designated for the proper storage of materials;
- Tools, equipment, materials, and supplies shall be stored in an orderly manner;
- As work progresses, scrap and unessential materials must be neatly stored or removed from the work area;
- Containers should be provided for collecting trash and other debris and shall be removed at regular intervals;
- All spills shall be quickly cleaned up; oil and grease shall be cleaned from walking and working surfaces;
- Review the safety requirements of each job you are assigned to with your supervisor. You are not expected to perform a job that may result in injury or illness to yourself or to others;
- Familiarize yourself with, understand, and follow jobsite emergency procedures;
- Do not fight or horseplay while conducting the firm's business;
- Do not use or possess firearms or other weapons while conducting the firm's business;
- Report unsafe conditions or unsafe acts to your supervisor immediately;
- Report emergencies, occupational illnesses, injuries, vehicle accidents, and near misses immediately;
- Do not remove or make ineffective safeguards or safety devices attached to any piece of equipment;
- Report unsafe equipment, defective or frayed electrical cords, and unguarded machinery to your supervisor;
- Shut down and lock out machinery and equipment before cleaning, adjustment, or repair. Do not lubricate or repair moving parts of machinery while the parts are in motion;
- Do not run in the workplace;
- When ascending or descending stairways, use the handrail and take one step at a time;
- Do not apply compressed air to any person or clothing;
- Do not wear steel taps or shoes with metal exposed to the sole at any JACOBS project location;
- Do not wear finger rings, loose clothing, wristwatches, and other loose accessories when within arm's reach of moving machinery;
- Remove waste and debris from the workplace and dispose of in accordance with federal, state, and local regulations;
- Note the correct way to lift heavy objects (secure footing, firm grip, straight back, lift with legs), and get help if needed. Use mechanical lifting devices whenever possible; and
- Check the work area to determine what problems or hazards may exist.

8.8 Hazard Communication

(Reference SOPs HSE-107, *Hazard Communication* and HSE-403, *Hazardous Material Handling*)

The hazard communication coordinator is to perform the following:

- Complete an inventory of chemicals brought on site by JACOBS using the chemical inventory form included as an attachment to this HSP;
- Confirm that an inventory of chemicals brought on site by JACOBS subcontractors is available;

- Request or confirm locations of material safety data sheets (MSDSs) from the client, contractors, and subcontractors for chemicals to which JACOBS employees potentially are exposed;
- Before or as the chemicals arrive on site, obtain an MSDS for each hazardous chemical and include on the chemical inventory sheet (attached to this HSP) and add the MSDS to the MSDS attachment section of this HSP;
- Label chemical containers with the identity of the chemical and with hazard warnings, and store properly;
- Give employees required chemical-specific HAZCOM training using the chemical-specific training form included as an attachment to this HSP; and
- Store all materials properly, giving consideration to compatibility, quantity limits, secondary containment, fire prevention, and environmental conditions.

8.9 Knife Use

Open-bladed knives (for example, box cutters, utility knives, pocket knives, machetes, and multi-purpose tools with fixed blades such as a Leatherman™) are prohibited at worksites except where the following three conditions are met:

- The open-bladed knife is determined to be the best tool for the job;
- An approved Activity Hazard Analysis (AHA) or written procedure is in place that covers the necessary safety precautions (work practices, PPE, and training); and
- Knife users have been trained and follow the AHA.

8.10 Lighting

Lighting shall be evaluated when conducting work inside buildings, confined spaces, or other areas/instances where supplemental light may be needed (e.g., work before sunrise or after sunset). A light meter can be used to evaluate the adequacy of lighting. The following are common requirements for lighting and the conditions/type of work being performed:

- While work is in progress outside construction areas shall have at least 33 lux (lx);
- Construction work conducted inside buildings should be provided with at least 55 lux light;
- The means of egress shall be illuminated with emergency and non-emergency lighting to provide a minimum 11 lx measured at the floor. Egress illumination shall be arranged so that the failure of any single lighting unit, including the burning out of an electric bulb will not leave any area in total darkness.

8.11 Manual Lifting

(Reference SOP HSE-112, *Manual Lifting*)

Back injuries are the leading cause of disabling work and most back injuries are the result of improper lifting techniques or overexertion. Use the following to mitigate the hazards associated with lifting:

- When possible, the task should be modified to minimize manual lifting hazards;
- Lifting of loads weighing more than 40 pounds (18 kilograms) shall be evaluated by the SC using the Lifting Evaluation Form contained in SOP HSE-112;
- Using mechanical lifting devices is the preferred means of lifting heavy objects such as forklifts; cranes, hoists, and rigging; hand trucks; and trolleys;

- Personnel shall seek assistance when performing manual lifting tasks that appear beyond their physical capabilities;
- In general, the following steps must be practiced when planning and performing manual lifts: Assess the situation before you lift; ensure good lifting and body positioning practices; ensure good carrying and setting down practices; and
- All JACOBS workers must have training in proper manual lifting training either through the New Employee Orientation or through Manual Lifting module located on the VO.

8.12 Personal Hygiene

Good hygiene is essential for personal health and to reduce the potential of cross-contamination when working on a hazardous waste site. Implement the following:

- Keep hands away from nose, mouth, and eyes during work;
- Keep areas of broken skin (chapped, burned, etc.) covered; and
- Wash hands with soap and water prior to eating, smoking, or applying cosmetics.

8.13 Shipping and Transportation of Hazardous Materials

(Reference SOP HSE-417, *Hazardous Materials Transportation*)

The U.S. Department of Transportation (DOT) has specific regulations governing shipping of hazardous materials (also called dangerous goods). Chemicals brought to the site might be defined as hazardous materials by the U.S DOT. Hazardous wastes that may be shipped offsite are also defined as hazardous materials by U.S. DOT. Other wastes may also be U.S. DOT hazardous materials. To confirm whether a material or a waste is a U.S. DOT hazardous material, check with the ESBG Waste Coordinator (Lisa Schwan/ATL), the project EM, or the JACOBS Dangerous Goods Shipping Coordinators (John Blasco/BAO or Rob Strehlow/MKW).

All staff who affect shipment of hazardous materials, including receiving hazardous materials, preparing profiles or manifests, packaging hazardous wastes, labeling, or transporting hazardous materials by road, are called HazMat employees (note JACOBS cannot transport hazardous wastes by public road). HazMat employees must receive JACOBS online training in shipping dangerous goods. JACOBS's online Dangerous Goods Shipping course can be found on the JACOBS HSSE website.

All hazardous materials that are shipped (e.g., via Federal Express) or are transported by road must be properly identified, labeled, packed, and documented by trained staff. If the material is a product that is being shipped (e.g., calibration gas), use the HazMat ShipRight tool on the JACOBS virtual office (under Company Resources – Online Shipping). Contact the Dangerous Goods Shipping coordinators, the ESBG Waste Coordinator or the project EM for additional information.

49 CFR 172 requires that all hazmat employees be aware of potential transportation security concerns. Hazardous materials security is addressed in JACOBS's Hazardous Materials SOP (HSE-403). The following points are provided as an overview of security measures to increase awareness of this important matter:

- It is essential that each employee understand the security risks involved with transporting hazardous materials;
- All transporters of hazardous materials must be prequalified by a Contracts Administrator who evaluate the carrier's safety rating, security measures, and employee screening procedures;
- When shipping hazardous materials, check driver credentials and ask about shipping details;

- When receiving a hazardous materials shipment, inspect packages for signs of tampering or damage to the contents. Verify the drivers and company information on the form with the driver; and
- If there is suspicious or unusual behavior (e.g., driver without credentials, evasive answers) or any discrepancies identified, do not offer or accept the shipment, and immediately notify the project manager or the RHSM.

Employees responsible for shipping hazard materials must also review the JACOBS Transportation Security Plan (HSE-417 Appendix A).

8.14 Substance Abuse

(Reference SOP HSE-105, *Drug-Free Workplace)*

Employees who work under the influence of controlled substances, drugs, or alcohol may prove to be dangerous or otherwise harmful to themselves, other employees, clients, the company, the company's assets and interests, or the public. JACOBS does not tolerate illegal drug use, or any use of drugs, controlled substances, or alcohol that impairs an employee's work performance or behavior.

Prohibitions onsite include:

- Use or possession of intoxicating beverages while performing JACOBS work;
- Abuse of prescription or nonprescription drugs;
- Use or possession of illegal drugs or drugs obtained illegally;
- Sale, purchase, or transfer of legal, illegal or illegally obtained drugs; and
- Arrival at work under the influence of legal or illegal drugs or alcohol.

Drug and/or alcohol testing is applicable under JACOBS Constructors, Inc. and munitions response projects performed in the United States. In addition, employees may be required to submit to drug and/or alcohol testing as required by clients. When required, this testing is performed in accordance with SOP HSE-105, Drug-Free Workplace. Employees who are enrolled in drug or alcohol testing are required to complete annual training located on the JACOBS Virtual Office (VO).

9.0 Project-Specific Hazard Controls

This section provides safe work practices and control measures used to reduce or eliminate potential hazards. These practices and controls are to be implemented by the party in control of either the work or the particular hazard. Each person onsite is required to abide by the hazard controls. Always consult the appropriate SOP to ensure all requirements are implemented. JACOBS employees and subcontractors must remain aware of the hazards affecting them regardless of who is responsible for controlling the hazards. JACOBS employees and subcontractors who do not understand any of these provisions should contact the RHSM for clarification.

9.1 Arsenic

(Reference SOP HSE-501, *Arsenic*)

Arsenic is considered a "Confirmed Human Carcinogen." JACOBS is required to control employee exposure to arsenic when exposures are at or above 5.0 micrograms per cubic meter ($\mu g/m^3$), or if there is the possibility of skin or eye irritation from arsenic. The elements of the JACOBS arsenic program include the following:

- Exposure monitoring;
- Methods of control, including PPE and respirators;
- Medical surveillance;
- Training on hazards of arsenic and control measures (includes project-specific training and the computer-based training on JACOBS's Virtual Office, *Arsenic Exposure)*; and
- Recordkeeping requirements.

If air monitoring indicates there is potential exposure at the action level concentrations, notify the RHSM to ensure the above have been adequately addressed. Full implantation of SOP HSE-501, Arsenic, will be required. Other exposure control measures include:

- Do not enter regulated work areas unless training, medical monitoring, and PPE requirements established by the competent person have been met;
- Do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas;
- Avoid skin and eye contact with liquid and particulate arsenic or arsenic trichloride;
- Respiratory protection and other exposure controls selection shall be based on the most recent exposure monitoring results obtained from the competent person; and
- Review the fact sheet included as an attachment to this HSP.

9.2 Benzene

(Reference SOP HSE-503, *Benzene*)

Benzene is considered a "Confirmed Human Carcinogen." JACOBS is required to control employee workplace exposure to benzene when personal exposures is at or above 0.5 parts per million (ppm) as an 8-hour time-weighted average (TWA) or above 5.0 ppm short term exposure limit (STEL), by implementing a program that meets the requirements of the OSHA Benzene standard, 29 CFR 1910.1028. The elements of the JACOBS benzene program include the following:

- Exposure monitoring;
- Methods of control, including personal protective equipment (PPE) and respirators;
- Medical surveillance;

- Training on hazards of benzene and control measures (includes project-specific training and the computer-based training on JACOBS's Virtual Office, *Benzene);* and
- Record keeping requirements.

If air monitoring indicates there is potential exposure at the action level concentrations above, notify the RHSM to ensure the above have been adequately addressed. Other exposure control measures include:

- Do not enter regulated work areas unless training, medical monitoring, and PPE requirements established by the competent person have been met;
- Do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas;
- Respiratory protection and other exposure controls selection shall be based on the most recent exposure monitoring results obtained from the competent person; and
- Review the fact sheet included as an attachment to this HSP.

9.3 Drum and Portable Tank Handling

Below are the hazard controls and safe work practices to follow when overseeing the movement of drums or when handling drums:

- Ensure that personnel are trained in proper lifting and moving techniques to prevent back injuries;
- Ensure drum or tank bungs and lids are secured and are labeled prior to moving;
- Ensure that drums and tanks remain covered except when removing or adding material or waste. Covers and/or lids will be properly secured at the end of each workday;
- Provide equipment to keep the operator removed from the drums to lessen the likelihood of injury. Such equipment might include: a drum grappler attached to a hydraulic excavator; a small front-end loader, which can be either loaded manually or equipped with a bucket sling; a rough terrain forklift; Roller conveyor equipped with solid rollers; drum carts designed specifically for drum handling;
- Make sure the vehicle selected has sufficient rated load capacity to handle the anticipated loads, and make sure the vehicle can operate smoothly on the available road surface;
- Ensure there are appropriately designed Plexiglas cab shields on loaders, backhoes, etc., when handling drums containing potentially explosive materials;
- Equipment cabs should be supplied with fire extinguishers, and should be air-conditioned to increase operator efficiency;
- Supply operators with appropriate respiratory protective equipment when needed;
- Ensure that drums are secure and are not in the operator's view of the roadway;
- Prior to handling, all personnel should be warned about hazards of handling;
- Before moving anything, determine the most appropriate sequence in which the various drums, portable tanks, and other containers should be moved (e.g. small containers may have to be removed first to permit heavy equipment to enter and move the drums;
- Overpack drums and an adequate volume of absorbent should be kept near areas where minor spills may occur;
- Use containers or overpacks that are compatible with the waste or materials;
- Drums containing liquids or hazardous waste will be provided with secondary containment and may not be located near a storm water inlet or conveyance;

- Allow enough aisle space between drum pallets and between drums and other equipment that the drums can be easily accessed (at least 2 to 3 feet) by fire control equipment and similar equipment.; and
- Make sure that a spill kit is available in drum or tank storage areas (or where liquids are transferred from one vessel to another).

9.4 Drum Sampling Safety

Personnel are permitted to handle and/or sample drums containing certain types of waste (drilling waste, investigation-derived waste, and waste from known sources) only. Handling or sampling drums with unknown contents requires a plan revision or amendment approved by the RHSM. The following control measures will be taken when sampling drums:

- Minimize transportation of drums;
- Sample only labeled drums or drums from a known waste stream;
- Do not sample bulging or swollen drums. Contact the RHSM;
- If drums contain, or potentially contain, flammable materials, use non-sparking tools to open;
- Use the proper tools to open and seal drums;
- Reseal bung holes or plugs whenever possible;
- Avoid mixing incompatible drum contents;
- Sample drums without leaning over the drum opening;
- Transfer/sample the content of drums using a method that minimizes contact with material;
- Use the PPE and perform air monitoring as specified in the PPE and Site Monitoring sections of this HSP;
- Take precautions to prevent contaminated media from contacting the floor or ground, such as having plastic under the sampling area, having a spill kit accessible during sampling activities; and
- If transferring/sampling drums containing flammable or combustible liquids, drums and liquid transfer equipment should be grounded and bonded to reduce the potential of a static discharge.

9.5 Earthmoving Equipment

(Reference SOP HSE-306, *Earthmoving Equipment*)

Below are the hazard controls and safe work practices to follow when working around or operating heavy equipment. Ensure the requirements in the referenced SOP are followed.

- JACOBS authorizes only those employees qualified by training or previous experience to operate material handling equipment.
- JACOBS employees must be evaluated prior to operating earthmoving equipment by a JACOBS earthmoving equipment operator evaluation designated person. This evaluation will be documented according to SOP HSE-306, Earthmoving Equipment.
- Equipment must be checked at the beginning of each shift to ensure the equipment is in safe operating condition and free of apparent damage. The check should include: service brakes, parking brakes, emergency brakes, tires, horn, back-up alarm, steering mechanism, coupling devices, seat belts and operating controls. All defects shall be corrected before the equipment is placed in service. Documentation of this inspection must be maintained onsite at all times (use the Earthmoving Equipment Inspection form if operated by JACOBS).

- Equipment must be on a stable foundation such as solid ground or cribbing; outriggers are to be fully extended.
- Equipment must not be used to lift personnel; loads must not be lifted over the heads of personnel.
- Equipment, or parts thereof, which are suspended must be substantially blocked or cribbed to prevent shifting before personnel are permitted to work under or between them. All controls shall be in a neutral position, with the motors stopped and brakes set.
- Equipment which is operating in reverse must have a reverse signal alarm distinguishable from the surrounding noise or a signal person when the operators view is obstructed.
- When equipment is used near energized power lines, the closest part of the equipment must be at least 10 feet (3 meters) from the power lines less than 50 kilovolts (kV). Provide an additional 4 feet (1.2 meters) for every 10 kV over 50 kV. A person must be designated to observe clearances and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means. All overhead power lines must be considered to be an energized until the electrical utility authorities indicate that it is not an energized line and it has been visibly grounded.
- Underground utility lines must be located before excavation begins; refer to the Utilities (underground) section.
- Operators loading and unloading from vehicles are responsible for seeing that vehicle drivers are in the vehicle cab or in a safe area.
- The parking brake shall be set whenever equipment is parked; wheels must be chocked when parked on inclines.
- When not in operation, the blade or bucket must be blocked or grounded; the master clutch must be disengaged when the operator leaves the cab. When equipment is unattended, power must be shut off, brakes set, blades or buckets landed and shift lever in neutral.

9.6 Excavation Activities

(Reference SOP HSE-307, *Excavation and Trenching Safety*)

The requirements in this section shall be followed whenever excavation is being performed. Refer to the Earthmoving Equipment section and SOP for additional requirements applicable to operating/oversight of earthmoving equipment. Below are the hazard controls and safe work practices to follow when working around or performing excavation. Ensure the requirements in the referenced SOP are followed.

- If the project site is suspected of munitions or explosives of concern (MEC) contamination, requirements of the *Explosives Usage and Munitions Response (MR)* SOP HSE-610 shall be followed. MECs include unexploded ordnance (UXO), discarded military munitions, materials that present a potential explosive hazard, chemical warfare materials, munitions constituents, and contaminated soil or groundwater. "Down-hole" avoidance support may be required to prevent accidental contact with UXO. Safety requirements will be based on the risk assessment identified within the MR (safety) ORE (Opportunity Risk Evaluation).
- Do not enter the excavations unless completely necessary, and only after the excavation competent person has completed their daily inspection and has authorized entry. An inspection shall be conducted by the competent person prior to the start of work, as needed throughout the shift, after every rainstorm, and after any hazard increasing occurrence. Documentation of the inspection must be maintained onsite at all times.

- Follow all excavation entry requirements established by the excavation competent person and any excavation permit being used.
- Sloping, benching, shoring, shielding, or other protective systems are required to protect personnel from cave-ins except when the excavation is made entirely in stable rock or is less than 5 feet deep (1.5 meters) and there is no indication of possible cave-in, as determined by the excavation competent person. Protective systems for excavations deeper than 20 feet (6.1 meters) must be designed or approved by a registered professional engineer.
- Trenches greater than 4 feet (1.2 meters) deep shall be provided with a ladder, stairway, or ramp positioned so that the maximum lateral travel distance is no more than 25 feet (7.6 meters).
- The atmosphere of excavations greater than 4 feet (1.2 meters) deep shall be tested prior to entry when a hazardous atmosphere exists or could reasonably be expected to exist, such as excavating landfills, hazardous waste dumps; or areas containing sewer or gas utility systems, petroleum distillates, or areas where hazardous substances are stored nearby.
- Spoil piles, material, and equipment must be kept at least 2 feet (61 centimeters) from the edge of the excavation, or a retaining device must be used to prevent the material from falling into the excavation.
- Excavations shall not be entered when:
  - Protective systems are damaged or unstable;
  - Objects or structures above the work location may become unstable and fall into the excavation;
  - The potential for a hazardous atmosphere exists, unless the air has been tested and found to be at safe levels; or
  - Accumulated water exists in the excavation, unless precautions have been taken to prevent excavation cave-in.
- The excavation self-assessment checklist shall be used to evaluate excavations prior to entry.

9.7 Hand and Power Tools

(Reference SOP HSE-210, *Hand and Power Tools*)

Below are the hazard controls and safe work practices to follow when personnel or subcontractors are using hand and power tools. Ensure the requirements in the referenced SOP are followed:

- Tools shall be inspected prior to use and damaged tools will be tagged and removed from service;
- Hand tools will be used for their intended use and operated in accordance with manufacturer's instructions and design limitations;
- Maintain all hand and power tools in a safe condition;
- Use PPE (such as gloves, safety glasses, earplugs, and face shields) when exposed to a hazard from a tool;
- Do not carry or lower a power tool by its cord or hose;
- Portable power tools will be plugged into GFCI protected outlets;
- Portable power tools will be Underwriters Laboratories (UL) listed and have a three-wire grounded plug or be double insulated;

- Disconnect tools from energy sources when they are not in use, before servicing and cleaning them, and when changing accessories (such as blades, bits, and cutters);
- Safety guards on tools must remain installed while the tool is in use and must be promptly replaced after repair or maintenance has been performed;
- Store tools properly in a place where they will not be damaged or come in contact with hazardous materials;
- If a cordless tool is connected to its recharge unit, both pieces of equipment must conform strictly with electrical standards and manufacturer's specifications;
- Tools used in an explosive environment must be rated for work in that environment (that is, intrinsically safe, spark-proof, etc.); and
- Working with manual and pistol-grip hand tools may involve highly repetitive movement, extended elevation, constrained postures, and/or awkward positioning of body members (for example, hand, wrist, arm, shoulder, neck, etc.). Consider alternative tool designs, improved posture, the selection of appropriate materials, changing work organization, and sequencing to prevent muscular, skeletal, repetitive motion, and cumulative trauma stressors.

Machine Guarding

- Ensure that all machine guards are in place to prevent contact with drive lines, belts, chains, pinch points or any other sources of mechanical injury.
- Unplugging jammed equipment will only be performed when equipment has been shut down, all sources of energy have been isolated and equipment has been locked/tagged and tested.
- Maintenance and repair of equipment that results in the removal of guards or would otherwise put anyone at risk requires lockout of that equipment prior to work.

9.8 Portable Generator Hazards

(Reference SOP HSE-206, Electrical Safety)

- Portable generators are useful when temporary or remote electric power is needed, but they also can be hazardous. The primary hazards to avoid when using a generator are carbon monoxide (CO) poisoning from the toxic engine exhaust, electric shock or electrocution, and fire.
- NEVER use a generator indoors or in similar enclosed or partially-enclosed spaces. Generators can produce high levels of carbon monoxide (CO) very quickly. When you use a portable generator, remember that you cannot smell or see CO. Even if you can't smell exhaust fumes, you may still be exposed to CO.
- If you start to feel sick, dizzy, or weak while using a generator, get to fresh air RIGHT AWAY. DO NOT DELAY. The CO from generators can rapidly lead to full incapacitation and death.
- If you experience serious symptoms, get medical attention immediately. Inform project staff that CO poisoning is suspected. If you experienced symptoms while indoors have someone call the fire department to determine when it is safe to re-enter the building.
- Follow the instructions that come with your generator. Locate the unit outdoors and away from doors, windows, and vents that could allow CO to come indoors.
- Ensure the generator is grounded in accordance with the manufacturer's operation manual.
- Keep the generator dry and do not use in rain or wet conditions. To protect from moisture, operate it on a dry surface under an open, canopy-like structure. Dry your hands if wet before touching the generator.

- Plug appliances directly into the generator. Or, use a heavy duty, outdoor-rated extension cord that is rated (in watts or amps) at least equal to the sum of the connected appliance loads. Check that the entire cord is free of cuts or tears and that the plug has all three prongs, especially a grounding pin.
- Most generators come with Ground Fault Circuit Interrupters (GFCI). Test the GFCIs daily to determine whether they are working
- If the generator is not equipped with GFCI protected circuits plug a portable GFCI into the generator and plug appliances, tools and lights into the portable GFCI.
- Never store fuel near the generator or near any sources of ignition.
- Before refueling the generator, turn it off and let it cool down. Gasoline spilled on hot engine parts could ignite.

9.9 Pressure Washing Operations

Below are the hazard controls and safe work practices to follow when working around or performing pressure washing.

- Only trained, authorized personnel may operate the high-pressure washer.
- Follow manufacturer's safety and operating instructions.
- Inspect pressure washer before use and confirm deadman trigger is fully operational
- The wand must always be pointed at the work area.
- The trigger should never be tied down
- Never point the wand at yourself or another worker.
- The wand must be at least 42 inches (1.1 meter) from the trigger to the tip and utilize greater than 10 degree tips.
- The operator must maintain good footing.
- Non-operators must remain a safe distance from the operator.
- No unauthorized attachment may be made to the unit.
- Do not modify the wand.
- All leaks or malfunctioning equipment must be repaired immediately or the unit taken out-of-service.
- Polycoated Tyvek or equivalent, 16-inch-high steel-toed rubber boots, safety glasses, hard hat with face shield, and inner and outer nitrile gloves will be worn, at a minimum.

9.10 Stairways and Ladders

(Reference SOP HSE-214, *Stairways and Ladders*)

Below are the hazard controls and safe work practices to follow when using stairways and ladders. Ensure the requirements in the referenced SOP are followed.

- Stairway or ladder is generally required when a break in elevation of 19 inches (48.3 cm) or greater exists.
- Personnel should avoid using both hands to carry objects while on stairways; if unavoidable, use extra precautions.

- Personnel must not use pan and skeleton metal stairs until permanent or temporary treads and landings are provided the full width and depth of each step and landing.
- Ladders must be inspected by a competent person for visible defects prior to each day's use. Defective ladders must be tagged and removed from service.
- Always obey and pay attention to warning labels or stickers on the specific ladder being used.
- Ladders must be used only for the purpose for which they were designed and shall not be loaded beyond their rated capacity.
- Ladder safety training on safe use (e.g., review SOP HSE-214 as part of a safety meeting) must be documented and kept with the project files.
- Only one person at a time shall climb on or work from an individual ladder.
- User must face the ladder when climbing; keep belt buckle between side rails.
- Ladders shall not be moved, shifted, or extended while in use.
- User must use both hands to climb; use rope to raise and lower equipment and materials.
- Straight and extension ladders must be tied off to prevent displacement.
- Ladders that may be displaced by work activities or traffic must be secured or barricaded.
- Personnel climbing ladders shall face the ladder and maintain 3 points of contact with the ladder.
- Portable ladders must extend at least 3 feet (91.5 cm) above landing surface.
- Straight and extension ladders must be positioned at such an angle that the ladder base to the wall is one-fourth of the working length of the ladder.
- Stepladders are to be used in the fully opened and locked position.
- Users are not to stand on the top two steps of a stepladder; nor are users to sit on top or straddle a stepladder.
- Fixed ladders $\geq$ 24 feet (7.3 meters) in height must be provided with fall protection devices.
- Fall protection should be considered when working from extension, straight, or fixed ladders greater than six feet (1.8 meters) from lower levels and both hands are needed to perform the work, or when reaching or working outside of the plane of ladder side rails.

9.11 Traffic Control

(Reference SOP HSE-216, *Traffic Control*)

The following precautions must be taken when working around traffic, and in or near an area where traffic controls have been established by a sub contractor. Ensure the requirements in the referenced SOP are followed.

- Exercise caution when exiting traveled way or parking along street – avoid sudden stops, use flashers, etc.
- Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier.
- All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests.
- Eye protection should be worn to protect from flying debris.

- Remain aware of factors that influence traffic related hazards and required controls – sun glare, rain, wind, flash flooding, limited sight-distance, hills, curves, guardrails, width of shoulder (i.e., breakdown lane), etc.
- Always remain aware of an escape route (e.g., behind an established barrier, parked vehicle, guardrail, etc).
- Always pay attention to moving traffic – never assume drivers are looking out for you.
- Work as far from traveled way as possible to avoid creating confusion for drivers.
- When workers must face away from traffic, a "buddy system" should be used, where one worker is looking towards traffic.
- When working on highway projects, obtain a copy of the contractor's traffic control plan.
- Work area should be protected by a physical barrier – such as a K-rail or Jersey barrier.
- Review traffic control devices to ensure that they are adequate to protect your work area. Traffic control devices should: 1) convey a clear meaning, 2) command respect of road users, and 3) give adequate time for proper traffic response. The adequacy of these devices are dependent on limited sight distance, proximity to ramps or intersections, restrictive width, duration of job, and traffic volume, speed, and proximity.
- Either a barrier or shadow vehicle should be positioned a considerable distance ahead of the work area. The vehicle should be equipped with a flashing arrow sign and truck-mounted crash cushion (TMCC). All vehicles within 40 feet (12.2 meters) of traffic should have an orange flashing hazard light atop the vehicle.
- Except on highways, flaggers should be used when 1) two-way traffic is reduced to using one common lane, 2) driver visibility is impaired or limited, 3) project vehicles enter or exit traffic in an unexpected manner, or 4) the use of a flagger enhances established traffic warning systems.
- Lookouts should be used when physical barriers are not available or practical. The lookout continually watches approaching traffic for signs of erratic driver behavior and warns workers.
- Vehicles should be parked at least 40 feet (12.2 meters) away from the work zone and traffic. Minimize the amount of time that you will have your back to oncoming traffic.
- Traffic control training module on the VO shall be completed when JACOBS workers who work in and around roadways and who exposed to public vehicular traffic.

9.12 Utilities (underground)

An assessment for underground utilities must be conducted where there is a potential to contact underground utilities or similar subsurface obstructions during intrusive activities. Intrusive activities include excavation, trenching, drilling, hand augering, soil sampling, or similar activities.

The assessment must be conducted <u>before any intrusive subsurface activity</u> and must include at least the following elements:

1. A background and records assessment of known utilities or other subsurface obstructions.
2. Contacting and using the designated local utility locating service.
3. Conducting an independent field survey to identify, locate, and mark potential underground utilities or subsurface obstructions. *Note: This is independent of, and in addition to, any utility survey conducted by the designated local utility locating service above.*
4. A visual survey of the area to validate the chosen location.

When any of these steps identifies an underground utility within 5 feet (1.5 meters) of intrusive work, then non-aggressive means must be used to physically locate the utility before a drill rig, backhoe, excavator or other aggressive method is used.

Aggressive methods are never allowed within 2 feet of an identified high risk utility (see paragraph below).

Any deviation from these requirements must be approved by the Responsible HS Manager and the Project Manager.

Background and Records Assessment of Known Utilities

Identify any client- or location-specific permit and/or procedural requirements (e.g., dig permit or intrusive work permit) for subsurface activities. For military installations, contact the Base Civil Engineer and obtain the appropriate form to begin the clearance process.

Obtain available utility diagrams and/or as-built drawings for the facility.

Review locations of possible subsurface utilities including sanitary and storm sewers, electrical lines, water supply lines, natural gas lines, fuel tanks and lines, communication lines, lighting protection systems, etc. Note: Use caution in relying on as-built drawings as they are rarely 100 percent accurate.

Request that a facility contact with knowledge of utility locations review and approve proposed locations of intrusive work.

Designated Local Utility Locating Service

Contact your designated local utility locating service (e.g., Dig-Safe, Blue Stake, One Call) to identify and mark the location of utilities. Call 811 in the US or go to www.call811.com to identify the appropriate local service group. Contacting the local utility locating service is a legal requirement in most jurisdictions.

Independent Field Survey (Utility Locate)

The organization conducting the intrusive work (JACOBS or subcontractor) shall arrange for an independent field survey to identify, locate, and mark any potential subsurface utilities in the work area. This survey is in addition to any utility survey conducted by the designated local utility locating service.

The independent field survey provider shall determine the most appropriate instrumentation/technique or combinations of instrumentation/techniques to identify subsurface utilities based on their experience and expertise, types of utilities anticipated to be present, and specific site conditions.

A JACOBS or subcontractor representative must be present during the independent field survey to observe the utility locate and verify that the work area and utilities have been properly identified and marked. If there is any question that the survey was not performed adequately or the individual was not qualified, then arrangements must be made to obtain a qualified utility locate service to re-survey the area. Obtain documentation of the survey and clearances in writing and signed by the party conducting the clearance. Maintain all documentation in the project file.

If the site owner (military installation or client) can provide the independent field survey, JACOBS or the subcontractor shall ensure that the survey includes:

- Physically walking the area to verify the work location and identify, locate, and mark underground utility locations:
- Having qualified staff available and instrumentation to conduct the locate;
- Agreeing to document the survey and clearances in writing.

- Should any of the above criteria not be met, JACOBS or subcontractor must arrange for an alternate independent utility locate service to perform the survey.
- The markings from utility surveys must be protected and preserved until the markings are no longer required. If the utility location markings are destroyed or removed before intrusive work commences or is completed, the PM, SC, or designee must notify the independent utility locate service or the designated local utility locating service to resurvey and remark the area.

Visual Assessment before and during Intrusive Activities

Perform a "360 degree" assessment. Walk the area and inspect for utility-related items such as valve caps, previous linear cuts, patchwork in pavement, hydrants, manholes, utility vaults, drains, and vent risers in and around the dig area.

The visual survey shall include all surface landmarks, including manholes, previous liner cuts, patchwork in pavement, pad-mounted transformers, utility poles with risers, storm sewer drains, utility vaults, and fire hydrants.

If any unanticipated items are found, conduct further research before initiating intrusive activities and implement any actions needed to avoid striking the utility or obstruction.

Subsurface Activities within 5 feet of an Underground Utility or if there is Uncertainty

When aggressive intrusive activities will be conducted within 5 feet (1.5 meters) of an underground utility or when there is uncertainty about utility locations, locations must be physically verified by non-aggressive means such as air or water knifing, hand digging, or human powered hand augering. Non-conductive tools must be used if electrical hazards may be present. If intrusive activities are within 5 feet (1.5 meters) and parallel to a marked existing utility, the utility location must be exposed and verified by non-aggressive methods every 100 feet (30.5 meters). Check to see if the utility can be isolated during intrusive work.

Intrusive Activities within 2 feet of an Underground Utility

Use non-aggressive methods (hand digging, vacuum excavation, etc.) to perform intrusive activities within 2 feet of a high risk utility (i.e., a utility that cannot be de-energized or would cause significant impacts to repair/replace). Hazardous utilities shall be de-energized whenever possible.

Spotter

A spotter shall be used to monitor for signs of utilities during advancement of intrusive work (e.g., sudden change in advancement of auger or split spoon, presence of pea gravel or sand in soils, presence of concrete or other debris in soils, refusal of auger or excavating equipment). If any suspicious conditions are encountered stop work immediately and contact the PM or RHSM to evaluate the situation. The spotter must have a method to alert an operator to stop the intrusive activity (e.g., air horn, hand signals).

9.13 Utilities (overhead)

Proximity to Power Lines

No work is to be conducted within 50 feet (15.2 meters) of overhead power lines without first contacting the utility company to determine the voltage of the system. No aspect of any piece of equipment is to be operated within 50 feet (15.2 meters) of overhead power lines without first making this determination.

Operations adjacent to overhead power lines are PROHIBITED unless one of the following conditions is satisfied:

- Power has been shut off, positive means (such as lockout) have been taken to prevent the lines from being energized, lines have been tested to confirm the outage, and the utility company has provided a signed certification of the outage.
- The minimum clearance from energized overhead lines is as shown in the table below, or the equipment will be repositioned and blocked to ensure that no part, including cables, can come within the minimum clearances shown in the table.

MINIMUM DISTANCES FROM POWERLINES

Powerlines Nominal System Kv	Minimum Required Distance, Feet (Meters)
0-50	10 (3.0)
50-200	15 (4.6)
201-350	20 (6.1)
351-500	25 (7.6)
501-750	35 (10.7)
751-1000	45 (13.7)
Over 1000	Established by utility owner/operator or by a professional engineer in electrical power transmission/distribution

(These distances have been determined to eliminate the potential for arcing based on the line voltage.)

- The power line(s) has been isolated through the use of insulating blankets which have been properly placed by the utility. If insulating blankets are used, the utility will determine the minimum safe operating distance; get this determination in writing with the utility representative's signature.
- All inquiries regarding electric utilities must be made in writing and a written confirmation of the outage/isolation must be received by the PM prior to the start of work.

9.14 Working Around Material Handling Equipment

When JACOBS personnel are exposed to material handling equipment, the following safe work practices/hazard controls shall be implemented:

- Never approach operating equipment from the rear. Always make positive contact with the operator, and confirm that the operator has stopped the motion of the equipment.
- Never approach the side of operating equipment; remain outside of the swing and turning radius.
- Maintain distance from pinch points of operating equipment.
- Never turn your back on any operating equipment.
- Never climb onto operating equipment or operate contractor/subcontractor equipment.
- Never ride contractor/subcontractor equipment unless it is designed to accommodate passengers and equipped with firmly attached passenger seat.
- Never work or walk under a suspended load.
- Never use equipment as a personnel lift; do not ride excavator buckets or crane hooks.
- Always stay alert and maintain a safe distance from operating equipment, especially equipment on cross slopes and unstable terrain.
- Wear a high visibility safety vest or high visibility clothing

10.0 Physical Hazards and Controls

Physical hazards include exposure to temperature extremes, sun, noise, and radiation. If you encounter a physical hazard that has not been identified in this plan, contact the RHSM so that a revision to this plan can be made.

10.1 Noise

(Reference SOP HSE-108, *Hearing Conservation*)

JACOBS is required to control employee exposure to occupational noise levels of 85 decibels, A-weighted, (dBA) and above by implementing a hearing conservation program that meets the requirements of the OSHA Occupational Noise Exposure standard, 29 CFR 1910.95. A noise assessment may be conducted by the RHSM or designee based on potential to emit noise above 85 dBA and also considering the frequency and duration of the task.

- Areas or equipment emitting noise at or above 90dBA shall be evaluated to determine feasible engineering controls. When engineering controls are not feasible, administrative controls can be developed and appropriate hearing protection will be provided.
- Areas or equipment emitting noise levels at or above 85 dBA, hearing protection must be worn.
- Employees exposed to 85 dBA or a noise dose of 50% must participate in the Hearing Conservation program including initial and annual (as required) audiograms.
- The RHSM will evaluate appropriate controls measures and work practices for employees who have experienced a standard threshold shift (STS) in their hearing.
- Employees who are exposed at or above the action level of 85 dBA are required to complete the online Noise Training Module located on JACOBS's virtual office.
- Hearing protection will be maintained in a clean and reliable condition, inspected prior to use and after any occurrence to identify any deterioration or damage, and damaged or deteriorated hearing protection repaired or discarded.
- In work areas where actual or potential high noise levels are present at any time, hearing protection must be worn by employees working or walking through the area.
- Areas where tasks requiring hearing protection are taking place may become hearing protection required areas as long as that specific task is taking place.
- High noise areas requiring hearing protection should be posted or employees must be informed of the requirements in an equivalent manner and a copy of the OSHA standard 29 CFR 1910.95 shall be posted in the workplace.

10.2 Ultraviolet Radiation (sun exposure)

Health effects regarding ultraviolet (UV) radiation are confined to the skin and eyes. Overexposure can result in many skin conditions, including erythema (redness or sunburn), photoallergy (skin rash), phototoxicity (extreme sunburn acquired during short exposures to UV radiation while on certain medications), premature skin aging, and numerous types of skin cancer. Implement the following controls to avoid sunburn.

Limit Exposure Time

- Rotate staff so the same personnel are not exposed all of the time.
- Limit exposure time when UV radiation is at peak levels (approximately 2 hours before and after the sun is at its highest point in the sky).

- Avoid exposure to the sun, or take extra precautions when the UV index rating is high.

Provide Shade

- Take lunch and breaks in shaded areas.
- Create shade or shelter through the use of umbrellas, tents, and canopies.
- Fabrics such as canvas, sailcloth, awning material and synthetic shade cloth create good UV radiation protection.
- Check the UV protection of the materials before buying them. Seek protection levels of 95 percent or greater, and check the protection levels for different colors.

Clothing

- Reduce UV radiation damage by wearing proper clothing; for example, long sleeved shirts with collars, and long pants. The fabric should be closely woven and should not let light through.
- Head protection should be worn to protect the face, ears, and neck. Wide-brimmed hats with a neck flap or "Foreign Legion" style caps offer added protection.
- Wear UV-protective sunglasses or safety glasses. These should fit closely to the face. Wrap-around style glasses provide the best protection.

Sunscreen

- Apply sunscreen generously to all exposed skin surfaces at least 20 minutes before exposure, allowing time for it to adhere to the skin.
- Re-apply sunscreen at least every 2 hours, and more frequently when sweating or performing activities where sunscreen may be wiped off.
- Choose a sunscreen with a high sun protection factor (SPF). Most dermatologists advocate SPF 30 or higher for significant sun exposure.
- Waterproof sunscreens should be selected for use in or near water, and by those who perspire sufficiently to wash off non-waterproof products.
- Check for expiration dates, because most sunscreens are only good for about 3 years. Store in a cool place out of the sun.
- No sunscreen provides 100 percent protection against UV radiation. Other precautions must be taken to avoid overexposure.

10.3 Temperature Extremes

(Reference SOP HSE-211, *Heat and Cold Stress*)

Each employee is responsible for the following:

- Recognizing the symptoms of heat or cold stress;
- Taking appropriate precautionary measures to minimize their risk of exposure to temperature extremes (see following sections); and
- Communicating any concerns regarding heat and cold stress to their supervisor or SC.

10.3.1 Heat

The following specific heat illness prevention measures must be implemented. This includes,

- Having enough water onsite so that each worker can consume at a minimum, **one quart per hour per shift**.
- Frequent reminders and/or water breaks shall be taken so that each person can consume enough water.
- Access to shade (i.e., blockage from direct sunlight) shall be provided at all times and shall be reasonably close to the work area. Keep in mind that a vehicle or other enclosed are with no air conditioning is NOT considered shade. Must be a well ventilated area or have air conditioning.
- Workers suffering from heat illness-related symptoms OR if needed for preventative recovery shall be provided access to shade for at least 5 minutes, or longer, for recovery. (if heat related symptoms are occurring, contact the RHSM).
- Training on risk factors, signs and symptoms of heat illness, importance of hydration and acclimatization, and importance of reporting symptoms and what to do in case of heat illness emergency, and contacting emergency medical services (see sections that follow).

Heat-related illnesses are caused by more than just temperature and humidity factors.

Physical fitness influences a person's ability to perform work under heat loads. At a given level of work, the more fit a person is, the less the physiological strain, the lower the heart rate, the lower the body temperature (indicates less retrained body heat—a rise in internal temperature precipitates heat injury), and the more efficient the sweating mechanism.

Acclimatization is a gradual physiological adaptation that improves an individual's ability to tolerate heat stress. Acclimatization requires physical activity under heat-stress conditions similar to those anticipated for the work. With a recent history of heat-stress exposures of at least two continuous hours per day for 5 of the last 7 days to 10 of the last 14 days, a worker can be considered acclimatized. Its loss begins when the activity under those heat-stress conditions is discontinued, and a noticeable loss occurs after 4 days and may be completely lost in three to four weeks. Because acclimatization is to the level of the heat-stress exposure, a person will not be fully acclimatized to a sudden higher level; such as during a heat wave.

Dehydration reduces body water volume. This reduces the body's sweating capacity and directly affects its ability to dissipate excess heat.

The ability of a body to dissipate heat depends on the ratio of its surface area to its mass (surface area/weight). **Heat dissipation** is a function of surface area, while heat production depends on body mass. Therefore, overweight individuals (those with a low ratio) are more susceptible to heat-related illnesses because they produce more heat per unit of surface area than if they were thinner. Monitor these persons carefully if heat stress is likely.

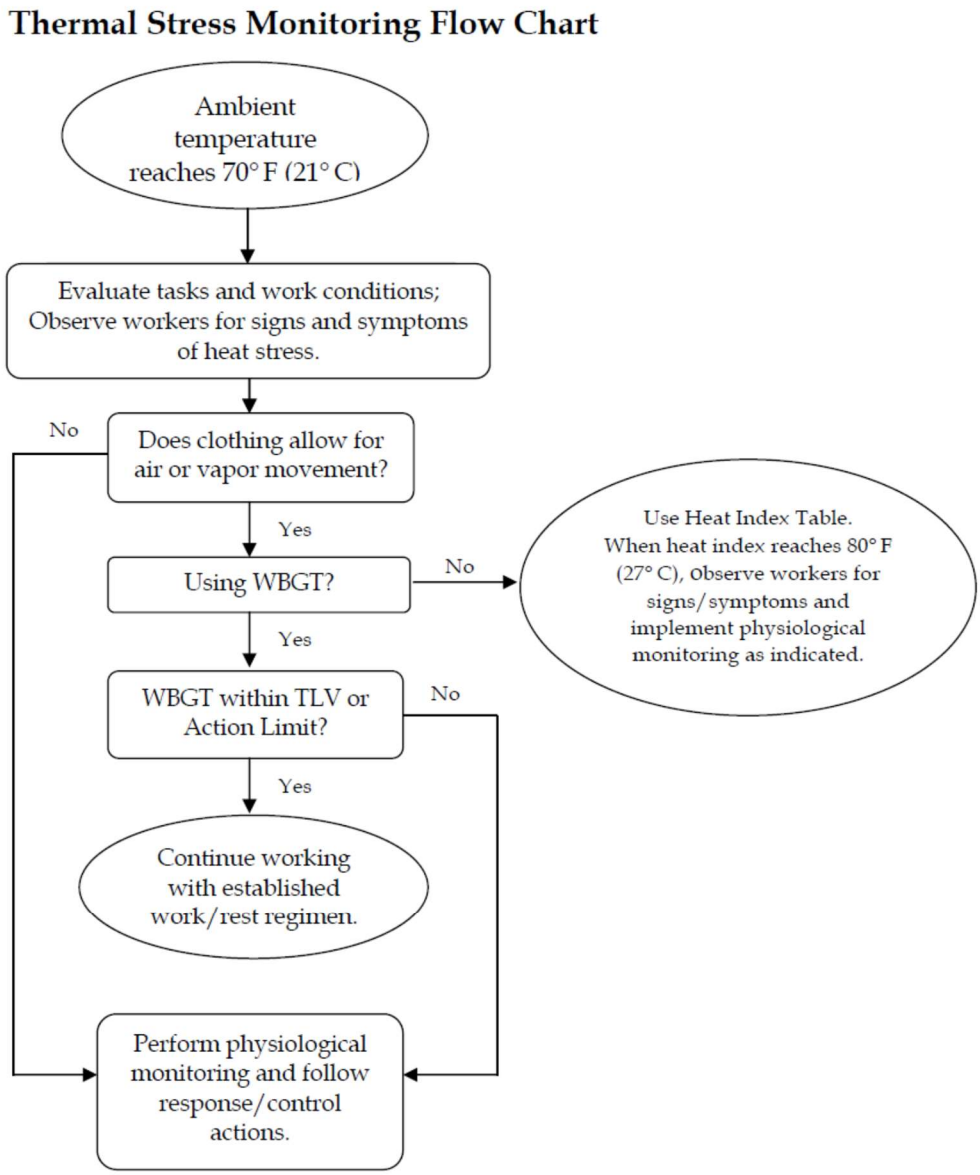
When wearing **impermeable clothing**, the weight of an individual is not as important in determining the ability to dissipate excess heat because the primary heat dissipation mechanism, evaporation of sweat, is ineffective.

SYMPTOMS AND TREATMENT OF HEAT STRESS					
	Heat Syncope	Heat Rash	Heat Cramps	Heat Exhaustion	Heat Stroke
Signs and Symptoms	Sluggishness or fainting while standing erect or immobile in heat.	Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure.	Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours.	Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low	Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature.
Treatment	Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.	Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.	Remove to cooler area. Rest lying down. Increase fluid intake.	Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.	Cool rapidly by soaking in cool– but not cold– water. Call ambulance, and get medical attention immediately!

Precautions

- Drink 16 ounces of water before beginning work. Disposable cups and water maintained at 50°Fahrenheit (10 degrees Celsius [C]) to 60°Fahrenheit (F) (15.6 degrees C) should be available. Under severe conditions, drink 1 to 2 cups every 20 minutes, for a total of 1 to 2 gallons (7.5 liters) per day. Do not use alcohol in place of water or other nonalcoholic fluids. Decrease your intake of coffee and caffeinated soft drinks during working hours.
- Acclimate yourself by slowly increasing workloads (do not begin with extremely demanding activities).
- Use cooling devices, such as cooling vests, to aid natural body ventilation. These devices add weight, so their use should be balanced against efficiency.
- Use mobile showers or hose-down facilities to reduce body temperature and cool protective clothing.
- Conduct field activities in the early morning or evening and rotate shifts of workers, if possible.
- Avoid direct sun whenever possible, which can decrease physical efficiency and increase the probability of heat stress. Take regular breaks in a cool, shaded area. Use a wide-brim hat or an umbrella when working under direct sun for extended periods.
- Provide adequate shade to protect personnel against radiant heat (sun, flames, hot metal).
- Maintain good hygiene standards by frequently changing clothing and showering.
- Observe one another for signs of heat stress. PREVENTION and communication is key.

Thermal Stress Monitoring



Permeable Clothing – Monitoring Using WBGT

A Wet Bulb Globe Thermometer (WBGT) is the established and preferred means of measuring the environmental factors associated with heat stress and for providing indication of when physiological monitoring or rest regimens should be incorporated into the work schedule. The WBGT is the composite temperature used to estimate the effect of temperature, humidity, wind speed, and solar radiation on the human body.

When permeable work clothes are worn (street clothes or clothing ensembles over modesty clothes), physiological monitoring may be required based on the outcome of the WBGT measurements, taking into account the clothing adjustment factors. Use of the WBGT should generally begin when the heat index reaches 80° F (27° C) as indicated in the Heat Index Table below, or when workers exhibit symptoms of heat stress as indicated in Attachment 1.

If the WBGT is within the TLV (acclimatized workers) or Action Limit (unacclimatized workers) per the tables below, then work may continue while maintaining the established work/rest regimen. If the

WBGT reading meets or exceeds either the TLV or Action Level for a work/rest regimen of 15 minutes work and 45 minutes rest, then physiological monitoring will be implemented.

Screening Criteria for TLV and Action Limit for Heat Stress Exposure								
Allocation of work in a cycle of work and recovery	TLV (WBGT Values in ˚F/C˚) (Acclimatized Workers)				Action Limit (WBGT Values in ˚F/˚C˚) (Unacclimatized Workers)			
	Light	Moderate	Heavy	Very Heavy	Light	Moderate	Heavy	Very Heavy
75-100%	88/31	82/28	--	--	82/28	77/25	--	--
50-75%	88/31	84/29	82/28	--	83/29	79/26	75/24	--
25-50%	90/32	86/30	84/29	82/28	85/30	81/27	78/26	76/25
0-25%	91/33	89/32	87/31	86/30	86/30	84/29	82/28	81/27
Work Category Descriptions:								
Light	Sitting or standing with light manual work using hands or arms; occasional walking.							
Moderate	Sustained moderate hand, arm, and leg work; light pushing and pulling; normal walking.							
Heavy	Intense arm and trunk work, carrying, shoveling, manually sawing, pushing and pulling heavy loads, walking at a fast pace.							
Very Heavy	Very intense activity at fast to maximum pace.							
Notes: WBGT values are expressed to the nearest degree. "—"Dashes indicate the need for physiological monitoring because screening criteria are not recommended for this type of work.								

Clothing Adjustment Factors for Some Clothing Ensembles*	
Clothing Type	Addition to WBGT ˚F/˚C˚
Work Clothes (sleeved shirt and pants)	0/0
Cloth (woven material) coveralls	0/0
Double-layer woven clothing	5.4/3
Polypropylene coveralls	0.9/0.5
Limited Use Vapor barrier coveralls	19.8/11
* These values must not be used for completely encapsulating (impermeable) coveralls/suits. Coveralls assume that only modesty clothing is worn beneath.	

Thermal Stress Monitoring – Permeable or Impermeable Clothing

When permeable work clothes are worn (street clothes or clothing ensembles over street clothes), regularly observe workers for signs and symptoms of heat stress and implement physiological monitoring as indicated below. This should start when the heat index reaches 80° F (27° C) [see Heat Index Table below], or sooner if workers exhibit symptoms of heat stress indicated in the table above. These heat index values were devised for shady, light wind conditions; exposure to full sunshine can increase the values by up to 15°F (8°C). Also, strong winds, particularly with very hot, dry air, can be extremely hazardous.

When wearing **impermeable clothing** (e.g., clothing doesn't allow for air or water vapor movement such as Tyvek), physiological monitoring as described below shall be conducted when the ambient

temperature reaches 70° F (21° C) or at a lower temperature when workers begin to exhibit signs and symptoms of heat stress.

Heat Index	Possible Heat Disorders	Minimum Frequency of Physiological Monitoring
80°F - 90°F (27°C - 32°C)	Fatigue possible with prolonged exposure and/or physical activity	Observe Workers for signs of heat stress and implement physiological monitoring if warranted.
90°F - 105°F (32°C - 41°C)	Sunstroke, heat cramps, or heat exhaustion possible with prolonged exposure and/or physical activity	Every 2 hours, or sooner, if signs of heat stress are observed.
105°F - 130°F (41°C - 54°C)	Sunstroke, heat cramps, or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity.	Every 60 minutes or sooner if signs of heat stress are observed.
130°F or Higher (54°C or Higher)	Heat/Sunstroke highly likely with continued exposure.	Every 30 minutes or sooner if signs of heat stress are observed.
Source: National Weather Service		

Physiological Monitoring and Associated Actions

The following physiological monitoring protocol below, using either radial pulse or aural temperature, will occur when the heat index is 80 degrees F or greater (or when personnel exhibit signs of heat stress), the following will be performed:

- The sustained heart rate during the work cycle should remain below 180 beats per minute (bpm) minus the individual's age (e.g. 180 – 35 year old person = 145 bpm). The sustained heart rate can be estimated by measuring the heart rate at the radial pulse for 30 seconds as quickly as possible prior to starting the rest period.
- The heart rate after one minute rest period should not exceed 120 beats per minute (bpm).
- If the heart rate is higher than 120 bpm, the next work period should be shortened by 33 percent, while the length of the rest period stays the same.
- If the pulse rate still exceeds 120 bpm at the beginning of the next rest period, the following work cycle should be further shortened by 33 percent.
- Continue this procedure until the rate is maintained below 120 bpm.
- Alternately, the body temperature can be measured, either oral or aural (ear), before the workers have something to drink.
- If the oral or aural temperature exceeds 99.6° F (37.6 ° F) at the beginning of the rest period, the following work cycle should be shortened by 33 percent.
- Continue this procedure until the oral or aural (ear) temperature is maintained below 99.6 ° F (37.6° C). While an accurate indication of heat stress, oral temperature is difficult to measure in the field, however, a digital aural (aural) thermometer is easy to obtain and inexpensive to purchase.
- Use the form attached to this HSP to track workers' measurements and actions taken.

Procedures for when Heat Illness Symptoms are Experienced

- **Always** contact the RHSM when any heat illness related symptom is experienced so that controls can be evaluated and modified, if needed.

- In the case of cramps, reduce activity, increase fluid intake, move to shade until recovered.
- In the case of all other heat-related symptoms (fainting, heat rash, heat exhaustion), and if the worker is a JACOBS worker, contact the occupational physician at 1-866-893-2514 and immediate supervisor.
- In the case of heat stroke symptoms, call 911, have a designee give location and directions to ambulance service if needed, follow precautions under the emergency medical treatment of this HSP.
- Follow the Incident Notification, Reporting, and Investigation section of this HSP.

10.3.2 Cold

General

Low ambient temperatures increase the heat lost from the body to the environment by radiation and convection. In cases where the worker is standing on frozen ground, the heat loss is also due to conduction.

Wet skin and clothing, whether because of water or perspiration, may conduct heat away from the body through evaporative heat loss and conduction. Thus, the body cools suddenly when chemical protective clothing is removed if the clothing underneath is perspiration soaked.

Movement of air across the skin reduces the insulating layer of still air just at the skin's surface. Reducing this insulating layer of air increases heat loss by convection.

Non-insulating materials in contact or near-contact with the skin, such as boots constructed with a metal toe or shank, conduct heat rapidly away from the body.

Certain common drugs, such as alcohol, caffeine, or nicotine, may exacerbate the effects of cold, especially on the extremities. These chemicals reduce the blood flow to peripheral parts of the body, which are already high-risk areas because of their large surface area to volume ratios. These substances may also aggravate an already hypothermic condition.

Precautions

- Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in wet weather.
- Consider monitoring the work conditions and adjusting the work schedule using guidelines developed by the U.S. Army (wind-chill index) and the National Safety Council (NSC).
- Wind-Chill Index (below) is used to estimate the combined effect of wind and low air temperatures on exposed skin. The wind-chill index does not take into account the body part that is exposed, the level of activity, or the amount or type of clothing worn. For those reasons, it should only be used as a guideline to warn workers when they are in a situation that can cause cold-related illnesses.
- Persons who experience initial signs of immersion foot, frostbite, and/or hypothermia should report it immediately to their supervisor/PM to avoid progression of cold-related illness.
- Observe one another for initial signs of cold-related disorders.
- Obtain and review weather forecast – be aware of predicted weather systems along with sudden drops in temperature, increase in winds, and precipitation.

SYMPTOMS AND TREATMENT OF COLD STRESS			
	Immersion (Trench) Foot	**Frostbite**	**Hypothermia**
Signs and Symptoms	Feet discolored and painful; infection and swelling present.	Blanched, white, waxy skin, but tissue resilient; tissue cold and pale.	Shivering, apathy, sleepiness; rapid drop in body temperature; glassy stare; slow pulse; slow respiration.
Treatment	Seek medical treatment immediately.	Remove victim to a warm place. Re-warm area quickly in warm–but **not** hot–water. Have victim drink warm fluids, but **not** coffee or alcohol. Do not break blisters. Elevate the injured area, and get medical attention.	Remove victim to a warm place. Have victim drink warm fluids, but **not** coffee or alcohol. Get medical attention.

Wind Chill Chart

Wind (mph) \ Temperature (°F)	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes, 10 minutes, 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)

Effective 11/01/01

11.0 Biological Hazards and Controls

Biological hazards are everywhere and change with the region and season. If you encounter a biological hazard that has not been identified in this plan, contact the RHSM so that a revision to this plan can be made. Whether it is contact with a poisonous plant, a poisonous snake, or a bug bite, do not take bites or stings lightly. If there is a chance of an allergic reaction or infection, or to seek medical advice on how to properly care for the injury, contact the occupational nurse at 1-866-893-2514.

11.1 Africanized Honey Bees

Africanized honey bees are present in the Phoenix, Arizona area and other parts of the southwestern United States. They can be more aggressive than the common honey bee. The following precautions should be taken:

- Aside from watching for nests, be extra careful when moving discarded materials on the ground.
- Be alert for bees that appear to be acting more aggressive or strange. Do not disturb colonies.
- If bees begin to fly at your face or buzz around over your head, quickly retrace your steps and leave the area immediately. Report this occurrence to the SC and fellow workers at the site. Avoid this area until instructed that it is safe to reenter.
- Wear light colored clothing as dark clothing/colors appears to attract and anger bees.
- Avoid wearing any type of aftershave or perfume. This may also attract bees.
- If swarmed by bees, run quickly to an enclosed shelter. Do not stop to pickup belongings or materials. Do not flail at bees as this will increase their attack, but cover head and face as best able.
- Once away from bees evaluate your condition. If you have been stung or if you are having any symptoms other than local pain and swelling, call the occupational nurse at 1-866-893-2514.

11.2 Bees and Other Stinging Insects

Bees and other stinging insects may be encountered almost anywhere and may present a serious hazard, particularly to people who are allergic. Watch for and avoid nests. Keep exposed skin to a minimum. Carry a kit if you have had allergic reactions in the past, and inform your supervisor and/or a buddy. If you are stung, contact the occupational nurse at 1-866-893-2514. If a stinger is present, remove it as soon as possible using something with a thin, hard edge (e.g., credit card) to scrape the stinger out. Be sure to sanitize the object first with hand sanitizer, alcohol or soap and water. Wash and disinfect the wound, cover it, and apply ice. Watch for an allergic reaction if you have never been stung before. Call 911 if the reaction is severe.

11.3 Bird Droppings

Large amounts of bird droppings may present a disease risk. The best way to prevent exposure to fungus spores in bird droppings is to avoid disturbing it. A brief inhalation exposure to highly contaminated dust may be all that is needed to cause infection and subsequent development of fungal disease.

If disturbing the droppings or if removal is necessary to perform work, follow these controls:

- Use dust control measures (wetting with water or HEPA vacuuming) for all activities that may generate dust from the accumulated droppings.
- Wear Tyvek with hoods, disposable gloves and booties, and air-purifying respirators with a minimum N95 rating.
- Put droppings into plastic/poly bags and preferably into a 55-gallon drum to prevent bag from ripping.

11.4 Feral Dogs

Avoid all dogs – both leashed and stray. Do not disturb a dog while it is sleeping, eating, or caring for puppies. If a dog approaches to sniff you, stay still. An aggressive dog has a tight mouth, flattened ears and a direct stare. If you are threatened by a dog, remain calm, do not scream and avoid eye contact. If you say anything, speak calmly and firmly. Do not turn and run, try to stay still until the dog leaves, or back away slowly until the dog is out of sight or you have reached safety (e.g. vehicle). If attacked, retreat to vehicle or attempt to place

something between you and the dog. If you fall or are knocked to the ground, curl into a ball with your hands over your head and neck and protect your face. If bitten, contact the occupational nurse at 1-866-893-2514. Report the incident to the local authorities.

11.5 Fire Ants

There are several types of fire ants in the United States that can cause painful bites and allergic reactions. Fire ants aggressively defend their nests by stinging several times after climbing on their victims. Large ant mounds are easily visible, but there can be smaller mounds or nests with little "worked" soil that can be stepped on inadvertently. They can also be under rocks, wood or other debris. Implement the following when fire ants are observed:

- Be aware of fire ants and take care not to stand on ant nests;
- Use insect repellents on clothing and footwear to temporarily discourage ants from climbing; and
- Tuck pants into socks.

If stung, get away from the area you are standing on, briskly brush off ants—wash affected area with soap. Call the occupational nurse.

11.6 Hantavirus

Hantavirus pulmonary syndrome (HPS) is a disease caused by a virus which can be transmitted from certain rodents to humans and is prevalent throughout the United States. Avoid disturbing rodent nests. Contact is most likely to occur when there is a current rodent infestation in things like control boxes, storage sheds, wellheads, remediation equipment, or trailers. Once excreted into the environment by the rodent, hantaviruses can survive in the environment and remain infectious for a period of 2-3 days. Ultraviolet rays in sunlight inactivate hantaviruses.

Nesting material and droppings must be removed if work is necessary in a rodent-infested area. PPE for removal shall include:

- Tyvek coveralls;
- Rubber boots or disposable shoe covers;
- Rubber, latex, or vinyl gloves;
- Respiratory protection such as a full face or half-mask air-purifying respirator with a high-efficiency particulate air (HEPA) filter; and
- Protective goggles if wearing a half-mask respirator.

Spray any urine, droppings, and nesting materials with either a bleach and water solution (1 parts bleach to 9 parts water) or a household disinfectant prepared according to the label instructions for dilution and disinfection time. Soak well and let stand for 15 minutes. Use a paper towel or rag to pick up the materials and dispose of them.

Mop floors after spraying them using bleach and water solution or a disinfectant. Dirt floors can be sprayed with either bleach and water solution or a disinfectant.

Personal protective gear shall be decontaminated upon removal at the end of the day. All potentially infective waste material (including respirator filters) from clean-up operations shall be double-bagged in plastic bags.

Symptoms of HPS

Symptoms develop between 14 and 31 days after exposure to infected rodents and include fatigue, fever, and muscle aches, especially the large muscle groups--thighs, hips, back and sometimes shoulders. About half of all HPS patients also experience headaches, dizziness, chills and/or abdominal pain. Four to 10 days after the initial phase of the illness, late symptoms of HPS may appear. These include coughing and shortness of breath. If you develop symptoms suggestive of HPS, call the occupational nurse at 1-866-893-2514.

11.7 Covid-19 Virus

Notwithstanding this and previous advice, all employees are to advise their line manager, HR or their HSE representative if they have any COVID-19 related symptoms, and either not present for work or remove themselves from the workplace immediately until symptoms are assessed.

Vulnerable groups: Some of our employees may fall into what the U.S. Center for Disease Control identifies as higher risk categories, such as Jacobs employees with underlying health conditions, who are pregnant, or who are 65 years and older. **We cannot systematically exclude these employees from the project site absent implementation of a project site closure that equally effects all other employees at the closed site. If the project site is open, individual employees need to be left to make their own assessment of risk, just like other employees outside the high risk categories**. However, some staff both in and outside of these higher risk categories may genuinely be concerned or unable to work on site at this time (such as care givers of parents or children, or due to general overall concern). In such instances, in line with our culture of caring, we must assess each case individually, discuss the concerns, and do everything we reasonably can to allow that colleague to work remotely. Where that is not possible, for client or project reasons, this should be raised to the project management, DO and HSE representative for support and to consider whether there are other risk reduction measures that can be employed at the work site (e.g., physical distancing and other mitigation measures as advised by HSE) that can assist with addressing the concern. We would also recommend that those employees who have partners working in higher risk professions such as care workers, doctors and nurses be given the option of working from home if in an area of widespread community transmission.

Visitor management: Take steps to reduce the number of visitors coming to the site office. Require visitors to book their appointment 24 hours minimum in advance and only allow visitors that are critical to the operation of the site / office. Approval of visitors must be approved by PM, RE or other senior project team member. Maintain clear signage at reception informing visitors of additional control measures and requesting that they disclose where they have travelled in the last fourteen (14) days and if they are displaying any COVID-19 symptoms. Refer to REO's guidance issued on establishing signs/protocols for visitors. Any such case would be denied access to the site office and be asked to leave. Also make available hand sanitizer for visitors. On larger sites where project offices are shared, consider infrared cameras to monitor the temperature of those arriving to work.

Meetings: Make use of technology for meetings with clients and contractors where possible in order to avoid the need for in person meetings altogether. Where meetings are required or essential, ensure number of attendees is kept to a minimum (i.e. one essential team member) and physical distancing is maintained (6'/2m or more). Some projects are considering holding meetings outside where they have more space, however ultimately what is important is avoiding the need for in person meetings, reducing the number of staff in attendance and ensuring distancing between participants.

Hard Copy Transmittals: Conduct an assessment and determine methods to stop the submission of all hard copies of documents (drawings, method statements, letters, etc.) and request the contractor to make all submissions electronically. Where hard copies must be kept for contractual reasons, request that they are sent electronically to Jacobs and have the Contractor retain the hard copy on their premises to submit later as a hard copy submittal. We understand that a number of projects have raised concerns around physical servers being located on site and inaccessible to staff working from outside the project, we ask project teams to follow IT guidance and utilize, Jacobs file sharing tools, ProjectWise, SharePoint and TEAMS and other communication tools, where there is an issue and requirement on your project please raise a ticket to IT for support.

Travel, Site Surveys and Inspections: Traveling in a car by yourself or with a colleague and then being outdoors is a relatively low-risk activity, although overnight accommodation in a hotel may be required. Assess your tasks and travel arrangements to site and on site, limit the number of passengers in vehicles to reduce contact. Consider lone working risks if you're travelling alone and if overnight stays are required. Avoid crowded places such as restaurants. Preference is to buy food or takeaways to be eaten in rooms. Refer to Jacobs COVID-19 Information page regarding travel guidelines.

Jacobs site work: Site work is an integral part of our business and the continuation of site work is considered business critical (Business Continuity) and should continue unless directed by the government authorities, the client or Jacobs leadership. The following measures are suggested:

- On project sites, where possible undertake site work such as inspections during quieter times (early mornings, scheduled breaks and lunch) to reduce interaction with construction workers and maintain physical distancing of at least 6 feet (2 meters) or more from all persons at all times.
- Reduce the need for individuals to touch potentially contaminated surfaces. For example by signing documents, picking up passes, etc.
- Carry personal hand sanitizers and use this to ensure hands remain clean where soap and water are not available.
- No one on site should be at work if they are unwell or displaying any of the symptoms (coughing, fever, fatigue, shortness of breath). If employee begins to have symptoms, they should isolate immediately and notify their RE or PM electronically. If this is noticed by another worker, they must notify their RE or PM.
- Everyone is empowered expected to directly stop work if they believe their work, or the work of their team or others is unsafe or is putting others at increased risk.
- Where close contact or contact with individuals that are unavoidable, but critical, the tasks must be risk assessed with the support of a HSE professional (and if necessary industrial hygienist or medical professional). The principles of prevention must be applied, and if necessary, as a last resort PPE must be provided such as disposable coveralls, safety glasses, face-masks, nitrile gloves and any other protective clothing deemed necessary; however, where work presents a risk that cannot be mitigated, the work shall not continue. If there is a need to provide the disposable coveralls and nitrile gloves, ensure appropriate disposal receptacle is provided ensuring all PPE waste is double bagged.
- Watch out for your team members, its normal to feel down, low, anxious at this time and many will be distracted and may be complacent about other project safety risks, ensure we look out for one another and stay safe.
- Let us make effective use of any downtime, plan activities, update or develop documents such as HSE plans, RA, method statements and other documents, undertake any outstanding training.
- Last but not least please ensure that there is an adequate supply of hot/cold water along with soap and disposable hand towels in each of the wash facilities. Keep hand sanitizers in the office in easily accessible areas (motion operated are preferred), outside toilets, break rooms, office entrance and encourage staff to use it frequently. Maintain extra vigilance around cleaning in the office and on site.
- Implement appropriate guidance outlined in the Working During a Pandemic (to be issued).

Contractor site and facilities: Ask contractors to ensure that they have instilled appropriate preventative measures on site and to submit an outline of measures taken or to be taken. This must include ensuring the following as a minimum:

- There is an adequate supply of hot/cold water along with soap and disposable hand towels in each of the wash facilities.
- Hand sanitizer must be available in the office in easily accessible areas, outside toilets, break rooms, office entrance and encourage staff to use it frequently.
- Regular cleaning regimes in the office.
- Physical distancing measures, such as reduced meeting and visitor attendance, site transportation, canteen protocol etc.
- Measures to reduce the risks of workers on site
- Deep cleaning and disinfection regime of site / offices
- Visitor management protocol including reducing the number of visitors and infrared cameras to monitor the temperature in accordance with the Working in a Pandemic Guidelines (to be issued) of those arriving to work.
- Incident / suspected COVID case management protocol.
- Please note that this is a non-exhaustive list of considerations and the contractor should assess their operations and mitigate risk accordingly.

COVID-19 Contractor Worker Welfare Precautions: Ensure that Contractors who maintain off-site facilities and services for their workers complete the **COVID-19 Contractor Worker Welfare Precautions form** and submit verification to Jacobs that they are managing the COVID-19 risk associated with their off-site facilities and services in line with government advice. The completed form will be used by Jacobs to assess how the contractor is managing its operations, this must be completed and returned to Jacobs for confirmation promptly within 3 working days.

Vigilance and incident notification: We would like everyone to remain vigilant and look out for one another. Ensure prompt notification of any confirmed or potential case from our staff or non-controlled contractor in order to ensure that the correct measures are taken in line with local government and company direction. However, we must also ensure that we avoid rumors and panic unnecessarily, there must be one source of truth on each project through you. Please ensure that there is a method for both our staff and contractors to promptly notify you as the PD, PM or RE on your project of any confirmed or potential case and then follow the below process to notify our regional management team of the incident:

- The incident must be verbally reported immediately by your established Verbal Reporting Chain
- If the matter is triaged and the person is asked to go into self-isolation, advise HR

Due to the fact our staffing levels may be lower, pay extra care to personnel not authorized to be on site. Any security concerns should be reported immediately to Security, HSE or management.

Below is a checklist for field projects working during the COVID-19 (C-19) pandemic. Please engage your project Health and Safety Manager (HSM) to ensure that appropriate hazard mitigation measures for C-19 are addressed in project HSE plans.

As a reminder, all employees are to advise their line manager, HR or their HSE representative if they have any C-19 related symptoms, and either not present for work or remove themselves from the workplace immediately until symptoms are assessed.

COVID-19 Field Checklist

Business Resilience: At your project sites consider measures that you can take to ensure project resilience such as:

- ☐ Where possible, split shifts – for example into three teams, those that work remotely, and two other teams A and B working rotating shifts.
- ☐ Split offices / sites - Consider having teams working in different parts of the project with zero cross over
- ☐ Shut down considerations - Ensure that you have everyone take home laptops, chargers and any other important work documents in case of a shutdown of work sites. Refer to HSSE COVID-19 Temporary Field Project Shutdown Guidance

Visitor management: Take steps to reduce the number of visitors coming to the site office. Require visitors to book their appointment 24 hours minimum in advance and only allow visitors that are critical to the operation of the site / office. Approval of visitors must be approved by PM or other senior project team member.

- ☐ Maintain clear signage at reception informing visitors of additional control measures and requesting that they disclose where they have travelled in the last fourteen (14) days and if they are displaying any COVID-19 symptoms. Any such case would be denied access to the site office and be asked to leave.
- ☐ Also make available hand sanitizer for visitors.

Meetings: Make use of technology for meetings with clients and contractors where possible in order to avoid the need for in person meetings altogether.

- ☐ Where meetings are required or essential, ensure number of attendees is kept to a minimum (i.e. one essential team member) and physical distancing is maintained (6'/2m or more).

Hard Copy Transmittals: Conduct an assessment and determine methods to stop the submission of all hard copies of documents (drawings, method statements, letters, etc.) and request the contractor to make all submissions electronically.

- ☐ Where hard copies must be kept for contractual reasons, request that they are sent electronically to Jacobs and have the Contractor retain the hard copy on their premises to submit later as a hard copy submittal.

Travel, Site Surveys and Inspections: Traveling in a car by yourself or with a colleague and then being outdoors is a relatively low-risk activity, although overnight accommodation in a hotel may be required.

- ☐ Assess your tasks and travel arrangements to site and on site, limit the number of passengers in vehicles to reduce contact.
- ☐ Consider lone working risks if you're travelling alone and if overnight stays are required.
- ☐ If staying in a hotel, ensure they have C-19 cleaning protocols in place and take antiseptic wipes to clean items such as the TV remote, phone, light switches, and bathroom handles, etc.

- ☐ Ensure that hotels have restaurants in the near vicinity that you can order take-away to eat in your room.

- ☐ Avoid crowded places such as restaurants. Preference is to buy food or takeaways to be eaten in rooms. Refer to Jacobs COVID-19 Information page regarding travel guidelines.

- ☐ Use your own vehicle when possible for local travel. Whether driving your own vehicle or a field vehicle, ensure that the inside of vehicles are cleaned thoroughly before you drive them using an EPA-approved cleaning agent.

  If others have been in the car who are exhibiting symptoms of C-19, let the vehicle set for a day or two with windows down to allow for natural ventilation. Wear gloves when cleaning.

  - Check out this article from Kelley Blue Book: How to Clean Your Car to Reduce the Spread of the Coronavirus.
  - View the EPA's registered list of antimicrobial products for use against novel Coronavirus SARS-CoV-2, the cause of COVID-19.

Jacobs site work: Site work is an integral part of our business and the continuation of site work is considered business critical (Business Continuity) and should continue unless directed by the government authorities, the client or Jacobs leadership. The following measures are suggested:

- ☐ On project sites, where possible undertake site work such as inspections during quieter times (early mornings, scheduled breaks and lunch) to reduce interaction with construction workers and maintain physical distancing of at least 6 feet (2 meters) or more from all persons at all times.

- ☐ Reduce the need for individuals to touch potentially contaminated surfaces. For example, by signing documents, picking up passes, etc.

- ☐ Carry personal hand sanitizers and use this to ensure hands remain clean where soap and water are not available.

- ☐ No one on site should be at work if they are unwell or displaying any of the symptoms (coughing, fever, fatigue, shortness of breath). If employee begins to have symptoms, they should isolate immediately and notify their PM electronically. If this is noticed by another worker, they must notify their PM or HSE.

- ☐ Everyone is empowered expected to directly stop work if they believe their work, or the work of their team or others is unsafe or is putting others at increased risk.

- ☐ Where close contact or contact with individuals that are unavoidable, but critical, the tasks must be risk assessed with the support of a HSE professional (and if necessary industrial hygienist or medical professional). The principles of prevention must be applied, and if necessary, as a last resort PPE must be provided such as disposable coveralls, safety glasses, face-masks, nitrile gloves and any other protective clothing deemed necessary; however, where work presents a risk that cannot be mitigated, the work shall not continue. If there is a need to provide the disposable coveralls and nitrile gloves, ensure appropriate disposal receptacle is provided ensuring all PPE waste is double bagged.

- ☐ Watch out for your team members, its normal to feel down, low, anxious at this time and many will be distracted and may be complacent about other project safety risks, ensure we look out for one another and stay safe.

- ☐ Ensure that there is an adequate supply of hot/cold water along with soap and disposable hand towels in each of the wash facilities, or adequate alcohol-based hand sanitizers. Keep hand sanitizers in the office in easily accessible areas (motion operated are preferred), outside toilets, break rooms,

office entrance and encourage staff to use it frequently. Maintain extra vigilance around cleaning in the office and on site.

Contractor site and facilities: Ask contractors to ensure that they have instilled appropriate preventative measures on site and to submit an outline of measures taken or to be taken. This must include ensuring the following as a minimum:

- ☐ There is an adequate supply of hot/cold water along with soap and disposable hand towels in each of the wash facilities.
- ☐ Hand sanitizer must be available in the office in easily accessible areas, outside toilets, break rooms, office entrance and encourage staff to use it frequently.
- ☐ Regular cleaning regimes in the office.
- ☐ Physical distancing measures, such as reduced meeting and visitor attendance, site transportation, canteen protocol etc.
- ☐ Measures to reduce the risks of workers on site
- ☐ Deep cleaning and disinfection regime of site / offices
- ☐ Incident / suspected COVID case management protocol.
- ☐ Please note that this is a non-exhaustive list of considerations and the contractor should assess their operations and mitigate risk accordingly

Vigilance and incident notification: We would like everyone to remain vigilant and look out for one another. Ensure prompt notification of any confirmed or potential case from our staff or subcontractor in order to ensure that the correct measures are taken in line with local government and company direction. However, we must also ensure that we avoid rumors and panic unnecessarily.

Please ensure that there is a method for both our staff and contractors to promptly notify the PM or designee on your project of any confirmed or potential case and then follow the below process to notify our regional management team of the incident:

- ☐ The incident must be verbally reported immediately by your established Verbal Reporting Chain
- ☐ If the matter is triaged and the person is asked to go into self-isolation, advise HR and HSE
- ☐ Due to the fact our staffing levels may be lower, pay extra care to personnel not authorized to be on site. Any security concerns should be reported immediately to Security, HSE or management.

Personal Hygiene

- ☐ Do not touch your face or head!
- ☐ Avoid touching surfaces and equipment that you don't need to touch or clean them thoroughly before touching them. Wear gloves to prevent contact if cleaning supplies aren't available.

  Remove gloves by peeling them off inside-out to reduce potential spread of the virus. Double bag them and dispose of them in normal sanitary trash.
- ☐ Wash your hands or use hand sanitizer frequently throughout the day.

11.8 Mosquito Bites

Due to the recent detection of the West Nile Virus in the southwestern United States it is recommended that preventative measures be taken to reduce the probability of being bitten by mosquitoes whenever possible. Mosquitoes are believed to be the primary source for exposure to the West Nile Virus as well as several other types of encephalitis. The following guidelines should be followed to reduce the risk of these concerns for working in areas where mosquitoes are prevalent:

- Stay indoors at dawn, dusk, and in the early evening;
- Wear long-sleeved shirts and long pants whenever you are outdoors;
- Spray clothing with repellents containing permethrin or N,N-diethyl-meta-toluamide (DEET) since mosquitoes may bite through thin clothing;
- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 35% DEET. Repellents may irritate the eyes and mouth, so avoid applying repellent to the hands; and
- Whenever you use an insecticide or insect repellent, be sure to read and follow the manufacturer's DIRECTIONS FOR USE, as printed on the product.

Vitamin B and "ultrasonic" devices are NOT effective in preventing mosquito bites.

Symptoms of Exposure to the West Nile Virus

Most infections are mild, and symptoms include fever, headache, and body aches, occasionally with skin rash and swollen lymph glands. More severe infection may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis, and, rarely, death.

The West Nile Virus incubation period is from 3 to 15 days.

Contact the project RHSM with questions, and immediately report any suspicious symptoms to your supervisor, PM, and contact the occupational nurse at 1-866-893-2514.

11.9 Poison Ivy, Poison Oak, and Poison Sumac

Poison ivy, poison oak, and poison sumac typically are found in brush or wooded areas. They are more commonly found in moist areas or along the edges of wooded areas. Shrubs are usually 12 to 30 inches high, or can also be a tree-climbing vine, with triple leaflets and short, smooth hair underneath. Plants are red and dark green in spring and summer, with yellowing leaves anytime especially in dry areas. Leaves may achieve bright reds in fall, but plants lose its (yellowed, then brown) leaves in winter, leaving toxic stems. All parts of the plant remain toxic throughout the seasons. These plants contain urushiol a colorless or pale yellow oil that oozes from any cut or crushed part of the plant, including the roots, stems and leaves and causes allergic skin reactions when contacted. The oil is active year round.

Become familiar with the identity of these plants (see below). Wear protective clothing that covers exposed skin and clothes. Avoid contact with plants and the outside of protective clothing. If skin contacts a plant, wash the area with soap and water immediately. If the reaction is severe or worsens, seek medical attention.

Poison Ivy *Poison Sumac* *Poison Oak*

Contamination with poison ivy, sumac or oak can happen through several pathways, including:

- Direct skin contact with any part of the plant (even roots once above ground foliage has been removed).
- Contact with clothing that has been contaminated with the oil.
- Contact from removing shoes that have been contaminated (shoes are coated with urishol oil).
- Sitting in a vehicle that has become contaminated.
- Contact with any objects or tools that have become contaminated.
- Inhalation of particles generated by weed whacking, chipping, vegetation clearing.

If you must work on a site with poison ivy, sumac or oak the following precautions are necessary:

- Do not drive vehicles onto the site where it will come into contact with poison ivy, sumac or oak. Vehicles which need to work in the area, such as drill rigs or heavy equipment must be washed as soon as possible after leaving the site.
- All tools used in the poison ivy, sumac or oak area, including those used to cut back poison oak, surveying instruments used in the area, air monitoring equipment or other test apparatus must be decontaminated before they are placed back into the site vehicle. If on-site decontamination is not possible, use plastic to wrap any tools or equipment until they can be decontaminated.
- Personal protective equipment, including Tyvek coveralls, gloves, and boot covers must be worn. PPE must be placed into plastic bags and sealed if they are not disposed immediately into a trash receptacle.
- As soon as possible following the work, shower to remove any potential contamination. Any body part with suspected or actual exposure should be washed with Zanfel, Tecnu or other product designed for removing urishiol. If you do not have Zanfel or Tecnu wash with cold water. Do not take a bath, as the oils can form and invisible film on top of the water and contaminate your entire body upon exiting the bath.
- Tecnu may also be used to decontaminate equipment.
- Use IvyBlock or similar products to prevent poison oak, ivy and sumac contamination. Check with the closest JACOBS warehouse to see if these products are available. Follow all directions for application.

If you do come into contact with one of these poisonous plants and a reaction develops, contact your supervisor and the occupational nurse 1-866-893-2514.

11.10 Scorpions

Scorpions usually hide during the day and are active at night. They may be hiding under rocks, wood, or anything else lying on the ground. Some species may also burrow into the ground. Most scorpions live in dry, desert areas; however, some species can be found in grasslands, forests, and inside caves.

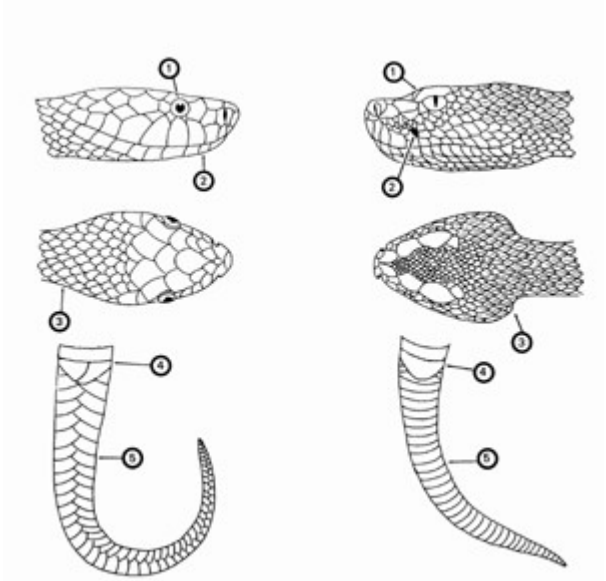
When entering an area that has the potential to contain scorpions, the following PPE is recommended: long pants, long sleeved shirts with collars, leather work gloves and leather work boots. Reaching into enclosures or recesses without prior visual inspection is not recommended. Thoroughly inspect each area before accessing. Shake out clothing, jackets, shoes or boots prior to putting them on.

11.11 Snakes

Snakes typically are found in underbrush and tall grassy areas. If you encounter a snake, stay calm and look around; there may be other snakes. Turn around and walk away on the same path you used to approach the area. If bitten by a snake, wash and immobilize the injured area, keeping it lower than the heart if possible. Call the occupational nurse at 1-866-893-2514 immediately. Do not apply ice, cut the wound, or apply a tourniquet. Try to identify the type of snake: note color, size, patterns, and markings. Below is a guide to identifying poisonous snakes from non-poisonous snakes.

Identification of Poisonous Snakes

Major Identification Features Non-venomous Snake	Major Identification Features Venomous Snake
1. Round pupils 2. No sensing pit 3. Head slightly wider than neck 4. Divided anal plate 5. Double row of scales on the underside of the tail	1. Elliptical pupils 2. Sensing pit between eye and nostril 3. Head much wider than neck 4. Single anal plate 5. Single scales on the underside of the tail



11.12 Spiders - Brown Recluse and Widow

The Brown Recluse spider can be found most anywhere in the United States. It varies in size in shape, but the distinguishing mark is the violin shape on its body. They are typically non-aggressive. Keep an eye out for irregular, pattern-less webs that sometimes appear almost tubular built in a protected area such as in a crevice or between two rocks. The spider will retreat to this area of the web when threatened.

The Black Widow, Red Widow and the Brown Widow are all poisonous. Most have globose, shiny abdomens that are predominantly black with red markings (although some may be pale or have lateral stripes), with moderately long, slender legs. These spiders are nocturnal and build a three-dimensional tangled web, often with a conical tent of dense silk in a corner where the spider hides during the day.

Hazard Controls

- Inspect or shake out any clothing, shoes, towels, or equipment before use.
- Wear protective clothing such as a long-sleeved shirt and long pants, hat, gloves, and boots when handling stacked or undisturbed piles of materials.
- Minimize the empty spaces between stacked materials.
- Remove and reduce debris and rubble from around the outdoor work areas.
- Trim or eliminate tall grasses from around outdoor work areas.
- Store apparel and outdoor equipment in tightly closed plastic bags.
- Keep your tetanus boosters up-to-date (every 10 years). Spider bites can become infected with tetanus spores.

If you think you have been bit by a poisonous spider, immediately call the occupational nurse at 1-866-893-2514 and follow the guidance below:

- Remain calm. Too much excitement or movement will increase the flow of venom into the blood;
- Apply a cool, wet cloth to the bite or cover the bite with a cloth and apply an ice bag to the bite;
- Elevate the bitten area, if possible;
- Do not apply a tourniquet, do not try to remove venom; and
- Try to positively identify the spider to confirm its type. If the spider has been killed, collect it in a plastic bag or jar for identification purposes. Do not try to capture a live spider—especially if you think it is a poisonous spider.

Black Widow

Red Widow

Brown Widow

Brown Recluse

If you are stung by a scorpion, call the occupational nurse 1-866-893-2514 and try to note the description of the scorpion. Cleanse the sting area and apply ice.

11.13 Ticks

Every year employees are exposed to tick bites at work and at home putting them at risk of illness. Ticks typically are in wooded areas, bushes, tall grass, and brush. Ticks are black, black and red, or brown and can be up to one-quarter inch (6.4 mm) in size.

In some geographic areas exposure is not easily avoided. Wear tightly woven light-colored clothing with long sleeves and pant legs tucked into boots; spray only outside of clothing with permethrin or permanone and spray skin with only DEET; and check yourself frequently for ticks.

Where site conditions (vegetation above knee height, tick endemic area) or when tasks (having to sit or kneel in vegetation) diminish the effectiveness of the other controls mentioned above, bug-out suits (check with your local or regional warehouse) or Tyvek shall be used. Bug-out suits are more breathable than Tyvek.

Take precautions to avoid exposure by including pre-planning measures for biological hazards prior to starting field work. Avoid habitats where possible, reduce the abundance through habitat disruption or application of acracide. If these controls aren't feasible, contact your local or regional warehouse for preventative equipment such as repellants, protective clothing and tick removal kits. Use the buddy system and perform tick inspections prior to entering the field vehicle. If ticks were not planned to be encountered and are observed, do not continue field work until these controls can be implemented.

See Tick Fact Sheet attached to this HSP for further precautions and controls to implement when ticks are present. If bitten by a tick, follow the removal procedures found in the tick fact sheet, and call the occupational nurse at 1-866-893-2514.

Be aware of the symptoms of Lyme disease or Rocky Mountain spotted fever (RMSF). Lyme disease is a rash that might appear that looks like a bull's eye with a small welt in the center. RMSF is a rash of red spots under the skin 3 to 10 days after the tick bite. In both RMSF and Lyme disease, chills, fever, headache, fatigue, stiff neck, and bone pain may develop. If symptoms appear, again contact the occupational nurse at 1-866-893-2514.

Be sure to complete an Incident Report (either use the Hours and Incident Tracking System [HITS] system on the VO) if you do come in contact with a tick.

12.0 Contaminants of Concern

The table below summarizes the potential contaminants of concern (COC) and their occupational exposure limit and signs and symptoms of exposure. The table also includes the maximum concentration of each COC and the associated location and media that was sampled (groundwater, soil boring, surface soil). These concentrations were used to determine engineering and administrative controls described in the "Project-Specific Hazard Controls" section of this HSP, as well as PPE and site monitoring requirements.

Contaminants of Concern					
Contaminant	**Location and Maximum[a] Concentration (ppm)**	**Exposure Limit[b]**	**IDLH[c]**	**Symptoms and Effects of Exposure**	**PIP[d] (eV)**
Antimony	GW: UK SB: UK SS: UK	0.05 mg/m^3	50 mg/ m^3	Irritated eyes, skin, nose, throat, mouth; cough; dizziness; headaches and nausea, vomiting, diarrhea, stomach cramps, insomnia	NA
Arsenic	GW: UK SB: UK SS: UK	0.01 mg/m^3	5 mg/ m^3 as As Ca	Ulceration of nasal septum, respiratory irritation, dermatitis, gastrointestinal disturbances, peripheral neuropathy, hyperpigmentation	NA
Barium	GW: UK SB: UK SS: UK	5.0 mg/m^3	50 mg/ m^3	Irritation eyes, nose, upper respiratory system; benign pneumoconiosis (baritosis)	NA
Benzene	GW: UK SB: 0.084 (CB-7-11) SS: UK	0.5 ppm	500 Ca	Eye, nose, skin, and respiratory irritation; headache; nausea; dermatitis; fatigue; giddiness; staggered gait; bone marrow depression	9.24
Beryllium	GW: UK SB: UK SS: UK	0.002 mg/m^3	4 mg/ m^3	Berylliosis; anorexia, low-weight, chest pain, cough, clubbing of fingers, cyanosis, pulmonary insufficiency, irritated eyes, dermatitis	NA
Cadmium	GW: UK SB: UK SS: UK	0.005 mg/m^3	9 mg/ m^3	Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia; [potential occupational carcinogen]	NA
Chromium (as Cr(II) & Cr(III))	GW: UK SB: UK SS: UK	0.5 mg/m^3	25 mg/m^3	Irritated eyes, sensitization dermatitis, histologic fibrosis of lungs	NA
Copper	GW: UK SB: UK SS: UK	0.1 mg/m^3	100 mg/m^3	Irritation of eyes, upper respiratory system; metal fume fever: chills, muscle ache, nausea, fever, dry throat, cough, lassitude (weakness, exhaustion); metallic or sweet taste; discoloration skin, hair	NA
Ethyl Benzene	GW: UK SB: UK SS: UK	100 ppm	800	Eye, skin, and mucous membrane irritation; headache; dermatitis; narcotic; coma	8.76
Lead	GW: UK SB: UK SS: UK	0.05 mg/m^3	100 mg/m^3 as Pb	Weakness lassitude, facial pallor, pal eye, weight loss, malnutrition, abdominal pain, constipation, anemia, gingival lead line, tremors, paralysis of wrist and ankles, encephalopathy, kidney disease, irritated eyes, hypertension	NA

Contaminants of Concern					
Contaminant	**Location and Maximum[a] Concentration (ppm)**	**Exposure Limit[b]**	**IDLH[c]**	**Symptoms and Effects of Exposure**	**PIP[d] (eV)**
Naphthalene	GW: UK SB: UK SS: UK	10 ppm	250	Eye irritation, headache, confusion, excitement, nausea, vomiting, abdominal pain, bladder irritation, profuse sweating, dermatitis, corneal damage, optical neuritis	8.12
Nickel	GW: UK SB: UK SS: UK	1.0 mg/m^3	10 mg/m^3	Sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen]	NA
PNAs (Limits as Coal Tar Pitch Volatiles)	GW: UK SB: 693 (CB-7-11) SS: UK	0.2 mg/m^3	80 Ca	Dermatitis and bronchitis	UK
Selenium	GW: UK SB: UK SS: UK	0.2 mg/m^3	1.0 mg/m^3	Irritation eyes, skin, nose, throat; visual disturbance; headache; chills, fever; dyspnea (breathing difficulty), bronchitis; metallic taste, garlic breath, gastrointestinal disturbance; dermatitis; eye, skin burns; in animals: anemia; liver necrosis, cirrhosis; kidney, spleen damage	NA
Thallium	GW:UK SB: UK SS: UK	0.1 mg/m^3	15 mg/m^3	Nausea, diarrhea, abdominal pain, vomiting; ptosis, strabismus; peri neuritis, tremor; retrosternal (occurring behind the sternum) tightness, chest pain, pulmonary edema; convulsions, chorea, psychosis; liver, kidney damage; alopecia; paresthesia legs	NA
Toluene	GW: UK SB: UK SS: UK	20 ppm	500	Eye and nose irritation, fatigue, weakness, confusion, dizziness, headache, dilated pupils, excessive tearing, nervousness, muscle fatigue, paresthesia, dermatitis, liver and kidney damage	8.82
Xylene	GW: UK SB: UK SS: UK	100 ppm	900	Irritated eyes, skin, nose, and throat; dizziness; excitement; drowsiness; incoherence; staggering gait; corneal vacuolization; anorexia; nausea; vomiting; abdominal pain; dermatitis	8.56

Footnotes:

[a] Specify sample-designation and media: SB (Soil Boring), A (Air), D (Drums), GW (Groundwater), L (Lagoon), TK (Tank), SS (Surface Soil), SL (Sludge), SW (Surface Water).
[b] Appropriate value of permissible exposure limit (PEL), recommended exposure limit (REL), or threshold limit value (TLV) listed.
[c] IDLH = immediately dangerous to life and health (units are the same as specified "Exposure Limit" units for that contaminant); NL = No limit found in reference materials; CA = Potential occupational carcinogen.
[d] PIP = photoionization potential; NA = Not applicable; UK = Unknown.

eV = electron volt
mg/kg = milligram per kilogram
mg/m^3 = milligrams per cubic meter
ug/m^3 = micrograms per cubic meter

Potential Routes of Exposure		
Dermal: Contact with contaminated media. This route of exposure is minimized through use of engineering controls, administrative controls and proper use of PPE.	**Inhalation:** Vapors and contaminated particulates. This route of exposure is minimized through use of engineering controls, administrative controls and proper use of respiratory protection when other forms of control do not reduce the potential for exposure.	**Other:** Inadvertent ingestion of contaminated media. This route should not present a concern if good hygiene practices are followed (e.g., wash hands and face before drinking or smoking).

13.0 Site Monitoring

(Reference SOP HSE-207, *Exposure Monitoring for Airborne Chemical Hazards*)

When performing site monitoring, record all the information, such as in a field logbook. Note date and time, describe monitoring location (for example, in breathing zone, at source and site location), and what the reading is. If any action levels are reached, note it in the field logbook and note the action taken.

Exposure records (air sampling) must be preserved for the duration of employment plus thirty years. Ensure that copies of the field log book are maintained in the project file.

Copies of all project exposure records (e.g., copies of field logbook pages where air monitoring readings are recorded and associated calibration) shall be sent to the regional SPA for retention and maintained in the project files.

13.1 Direct Reading Monitoring Specifications

Instrument	Tasks	Action Levels[a]	Action to be Taken when Action Level reached	Frequency [b]	Calibration
Toxic Gas Monitor: MultiRAE Plus with 10.6 eV lamp (VOCs, O_2, LEL, H_2S) NOTE: Utilize benzene detector tubes for benzene if VOCs are detected	All tasks	< 5 ppm > 5 ppm 0-10% : 10-25% LEL: >25% LEL: >25%[c] O_2: 20.9%[c] O_2: <19.5%[c] O_2:	Level D Stop work, let the area ventilate, re-evaluate, contact HSM No explosion hazard Potential explosion hazard Explosion hazard; evacuate or vent Explosion hazard; evacuate or vent Normal O_2 O_2 deficient; vent or use SCBA	Initially & periodically during tasks	Daily
Detector Tube: Drager benzene specific 0.5/c (0.5 to 10 ppm range) with pre-tube, or equivalent	All task	<0.5 ppm 0.5-1 ppm >1 ppm	Level D Level C Level B	Initially and periodically when PID>1 ppm	Not applicable

[a] Action levels apply to sustained breathing-zone measurements above background.
[b] The exact frequency of monitoring depends on field conditions and is to be determined by the SC; generally, every 5 to 15 minutes if acceptable; more frequently may be appropriate.
[c] If the measured percent of O_2 is less than 10, an accurate LEL reading will not be obtained. Percent LEL and percent O_2 action levels apply only to ambient working atmospheres, and not to confined-space entry. More-stringent percent LEL and O_2 action levels are required for confined-space entry.
[d] Noise monitoring and audiometric testing also required.

13.2 Calibration Specifications

(Refer to the respective manufacturer's instructions for proper instrument-maintenance procedures)

Instrument	Gas	Span	Reading	Method
MultiRae or equivalent	H2S	CF = 25	25 ppm	0.5 lpm reg
	CO	CF = 50	50 ppm	T-tubing
	LEL	CF = 50	50 %	
	O2	CF = 20.9	20.9 %	
	100 ppm isobutylene	CF = 100	100 ppm	

Calibrate air monitoring equipment daily (or prior to use) in accordance with the instrument's instructions. Document the calibration in the field logbook (or equivalent) and include the following information:

- Instrument name
- Serial Number
- Owner of instrument (for example, JACOBS, HAZCO)
- Calibration gas (including type and lot number)
- Type of regulator (for example, 1.5 lpm)
- Type of tubing (for example, direct or T-tubing)
- Ambient weather condition (for example, temperature and wind direction)
- Calibration/instrument readings
- Operator's name and signature
- Date and time

13.3 Integrated Personal Air Sampling

Sampling, in addition to real-time monitoring, may be required by other OSHA regulations where there may be exposure to certain contaminants. Air sampling typically is required when site contaminants include lead, cadmium, arsenic, asbestos, and certain volatile organic compounds. Contact the RHSM immediately if these contaminants are encountered.

Method Description: Personal monitoring for heavy metals and benzene (consult with RHSM)

Personal Breathing Zone and Area Samples

Personal breathing zone and area sampling results must be sent immediately to the RHSM.

Employees potentially exposed to the substances for which air sampling is being performed shall be given the opportunity to observe the exposure measurements, and records shall be made available to all affected employees upon request or when they are required to be provided by a specific regulation. Employees may also receive a copy of their exposure records from the Medical Surveillance Program Administrator (MSPA).

14.0 Personal Protective Equipment

(Reference JACOBS- SOP HSE-117, *Personal Protective Equipment*)

14.1 Required Personal Protective Equipment

PPE must be worn by employees when actual or potential hazards exist and engineering controls or administrative practices cannot adequately control those hazards.

A PPE assessment has been conducted by the RHSM based on project tasks (see PPE specifications below). Verification and certification of assigned PPE by task is completed by the RHSM that approved this plan. Below are items that need to be followed when using any form of PPE:

- Employees must be trained to properly wear and maintain the PPE;
- Employees must be trained in the limitations of the PPE;
- In work areas where actual or potential hazards are present at any time, PPE must be worn by employees working or walking through the area;
- Areas requiring PPE should be posted or employees must be informed of the requirements in an equivalent manner;
- PPE must be inspected prior to use and after any occurrence to identify any deterioration or damage;
- PPE must be maintained in a clean and reliable condition;
- Damaged PPE shall not be used and must either be repaired or discarded; and
- PPE shall not be modified, tampered with, or repaired beyond routine maintenance.

The table below outlines PPE to be used according to task based on project-specific hazard assessment. If a task other than the tasks described in this table needs to be performed, contact the RHSM so this table can be updated.

PPE Specifications [a]

	Level		Head	Respirator [b]
General site entry Surveying	D	Work clothes; steel-toe, leather work boots; work glove.	Hardhat [c] Safety glasses Ear protection [d]	None required
Excavation of areas contaminated by heavy metals	Modified D	**Coveralls:** Uncoated Tyvek® **Boots:** Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with outer rubber boot covers **Gloves:** Inner surgical-style nitrile & outer chemical-resistant nitrile gloves.	Hardhat [c] Splash shield [c] Safety glasses Ear protection [d]	None required.
Tasks requiring upgrade – PID readings and detector tubes indicate the presence of benzene	C	**Coveralls:** Polycoated Tyvek® **Boots:** Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with outer rubber boot covers **Gloves:** Inner surgical-style nitrile & outer chemical-resistant nitrile gloves.	Hardhat [c] Splash shield [c] Ear protection [d] Spectacle inserts	APR, full face, MSA Ultratwin or equivalent; with GME-H cartridges or equivalent[e].

Reasons for Upgrading or Downgrading Level of Protection

Upgrade[f]	Downgrade
• Request from individual performing tasks. • Change in work tasks that will increase contact or potential contact with hazardous materials.	• New information indicating that situation is less hazardous than originally thought.

- Occurrence or likely occurrence of gas or vapor emission.
- Known or suspected presence of dermal hazards.
- Instrument action levels (Section 5) exceeded.
- Change in site conditions that decreases the hazard.
- Change in work task that will reduce contact with hazardous materials.

[a] Modifications are as indicated. JACOBS will provide PPE only to JACOBS employees.

[b] No facial hair that would interfere with respirator fit is permitted.

[c] Hardhat and splash-shield areas are to be determined by the SSC.

[d] Ear protection should be worn when conversations cannot be held at distances of 3 feet or less without shouting.

[e] Cartridge change-out schedule is at least every 8 hours (or one work day), except if relative humidity is > 85%, or if organic vapor measurements are > midpoint of Level C range (refer to Section 5)--then at least every 4 hours. If encountered conditions are different than those anticipated in this HSP, contact the HSM.

[f] Performing a task that requires an upgrade to a higher level of protection (e.g., Level D to Level C) is permitted only when the PPE requirements have been approved by the HSM, and an SSC qualified at that level is present.

14.2 Respiratory Protection

(Reference SOP HSE-121, *Respiratory Protection*)

Implement the following when using respiratory protection:

- Respirator users must have completed appropriate respirator training within the past 12 months. Level C training is required for air-purifying respirators (APR) use and Level B training is required for supplied-air respirators (SAR) and self-contained breathing apparatus (SCBA) use. Specific training is required for the use of powered air-purifying respirators (PAPR);
- Respirator users must complete the respirator medical monitoring protocol and been approved for the specific type of respirator to be used;
- Tight-fitting facepiece respirator (negative or positive pressure) users must have passed an appropriate fit test within past 12 months;
- Respirator use shall be limited to those activities identified in this plan. If site conditions change that alters the effectiveness of the specified respiratory protection, the RHSM shall be notified to amend the written plan;
- Tight-fitting facepiece respirator users shall be clean-shaven and shall perform a user seal check before each use;
- Canisters/cartridges shall be replaced according to the change-out schedule specified in this plan. Respirator users shall notify the SC or RHSM of any detection of vapor or gas breakthrough. The SC shall report any breakthrough events to the RHSM for schedule upgrade;
- Respirators in regular use shall be inspected before each use and during cleaning;
- Respirators in regular use shall be cleaned and disinfected as often as necessary to ensure they are maintained in a clean and sanitary condition;
- Respirators shall be properly stored to protect against contamination and deformation;
- Field repair of respirators shall be limited to routine maintenance. Defective respirators shall be removed from service;
- When breathing air is supplied by cylinder or compressor, the SC or RHSM shall verify the air meets Grade D air specifications; and
- The SC or designee shall complete the Self-Assessment Checklist – Respiratory Protection included in as attachment to this plan to verify compliance with JACOBS's respiratory protection program.

Respirator Change-Out Schedule

Contaminant	Change-Out Schedule
Benzene	End-of-service life or end of shift (whichever occurs first)

15.0 Worker Training and Qualification

15.1 JACOBS Worker Training

(Reference SOP HSE-110, *Training*)

15.1.1 Hazardous Waste Operations Training

All employees engaging in hazardous waste operations or emergency response shall receive appropriate training as required by 29 CFR 1910.120 and 29 CFR 1926.65. At a minimum, the training shall have consisted of instruction in the topics outlined in 29 CFR 1910.120 and 29 CFR 1926.65. Personnel who have not met these training requirements shall not be allowed to engage in hazardous waste operations or emergency response activities.

15.1.1.1 Initial Training

General site workers engaged in hazardous waste operations shall, at the time of job assignment, have received a minimum of 40 hours of initial health and safety training for hazardous waste site operations, unless otherwise noted in the above-referenced standards.

Employees who may be exposed to health hazards or hazardous substances at treatment, storage, and disposal (TSD) operations shall receive a minimum of 24 hours of initial training to enable the employee to perform their assigned duties and functions in a safe and healthful manner.

Employees engaged in emergency response operations shall be trained to the level of required competence in accordance with 29 CFR 1910.120.

15.1.1.2 Three-Day Actual Field Experience

General site workers for hazardous waste operations shall have received three days of actual experience (on-the-job training) under the direct supervision of a trained, qualified supervisor and shall be documented. If the field experience has not already been received and documented at a similar site, this supervised experience shall be accomplished and documented at the beginning of the assignment of the project.

15.1.1.3 Refresher Training

General site workers and TSD workers shall receive 8-hours of refresher training annually (within the previous 12-month period) to maintain qualifications for fieldwork. Employees engaged in emergency response operations shall receive annual refresher training of sufficient content and duration to maintain their competencies or shall demonstrate competency in those areas at least annually.

15.1.1.4 Eight-Hour Supervisory Training

On site management or supervisors who will be directly responsible for, or supervise employees engaged in hazardous waste site operations, will have received at least 8 hours of additional specialized training on managing such operations. Employees designated as Safety Coordinator – Hazardous Waste are considered 8-hour HAZWOPER Site Safety Supervisor trained.

15.1.2 First Aid/Cardiopulmonary Resuscitation

First aid and CPR training consistent with the requirements of a nationally recognized organization such as the American Red Cross Association or National Safety Council shall be administered by a certified trainer. A minimum of two personnel per active field operation will have first aid and CPR

training. Bloodborne pathogen training located on JACOBS's Virtual Office is also required for those designated as first aid/CPR trained.

15.1.3 Safety Coordinator Training

SCs are trained to implement the HSE program on JACOBS field projects. A qualified SC is required to be identified in the site-specific HSP for JACOBS field projects. SCs must also meet the requirements of the worker category appropriate to the type of field project (construction or hazardous waste). In addition, the SCs shall have completed additional safety training required by the specific work activity on the project that qualifies them to implement the HSE program (for example, fall protection, excavation).

15.1.4 Site-Specific Training

Prior to commencement of field activities, all field personnel assigned to the project will have completed site-specific training that will address the contents of applicable HSPs, including the activities, procedures, monitoring, and equipment used in the site operations. Site-specific training will also include site and facility layout, potential hazards, risks associated with identified emergency response actions, and available emergency services. This training allows field workers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and work operations for their particular activity.

15.1.5 Project-Specific Training Requirements

Project-specific training for this project includes:

- HSPs/AHAs
- CPR/First Aid
- The following safety training programs are offered on the VO:
  - Arsenic Training
  - Behavior Based-Loss Prevention System (BBLPS) Training
  - Benzene Training
  - Cadmium Training
  - Chromium Training
  - Bloodborne Pathogen Training
  - Drum Handling Training
  - Fire Extinguisher Training
  - Hand Safety Training
  - Hazard Communication Training
  - Manual Lifting Training
  - Noise Training
  - Personal Protective Training
  - WHMIS Training
- Other task specific training as determined

16.0 Medical Surveillance and Qualification

(Reference SOP HSE-113, *Medical Surveillance*

All site workers participating in hazardous waste operations or emergency response (HAZWOPER) will maintain an adequate medical surveillance program in accordance with 29 CFR 1910.120 or 29

CFR 1926.65 and other applicable OSHA standards. Documentation of employee medical qualification (e.g., physician's written opinion) will be maintained in the project files and made available for inspection.

16.1 Hazardous Waste Operations and Emergency Response

JACOBS personnel expected to participate in on site HAZWOPER tasks are required to have a current medical qualification for performing this work. Medical qualification shall consist of a qualified physician's written opinion regarding fitness for duty at a hazardous waste site, including any recommended limitations on the employee's assigned work. The physician's written opinion shall state whether the employee has any detected medical conditions that would place the employee at increased risk of material impairment of the employee's health from work in hazardous waste operations or emergency response, or from respirator use.

16.2 Job or Site-Specific Medical Surveillance

Due to the nature of hazards for a particular job or work site, specialized medical surveillance may be necessary. This surveillance could include biological monitoring for specific compounds, or specialized medical examinations.

Site-specific medical surveillance includes:

- Not applicable

16.3 Respirator User Qualification

Personnel required to wear respirators must have a current medical qualification to wear respirators. Medical qualification shall consist of a qualified physician's written opinion regarding the employee's ability to safely wear a respirator in accordance with 29 CFR 1910.134.

16.4 Hearing Conservation

Personnel working in hazardous waste operations or operations that fall under 29 CFR 1910.95 and exposed to noise levels in excess of the 85dBA time-weighted average shall be included in a hearing conservation program that includes annual audiometric testing.

17.0 Site-Control Plan

17.1 Site-Control Procedures

(Reference SOP HSE-218, *Hazardous Waste Operations)*

Site control is established to prevent the spread of contamination throughout the site and to ensure that only authorized individuals are permitted into potentially hazardous areas.

The SC will implement site control procedures including the following bulleted items.

- Establish support, contamination reduction, and exclusion zones. Delineate with flags or cones as appropriate. Support zone should be upwind of the site. Use access control at entry and exit from each work zone.
- Establish onsite communication consisting of the following:
  - Line-of-sight and hand signals;
  - Air horn; and
  - Two-way radio or cellular telephone if available.
- Establish offsite communication.
- Establish and maintain the "buddy system."

17.2 Remediation Work Area Zones

(Reference SOP HSE-218 Hazardous Waste Operations)

A three-zone approach will be used to control areas where site contaminants exist. Access will be allowed only after verification of appropriate training and medical qualification. The three-zone approach shall include an EZ, Contamination Reduction Zone (CRZ) and a Support Zone (SZ). The three-zone approach is not required for construction work performed outside contaminated areas where control of site contamination is not a concern.

Specific work control zones shall be established as necessary during task planning. Site work zones should be modified in the field as necessary, based on such factors as equipment used, air monitoring results, environmental conditions, or alteration of work plans. The following guidelines shall be used for establishing and revising these preliminary zone designations.

17.2.1 Support Zone

The SZ is an uncontaminated area (trailers, offices, field vehicles, etc.) that will serve as the field support area for most operations. The SZ provides field team communications and staging for emergency response. Appropriate sanitary facilities and safety and emergency response equipment will be located in this zone. Potentially contaminated personnel/materials are not allowed in this zone. The only exception will be appropriately packaged and decontaminated materials, or personnel with medical emergencies that cannot be decontaminated.

17.2.2 Contamination Reduction Zone

The CRZ is established between the EZ and the SZ, upwind of the contaminated area where possible. The CRZ provides an area for decontamination of personnel, portable handheld equipment and tools, and heavy equipment. In addition, the CRZ serves as access for heavy equipment and emergency support services.

17.2.3 Exclusion Zone

The EZ is where activities take place that may involve exposure to site contaminants and/or hazardous materials or conditions. This zone shall be demarcated to prevent unauthorized entry. More than one EZ may be established if there are different levels of protection to be employed or different hazards that exist in the same work area. The EZ shall be large enough to allow adequate space for the activity to be completed, including field personnel and equipment, as well as necessary emergency equipment.

The EZ shall be demarcated with some form of physical barrier or signage. The physical barrier or signage shall be placed so that they are visible to personnel approaching or working in the area. Barriers and boundary markers shall be removed when no longer needed.

17.2.4 Other Controlled Areas

Other work areas may need to be controlled due to the presence of an uncontrolled hazard, to warn workers of requirements, or to prevent unauthorized entry. Examples include general construction work areas, open excavations, high noise areas, vehicle access areas, and similar activities or limited access locations. These areas shall be clearly demarcated with physical barriers (fencing, cones, reinforced caution tape or rope) as necessary and posted with appropriate signage.

18.0 Decontamination

(Reference SOP HSE-218, *Hazardous Waste Operations*)

Decontamination areas will be established for work in potentially contaminated areas to prevent the spread of contamination. Decontamination areas should be located upwind of the exclusion zone where possible and should consider any adjacent or nearby projects and personnel. The SC must establish and monitor the decontamination procedures and their effectiveness. Decontamination procedures found to be ineffective will be modified by the SC. The SC must ensure that procedures are established for disposing of materials generated on the site.

No eating, drinking, or smoking is permitted in contaminated areas and in exclusion or decontamination zones. The SC should establish areas for eating, drinking, and smoking.

18.1 Contamination Prevention

Preventing or avoiding contamination of personnel, tools, and equipment will be considered in planning work activities at all field locations. Good contamination prevention and avoidance practices will assist in preventing worker exposure and result in a more efficient decontamination process. Procedures for contamination prevention and avoidance include the following:

- Do not walk through areas of obvious or known contamination;
- Do not directly handle or touch contaminated materials;
- Make sure there are no cuts or tears in PPE;
- Fasten all closures in suits and cover them with duct tape, if appropriate;
- Take particular care to protect any skin injuries;
- Stay upwind of airborne contamination, where possible;
- Do not eat or drink in contaminated work areas;
- Do not carry food, beverages, tobacco, or flame-producing equipment into contaminated work areas;
- Minimize the number of personnel and amount of equipment in contaminated areas to that necessary for accomplishing the work;
- Choose tools and equipment with nonporous exterior surfaces that can be easily cleaned and decontaminated;
- Cover monitoring and sampling equipment with clear plastic, leaving openings for the sampling ports, as necessary; and
- Minimize the amount of tools and equipment necessary in contaminated areas.

18.2 Personnel and Equipment Decontamination

Personnel exiting an EZ must ensure that they are not spreading potential contamination into clean areas or increasing their potential for ingesting or inhaling potential contaminants. Personal decontamination may range from removing outer gloves as exiting the EZ, to proceeding through an outer layer doffing station including a boot and glove wash and rinse, washing equipment, etc. Equipment that has come into contact with contaminated media must also be cleaned/decontaminated when it is brought out of the EZ.

18.3 Decontamination During Medical Emergencies

Standard personnel decontamination practices will be followed whenever possible. For emergency life saving first aid and/or medical treatment, normal decontamination procedures may need to be abbreviated or omitted. In this situation, site personnel shall accompany contaminated victims to advise emergency response personnel on potential contamination present and proper decontamination procedures.

Outer garments may be removed if they do not cause delays, interfere with treatment, or aggravate the problem. Protective clothing can be cut away. If the outer garments cannot be safely removed, a plastic barrier between the individual and clean surfaces should be used to help prevent contaminating the inside of ambulances or medical personnel. Outer garments can then be removed at the medical facility.

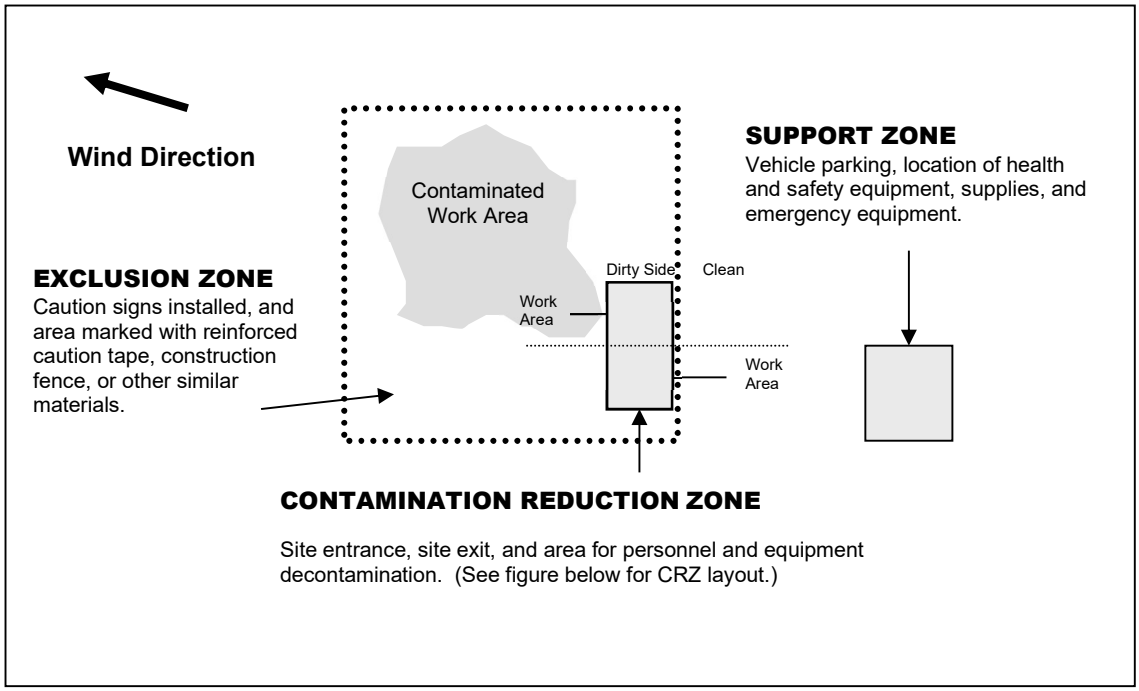
18.4 Waste Collection and Disposal

All contaminated material generated through the personnel and equipment decontamination processes (e.g., contaminated disposable items, gross debris, liquids, sludges) will be properly containerized and labeled, stored at a secure location, and disposed in accordance with the project plans.

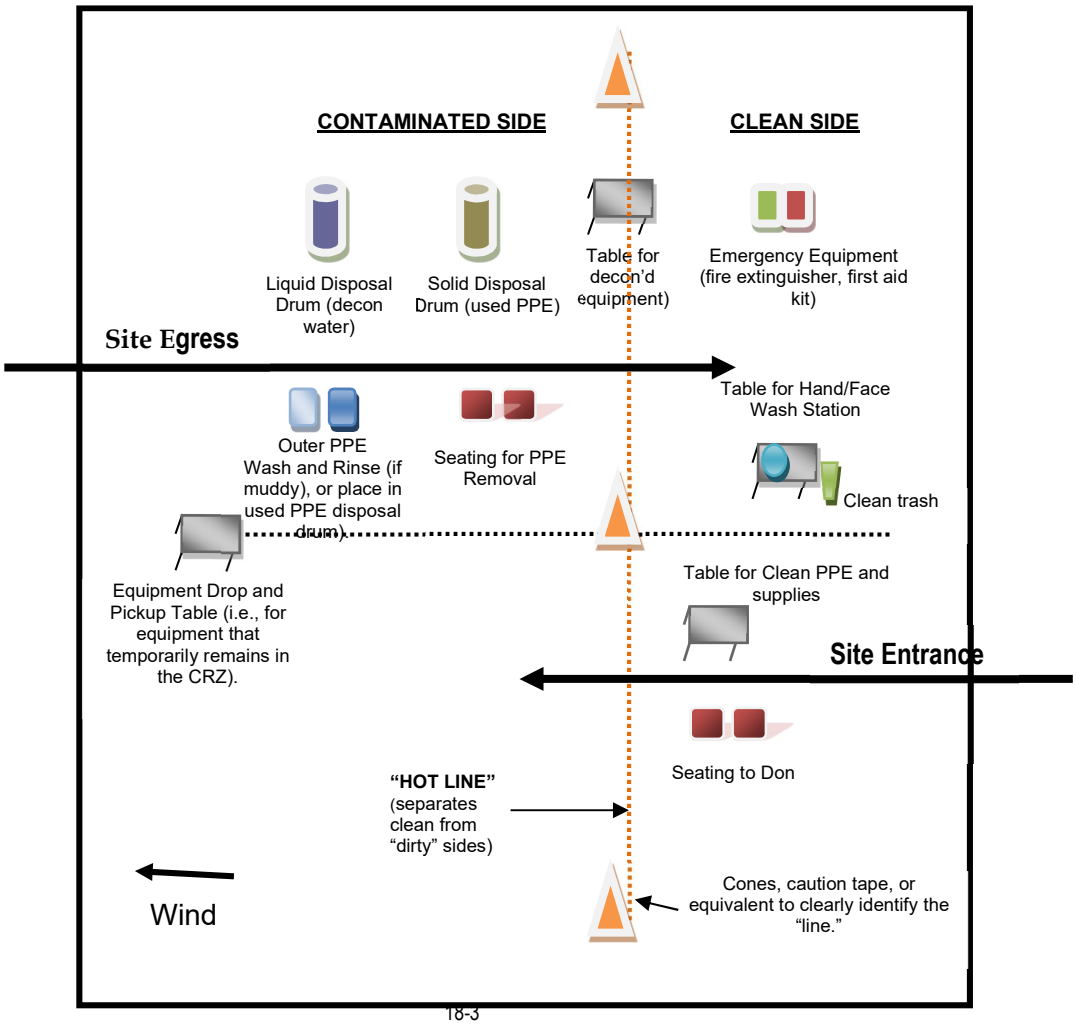
18.5 Diagram of Personnel-Decontamination Line

The following figure illustrates a conceptual establishment of work zones, including the decontamination line. Work zones are to be modified by the SC to accommodate task-specific requirements.

Work Area - Set up appropriately based on wind direction



Typical Contamination Reduction Zone



19.0 Emergency Response Plan

(Reference SOP HSE-106, *Emergency Planning*)

19.1 Pre-Emergency Planning

The Emergency Response Coordinator (ERC), typically the SC or designee, performs the applicable pre-emergency planning tasks before starting field activities and coordinates emergency response with JACOBS onsite parties, the facility, and local emergency-service providers as appropriate. Pre-Emergency Planning activities performed by the ERC include:

- Review the facility emergency and contingency plans where applicable;
- Determine what onsite communication equipment is available (two-way radio, air horn);
- Determine what offsite communication equipment is needed (nearest telephone, cell phone);
- Confirm and post the "Emergency Contacts" page and route to the hospital located in this section in project trailer(s) and keep a copy in field vehicles along with evacuation routes and assembly areas. Communicate the information to onsite personnel and keep it updated;
- Field Trailers: Post "Exit" signs above exit doors, and post "Fire Extinguisher" signs above locations of extinguishers. Keep areas near exits and extinguishers clear;
- Review changed site conditions, onsite operations, and personnel availability in relation to emergency response procedures;
- Where appropriate and acceptable to the client, inform emergency room and ambulance and emergency response teams of anticipated types of site emergencies;
- Inventory and check site emergency equipment, supplies, and potable water;
- Communicate emergency procedures for personnel injury, exposures, fires, explosions, and releases;
- Rehearse the emergency response plan before site activities begin. This may include a "tabletop" exercise or an actual drill depending on the nature and complexity of the project. Drills should take place periodically but no less than once a year;
- Brief new workers on the emergency response plan; and
- The ERC will evaluate emergency response actions and initiate appropriate follow-up actions.

19.2 Emergency Equipment and Supplies

The ERC shall ensure the following emergency equipment is on the site. Verify and update the locations of this equipment as needed. The equipment will be inspected in accordance with manufacturer's recommendations. The inspection shall be documented in a field logbook or similar means to be kept in the project files.

Emergency Equipment and Supplies	Location
20 (or two 10) class A,B,C fire extinguisher	
First aid kit	
Eye wash	
Emergency shower	
Potable water	
Bloodborne-pathogen kit	
Additional equipment (specify):	

19.3 Incident Response

In fires, explosions, or chemical releases, actions to be taken include the following:

- Notify appropriate response personnel;
- Shut down JACOBS operations and evacuate the immediate work area;
- Account for personnel at the designated assembly area(s);
- Assess the need for site evacuation, and evacuate the site as warranted;
- Implement HSE-111, Incident Notification, Reporting and Investigation; and
- Notify and submit reports to clients as required in contract.

Small fires or spills posing minimal safety or health hazards may be controlled with onsite spill kits or fire extinguishers without evacuating the site. When in doubt evacuate. Follow the incident reporting procedures in the "Incident Notification, Reporting, and Investigation" section of this HSP.

19.4 Emergency Medical Treatment

Emergency medical treatment is needed when there is a life-threatening injury (such as severe bleeding, loss of consciousness, breathing or heart has stopped). When in doubt if an injury is life-threatening or not, treat it as needing emergency medical treatment.

- Notify 911 or other appropriate emergency response authorities as listed in the "Emergency Contacts" page located in this section.
- The ERC will assume charge during a medical emergency until the ambulance arrives or until the injured person is admitted to the emergency room.
- Prevent further injury, perform decontamination (if applicable) where feasible; lifesaving and first aid or medical treatment takes priority.
- Initiate first aid and CPR where feasible.
- Notify supervisor and if the injured person is a JACOBS employee, the supervisor will call the occupational nurse at 1-866-893-2514 and make other notifications as required by HSE SOP-111, *Incident Notification, Reporting and Investigation*.
- Make certain that the injured person is accompanied to the emergency room.
- Follow the Serious Incident Reporting process in HSE SOP-111, Incident Notification, Reporting and Investigation, and complete incident report using the HITS system on the VO or if not feasible, use the hard copy forms provided as an attachment to this HSP.
- Notify and submit reports to client as required in contract.

19.5 Evacuation

- Evacuation routes, assembly areas, and severe weather shelters (and alternative routes and assembly areas) are to be specified on the site map.
- Evacuation route(s) and assembly area(s) will be designated by the ERC or designee before work begins.
- Personnel will assemble at the assembly area(s) upon hearing the emergency signal for evacuation.
- The ERC and a "buddy" will remain on the site after the site has been evacuated (if safe) to assist local responders and advise them of the nature and location of the incident.

- The ERC will account for all personnel in the onsite assembly area.
- A designated person will account for personnel at alternate assembly area(s).
- The ERC will follow the incident reporting procedures in the "Incident Notification, Reporting and Investigation" section of this HSP.

19.6 Evacuation Signals

Signal	Meaning
Grasping throat with hand	Emergency-help me.
Thumbs up	OK; understood.
Grasping buddy's wrist	Leave area now.
Continuous sounding of horn	Emergency; leave site now.

19.7 Inclement Weather

Sudden inclement weather can rapidly encroach upon field personnel. Preparedness and caution are the best defenses. Field crew members performing work outdoors should carry clothing appropriate for inclement weather. Personnel are to take heed of the weather forecast for the day and pay attention for signs of changing weather that indicate an impending storm. Signs include towering thunderheads, darkening skies, or a sudden increase in wind. If stormy weather ensues, field personnel should discontinue work and seek shelter until the storm has passed.

Protective measures during a lightning storm include seeking shelter; avoiding projecting above the surrounding landscape (don't stand on a hilltop--seek low areas); staying away from open water, metal equipment, railroad tracks, wire fences, and metal pipes; and positioning people several yards apart. Some other general precautions include:

- Know where to go and how long it will take to get there. If possible, take refuge in a large building or vehicle. Do not go into a shed in an open area;
- The inclination to see trees as enormous umbrellas is the most frequent and most deadly mistake. Do not go under a large tree that is standing alone. Likewise, avoid poles, antennae, and towers;
- If the area is wide open, go to a valley or ravine, but be aware of flash flooding;
- If you are caught in a level open area during an electrical storm and you feel your hair stand on end, drop to your knees, bend forward and put your hands on your knees or crouch. The idea is to make yourself less vulnerable by being as low to the ground as possible and taking up as little ground space as possible. Lying down is dangerous, since the wet earth can conduct electricity. Do not touch the ground with your hands; and
- Do not use telephones during electrical storms, except in the case of emergency.

Remember that lightning may strike several miles from the parent cloud, so work should be stopped and restarted accordingly. The lightning safety recommendation is 30-30: Seek refuge when thunder sounds within 30 seconds after a lightning flash; and do not resume activity until 30 minutes after the last thunder clap.

High winds can cause unsafe conditions, and activities should be halted until wind dies down. High winds can also knock over trees, so walking through forested areas during high-wind situations should be avoided. If winds increase, seek shelter or evacuate the area. Proper body protection should be worn in case the winds hit suddenly, because body temperature can decrease rapidly.

Emergency Contacts

24-hour Injury Reporting – 1-888-449-7787
Global Assistance and Response Hotline – 443-221-6281

Medical Emergency – 911 **Facility Medical Response #:** **Local Ambulance #: 928.445.3814**	**Non-Emergency Medical Injuries** WorkCare: 1-888-449-7787 Call no matter how minor the injury as soon as possible
Fire/Spill Emergency – 911 **Facility Fire Response #:** **Local Fire Dept #:** (928) 777-1700	
Security & Police – 911 **Facility Security #:** **Local Police #:** (928) 777-1900	**JACOBS Responsible Health and Safety Manager (RHSM)** Name: Jeffrey T. Hilgaertner Phone: 714-552-1971
Utilities Emergency Phone Numbers Water: NA Gas: NA Electric: NA	**JACOBS Human Resources Department** Phone: Employee Connect toll-free number 1-877-586-4411 (U.S. and Canada)
JACOBS Project Manager Name: Dave Allard Phone: 480.295.3913; cell 480.363.3254	**JACOBS Worker's Compensation:** Contact Business Group HR dept. to have form completed or contact Jennifer Rindahl after hours: (720)891-5382
JACOBS Safety Coordinator (SC) Name: Victor Martinez Phone: 714 435 6252 Name: Dave Allard Phone: 480 295-3913 Cell: 480 363-3254	**Media Inquiries Corporate Strategic Communications** Name: Lorrie Paul Crum Phone: (720) 286-0255
JACOBS Project Environmental Manager Name: Liz Luecker/SEA Phone: 425-233-3585	**Automobile Accidents** Rental: Vehicle Accident Form required to be sent to AutoClaims@jacobs.com (see Vehicle Accident Guidance attached to this plan) Fleet or owned vehicle: Michelle Garcia/DEN: (720) 286-4273
Federal Express Dangerous Goods Shipping Phone: 800/238-5355	**CHEMTEL (hazardous material spills)** **Phone: 800/255-3924**
Facility Alarms: TBD prior to beginning site activities	Evacuation Assembly Area(s): outside of site gate
Facility/Site Evacuation Route(s): through of site gate	

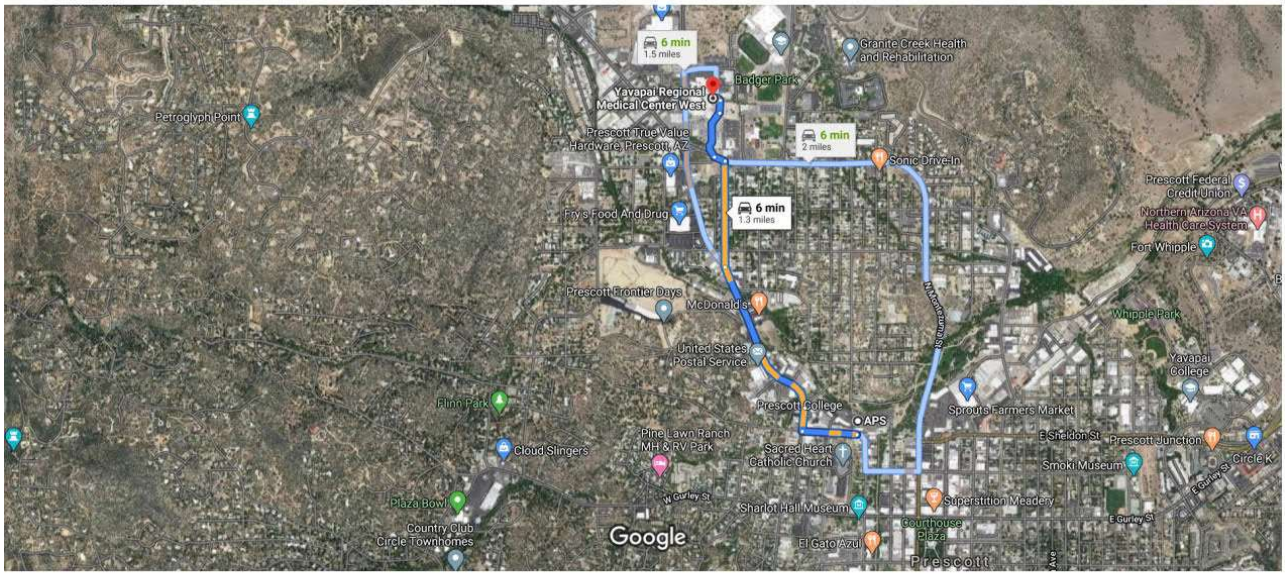
Directions to Local Hospital

Local Hospital: **Yavapai Regional Medical Center, Emergency Room**
1003 Willow Creek Road, Prescott, Arizona 86301

928-771-5100

Google Maps APS to Yavapai Regional Medical Center West

Drive 1.3 miles, 6 min



Imagery ©2020 Maxar Technologies, USDA Farm Service Agency, Map data ©2020 1000 ft

APS

300 N Granite St, Prescott, AZ 86301

Take Miller Valley Rd and N Walnut St to Whipple St

4 min (1.0 mi)

1. Head west on W Sheldon St toward N Summit Ave

0.2 mi

2. Turn right onto Grove Ave

371 ft

3. Slight left onto Miller Valley Rd
   Pass by O'Reilly Auto Parts (on the left)

0.5 mi

4. Slight right onto N Walnut St

0.3 mi

5. Turn left onto Whipple St

18 s (174 ft)

Drive to your destination

1 min (0.2 mi)

6. Turn right

0.1 mi

7. Slight left

190 ft

8. Turn left
   Destination will be on the left

66 ft

Yavapai Regional Medical Center West

1003 Willow Creek Rd, Prescott, AZ 86301

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

20.0 Spill Containment Procedures

JACOBS and subcontractor personnel working at the project site shall be knowledgeable of the potential health, safety and environmental concerns associated with petroleum and other substances that could potentially be released at the project site.

The following is a list of criteria that must be addressed in JACOBS's or the subcontractor's plans in the event of a spill or release. In the event of a large quantity spill notify emergency services. Personnel discovering a spill shall (only if safe to do so):

- Stop or contain the spill immediately (if possible) or note source. Shut off the source (e.g., pump, treatment system) if possible. If unsafe conditions exist, then leave the area, call emergency services, inform nearby personnel, notify the site supervisors, and initiate incident reporting process. The SC shall be notified immediately;
- Extinguish sources of ignition (flames, sparks, hot surfaces, cigarettes);
- Clear personnel from the spill location and barricade the area;
- Use available spill control equipment in an effort to ensure that fires, explosions, and releases do not occur, recur, or spread;
- Use sorbent materials to control the spill at the source;
- Construct a temporary containment dike of sorbent materials, cinder blocks, bricks or other suitable materials to help contain the spill;
- Attempt to identify the character, exact source, amount, and extent of the released materials. Identification of the spilled material should be made as soon as possible so that the appropriate cleanup procedure can be identified;
- Assess possible hazards to human health or the environment as a result of the release, fire or explosion; and
- Follow incident notification, reporting, and investigation section of this plan.

21.0 Inspections

21.1 Project Activity Self-Assessment Checklists

In addition to the hazard controls specified in this document, Project Activity Self-Assessment Checklists are contained as an attachment to this HSP. The Project-Activity Self–Assessment Checklists are based upon minimum regulatory compliance and some site-specific requirements may be more stringent. The objective of the self-assessment process is to identify gaps in project safety performance, and prompt for corrective actions in addressing these gaps. The self-assessment checklists, including documented corrective actions, shall be made part of the permanent project records and maintained by the SC.

The self-assessment checklists will also be used by the SC in evaluating the subcontractors and any client contractors' compliance on site.

The self-assessment checklists for the following tasks and exposures are required when the task or exposure is initiated and weekly thereafter while the task or exposure is taking place. The checklists shall be completed by the SC or other JACOBS representative and maintained in project files.

- Arsenic
- Benzene
- Cadmium
- Earthmoving Equipment
- Excavations
- Hand and Power Tools
- Hazardous Materials Handling
- Lead
- Manual Lifting
- Personal Protective Equipment
- Respiratory Protection

21.2 Traffic Control Safe Behavior Observations

Safe Behavior Observations (SBOs) are a tool to be used by supervisors to provide positive reinforcement for work practices performed correctly, while also identifying and eliminating deviations from safe work procedures that could result in a loss.

The SC or designee shall perform at least one SBO each week for any field work performed by subcontractors or when there are at least two JACOBS personnel performing field work.

The SC or designee shall complete the SBO form (attached to this HSP) for the task/operation being observed and submit them weekly.

For commercial projects, SBOs may be submitted electronically by e-mailing them to the address, "CH2MHILL ES COM Safe Behavior Observations" when connected to the network or at SafeBehaviorObservations@ch2m.com. For Federal projects, SBOs may be submitted electronically by e-mailing them to the address, "JACOBS ES FED Safe Behavior Observations" when connected to the network or at CH2MHILLESFEDSafeBehaviorObservation@ch2m.com.

22.0 Incident Notification, Reporting, and Investigation

(Reference SOP HSE-111, *Incident Notification, Reporting and Investigation*)

22.1 General Information

This section applies to the following:

- All injuries involving employees, third parties, or members of the public;
- Damage to property or equipment;
- Interruptions to work or public service (hitting a utility);
- Incidents which attract negative media coverage;
- Near misses;
- Spills, leaks, or regulatory violations; and
- Motor vehicle accidents.

Documentation, including incident reports, investigation, analysis and corrective measure taken, shall be kept by the SC and maintained onsite for the duration of the project.

22.2 Section Definitions

Incident: An incident is an event that causes or could have caused undesired consequences. An incident may be caused by natural forces, employees, subcontractors, or third parties in any location associated with JACOBS operations, including offices, warehouses, project sites, private property, or public spaces. Incidents include:

- Injury or illness to a JACOBS employee or subcontractor employee, or member of the public;
- Property damage;
- Spill or release;
- Environmental requirement or permit violation;
- A "near-miss"; or
- Other (e.g., fire, explosion, bomb threat, workplace violence, threats)**Accident**: an incident involving actual loss through injury, damage to assets, or environmental harm.

Near Miss: A near-miss occurs when an intervening factor prevented an injury or illness, property damage, spill or release, permit violation or other event from occurring. Examples of near-miss situations include: a hard hat or other personal protective equipment (PPE) prevented an injury; secondary containment or emergency shutoff prevented a spill; or an alert co-worker prevented an incident.

Serious Incident:

A Serious Incident must be immediately reported to senior management includes:

- Work related death, or life threatening injury or illness of a JACOBS employee;
- subcontractor, or member of the public;
- Kidnap/missing person;
- Acts or threats of terrorism;
- Event that involves a fire, explosion, or property damage that requires a site evacuation or is estimated to result in greater than $ 500,000 in damage; or

- Spill or release of hazardous materials or substances that involves a significant threat of imminent harm to site workers, neighboring facilities, the community or the environment.

22.3 Reporting Requirements

All employees and subcontractors' employees shall immediately report any incident (including "near misses," as defined in the section above) in which they are involved or witness to their supervisor.

The JACOBS or Subcontractor supervisor, upon receiving an incident report, shall inform his immediate superior and the JACOBS SC.

The SC shall immediately report the following information to the RHSM and PM by phone and e-mail:

- Project Name and Site Manager;
- Date and time of incident;
- Description of incident;
- Extent of known injuries or damage;
- Level of medical attention; and
- Preliminary root cause/corrective actions

The RHSM shall immediately inform the EM (or available alternate) of spills, potential environmental permit compliance, or any environmental situation that could result in a notice of violation from an agency.

The JACOBS team shall comply with all applicable statutory incident reporting requirements such as those to OSHA, the police, or state or Federal environmental agency.

22.4 HITS System and Incident Report Form

JACOBS maintains a HITS entry and/or Incident Report Form (IRF) for all work-related injuries and illnesses sustained by its employees in accordance with recordkeeping and insurance requirements. A HITS entry and/or IRF will also be maintained for other incidents (property damage, fire or explosion, spill, release, potential violation, and near misses) as part of our loss prevention and risk reduction initiative.

The SC shall complete an entry into the Hours and Incident Tracking System (HITS) database system located on JACOBS's Virtual Office (or if VO not available, use the hard copy Incident Report Form and Root Cause Analysis Form and forward it to the RHSM) within 24 hours and finalize those forms within 3 calendar days.

22.5 Injury Management/Return-to-Work (for US/Puerto Rico based JACOBS Staff Only)

(Reference SOP HSSE-124, Injury Management/Return-to-Work)

22.5.1 Background

The Injury Management Program has been established to provide orderly, effective and timely medical treatment and return-to-work transition for an employee who sustains a work-related injury or illness. It also provides guidance and assistance with obtaining appropriate treatment to aid recovery, keep supervisors informed of employee status, and to quickly report and investigate work-related injury/illnesses to prevent recurrence.

To implement the Injury Management/Return-to-Work Program successfully, supervisors and/or SC should:

- Ensure employees are informed of the Injury Management/Return-to-Work Program;
- Become familiar with the Notification Process (detailed below); and
- Post the Injury Management/Return-to-Work Notification Poster.

22.5.2 The Injury Management/Return-to-Work Notification Process:

- Employee informs their supervisor.
- Employee calls the Injury Management Program toll free number 1-866-893-2514 immediately and speaks with the Occupational Injury Nurse. This number is operable 24 hours per day, 7 days a week.
- Supervisor ensures employee immediately calls the Injury Management Program number. Supervisor makes the call with the injured worker or for the injured worker, if needed.
- Nurse assists employee with obtaining appropriate medical treatment, as necessary schedules clinic visit for employee (calls ahead, and assists with any necessary follow up treatment). The supervisor or SC accompanies the employee if a clinic visit is necessary to ensure that employees receive appropriate and timely care.
- Supervisor or SC completes the HITS entry or Incident Report Form immediately (within 24 hours) and forwards it to the Project Manager and RHSM.
- Nurse notifies appropriate JACOBS staff by e-mail (supervisor, Health & Safety, Human Resources, Workers' Compensation).
- Nurse communicates and coordinates with and for employee on treatment through recovery.
- Supervisor ensures suitable duties are identified and available for injured or ill workers who are determined to be medically fit to return to work on transitional duty (temporary and progressive).
- Supervisor ensures medical limitations prescribed (if any) by physician are followed until the worker is released to full duty.

22.6 Serious Incident Reporting Requirements

(Reference SOP HSE-111, *Incident Reporting, Notification and Investigation*)

The serious incident reporting requirements ensures timely notification and allows for positive control over flow of information so that the incident is handled effectively, efficiently, and in conjunction with appropriate corporate entities. This standard notification process integrates Health, Safety, Security and Environment and Firm Wide Security Operations requirements for the consistent reporting of and managing of serious events throughout our operations.

22.6.1 Serious Incident Determination

The following are general criteria for determining whether an incident on JACOBS owned or managed facilities or program sites is considered serious and must be immediately reported up to Group President level through the reporting/notification process:

- Work related death, or life threatening injury or illness of a JACOBS employee, subcontractor, or member of the public;
- Kidnap or missing person;
- Acts or threats of terrorism;
- Event that involves a fire, explosion, or property damage that requires a site evacuation or is estimated to result in greater than $ 500,000 in damage; or

- Spill or release of hazardous materials or substances that involves a significant threat of imminent harm to site workers, neighboring facilities, the community or the environment.

22.6.2 Serious Incident Reporting

If an incident meets the "Serious Incident" criteria, the Project Manager is to immediately contact the Crisis Manager at 720-286-4911, then follow the standard incident reporting procedure.

For all serious incidents this standard reporting process is implemented immediately so as to ultimately achieve notification to the Business Group President within 2 hours of incident onset or discovery, and notification to appropriate corporate Crisis Management Support Team.

ESBG US Operations
Incident Reporting Flow Diagram

Direct Reporting Responsibility

Informational Reporting

Incident:

- Injury or illness
- Hazardous substance exposure
- Damage to property
- Fire or explosion
- Spill, release, potential violation, or permit exceedance
- A "near-miss"

If incident is an **injury** to US or Puerto Rico based JACOBS personnel contact the Occupational Health Nurse at 866/893-2514. Outside the US, the supervisor must notify the HR

The Ops Leader is responsible for completing the Incident Report Form (IRF) in **HITS** when there is an injury to a JACOBS employee. The PM, CM or SC is responsible for completing the IRF for all other incidents. ***The IRF/HITS must be completed within 24 hours of the incident and does not replace the required immediate PM and RHSM notifications.***

Incident

Ensure that Emergency Responders have been notified as necessary

Employee or Subcontractor

Provide immediate notification.

Supervisor – Construction Manager - Safety Coordinator

Provide immediate notification by phone and email to PM and RHSM. In addition, for spills, NOVs, and permit issues you may also call the EM.

CRISIS MANAGER:

If the incident meets the "**Serious Incident**" criteria, contact the Crisis Manager

(720.286.4911)

Third Party – Incidents outside of our contractual obligations do not need to be communicated, unless they are serious and/or may affect JACOBS. The RHSM will determine the level of communication necessary for third party incidents.

Serious Incident:

- Work related death, or life threatening injury or illness of a JACOBS employee, subcontractor, or member of the public
- Kidnap/missing person
- Acts or threats of terrorism
- Event that involves a fire, explosion, or property damage that requires a site evacuation or is estimated to result in greater than $ 500,000 US in damage.
- Spill or release of hazardous materials or substances that involves a significant threat of imminent harm to site workers, neighboring facilities, the community or the environment.

Responsible HSM (RHSM)

Immediately notify the Sector OR Client Program HSE Manager, immediately notify the Responsible Environmental Manager (EM) for spills, NOVs, and permit issues, and direct the incident investigation.

Client Program HSE Manager

Notify Sector HSM, and coordinate communication and incident investigations.

Immediate notification to the Sector HSM is not required for some minor incidents. Follow the program or sector protocol.

Project Manager

Provide notification to the Sector OR Program Project Delivery (PD) or Operations (Ops) Manager or designee. Notification is based on program or sector specific criteria.

Immediate notification to the PD/Ops Manager is not required for some minor incidents. Follow the program or sector protocol.

Sector or Program PD/Ops Manager

Notify Client Program Manager OR Sector Director, provide guidance and follow the incident through to resolution.

Client Program Manager

Notify Sector Director; provide decision-making assistance or direction for incident resolution.

Keep unnecessary communication of serious incidents to a minimum.

Sector HSE Manager

Coordinate communication, direct significant incident investigations, notify Sector EM for spills, NOVs, & permit issues.

HSSE Director

Provide decision-making assistance or direction for incident resolution.

Sector Director

Provide decision-making assistance or direction for incident resolution.

ES US Operations Director/ Executive Leadership Team

Provide decision-making assistance, direction for incident resolution, and make higher level notifications as necessary

Post-emergency incident communications regarding serious incidents at a JACOBS office or project (regardless of the party involved) shall be considered sensitive in nature and must be controlled in a confidential manner.

22.7 Incident Root Cause Analysis

The accident analysis is essential if all causes of the incident are to be identified for the correct remedial actions to be taken to prevent the same and similar type of incident from recurring. Root Cause Analysis (RCA) shall be completed for all recordable injuries, property damage incidents in excess of $5000.00 (US), environmental permit violations, spills and releases which are required to be reported to regulatory agencies, and any other incident, including near misses where they RHSM or PM determines an RCA is appropriate. The RHSM/REM is responsible for ensuring it is completed and results entered in the incident report form in HITS. RCA's must be completed using a Team that includes, at least the RHSM or designee, the involved party(ies), a responsible operations representative (e.g. PM, construction manager, crew supervisor, etc.) and an independent management representative not associated with the incident.

The Root Cause Analysis Form must be completed for all Loss Incidents and Near Loss Incidents. This form must be submitted to the investigation team for review.

For minor losses or near losses, the information may be gathered by the supervisor or other personnel immediately following the loss. Based on the complexity of the situation, this information may be all that is necessary to enable the investigation team to analyze the loss, determine the root cause, and develop recommendations. More complex situations may require the investigation team to revisit the loss site or re-interview key witnesses to obtain answers to questions that may arise during the investigation process.

Photographs or videotapes of the scene and damaged equipment should be taken from all sides and from various distances. This point is especially important when the investigation team will not be able to review the loss scene.

The investigation team must follow the Root Cause Analysis Flow Chart (see Attachment 4 of the SOP) to assist in identifying the root cause(s) of a loss. Any loss may have one or more root causes and contributing factors. The root cause is the primary or immediate cause of the incident, while a contributing factor is a condition or event that contributes to the incident happening, but is not the primary cause of the incident. Root causes and contributing factors that relate to the person involved in the loss, his or her peers, or the supervisor should be referred to as "personal factors." Causes that pertain to the system within which the loss or injury occurred should be referred to as "job factors."

Personal factors include:

- Lack of skill or knowledge;
- Correct way takes more time and/or requires more effort;
- Short-cutting standard procedures is positively reinforced or tolerated; or
- Person thinks there is no personal benefit to always doing the job according to standards.

Job Factors include:

- Lack of or inadequate operational procedures or work standards;
- Inadequate communication of expectations regarding procedures or standards; or
- Inadequate tools or equipment.

The root cause(s) could be any one or a combination of these seven possibilities or some other uncontrollable factor. In the vast majority of losses, the root cause is very much related to one or more of these seven factors. Uncontrollable factors should be used rarely and only after a thorough review eliminates all seven other factors.

22.7.1 Corrective Actions

Include all corrective actions taken or those that should be taken to prevent recurrence of the incident. Include the specific actions to be taken, the employer and personnel responsible for implementing the actions, and a timeframe for completion. Be sure the corrective actions address the causes.

Once the investigation report has been completed, the PM shall hold a review meeting to discuss the incident and provide recommendations. The responsible supervisors shall be assigned to carry out the recommendations, and shall inform the SC upon successful implementation of all recommended actions.

- Evaluation and follow-up of the IRF will be completed by the type of incident by the RHSM, EM, or FWSO.
- Incident investigations must be initiated and completed as soon as possible but no later than 72 hours after the incident.

23.0 Records and Reports

An organized project filing system is essential for good documentation and recordkeeping. There are many benefits to an organized filing system:

- Other JACOBS employees can easily and quickly find documents;
- Records are readily available for review;
- Records may be needed during OSHA investigations, audits, or other legal matters;
- Records may be needed on short notice in case of an accident, illness or other emergency; and
- Systematic recordkeeping aids in overall project organization.

The project filing system shall be established at the beginning of the project and maintained throughout all phases of construction and archived in accordance with JACOBS's Records Retention Policy. The information contained in the filing system shall be updated regularly and/or as specified in this document. The PM and SC are responsible for collecting documentation, including subcontractor documentation, and maintaining a complete and organized filing system.

Below are examples of records that must be maintained as the project progresses:

- Exposure records includes air monitoring data (including calibration records), MSDSs, exposure modeling results;
- Physical hazard exposure records include noise, ionizing radiation, non-ionizing radiation, vibration, and lasers exposure assessments and measurements;
- Respiratory fit test records;
- Training records;
- Incident reports, investigations and associated back-up information such as agency notifications, calculations, and corrective actions taken;
- Federal or state agency inspection records;
- Other Records:
  - Ergonomic evaluations;
  - HSE audits and assessments;
  - Project-specific HSE plans;
  - Confined space entry permits;
  - Equipment inspections;
  - Equipment maintenance;
  - Emergency equipment inspection records;
  - SBOs;
  - Self-assessment checklists
- The RHSM shall coordinate with the PM or designee to ensure that final project-specific HSE records described in this section, including negative exposure determinations, are maintained with the project files in accordance with the JACOBS records retention schedule, or forwarded to the Medical Surveillance Program Administrator, as appropriate. Records retention requirements are detailed in the Recordkeeping and Access to Records SOP, HSE-119.

JACOBS Health and Safety Plan

Attachment 1

Health and Safety Plan Employee Sign-off Form

EMPLOYEE SIGNOFF FORM

Health and Safety Plan

The JACOBS project employees and subcontractors listed below have been provided with a copy of this HSP, have read and understood it, and agree to abide by its provisions.

Project Name: **Project Number:**

EMPLOYEE NAME (Please print)	**EMPLOYEE SIGNATURE**	**COMPANY**	**DATE**

JACOBS Health and Safety Plan

Attachment 2

Chemical Inventory/Register Form

CH2MHILL

CHEMICAL INVENTORY/REGISTER FORM

Refer to SOP HSE-107, Attachment 1, for instructions on completing this form.

Location:

HCC:

☐ Office ☐ Warehouse ☐ Laboratory ☐ Project:

Project No.:

Regulated Product	Location	Container labeled (✓if yes)	MSDS available (✓if yes)

MSDS for the listed products will be maintained at:

JACOBS Health and Safety Plan

Attachment 3

Chemical-Specific Training Form

CH2MHILL

CHEMICAL-SPECIFIC TRAINING FORM

Refer to SOP HSE-107 Attachment 1 for instructions on completing this form.

Location:	Project # :
HCC:	Trainer:

TRAINING PARTICIPANTS:

NAME	SIGNATURE	NAME	SIGNATURE

REGULATED PRODUCTS/TASKS COVERED BY THIS TRAINING:

The HCC shall use the product MSDS to provide the following information concerning each of the products listed above.

☐ Physical and health hazards

☐ Control measures that can be used to provide protection (including appropriate work practices, emergency procedures, and personal protective equipment to be used)

☐ Methods and observations used to detect the presence or release of the regulated product in the workplace (including periodic monitoring, continuous monitoring devices, visual appearance or odor of regulated product when being released, etc.)

Training participants shall have the opportunity to ask questions concerning these products and, upon completion of this training, will understand the product hazards and appropriate control measures available for their protection.

Copies of MSDSs, chemical inventories, and JACOBS's written hazard communication program shall be made available for employee review in the facility/project hazard communication file.

JACOBS Health and Safety Plan

Attachment 4

Project Activity Self-Assessment Checklists/Permits/Forms

Heat Stress Monitoring (Attached)

Note: The following forms must be printed from the VO and utilized if you are doing work associated with these activities.

Arsenic
Benzene
Cadmium
Earthmoving Equipment
Excavations
Hand and Power Tools
Hazardous Materials Handling
Lead
Manual Lifting
Personal Protective Equipment
Respiratory Protection
Traffic Control

HEAT STRESS PHYSIOLOGICAL MONITORING FORM

Project:

Date: | Company:

1. Take and record measurement of temperature or pulse at the frequency indicated in the safety plan.
2. Follow the Physiological Monitoring Protocol in the safety plan.
3. Never continue work if your body temperature is more than 100.4° F/38° C, or if you are experiencing sudden and severe fatigue, nausea, dizziness, or lightheadedness.

Employee:

Describe action taken below if measurements are exceeded:

Time								
Temp								
Pulse								

Employee:

Describe action taken below if measurements are exceeded:

Time								
Temp								
Pulse								

Employee:

Describe action taken below if measurements are exceeded:

Time								
Temp								
Pulse								

Employee:

Describe action taken below if measurements are exceeded:

Time								
Temp								
Pulse								

Employee:

Describe action taken below if measurements are exceeded:

Time								
Temp								
Pulse								

JACOBS Health and Safety Plan

Attachment 5

Key Target Zero Program Elements

(blank forms for field use)

Activity Hazard Analysis

Pre-Task Safety Plans

Safe Behavior Observation

Incident Report and Investigation
(use electronic form when possible)
HITS

Lessons Learned Template

ACTIVITY HAZARD ANALYSIS

Activity:	**Date**:
	Project Name:
Description of the work:	**Site Supervisor**:
	Site Safety Officer:
	Review for latest use: Before the job is performed

Work Activity Sequence (Identify the principal steps involved and the sequence of work activities)	**Potential Health and Safety Hazards** (Analyze each principal step for potential hazards)	**Hazard Controls** (Develop specific controls for each potential hazard)

ACTIVITY HAZARD ANALYSIS

Work Activity Sequence (Identify the principal steps involved and the sequence of work activities)	**Potential Health and Safety Hazards** (Analyze each principal step for potential hazards)	**Hazard Controls** (Develop specific controls for each potential hazard)

Equipment to be used (List equipment to be used in the work activity)	**Inspection Requirements** (List inspection requirements for the work activity)	**Training Requirements** (List training requirements including hazard communication)

ACTIVITY HAZARD ANALYSIS

	PRINT NAME	SIGNATURE	
Supervisor Name:	_____	_____	Date/Time:_____
Safety Officer Name:	_____	_____	Date/Time:_____
Employee Name(s):	_____	_____	Date/Time:_____
	_____	_____	Date/Time:_____
	_____	_____	Date/Time:_____
	_____	_____	Date/Time:_____
	_____	_____	Date/Time:_____
	_____	_____	Date/Time:_____
	_____	_____	Date/Time:_____
	_____	_____	Date/Time:_____
	_____	_____	Date/Time:_____

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Pre-Task Safety Plan (PTSP) and Safety Meeting Sign-in Sheet

Project:_____ Location: _____ Date:_____

Supervisor: _____ Job Activity:_____

_____

Attendees: Print Name Sign Name

_____

_____

_____

_____

_____

_____

_____

List Tasks and verify that applicable AHAs have been reviewed:

_____

_____

_____

Tools/Equipment Required for Tasks (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools):

_____

_____

_____

Potential H&S Hazards, including chemical, physical, safety, biological and environmental (check all that apply):

__ Chemical burns/contact	__ Trench, excavations, cave-ins	__ Ergonomics
__ Pressurized lines/equipment	__ Overexertion	__ Chemical splash
__ Thermal burns	__ Pinch points	__ Poisonous plants/insects
__ Electrical	__ Cuts/abrasions	__ Eye hazards/flying projectile
__ Weather conditions	__ Spills	__ Inhalation hazard
__ Heights/fall > 6 feet	__ Overhead Electrical hazards	__ Heat/cold stress
__ Noise	__ Elevated loads	__ Water/drowning hazard
__ Explosion/fire	__ Slips, trip and falls	__ Heavy equipment
__ Radiation	__ Manual lifting	__ Aerial lifts/platforms
__ Confined space entry	__ Welding/cutting	__ Demolition
__Underground Utilities	__ Security	__ Poor communications

Other Potential Hazards (Describe):

_____

_____

_____

Hazard Control Measures (Check All That Apply):			
PPE __ Thermal/lined __ Eye __ Dermal/hand __ Hearing __ Respiratory __ Reflective vests __ Flotation device __ Hard Hat	Protective Systems __ Sloping __ Shoring __ Trench box __ Barricades __ Competent person __ Locate buried utilities __ Daily inspections __ Entry Permits/notification	Fire Protection __ Fire extinguishers __ Fire watch __ Non-spark tools __ Grounding/bonding __ Intrinsically safe equipment	Electrical __ Lockout/tagout __ Grounded __ Panels covered __ GFCI/extension cords __ Power tools/cord inspected __ Overhead line clearance __ Underground utils ID'd
Fall Protection __ Harness/lanyards __ Adequate anchorage __ Guardrail system __ Covered opening __ Fixed barricades __ Warning system	Air Monitoring __ PID/FID __ Detector tubes __ Radiation __ Personnel sampling __ LEL/O2 __ No visible dust __ Other	Proper Equipment __ Aerial lift/ladders/scaffolds __ Forklift/heavy equipment __ Backup alarms __ Hand/power tools __ Crane with current inspection __ Proper rigging __ Operator qualified	Welding & Cutting __ Cylinders secured/capped __ Cylinders separated/upright __ Flash-back arrestors __ No cylinders in CSE __ Flame retardant clothing __ Appropriate goggles
Confined Space Entry __ Isolation __ Air monitoring __ Trained personnel __ Permit completed __ Rescue	Medical/ER __ First-aid kit __ Eye wash __ FA-CPR trained personnel __ Route to hospital	Heat/Cold Stress __ Work/rest regime __ Rest area __ Liquids available __ Monitoring __ Training	Vehicle/Traffic __ Traffic control __ Barricades __ Flags __ Signs
Permits __ Hot work __ Confined space __ Lockout/tagout __ Excavation __ Demolition __ Energized work	Demolition __ Pre-demolition survey __ Structure condition __ Isolate area/utilities __ Competent person __ Hazmat present	Inspections: __ Ladders/aerial lifts __ Lanyards/harness __ Scaffolds __ Heavy equipment __ Drill rigs/geoprobe rigs __ Cranes and rigging __ Utilities marked	Training: __ Hazwaste (current) __ Construction __ Competent person __ Task-specific __ FA/CPR __ Confined Space __ Hazcom
Underground Utilities __Dig alert called __3rd Party locater __As-builts reviewed __Interview site staff __Client review __soft locate necessary?	Incident Communications __Work stops until cleared by TM/CM __Immediate calls to TM/CM __Client notification __24 hour notification setup __Clear communications	AHA' s __reviewed and approved by HSM __on site and current __applicable for this day's work __Communication and incident processes included?	

Field Notes (including observations from prior day, etc.):
_____
_____
_____

Name (Print): _____
Signature:_____ Date:_____

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Safe Behavior Observation Form		
☐Federal or ☐Commercial Sector (check one)	☐Construction or ☐Consulting (check one)	
Project Number:	Client/Program:	
Project Name:	Observer:	Date:
Position/Title of worker observed:	Background Information/ comments:	
Task/Observation Observed:		

- ❖ Identify and reinforce safe work practices/behaviors
- ❖ Identify and improve on at-risk practices/acts
- ❖ Identify and improve on practices, conditions, controls, and compliance that eliminate or reduce hazards
- ❖ Proactive PM support facilitates eliminating/reducing hazards (do you have what you need?)
- ❖ Positive, corrective, cooperative, collaborative feedback/recommendations

Actions & Behaviors	Safe	At-Risk	Observations/Comments
Current & accurate Pre-Task Planning/Briefing (Project safety plan, STAC, AHA, PTSP, tailgate briefing, etc., as needed)			**Positive Observations/Safe Work Practices:**
Properly trained/qualified/experienced			
Tools/equipment available and adequate			
Proper use of tools			**Questionable Activity/Unsafe Condition Observed:**
Barricades/work zone control			
Housekeeping			
Communication			
Work Approach/Habits			
Attitude			
Focus/attentiveness			**Observer's Corrective Actions/Comments:**
Pace			
Uncomfortable/unsafe position			
Inconvenient/unsafe location			
Position/Line of fire			
Apparel (hair, loose clothing, jewelry)			
Repetitive motion			**Observed Worker's Corrective Actions/Comments:**
Other…			

For ES Federal Sector projects please email completed forms to: JACOBS ES FED Safe Behavior Observation
For ES Commercial Sector projects please email completed forms to: JACOBS ES COM Safe Behavior Observation
For CNR ES staff please email completed forms to: cnressafe@ch2m.com

HITS Incident Report Hardcopy (Phase 1 – Initial Entry)

Phase 1 – Initial Entry

Type of Incident (May select more than one)

☐ Injury/Illness ☐ Spill/Release ☐ Near Miss
☐ Property Damage ☐ Environment/Permit ☐ Other

General Information Section

Preparer's Name: _____ **Preparer's Phone Number:** _____

Date of Incident: _____ **Time of Incident**: _____ AM / PM

What Business Group is accountable for this incident: _____

What Business Group SubGroup is accountable for this incident: _____

What JACOBS Company is accountable for this incident: _____

Where did the Incident occur?

- ☐ United States, Geographic Region: _____
- ☐ Canada, Province/Territory: _____
- ☐ International, County: _____

Location of Incident?

- ☐ Company Premises, JACOBS Office (use 3 letter office code if available): _____
- ☐ Project, Project name: _____
- ☐ In Transit
  Traveling from: _____
  Traveling to: _____
- ☐ At Home
- ☐ Other, Specify: _____

Describe the incident: _____

_____

_____

Describe how this event could have been prevented: _____

_____

Provide Witness Information:

Name: _____ Phone: _____
Name: _____ Phone: _____
Name: _____ Phone: _____

Personnel Notified of Incident (Provide name, date and time):

JACOBS Personnel:

_____

Client Personnel:

_____

Additional Comments:

_____

_____

Injury/Illness Section **[Complete only if Injury/Illness Incident type selected]**

Who was injured?

- ☐ JACOBS Employee or JACOBS Temp Employee
- ☐ Subcontractor to JACOBS (Non-LLC Joint Venture Project)
- ☐ LLC Joint Venture Partner Employee
- ☐ LLC Joint Venture Project Subcontractor/Contractor
- ☐ Other

Name of Injured: _____ **Job Title:** _____

Employer Name: _____ **Supervisor of Employee:** _____

Complete for JACOBS Employee Injuries

Business Group of Injured Employee: _____

Has the employee called the Injury Management Administrator (1-800-756-1130)?

☐ Yes ☐ No ☐ Not Sure

Has the injured employee's supervisor been notified of this incident?

☐ Yes ☐ No ☐ Not Sure

Complete for Non-JACOBS Employee Injuries

Has the project safety coordinator been notified of this incident?

☐ Yes ☐ No ☐ Not Sure

Project Safety Coordinator: _____

Body Part Affected: _____

Injury/Illness (Result): _____

Describe treatment provided (if medication provided, identify whether over-the-counter or prescription): _____

_____

Describe any work restriction prescribed (include dates and number of days): _____

_____

Physician/Health Care Provider Information

Name: _____ Phone: _____

Was treatment provided away from the worksite?

☐ No

☐ Yes

Facility Name:

_____

Address:

_____

City: _____ Phone Number:

_____

Was injured treated in an emergency room?

☐ No ☐ Yes

Was injured hospitalized overnight as an in-patient?

☐ No ☐ Yes

General Information Environmental Section **[Complete only if Environment/Permit or Spill/Release Incident type selected]**

Who had control of the area during the incident?

☐ JACOBS, Company: _____

☐ Subcontractor, Company: _____

☐ Joint Venture Partner/Contractor/Subcontractor, Company: _____

☐ Other, Company: _____

Relationship to JACOBS: _____

Property Damage Section **[Complete only if Property Damage Incident type selected]**

Property Damaged: _____

Property Owner:

_____

Damage Description: _____

Estimated US Dollar Amount: _____

Spill or Release Section **[Complete only if Spill/Release Incident type selected]**

Substance: _____

Estimated Quantity: _____

Did the spill/release move off the property?: _____

Spill/Release From: _____

Spill/Release To: _____

Environment/Permit Section **[Complete only if Environment/Permit Incident type selected]**

Describe Environmental or Permit Issue: _____

Permit Type: _____

Permitted Level or Criteria (e.g., discharge limit): _____

Permit Name and Number (e.g., NPDES No. ST1234): _____

Substance and Estimated Quantity: _____

Duration of Permit Exceedence: _____

HSSE

Lessons Learned

[Date] ESBG LL-11-xx

Subject	**[Insert Descriptive Name of Lessons Learned]**
JACOBS Project?	[Yes or No]
Situation	[Describe incident or situation that occurred in general terms. Try to be brief and avoid unnecessary details such as names of people or projects, business groups, divisions, dates, location, etc.]
Lessons Learned (Recommendations and Comments)	• Bullet out any lessons learned, recommendations or other important "take away" information that would benefit others. Tie the recommendations to the incident or event, and avoid including information that is not directly tied to the event.
Submitted By	[Name/Office Location/Phone]
Additional Information Contact	[Name/Office Location/Phone]
Keywords/Categories	[Insert any keywords or incident categories that would aid in a search for this lessons learned]

Send completed Lessons Learned to the ESBG HSSE Director for posting and distribution. Please include a recommended distribution list.

JACOBS Health and Safety Plan

Attachment 6

Fact Sheets

Tick Fact Sheet

Vehicle Accident Guidance

Working Alone

Tick-Borne Pathogens — A Fact Sheet

Most of us have heard of Lyme disease or Rocky Mountain Spotted Fever (RMSF), but there are actually six notifiable tick-borne pathogens that present a significant field hazard. In some areas, these account for more than half of our serious field incidents. The following procedures should be applied during any field activity—even in places that are predominantly paved with bordering vegetation.

Hazard Recognition

An important step in controlling tick related hazards is understanding how to identify ticks, their habitats, their geographical locations, and signs and symptoms of tick-borne illnesses.

Tick Identification

There are five varieties of hard-bodied ticks that have been associated with tick-borne pathogens. These include:

- Deer (Black Legged) Tick (eastern and pacific varieties)
- Lone Star Tick
- Dog Tick
- Rocky Mountain Wood Tick

These varieties and their geographical locations are illustrated on the following page.

Tick Habitat

In eastern states, ticks are associated with deciduous forest and habitat containing leaf litter. Leaf litter provides a moist cover from wind, snow, and other elements. In the north-central states, is generally found in heavily wooded areas often surrounded by broad tracts of land cleared for agriculture.

On the Pacific Coast, the bacteria are transmitted to humans by the western black-legged (deer) tick and habitats are more diverse. For this region, ticks have been found in habitats with forest, north coastal scrub, high brush, and open grasslands. Coastal tick populations thrive in areas of high rainfall, but ticks are also found at inland locations.

Illnesses and Signs & Symptoms

There are six notifiable tick-borne pathogens that cause human illness in the United States. These pathogens may be transmitted during a tick bite—normally hours after attachment. The illnesses, presented in approximate order of most common to least, include:

- Lyme (bacteria)
- RMSF (bacteria)
- Ehrlichiosis (bacteria)
- STARI (Southern Tick-Associated Rash Illness) (bacteria)
- Tularemia (Rabbit Fever) (bacteria)
- Babesia (protozoan parasite)

Symptoms will vary based on the illness, and may develop in infected individuals typically between 3 and 30 days after transmission. Some infected individuals will not become ill or may develop only mild symptoms. These illnesses present with some or all of the following signs & symptoms: fever, headache, muscle aches, stiff neck,

joint aches, nausea, vomiting, abdominal pain, diarrhea, malaise, weakness, small solid, ring-like, or spotted rashes. The bite site may be red, swollen, or develop ulceration or lesions. For Lyme disease, the bite area will sometimes resemble a target pattern. A variety of long-term symptoms may result if the illness is left untreated, including debilitating effects and death.

Deer Tick

From Left: adult female, adult male, nymph, and larvae Deer Tick (cm scale)

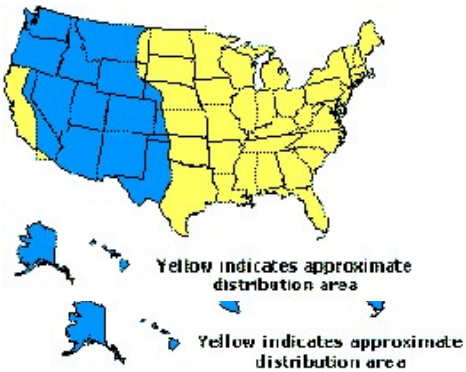
Lone Star Tick

Dog Tick

Distribution of Deer Tick (dark green)

Distribution of Pacific Deer Tick (dark green)

Distribution of Lone Star Tick (Green)



Hazard Control

The methods for controlling exposure to ticks include, in order of most- to least-preferred:

- Avoiding tick habitats and ceasing operations in heavily infested areas
- Reducing tick abundance through habitat disruption or application of acracide
- Personal protection through use of repellants and protective clothing
- Frequent tick inspections and proper hygiene

Vaccinations are not available and preventative antibiotic treatment after a bite is generally not recommended.

Avoidance and Reduction of Ticks

To the extent practical, tick habitats should be avoided. In areas with significant tick infestation, consider stopping work and withdrawing from area until adequate tick population control can be achieved. Stopping and withdrawing should be considered as seriously as entering an area without proper energy control or with elevated airborne contaminants—tick-borne pathogens present risk of serious illness!

In areas where significant population density or infestation exists, tick reduction should be considered. Tick reduction can be achieved by disrupting tick habitats and/or direct population reduction through the use of tick-toxic pesticides (Damminix, Dursban, Sevin, etc.).

Habitat disruption may include only simple vegetative maintenance such as removing leaf litter and trimming grass and brush. Tick populations can be reduced by between 72 and 100 percent when leaf litter alone is removed. In more heavily infested areas, habitat disruption may include grubbing, tree trimming or removal, and pesticide application (Damminix, Dursban, Sevin, etc.). This approach is practical in smaller, localized areas or perimeter areas that require occasional access. Habitat controls are to be implemented with appropriate health and safety controls, in compliance with applicable environmental requirements, and may be best left to the property owner or tenant or to a licensed pesticide vendor. Caution should be exercised when using chemical repellents or pesticides in or around areas where environmental or industrial media samples will be collected for analysis.

Personal Protection

After other prevention and controls are implemented, personal protection is still necessary to control exposure to ticks. Personal protection must include all of the following steps:

- So that ticks may be easily seen, wear light-colored clothing. Full-body New Tyvek (paper-like disposable coveralls) may also be used
- To prevent ticks from getting underneath clothing tuck pant legs into socks or tape to boots
- Wear long-sleeved shirts, a hat, and high boots
- Apply DEET repellent to exposed skin or clothing per product label
- Apply permethrin repellent to the outside of boots and clothing before wearing, per product label
- Frequently check for ticks and remove from clothing

- At the end of the day, search your entire body for ticks (particularly groin, armpits, neck, and head) and shower
- To prevent pathogen transmission through mucous membranes or broken/cut skin, wash or disinfect hands and/or wear surgical-style nitrile gloves any time ticks are handled

Pregnant individuals and individuals using prescription medications should consult with their physician and/or pharmacists before using chemical repellents. Because human health effects may not be fully known, use of chemical repellents should be kept to a minimum frequency and quantity. Always follow manufacturers' use instructions and precautions. Wash hands after handling, applying, or removing protective gear and clothing. Avoid situations such as hand-to-face contact, eating, drinking, and smoking when applying or using repellents.

Remove and wash clothes per repellent product label. Chemical repellents should not be used on infants and children.

Vaccinations are generally not available for tick-borne pathogens. Although production of the LYMErix™ Lyme disease vaccination has been ceased, vaccination may still be considered under specific circumstances and with concurrence from the consulting physician.

Tick Check

A tick check should be performed after field survey before entering the field vehicle (you do not want to infest your field vehicle with ticks). Have your field partner check your back; the backs of your legs, arms, and neck; and your hairline. Shake off clothing as thorough as possible before entering the vehicle. Once the field day is complete, repeat this procedure and perform a thorough self check.

If a tick has embedded itself into the skin, remove the tick as described below.

Tick Removal

1. Use the tick removal kit obtained through the JACOBS Milwaukee warehouse, or a fine-tipped tweezers or shield your fingers with a tissue, paper towel, or nitrile gloves.
Error! Objects cannot be created from editing field codes.
2. Grasp the tick as close to the skin surface as possible and pull upward with steady, even pressure. Do not twist or jerk the tick; this may cause the mouthparts to break off and remain in the skin. If this happens, remove mouthparts with tweezers. Consult your healthcare provider if infection occurs.

3. Avoid squeezing, crushing or puncturing the body of the tick because its fluids (saliva, hemolymph, gut contents) may contain infectious organisms. Releasing these organisms to the outside of the tick's body or into the bite area may increase the chance of infectious organism transmission.

4. Do not handle the tick with bare hands because infectious agents may enter through mucous membranes or breaks in the skin. This precaution is particularly directed to individuals who remove ticks from domestic

animals with unprotected fingers. Children, elderly persons, and immunocompromised persons may be at greater risk of infection and should avoid this procedure.

5. After removing the tick, thoroughly disinfect the bite site and wash your hands with soap and water.

6. Should you wish to save the tick for identification, place it in a plastic bag, with the date of the tick bite, and place in your freezer. It may be used at a later date to assist a physician with making an accurate diagnosis (if you become ill).

Note: Folklore remedies such as petroleum jelly or hot matches do little to encourage a tick to detach from skin. In fact, they may make matters worse by irritating the tick and stimulating it to release additional saliva, increasing the chances of transmitting the pathogen. These methods of tick removal should be avoided. In addition, a number of tick removal devices have been marketed, but none are better than a plain set of fine tipped tweezers.

First-Aid and Medical Treatment

Tick bites should always be treated with first-aid. Clean and wash hands and disinfect the bite site after removing embedded tick. Individuals previously infected with Lyme disease does not confer immunity—re-infection from future tick bites can occur even after a person has contracted a tick-borne disease.

The employee should contact the Injury Management/Return To Work provider (IMRTW), WorkCare using the toll-free number 866-893-2514 to report the tick bite. WorkCare will follow-up with each Jacobs employee who reports a tick bite and is at risk of developing Lyme disease by monitoring for symptoms up to 45 days, and will refer the employee to a medical provider for evaluation and treatment as necessary.

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2011 Vehicle Accident Guidance—ESBG

Remember that if you a **renting** a non-JACOBS owned vehicle (short-term rental) in the U.S., you should carry the insurance card from the state where your driver's license is issued.

If you operate a **fleet vehicle**, carry the insurance card where the vehicle is registered.

For ALL Vehicles if you are in an accident:

1. If you are injured, call 911 for emergency medical treatment or 1-866-893-2514 to contact the JACOBS Occupational Nurse/Physician for minor injuries. If you feel you have not been injured, contact the RHSM for guidance on whether calling the JACOBS Occupation Nurse/Physician is applicable.

2. **Call the Police--**For any vehicle accident/damage, it is recommended that the local police (or site security/emergency services if working on a client site that provides such services) be called to determine if a report needs to be filed. In some instances, a report may not be required (during accident alerts, or in public parking lots). Document that the authorities were called and follow up with any guidance they give you. State requirements vary. If a report is filed, obtain a copy.

3. Notify Supervisor, (and PM/RHSM if working on a project site)

4. Complete a HITS report on the VO.

Additional Steps

To report an auto accident, and before a claim can be taken by telephonic reporting, have available your name (the company name alone is no longer accepted, a driver's name must be provided even for fender benders), location of accident and your office address if different than the accident location, business group and project number. A claim cannot be taken without your name, address, business group and your project number. By location the state where the accident occurred, and which office you are aligned to, i.e., accident occurs in Idaho, but you are out of the Denver office. Advise the claim recorder the accident occurred in ID, but that your office location is Denver. This will assist the claim intake person in identifying location coding for the claims.

Auto accidents involve two different sections of an Auto policy:

1) Liability to others due to Bodily Injury and Property Damage

2) Physical Damage - Comprehensive and Collision - damage to the vehicle CH employee is driving

Jacobs has Liability coverage for any auto - our policy will respond on either a primary or excess basis.

Refer to the table below for additional notifications to make based on the type of accident experienced and type of vehicle being used.

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Liability - Bodily Injury or Property Damage to Others

Scenario	Which Coverage Responds	What to do if in an accident
Jacobs fleet, pool or project vehicle - long term lease - lower 48	Jacobs - Primary	Contact Broadspire (1-800-753-6737); Jennifer Rindahl/DEN (720-286-2449); Linda George/DEN (720-286-2057)
Jacobs fleet, pool or project vehicle - long term lease - Alaska (North Slope)	Jacobs - Primary	Contact Jennifer Rindahl/DEN (720-286-2449)
Client vehicle driven by Jacobs employee	Client's auto policy unless client has made Jacobs responsible for vehicle	Contact Broadspire (1-800-753-6737); Contact Jennifer Rindahl/DEN (720-286-2449); contact client;
Short term lease (30 days or less)	Rental car company if rented through Enterprise, Budget or Hertz; Jacobs excess	Contact Broadspire (1-800-753-6737); Contact local branch of rental car company where vehicle leased (ERAC includes 24 hour roadside assistance) and Jennifer Rindahl/DEN (720-286-2449)
Short term lease (30 days or less)	Jacobs - Primary if rented through company other than our national agreements; $100,000 deductible	Contact Broadspire (1-800-753-6737); Contact rental car company and Jennifer Rindahl/DEN (720-286-2449)
Personal vehicle used on business	Employee's personal auto policy; Jacobs on an excess basis	Contact personal auto insurance company; contact Jennifer Rindahl/DEN (720-286-2449)

Physical Damage - damage to vehicle CH employee was driving

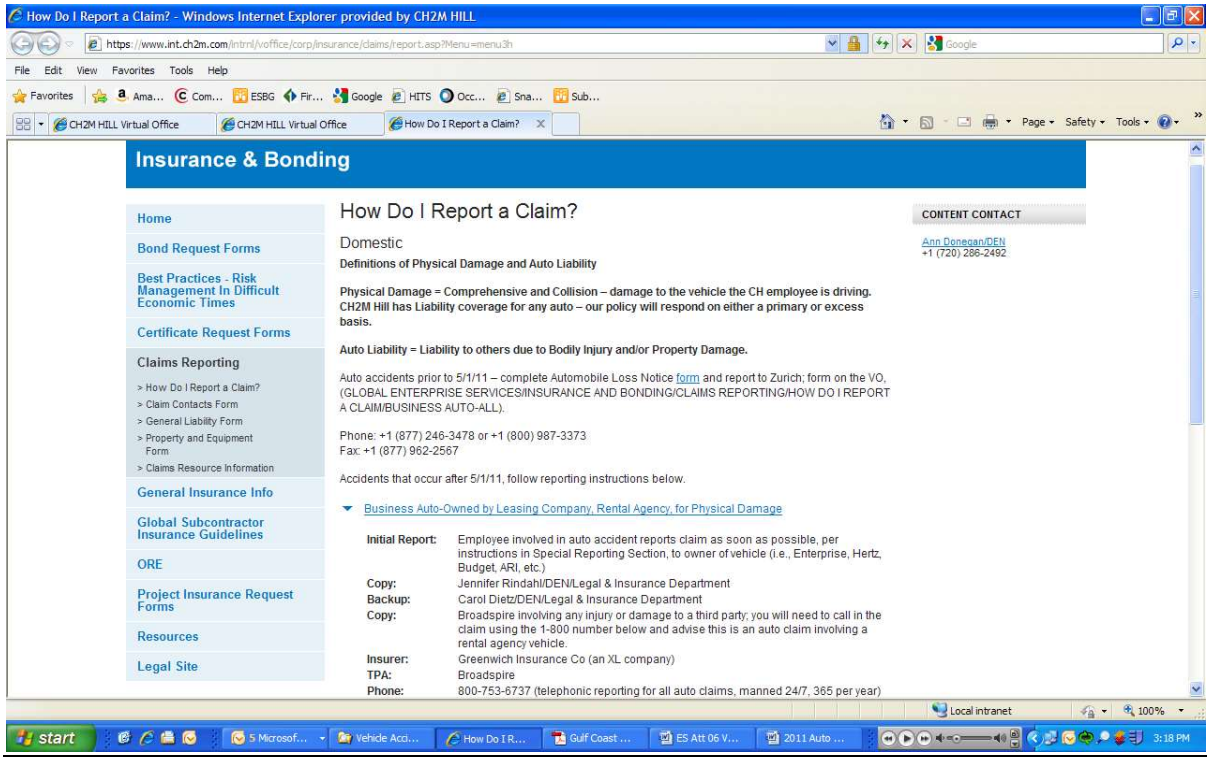
Scenario	Which Coverage Responds	What to do if in an accident
Jacobs fleet, pool or project vehicle - long term lease - lower 48	Jacobs ONLY if vehicle is scheduled on policy - $5,000 deductible	Contact Broadspire (1-800-753-6737); Jennifer Rindahl/DEN (720-286-2449); Linda George/DEN (720-286-2057)
Jacobs fleet, pool or project vehicle - long term lease - Alaska (North Slope)	Jacobs Equipment Schedule if scheduled on policy	Contact Jennifer Rindahl/DEN (720-286-2449)
Jacobs fleet, pool or project vehicle - long term lease	ARI if physical damage coverage purchased - $500 deductible	Contact Jennifer Rindahl/DEN 720.286.2449; call ARI at 1-800-221-1645 give them Client Code and ARI fleet vehicle number; and notify Linda George/DEN - Fleet Coordinator - 720-286-2057
Client vehicle Jacobs Employee is driving	Client's auto policy unless client has made Jacobs contractually responsible for vehicle	Contact Jennifer Rindahl/DEN (720-286-2449); contact client; contact Broadspire (1-800-753-6737)
Short term lease (30 days or less) using corporate VISA	VISA if corporate credit card used and vehicle is not a pickup, truck, cargo van or used off-road	Contact VISA - 1-800-847-2911 or http://www.visa.com/eclaim
Short term lease (30 days or less) through Enterprise (ERAC) and vehicle is used off-road and physical damage coverage included when vehicle leased	ERAC up to $3,000 in damage; Jacobs's coverage is excess	Notify Rental Car Company; contact Jennifer Rindahl/DEN (720-286-2449) if damage over $5,000
Short term lease (30 days or less) did **not** use corporate VISA	Jacobs - $5,000 deductible (project responsibility)	Contact Broadspire (1-800-753-6737); Contact Jennifer Rindhal/DEN 720-286-2449; contact VISA - 1-800-847-2911 or http://www.visa.com/eclaim
Personal vehicle used on business	CH will reimburse the amount of the deductible carried on the employee's policy up to $500 whichever is less	Contact Jennifer Rindahl/DEN (720-286-2449); contact client; contact Broadspire (1-800-753-6737)

Details for reporting a claim on the Jacobs VO are accessed by going to the VO home page and clicking:

GLOBAL ENTERPRISE SERVICES/INSURANCE & BONDING/CLAIMS REPORTING

HOW DO I REPORT A CLAIM TAB or access the following URL:

https://www.int.ch2m.com/intrnl/voffice/corp/insurance/claims/report.asp?Menu=menu3h



For Personally Owned Vehicles (POVs):

JACOBS does not provide auto insurance for POVs, it is responsibility of the owner. If you are in a vehicle accident conducting company business, contact the police as above, supervisor, and 911 or JACOBS's occupational nurse/physician as stated above. Complete a HITS report. Contact Jennifer Rindahl/DEN for assistance for meeting personal insurance deductibles (up to $500) with proof of insurance and deductible.

If using your POV for extended project use, notify the PM to make sure a rental car is not needed. Check your insurance policy for guidance on using the POV for business use.

Additional Resources:

Claims Resource Manual

WORKING ALONE PROTOCOL
CALL – IN CONTACT FORM

Date of site work:_____ Expected start time:_____
Name of JACOBS employee in the field:_____
Name of JACOBS employee responsible to receive contact:
Client Emergency Contact (if any):
JACOBS employee's contact numbers:
Radio #_____
Cell Phone #_____
Address and Location of work:_____
Directions/Map:

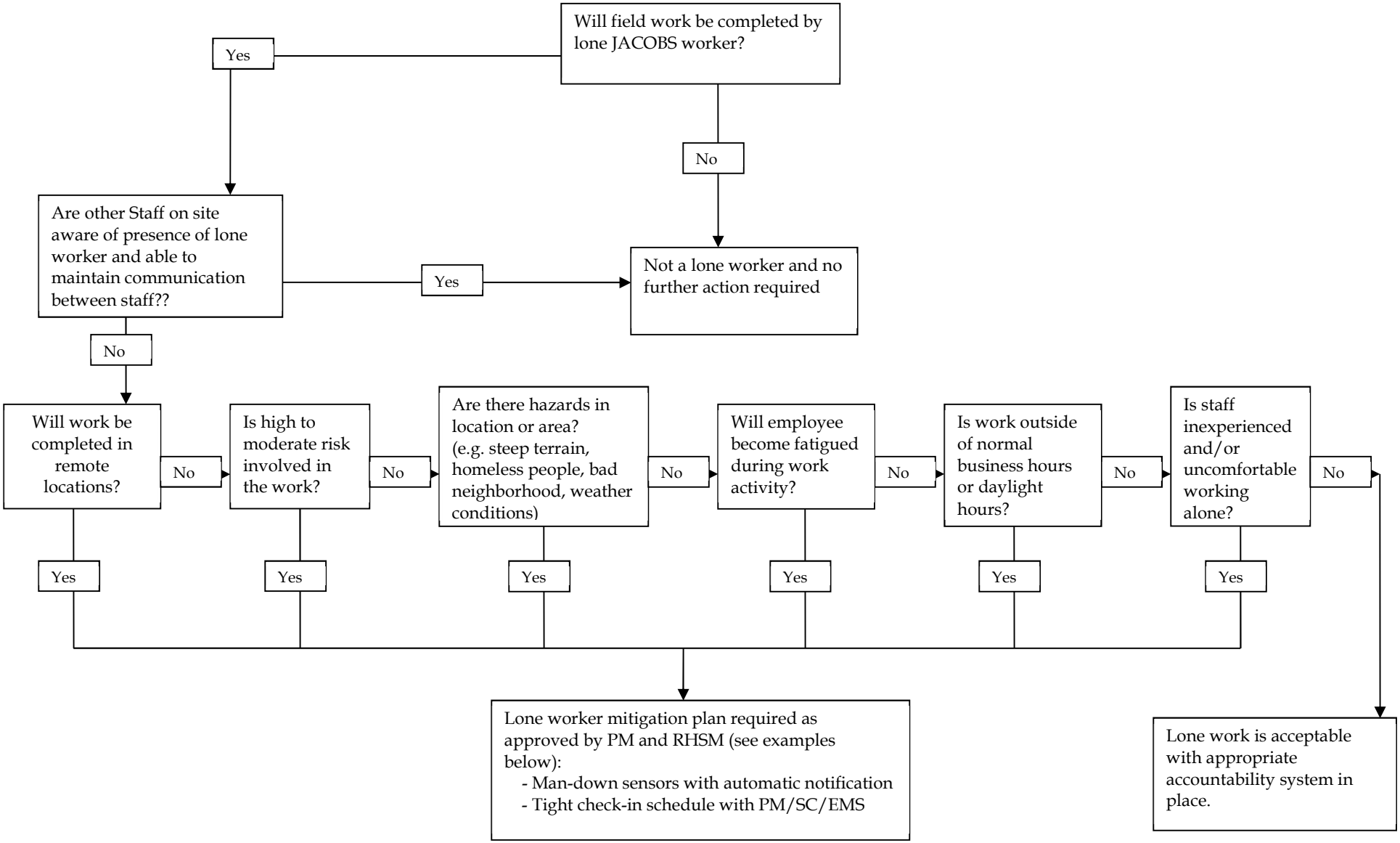
Planned Activity:_____
Specified Frequency and time for call in:_____

Time	Verified	Location

If lone worker fails to call in at specified frequency/time:

1) Call worker's radio and cell to determine if an emergency exists.
2) If no reply, immediately call Client security/emergency service if there is one at the site.
3) If there is no client security call Emergency Services (911). Inform the dispatcher there is a lone worker that cannot be contacted and there may be an emergency on site. Provide the lone worker's name, their last known location, and your contact information.
4) After Emergency Services have been contacted, call the other emergency contacts, Project Manager, and Responsible Health and Safety Manager.

Lone Worker Protocol



Observed Hazard Form

CH2MHILL

OBSERVED HAZARD FORM

Name/Company of Observer (*optional*):

Date reported:_____

Time reported:_____

Contractor/s performing unsafe act or creating unsafe condition:

1. _____

2. _____

3. _____

Unsafe Act or Condition:

_____
_____
_____
_____
_____
_____
_____
_____
_____

Location of Unsafe Act or Condition:

Name of JACOBS Representative:

_____

Corrective Actions Taken: Date: _____

_____
_____
_____
_____
_____

Project Safety Committee Evaluation: Date: _____

_____
_____
_____
_____
_____

JACOBS HEALTH AND SAFETY PLAN

Attachment 8

Stop Work Order Form

CH2MHILL

Stop Work Order

REPORT PREPARED BY:

Name:	**Title:**	**Signature:**	**Date:**

ISSUE OF NONPERFORMANCE:

Description:	Date of Nonperformance:
	_____

SUBCONTRACTOR SIGNATURE OF NOTIFICATION:

Name:	**Title:**	**Signature:**	**Date:**

**** Corrective action is to be taken immediately. Note below the action taken, sign and return to CCI.* Work may not resume until authorization is granted by JACOBS Constructors, Inc. Representative,***

SUBCONTRACTOR'S CORRECTIVE ACTION

Description:	Date of Nonperformance:
	_____

SUBCONTRACTOR SIGNATURE OF CORRECTION

Name:	**Title:**	**Signature:**	**Date:**

Agency Inspection Target Zero Bulletin

Environmental Services Business Group

TARGET ZERO BULLETIN

Subject: HSSE Agency Inspections (OSHA, EPA, DOT, State Health Department)

Do you know what YOU would do if an agency inspector arrived at your site unannounced?

Recently, a State Occupational Safety and Health Administration (OSHA) inspector made an unannounced visit to one of our Federal project sites. OSHA, U.S. Environmental Protection Agency (EPA), and authorized state or local agencies have authority to inspect any facility that is subject to health, safety, and environmental legislation. Inspections may be announced or unannounced. This particular inspector indicated that the project was targeted for an inspection because the work was funded by the American Recovery and Reinvestment Act (ARRA).

Enterprise Standard Operating Procedure (SOP) HSE-201, *Agency Inspections and Communications,* describes the responsibilities, procedures, and requirements associated with inspections conducted by external regulatory agencies, as well as the methods for communicating information to key individuals. This Target Zero Bulletin is a brief summary of what to do in the event of an agency inspection at your site. Refer to the SOP for more specific guidance.

Notification of Inspections

- If the inspection is an announced regulatory agency inspection, the Project Manager (PM) should notify the Responsible Health and Safety Manager (RHSM) and Responsible Environmental Manager (REM) well in advance of the inspection.
- If an unannounced agency inspector visits one of our projects, Field personnel must immediately notify the project Emergency Response Coordinator (ERC). Typically the ERC is the Safety Coordinator (SC).
- The ERC must immediately notify the RHSM/REM, as appropriate, of unannounced inspections, or designate someone to call the RHSM/REM. The RHSM/REMs can provide guidance to the field staff and PM.

Inspector Credential Verification

- Upon arrival, the ERC must request the inspector to provide official credentials. Record the inspector's name and office phone number or obtain the inspector's business card.
- The inspector shall sign the visitors log and be given a site-specific health, safety, and environmental protection briefing.
- The inspector shall meet any site access requirements associated with security clearances, specialized training, and medical monitoring. The JACOBS representative shall verify that the inspector possesses these requirements; access will only be granted to those areas where appropriate access requirements are met. Some inspectors have the authority to gain access to any work area at any time, such as an inspector with a search warrant. In these cases, we can stop work operations as necessary to protect the safety of the inspector(s).

Opening Conference

- The JACOBS Project Manager, ERC, RHSM, or REM, and the inspector shall determine attendees for the opening conference. The RHSM (for OSHA and other worker health and safety inspections) or REM (for environmental inspections) shall join the opening conference via conference call.
- The inspector shall inform JACOBS of the purpose of the inspection and provide a copy of the complaint, if applicable.
- The inspector shall outline the scope of the inspection, including employee interviews conducted in private, physical inspection of the workplace and records, possible referrals, discrimination complaints, and the closing conference(s).

Requests for OSHA Logs

- An OSHA inspector may request to review the project OSHA Injury/Illness log, better known as the OSHA 300 Log. Contact your RHSM for assistance in obtaining the OSHA 300 Log.

- Field projects with a continuous duration of one year or longer are considered to be separate establishments and are required to maintain an OSHA 300 log specific to the project. The project OSHA 300 log should be maintained onsite and kept current.
- Recordable injuries and illnesses sustained on field projects less than one year in duration are maintained on the JACOBS office log where the injured employee is based.

The Inspection

- The scope of the inspection shall be limited to that indicated by the inspector in the opening conference. The inspector shall be escorted to relevant areas only. The ERC or other designated by the RHSM or REM must accompany the inspector during the inspection.
- Ensure that the inspection is limited to the scope that the inspector disclosed during the opening conference. The ERC should always take notes which identify: areas inspected, machinery or equipment and materials examined, employees or other persons interviewed, and photographs taken by the inspector.
- The inspector will observe safety, health, and environmental conditions and practices and document the inspection process. The inspector may also take photos and instrument readings, examine records, collect air samples, measure noise levels, survey existing engineering controls, and monitor employee exposure to toxic vapors, gases, and dusts.
- JACOBS should gather duplicate information (photographs, readings, samples) in the same manner and condition as the inspector. If the equipment needed to take duplicate samples is not onsite, ask the inspector if the sampling can wait until the equipment is available. If samples are taken, request a description of the tests that the agency intends to perform on the samples and request results as soon as they are available.
- Employees may be questioned during the inspection tour. The employee can refuse to speak to an inspector, can speak to the inspector with a company representative (including management) present, or can speak to the inspector privately. It is JACOBS policy that employees who wish to speak to the inspector are not discriminated against, intimidated, or otherwise mistreated for exercising their rights during compliance inspections.
- Copies of documents should not be provided to the inspector without the approval of the RHSM or REM or Legal Insurance Department (LID). **DO NOT** voluntarily release documents. Respond only to inspection team requests.
- During the course of the inspection, the inspector may point out violations. For each violation, the JACOBS representative should ask the inspector to discuss possible corrective action. Where possible, violations detected by the inspector should be corrected immediately and noted by the inspector as corrected.
- For those items which cannot be corrected immediately, an action plan shall be formulated for timely correction. In any instance, employees exposed to hazards shall be removed from the area.

Closing Conference

After the inspection, a closing conference is normally held as follows:

- The JACOBS PM, ERC, RHSM or REM shall be involved via conference call in the closing conference, at a minimum;
- The inspector shall describe the apparent violations found during the inspection and other pertinent issues as deemed necessary by the inspector. JACOBS shall be advised of their rights to participate in any subsequent conferences, meetings or discussions. Any unusual circumstances noted during the closing conference shall be documented by the ERC;
- The inspector shall discuss violations observed during the inspection and indicate for which violations a citation and a proposed penalty may be issued or recommended;
- The ERC shall request receipts for all samples and approved documents photocopied by the inspector, request a photocopy of the inspector's photograph log, and request a copy of the final inspection report; and
- Any documentation from an agency inspection must be transmitted immediately to the RHSM or REM, and LID.

Unannounced regulatory agency inspections may happen at any time on our projects -

Get your RHSM/REM and PM involved immediately if an Inspector arrives.

JACOBS HEALTH AND SAFETY PLAN

Attachment 10

Completed JACOBS AHAs

JACOBS HEALTH AND SAFETY PLAN

Attachment 11

Material Safety Data Sheets

JACOBS HEALTH AND SAFETY PLAN

Attachment 12

COVID-19

Health and Safety Field Change Request (FCR)

Date of Change: 3/13/2020

FCR No. (assigned by RHSM):

Applicable Health and Safety Plan Title:

Project Number: **Project Location:**

Subject of Change: Adding hazards, controls and awareness information for COVID-19

Recommended Changes:

A. Review and follow Jacobs Global Security Companywide Travel Restriction, Preparedness Pamphlet and FAQ
B. Review signs and symptoms of Coronavirus with all field staff. Utilize CDC guidance document to review COVID-19 awareness information.
C. If project team member has specific COVID-19 concerns (e.g. in high risk category, high risk locations), speak with PM and supervisor. Accommodations shall be made by the PM and supervisor.
D. If showing signs of COVID-19 (fever, dry cough, shortness of breath) in CDC guidance (attached); do not report to project site for work. Contact project Safety Liaison, Workcare, supervisor, PM, HSM.
E. Contact personal care physician and/or WorkCare for COVID-19 symptom reporting. See attached WorkCare guidance. Rather than phone notification, WorkCare request the following link be used for reporting.

Additional COVID-19 field project control measures:

F. Monitor local public health agencies communications. Follow all local agency guidance and restrictions.
G. Ensure Field Team Lead and Safety Liaison has cell phone number of all field staff for communication to project teams.
H. Identify project specific telework opportunities where feasible (e.g. work from hotel room).
I. Frequent hand washing is required. Hand wash facilities are typically required at temporary job locations (e.g. at portapotty at field office). If a handwashing sink is not feasible (e.g. mobile staff), utilize disinfectant hand wipes.
J. Provide hand sanitizer at all field project locations.
K. Be familiar with cough and sneeze etiquette and avoid touching eyes, nose, mouth.
L. Avoid sharing personal items with co-workers (e.g. cups).
M. Use disinfectant to frequently clean shared surfaces including, but not limited to rental cars; hotel room touch points; temporary office trailer touch points (e.g. door handles, workstations).
N. If entering residential project site locations – ask occupants if they have signs of illness prior to entry. Do not enter residential locations with occupants that have signs/symptoms.
Note: All references are frequently updated. Check Jacobs and CDC COVID-19 webpages frequently for updates.

Reason for Change:
Adding additional COVID-19 hazard and control information

Submitted by: **Company**: **Date**:

Review & Acceptance:

Program Manager: **Date:**

Health & Safety Mgr: **Date:**

Environmental Manager: NA **Date:** NA

Distribution:

1. Field staff	2. PM/SL	3.	4.
5.	6.	7.	8.

File Copies: Project File
Attachments:

- Jacobs COVID-19 Preparedness Pamphlet
- CDC Factsheet – What You Need to Know about COVID-19
- WorkCare COVID-19 Employer Instructions

Appendix D
Permits and Approvals

Engineering
City of Prescott

PERMIT NUMBER
ENG2006-012
ISSUED
7/27/2020

Construction Hours: 6am-8pm Monday thru Saturday only

PERMIT TYPE: **GRADING AND DRAINAGE ONLY** PERMIT SUB TYPE : **SINGLE SITE COMMERCIAL**	SUBDIVISION/COMM SITE: Lot#:	APN: **113-14-058C** ADDRESS: **300 N GRANITE ST**
DESCRIPTION: **APS SUBSTATION**		
ENGINEER'S ESTIMATE OF PROBABLE COST: **507686**	GRADING CUT: **0** GRADING FILL : **0** PAVING SF : **0** DRAINAGE LF: **0**	WATER MAIN LF: **0** FIRE HYDRANTS: **0** SEWER MAIN: **0** MANHOLES: **0**

APPLICANT: **JUDY HEYWOOD**	PHONE: **(602)250-3850**
MAILING ADDRESS: **400 N. 5TH ST. , PHOENIX, AZ , 85004**	EMAIL: **JUDITH.HEYWOOD@APS.COM**
CONTRACTOR: **ENVIRONMENTAL RESPONSE INC**	PHONE: **(602)757-7998**
MAILING ADDRESS: **2202 W. MEDTRONIC WAY #108, TEMPE, AZ , 85281**	EMAIL **ESMITH@SPRAY-ERI.COM**
OWNER: **CV - ARIZONA PUBLIC SERVICE COMPANY**	PHONE: **(602)250-3850**
MAILING ADDRESS: **PO BOX 53999, MS 9505 , PHOENIX, AZ , 85072-3940**	EMAIL:
ENGINEER OF RECORD: **JACOBS ENGINEERING GROUP INC**	PHONE: **(602)250-3850**
MAILING ADDRESS: **1501 W. FOUNTAINHEAD PARKWAY #401, TEMPE, AZ , 85282**	EMAIL:

CONDITIONS

FEES

DESCRIPTION	ACCOUNT	QUANTITY	PAID AMOUNT
PW - EROSION AND SEDIMENT CONTROL	7039999-6525	0	$53.43
PW - GRADING PERMIT	2159999-6405	200000	$1346.95
PW - GRADING PLAN REVIEW	2159999-6405	200000	$420.73
PW - PLAN REVIEW - DRAINAGE	2159999-6525-90024	9	$923.22
			TOTAL: $2,744.33

Engineering
City of Prescott

PERMIT NUMBER
ENG2006-012
ISSUED
7/27/2020

PERMIT REQUIREMENTS:
The permittee agrees to adhere to the approved plans and the following conditions of this permit by signing below.

- All work shall conform to applicable City, State and Federal Regulations.
- All work performed shall conform to the City Permitted Plans for the project and all applicable MAG and/or City of Prescott General Engineering Standards, including standard specifications and detail drawings.
- Traffic control for any work performed on rights-of-way shall conform to the Manual on Uniform Traffic Control, the City of Prescott Traffic Barricade Manual and any approved project specific traffic control plan.
- Permit submittals with traffic control plans require 48 hours for review and approval by the Transportation Services Division prior to permit issue.
- All excavations shall be properly barricaded. Applicant/Contractor shall properly barricade and maintain all traffic control at his own expense. City reserves the right to require the applicant/contractor to correct deficient temporary traffic controls and to charge applicant/contractor for use of city forces to maintain public safety, if required.
- All road cuts shall be patched immediately with hot (C-3/4 mix) asphalt or high performance cold mix(UPM or equal). Non-shrink material will be used as backfill in all trenching under pavement. Asphalt patches shall be scaled with a material acceptable to City Public Works Department. All permanent patches shall be hot mix asphalt per City Standard Detail 200Q-1.
- Final hot mix pavement patch shall be completed as soon as possible, (no longer than 30 days without City Engineer approval.) If inclement weather conditions exist, or hot mix is not available, approved steel traffic plates may be utilized for up to five (5) days when recessed in milled pavement and approved by City Engineer, or UPM (Unique Paving Materials) may be used.
- ROW Start Inspection requests shall be called in through the Interactive Voice Response (IVR) System by call 77-1176. Permitte's shall call for PW-ROW START inspection prior to any work being performed. If work is not inspected by City Representative, the applicant/contractor may be required to remove/modify to allow for City inspection, at applicant's/contractor's expense.
- Any damage to pavement due to work shall immediately be repaired to the satisfaction of the City.
- All concrete shall be protected from freezing for a period of seven days and all exposed concrete surfaces shall be sprayed with a curing compound, as approved by City Public Works Department.
- Vehicles, dumpsters or similar type equipment shall not be parked or placed on paved surfaces unless specifically allowed in the permit.
- Materials, vehicles or equipment shall not be placed in any manner to block pedestrian or vehicular traffic without a specific approved ROW Permit.
- Excavated or imported material shall not be stored on pavement, sidewalk, travel roadway surface or other public right-of-way without prior approval of the City Public Works Department. Any material placed or stored in these areas without prior approval will be removed at the contractor/applicant's sole expense.
- Proper drainage/erosion control shall be maintained at all times per the General Engineering Standards and as directed by the City Inspector. If a SWPPP is required, additional reporting is required. Please coordinate with your Project Inspector and/or City Stormwater Administrator.
- Any repairs to existing streets or rights-of-way shall be warranted for a period of two years from the date of City approval and acceptance.
- It is expressly understood by the undersigned that this Permit is revocable at will by the City, at the sole option of the City, If City revokes this permit, it shall be the responsibility of the Permittee to remove, at permittee's expense, all improvements authorized and not accepted by the City by this permit.
- The undersigned hereby agrees to indemnify and hold harmless the City, its departments and divisions, its employees and agents, from any and all claims, liabilities, expenses or lawsuits as a result of the undersigned's work in or use of the right-of-way as allowed in this permit, whether said claims, liabilities, expenses or lawsuits arise by the acts or omissions of the undersigned, his/her agents, whether by acts or omissions of the City, its agents or employees, or whether by the acts or omissions of third person. The undersigned further releases and discharges the City, its departments and divisions, its agents and employees, and any and all persons legally responsible for the acts or omissions of the City, from any and all claims which the undersigned has or may have against the City, its agents, or employees, arising out of or in any way connected with the undersigned's activities as set forth on this permit.

HOLD HARMLESS:
Issuance of this permit shall not be construed as an adoption of the construction documents as the minimum standard of construction, and that the construction authorized by this permit shall be in strict compliance with all Codes, Statutes, Regulations and Ordinances applicable thereto as the minimum standard of construction, and that the City of Prescott reserves the right to enforce same notwithstanding the issuance of this permit.

Signature Owner/Authorized agent: _____ **Date:** _____

INSPECTIONS IN THE ORDER THEY CAN BE SCHEDULED

INSPECTION DESCRIPTION	IVR CODE

INSPECTIONS THAT CAN BE SCHEDULED AT ANY TIME

INSPECTION DESCRIPTION	IVR CODE
PW - ELEVATION CERT - UNDER CONSTRUCTION	4016
PW - ELEVATION CERTIFICATE - FINAL	4030

INTERACTIVE VOICE RESPONSE SYSTEM (IVR)

(928) 777-1176

In order to use the City of Prescott's IVR System, you will need to have the BUILDING PERMIT NUMBER, THE SITE ADDRESS AND THE IVR CODE for the inspection you are requesting. This information is located on the front of the Building Permit.

You may schedule an inspection up to four business days in advance. **All calls must be received by midnight.**

To schedule an inspection:

1. Dial 928-777-1176.
2. Follow the prompts.
3. To inquire about your inspection time, or to speak to an inspector, you may call 928-777-1387 between 7:30 am and 8:00 am on the morning of the inspection.

NOTE:
You will be prompted throughout the call to enter your permit number, the inspection code(s), and the date of the required inspection. Please listen carefully to confirm that the correct address was given and that the correct inspection was requested. When finished scheduling **ALL** inspections, you will be given a confirmation number. Please write this number down.
IF YOU DO NOT GET A CONFIRMATION NUMBER, THEN THE INSPECTION WAS NOT SCHEDULED.

If you are unable to schedule an inspection through the IVR System please call the Building Division at 928-777-1356.

Jacobs

Transmittal

NONE

www.jacobs.com

Subject	**Permit ENG2006-012**		
Attention	Permitting	**Company**	City of Prescott
Address	201 S. Cortez St	**Phone No.**	
From	David Allard, P.E.	**Date**	July 7, 2020
Project	300 N. Granite St		
Project No.	D3285500	**File**	ENG2006-012_Resubmittal

Enclosures/Attachments

1. Engineers Sealed Cost Estimate
2. Revised Remedial Design Engineering Plans
3. City of Prescott's Pan Review Comment Letter
4. Original Submittal with City's Redlines.

CH2M HILL Engineers, Inc.

Please notify us immediately if the message is unclear or incomplete.
NOTICE - This communication may contain confidential and privileged information that is for sole use of the intended recipient. Any viewing, copying or distribution of, or reliance on this message is strictly prohibited. If you have received this message in error, please notify us immediately at the telephone number listed above. At no cost to you, we will arrange for the return of the original message to us via post.

Enter Document No. via Document Properties

Public Works Department

433 N. Virginia Street
Prescott AZ 86301
928-777-1130

AS-BUILT SUBMITTAL REQUIREMENTS
FOR PUBLIC IMPROVEMENTS AND FIRE LINES

****** THIS FORM MUST BE SUBMITTED WITH THE AS-BUILT SUBMITTAL******

Description: APS SUBSTATION
Address: 300 N Granite St
Permit #: ENG2006-012

PRIOR TO THE SETTING OF A WATER METER OR THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY (C of O) FOR THE PROJECT, THE CONTRACTOR, OWNER, OR ENGINEER OF RECORD SHALL RECEIVE AS-BUILT PLANS APPROVAL FROM CITY OF PRESCOTT. THE SUBMITTAL SHALL CONTAIN THE FOLLOWING ITEMS:

- ☒ THREE (3) BOND COPIES OF THE COMPLETE PROJECT AS-BUILT PLANS.
  - ☒ ONE (1) COPY OF THE COMPLETE PROJECT MYLAR AS-BUILT PLANS, ONCE AS-BUILT PLANS HAVE BEEN REVIEWED AND APPROVED. (MYLAR PLAN SET IS REQUIRED BEFORE RELEASE OF PW FINAL.)
- ☐ ADEQ/YCES APPROVAL OF CONSTRUCTION
- ☒ DIGITAL FILES OF THE COMPLETE PROJECT SUBMITTED ON CITY COORDINATES (PDF & CADD)
- ☐ TEST RESULTS

ALL ITEMS REQUIRED ABOVE SHALL BE SUBMITTED TO 201 S. CORTEZ STREET, PERMIT CENTER. INCOMPLETE SUBMITTALS WILL NOT BE ACCEPTED. AS-BUILT SUBMITTALS REQUIRE A MINIMUM OF THREE (3) BUSINESS DAYS FOR REVIEW. ***THIS FORM MUST BE SUBMITTED WITH THE ATO AS-BUILT SUBMITTAL***

NOTE: FAILURE TO SUBMIT THE ITEMS NOTED ABOVE IN A TIMELY MANNER MAY DELAY THE INSTALLATION OF THE WATER METER AND/OR GRANTING OF A CERTIFICATE OF OCCUPANCY FOR THE STRUCTURE.

Bidder Evaluation
Project: APS Prescott Former MGP
27-Jun-19

				Engineer's Estimate		ERI		
Item No.	**Item**	**Quantity**	**Unit**	**Unit Price**	**Extended Total**	**Unit Price**	**Extended Total**	**Fuel Surcharge Unit Price***
1	Mobilization/Demobilization	1	LS	22,862.00	22,862.00	42,575.00	42,575.00	
2	Permits and Notifications	1	LS	6,505.00	6,505.00	10,742.00	10,742.00	
3	Submittals and Control Plans	1	LS	9,572.00	9,572.00	13,937.00	13,937.00	
4	Site Preparation and Temporary Facilities	1	LS	19,457.00	19,457.00	25,330.00	25,330.00	
5	Maintenance and Operation of Temporary Facilities	2	MO	18,130.00	36,260.00	6,250.00	12,500.00	
6	Surveying	50	Crew Hour	78.00	3,900.00	178.00	8,900.00	
7	Demolition							
7.1	Removal and Disposal of Asphalt Pavement	60	Ton		-	90.00	5,400.00	
7.2	Removal and Disposal of Concrete Structures	325	Ton	5.05	1,641.25	64.84	21,073.00	
7.3	Remove and Disposal of Subsurface Structures, Utilities, & Grounding Grid	50	Ton		-	79.50	3,975.00	
8	Excavation Support							
8.1	Design and Permitting of Excavation Support System	1	LS		-		-	
8.2	Excavation Support System	100	LF		-		-	
9	Excavation							
9.1	Site Excavation	6,800	Ton	21.10	143,480.00	20.40	138,720.00	
9.2	Temporary Support of Unidentified Utilities	120	LF		-		-	
10	Odor/Dust Control							
10.1	Foam Odor Control Equipment	1	LS			8,175.00	8,175.00	
10.2	Foam Odor Control - Optional	2	Drum (55gal)			880.00	1,760.00	
11	Loading, Hauling, and Disposal							
11.1	Loading and Hauling of Special Waste to Gray Wolf Facility	6,800	Ton		-	17.55	119,340.00	0.20
11.2	Loading and Handling Hazardous Waste	50	Ton		-	23.40	1,170.00	
11.3	Loading, Hauling, and Disposal of Debris	50	Ton		-	143.00	7,150.00	
12	Groundwater Management							
12.1	Excavation Water Management Equipment	1	LS		-	2,071.00	2,071.00	
12.2	Water Removal From Excavations	250	Gal		-	2.10	525.00	
13	Free Product Removal							
13.1	Free Product Removal Equipment	1	LS		-	571.00	571.00	
13.2	Free Product Removal	50	Gal		-	4.10	205.00	
14	Backfill							
14.1	Embankment Backfill Material	5,900	Ton	20.00	118,000.00	16.45	97,055.00	0.20
14.2	Embankment Backfill Placement	5,900	Ton	14.00	82,600.00	10.53	62,127.00	
14.3	Aggregate Base Backfill	900	Ton		-	19.25	17,325.00	
14.4	Aggregate Base Backfill Placement	900	Ton		-	22.50	20,250.00	
14.6	Controlled Low Strength Material	50	CY		-	125.00	6,250.00	
14.7	Controlled Low Strength Material Placement	50	CY		-	138.00	6,900.00	
15	Site Restoration							
15.1	Asphalt Pavemant	14,300	SF	4.00	57,200.00	4.40	62,920.00	
16	PPE Protection Upgrades							
16.1	Upgrade to Level C		Person/Day			75.00		
16.7	Upgrade to Level B		Person/Day			368.00		
17	Standby Time & Surcharges							
17.1	Short Term Standby		Day			2,800.00		
17.2	Long Term Standby		Day			2,000.00		
Total of Extended Total Prices					**501,477.25**		**696,946.00**	
18	100% Performance and Payment Bond		% of contract value		6,209.00	0.0157	13,664.56	
Total of Extended Total Prices With Bond					**507,686.25**		**710,610.56**	

* Additional amount added/deducted to unit rate for each $0.10/gallon increase/decrease in diesel fuel cost based on gaspricesaaa.com website average for Prescott. Current price is $3.279/gal

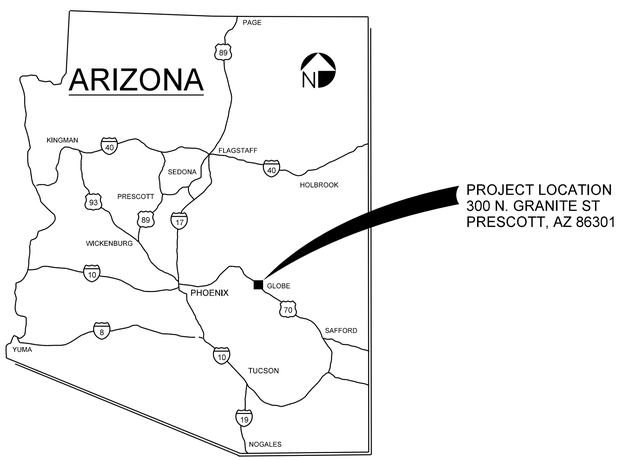
Registered Professional Engineer (Civil)
CERTIFICATE NO.
26169
DAVID J.
ALLARD
Date Signed 07/07/20
ARIZONA, U.S.A.

APPROVED
City of Prescott
Date_07/15/2020_ By_aric.stewart

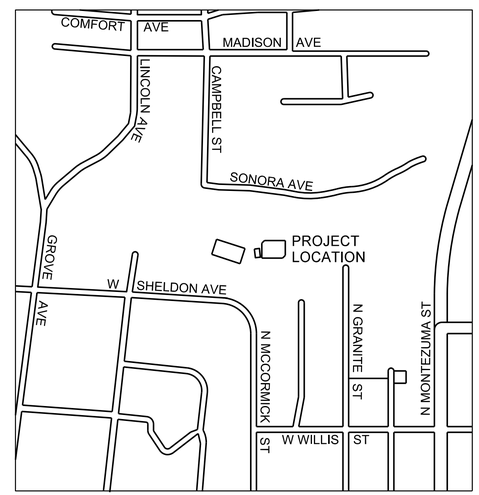
CITY OF PRESCOTT ARIZONA

APS FORMER MANUFACTURED GAS PLANT SITE
PRESCOTT, ARIZONA
SUBSTATION REMEDIATION PLANS

JULY 2020 △1



VICINITY MAP
NTS



LOCATION MAP
NTS

INDEX OF DRAWINGS

SHEET NUMBER	DRAWING NUMBER	DESCRIPTION
1	G-1	COVER SHEET, SITE LOCATION AND VICINITY MAP, DRAWING INDEX
2	G-2	GENERAL NOTES, LEGEND AND ABBREVIATIONS
3	G-3	HAUL ROUTE PLAN
4	C-1	EXISTING SITE PLAN
5	C-2	SITE CONSTRUCTION AND DEMOLITION PLAN
6	C-3	EXCAVATION PLAN
7	C-4	GRADING AND SITE RESTORATION PLAN
8	C-5	STORM WATER DETAILS
9	C-6	SECTIONS

FEMA FIRM PARCEL

04025C2061H
EFF. 3/6/2018 △1

BENCHMARK

NAME: MV-01 DESCRIPTION: CARRIAGE BOLT WITH 2" WASHER ON TOP OF CURB ON NORTHEAST CURB RETURN AT SOUTHEAST CORNER OF GROVE AVENUE AND SHELDON STREET (PREVIOUSLY LISTED AT 5344.77 ON NGVD 29 DATUM) NGVD 29: 5344.584, NAVD 88: 5347.635.

CUT AND FILL QUANTITIES (APPROX)

ONSITE CUT:	3,200 CUBIC YARDS
ONSITE FILL:	4,200 CUBIC YARDS
NET (DISTURBED AREAS):	0.35 ACRES
PARCEL:	113-14-58C

"AS-BUILT CERTIFICATION"

I HEREBY CERTIFY THAT THE "RECORD DRAWING" MEASUREMENTS AS SHOWN HEREON WERE MADE UNDER MY SUPERVISION OR AS NOTED AND ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF

REGISTERED ENGINEER / LAND SURVEYOR — DATE

REGISTRATION NUMBER

OWNER

ARIZONA PUBLIC SERVICE
400 NORTH 5TH STREET, MAIL STATION 9303
PHOENIX, AZ 85004
CONTACT: JUDITH HEYWOOD
602-250-3850

ENGINEER

JACOBS
1501 W. FOUNTAINHEAD PARKWAY
SUITE 401
TEMPE, AZ 85282
CONTACT: DAVID ALLARD
480-295-3913

Eric M. Stewart — 07/21/2020
CITY ENGINEER — DATE

UTILITY MANAGER — DATE △1

Registered Professional Engineer (Civil) CERTIFICATE NO. 26169 DAVID J. ALLARD Date Signed 07/07/20 ARIZONA, U.S.A.

NO.	DATE	REVISION	BY	APVD
1	7/07/20	REVISED PERMIT PLANS	SM	DA

DSGN D ALLARD | DR D ALLARD | CHK S METCALF | APVD M BRANCHE | APVD D ALLARD

JACOBS

APS PRESCOTT
SUBSTATION REMEDIATION
300 N. GRANITE ST
PRESCOTT, AZ 86301

GENERAL
COVER, LOCATION MAP AND INDEX OF DRAWINGS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 — 1"

DATE	JULY 2020
PROJ	704643
DWG	G-1
SHEET	1 of 9

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GENERAL SITE NOTES:

1. SOURCE OF TOPOGRAPHY SHOWN ON THE CIVIL PLANS ARE BASE MAPS OR SURVEY PROVIDED BY CVL CONSULTANTS. EXISTING CONDITIONS MAY VARY FROM THOSE SHOWN ON THESE PLANS. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND ADJUST WORK PLAN ACCORDINGLY PRIOR TO BEGINNING CONSTRUCTION.
2. EXCEPT FOR DRAWING C-1 EXISTING TOPOGRAPHY, STRUCTURES, AND SITE FEATURES ARE SHOWN SCREENED AND/OR LIGHT-LINED. NEW FINISH GRADE, STRUCTURES, AND SITE FEATURES ARE SHOWN HEAVY-LINED.
3. HORIZONTAL DATUM: NGVD 29
4. VERTICAL DATUM: NAVD 88
5. MAINTAIN, RELOCATE, OR REPLACE EXISTING SURVEY MONUMENTS, CONTROL POINTS, AND STAKES WHICH ARE DISTURBED OR DESTROYED BY CONSTRUCTION ACTIVITIES. PERFORM THE WORK TO PRODUCE THE SAME LEVEL OF ACCURACY AS THE ORIGINAL MONUMENT(S) IN A TIMELY MANNER, AND AT THE CONTRACTOR'S EXPENSE.
6. FOR LOCATION OF CONTROL POINTS SEE DRAWING C-1.
7. COORDINATES AND DIMENSIONS SHOWN FOR ROADWAY IMPROVEMENTS ARE TO FACE OF CURB OR EDGE OF PAVEMENT.
8. STAGING AREA SHALL BE FOR CONTRACTOR'S EMPLOYEE PARKING, CONTRACTOR'S TRAILERS AND ON-SITE STORAGE OF MATERIALS.
9. PROVIDE TEMPORARY FENCING ON SITE AS NECESSARY TO MAINTAIN SECURITY AT ALL TIMES.
10. ELEVATIONS GIVEN ARE TO FINISH GRADE UNLESS OTHERWISE SHOWN.
11. SLOPE UNIFORMLY BETWEEN CONTOURS AND SPOT ELEVATIONS SHOWN.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING EROSION CONTROL DEVICES DURING CONSTRUCTION. EROSION CONTROL DEVICES SHOWN ON STORM WATER MANAGEMENT PLANS ARE THE MINIMUM REQUIRED. CONTRACTOR SHALL TAKE ALL OTHER MEASURES TO POSITIVELY PRECLUDE EROSION MATERIALS FROM LEAVING THE SITE. CONTRACTOR TO SUBMIT EROSION CONTROL PLAN, FOR REVIEW PRIOR TO ANY EARTH WORK ACTIVITIES ON-SITE.

GENERAL YARD PIPING AND UTILITIES NOTES:

1. EXISTING UNDERGROUND UTILITIES OBTAINED FROM AS-BUILTS AND FROM FIELD SURVEY. CONTRACTOR SHALL FIELD VERIFY DEPTH AND LOCATION PRIOR TO EXCAVATION. PROTECT ALL EXISTING UTILITIES DURING CONSTRUCTION UNLESS IDENTIFIED FOR REMOVAL.
2. EXISTING PIPING AND EQUIPMENT ARE SHOWN SCREENED AND/OR LIGHT-LINED. NEW PIPING AND EQUIPMENT ARE SHOWN HEAVY-LINED.
3. CONTRACTOR SHALL COORDINATE WITH APS REGARDING ALL BURIED AND OVERHEAD POWER LINES.

BENCHMARK

NAME: MV-01 DESCRIPTION: CARRIAGE BOLT WITH 2" WASHER ON TOP OF CURB ON NORTHEAST CURB RETURN AT SOUTHEAST CORNER OF GROVE AVENUE AND SHELDON STREET (PREVIOUSLY LISTED AT 5344.77 ON NGVD 29 DATUM) NGVD 29: 5344.584, NAVD 88: 5347.635.

CIVIL LEGEND

- COUNTY PROPERTY BOUNDARY
- ROAD CENTERLINE
- ACCESS GATE
- FLOW LINE
- HAUL ROUTE
- CP — CONTROL POINT
- FH — FIRE HYDRANT
- LIGHT POLE
- MANHOLE
- CONCRETE SLAB
- TREE
- PALM TREE
- VALVE
- GATE
- SPOT ELEVATION
- G — GAS LINE
- OP — OVERHEAD POWER
- FO — FIBER OPTIC LINE
- W — WATER LINE
- SD — STORM SEWER LINE
- E-OVH — OVERHEAD ELECTRIC LINE
- E-BUR — BURIED ELECTRIC LINE
- SS — SEWER
- FO — FIBER OPTIC
- HG — HIGH PRESSURE GAS
- OR — STRUCTURE, BUILDING OR FACILITY
- ASPHALT CONCRETE PAVEMENT
- GRAVEL SURFACING
- CONCRETE PAVEMENT
- CURB
- CURB AND GUTTER
- SINGLE SWING GATE
- TEMPORARY SECURITY FENCE
- ARCHITECTURAL FENCE
- CHAIN LINK FENCE
- REMOVE AND DISPOSE
- REMOVE AND DISPOSE CONCRETE SLAB
- CONSTRUCTION ENTRANCE
- OUTLET PROTECTION / RIPRAP

ABBREVIATIONS

ABC	AGGREGATE BASE COURSE
ACP	ASPHALT PAVING
ADA	AMERICANS WITH DISIBILITY ACT
ADWR	ARIZONA DEPARTMENT OF WATER RESOURCES
APS	ARIZONA PUBLIC SERVICE
APVD	APPROVED
CL	CENTERLINE
CLSM	CONTROLLED LOW-STRENGTH MATERIAL
CONC	CONCRETE
COP	CITY OF PHOENIX
DET	DETAIL
DIA	DIAMETER
DWG	DRAWING
E	EAST, EASTING
EA	EACH
EXIST	EXISTING
FG	FINISH GRADE
FL	FLOW LINE
FT	FOOT, FEET
GAL	GALLON
HPG	HIGH PRESSURE GAS
HWY	HIGHWAY
IE	INVERT ELEVATION
IN	INCH, INCHES
MAG	MARICOPA ASSOCIATION OF GOVERMENTS
MIN	MINIMUM
MON	MONUMENT
N	NORTH, NORTHING
NTS	NOTE TO SCALE
OVH	OVERHEAD
R	RADIUS
RR	RAILROAD, RAILWAY
R/W	RIGHT-OF-WAY
STD	STANDARD
S.W GAS	SOUTHWEST GAS
TEMP	TRMPORARY
TOC	TOP OF CONCRETE, TOP OF CURB
TYP	TYPICAL
V	VOLT

Registered Professional Engineer (Civil) 26169 DAVID J. ALLARD Date Signed 07/07/20 ARIZONA, U.S.A.

NO.	DATE	REVISION	BY	APVD

DSGN D ALLARD | DR D ALLARD | CHK S METCALF | APVD M BRANCHE | BY D ALLARD

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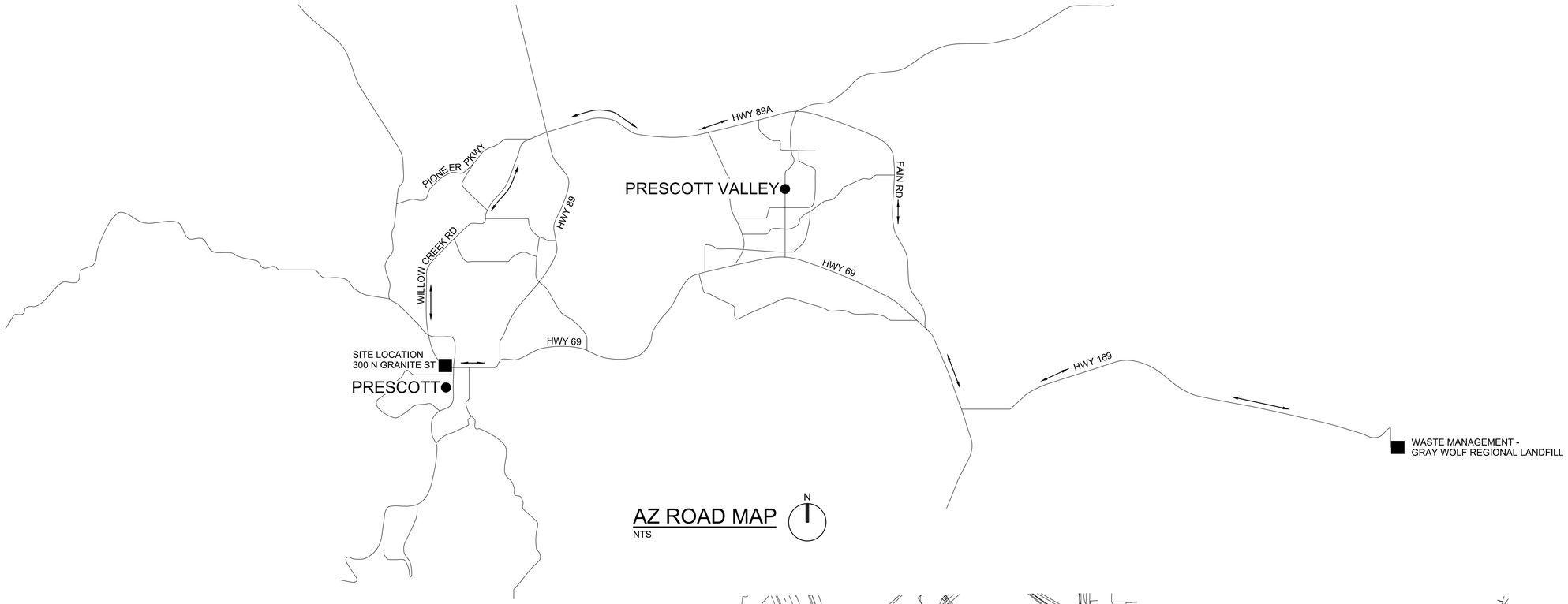
PRESCOTT, AZ 86301

JACOBS

GENERAL
GENERAL NOTES, LEGEND AND ABBREVIATIONS

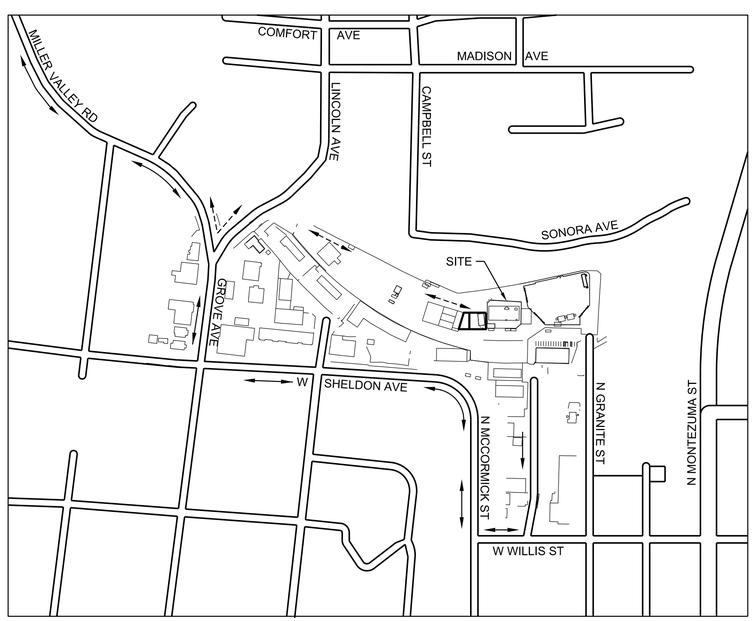
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	JULY 2020
PROJ	704643
DWG	G-2
SHEET	2 of 9



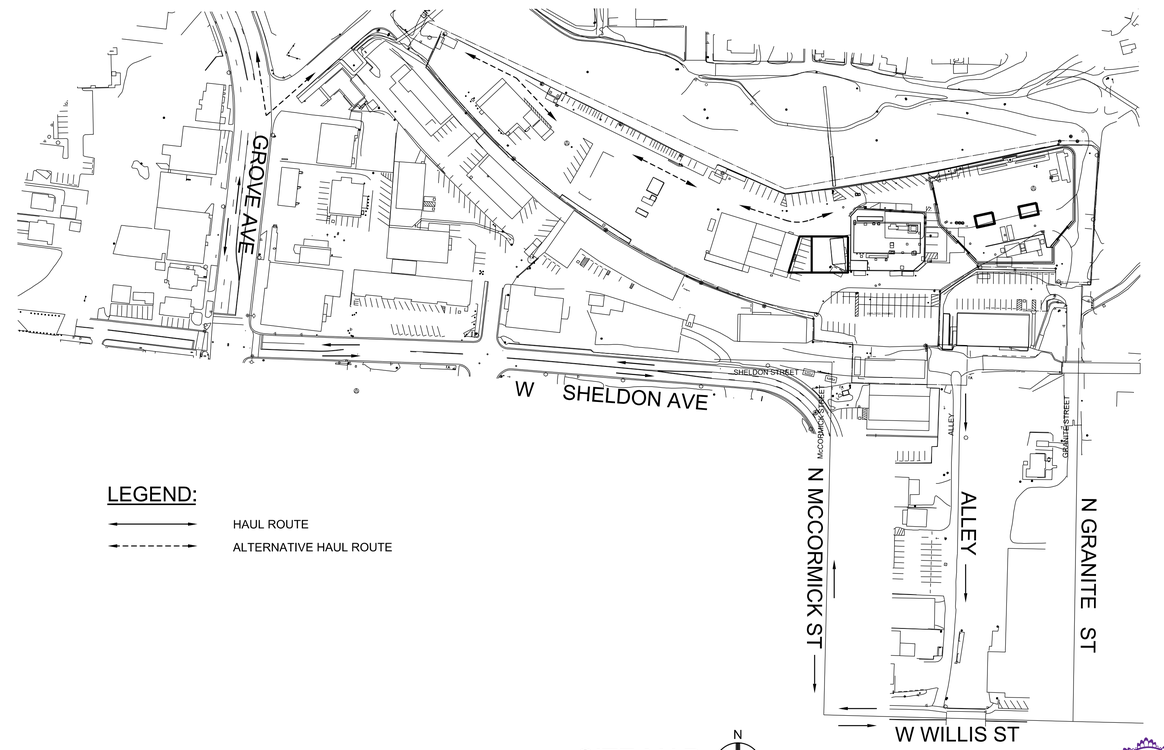
AZ ROAD MAP

NTS



LOCATION MAP

NTS



LEGEND:

HAUL ROUTE

ALTERNATIVE HAUL ROUTE

SITE MAP

NTS

REGISTERED PROFESSIONAL ENGINEER (CIVIL)
26169
DAVID J. ALLARD
Date Signed 07/07/20
ARIZONA, U.S.A.

NO.	DATE	REVISION	BY	APVD

DSGN	DR	CHK	APVD
D ALLARD	S METCALF	M BRANCHE	D ALLARD

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GENERAL

HAUL ROUTE PLAN

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VERIFY SCALE
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0 1"

DATE	JULY 2020
PROJ	704643
DWG	G-3
SHEET	3 of 9

GENERAL

1. POWER POLE REMOVED BY APS PRIOR TO REMEDIATION.
2. POWER POLE TO REMAIN.
3. CONTROL BUIDING REMOVED BY APS PRIOR TO REMEDIATION.
4. SUBSTATION ELECTRICAL EQUIPMENT REMOVED BY APS PRIOR TO REMEDIATION.
5. TRANSFORMER TO BE REMOVED BY APS PRIOR REMEDIATION.
6. GATE TO REMAIN CLOSED WHEN NOT IN USE TO PREVENT PUBLIC TRESPASS.

LEGEND

- SS — SANITARY SEWER
- OP — OVERHEAD POWER
- X — SECURITY FENCE
- POWER POLE
- LIGHT POLE
- LARGE POWER POLE

FEMA FIRM PARCEL

0425C2061H
EFF. 3/6/2018

PLAN

1"=20'-0"

N

0 20 40 60
Scale In Feet

Registered Professional Engineer (Civil)
26169
DAVID J. ALLARD
Date Signed 07/07/20
ARIZONA, U.S.A.

NO.	DATE	REVISION	CHK	APVD
1	7/07/20	REVISED PERMIT PLANS	M BRANCHE	D ALLARD

DSGN	DR	CHK	APVD
D ALLARD	D ALLARD	S METCALF	D ALLARD

	BY	DA
	SM	

JACOBS

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SUBSTATATION REMEDIATION
300 N. GRANITE ST.
PRESCOTT, AZ 86301

CIVIL
EXISTING SITE PLAN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	JULY 2020
PROJ	704643
DWG	C-1
SHEET	4 of 9

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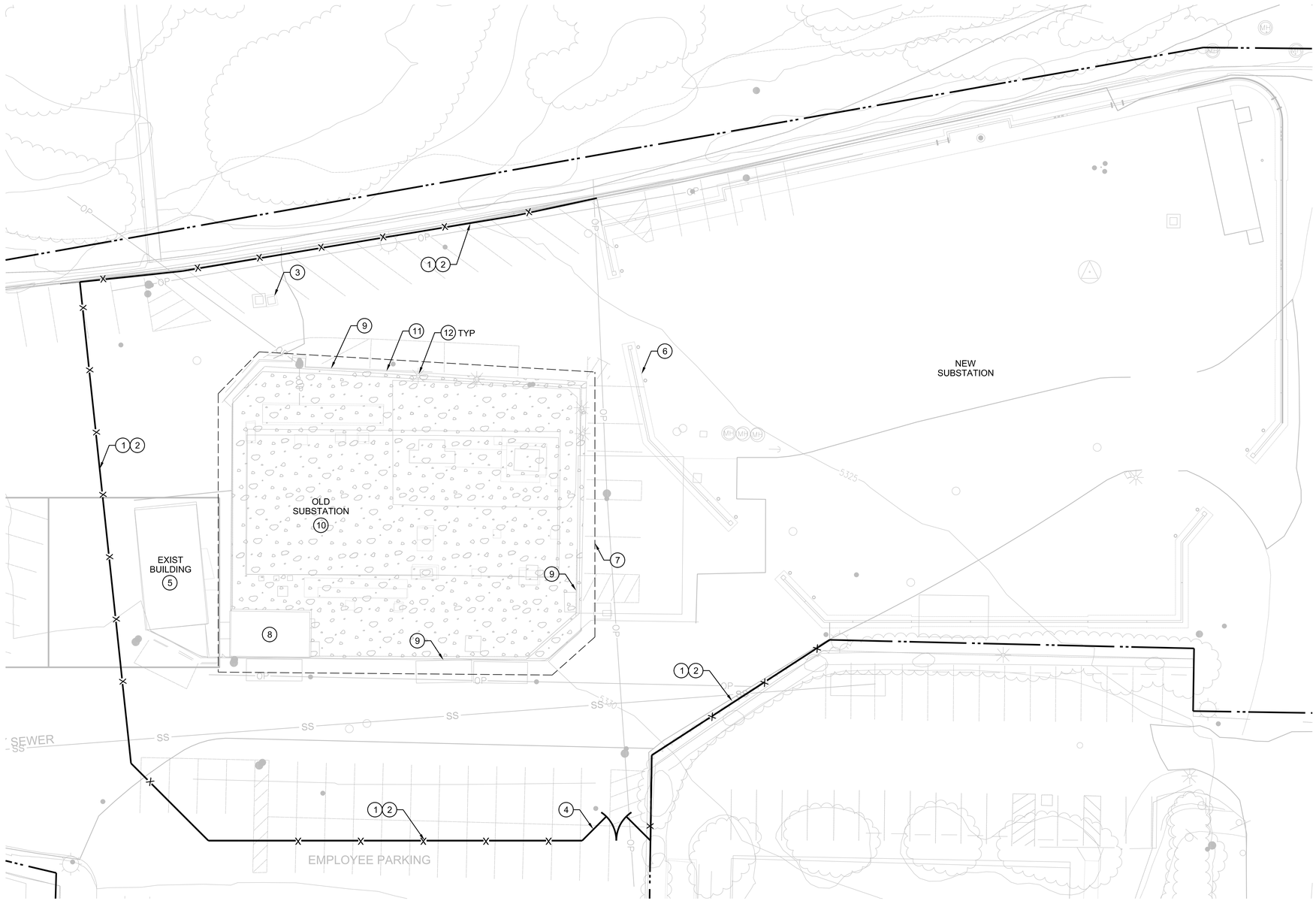

PLAN

1"=20'-0"

NOTES

1. PROVIDE AND INSTALL FENCE LINE MISTING SYSTEM FOR DUST AND ODOR CONTROL ON ALL FENCING. COVER ENTIRE HEIGHT OF FENCE WITH FABRIC TO PREVENT BLOWING DUST DURING CONSTRUCTION.
2. PROVIDE SAND BAG SILT PROTECTION, SEE 6/C-5.
3. PROVIDE INLET BARRIER, SEE 7/C-5 AND 8/C-5.
4. STABILIZED CONSTRUCTION ENTRANCE OR CORRUGATED STEEL PLATES, SEE 1/C-5.
5. EXISTING HISTORIC BUILDING PROTECT DURING CONSTRUCTION.
6. NEW SUBSTATION MASONRY WALL AND GATES, PROTECT DURING CONSTRUCTION.
7. SAW CUT, REMOVE AND DISPOSE OF ASPHALT PAVING AS REQUIRED TO ACCOMPLISH REQUIRED EXCAVATION. SWEEP OR VACUUM DUST GENERATED BY SAW CUTTING TO PREVENT DISCHARGE TO MILLER CREEK. 1
8. REMOVE AND DISPOSE OF CONCRETE BUILDING FOUNDATION.
9. REMOVE AND DISPOSE OF CONCRETE AND BLOCK RETAINING WALLS.
10. REMOVE AND DISPOSE OF CONCRETE SUBSTATION FOUNDATIONS AND CURBS (ALL FOUNDATIONS NOT SHOWN).
11. REMOVE AND DISPOSE OF EXISTING SUBSTATION CHAIN LINK FENCING.
12. REMOVE AND DISPOSE OF ALL SUBSTATION LIGHT POLES (ALL NOT SHOWN).

EROSION CONTROL NOTES:

1. CONTRACTOR SHALL COMPLY WITH ALL PROVISIONS AND BEST MANAGEMENT PRACTICES INCLUDED IN THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) FOR THE SITE.
2. BEST MANAGEMENT PRACTICE (BMP) REFERENCE NUMBERS REFER TO THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY DRAINAGE DESIGN MANUAL - EROSION CONTROL, DATED DECEMBER, 2018
3. ALL EROSION CONTROL SHALL BE INSTALLED PRIOR TO THE BEGINNING OF WORK AND BE MAINTAINED THROUGHOUT CONSTRUCTION IN ACCORDANCE WITH THE SWPPP.

PRE-CONSTRUCTION CONTROLS INCLUDE:

A. SAND BAG BARRIER (SPC-2), GRAVEL FILTER BERM (SPC-3) OR SILT FENCES (SPC-5) SHALL BE INSTALLED AT SITE PERIMETER.

B. STABILIZED CONSTRUCTION ENTRANCE (EC-5) OR CORRUGATED STEEL PLATES SHALL BE INSTALLED AND USED BY ALL VEHICLES LEAVING PAVEMENT, SEE 1/C-5.

C. STORM DRAIN INLET PROTECTION (SPC-7) SHALL BE INSTALLED AT ALL DROP INLETS, CATCH BASINS AND MANHOLES.

4. A STANDBY CREW FOR EMERGENCY WORK SHALL BE ON CALL AT ALL TIMES. NECESSARY MATERIALS SHALL BE AVAILABLE ON SITE AND STOCKPILED AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY DEVICES OR TO REPAIR ANY DAMAGED EROSION CONTROL MEASURES, ESPECIALLY WHEN RAIN IS IMMINENT.
5. DEVICES SHALL NOT BE MOVED OR MODIFIED WITHOUT THE APPROVAL OF THE ENGINEER.
6. AFTER A RAINSTORM, ALL SILT AND DEBRIS SHALL BE REMOVED FROM CHECK BERMS. ANY GRADED SLOPE SURFACE PROTECTION MEASURE DAMAGED DURING A RAINSTORM SHALL BE IMMEDIATELY REPAIRED.
7. AVOID PAVING DURING WET WEATHER.
8. STORE MATERIALS AWAY FROM DRAINAGE COURSES TO PREVENT CONTACT WITH STORM WATER.
9. PLACE DRIP PANS OR ABSORBENT MATERIALS UNDER CONSTRUCTION EQUIPMENT WHEN NOT IN USE.
10. CLEAN UP SPILLS WITH ABSORBENT MATERIALS AND DISPOSE OF PROPERLY.
11. OLD CONCRETE MUST BE DISPOSED OF PROPERLY. COLLECT AND REMOVE ALL BROKEN CONCRETE FROM THE SITE.
12. KEEP WORK SITE CLEAN AND ORDERLY DAILY.
13. PROPERLY STORE PAINTS AND SOLVENTS.
14. ALLOW MATERIAL DELIVERY AND STORAGE ONLY IN DESIGNATED AREAS AND AVOID TRANSPORT NEAR DRAINAGE PATHS AND WATERWAYS.
15. MINIMIZE THE USE OF HAZARDOUS MATERIALS ON SITE.
16. COLLECT SITE TRASH AS NEEDED, ESPECIALLY DURING RAINY OR WINDY CONDITIONS.
17. ARRANGE FOR REGULAR WASTE COLLECTION BEFORE CONTAINERS OVERFLOW.
18. TEMPORARY SANITARY FACILITIES SHALL BE MAINTAINED IN GOOD WORKING ORDER BY A LICENSED SERVICE.
19. CONTRACTOR SHALL BE RESPONSIBLE FOR UPDATING THIS STORM WATER MANAGEMENT PLAN THROUGHOUT CONSTRUCTION AND INDICATE ANY AND ALL REVISIONS/ UPDATES ON THIS PLAN.
20. CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN SUCH A MANNER THAT STORM WATER WILL BE CONTAINED WITHIN THE PROJECT OR CHANNELED INTO THE DRAIN CHANNEL PROVIDED THAT IT IS FREE FROM POLLUTANTS AND DEBRIS.
21. CONTRACTOR SHALL IMMEDIATELY RESTORE ANY DAMAGED EROSION CONTROL MEASURE WITHIN THE PROJECT BOUNDARY.
22. THE CONTRACTOR SHALL BE RESPONSIBLE, AND TAKE NECESSARY PRECAUTIONS, TO PREVENT PUBLIC TRESPASS ONTO AREAS WHERE IMPOUNDED WATER CREATES A HAZARDOUS CONDITION.

N

0 20 40 60
Scale In Feet

Registered Professional Engineer (Civil) CERTIFICATE NO. 26169 DAVID J. ALLARD Date Signed 07/07/20 ARIZONA, U.S.A.

NO.	DATE	DSGN	DR	CHK	APVD	BY	DA
1	7/07/20	D ALLARD	S METCALF	M BRANCHE	D ALLARD	SM	DA

REVISION

REVISED PERMIT PLANS

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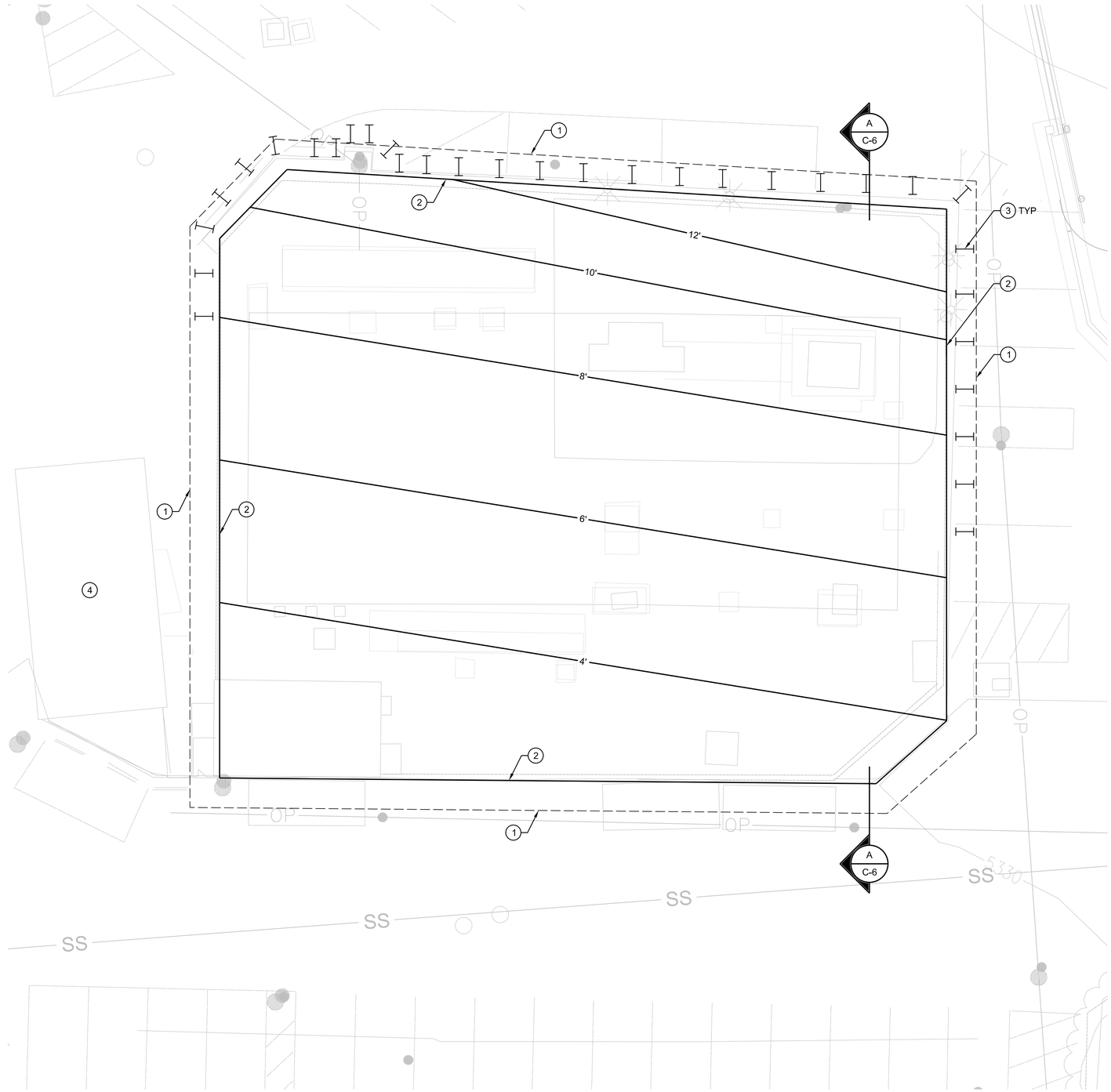
JACOBS

CIVIL
SITE CONSTRUCTION AND DEMOLITION PLAN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	JULY 2020
PROJ	704643
DWG	C-2
SHEET	5 of 9



PLAN
1"=10'-0"

GENERAL NOTES:

1. ALL STRUCTURES AND UTILITIES ARE TO BE SUPPORTED AND PROTECTED IN PLACE DURING REMEDIATION ACTIVITIES UNLESS OTHERWISE INDICATED.
2. MAINTAIN EXISTING SECURITY FENCING WITH FABRIC SCREENING FOR THE DURATION OF THE PROJECT. WHERE FENCE INTERFERES WITH WORK PROVIDE TEMPORARY FENCING WITH FABRIC SCREENING TO MAINTAIN SITE SECURITY.
3. PROVIDE, INSTALL, AND MAINTAIN FENCE LINE MISTING SYSTEMS FOR DUST AND ODOR CONTROL. SYSTEM MUST BE IN OPERATION AT ALL TIMES DURING DEMOLITION, EXCAVATING AND BACKFILLING ACTIVITIES.
4. INSTALL AND MAINTAIN ALL EROSION CONTROL AND STORMWATER MANAGEMENT FACILITIES PRIOR TO BEGINNING EXCAVATION WORK. MAINTAIN DURING DURATION OF WORK. SEE DWG C-2.
5. REMOVE CONCRETE SLABS AND ASPHALT PAVEMENT IN SECTIONS JUST PRIOR TO EXCAVATION IN THE AREA LEAVING THE REMAINING IN PLACE TO CONTROL ODOR AND EROSION.
6. UTILITY LOCATIONS BASED ON HISTORICAL INFORMATION, UTILITY OWNER LOCATION, AND PRIVATE LOCATOR DESIGNATION. CONTRACTOR SHALL VERIFY LOCATION OF UTILITIES PRIOR TO EXCAVATION. OTHER ABANDONED OR ACTIVE UTILITIES MAY BE LOCATED ON SITE.
7. APPROXIMATE EXCAVATION LIMITS ARE SHOWN FOR THE PROPOSED BOTTOM OF EXCAVATION AT THE INDICATED ESTIMATED DEPTH. CONTRACTOR SHALL SLOPE OR SHORE AS REQUIRED FOR SAFETY, STABILITY, AND PROTECTION OF UTILITIES OR STRUCTURES.
8. EXCAVATIONS SHALL USE "SOFT-DIG"UNTIL ALL UTILITIES ARE LOCATED. COORDINATE EXCAVATIONS ADJACENT TO UTILITIES WITH UTILITY OWNERS. IN ACCORDANCE WITH ARIZONA REVISED STATUTES 45-841 AND 45-844 SHOULD HUMAN REMAINS, FUNERARY OBJECTS, OR HISTORIC OR PREHISTORIC ARTIFACTS BE UNCOVERED WITHIN THE PROJECT AREA, ALL WORK MUST BE STOPPED IN THE AREA OF THE DISCOVERY AND THE DIRECTOR OF THE ARIZONA STATE MUSEUM SHOULD BE IMMEDIATELY NOTIFIED. ACTION MUST THEN BE TAKEN TO PREVENT FURTHER DISTURBANCE ON SUCH REMAINS. THE ARIZONA STATE MUSEUM OFFICE WILL BE GIVEN ADEQUATE TIME TO ASSESS THE REMAINS AND WILL RESPOND TO ANY REQUEST TO PROCEED WITH GROUND-DISTURBING ACTIVITIES IN THE AREA OF THE DISCOVERY. 1

EXCAVATION NOTES:

1. SAW CUT AND REMOVE ASPHALT AS REQUIRED FOR EXCAVATION.
2. REMOVE AND DISPOSE OF RETAINING WALL.
3. EXISTING SOLDIER PILE AND LOGGING EXCAVATION SUPPORT PREVIOUSLY CUT OFF 3 TO 5 FEET BELOW GRADE.
4. PROTECT HISTORIC BUILDING DURING CONSTRUCTION ACTIVITIES.

LEGEND

——12'—— APPROXIMATE DEPTH OF EXCAVATION BELOW GRADE SURFACE.

N

0 10 20 30
Scale In Feet

Registered Professional Engineer (Civil) CERTIFICATE NO. 26169 DAVID J. ALLARD Date Signed 07/07/20 ARIZONA, U.S.A.

NO.	DATE	REVISION	DR	CHK	APVD
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DSGN	D ALLARD		D ALLARD	S METCALF	M BRANCHE	APVD	D ALLARD

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CIVIL
EXCAVATION PLAN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	JULY 2020
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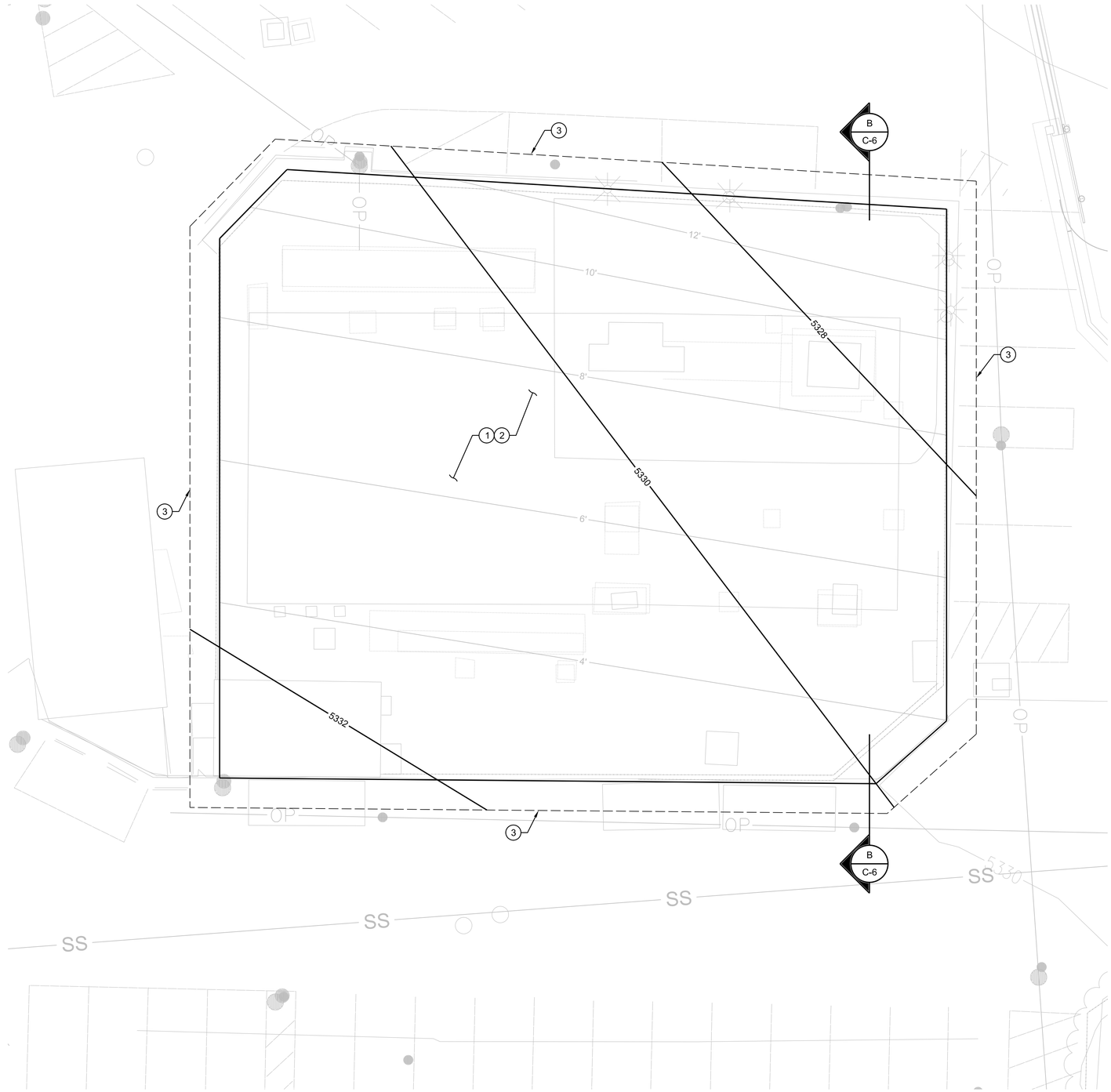
SHEET	6 of 9



PLAN
1"=10'-0"

GENERAL NOTES:

1. REMOVE ALL TEMPORARY FENCING, SCREENING, STORMWATER PROTECTION, AND OTHER TEMPORARY FACILITIES AT THE COMPLETION OF WORK.
2. BACKFILL ALL EXCAVATIONS TO GRADES SHOWN. ELEVATION GIVEN ARE FINISHED GRADE UNLESS OTHERWISE SHOWN.
3. SLOPE UNIFORMLY BETWEEN CONTOURS AND SPOT ELEVATIONS SHOWN.

BACKFILL NOTES:

1. BACKFILL SITE WITH COMPACTED EMBANKMENT BACKFILL.
2. COMPLETE SITE RESTORATION WITH 12-INCH AGGREGATE BASE AND 4-INCHES OF ASPHALT PAVEMENT.
3. MATCH EXISTING GRADE EDGES. SLOPE UNIFORMLY BETWEEN EXISTING GRADES.

LEGEND

——5330—— APPROXIMATE FINISH GRADE

N

0 10 20 30
Scale In Feet

Registered Professional Engineer (Civil)
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CIVIL
GRADING AND SITE RESTORATION PLAN

VERIFY SCALE
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0 1"

DATE	JULY 2020
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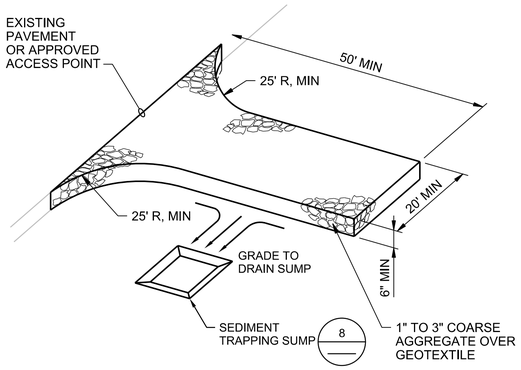
DWG	C-4
SHEET	7 of 9



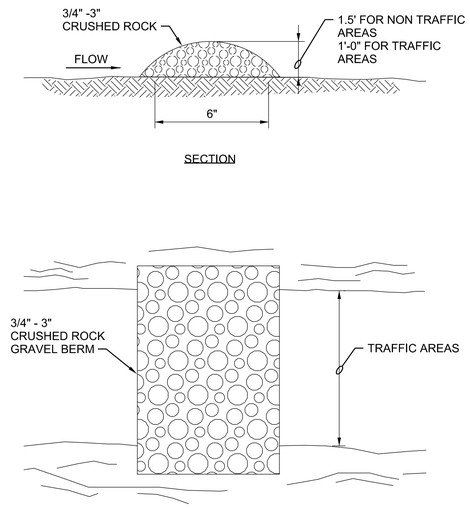
NOTES:

1. ADDITIONAL GRAVEL MAY HAVE TO BE ADDED PERIODICALLY TO MAINTAIN PROPER FUNCTION OF THE PAD.
2. REMOVE GRAVEL ENTRANCE AND REPLACE WITH NEW BASE COURSE PRIOR TO COMPLETION OF ACCESS ROAD.
3. CORRUGATED STEEL PLATES MAY BE USED IN PLACE OF AGGREGATE ON PAVED SURFACES.

1 EC-5 - STABILIZED CONSTRUCTION ENTRANCE

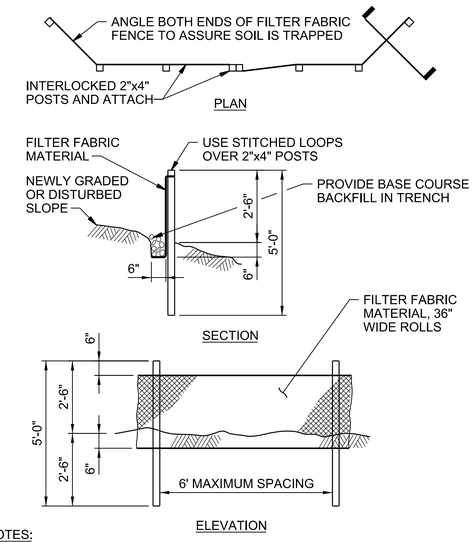
C-1

NTS



2 SPC-3 - GRAVEL FILTER BERM

NTS



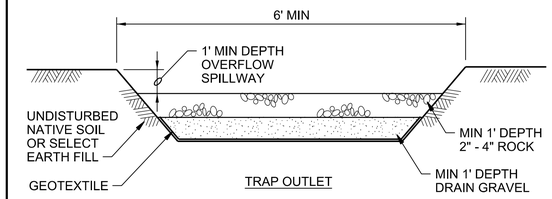
NOTES:

1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. 2"x4" DOUGLAS FIR OR STEEL FENCE POSTS.
3. STITCHED LOOPS TO BE INSTALLED DOWNHILL SIDE OF SLOPE.
4. COMPACT ALL AREAS OF FILTER FABRIC TRENCH.

3 SPC-5 - SILT FENCE

C-2, C-3

NTS



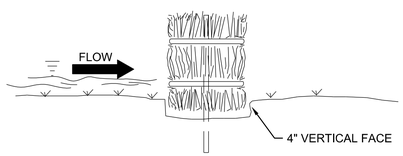
MAINTENANCE STANDARDS:

1. SEDIMENT SHALL BE REMOVED FROM THE TRAP WHEN IT REACHES 1 FOOT IN DEPTH.
2. ANY DAMAGE TO THE TRAP EMBANKMENTS OR SLOPES SHALL BE REPAIRED.

4 SPC-9 - SEDIMENT TRAP

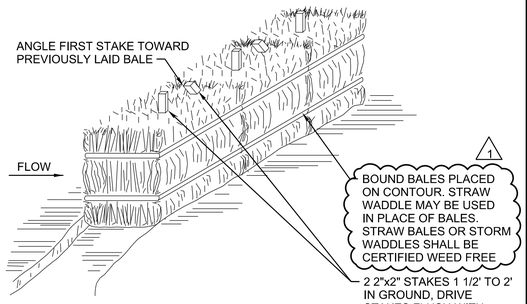
C-2

NTS



* PROMOTES ON SITE SEDIMENTATION BY CREATING A TEMPORARY POND.

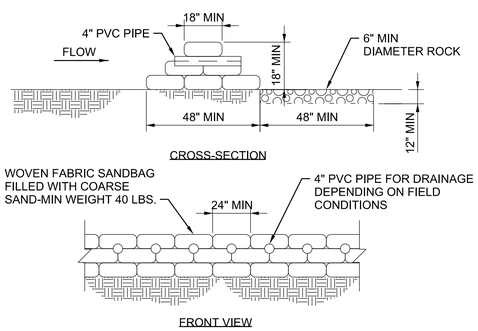
BEDDING DETAIL



ANCHORING DETAIL

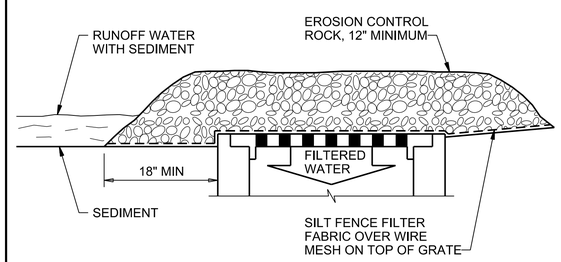
5 SPC-1 - ORGANIC FILTER BARRIER

NTS (MAY BE USED IN PLACE OF SILT FENCE) (5)



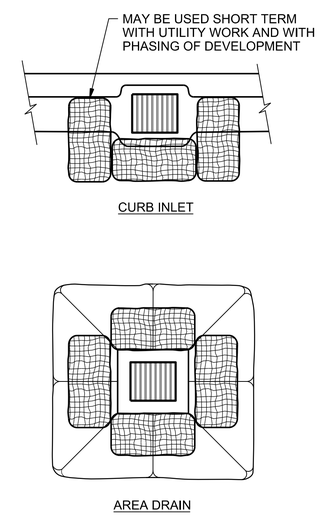
6 SPC-2 - SAND BAG BARRIER

NTS



7 SPC-7 - GRAVEL AND WIRE MESH INLET BARRIER

NTS (MAY BE USED IN PLACE OF (8))



8 SPC-7 - BIOFILTER BAG INLET BARRIER

NTS

NO.	DATE	DSGN	DR	CHK	APVD	BY	DA
1	7/07/20	D ALLARD	S METCALF	M BRANCHE	D ALLARD	SM	DA

REVISED PERMIT PLANS

REVISION

APS PRESCOTT
SUBSTATION REMEDIATION
300 N. GRANITE ST
PRESCOTT, AZ 86301

JACOBS

CIVIL
STORM WATER DETAILS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	JULY 2020
PROJ	704643
DWG	C-5
SHEET	8 of 9

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.

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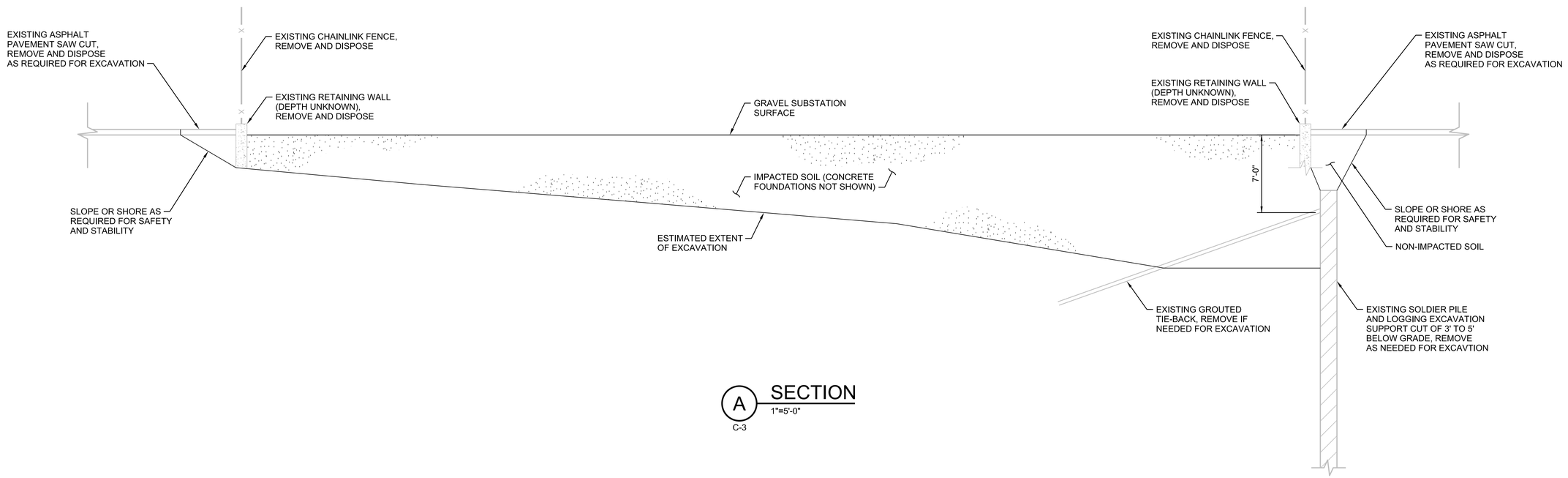
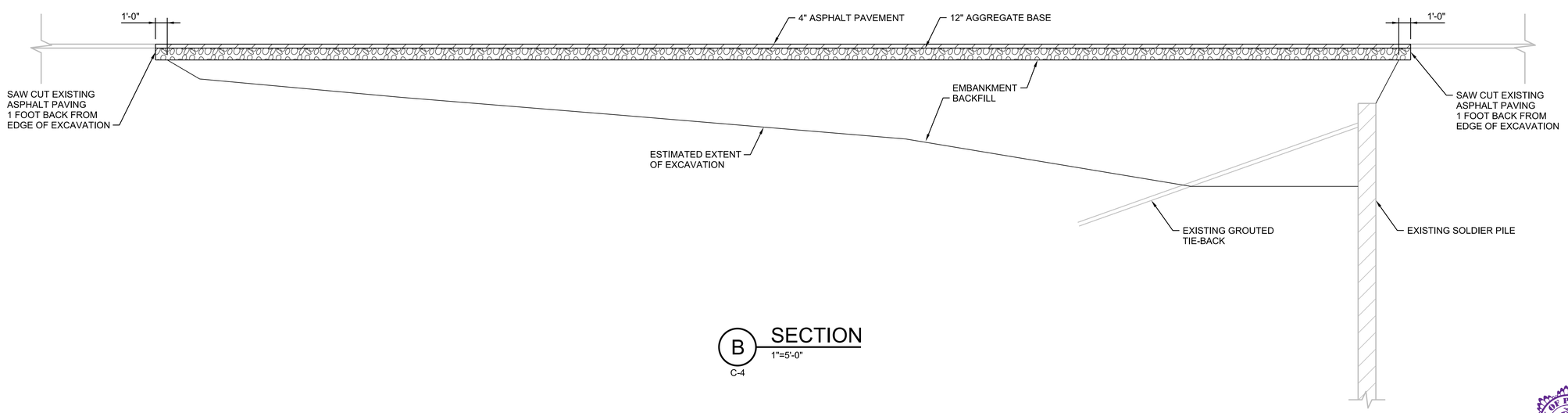


A SECTION
1"=5'-0"
C-3



B SECTION
1"=5'-0"
C-4

REGISTERED PROFESSIONAL ENGINEER (CIVIL)
26169
DAVID J. ALLARD
Date Signed 07/07/20
ARIZONA, U.S.A.

NO.	DATE	REVISION	BY	APVD

DSGN D ALLARD | DR D ALLARD | CHK S METCALF | APVD M BRANCHE | BY D ALLARD

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APS PRESCOTT
SUBSTATION REMEDIATION
300 N. GRANITE ST
PRESCOTT, AZ 86301

JACOBS

CIVIL
SECTIONS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	JULY 2020
PROJ	704643
DWG	C-6
SHEET	9 of 9

CITY OF PRESCOTT 201 S. Cortez Street, Prescott, AZ, 86303
Building Department (928)777-1356 FAX(928)777-1258
Public Works (928)777-1269 FAX(928)777-1251
Department (928)777-1760 FAX(928)776-1890
Fire Department (928)777-1207 FAX(928)777-1258
Planning and Zoning

PERMIT PLAN REVIEW COMMENTS LETTER

PERMIT STATUS: [ ] APPROVED [X] NOT APPROVED

DATE: 07/06/20

TO: JUDY HEYWOOD
400 N. 5TH ST. MAIL STATION 93030
PHOENIX AZ 85004

PERMIT #: ENG2006-012

RE: 300 N GRANITE ST

THE FOLLOWING ARE REVIEW COMMENTS AND REQUIRED REVISIONS FOR THIS PROJECT. ALL ITEMS LISTED, BY DEPARTMENT, REQUIRE CORRECTION AND RESUBMITTAL TO THE COMMUNITY DEVELOPMENT DEPARTMENT.

RS - RECREATION SERVICES REVIEW - NOT REQUIRED

Reviewer: RECREATION SERVICES REVIEWER

PW - SURVEYOR REVIEW - APPROVED

Reviewer: Brett Flippo

APPROVED

CD - HISTORIC PRESERVATION REVIEW- APPROVED WITH CONDITION

Reviewer: Cat Moody

It should be reminded that, according to Arizona Revised Statutes §45-841 and §45-844, should human remains, funerary objects, or historic or prehistoric artifacts be uncovered within the Project Area, all work must be stopped in the area of the discovery and the Director of the Arizona State Museum should be immediately notified. Action must then be taken to prevent further disturbance on such remains. The Arizona State Museum office will be given adequate time to assess the remains and will respond to any request to proceed with ground-disturbing activities in the area of the discovery.

PW - ENGINEERS COST ESTIMATE - CORRECTIONS REQUIRED

Reviewer: Aric Stewart

Please submit a sealed engineer's estimate.

PW - CITY ENGINEER REVIEW - CORRECTIONS REQUIRED

Reviewer: Aric Stewart

PLANS:
1) The cover sheet should have : a) signature lines for the CITY ENGINEER and DATE, as well as for the UTILITIES MANAGER and DATE; b) noted the FEMA FIRM that this parcel would be in.
2) Please delineate the 100-yr FEMA floodplain on the grading plan.

PW - SOLID WASTE REVIEW - APPROVED

Reviewer: SOLID WASTE REVIEWER

CD - BUILDING REVIEW - APPROVED

Reviewer: Laurel Collins

BUILDING DEPARTMENT
LAUREL COLLINS 928777-1391

PROVIDE A LETTER OF STRUCTURAL ACCEPTANCE BY FINAL FOR THE BACKFILL AT THE EXISTING RETAINIING WALLS.

CD - PLANNING AND ZONING REVIEW - APPROVED

Reviewer: Tammy DeWitt

PW - DRAINAGE ENGINEER REVIEW - APPROVED

Reviewer: Ben Easley

PW - FEES - CORRECTIONS REQUIRED

Reviewer: PUBLIC WORKS REVIEWER

pending corrections

PW - ENVIRONMENTAL COORDINATOR REVIEW- APPROVED WITH CONDITION

Reviewer: Matthew Killeen

The straw bales shown on plan sheet 8 of 9 are notorious vectors for weed seeds. Should something like that be needed certified weed free straw wattles would be preferred.
Please ensure that dust generated by saw cutting is swept up or vacuumed so as not to discharge into Miller Creek.
Overall this was a well thought out and documented plan. The City appreciates the applicants' attention to these details.

PW - TRAFFIC ENGINEER REVIEW - APPROVED

Reviewer: Ian Mattingly

Ian Mattingly, PE
City Traffic Engineer
City of Prescott
ian.mattingly@prescott-az.gov
(928)777-1130

Approved.

PW - FEMA FLOODPLAIN REVIEW - APPROVED

Reviewer: Ben Easley

WHEN RESUBMITTING PLANS FOR REVIEW PLEASE INCLUDE THE FOLLOWING:

1. Any plans and/or documents that required revisions as well as any new materials requested.
2. All changes shall be clouded with a Date Delta (ie Delta 1, 2/23/18).

- **PLAN REVIEW TIME FRAMES ARE BASED ON VOLUME. PLEASE CONTACT THE COMMUNITY DEVELOPMENT DEPARTMENT FOR CURRENT REVIEW COMPLETION TIMES.**

1501 E. Fountainhead Parkway
Suite 401
Tempe, AZ 85282

www.jacobs.com

June 5, 2020

Attention: Permitting
City of Prescott
Public Works Department
201 S. Cortez St.
Prescott AZ 86303

Project Name: APS 300 N. Granite St. Substation Grading Permit
Project Number: D328550

Subject: APS 300 N. Granite Substation Grading Permit

Jacob Engineering Group (Jacobs) on behalf of Arizona Public Service (APS) is submitting the attached Civil Grading/Underground Utility Permit Application. The application is for excavation and backfilling associated with remediation of the existing substation located at 300 N. Granite Street. This application package includes the following:

1. Permit Application Form
2. Remedial Design Engineering Plans
3. Storm Water Pollution Prevention Plan

Site Background

The Site is located at 300 North Granite Street in Prescott, Arizona.

From 1909 until 1949 APS predecessor companies operated a Manufactured Gas Plant (MGP) on the site. MGPs converted coal or oil to a gas that was piped throughout the town. APS continues to own the site for use as a service center and substation.

In 1993 APS began a site investigation to determine any impacts from the MGP operations remaining at the site. In April of 1999 APS submitted Remedial Action Plan describing the actions clean up the site. From November 1999 through February 2001 APS conducted remediation of the site. The remediation activities included:

1. Excavation of approximately 101,000 tons of contaminated soil which was hauled off and disposed at an offsite licensed facility.

2. Sampling of remaining soil to confirm the site meets Arizona Department of Environmental Quality (ADEQ) requirements for residential use.

3. Backfill and compaction of the excavation with clean soil in accordance with grading plan approved by the City of Prescott. A portion of the soil was provided by the City from the Willow Lake area.

4. Asphalt paving of the property owned by APS.

5. Restoration of the West Granite Creek in accordance with the West Granite Creek Master Plan.

All work was performed under the supervision of the ADEQ Voluntary Remediation Program. APS submitted the final closure documents in August 2002 and the site was accepted for closure by ADEQ in May 2013.

Current Plan

The only area that could not be remediated by excavation during the 1999 to 2001 was the existing substation as it needed to remain in operation. Recently APS has designed and constructed a new substation on the east side of the site and are in the process of de-energizing the existing substation. Once this substation is de-energized and equipment removed APS will remediate the soil within the substation area. This remediation will include

1. Excavation and offsite disposal of approximately 3,200 cubic yards of soil.

2. Backfill excavation with clean soil to match existing grade around the substation area.

3. Place aggregate base material and cover the area with asphalt paving.

The attached engineering plans detail the remediation activities. If you have any questions or need additional information, please contact David Allard with Jacobs at 480.363.3254 or Judy Heywood with APS at 602.250.3850.

Yours sincerely

David Allard
Project Manager
480.295.3913
dave.allard@jacobs.com

Copies: Judith Heywood/APS

City of Prescott
Civil Grading/Underground Utility Permit Application
Public Works Department

201 S. Cortez St., Prescott, AZ 86303
Phone: (928)-777-1269 Fax (928) 777-1251

Project Address: 300 N. Granite St.	Assessor's Parcel #: 113-14-58C	ENG PERMIT #:
Subdivision:		Lot#:
Description of Work: After completion on new substation and de-energize and demolition of old substation APS will excavate and disposal of soil within area of old substation. The excavation will be backfill with clean imported fill and restored with asphalt pavement		
Water Line Linear Feet (LF): NA Sewer Line Linear Feet (LF): NA	Fire Line Linear Feet (LF): NA Paving Square Feet (SF) 14,850	Grading Cubic Yards (CY): CY of Cut: 3,200 CY of Fill: 4,200
Approximate Acreage to Be Disturbed By Grading: 0.34	Engineer's Estimate TOTAL Cost: $710,000	Right-of-Way Permit #: Building Permit #:
Location (Address or APN) That Either Fill Material Originated AND/OR Excess Cut Material Will be Placed and Associated Permit #: Soil will be disposed at Gray Wolf Regional Landfill, Dewey, AZ. Imported soil for commercial source tested to be clean.		
Geotechnical Engineer: NA	If Blasting, Provide Contractor: (Fire Department Approval Required)	

APPLICANT/CONTACT: Arizona Public Service/Judy Heywood		Phone: 602-250-3850
Address: 400 N 5th Street, Mail Station 9303		Email Address: judith.heywood@aps.com
City: Phoenix	State: Arizona	ZIP: 85004
OWNER: Arizona Public Service		Phone:
Address: 400 N 5th St		Email Address:
City: Phoenix	State: Arizona	ZIP: 85004
ENGINEER/ARCHITECT Jacobs Engineering Group, Inc,/David Allard		Phone: 480.295.3913
Address: 1501 W. Fountainhead Parkway, Suite 401		Email Address: dave.allard@jacobs.com
City: Tempe	State: Arizona	ZIP: 85282
EXCAVATING CONTRACTOR: Environmental Response Inc./Eric Smith		Phone: 602.757.1998
Address: 2202 W. Medtronic Way, Suite 108		Email Address: ESmith@spray-eri.com
City: Tempe	State: Arizona	ZIP: 85281
Lic#: AZ ROC # 101060	City T&P Tax #: CL-00518	State Tax #: TPT# 07471544

CITY OF PRESCOTT
PUBLIC WORKS DEPARTMENT
201 S. Cortez Street, Prescott, AZ 86303
(928) 777-1269

CONSTRUCTION HOLD HARMLESS

Building Permit #: _____

To the fullest extent allowed by the law, the Contractor(s) agrees to defend, indemnify and hold harmless the City, its employees, agents, invitees and/or volunteers from any claims, demands, causes of action, liability, loss, property damage or any type of damage and/or injury (to property or person, including without limitation, wrongful death), whether brought by an individual or other entity, or imposed by a court of law or by administrative action of any Federal, State or local government body or agency, arising out of or incident to any acts, omissions, negligence or conduct of the City, its personnel, employees, agents, contractors, or volunteers in connection with or arising out of the Contractor's placement of soil pursuant to this grading permit.

It is expressly understood by the undersigned that this permit is revocable at will by the City, at the sole option of the city. If the city revokes this permit, it shall be the responsibility of the permittee to remove, at permittee's expense, all improvements authorized by this permit and restore the property to its original condition.

The Undersigned further releases and discharges the City from any and all claims in which the undersigned has or may have against the City, its agents, or employees, arising out of or in any way connected with the undersigned's activities as set forth on this permit. The applicant agrees to abide by the aforementioned miscellaneous requirements and all provisions and conditions as set forth in this permit.

The undersigned, under penalty of perjury, does hereby certify that all improvements made to the above project, at the address as stated above, by means of the building or improvement of structures or appurtenances of such property, have been performed by a duly licensed contractor unless the entire structure is intended for the undersigned's sole occupancy as owner and no part is provided for occupancy by the public, employees or business visitors and no part of the premises are intended for sale or rent.

I understand the owners who sell or rent property not completed with a licensed general contractor, may be subject to a Class 1 Misdemeanor under Arizona Revised Statues § 32-1151 and § 32-1154. A Class 1 Misdemeanor is punishable by a fine not to exceed $2500.00 and/or one year in the County jail. I understand and acknowledge the above certification.

Owner/Contractor: Greg Jung **Date:** 6/5/20

CITY OF PRESCOTT
ARIZONA
Everybody's Hometown

YAVAPAI COUNTY CONTRACTORS ASSOCIATION

Public Works PW-Inspection Deposit

Effective September 1, 2015, the Prescott City Council adopted a $75 per hour PW-Inspection Fee for all Public Works related inspections. PW-Inspections are required for any public infrastructure construction* and for any private fireline, that is a direct, open connection to a City water main.

** Public infrastructure means the new construction or replacement of infrastructure that will be turned over to the public (City) for long-term maintenance. This includes items such as, grading, retaining walls, water mains, sewer mains, drainage infrastructure, curb, gutter, sidewalk, asphalt, chip seal, or any other item constructed in the right-of-way or turned over to the City.*

PW-Inspection Fee "Deposit" amount will be collected based on the "***Engineer's Estimate" of cost for the "Public Infrastructure" portion of the project only***. These "Deposit" amounts are ONLY AN ESTIMATE OF PW-INSPECTION FEE COSTS.

A minimum balance of 20% of the original "Deposit" amount shall be maintained in the deposit account at all times. Monthly statements will be provided showing PW-Inspection Fees paid, "Deposit" account balance and/or additional deposits due. Any shortage to the PW-Inspection Fee "Deposit" account owed must be paid prior to a "Certificate of Occupancy" or "Approval to Operate and Release" being issued by the City. Any excess PW-Inspection "Deposit" remaining after the project is released by the City will be returned to the applicant within 30-days.

It is difficult to determine the number of project inspection hours. Variables such as the scale of the work, the number of days, weather delays and the complexity of the project all affect PW-Inspection time tables.

THE FOLLOWING AMOUNTS ARE ONLY ESTIMATED DEPOSIT AMOUNTS:

Description of Service	Construction Cost Based on Engineer's Estimate	Deposit Amount	Minimum Balance
PW-Inspections	First $5,000	$300	0
	$5,000-$25,000	$2,500	$500
	$25,000-$50,000	$3,000	$600
	$50,000-$100,000	$4,000	$800
	$100,000-$200,000	$6,000	$1,200
	$200,000-$500,000	$7,500	$1,500
	$500,000-$1,000,000	$15,000	$3,000
	$1,000,000-$2,000,000	$30,000	$6,000
	$2,000,000 and up **	$40,000	$40,000

****PROJECTS OVER $2,000,000 IN ENGINEER'S ESTIMATE**

The City recognizes the importance of managing cash flow throughout the life of projects, especially those greater than $2M in "Engineer's Estimate". In lieu of the Developer paying all anticipated PW-Inspection Fees in a "Deposit" at the time of permit issuance, the Developer may pay PW-Inspection Fees monthly through the progression of the project. A minimum PW-Inspection Fee "Deposit" of $40,000 shall be posted prior to start of work. The minimum balance shall not fall below $40,000 at any time. Monthly statements will be provided showing fees due and account balance.

If you have questions concerning the PW-Inspection Deposit and how it is applicable to projects, please contact Sergio Rivera, Development Review Supervisor, City Hall Permit Center, 928-777-1811.

CITY OF PRESCOTT
PUBLIC WORKS DEPARTMENT
201 S. Cortez Street, Prescott AZ 86303 (928)777-1269

COMMERCIAL & MULTI-FAMILY CIVIL PLAN REVIEW SUBMITTAL CHECKLIST

BLDG/ENG Permit #: _____ **Pre-Application Meeting #:**_____

THIS FORM MUST BE SUBMITTED WITH FIRST PLAN CHECK (Submit All Applicable Items)

Project Name: Arizona Public Service - Prescott MGP Substation Remediation

Description of Work: Excavation , disposal and backfilling of soil within old substation at 300 N. Granite St. facility

I certify that these plans include all items I have checked on this checklist, and were prepared per the development standards cited below. I understand that the plans may not be accepted if I have failed to provide this information.

Signature (of preparer of plans)	Registration number (if applicable)	Date
	Civil 26169	6/1/2020

Req'd	Rec'd	# of Sets	GENERAL SUBMITTAL GUIDELINES
			We have prepared our plans and submittal in conformance with the "Improvement Plan Check Policies and Guidelines" and the City Drainage Criteria Manual dated _____. (The latest edition of the "Guidelines" may be obtained from the City Public Works Department or downloaded from the Land Development Code website @ www.cityofprescott.net
☐	☐	2 Sets	24"x36" Drainage Plans
☐	☐	2 Sets	24"x36" Water and Sewer Plans **(for mainlines off-site and within a commercial site),** including service & meter size, fire lines, water backflow, PRV, and sewer backwater.
☐	☐	2 Sets	Water and Sewer Reports **(for public main extensions)**
☐	☐	2 Sets	24"x36" Landscaping Plans
☒	☒	2 Sets	24"x36" Grading Plan and Erosion Control Plan/SWPPP. (120% financial assurances are required for slope stabilization (per LDC 6.7.7), SWPPP Binder, and ADEQ NOI are required prior to issuance of a grading permit.)
☐	☐	2 Sets	Drainage Report with Hydraulic Calculations, and Hydrological Maps
☐	☐	2 Sets	Geotechnical Report including R-Value
☒	☒	1 Set	Electronic copy of all submitted items (in pdf. Form)
☐	☐	2 Sets	Corresponding Pre-Application Conference Letter
☐	☐	1 Set	Construction Cost Estimate (using City of Prescott forms and most current unit prices) with Plan Check Fee Calculation Sheet **(for water/sewer main line and fire line extensions only)**

ALL ENGINEERING PLAN SHEETS SHALL INCLUDE:

1. Date plans are prepared. Scale of Plan with North arrow.
2. Engineer's firm, address and phone number in block provided. Self-adhesive label is not acceptable.
3. Survey datum: List at least two control points with coordinates and elevations on City of Prescott datum and ties. Refer to Prescott Land Development Ordinance 9.10.10 for details.
4. Revision Box
5. Quantities Box: Final quantities must be listed on either the title sheet or second sheet, showing as a minimum street footage per street with totals per project, water line and sewer line linear feet, fire hydrants, storm drains, water & sewer taps, earthwork, on the as-built as quantities may change from beginning of project to completion.
6. Signature block normally says "Approved By". For "As Built" plans, the signature block should say "Reviewed By" with date. In large lettering write "AS BUILT" near the title block, if the plans are "As Built" plans – Each Sheet.
7. Grading Plan shall be included with first plan submittal.
8. The SWPPP and NOI submittal shall be included with the Grading Plan submittal.

RESUBMITTALS

1. Two (2) sets of revised plans/reports
2. One (1) electronic submittal or revised plans/reports
3. All of the previous redlined/returned check plans/reports
4. If submittals beyond the second review set contain issues that have not been satisfactorily addressed, Engineering Services may call a meeting with the Engineer and the Developer to resolve the issues prior to continuing the plan review process.

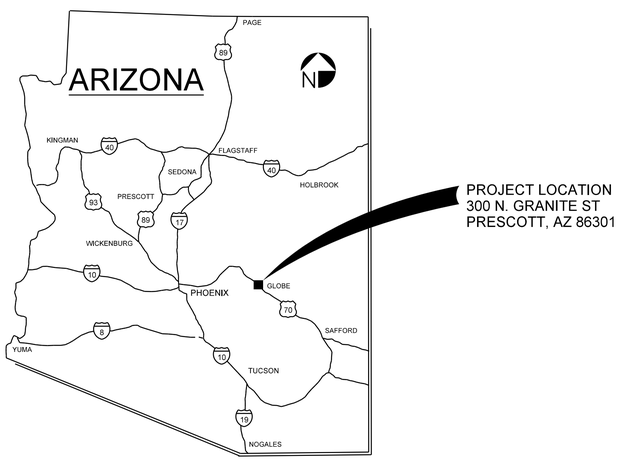
Copies of all standards, manuals and City Plan Checking "Checklists" are available to the public for a nominal printing charge at the Engineering Services Department, and on the City's website at www.cityofprescott.net.

APS FORMER MANUFACTURED GAS PLANT SITE
PRESCOTT, ARIZONA
SUBSTATION REMEDIATION PLANS

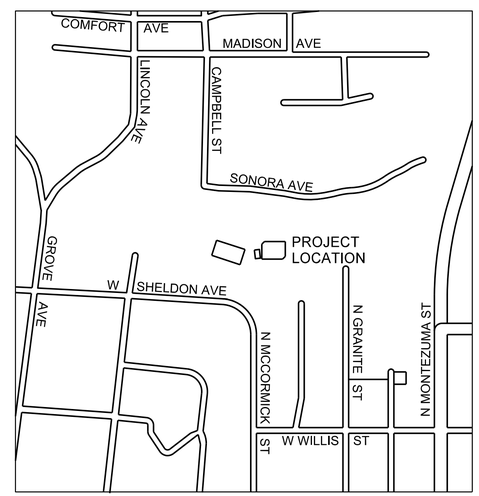
MAY 2020

BUILDING DEPARTMENT
LAUREL COLLINS 928777-1391

PROVIDE A LETTER OF STRUCTURAL ACCEPTANCE BY FINAL FOR THE BACKFILL AT THE EXISTING RETAINIING WALLS.



VICINITY MAP
NTS



LOCATION MAP
NTS

INDEX OF DRAWINGS

SHEET NUMBER	DRAWING NUMBER	DESCRIPTION
1	G-1	COVER SHEET, SITE LOCATION AND VICINITY MAP, DRAWING INDEX
2	G-2	GENERAL NOTES, LEGEND AND ABBREVIATIONS
3	G-3	HAUL ROUTE PLAN
4	C-1	EXISTING SITE PLAN
5	C-2	SITE CONSTRUCTION AND DEMOLITION PLAN
6	C-3	EXCAVATION PLAN
7	C-4	GRADING AND SITE RESTORATION PLAN
8	C-5	STORM WATER DETAILS
9	C-6	SECTIONS

BENCHMARK

NAME: MV-01 DESCRIPTION: CARRIAGE BOLT WITH 2" WASHER ON TOP OF CURB ON NORTHEAST CURB RETURN AT SOUTHEAST CORNER OF GROVE AVENUE AND SHELDON STREET (PREVIOUSLY LISTED AT 5344.77 ON NGVD 29 DATUM) NGVD 29: 5344.584, NAVD 88: 5347.635.

CUT AND FILL QUANTITIES (APPROX)

ONSITE CUT:	3,200 CUBIC YARDS
ONSITE FILL:	4,200 CUBIC YARDS
NET (DISTURBED AREAS):	0.35 ACRES
PARCEL:	113-14-58C

"AS-BUILT CERTIFICATION"

I HEREBY CERTIFY THAT THE "RECORD DRAWING" MEASUREMENTS AS SHOWN HEREON WERE MADE UNDER MY SUPERVISION OR AS NOTED AND ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF

REGISTERED ENGINEER / LAND SURVEYOR — DATE

REGISTRATION NUMBER

OWNER

ARIZONA PUBLIC SERVICE
400 NORTH 5TH STREET, MAIL STATION 9303
PHOENIX, AZ 85004
CONTACT: JUDITH HEYWOOD
602-250-3850

ENGINEER

JACOBS
1501 W. FOUNTAINHEAD PARKWAY
SUITE 401
TEMPE, AZ 85282
CONTACT: DAVID ALLARD
480-295-3913

Registered Professional Engineer (Civil) CERTIFICATE NO. 26169 DAVID J. ALLARD Date Signed 05/20/20 ARIZONA, U.S.A.

NO.	DATE	REVISION	BY	APVD

DSGN D ALLARD | DR S METCALF | CHK M BRANCHE | APVD D ALLARD

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GENERAL
COVER, LOCATION MAP AND INDEX OF DRAWINGS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 — 1"

DATE	MAY 2020
PROJ	704643
DWG	G-1
SHEET	1 of 9

GENERAL SITE NOTES:

1. SOURCE OF TOPOGRAPHY SHOWN ON THE CIVIL PLANS ARE BASE MAPS OR SURVEY PROVIDED BY CVL CONSULTANTS. EXISTING CONDITIONS MAY VARY FROM THOSE SHOWN ON THESE PLANS. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND ADJUST WORK PLAN ACCORDINGLY PRIOR TO BEGINNING CONSTRUCTION.
2. EXCEPT FOR DRAWING C-1 EXISTING TOPOGRAPHY, STRUCTURES, AND SITE FEATURES ARE SHOWN SCREENED AND/OR LIGHT-LINED. NEW FINISH GRADE, STRUCTURES, AND SITE FEATURES ARE SHOWN HEAVY-LINED.
3. HORIZONTAL DATUM: NGVD 29
4. VERTICAL DATUM: NAVD 88
5. MAINTAIN, RELOCATE, OR REPLACE EXISTING SURVEY MONUMENTS, CONTROL POINTS, AND STAKES WHICH ARE DISTURBED OR DESTROYED BY CONSTRUCTION ACTIVITIES. PERFORM THE WORK TO PRODUCE THE SAME LEVEL OF ACCURACY AS THE ORIGINAL MONUMENT(S) IN A TIMELY MANNER, AND AT THE CONTRACTOR'S EXPENSE.
6. FOR LOCATION OF CONTROL POINTS SEE DRAWING C-1.
7. COORDINATES AND DIMENSIONS SHOWN FOR ROADWAY IMPROVEMENTS ARE TO FACE OF CURB OR EDGE OF PAVEMENT.
8. STAGING AREA SHALL BE FOR CONTRACTOR'S EMPLOYEE PARKING, CONTRACTOR'S TRAILERS AND ON-SITE STORAGE OF MATERIALS.
9. PROVIDE TEMPORARY FENCING ON SITE AS NECESSARY TO MAINTAIN SECURITY AT ALL TIMES.
10. ELEVATIONS GIVEN ARE TO FINISH GRADE UNLESS OTHERWISE SHOWN.
11. SLOPE UNIFORMLY BETWEEN CONTOURS AND SPOT ELEVATIONS SHOWN.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING EROSION CONTROL DEVICES DURING CONSTRUCTION. EROSION CONTROL DEVICES SHOWN ON STORM WATER MANAGEMENT PLANS ARE THE MINIMUM REQUIRED. CONTRACTOR SHALL TAKE ALL OTHER MEASURES TO POSITIVELY PRECLUDE EROSION MATERIALS FROM LEAVING THE SITE. CONTRACTOR TO SUBMIT EROSION CONTROL PLAN, FOR REVIEW PRIOR TO ANY EARTH WORK ACTIVITIES ON-SITE.

GENERAL YARD PIPING AND UTILITIES NOTES:

1. EXISTING UNDERGROUND UTILITIES OBTAINED FROM AS-BUILTS AND FROM FIELD SURVEY. CONTRACTOR SHALL FIELD VERIFY DEPTH AND LOCATION PRIOR TO EXCAVATION. PROTECT ALL EXISTING UTILITIES DURING CONSTRUCTION UNLESS IDENTIFIED FOR REMOVAL.
2. EXISTING PIPING AND EQUIPMENT ARE SHOWN SCREENED AND/OR LIGHT-LINED. NEW PIPING AND EQUIPMENT ARE SHOWN HEAVY-LINED.
3. CONTRACTOR SHALL COORDINATE WITH APS REGARDING ALL BURIED AND OVERHEAD POWER LINES.

BENCHMARK

NAME: MV-01 DESCRIPTION: CARRIAGE BOLT WITH 2" WASHER ON TOP OF CURB ON NORTHEAST CURB RETURN AT SOUTHEAST CORNER OF GROVE AVENUE AND SHELDON STREET (PREVIOUSLY LISTED AT 5344.77 ON NGVD 29 DATUM) NGVD 29: 5344.584, NAVD 88: 5347.635.

CIVIL LEGEND

- COUNTY PROPERTY BOUNDARY
- ROAD CENTERLINE
- ACCESS GATE
- FLOW LINE
- HAUL ROUTE
- CP — CONTROL POINT
- FH — FIRE HYDRANT
- LIGHT POLE
- MANHOLE
- CONCRETE SLAB
- TREE
- PALM TREE
- VALVE
- GATE
- SPOT ELEVATION
- G — GAS LINE
- OP — OVERHEAD POWER
- FO — FIBER OPTIC LINE
- W — WATER LINE
- SD — STORM SEWER LINE
- E-OVH — OVERHEAD ELECTRIC LINE
- E-BUR — BURIED ELECTRIC LINE
- SS — SEWER
- FO — FIBER OPTIC
- HG — HIGH PRESSURE GAS
- OR — STRUCTURE, BUILDING OR FACILITY
- ASPHALT CONCRETE PAVEMENT
- GRAVEL SURFACING
- CONCRETE PAVEMENT
- CURB
- CURB AND GUTTER
- SINGLE SWING GATE
- TEMPORARY SECURITY FENCE
- ARCHITECTURAL FENCE
- CHAIN LINK FENCE
- REMOVE AND DISPOSE
- REMOVE AND DISPOSE CONCRETE SLAB
- CONSTRUCTION ENTRANCE
- OUTLET PROTECTION / RIPRAP

ABBREVIATIONS

ABC	AGGREGATE BASE COURSE
ACP	ASPHALT PAVING
ADA	AMERICANS WITH DISIBILITY ACT
ADWR	ARIZONA DEPARTMENT OF WATER RESOURCES
APS	ARIZONA PUBLIC SERVICE
APVD	APPROVED
CL	CENTERLINE
CLSM	CONTROLLED LOW-STRENGTH MATERIAL
CONC	CONCRETE
COP	CITY OF PHOENIX
DET	DETAIL
DIA	DIAMETER
DWG	DRAWING
E	EAST, EASTING
EA	EACH
EXIST	EXISTING
FG	FINISH GRADE
FL	FLOW LINE
FT	FOOT, FEET
GAL	GALLON
HPG	HIGH PRESSURE GAS
HWY	HIGHWAY
IE	INVERT ELEVATION
IN	INCH, INCHES
MAG	MARICOPA ASSOCIATION OF GOVERMENTS
MIN	MINIMUM
MON	MONUMENT
N	NORTH, NORTHING
NTS	NOTE TO SCALE
OVH	OVERHEAD
R	RADIUS
RR	RAILROAD, RAILWAY
R/W	RIGHT-OF-WAY
STD	STANDARD
S.W GAS	SOUTHWEST GAS
TEMP	TRMPORARY
TOC	TOP OF CONCRETE, TOP OF CURB
TYP	TYPICAL
V	VOLT

Registered Professional Engineer (Civil) 26169 DAVID J. ALLARD Date Signed 05/20/20 ARIZONA, U.S.A.

NO.	DATE	REVISION	BY	APVD

DSGN D ALLARD | DR D ALLARD | CHK S METCALF | APVD M BRANCHE | D ALLARD

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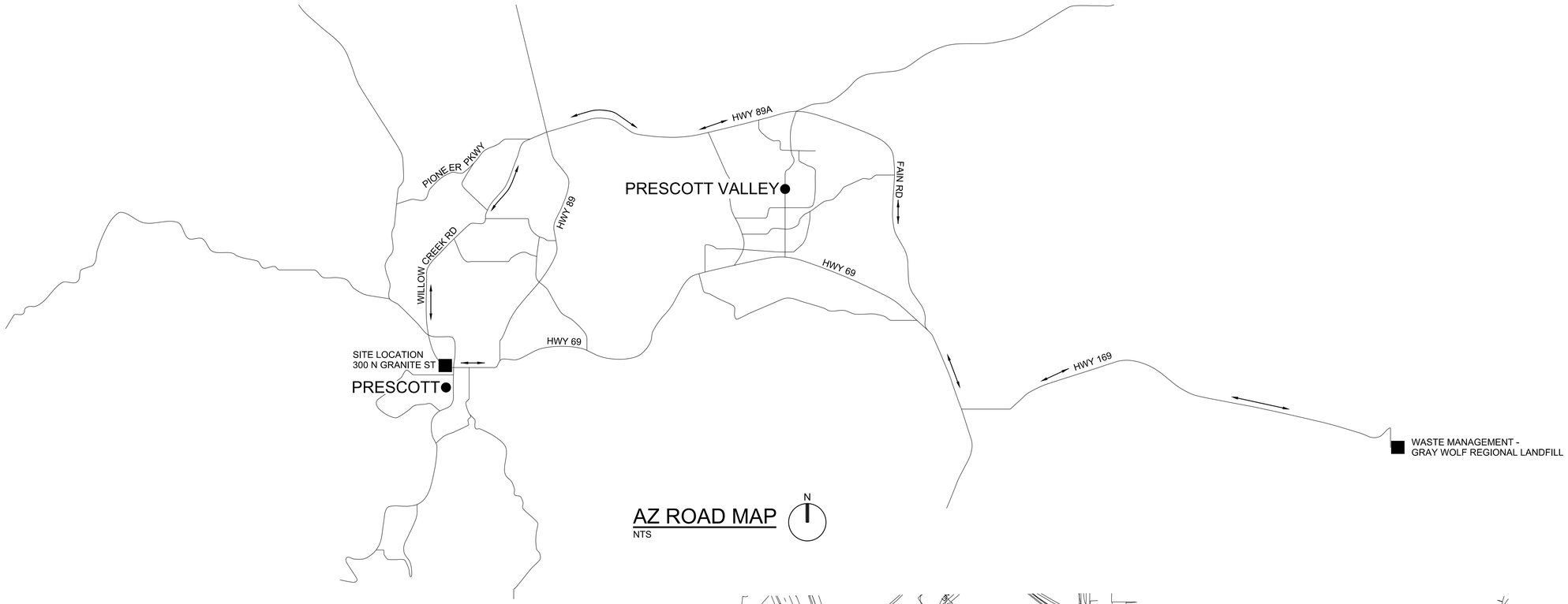
GENERAL
GENERAL NOTES, LEGEND AND ABBREVIATIONS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

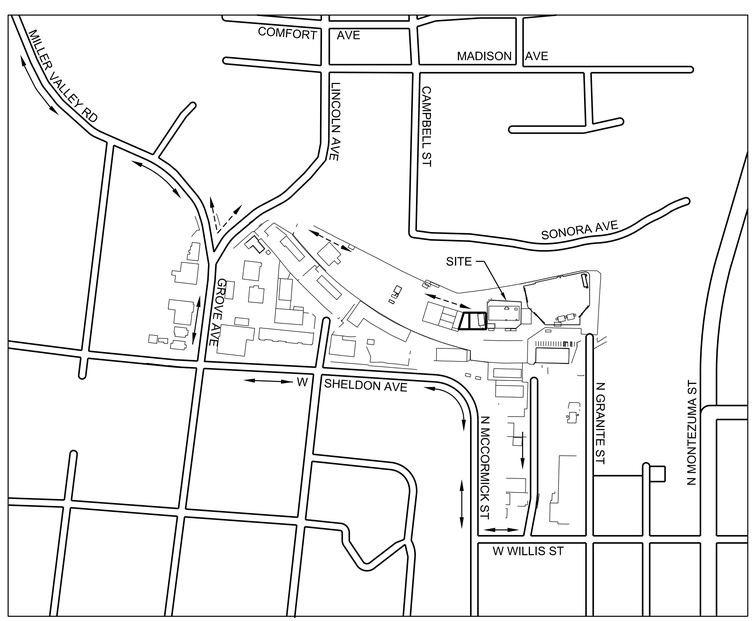
DATE	MAY 2020
PROJ	704643
DWG	G-2
SHEET	2 of 9



AZ ROAD MAP

NTS

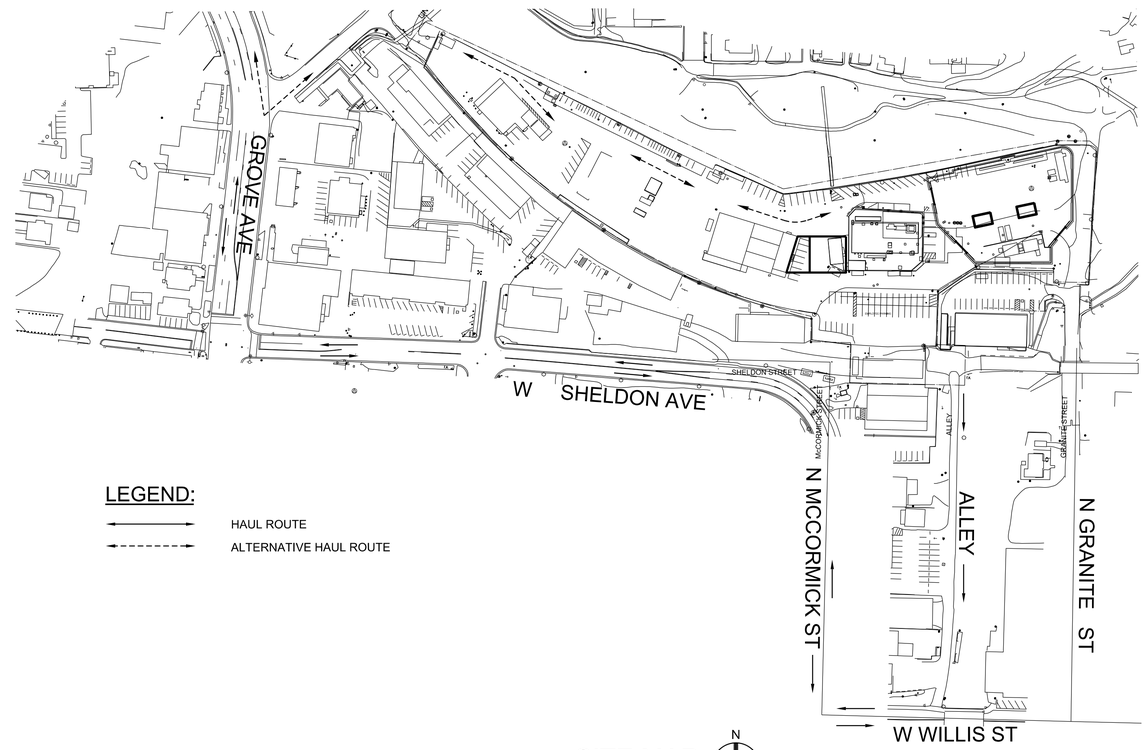
N



LOCATION MAP

NTS

N



LEGEND:

HAUL ROUTE

ALTERNATIVE HAUL ROUTE

SITE MAP

NTS

N

REGISTERED PROFESSIONAL ENGINEER (CIVIL)
26169
DAVID J. ALLARD
Date Signed 05/20/20
ARIZONA, U.S.A.

NO.	DATE	REVISION	BY	APVD

DSGN	DR	CHK	APVD
D ALLARD	D ALLARD	S METCALF	M BRANCHE

D ALLARD

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GENERAL

HAUL ROUTE PLAN

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0 1"

DATE	MAY 2020
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SHEET	3 of 9

PLAN

1"=20'-0"

GENERAL

1. POWER POLE REMOVED BY APS PRIOR TO REMEDIATION.
2. POWER POLE TO REMAIN.
3. CONTROL BUIDING REMOVED BY APS PRIOR TO REMEDIATION.
4. SUBSTATION ELECTRICAL EQUIPMENT REMOVED BY APS PRIOR TO REMEDIATION.
5. TRANSFORMER TO BE REMOVED BY APS PRIOR REMEDIATION.
6. GATE TO REMAIN CLOSED WHEN NOT IN USE TO PREVENT PUBLIC TRESPASS.

LEGEND

- SS — SANITARY SEWER
- OP — OVERHEAD POWER
- X — SECURITY FENCE
- POWER POLE
- LIGHT POLE
- LARGE POWER POLE

N

0 20 40 60
Scale In Feet

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CIVIL
EXISTING SITE PLAN

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0 1"

DATE	MAY 2020
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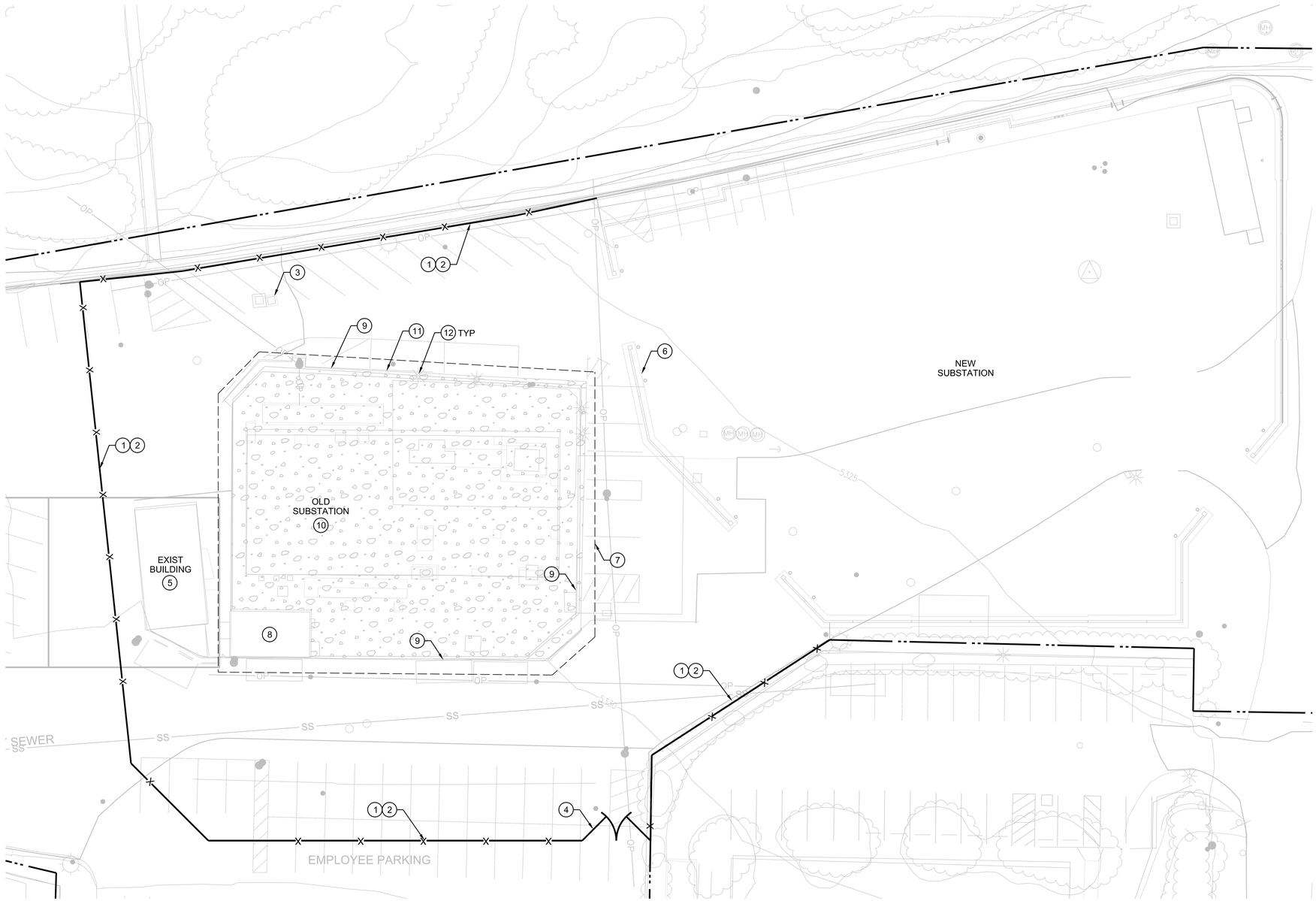
DWG	C-1
SHEET	4 of 9



PLAN

1"=20'-0"

NOTES

1. PROVIDE AND INSTALL FENCE LINE MISTING SYSTEM FOR DUST AND ODOR CONTROL ON ALL FENCING. COVER ENTIRE HEIGHT OF FENCE WITH FABRIC TO PREVENT BLOWING DUST DURING CONSTRUCTION.
2. PROVIDE SAND BAG SILT PROTECTION, SEE 6/C-5.
3. PROVIDE INLET BARRIER, SEE 7/C-5 AND 8/C-5.
4. STABILIZED CONSTRUCTION ENTRANCE OR CORRUGATED STEEL PLATES, SEE 1/C-5.
5. EXISTING HISTORIC BUILDING PROTECT DURING CONSTRUCTION.
6. NEW SUBSTATION MASONRY WALL AND GATES, PROTECT DURING CONSTRUCTION.
7. SAW CUT, REMOVE AND DISPOSE OF ASPHALT PAVING AS REQUIRED TO ACCOMPLISH REQUIRED EXCAVATION.
8. REMOVE AND DISPOSE OF CONCRETE BUILDING FOUNDATION.
9. REMOVE AND DISPOSE OF CONCRETE AND BLOCK RETAINING WALLS.
10. REMOVE AND DISPOSE OF CONCRETE SUBSTATION FOUNDATIONS AND CURBS (ALL FOUNDATIONS NOT SHOWN).
11. REMOVE AND DISPOSE OF EXISTING SUBSTATION CHAIN LINK FENCING.
12. REMOVE AND DISPOSE OF ALL SUBSTATION LIGHT POLES (ALL NOT SHOWN).

EROSION CONTROL NOTES:

1. CONTRACTOR SHALL COMPLY WITH ALL PROVISIONS AND BEST MANAGEMENT PRACTICES INCLUDED IN THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) FOR THE SITE.
2. BEST MANAGEMENT PRACTICE (BMP) REFERENCE NUMBERS REFER TO THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY DRAINAGE DESIGN MANUAL - EROSION CONTROL, DATED DECEMBER, 2018
3. ALL EROSION CONTROL SHALL BE INSTALLED PRIOR TO THE BEGINNING OF WORK AND BE MAINTAINED THROUGHOUT CONSTRUCTION IN ACCORDANCE WITH THE SWPPP.

PRE-CONSTRUCTION CONTROLS INCLUDE:

A. SAND BAG BARRIER (SPC-2), GRAVEL FILTER BERM (SPC-3) OR SILT FENCES (SPC-5) SHALL BE INSTALLED AT SITE PERIMETER.

B. STABILIZED CONSTRUCTION ENTRANCE (EC-5) OR CORRUGATED STEEL PLATES SHALL BE INSTALLED AND USED BY ALL VEHICLES LEAVING PAVEMENT, SEE 1/C-5.

C. STORM DRAIN INLET PROTECTION (SPC-7) SHALL BE INSTALLED AT ALL DROP INLETS, CATCH BASINS AND MANHOLES.

4. A STANDBY CREW FOR EMERGENCY WORK SHALL BE ON CALL AT ALL TIMES. NECESSARY MATERIALS SHALL BE AVAILABLE ON SITE AND STOCKPILED AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY DEVICES OR TO REPAIR ANY DAMAGED EROSION CONTROL MEASURES, ESPECIALLY WHEN RAIN IS IMMINENT.
5. DEVICES SHALL NOT BE MOVED OR MODIFIED WITHOUT THE APPROVAL OF THE ENGINEER.
6. AFTER A RAINSTORM, ALL SILT AND DEBRIS SHALL BE REMOVED FROM CHECK BERMS. ANY GRADED SLOPE SURFACE PROTECTION MEASURE DAMAGED DURING A RAINSTORM SHALL BE IMMEDIATELY REPAIRED.
7. AVOID PAVING DURING WET WEATHER.
8. STORE MATERIALS AWAY FROM DRAINAGE COURSES TO PREVENT CONTACT WITH STORM WATER.
9. PLACE DRIP PANS OR ABSORBENT MATERIALS UNDER CONSTRUCTION EQUIPMENT WHEN NOT IN USE.
10. CLEAN UP SPILLS WITH ABSORBENT MATERIALS AND DISPOSE OF PROPERLY.
11. OLD CONCRETE MUST BE DISPOSED OF PROPERLY. COLLECT AND REMOVE ALL BROKEN CONCRETE FROM THE SITE.
12. KEEP WORK SITE CLEAN AND ORDERLY DAILY.
13. PROPERLY STORE PAINTS AND SOLVENTS.
14. ALLOW MATERIAL DELIVERY AND STORAGE ONLY IN DESIGNATED AREAS AND AVOID TRANSPORT NEAR DRAINAGE PATHS AND WATERWAYS.
15. MINIMIZE THE USE OF HAZARDOUS MATERIALS ON SITE.
16. COLLECT SITE TRASH AS NEEDED, ESPECIALLY DURING RAINY OR WINDY CONDITIONS.
17. ARRANGE FOR REGULAR WASTE COLLECTION BEFORE CONTAINERS OVERFLOW.
18. TEMPORARY SANITARY FACILITIES SHALL BE MAINTAINED IN GOOD WORKING ORDER BY A LICENSED SERVICE.
19. CONTRACTOR SHALL BE RESPONSIBLE FOR UPDATING THIS STORM WATER MANAGEMENT PLAN THROUGHOUT CONSTRUCTION AND INDICATE ANY AND ALL REVISIONS/ UPDATES ON THIS PLAN.
20. CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN SUCH A MANNER THAT STORM WATER WILL BE CONTAINED WITHIN THE PROJECT OR CHANNELED INTO THE DRAIN CHANNEL PROVIDED THAT IT IS FREE FROM POLLUTANTS AND DEBRIS.
21. CONTRACTOR SHALL IMMEDIATELY RESTORE ANY DAMAGED EROSION CONTROL MEASURE WITHIN THE PROJECT BOUNDARY.
22. THE CONTRACTOR SHALL BE RESPONSIBLE, AND TAKE NECESSARY PRECAUTIONS, TO PREVENT PUBLIC TRESPASS ONTO AREAS WHERE IMPOUNDED WATER CREATES A HAZARDOUS CONDITION.

N

0 20 40 60
Scale In Feet

Registered Professional Engineer (Civil) CERTIFICATE NO. 26169 DAVID J. ALLARD Date Signed 05/20/20 ARIZONA, U.S.A.

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CIVIL
SITE CONSTRUCTION AND DEMOLITION PLAN

VERIFY SCALE
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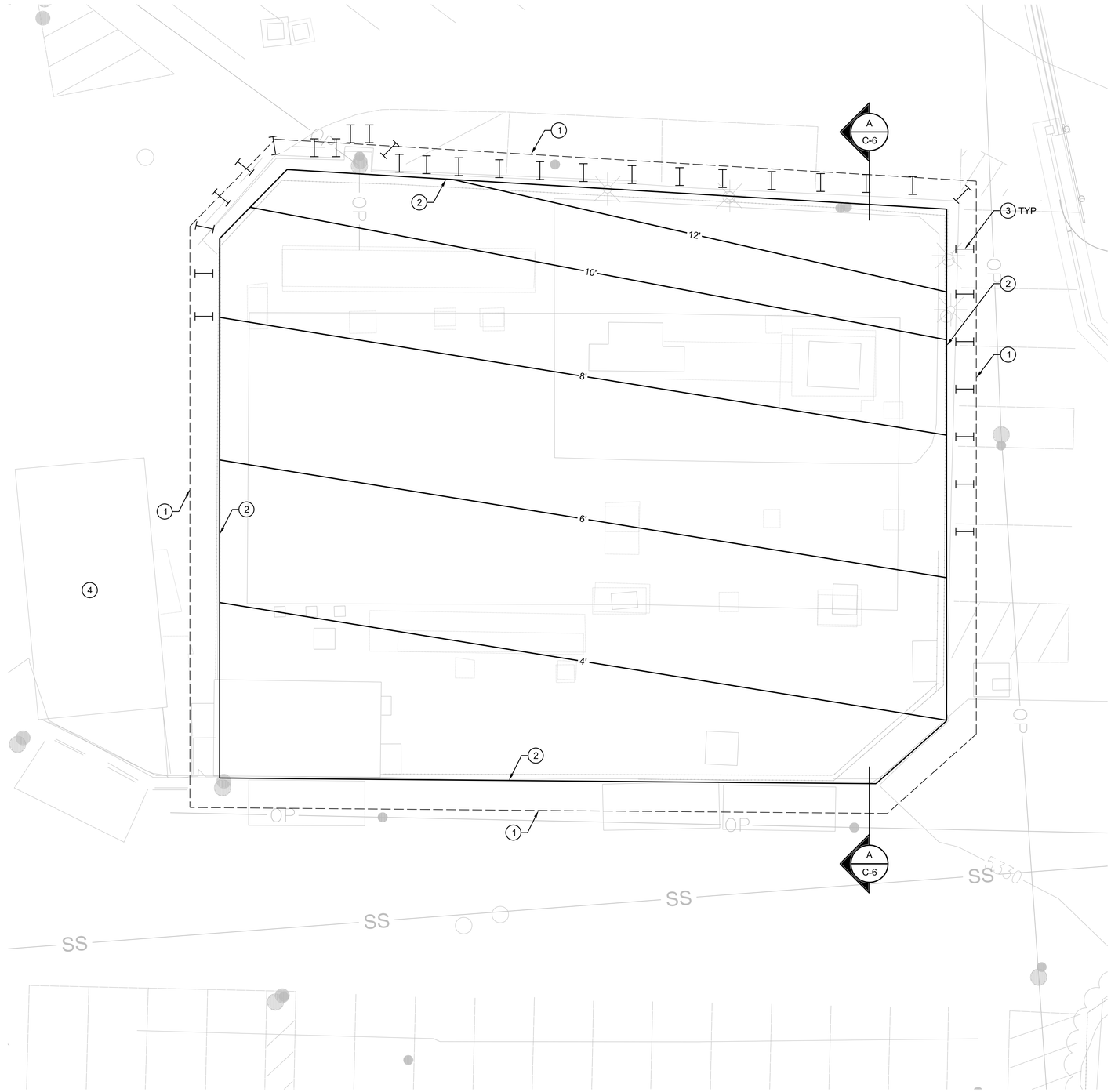
0 1"

DATE	MAY 2020
PROJ	704643
DWG	C-2
SHEET	5 of 9



PLAN
1"=10'-0"

GENERAL NOTES:

1. ALL STRUCTURES AND UTILITIES ARE TO BE SUPPORTED AND PROTECTED IN PLACE DURING REMEDIATION ACTIVITIES UNLESS OTHERWISE INDICATED.
2. MAINTAIN EXISTING SECURITY FENCING WITH FABRIC SCREENING FOR THE DURATION OF THE PROJECT. WHERE FENCE INTERFERES WITH WORK PROVIDE TEMPORARY FENCING WITH FABRIC SCREENING TO MAINTAIN SITE SECURITY.
3. PROVIDE, INSTALL, AND MAINTAIN FENCE LINE MISTING SYSTEMS FOR DUST AND ODOR CONTROL. SYSTEM MUST BE IN OPERATION AT ALL TIMES DURING DEMOLITION, EXCAVATING AND BACKFILLING ACTIVITIES.
4. INSTALL AND MAINTAIN ALL EROSION CONTROL AND STORMWATER MANAGEMENT FACILITIES PRIOR TO BEGINNING EXCAVATION WORK. MAINTAIN DURING DURATION OF WORK. SEE DWG C-2.
5. REMOVE CONCRETE SLABS AND ASPHALT PAVEMENT IN SECTIONS JUST PRIOR TO EXCAVATION IN THE AREA LEAVING THE REMAINING IN PLACE TO CONTROL ODOR AND EROSION.
6. UTILITY LOCATIONS BASED ON HISTORICAL INFORMATION, UTILITY OWNER LOCATION, AND PRIVATE LOCATOR DESIGNATION. CONTRACTOR SHALL VERIFY LOCATION OF UTILITIES PRIOR TO EXCAVATION. OTHER ABANDONED OR ACTIVE UTILITIES MAY BE LOCATED ON SITE.
7. APPROXIMATE EXCAVATION LIMITS ARE SHOWN FOR THE PROPOSED BOTTOM OF EXCAVATION AT THE INDICATED ESTIMATED DEPTH. CONTRACTOR SHALL SLOPE OR SHORE AS REQUIRED FOR SAFETY, STABILITY, AND PROTECTION OF UTILITIES OR STRUCTURES.
8. EXCAVATIONS SHALL USE "SOFT-DIG"UNTIL ALL UTILITIES ARE LOCATED. COORDINATE EXCAVATIONS ADJACENT TO UTILITIES WITH UTILITY OWNERS.

EXCAVATION NOTES:

1. SAW CUT AND REMOVE ASPHALT AS REQUIRED FOR EXCAVATION.
2. REMOVE AND DISPOSE OF RETAINING WALL.
3. EXISTING SOLDIER PILE AND LOGGING EXCAVATION SUPPORT PREVIOUSLY CUT OFF 3 TO 5 FEET BELOW GRADE.
4. PROTECT HISTORIC BUILDING DURING CONSTRUCTION ACTIVITIES.

LEGEND

——12'—— APPROXIMATE DEPTH OF EXCAVATION BELOW GRADE SURFACE.

N

0 10 20 30
Scale In Feet

Registered Professional Engineer (Civil) CERTIFICATE NO. 26169 DAVID J. ALLARD Date Signed 05/20/20 ARIZONA, U.S.A.

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CIVIL
EXCAVATION PLAN

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0 1"

DATE	MAY 2020
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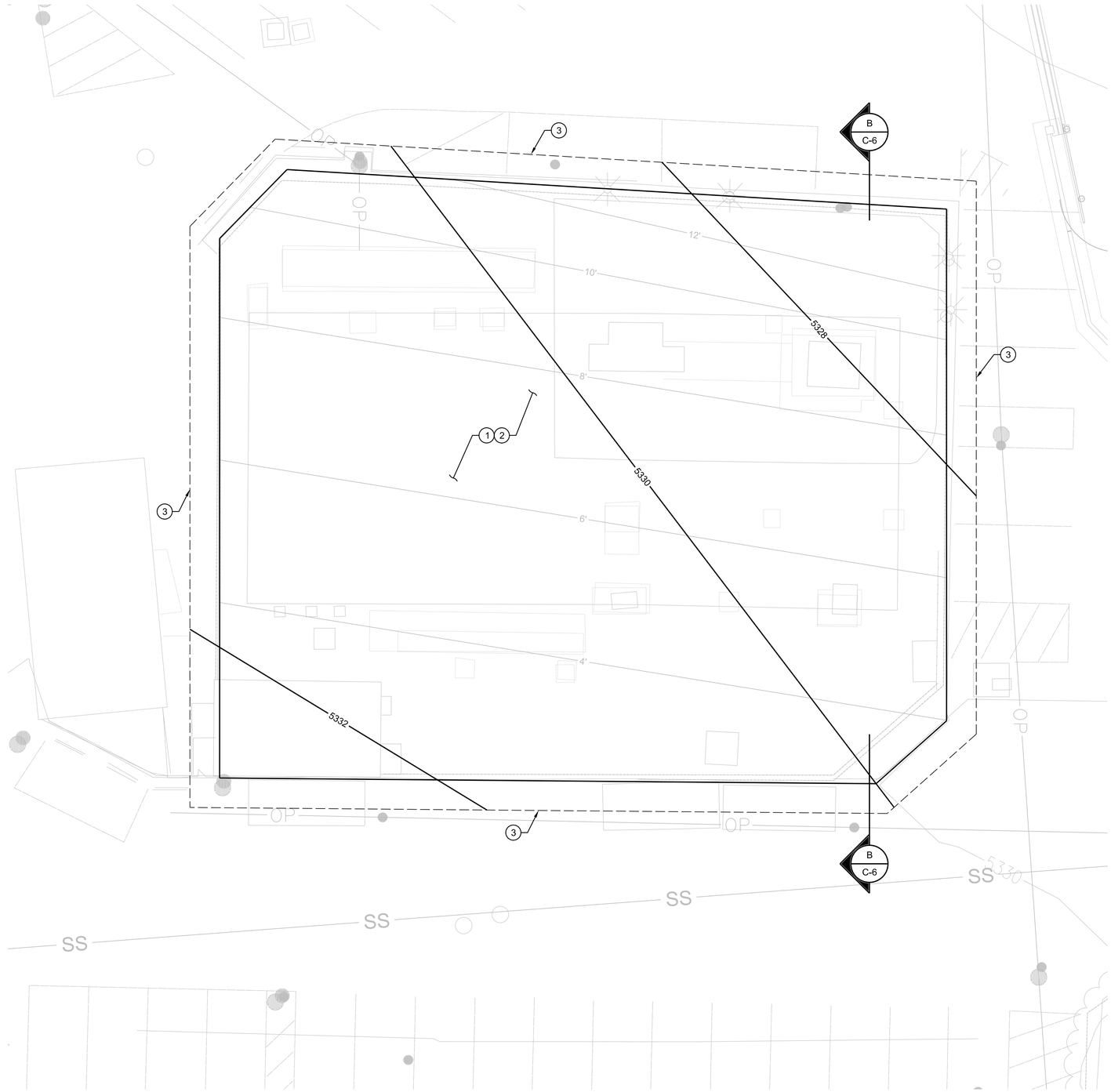
DWG	C-3
SHEET	6 of 9



PLAN

1"=10'-0"

GENERAL NOTES:

1. REMOVE ALL TEMPORARY FENCING, SCREENING, STORMWATER PROTECTION, AND OTHER TEMPORARY FACILITIES AT THE COMPLETION OF WORK.
2. BACKFILL ALL EXCAVATIONS TO GRADES SHOWN. ELEVATION GIVEN ARE FINISHED GRADE UNLESS OTHERWISE SHOWN.
3. SLOPE UNIFORMLY BETWEEN CONTOURS AND SPOT ELEVATIONS SHOWN.

BACKFILL NOTES:

1. BACKFILL SITE WITH COMPACTED EMBANKMENT BACKFILL.
2. COMPLETE SITE RESTORATION WITH 12-INCH AGGREGATE BASE AND 4-INCHES OF ASPHALT PAVEMENT.
3. MATCH EXISTING GRADE EDGES. SLOPE UNIFORMLY BETWEEN EXISTING GRADES.

LEGEND

——5330—— APPROXIMATE FINISH GRADE

N

0 10 20 30
Scale In Feet

Registered Professional Engineer (Civil)
26169
DAVID J. ALLARD
Date Signed 05/20/20
ARIZONA, U.S.A.

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CIVIL
GRADING AND SITE RESTORATION PLAN

VERIFY SCALE
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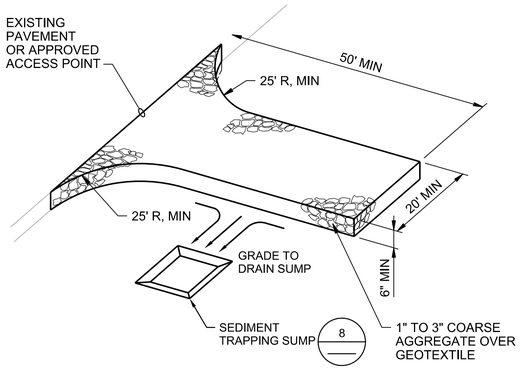
DWG	C-4
SHEET	7 of 9



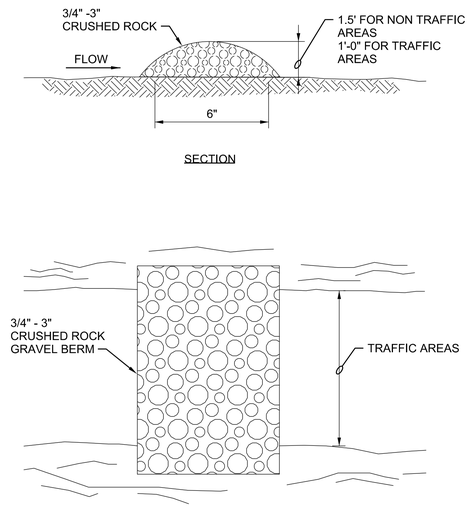
NOTES:

1. ADDITIONAL GRAVEL MAY HAVE TO BE ADDED PERIODICALLY TO MAINTAIN PROPER FUNCTION OF THE PAD.
2. REMOVE GRAVEL ENTRANCE AND REPLACE WITH NEW BASE COURSE PRIOR TO COMPLETION OF ACCESS ROAD.
3. CORRUGATED STEEL PLATES MAY BE USED IN PLACE OF AGGREGATE ON PAVED SURFACES.

1 EC-5 - STABILIZED CONSTRUCTION ENTRANCE

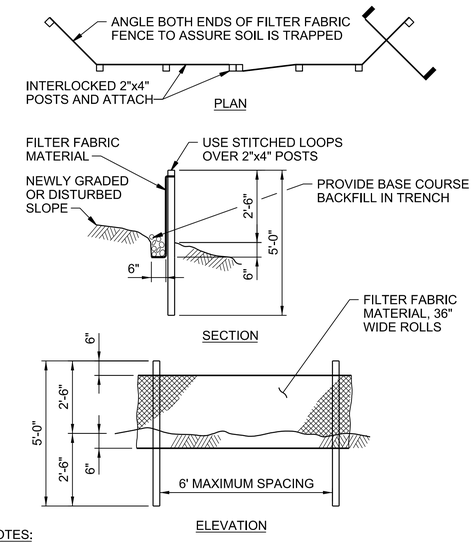
C-1

NTS



2 SPC-3 - GRAVEL FILTER BERM

NTS



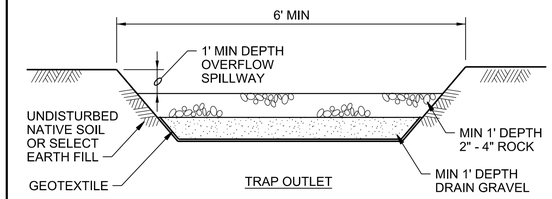
NOTES:

1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. 2"x4" DOUGLAS FIR OR STEEL FENCE POSTS.
3. STITCHED LOOPS TO BE INSTALLED DOWNHILL SIDE OF SLOPE.
4. COMPACT ALL AREAS OF FILTER FABRIC TRENCH.

3 SPC-5 - SILT FENCE

C-2, C-3

NTS



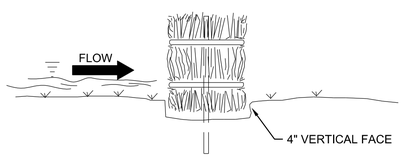
MAINTENANCE STANDARDS:

1. SEDIMENT SHALL BE REMOVED FROM THE TRAP WHEN IT REACHES 1 FOOT IN DEPTH.
2. ANY DAMAGE TO THE TRAP EMBANKMENTS OR SLOPES SHALL BE REPAIRED.

4 SPC-9 - SEDIMENT TRAP

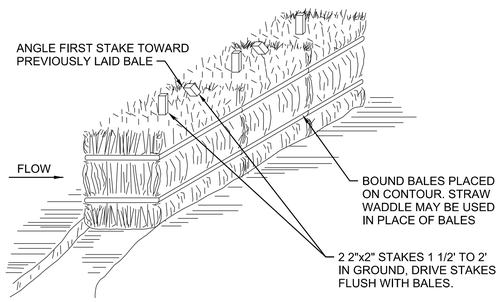
C-2

NTS



* PROMOTES ON SITE SEDIMENTATION BY CREATING A TEMPORARY POND.

BEDDING DETAIL

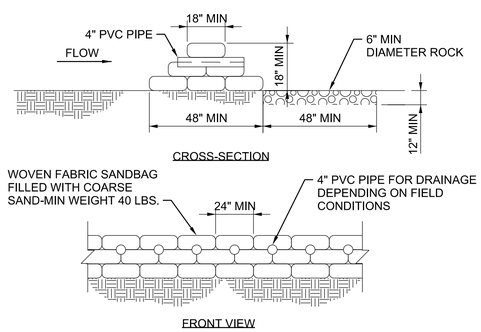


SUBSTITUTION OF STEEL BARS FOR WOODEN STAKES IS NOT RECOMMENDED DUE TO POTENTIAL FOR DAMAGING CONSTRUCTION EQUIPMENT

ANCHORING DETAIL

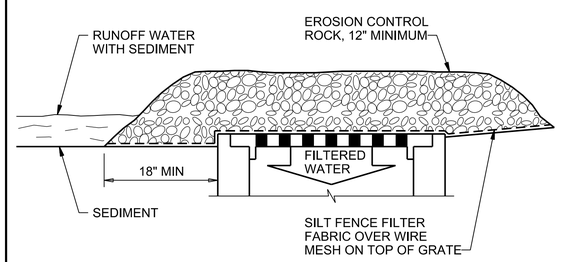
5 SPC-1 - ORGANIC FILTER BARRIER

NTS (MAY BE USED IN PLACE OF SILT FENCE) 5



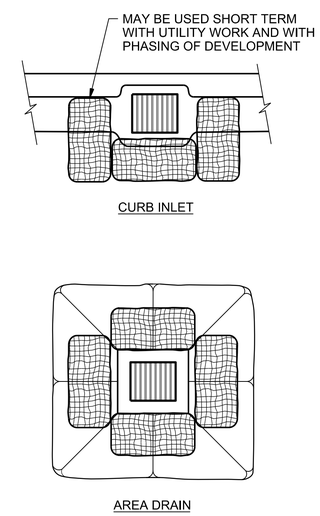
6 SPC-2 - SAND BAG BARRIER

NTS



7 SPC-7 - GRAVEL AND WIRE MESH INLET BARRIER

NTS (MAY BE USED IN PLACE OF 8)



8 SPC-7 - BIOFILTER BAG INLET BARRIER

NTS

NO.	DATE	REVISION	BY	APVD

DSGN D ALLARD | DR D ALLARD | CHK S METCALF | APVD M BRANCHE | BY D ALLARD | APVD

Registered Professional Engineer (Civil) CERTIFICATE NO. 26169 DAVID J. ALLARD Date Signed 05/20/20 ARIZONA, U.S.A.

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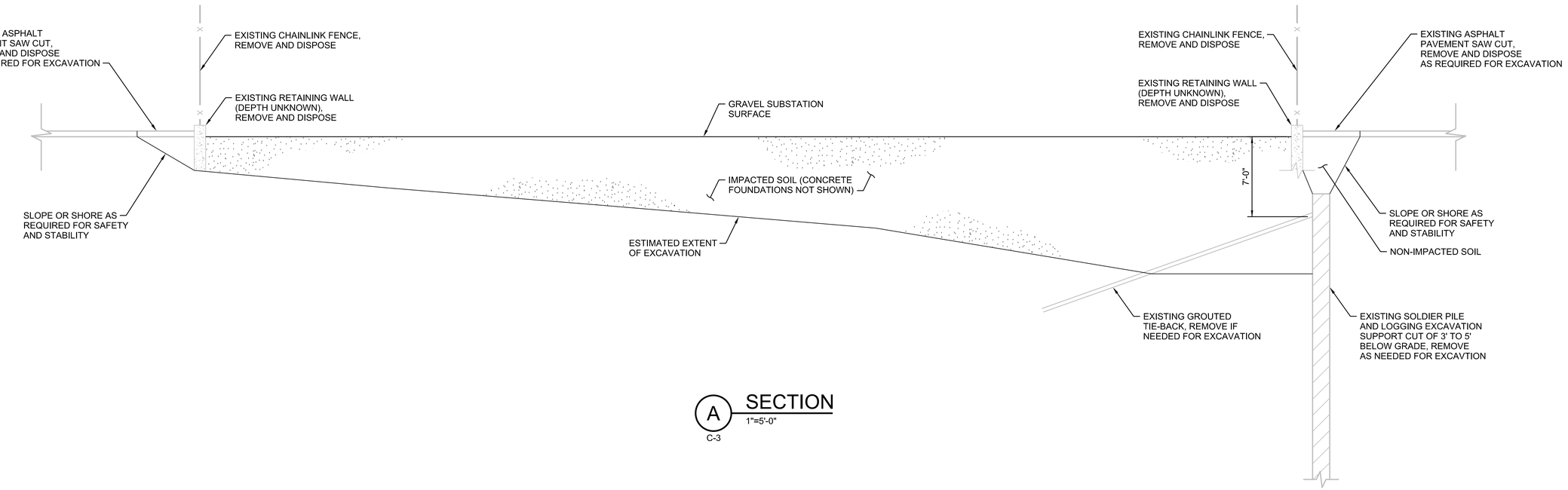
APS PRESCOTT
SUBSTATION REMEDIATION
300 N. GRANITE ST
PRESCOTT, AZ 86301

JACOBS

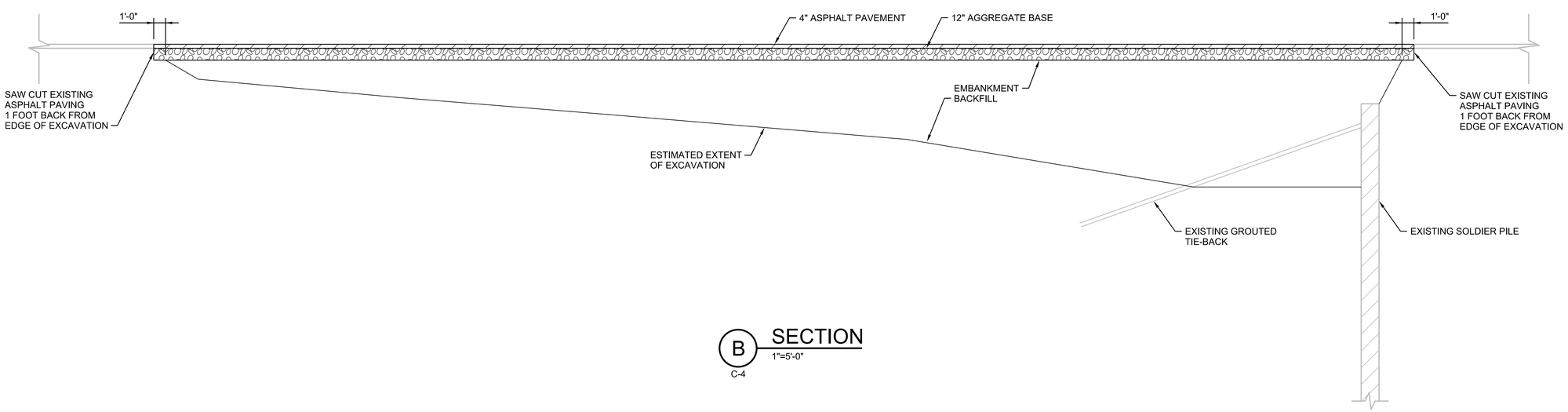
CIVIL
STORM WATER DETAILS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2020
PROJ	704643
DWG	C-5
SHEET	8 of 9



A SECTION
1"=5'-0"
C-3



B SECTION
1"=5'-0"
C-4

NO.	DATE	REVISION	BY	APVD

DSGN D ALLARD | DR D ALLARD | CHK S METCALF | APVD M BRANCHE | APVD D ALLARD

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Registered Professional Engineer (Civil) CERTIFICATE NO. 26169 DAVID J. ALLARD Date Signed 05/20/20 ARIZONA, U.S.A.

APS PRESCOTT
SUBSTATION REMEDIATION
300 N. GRANITE ST
PRESCOTT, AZ 86301

JACOBS

CIVIL
SECTIONS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2020
PROJ	704643
DWG	C-6
SHEET	9 of 9

Construction Stormwater Pollution Prevention Plan

APS Former Prescott Manufactured Gas Plant, Prescott, Arizona

Prepared for

Arizona Public Service

June 4, 2020

JACOBS

1501 W. Fountainhead Parkway
Suite 401
Tempe, Arizona 85282

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C Maintenance and Repair Activity Log
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E Copy of 2020 CGP
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G Contractor Certification Log

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1 Stormwater Team
2 Potential Stormwater Pollutants
3 Potential Stormwater Contamination Sources

Acronyms and Abbreviations

ADEQ	Arizona Department of Environmental Quality
APS	Arizona Public Service
AZPDES	Arizona Pollutant Discharge Elimination System
BMP	best management practice
BTEX	benzene, toluene, ethylbenzene, xylenes
CGP	construction general permit
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
ID	identification
MGP	Manufactured Gas Plant
MTBE	methyl tert-butyl ether
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration
PAH	polynuclear aromatic hydrocarbon
SDS	safety data sheet
SWPPP	Stormwater Pollution Prevention Plan
TAME	tertiary amyl methyl ether

SECTION 1

1 Introduction

1.1 Background

The National Pollutant Discharge Elimination System (NPDES) is a federal regulatory program to control discharges of pollutants to surface waters of the United States. On December 5, 2002, the U.S. Environmental Protection Agency (EPA) approved the State of Arizona's application for primacy of the NPDES program. As a result of this, the Arizona Department of Environmental Quality (ADEQ) became authorized and responsible for administering the NPDES program in all areas within the State except for Indian Lands and implementing the Arizona Pollutant Discharge Elimination System (AZPDES) program. AZPDES is the state program to carry out the NPDES program. In accordance with the AZPDES program, operators of construction sites disturbing 1 or more acres of land or smaller sites that are part of a common plan of development or sale are required to obtain AZPDES permit coverage for stormwater discharges. The AZPDES program allows construction sites to apply for coverage under a construction general permit (CGP). Arizona issued its first 5-year CGP in February 2003, which was revised in 2008 and again in 2013. ADEQ has revised the 2013 CGP, with the new 2020 permit becoming effective on July 1, 2020. If operating under the 2013 CGP, a new Notice of Intent (NOI) must be submitted within 60 calendar days of the 2020 permit issuance.

To apply for coverage under the 2020 CGP, the operator is required to develop a site-specific Stormwater Pollution Prevention Plan (SWPPP) describing how the CGP conditions will be met and to submit a NOI to ADEQ. The APS Former Prescott Manufactured Gas Plant located in Prescott Arizona is less than 1 acre and does not require permit coverage under 2020 CGP, however, this SWPPP has been prepared to conform to the requirements of the 2020 CGP (Permit AZG2020-001).

Development, implementation, and maintenance of this SWPPP will provide the Arizona Public Service (APS) contractor with the framework for reducing soil erosion and minimizing pollutants in stormwater during remedial activates at the Prescott Former Manufactured Gas Plant (MGP) Site (Site) in Prescott, Arizona.

The purpose of this SWPPP is to:

- Identify potential sources of pollution that may reasonably be expected to affect the quality of stormwater discharges from the Site.
- Identify, describe, and ensure implementation of control measures that will be used to reduce pollutants in stormwater discharges from the construction site.
- Present the procedures and activities that will be used to conform with the 2020 CGP.
- Identify the responsible team for onsite SWPPP implementation.

1.2 SWPPP Content

This SWPPP includes the information required by Section 6.0 of the CGP, which is presented as follows:

- Section 2, Responsible Parties – Presents the Stormwater Team and identifies all operators at the Site, including a description of their responsibilities and contact information (Section 6.3.1 6.3.2 of the CGP).
- Section 3, Site Evaluation, Assessment, and Planning –Includes the following information:
  - Project/site information describing the Site (Section 6.3.4 of the CGP).
  - Identification of the body(ies) of water that may receive runoff from the Site, including the ultimate body of water that receives the stormwater (Section 6.3.6 of the CGP).
  - Site map showing site topography, areas of soil disturbance, stormwater controls, and other required information (Section 6.3.5 of the CGP).
- Section 4, Erosion and Sediment Controls – Presents the stormwater management controls used to reduce erosion, sediment, and pollutants in stormwater discharge and minimize or eliminate non-stormwater discharges (Section 6.3.7 and 6.3.9 of the CGP).
- Section 5, Potential Pollutant Source and Pollution Prevention Procedures – Presents the potential pollutant sources and pollution prevention procedures, including best management practices (BMPs), to prevent and respond to spills and leaks (Sections 6.3.8 and 6.3.10 of the CGP).
- Section 6, Inspection, Maintenance, and Corrective Action Procedures – Describes the procedures operators will follow for maintaining control measures, conducting site inspections, and, if necessary, taking corrective actions (Section 6.8 of the CGP).
- Section 7, SWPPP Record Keeping – Describes documentation requirements, including inspection records, permit authorization, and other permit-required information, as well as posting and availability requirements for the SWPPP (Section 6.4, 6.5, 6.6, and 6.7 of the CGP).
- Section 8, SWPPP Certifications – Provides documentation that the SWPPP has been certified by the individual with responsibility to implement the actions in the SWPPP.

SECTION 2

2 Responsible Parties

2.1 Operators

An operator at a construction site is any person or entity who meets either of the following criteria:

- Has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or
- Has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the permit).

As the owner of the Site with operational control over construction plans and specifications, APS is considered an "operator" at the Site, along with the APS contractor. Operator information is presented below:

Owner/Operator

Company Name:	Arizona Public Service Company
Contact Name:	Judy Heywood, Project Manager
Address:	Mail Station 9303 Post Office Box 53999 Phoenix, Arizona 85072-3999
Phone (office)	602/250-3580
Phone (cell)	602/818-0259
Email:	Judith.heywood@aps.com

Responsibilities: APS or their authorized representative will direct the Contractor regarding the extent of excavation at the Site.

Contractor/Operator

Company Name:	Environmental Response Inc.
Contact Name:	Greg Laney
Address:	2202 W. Medtronic Way, Suite 108 Tempe, AZ 85281
Phone (office):	(480) 967-2802
Phone (cell):	(602) 757-1994

Email: GLaney@spray-eri.com

Responsibilities: Implementation of this SWPPP, including stormwater controls and inspections.

Emergency 24-Hour Contact

Company:	Environmental Response Inc.
Contact Name:	Greg Laney
Phone (cell):	(602) 757-1994

2.2 Stormwater Team

The Stormwater Team consists of the individuals who are responsible for overseeing the development and modification of the SWPPP and installing and maintaining stormwater controls, conducting site inspections, and taking corrective actions where required. The Stormwater Team for the Prescott remediation project is presented in Table 1.

TABLE 1
Stormwater Team
APS Former Prescott MGP Site

Position	Name/ Company	Role or Responsibility
Contractor Project Manager	Greg Laney/ERI	Operational control over construction plans and specifications, as well as day-to-day activities. Review and approval of initial SWPPP for the project.
Owner	Judy Heywood/APS	Oversight of construction/excavation plans.
Engineer	Jacobs Engineering	On-site project oversight construction/inspection of excavation plans.
Stormwater Coordinator		Onsite SWPPP implementation, including: • Installing, implementing, and maintaining the BMPs in the SWPPP. • Overseeing maintenance practices identified in the SWPPP. • Implementing and overseeing employee training. • Conducting or providing for inspection and monitoring activities. • Identifying new potential pollutant sources and ensuring the SWPPP is updated accordingly. • Updates to the SWPPP. • Completing and signing inspection and corrective action reports.
Spill Response Coordinator		Responsible for implementing spill and leak response procedures identified in the SWPPP in the event of a spill or leak.
Alternate Stormwater Coordinator (if applicable)		If the SWPPP coordinator is not available to implement the SWPPP, he or she will designate an appropriate individual to assume the responsibilities listed above.

Note: All members of the Stormwater Team have received training on applicable SWPPP procedures and are qualified to perform the duties identified in this table. Section 7 describes training documentation and record keeping.

Employees involved in implementing the SWPPP, including performing inspections, will be trained on the contents of the SWPPP. The training program will include reviewing the SWPPP and instruction in erosion controls, spill prevention and response, good housekeeping, proper material handling, disposal and control of waste, equipment fueling, and proper storage, washing, and inspection procedures. All employees will be trained prior to their first day on the site. Training will be documented as presented in Section 7.

SECTION 3

3 Site Evaluation, Assessment, and Planning

3.1 Project/Site Information

The project name is APS Former Prescott Manufactured Gas Plant Site and the Site is owned by APS. Manufactured gas was produced at the Prescott Manufactured Gas Plant (MGP) from approximately 1909 until 1949. APS performed remedial action activities with oversight from the Arizona Department of Environmental Quality (ADEQ) Voluntary Remediation Program (VRP). The ADEQ reference number for the APS Site is 502701-00. Construction/remediation operations will be conducted at the Site to remove approximately ¼ acre of remaining soil impacted by former MGP operations.

3.1.1 Site Location

The Site is in Yavapai County, at 300 North Granite Street, Prescott Arizona. The footprint of the overall construction area occupies approximately 0.95 acres. The Site property is owned by APS. Details of the Site location is presented below:

Project Name and Address

Project Name:	APS Former Prescott Manufactured Gas Plant Site
Site Address:	300 North Granite Street Prescott, Arizona, 86301
County:	Yavapai County

Latitude: 34.546288 W
Longitude: -112.472628 N

Figure 3-1 in Appendix A shows the location of the Site and the nearest receiving water.

3.1.2 Existing Site Conditions

The Site construction area is on property owned by APS is approximately 0.95 acres in size at an elevation of approximately 5,337 feet above mean sea level. The excavation area is approximately ¼ acre and contains concrete, gravel and soil, and is surrounded by an impervious asphalt surface. Approximately ¼ acre of the Site will be excavated to depth's ranging from 3 feet below the current ground surface to 13 feet below ground surface. The construction area is surrounded with a chain link fence and block wall. Impacted MGP soil will be removed using direct loading into haul trucks to eliminate the need to stockpile impacted soil. After excavation and backfill is complete the excavation surface will be completed with asphalt to match the existing grade and drainage. The Site location is shown on Figure 3-1. Previous excavation areas and Miller Creek receiving water are shown on the Site Plan Figure 3-2. The excavation area and Site extent is shown on Figure 3-3.

The Site property slopes slightly downward to the north towards a catch basin on the north side of the Site, shown on Figure 3-3. The catch basin outfalls to Miller Creek located north of the Site. Miller Creek is located approximately 1/8 mile upstream of a confluence with Granite Creek. Both receiving waters are within ¼ mile of the Site.

Soil that will be uncovered during excavation activities consists mostly of concrete, gravel, sand, and silt. Because the excavation area is surrounded by asphalt and the excavation will be below the

asphalt grade erosion potential of the exposed soil is low. During a routine precipitation event water will likely infiltrate onsite at the excavation area, and during a flood event there is potential for the excavation to accumulate stormwater which may require removal.

The climate of the Prescott area is temperate dry-hot summer with annual average rainfall of 17.95 inches. Highest average rainfall occurs in July and August. (US Climate Data, 2019; https://usclimatedata.com/).

3.2 Discharge Information

3.2.1 Nature of Construction Activities

General Description of Project

Construction-related activities involving land disturbance will be conducted at the Site during remedial activities. Remedial activities include the following:

- Excavation of soil that has been impacted by previous industrial operations including MGP-related waste management to depth's ranging from 3 to 13 feet below ground surface at the excavation area.
- Backfilling of excavated areas with clean fill.

Size of Construction Project

The Site encompasses approximately 0.95 acres with an excavated area of approximately 1/4-acre. Approximately ¼ acre will be disturbed during excavation activities. The remainder of the Site area is covered with asphalt and will not be disturbed. The construction support activity areas will be conducted on paved surfaces at the Site. A site map is presented on Figure 3-3 showing the Site features and drainage based on ground elevation. The Site is enclosed with a 6-foot semi-permanent chain-link fence to the north, west, and south, and a block wall to the east during construction activities.

Construction Support Activities

Construction support activities will be located on the Site and include staging areas for heavy equipment, construction materials, and waste. All staging areas are inside the Site fence and stormwater controls, shown on Figure 3-3.

3.2.2 Sequence and Estimated Dates of Construction Activities.

Construction activities will commence when all permits for remedial activities have been received. Remedial activities, including earth-disturbing activities, are estimated to last between 1 to 2 months. The following is a general sequence of construction events:

1. Mobilize to the Site and prepare the Site for work activities.
2. Install stormwater controls, including erosion and perimeter controls, catch basin inlet barrier, and evaluate operational functionality.
3. Excavate impacted materials and remove it from the Site. If needed, excavated soil may be temporarily stored at the Site in covered roll-off bins.
4. Other BMPs, such as material storage, onsite equipment fueling/maintenance/cleaning, will be implemented as needed prior to the initiation of such activities.

5. If excavation activities temporarily cease, installation of temporary stabilization measures will occur within 14 days.
6. Backfill excavation areas with imported backfill as soon as possible.
7. Cover the disturbed site area with aggregate base and the final asphalt surfacing.
8. Remove erosion control measures and demobilize construction equipment and vehicles from the Site.

Construction/remediation activities are anticipated to be performed in accordance with the following anticipated schedule:

- Site preparation is expected to begin in June-July 2020.
- Installation of stormwater controls are expected to begin in June – July 2020.
- Construction completion is anticipated to occur in July/September 2020.
- Final or temporary stabilization will be initiated within 14 days of final land disturbance and will be completed within 60 days of construction completion.
- Removal of erosion controls and construction equipment and vehicles is anticipated to occur after construction completion.

Changes to the proposed construction schedule will be documented and maintained with this SWPPP.

3.2.3 Allowable Non-Stormwater Discharges

Dewatering may be required during excavation activities. If dewatering occurs, water will be stored in a storage tank at the Site and tested prior to disposal at a Publicly Owned Treatment Works or approved disposal/treatment facility. Non-stormwater discharges are not expected during construction activities.

3.2.4 Prohibited Discharges

The following discharges from the Site are prohibited:

- Wastewater from washout of concrete, unless managed by an appropriate control.
- Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials, unless managed by an appropriate control.
- Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance.
- Soaps or solvents used in vehicle and equipment washing.
- Toxic or hazardous substances from a spill or other release.

3.2.5 Receiving Waters

Precipitation from a heavy rain event would flow across the site in a northerly direction towards the catch basin located on the north side of the Site. Based on a review of ADEQ maps, Miller Creek is classified as a not-attaining water and Granite Creek is classified as an impaired water of the United States, both receiving waters are located within 1/4-mile upstream of the outflow from the catch basin (http://gisweb.azdeq.gov/arcgis/emaps/?topic=oaw). The Site is less than 1 acre; therefore, a sampling and analysis plan will not be required.

3.3 Site Map

A site map is presented on Figure 3-3 in Appendix A. Stormwater protection is shown on Figure 3-4 and stormwater details provided on Figure 3-5. A stormwater catch basin was identified that would receive runoff from the Site. Miller Creek receives stormwater flow from the catch basin. The site map includes or will be updated to include the following information, where applicable:

- Topography of the site, existing types of cover, and drainage pattern(s) of flow onto, over, and from the site property before and after major grading activities.
- Drainage divides and direction of stormwater flow for all drainage areas located within the project limits (i.e., use arrows to show which way stormwater will flow).
- Areas of soil disturbance and areas that will not be disturbed. Boundaries of the property and of the locations where construction activities will occur, including:
  - Locations where construction activities will occur, noting any phasing of construction activities
  - Locations of any crossings of surface waters (not applicable)
  - Designated points on the site where vehicles will exit onto paved roads (site is completely paved except for the excavation area)
  - Locations of construction support activity areas
- Locations of temporary and permanent control measures identified in the SWPPP
- Locations where stabilization control measures are expected to occur
- Locations of all potential pollutant-generating activities identified in Table 3
- Locations of all surface waters within ¼-mile of the facility. Miller Creek is a not-attaining water TMDL complete for E. coli (2010) and Granite Creek is an impaired water for E. coli (2010) and low dissolved oxygen (2004) (See Figure 3-2 for locations of receiving waters)
- Stormwater discharge location(s), using arrows to indicate discharge direction, and including the location(s) where stormwater and/or allowable non-stormwater discharges are discharged to waters of the United States (in accordance with Part 1.3).
- Areas where final stabilization has been accomplished and no further construction permit requirements apply during construction.
- Locations of onsite material or equipment storage areas, and other supporting activities - Areas where vehicles and equipment will be staged, and materials and waste will be stored will be added to the Site Plan prior to commencing construction.

SECTION 4

4 Erosion and Sediment Controls

This section identifies the types of erosion and sediment controls that will be used during construction activities. Erosion and sediment controls include soil stabilization for disturbed areas and/or structural controls to divert runoff and remove sediment. This section will also address the control of other potential stormwater pollutant sources such as construction materials, waste disposal, control of vehicle traffic, and sanitary waste disposal.

4.1 Erosion Controls

Temporary stabilization measures will be used during construction to prevent an increase in the sediment yield and flow velocity from pre-construction, undisturbed conditions. The structural controls selected for temporary stabilization are based on guidance from the Drainage Design Manual for Maricopa County Volume III, Erosion Control, dated December 2018, and will be installed prior to remediation activities. Identification (ID) numbers listed for each control measure are from the Maricopa County manual. Control measures that have been selected for erosion and sediment control at the site are listed below and presented on the Site Figure 3-4. Specifications for the structural control measures and ID numbers for each control measure are presented on Figure 3-5.

Maintenance and inspection of these items is discussed in Section 6.

4.1.1 Perimeter Controls (General and Specific) Description, Installation and Maintenance Requirements.

Perimeter Sediment Controls. Sediment control measures will be installed at the site perimeter to reduce runoff velocity and cause deposition of the transported sediment prior to runoff leaving the site. At a minimum, silt fencing or organic barriers will be used to control runoff, as shown on Figure 3-3. Based on conditions at the site, one or more of the following sediment controls will be used:

- Organic Filter Barriers (SPC-1). An organic filter barrier is a temporary linear sediment barrier consisting of straw bales or wattles, designed to intercept and slow sediment-laden sheet flow runoff.
- Sand Bag Barriers (SPC-2). A sand bag barrier is a temporary berm constructed of stacked sandbags along the perimeter of a site or along the right-of-way in a disturbed area, designed to intercept and slow the flow of sediment-laden runoff. Sandbag barriers allow sediment to settle from runoff before water leaves the Site.
- Gravel Filter Berm (SPC-3). A gravel filter berm is a temporary berm constructed of open graded rock or bags of gravel installed at the toe of a slope, or the perimeter of a developing or disturbed area, designed to intercept and detain sediment-laden water from an unprotected area, detain the sediment, and release the water in sheet flow.
- Silt Fences (SPC-5). A silt fence is a geotextile fabric stretched between either wooden or metal posts with the lower edge of the fabric securely embedded in the soil typically located downstream of disturbed areas to intercept sheet flow runoff. The two main purposes for silt fences are to intercept and detain small amounts of sediment from disturbed areas during construction and decrease the velocity of sheet flows and low-to-moderate level channel flows.

4.1.2 Sediment Track-Out

Stabilized Construction Entrances (EC-5). A stabilized construction entrance is a stabilized pad of aggregate underlain with filter cloth located at any point where traffic will be entering or exiting a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area. Stabilized construction entrances reduce or eliminate the tracking of sediment onto public rights-of-way or streets. Stabilized construction entrances or shaker plates with rock will be implemented at all areas of construction entrance and egress, as shown on Figure 3-3. Additional gravel will be added, as needed, to maintain proper functioning of the pad during construction activities. Trucks are anticipated to be direct loaded and remain on the Site asphalt surface and not enter the excavation area to reduce the potential for track-out.

4.1.3 Stockpiled Sediment or Soil

If soil is stockpiled at the Site, it will be surrounded by a fiber roll or an earthen berm or other impermeable berm to reduce the potential for stormwater runoff from the area to leave the Site. Additionally, it will be covered to minimize dust and erosion. Any stockpiled soil will be contained within the Site extent shown on Figure 3-3.

4.1.4 Minimize Dust

Dust control at the Site will be managed using misters along the property boundary and applied water using a water truck.

4.1.5 Top Soil

The construction project involves the removal of soil at the site due to site contamination. Depths of soil removal will vary depending on actual soil analytical laboratory results during remediation. Excavated top soil will not be preserved.

4.1.6 Permanent Stabilization Measures

Permanent or final stabilization will be used after construction operations are complete to prevent an increase in the sediment yield and flow velocity from pre-construction, undisturbed conditions. Areas which do not require excavation and are undisturbed will retain the same elevation grade and drainage pattern.

Final stabilization will include final grading of the Site and installation of asphalt to match the existing pre-construction grade and conditions. Final stabilization will commence within 14 days of construction completion and will be completed within 60 days. If final stabilization cannot take place within 14 days, then temporary stabilization consisting of geotextile, aggregate base course, or similar, will occur within 14 days of construction completion and final stabilization will be completed within 60 days.

4.1.7 Storm Drain Inlets

One storm drain inlet has been identified in the immediate vicinity of the Site. This storm drain inlet that has the potential to be impacted by stormwater from the Site will be protected in accordance with the control measure presented in this section.

Storm Drain Inlet Protection (SPC-7). Storm drain inlet protection measures prevent soil and debris from site erosion from entering storm drain drop inlets and clogging them. Storm drain inlet protection will consist of gravel and mesh inlet barriers and/or biofilter bag inlet barriers and will be implemented at all drop inlets, catch basins, and manholes to intercept sediment and provide detention or filtration to reduce sediment and floatable materials in stormwater.

4.1.8 Other Stormwater -Controls

Sediment Traps (SPC-9). A sediment trap is a temporary containment area that allows sediment in collected stormwater to settle out during infiltration or before the runoff is discharged through a stabilized spillway. Where necessary, sediment traps will be installed at stabilized construction entrances to collect sediment generated during entrance and egress of construction vehicles.

SECTION 5

5 Potential Pollutant Source and Pollution Prevention Procedures

5.1 Summary of Potential Pollutant Sources

5.1.1 Significant Material Inventory

Pollutants that result from clearing, grading, excavation, and the storage and use of materials that have the potential to be present in stormwater runoff are listed in Table 2. This table includes information regarding material type, chemical and physical description, and the specific regulated stormwater pollutants associated with each material.

TABLE 2
Potential Stormwater Pollutants
APS Former Prescott MGP Site

Material	Chemical/Physical Description[1]	Stormwater Pollutants
Erosion	Solid particulates and soil contaminants	Soil, sediment, petroleum hydrocarbons including polynuclear aromatic hydrocarbon (PAHs), benzene, and polychlorinated biphenyls (PCBs)
Gasoline	Colorless, pale brown petroleum hydrocarbon liquid	Benzene, toluene, ethylbenzene, xylenes (BTEX), butane, heptane, hexane, cyclohexane, methyl cyclohexane, pentane, naphthalene, ethanol, methyl tert-butyl ether (MTBE), tertiary amyl methyl ether (TAME), ethyl tert-butyl ether (ETBE)
Diesel	Clear, blue-green to yellow liquid	Petroleum distillates, naphthalene
Antifreeze/coolant	Clear green/yellow liquid	Ethylene glycol, diethylene, sodium tetraborate-pentahydrate
Motor Oil	Amber liquid, petroleum odor	Highly refined mineral oil
Hydraulic Fluid	Colorless liquid, petroleum odor	Highly refined mineral oil
Sanitary/septic waste from portable toilets	Human waste	Pathogenic biologics
Concrete	Alkaline water	Concrete washout

Note: If additional chemicals are brought on site during construction activities, this table will be updated.

5.1.2 Potential Areas for Stormwater Contamination

The following are potential source areas of stormwater contamination during construction/ remediation activities:

- Cleared and graded areas
- Site entrance
- Fuel and oil storage areas
- Heavy equipment staging area
- Chemical storage areas
- Waste storage areas, including roll-off bins
- Soil stockpiles

Table 3 presents site-specific information regarding stormwater pollution potential from each of these areas. These areas are noted on Figure 3-3 and Figure 3-4.

TABLE 3
Potential Pollutant Generating Activities
APS Former Prescott MGP Site

Potential Stormwater Contamination Point	Potential Pollutants	Potential Pollutant-Generating Activity
Cleared and Graded Areas	Sediment and soil contaminants (listed in Table 2 under Erosion Material)	Erosion of soils from cleared and graded areas have the potential to add sediment and soil contaminants to stormwater runoff
Site Entrance	Sediment and soil contaminants (listed in Table 2 under Erosion Material)	Tracking of soil off site by heavy equipment has the potential to add sediment and soil contaminants to stormwater runoff
Fuel and oil storage area	Gasoline, diesel, motor oil, hydraulic fluid, transformer lube oil	Leaks or spills from fuel or oil storage containers can contaminate stormwater.
Heavy equipment staging area	Fuel and oil	Leaks or spills of fuel or oil from the heavy equipment can contaminant stormwater.
Soil Stockpiles	Sediment and soil contaminants (listed in Table 2 under Erosion Material)	Runoff from stockpiles can contaminate stormwater
Waste storage areas	Solid waste, sanitary waste	Leaks or spills from solid or sanitary waste containers can contaminate stormwater.

5.1.3 Use of Treatment Chemicals

If needed, an anionic foam surfactant (Rusmar AC-645; not considered hazardous) will be applied to the surface of the soil within the excavation to control odors, or on soil excavated and stock piled within the excavation. No polymers, flocculants, or other cationic treatment chemicals will be used at the site.

5.2 Pollution Prevention Procedures

This section describes the pollution prevention BMPs that will be used to prevent and respond to releases and leaks at the Site during construction/remediation activities. The ID numbers listed for each control measure are from the Drainage Design Manual for Maricopa County Volume III, Erosion Control, dated December 2018.

5.2.1 Spill Prevention and Response

Spill Containment Plan (GH-5)

These practices are implemented to prevent and control spills to ensure that spills and leaks do not result in water quality impacts. This BMP applies to all construction activities. Spill prevention and control measures shall be implemented any time chemicals or hazardous substances are used, stored, or handled. The Spill Containment Plan includes the following activities:

Education

- Educate employees and subcontractors on what is a significant spill for each material they use, and what is the appropriate response for “significant” and “insignificant” spills.
- Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks
- Hold regular meetings to discuss and reinforce appropriate disposal procedures and establish a program to instruct new employees.

Spill Prevention Procedures

The following activities will be performed to prevent spills from occurring at the Site:

- Project areas and activities potentially susceptible to spills shall be identified. Areas and activities that are most vulnerable to spills include: loading and unloading areas, fuel and chemical storage areas, process activities, dust or particulate generating processes, and waste disposal activities.
- Inspections shall be performed in accordance with the procedures in Section 6.1.
- Spills will be contained and cleaned up as soon as possible.
- If complete cleanup is not immediately possible, spills will be fully covered and not exposed to rainfall.
- Spills will not be washed down or buried.
- Residuals left over from the cleanup activity such as absorbent pads or containers of spill material will be disposed of properly.
- Proper spill and illicit discharge reporting procedures will be followed for both hazardous and non-hazardous materials.

- An area where a spill has occurred will be inspected to verify that spill residuals are not present after the initial cleaning and that the area does not need to be re-cleaned.
- Emergency phone numbers will be posted at the construction area.
- Personnel will be trained in emergency response procedures.
- Proper notification of regulatory agencies will occur in the event of a reportable spill.

Spill Response Procedures

Spill Response Procedures

Response guidelines have been identified below for responding to spills that may potentially result in an illicit discharge. It is the contractor's responsibility to have all emergency phone numbers available at the Site as well to notify the proper response agencies in a timely manner. It is also the contractor's responsibility to have all Safety Data Sheets onsite for non-hazardous/hazardous determination and to ensure timely and proper cleanup of any spill.

For non–hazardous materials that may be spilled in small quantities which do not enter state waters or pose a potential to do so, the following measures shall be implemented:

- Use absorbent materials to contain spills and clean the area of residuals.
- Dispose of the absorbent material properly.
- Do not hose down spill area with water.
- Notify SWPPP Coordinator.

For spills involving hazardous materials or an oil in an amount equal to or in excess of a reportable quantity, the following measures shall be implemented:

- Report the spill to the SWPPP Coordinator (or designee).
- Contact the local emergency response team by dialing 911.
- The SWPPP Coordinator (or designee) shall immediately contact the ADEQ at 602-771-2330 after the spill event.
- Notify appropriate divisions with ADEQ at 602 771-2330 (emergency) or 602 771-4106 (Non-emergency), if applicable, depending on the nature of the spill.
- Immediately contact the National Response Center: 800-424-8802 if:
    - A film, sheen, or discoloration is observed on the receiving water (Miller Creek) originating from a discharge point from the site.
    - A gasoline spill of 25 gallons or more on site.
    - A spill in the reportable quantity listed in 40CFR117 for hazardous material other than gasoline
- Cleanup spill immediately; a licensed contractor or HazMat team shall be used to properly clean up spills.

- Reportable quantities for a hazardous substance leak or spill are listed in 40CFR117. Within 7 calendar days of knowledge of the release, operators shall provide a description in the SWPPP of: the release; the circumstances leading to the release; and the date of the release. Local requirements may necessitate additional reporting of spills or discharges to local emergency response, public health, or drinking water supply agencies.

5.2.2 Fueling, Maintenance, and Washing of Equipment or Vehicles

Equipment Maintenance Procedures (GH-3)

These practices are to be used during vehicle and equipment staging, fueling, cleaning, and maintenance to prevent associated stormwater pollutants from entering stormwater. These BMPs apply to facilities or designated construction work areas where vehicles and equipment are staged, fueled, cleaned, or maintained

- Use drip pans or absorbent materials under equipment to catch/contain leaks.
- All maintenance areas are required to have spill kits and/or use other spill protection devices.
- Absorbent spill clean-up materials should be available and should be disposed of properly after use.
- Dedicated maintenance areas should be protected from stormwater run-on and runoff and should be located at least 50 feet from downstream drainage facilities and watercourses.
- Use offsite maintenance facilities whenever practical.
- Properly dispose of used oils, fluids, lubricants, and spill cleanup materials. Do not dump fuels and lubricants onto the ground, place used oil in a dumpster, or pour into a storm drain or watercourse.
- Repair fluid and oil leaks immediately.
- Provide spill containment dikes or secondary containment around stored oil and chemical drums.
- Properly dispose or recycle used batteries.
- Inspect vehicle and equipment maintenance and staging areas regularly.
- Vehicles and equipment should be inspected on each day of use. Leaks should be repaired immediately, or the equipment/vehicle should be removed from the Site.
- Inspect equipment for damaged hoses and leaky gaskets routinely and repair or replace as needed.
- Perform cleaning, washing, and maintenance in a centralized station offsite where possible. Detergents shall not be used for onsite washing unless the wash water is fully contained for proper disposal.
- Proper spill and illicit discharge reporting and cleanup procedures shall be followed for both hazardous and non-hazardous materials.

5.2.3 Storage, Handling, and Disposal of Construction Products, Materials, and Wastes

Chemical/Materials Management (GH-1)

Several BMPs have been selected for use during this project to address potential stormwater contamination from leaks or spills and from the storage and handling of materials. Each BMP will be put in place and/or utilized as needed through the project duration. Protective measures shall be in place at all times and BMP procedures shall be followed at all times throughout the project duration to prevent or mitigate pollution. The BMPs are described in the following subsections. Materials of concern are listed in Table 2.

Storage and Labeling Procedures

These practices are to be implemented for the proper handling, storage, and labeling of materials in order to prevent spills or leaks into the stormwater. These practices are to be implemented in all areas where delivery and storage of materials may be detrimental to the environment.

- All containers and materials shall be properly and legibly labeled.
- Do not store chemicals, drums, and bagged materials directly on the ground. Use secondary containment platforms or wooden pallets.
- Safety Data Sheets (SDS) shall be made available for all materials.
- Hazardous material storage and handling shall comply with applicable regulations and requirements.
- Where possible, cover stockpiled materials. Do not allow water to pond around stored drums.
- Do not pinch a drum with a forklift when unloading or moving.
- Mark any damaged containers.
- Chemicals, drums, and bagged materials will not be stored directly on the ground. Materials will be stored in a bermed, lined area or on secondary containment.
- Chemically incompatible materials shall not be stored together or in the same storage facility.
- When possible, keep chemical products in their original containers, bungs on lids closed, and labeled in accordance with U.S. Department of Transportation (DOT) and EPA regulations.
- Containment areas that have collected precipitation will not be drained until SWPPP coordinator has ensured that drainage will not contaminate surrounding soil.
- Sufficient separation shall be allowed between storage containers to allow for cleanup and emergency response.
- Personnel shall be trained in proper material handling and storage techniques, how to identify potential sources of pollutants, and spill prevention and response procedures.
- Leaks or spills shall be contained and cleaned up immediately.
- Less hazardous, recycled, or non-toxic materials shall be used whenever possible.
- Used and excess materials shall be recycled and/or properly disposed of.

- Materials shall be used only where and when necessary to complete the construction activity. Excess application of materials shall be avoided.

Solid Waste Management (GH-2)

These practices are to be implemented for the proper handling and disposal of solid waste (including hazardous and special waste) in order to prevent spills or leaks into the stormwater. These practices are to be implemented in all areas where delivery and storage of materials may be detrimental to the environment:

Collection, Storage, and Disposal

- Provide covered dumpsters of sufficient size and number to contain the solid waste generated by Site operations.
- Keep the site clean of litter and debris.
- Remove full dumpsters from the project site as soon as possible.
- Dispose of litter stored in collection areas and containers every 2 weeks or more frequently.
- Prevent stormwater runoff from contacting stored solid waste with berms, dikes, or other temporary diversion structures.
- Locate solid waste storage areas more than 50 feet from drainage facilities and watercourses and away from areas prone to flooding or ponding.
- Dumpster washout is not allowed on the project site.

Sanitary Waste Management

- Locate portable toilets a minimum of 50 feet away from storm drain inlets, drainage facilities, watercourses, and from traffic circulation. Provide secondary containment for all portable toilets.
- Educate employees, subcontractors, and suppliers on sanitary waste storage and disposal procedures and potential dangers to humans and the environment from sanitary wastes.
- Hold regular meetings to discuss and reinforce disposal procedures and educate new employees.
- Properly connect temporary sanitary facilities that discharge to the sanitary sewer system to avoid illicit discharges. Comply with local, municipal, county, and sewer district requirements.
- Ensure that sanitary facilities are maintained in good working order by a licensed service. Use only reputable, licensed sanitary waste haulers.

Hazardous, Special, and Asbestos-Containing Waste Management

- Segregate hazardous, special, asbestos-containing, and non-hazardous construction debris and waste.
- Ensure adequate waste storage space is available, waste collection containers are conveniently located, and adequate cleanup and containment materials are available onsite.

- Store wastes in an appropriate type of container and properly labeled per EPA, Occupational Safety and Health Administration (OSHA), and DOT regulations.
- Hazardous material storage and handling shall comply with applicable regulations and requirements.

5.2.4 Washing of Applicators and Containers used for Paint, Concrete or Other Materials

Designated Washdown Areas (GH-4)

Designated washout areas and associated procedures ensure the proper washout of concrete trucks, tools, and equipment and prevent fresh concrete from entering a storm drain. No concrete washout is anticipated at the Site, however the following BMPs will be implemented if concrete washout occurs:

- Concrete-related waste will not be allowed to enter storm drains or watercourses but will be collected and properly disposed of or placed in a temporary concrete washout structure.
- Install a sign adjacent to each temporary concrete washout structure to inform operators to utilize the structures.
- Saw cutting or grinding residue should not be allowed to flow across the pavement or ground and should not be left on the surface of the pavement or ground. Vacuum slurry residue and dispose in a temporary facility and allow slurry to dry.
- Temporary concrete washout facilities should be located a minimum of 50 feet from storm drain inlets, open drainage facilities, and watercourses, unless determined infeasible by SWPPP coordinator. Each facility should be located away from construction traffic or access areas to prevent disturbance or tracking.
- Temporary concrete washout facilities should be constructed above grade or below grade at the option of the contractor and have sufficient quantity and size to contain all liquid and concrete waste generated by washout operations.
- Wash concrete only from mixer truck chutes into approved concrete washout facility. Washout may be collected in an impermeable bag for disposal.
- Above-grade temporary concrete washout structures should have a minimum length and width of 10 feet or larger to provide sufficient volume to contain all liquid and concrete waste generated by washout operations.
- Plastic lining should be a minimum of 10-mil polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.

5.2.5 Other Pollution Prevention Practices

Good housekeeping procedures will be followed throughout this project, including keeping the project area free of trash and debris, keeping material and equipment storage areas clean, and timely, proper disposal of project waste.

SECTION 6

6 Inspection, Maintenance, and Corrective Action Procedures

6.1 Inspections

Visual inspections of all cleared and graded areas of the Site, structural controls, and BMPs will be conducted periodically throughout the project.

6.1.1 Qualified Personnel

Qualified personnel from the Stormwater Team identified in Table 1 will perform inspections associated with this SWPPP. These personnel will be knowledgeable in the implementation assessment of the erosion and sediment controls presented in Section 4 and the pollution prevention activities presented in Section 5.2.

6.1.2 Inspection Schedule

Routine inspections are required to occur on one of the following schedules, which must be identified below:

- Once every 7 calendar days, but not within 5 calendar days of the previous inspection OR
- Once every 14 calendar days, but not within 10 calendar days of the previous inspection AND also within 24 hours of the end of each rain event of 0.5 inch or greater, OR
- Once per month, but not within 14 calendar days of the previous inspection and within 24 hours of the occurrence of a storm event of 0.25 inch or greater.

For the Site, the inspections will occur with the following frequency: _Weekly (once every 7 calendar days).

Additional inspections will occur as follows.

- Whenever possible, before and during predicted rain events
- Periodic “spot” inspections to evaluate the effectiveness of BMPs

Rainfall information will be obtained from a properly maintained rain gauge at the Site or a weather station representative of the Site. Rainfall of 0.25 inch or greater during normal business hours, will be recorded on the inspection form presented in Appendix B. If an inspection day (except those required relative to a rainfall event) falls on a Saturday or holiday, the inspection may be conducted on the preceding workday. If the inspection day falls on a Sunday, the inspection may be conducted on the following Monday.

The inspection will verify that the structural controls described in Section 4 of this SWPPP are functional, that pollution prevention procedures in Section 5.2 are being implemented, and that practices and procedures contained in the SWPPP is being properly implemented. The inspection will also verify that the procedures used to prevent stormwater contamination from construction materials and petroleum products are effective.

6.1.3 Inspections of Erosion and Sediment Controls

Discharge locations will be inspected to determine if erosion control BMPs are adequate and effective. Additionally, the following inspection and maintenance practices will be used to maintain erosion and sediment controls:

Stabilized Construction Entrances (EC-5)

- Inspect monthly and after each rainfall.
- Replace gravel mat when surface voids are no longer visible. Periodic top dressing with additional stone will be required.
- All sediments deposited on paved roadways must be removed within 24 hours.
- Remove gravel and filter fabric upon completion of construction.

Sediment Traps (SPC-9)

- Inspect sediment traps before and after rainfall events and weekly during the rest of the rainy season. During extended rainfall events, inspect sediment traps on a more frequent basis.
  - If captured runoff has not completely drained within 36 hours, the sediment trap must be dewatered.
  - Inspect trap banks for embankment seepage and structural soundness.
  - Inspect outlet structure and rock spillway for any damage or obstructions. Repair damage and remove obstructions as needed.
  - Inspect outlet area for erosion and stabilize if required.
  - Remove accumulated sediment when the volume has reached one-third the original trap volume.
  - Inspect fencing for damage and repair as needed.

Organic Filter Barrier (SPC-1)

- Inspect organic filter barriers before and after each rainfall event and weekly throughout the rainy season for sediment accumulations and remove sediment when depth reaches one-third the barrier height.
- Replace or repair damage barriers as needed. Remove barriers or dismantle as mulching when no longer needed. Remove sediment accumulation, and clean, re-grade, and stabilize the area.

Sand Bag Barriers (SPC-2)

- Inspect sandbag barriers before and after each rainfall event, and weekly throughout the rainy season
- Reshape or replace sandbags as needed.
- Inspect sandbag barriers for sediment accumulations and remove sediments when accumulation reaches one-third the barrier height.
- Remove sandbags when no longer needed. Remove sediment accumulation, and clean, re-grade, and stabilize the area.

Gravel Filter Berm (SPC-3)

- Remove retained sediments when depth reaches one-third of berm height or 1 foot, whichever occurs first.
- Inspect monthly and after each rainfall. Reshape berm as needed, replace lost or dislodged rock.
- Remove gravel filter berm at the end of construction.

Silt Fence (SPC-5)

- Inspect regularly and frequently, as well as after each rainfall event to ensure they are intact, and that there are no gaps at the fence-ground interface or tears along the length of the fence. If gaps or tears are found, they should be repaired, or the fabric should be replaced immediately.
- Accumulated sediments should be removed from the fence base when the sediment reaches one-third to one-half the height of the fence. Sediment removal should occur more frequently if accumulated sediment is creating noticeable strain on the fabric and there is the possibility of the fence failing from a sudden storm event.
- Silt fences should not be removed until the upslope area has been permanently stabilized. When the silt fence is removed, the accumulated sediment also should be removed.

Storm Drain Inlet Protection (SPC-7)

- For systems using filter fabric, inspections should be made on a regular basis, especially after large storm events. If the fabric becomes clogged, it should be replaced.
- Sediment should be removed when it reaches approximately half the height of the barrier.
- If an excavated inlet sediment trap is used, sediment should be removed when it fills approximately half the depth of the hole.

6.1.4 Pollution Prevention BMP Inspections

The following additional measures will be taken to minimize pollutants from entering stormwater:

- Vehicles and equipment shall be routinely inspected for leaks and leak potential.
- A sufficient supply of cleanup materials (for example, absorbent pads) shall be kept at all storage and handling areas where leaks or spills are likely to occur.
- Material storage areas shall be routinely checked for accumulation of non-labeled materials and spills.
- Bermed areas shall be inspected routinely and repaired when signs of degradation are visible.

6.1.5 Inspection Reporting

The maintenance inspection report will be completed within 7 days after each inspection and the reports will be placed in chronological order in Appendix B of this SWPPP. Supplemental information regarding structural controls, BMPs, site conditions, or other factors that impact implementing the SWPPP, should be noted on the form. The form will be signed by the SWPPP Coordinator (or designee) as identified in Table 1. The completed forms will be maintained onsite

during the entire construction project. Any maintenance activity should be recorded on the form in Appendix C. Following construction, the completed forms will be retained for a minimum of 3 years.

If a stormwater control must be replaced, repaired, or maintained, work to fix the problem must be initiated immediately and complete by the next work day, if feasible. If a new control is installed or significant repair of existing controls is needed, the new or modified control must be installed and operational within 7 days of the time of discovery, or before the next storm event (whichever is sooner), where feasible. If it is infeasible to meet this timeline, records must be maintained in the SWPPP must documenting the reason and a schedule for installing the control must be included. The SWPPP must also be modified to include changes to stormwater controls within 7 days of completing the work.

6.2 Corrective Action

Corrective actions are actions the operator takes to modify or replace any control measure that fails to operate as designed to minimize the discharge of pollutants from the Site. Routine maintenance and repair are not considered corrective action. If any of the following conditions at the Site occur resulting in or from a failure of a control measure, new or modified controls must be implemented:

- A necessary control measure was never installed or was installed incorrectly
- A prohibited discharge listed in Section 3.2.4 is occurring or has occurred
- ADEQ or USEPA determines that modifications to the control measures are necessary to meet the requirements of Part 3.

6.2.1 Corrective Action Deadlines

All reasonable steps to minimize or prevent the discharge of pollutants must be taken on the same day a condition requiring corrective action is discovered until a permanent solution is installed and made operational. However, if the problem is identified when it is too late in the work day to initiate a corrective action, the corrective action shall be initiated on the following work day, unless the condition poses imminent endangerment to human health or the environment, in which case the operator shall take immediate action.

Any control measures or repairs required must be made operational, or completed, by no later than 7 calendar days from the time of discovery. If the operator cannot complete the necessary repairs or installation of controls within 7 calendar days, documentation on the reason it is not feasible and a schedule for implementation must be included in the SWPPP.

6.2.2 Corrective Action Reporting

Within 7 calendar days of discovery of any activity requiring corrective action, the following information must be documented in the appropriate section of the Inspection and Corrective Action Report Form (see template in Appendix B):

- Summary of corrective action taken or to be taken
- Whether SWPPP modifications are required as a result of this discovery or corrective action
- Date corrective action was initiated or will be initiated, and
- Date corrective action was completed or expected to be completed

6.3 Delegation of Authority

Table 1 identifies the individual who has been delegated appropriate authority in accordance with Appendix B of the 2020 CGP to sign inspection and corrective action reports.

SECTION 7

7 SWPPP Record Keeping

7.1 SWPPP Documentation

As part of the implementation of this SWPPP, the following records will be maintained in a field logbook or daily log sheets to be maintained by the Contractor:

- Dates when major excavation or grading activities occur
- Dates when construction activities temporarily or permanently cease on a portion of the site
- Dates when stabilization measures are initiated
- Dates of work stoppage and reasons for stoppage

The following documentation must be maintained and be available onsite during construction/remediation activities:

- All inspection reports (Appendix B)
- Description of any corrective action taken at the site, including triggering event and dates when problems were discovered, and modifications occurred (Appendix B)
- Documentation of maintenance and repairs of structural control measures (Appendix C)
- Descriptions and dates of any incidences of significant spills, leaks, or other releases that resulted in discharges of pollutants in stormwater (Appendix D)
- A copy of the 2020 CGP (Appendix E)
- Documentation that the Stormwater Team has received adequate training (Appendix F)

All copies of the SWPPP and all documentation required by the permit must be retained for at least three (3) years from the date of submittal of a Notice of Termination.

7.2 ADEQ Notifications

ADEQ shall be notified of any anticipated noncompliance in advance. Additionally, any noncompliance with the 2020 CGP that may endanger human health, or the environment must be reported in accordance with the terms of the permit within 24 hours of the event.

7.3 SWPPP Availability

The CGP 2020 authorization number and/or a copy of the ADEQ approval must be posted in a conspicuous location near the main entrance of the Site.

A copy of this SWPPP shall be retained at the Site (or other location easily accessible during normal business hours to ADEQ and any other federal, state, or local authority having jurisdiction over the project at any reasonable time. A copy of the SWPPP shall be available at a central location onsite for the use of all members of the Stormwater Team whenever they are on the Site. If an onsite location is unavailable to store the SWPPP when no personnel are present, notice of the plan's location must be posted near the main entrance at the Site.

7.4 SWPPP Modifications and Updates

The SWPPP will be revised as necessary to reflect current conditions and to maintain accuracy if there are changes in design or construction of the project, or if the SWPPP is found to be deficient. The operator will amend the SWPPP within 7 business days whenever:

1. There is a change in design, construction, operation, or maintenance at the Site that may have a significant effect on the discharge of pollutants to the waters of the U.S. that has not been previously addressed in the SWPPP; or
2. During inspections or investigations by the operator or by local, state, municipal separate storm sewer system, or federal officials, it is determined the discharges are causing or contributing to water quality exceedances or the SWPPP is ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the Site.
3. There is a change to the Stormwater Team

Changes in the revised SWPPP shall be implemented before the next rain event whenever practicable. If this is impracticable, then reason(s) shall be documented in the SWPPP and revisions implemented as soon as possible. An SWPPP amendment log is presented in the front of the SWPPP.

SECTION 8

8 SWPPP Certifications

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Greg Laney/Environmental Response Inc.

Printed Name/Title

Signature

Date

Judy Heywood/APS

Printed Name/Title

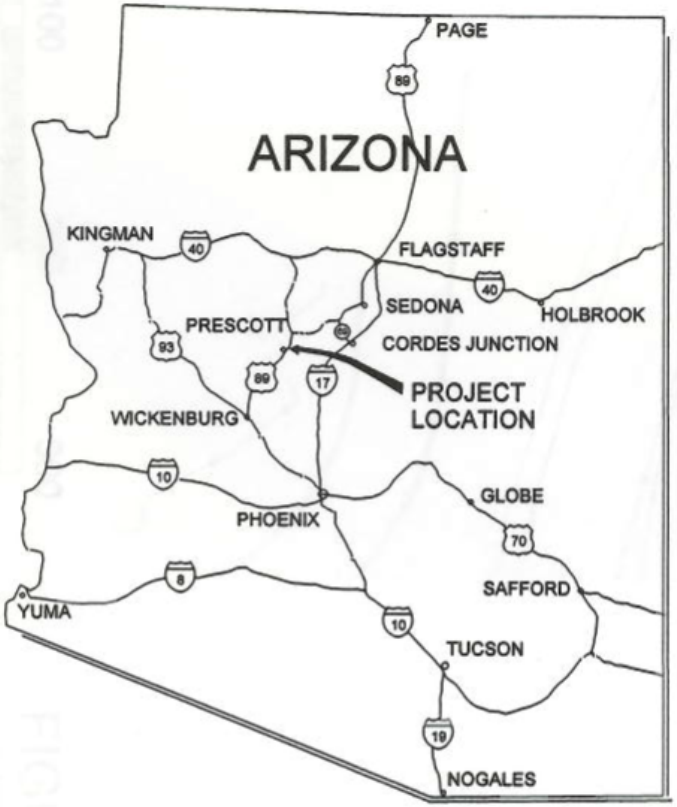
Signature

Date

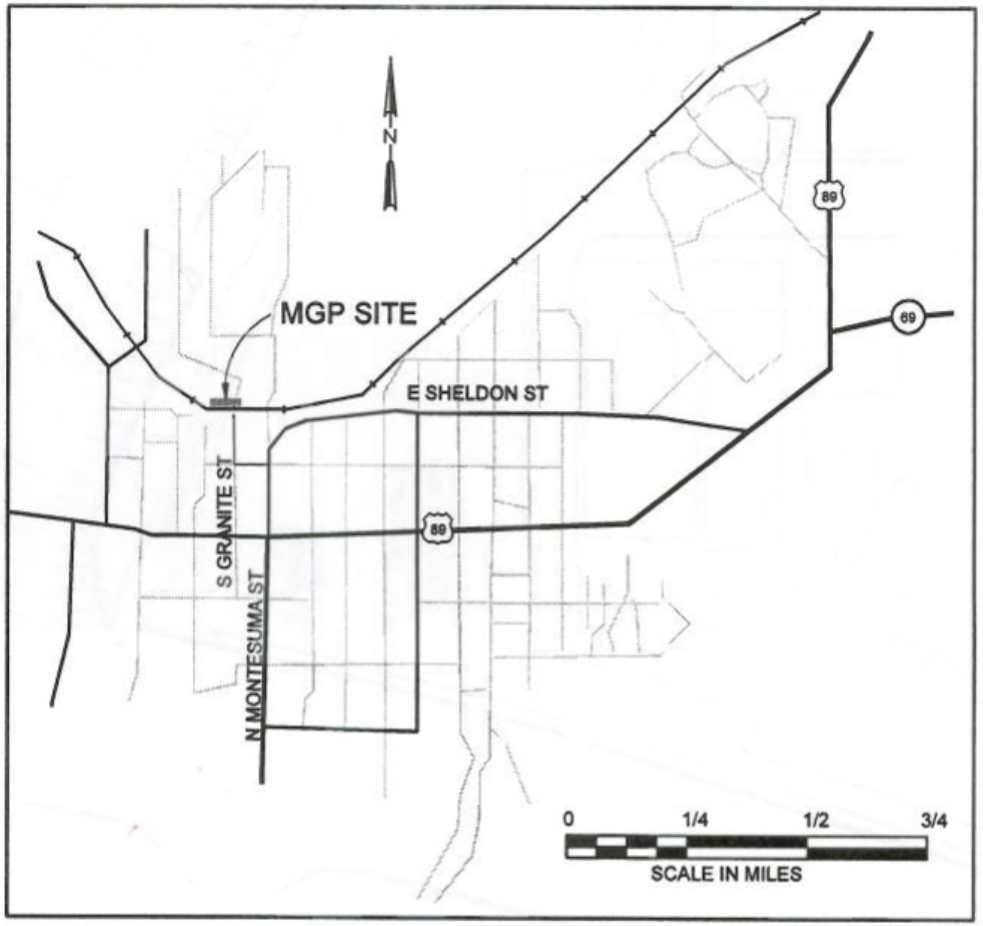
8.1 Contractor's Certification

Contractors and subcontractors that are involved in activities that have the potential to impact stormwater shall read this SWPPP and certify that they understand and will follow the requirements herein. Certification forms are contained in Appendix G.

Appendix A
SWPPP Figures



LOCATION MAP



VICINITY MAP

Figure 3-1. Site Location Map

APS Former MGP Plant Site
Prescott, Arizona

JACOBS

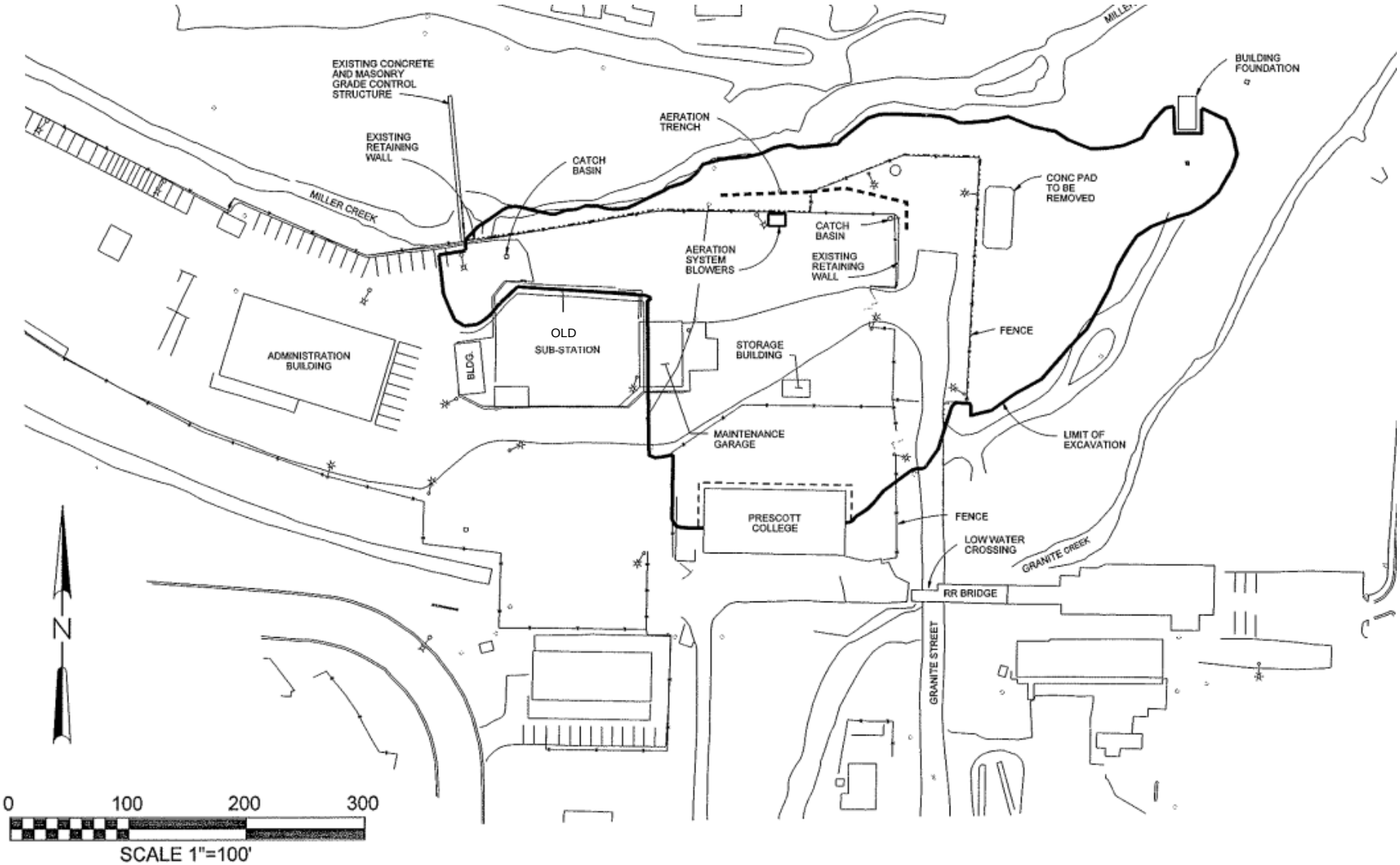


Figure 3-2 Previously Excavated Area and Old Sub-station Location

APS Former MGP Plant Site
Prescott, Arizona

JACOBS

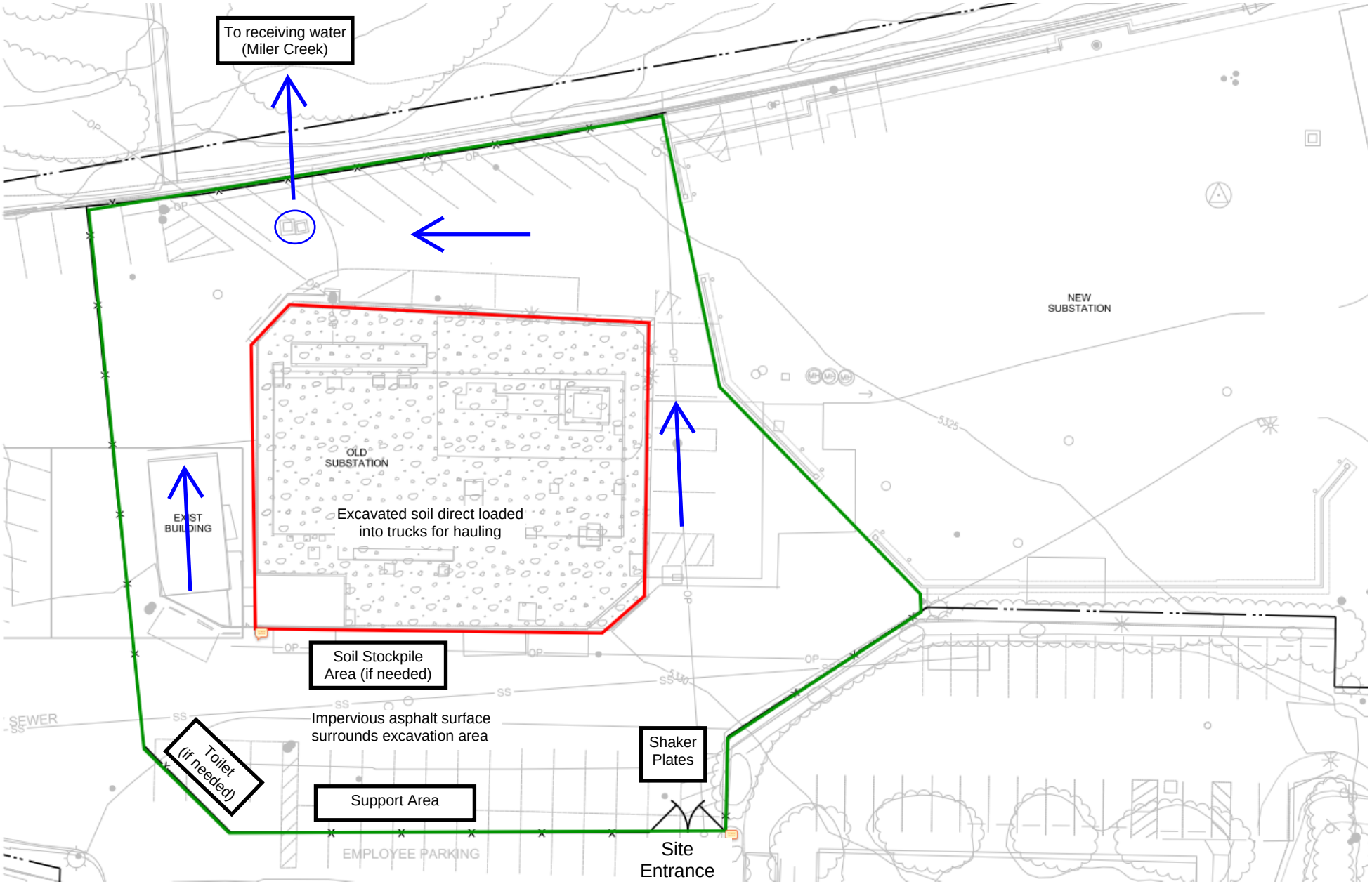
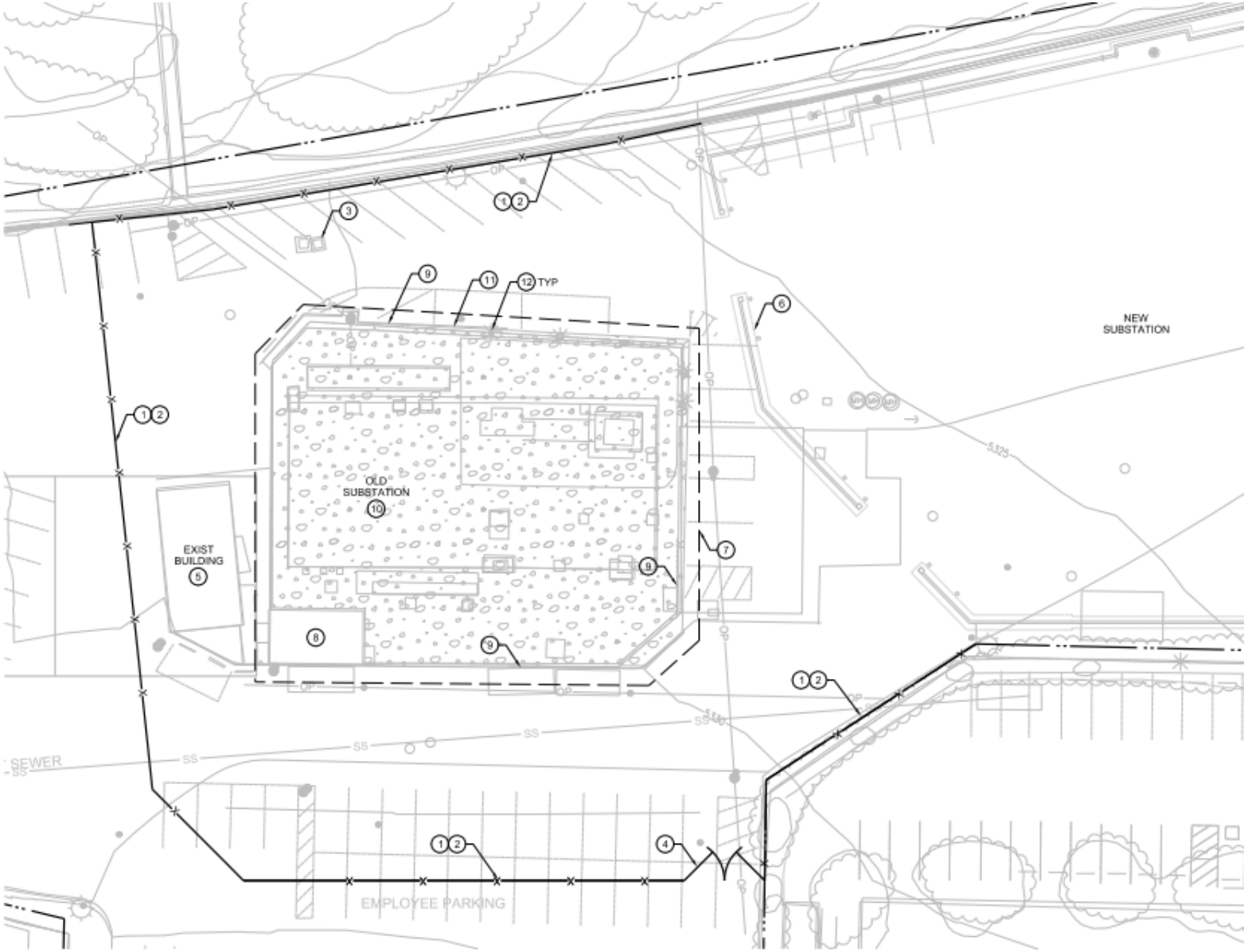


Figure 3-3 Site Map
APS Former MGP Plant Site
Prescott, Arizona

JACOBS

Notes:

- Anticipated excavation area
- Site extent: to be protected by SWPPP stormwater protection indicated on Figures 3.4 and 3.5
- Flow
- Catch basin



NOTES

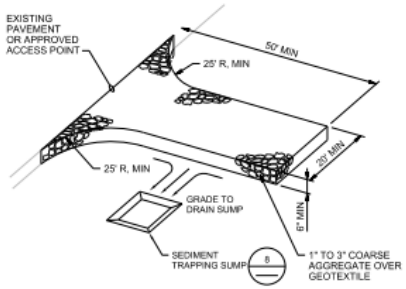
1. PROVIDE AND INSTALL FENCE LINE MISTING SYSTEM FOR DUST AND ODOR CONTROL ON ALL FENCING. COVER ENTIRE HEIGHT OF FENCE WITH FABRIC TO PREVENT BLOWING DUST DURING CONSTRUCTION.
2. PROVIDE SAND BAG SILT PROTECTION, SEE 6/C-5.
3. PROVIDE INLET BARRIER, SEE 7/C-5 AND 8/C-5.
4. STABILIZED CONSTRUCTION ENTRANCE OR CORRUGATED STEEL PLATES, SEE 1/C-5.
5. EXISTING HISTORIC BUILDING PROTECT DURING CONSTRUCTION.
6. NEW SUBSTATION MASONRY WALL AND GATES, PROTECT DURING CONSTRUCTION.

PLAN
1"=20'-0"

Figure 3-4
Stormwater Protection

APS Former MGP Plant Site
Prescott, Arizona

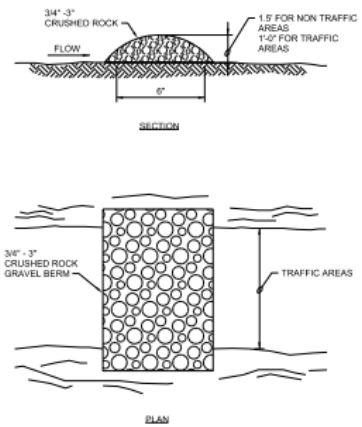
JACOBS



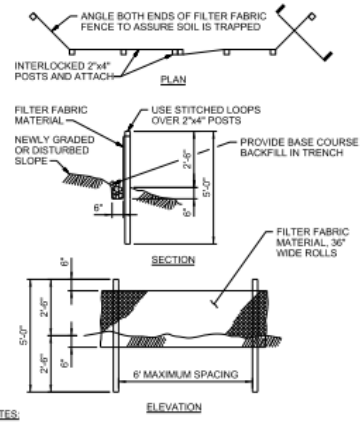
NOTES:

1. ADDITIONAL GRAVEL MAY HAVE TO BE ADDED PERIODICALLY TO MAINTAIN PROPER FUNCTION OF THE PAD.
2. REMOVE GRAVEL ENTRANCE AND REPLACE WITH NEW BASE COURSE PRIOR TO COMPLETION OF ACCESS ROAD.
3. CORRUGATED STEEL PLATES MAY BE USED IN PLACE OF AGGREGATE ON PAVED SURFACES.

1 C-1 EC-5 - STABILIZED CONSTRUCTION ENTRANCE
NTS



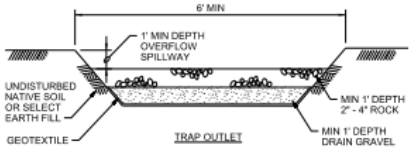
2 SPC-3 - GRAVEL FILTER BERM
NTS



NOTES:

1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. 2"x4" DOUGLAS FIR OR STEEL FENCE POSTS.
3. STITCHED LOOPS TO BE INSTALLED DOWNHILL SIDE OF SLOPE.
4. COMPACT ALL AREAS OF FILTER FABRIC TRENCH.

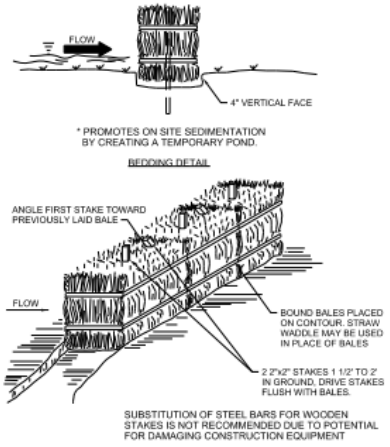
3 C-2, C-3 SPC-5 - SILT FENCE
NTS



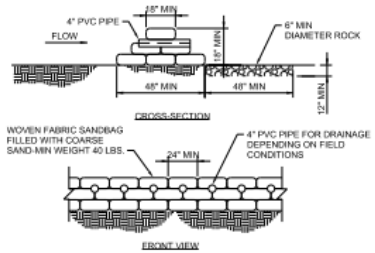
MAINTENANCE STANDARDS:

1. SEDIMENT SHALL BE REMOVED FROM THE TRAP WHEN IT REACHES 1 FOOT IN DEPTH.
2. ANY DAMAGE TO THE TRAP EMBANKMENTS OR SLOPES SHALL BE REPAIRED.

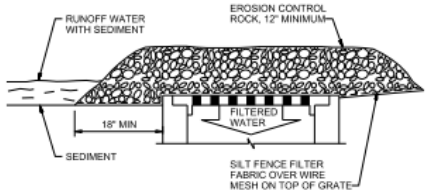
4 C-2 SPC-9 - SEDIMENT TRAP
NTS



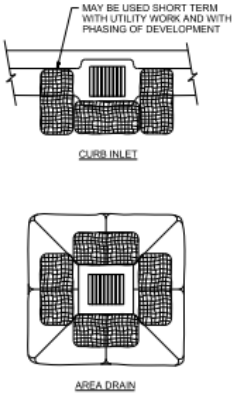
5 SPC-1 - ORGANIC FILTER BARRIER
NTS (MAY BE USED IN PLACE OF SILT FENCE) 5



6 SPC-2 - SAND BAG BARRIER
NTS



7 SPC-7 - GRAVEL AND WIRE MESH INLET BARRIER
NTS (MAY BE USED IN PLACE OF 8)



8 SPC-7 - BIOFILTER BAG INLET BARRIER
NTS

Figure 3-5
Stormwater Details

APS Former MGP Plant Site
Prescott, Arizona

JACOBS

Appendix B
Inspection and Corrective Action Form

2020 Construction General Permit (CGP)
Routine Inspection Report Form

Section I. General Information (see instructions)

Name of Project		CGP Authorization No.	AZCN- _____	Inspection Date	

○ **Check box when using this form to inspect an inactive/unstaffed construction site (this option applies to an entire site only).** See Part 4.2(4) of the permit.
Inspect the site immediately before becoming inactive/unstaffed and every 6 months thereafter and within 24 hours of each storm event of 0.5 inch or greater in 24 hours.

Inspector Name, Title and Contact Information	**Name:**_____ **Title:** _____ **Contact information:** _____
Present Phase of Construction	

Inspection Schedule (all days are calendar days) *(Note: you may be subject to different inspection frequencies in different areas of the site. Check all that apply. * See Part 4.2 for qualifications)*

Routine Schedule: ○ Within 7 days* ○ Within 14 days* and within 24 hours of a 0.5" storm event

○ Once per month, but not within 14 days of the previous inspection and within 24 hours of a 0.25" storm event

Reduced Schedule: once per month (but not within 14 days of the previous inspection) and before an anticipated storm event and within 24 hours of the end of each storm event of 0.5 inch or greater in 24 hours.

○ Once per month (in stabilized areas)
○ Once per month (where discharges are unlikely based on seasonal rainfall patterns)
○ Once per month (where winter conditions exist and earth-disturbing activities are being conducted)

Outfalls within 1/4 mile of an impaired water or outstanding Arizona water (OAW): ○ Every 7 days and within 24 hours of a 0.5" storm event

Was this inspection triggered by either a 0.25" or 0.5" storm event? ○ Yes ○ No

If yes, duration of storm event: ○ < 1 hour ○ < 6 hrs ○ > 6 hrs

If yes, how was the storm event determined (either 0.25" or 0.5")?

○ Rain gauge on site ○ Weather station representative of site. Specify weather station source: _____

Total rainfall amount that triggered the inspection (in inches)**:** _____

Identify all sources of non-stormwater discharges occurring at the site and the associated control measures in place

sources of non-stormwater discharges:	control measures associated with the non-stormwater discharges:
1. _____	1. _____
2. _____	2. _____
3. _____	3. _____
4. _____	4. _____
5. _____	5. _____

Adverse or Unsafe Conditions for Inspection

Did you determine that any portion of the site was unsafe for inspection per CGP Part 4.2(6)? ○ Yes ○ No

If "yes", complete the following:

- Describe the conditions that prevented you from conducting the inspection in this location:

- Location(s) where conditions were found:

Note: *Inspections may be postponed when adverse or unsafe conditions exist such as local flooding, high winds, or electrical storms, or situations that otherwise make inspections unsafe. However, the inspection must resume as soon as conditions are safe.*

Section II. Description of Discharges and Condition of the Discharge Locations (CGP Part 4.3(10)) (see instructions)

Outfall(s)	Observations *(Note: discharges may not occur at every outfall on the site after a storm event. Check all that apply.)*
1.	Describe the discharge: ○ Stormwater ○ Non-stormwater ○ None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	
2.	Describe the discharge: ○ Stormwater ○ Non-stormwater ○ None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	
3.	Describe the discharge: ○ Stormwater ○ Non-stormwater ○ None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	

Section III. Condition and Effectiveness of All On-site Control Measures (Erosion and Sediment (E&S)), Stabilization and Pollution Prevention (P2) Practices (CGP Part 3.3 through 3.5) (see instructions)

Description of Control Measures	Type of Control Measure: ▪ Erosion and Sediment (E&S) ▪ Stabilization ▪ Pollution Prevention (P2)	Additional controls required?	Repairs or other maintenance needed?[1]	Corrective action required?[1, 2] Date of discovery	Specify stabilization method (mulch, rock, planted vegetation, etc.)
1.	○ E&S ○ Stabilization ○ P2	○ Yes ○ No	○ Yes ○ No	○ Yes ○ No	
Notes (e.g., provide details about needed additional control measures, maintenance performed, etc.)					

Description of Control Measures	Type of Control Measure: ▪ Erosion and Sediment (E&S) ▪ Stabilization ▪ Pollution Prevention (P2)	Additional controls required?	Repairs or other maintenance needed?[1]	Corrective action required?[1, 2] Date of discovery	Specify stabilization method (mulch, rock, planted vegetation, etc.)
2.	○ E&S ○ Stabilization ○ P2	○ Yes ○ No	○ Yes ○ No	○ Yes ○ No	
Notes (e.g., provide details about needed additional control measures, maintenance performed, etc.)					

Note 1: The permit differentiates between conditions requiring repairs and maintenance, and those requiring corrective action. The permit requires maintenance in order to keep controls in effective operating condition and requires repairs if controls are not operating as intended. Corrective actions are triggered only for specific, more serious conditions, which include: 1) A necessary stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 3.1 and/or Part 3.2; 2) One of the prohibited discharges in Part 1.4 is occurring or has occurred; or 3) ADEQ or USEPA determines that modifications to the control measures are necessary to meet the requirements of Part 3.

Note 2: If answering "Yes" (i.e., a site condition that meets one or more of the three criteria in Note 1 above requires a corrective action), you must complete a Corrective Action Report. See Part 5 of the permit for more information.

Section VI. Certification and Signature (CGP Appendix B. 9.)

Section IV.A. – Certification and Signature by Contractor or Subcontractor performing the inspections (if applicable)

Check one of the following:

- ○ No instances of non-compliance were discovered during this inspection and the project was in full compliance with the SWPPP and permit.
- ○ Inspection follow-up is required, in accordance with Parts 4.5(1) and 4.5(2) of the permit.

"*I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*"

Signature of Contractor or Subcontractor: _____ Title: _____

Printed name : _____ Date: _____

Business / Agency: _____ Phone number: _____

Section IV.B. – Certification and Signature by Permittee (permittee / operator or a duly authorized representative is required to sign)

Check one of the following:

- ○ No instances of non-compliance were discovered during this inspection and the project was in full compliance with the SWPPP and permit.
- ○ Inspection follow-up is required, in accordance with Parts 4.5(1) and 4.5(2) of the permit.

"*I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*"

Signature of Permittee or
"Duly Authorized Representative": _____ Title: _____

Printed Name: _____ Date: _____

Business / Agency: _____ Phone number: _____

Section I General Information

You must complete Section A of the CAR Form within 24 hours of discovering the condition that triggered corrective action.

Date/Time Problem First Discovered

Specify the date and time when the triggering condition was first discovered.

Name/Contact Information

Provide the individual's name, title, and contact information as directed in the form.

Section II.A Corrective Action Triggering Conditions

You must complete the Corrective Action Report Form no later than 7 calendar days after discovering the condition that triggered corrective action.

Site Condition That Triggered Corrective Action

Under the CGP, corrective action is required when one of 5 triggering conditions occurs at your site. See CGP Part 5.1. Check the box that corresponds to the condition that triggered this corrective action.

Description of the Site Condition

Provide a summary description of the condition you found that triggered corrective action under CGP Part 5.1 and the specific location where it was found. Be as specific as possible about the location; it is recommended that you refer to a precise point on your site map. If you have already provided this explanation in an inspection report, you can refer to that report.

Deadline for Completing a Corrective Action

This deadline is fixed in CGP Part 5.2. For all projects, the deadline is either:

(1) No more than 7 calendar days after the date you discovered the problem; or

(2) If it is infeasible to complete work within the first 7 calendar days, as soon as practicable following the 7th day.

If your estimated date of completion falls after the 7 calendar day deadline consistent with (2), above, explain:

(a) Why you believe it is infeasible to complete work within 7 calendar days; and

(b) The schedule for installing and making the new or modified stormwater control operational in the soonest practicable timeframe.

Section II.B Stormwater Control Modifications to be Implemented

Provide a list of changes (i.e., modifications and / or replacements) you plan to make to your control measures to correct the problem, and record either the actual date you completed the work or the planned date. Keep in mind that your work must be completed within the timeline that you specified in Section II.A for the completion of corrective action work. Refer to Part 5.2 for Corrective Action deadlines and Part 6.4(2)(a) for conditions requiring a SWPPP modification. Keep in mind that SWPPP changes must be made within 7 calendar days of completing the corrective action work.

Space is provided for you to include additional notes or observations regarding the changes that you implemented at your site to correct the problem.

Section III Signature/Certification

For each corrective action taken in accordance with this Part, the operator shall document the details of the corrective action in the inspection report required by Part 4.4. These reports shall be signed in accordance with the signatory requirements in Appendix B, Subsection 9 and maintained with the SWPPP in accordance with the record keeping requirements in Part 8.2 of the permit.

2020 Construction General Permit (CGP)
Corrective Action Report Form

Section I. General Information

(Complete this section within 24 hours of discovering the condition that triggered corrective action)

Name of Project		**CGP Authorization No.**	**AZCN** _____	**Authorization Date**	
Date/ Time Problem First Discovered		**Today's Date**			
Name and Contact Information of Individual Completing this Form	**Name:**_____ **Contact information:** _____				

Section II.A. Corrective Action Triggering Conditions

(Complete this section within 24 hours of discovering the condition that triggered corrective action)

What site conditions triggered the requirement to conduct corrective action? *(Check the box that applies)*

☐ A necessary control measure was never installed, was installed incorrectly, or was not installed in accordance with the requirements in Part 3.2; or

☐ A stormwater control needs to be repaired or replaced (beyond routine maintenance required under Part 3.2); or

☐ One of the prohibited discharges in Part 1.4 is occurring or has occurred; or

☐ ADEQ or USEPA determines that revisions to the control measures are necessary to meet the requirements of Part 3; or

☐ A discharge is causing an exceedance of an applicable surface water quality standard.

Provide a description of the problem: (Provide description of the specific problem that triggered the need for corrective action, and the specific location where it was found. If you have already provided this explanation in an inspection report, you can refer to that report.)

Deadline for completing corrective action:

☐ Work will be completed no more than 7 calendar days after the date the problem was discovered (enter date): ____ / ____ / ____

☐ It is infeasible to complete work within the first 7 days, therefore, the work will be completed as soon as practicable following the 7th day (enter date): ____ / ____ / ____

If the estimated date of completion falls after the 7-day deadline, document the following: (1) The reason it is infeasible to complete work within 7 days, and (2) The schedule for installing and making the new or modified stormwater control operational in the soonest practicable timeframe.

NOTE: *Any corrective actions that result in changes to any of the stormwater controls or procedures shall be documented in the SWPPP within 7 calendar days of completing the corrective action work.*

Section II.B. – Stormwater Control Modifications to be Implemented [Print additional sheets as necessary]

List of stormwater control(s) to be modified or replaced to correct the condition that required the Corrective Action	Date of Completion	SWPPP Update Necessary? If yes, specify date SWPPP modified	Notes and observations
1.		☐ Yes ☐ No	
2.		☐ Yes ☐ No	
3.		☐ Yes ☐ No	

Section III. – Certification and Signature by Permittee (permittee / operator or a duly authorized representative is required to sign)

Check the following as appropriate:

- ☐ The operator has retained a copy of the inspection report documenting the corrective action(s) on-site with the SWPPP as required in Part 6.4.
- ☐ One or more outfalls is/are located within 1/4 miles upstream of an impaired or OAW and the operator shall submit a corrective action report to ADEQ, within 30 calendar days (from the date of the incident), in accordance with Part 8.1. in accordance with Parts 1.5(3) and 1.5(4).

"*I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*"

Signature of Permittee or
"Duly Authorized Representative": _____ Title: _____

Printed Name: _____ Date: _____

Business / Agency: _____ Phone number: _____

Appendix C
Maintenance and Repair Activity Log

Maintenance and Repair Activity Log

Date of Discovery	Description of Maintenance or Repair Activity	Schedule for Completion (If applicable)[1]	Reason for Extended Repair Schedule	Completion Date

Notes:

1. This table is not used to document corrective actions as described in Section 6.2. Corrective actions will be documented on the inspection and corrective action form in Appendix C. Routine maintenance and repair do not constitute corrective action.

2. Repairs must be completed within 7 days unless justification for why an extended schedule is required is provided in this table

Appendix D
Spills, Leaks, and Release Reporting Form

Spills, Leaks, and Release Reporting Form

Date of Occurrence	Description of Event	Actions Taken in Response	Completion Date

Appendix E
Copy of 2020 CGP

State of Arizona
Department of Environmental Quality
Water Quality Division
Phoenix, Arizona 85007

Arizona Pollutant Discharge Elimination System
General Permit for Stormwater Discharges Associated with Construction Activity to Surface Waters

This permit provides authorization to discharge under the Arizona Pollutant Discharge Elimination System (AZPDES) program, in compliance with the provisions of the Arizona Revised Statutes, Title 49, Chapter 2, Article 3.1; the Arizona Administrative Code (A.A.C.), Title 18, Chapter 9, Article 9, and Chapter 11, Article 1; and the Clean Water Act as amended (33 U.S.C. 1251 et seq.).

This general permit specifically authorizes stormwater discharges associated with construction activity in Arizona, pursuant to 40 CFR § 122.26(b)(14)(x) and 40 CFR § 122.26(b)(15). All discharges authorized by this general permit shall be consistent with the terms and conditions of this general permit. Permit coverage is required from the "commencement of construction activities" until "final stabilization", as these terms are defined in this permit.

This general permit becomes effective on July 1, 2020.

This general permit and the authorization to discharge expire at midnight June 30, 2025.

Signed this 27th day of March, 2020.

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Trevor Baggiore, Director
Water Quality Division

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1.0 COVERAGE UNDER THIS GENERAL PERMIT

1.1 Permit Area.

This general permit covers the state of Arizona. This permit is not authorized for use by operators with stormwater discharges associated with construction activities on any Indian country in Arizona. U.S. EPA Region 9 remains the permitting authority for Indian country in Arizona.

1.2 Eligibility.

This general permit authorizes stormwater discharges to surface waters, either directly or by way of a conveyance, associated with "construction activities," as defined in Appendix A, that will disturb one or more acres of land, or will disturb less than one acre, but is part of a common plan of development or sale that will ultimately disturb one acre or more (see 40 CFR 122.26(b)(15)(ii).

This general permit is also applicable to stormwater discharges associated with support activities from temporary plants or operations set up to produce concrete, asphalt, or other materials exclusively for the permitted construction activity. See 40 CFR 122.26(b)(14)(x) and (15) and Appendix A.

Operators of small construction sites (less than five (5) acres – see 40 CFR 122.26(b)(15) and Appendix A) may, if eligible, choose a waiver from coverage under this permit, provided that site remains in compliance with the applicable requirements of Part 1.6 during construction.

Coverage under this permit is not required for routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the facility. See A.A.C. R18-9-A902(B)(8)(c)(iii).

Coverage under this permit may be required for any other discharges associated with construction activities that ADEQ determines are needed in accordance with A.A.C. R18-9-A902(B)(8)(d).

Any discharges that are not consistent with the eligibility conditions of this permit are not authorized by this permit. A person shall either apply for a separate Arizona Pollutant Discharge Elimination System (AZPDES) permit to cover such discharge(s), cease the discharge(s), or take necessary steps to make the discharge(s) eligible for coverage under this permit.

Individual Permit Requirements. An operator who chooses to obtain an individual stormwater permit (in accordance with the requirements of A.A.C. R18-9-C902(B), or is required by ADEQ to obtain an individual stormwater permit (in accordance with A.A.C. R18-9-C902(A)), shall comply with the requirements of Appendix B, Subsections 17 and 18(a)(i).

1.3 Authorized Discharges.

1. <u>Allowable Stormwater Discharges</u>.

    a. Stormwater runoff associated with construction activities provided the discharge is conducted in compliance with this permit;

    b. Discharges requiring a stormwater permit under 40 CFR 122.26(a)(1)(v); 40 CFR 122.26(b)(15)(ii); or under 40 CFR 122.26(a)(9);

    c. Stormwater discharges from construction support activities (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) provided:

i. The support activity is directly related to a construction activity that is required to have AZPDES permit coverage for discharges of stormwater associated with construction activity;

ii. The support activity is not a commercial operation (serving multiple unrelated construction activities by different operators) and does not operate beyond the completion of the construction activity for which the support activity is directly associated;

iii. The support activity is not otherwise covered by a separate AZPDES permit; and

iv. Appropriate control measures for the discharges from the support activity areas are identified in the Stormwater Pollution Prevention Plan (SWPPP) and implemented.

2. Allowable Non-Stormwater Discharges.

a. The following are the only non-stormwater discharges allowed under this permit. These discharges are allowed provided they are minimized to the extent practicable. When allowable non-stormwater discharges cannot be practicably eliminated, the operator shall install appropriate control measures to reduce or eliminate pollutants in the discharge to ensure compliance with Part 3 of this permit:

i. Discharges from emergency fire-fighting activities

ii. Water used to control dust, provided reclaimed water or other process wastewaters are not used;

iii. Routine external building wash down provided detergents are not used;

iv. Water used to rinse vehicles and equipment, provided that reclaimed water or other wastewater is not used and no soaps, solvents, detergents, oils, grease or fuels are present in the rinsate;

v. Pavement rinse waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used;

vi. Uncontaminated air conditioning or compressor condensate;

vii. Uncontaminated groundwater or spring water;

viii. Foundation or footing drains where flows are not contaminated with process materials such as solvents;

ix. Water from firefighting system testing and maintenance, including hydrant flushing;

x. Discharges related to installation and maintenance of potable water supply systems, including disinfection and flushing activities, discharges resulting from pressure releases or overflows, discharges due to potable water pipeline breaks and discharges from wells approved by ADEQ for drinking water use;

xi. Hydrostatic testing of new pipes, tanks or vessels using potable water, surface water, or uncontaminated groundwater;

xii. Water used for compacting soil, provided reclaimed water or other wastewaters are not used;

xiii. Water used for drilling and coring such as for evaluation of foundation materials, where flows are not contaminated with additives; and

xiv. Uncontaminated waters obtained from dewatering operations/ foundations in preparation for and during excavation and construction provided the discharge are managed as specified in Part 3.6 of this permit.

Note: Reclaimed water may be used for dust control, soil compaction, or landscape irrigation if a valid reuse permit is obtained and there are no discharges of reclaimed water off-site.

b. If the site is within 1/4 mile upstream of an Outstanding Arizona Water (OAW), the operator shall not discharge any non-stormwater under this permit, except for emergency fire-fighting activities, unless specifically authorized by the Department.

1.4 Prohibited Discharges.

The operator shall not allow any non-stormwater discharges from the site, except as provided in Part 1.3(2)(b). All other non-stormwater discharges (not listed above) shall be eliminated or authorized under a separate AZPDES permit as those discharges are not authorized under this permit. Stormwater discharges that are mixed with non-stormwater, other than the allowable non-stormwater discharges listed in Part 1.3(2) are not eligible for coverage under this permit.

The following discharges are prohibited:

1. Wastewater from washout of concrete, unless managed by an appropriate control as described in Part 3.5;
2. Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials, unless managed by an appropriate control as described in Part 3.5;
3. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
4. Soaps or solvents used in vehicle and equipment washing; and
5. Toxic or hazardous substances from a spill or other release.

1.5 Limitations of Coverage.

1. Post-Construction Discharges. This general permit does not authorize stormwater discharges that originate from the site after construction activities have been completed and the site, including any temporary support activity site, has achieved final stabilization and a Notice of Termination (NOT) has been submitted to ADEQ. Post-construction stormwater discharges from sites may need to be covered by a separate AZPDES permit. See Part 6.4(13).
2. Discharges Covered by Another AZPDES Permit. This general permit does not authorize stormwater discharges associated with construction activities that are covered under an individual permit or another applicable general permit.
3. Impaired or Not-Attaining Waters. The following conditions apply if outfalls from construction sites are located within 1/4 mile upstream of a surface water listed as impaired or not-attaining:

   a. The operator must submit a copy of the SWPPP and associated review fee with the NOI to ADEQ;

   b. The SWPPP must include a Sampling and Analysis Plan (SAP - see Part 7.2) for analytical monitoring, if there are discharges from the site that include the pollutant(s) for which the surface water is impaired or not-attaining. However, if the operator can demonstrate there are no pollutants that will be an additional source

to the impairment, analytical monitoring may not be required. As part of this demonstration, the operator must consider all on-site activities, including the presence of pollutants (metals, nutrients, etc.) in site soils. The demonstration must be included in the SWPPP submitted for ADEQ's review;

c. If a discharge contains pollutants for which an approved Total Maximum Daily Load (TMDL) has been established, the SWPPP shall specifically identify control measures necessary to ensure the discharges will be consistent with the provisions of the TMDL.

4. Outstanding Arizona Waters (OAW). The following conditions and requirements apply if one or more outfalls from construction sites are located within 1/4 mile upstream of a surface water listed as an OAW in A.A.C. R18-11-112(G):

a. The operator must submit a copy of the SWPPP and associated review fee with the NOI to ADEQ;

b. The SWPPP must include a sampling and analysis plan for analytical monitoring (see Part 7.2) of pollutants expected to discharge from the site, including sediment.

1.6 Erosivity Waivers for Small Construction Activities.

A person performing construction activity which disturbs between one and five acres may be eligible for a waiver from coverage under this permit based on a low potential for soil erosion (i.e., the Erosivity Waiver). Construction activities that disturb five acres or greater, or less than five acres but are part of a common plan of development or sale, are not eligible for the erosivity waiver.

1. Calculating the Erosivity Waiver.

Low potential for erosion is defined as a rainfall erosivity (R) factor of less than five (5) and is calculated in myDEQ, which uses the EPA's methodology for determining if a site qualifies for the erosivity waiver, based on the *USDA Handbook 703-Predicting Soil Erosion by Water: A Guide to Conservation Planning with the Revised Universal Soil Loss Equation (RUSLE)*, dated January 1997. EPA has updated its Rainfall Erosivity Factor Calculator to correct known problems and to use updated data from the Natural Resources Conservation Service's (NRCS) Revised Universal Soil Loss Equation, Version 2 (RUSLE2) database. myDEQ is using the Version 2 for erosivity calculations for the 2020 CGP. The small construction site's rainfall erosivity calculation shall be less than five (5) during the entire period of construction activity.

If one or more outfalls from the construction site are located within 1/4 mile upstream of an impaired or not-attaining water or OAW, the site is not eligible for the erosivity waiver. The erosivity waiver is predicated on the above criteria being met and proper application procedures being followed.

2. Permit Waiver Certification.

The operator shall obtain an AZPDES Permit Waiver Certification before commencing construction activities. All waiver certifications require an AZPDES fee in accordance with A.A.C. R18-14-109, Table 6.

An operator of a construction activity that is eligible for an Erosivity Waiver shall provide the following information:

a. The name, address, and telephone number of the construction site operator(s);

b. The name (or other identifier), address, county, and parcel or lot number as recorded by the county, of the construction activity or site;

c. Latitude and longitude (in decimal degree format to 6 decimal places) of the construction site at the outfall nearest to the surface water;

d. The construction activity's start and completion (final stabilization) dates;

e. The total construction site acreage and the acreage to be disturbed by the operator submitting the NOI, to the nearest 0.5 acre;

f. If discharges may occur to a municipal separate storm sewer system (including municipal streets and other improvements that can convey stormwater), the name of the municipal operator of the storm sewer;

g. The name of the waterbody(s) that would be receiving stormwater discharges from the construction site; and

h. The waiver certification form shall be signed using the electronic signature feature in myDEQ and in accordance with the signatory requirements of Appendix B, Subsection 9.

3. Construction Activities That Extend Past Certified Period.

If the small construction activity continues beyond the calculated "end date" as shown on the Permit Waiver Certification, the operator shall prepare a SWPPP and submit an NOI as required under Parts 2.3 and 6.0.

2.0 AUTHORIZATION UNDER THIS GENERAL PERMIT

The operator shall review all the conditions and requirements of the permit before submitting any documentation described in Part 2.

2.1 Responsibilities of Operators.

1. All Operators. All operators are required to obtain coverage for stormwater discharges associated with construction activity under this permit or an alternative AZPDES permit. For the purposes of this permit, an "operator" is any person associated with a construction activity that meets either of the following two criteria:

   a. The person has operational control over construction plans and specifications, including the ability to make revisions to those plans and specifications; or

   b. The person has day-to-day operational control of those activities at a construction site that are necessary to ensure compliance with the permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the permit).

   Subcontractors are generally not considered to be "operators" for the purposes of this permit.

2. Multiple Operators. Where there are multiple operators associated with the same construction activity, all operators are required to obtain permit coverage. The following applies in these situations:

   a. If one operator has control over plans and specifications and a different operator has control over activities at the construction site, they may divide responsibility for compliance with the terms of this permit as long as they jointly develop a common SWPPP (see Part 6.1(1)), which documents which operator has responsibility for each requirement of the permit.

   b. If an operator only has operational control over a portion of a larger construction site (e.g., one of four homebuilders in a subdivision), the operator is responsible for compliance with applicable effluent limits (see Part 3), terms, and conditions of this permit as it relates to their activities on their portion of the construction site and implementation of control measures described in the SWPPP in the areas under their control.

   c. Operators must ensure either directly or through coordination with other operators, that their activities do not render another person's pollutant discharge controls ineffective.

   d. If the operator of a construction support activity (Part 1.3(1)(c)) is different from the operator of the main construction site, that operator is also required to obtain permit coverage.

2.2 Prerequisites for Submitting a Notice of Intent (NOI).

A person may be authorized to discharge under this permit only if the stormwater discharge is associated with construction activities from a construction site. Prior to submission of an NOI, an applicant seeking authorization to discharge under this general permit shall:

1. Meet the eligibility requirements under Part 1.2; and

2. Develop a SWPPP that meets the requirements of Part 6 of this permit, and that covers either the entire site or all portions of the site for which the person is an operator.

a. The SWPPP shall be prepared by a qualified person, prior to submission of the NOI and shall be implemented prior to the start of construction.

b. The SWPPP is not required to be submitted to ADEQ unless the construction site has one or more outfalls within 1/4 mile upstream of an impaired or not-attaining water or OAW as described in Parts 1.5(3) and 1.5(4) but shall be retained and made available in accordance with Part 6.7.

2.3 Submitting an NOI.

1. Application Required.

a. The operator shall submit a separate, accurate, and complete NOI to ADEQ for each construction activity that disturbs one or more acres of land, or for each activity that is part of a common plan of development or sale that will ultimately disturb one or more acres of land. NOIs must be submitted in myDEQ.

b. Submission of the NOI demonstrates the operator's intent to be covered by this permit; it is not a determination by ADEQ that the operator has met the eligibility requirements for the permit. Discharges are not authorized if ADEQ notifies the operator that further evaluation is necessary, or that the discharges are not eligible for coverage under this permit.

c. If the operator changes or another operator is added before construction activities are complete, the new operator shall also submit an NOI to be authorized under this permit before taking over operational control or commencing construction activities at the site.

2. NOI Requirements. Construction site operators seeking authorization for stormwater discharges under this general permit shall submit a complete and accurate AZPDES NOI in myDEQ. The NOI in myDEQ requires, at a minimum, the following information:

a. The name, address, and telephone number of the construction site operator;

b. The type of construction activity (e.g., school, commercial, subdivision, roadway, etc.);

c. Whether the construction activity is part of a common plan of development or sale;

d. Estimates of the total construction site acreage and the acreage to be disturbed by the operator submitting the NOI;

e. The printed name (or other identifier), address and county of the construction site;

f. An accurate latitude and longitude (in decimal degree format to 6 decimal places) of the construction site at the point nearest to the closest surface water;

g. The latitude and longitude (in decimal degree format to 6 decimal places) of outfalls that may discharge stormwater to a receiving surface water;

h. Confirmation that a SWPPP meeting the requirements in Part 6 of this permit has been developed and will be implemented prior to commencement of construction activities;

i. If the NOI is a late application, the operator shall certify that a SWPPP has been developed and implemented prior to submittal of the NOI;

j. The name and telephone number of a contact person for the SWPPP;

k. The name of the closest surface water, which may include an unnamed wash, or canal;

l. The name(s) of the MS4 into which there is a potential to discharge, if applicable;

m. The construction activity's estimated start and completion dates; and

n. Fees are to be paid using a credit card or electronic check (ACH-debit) at the time of NOI submission in myDEQ.

3. Effective Date of Permit Coverage.

a. Routine Coverage. Except as set forth in subsection (c) below, an eligible operator is authorized to discharge stormwater from a construction site when an authorization certificate is issued, after the NOI information is entered and certified in myDEQ.

b. Incomplete NOI Submitted. If ADEQ notifies the operator that an NOI is incomplete or incorrect, the operator shall submit a revised or new NOI in myDEQ if the operator still intends to obtain coverage under this permit.

c. Discharges to Impaired, Not-Attaining or Outstanding Arizona Waters. Applicants seeking coverage for a construction site that has one or more outfalls within 1/4 mile upstream of an impaired or not-attaining water or an OAW are not authorized under this permit for 30 calendar days following submission of their NOI, SWPPP, SAP and initial application fees in myDEQ. ADEQ may notify operators within this time frame that the NOI is approved, or there is cause for a SWPPP amendment, or denial of coverage as specified in Parts 1.5(3) and 1.5(4) of this permit. If notification is not received in the 30 calendar day time period, the operator is deemed covered under this permit.

d. SWPPP Requiring Additional Information. If the operator receives notification from ADEQ that the SWPPP is incomplete or otherwise deficient, the operator shall submit a revised SWPPP to ADEQ that addresses the comments if the operator still intends to obtain permit coverage. If review of the revised SWPPP reveals that a discharge of pollutants may cause or contribute to an exceedance of an applicable surface water quality standard in the receiving surface water, monitoring may be required, in accordance with Part 7. The revised SWPPP must include the applicable re-review fee. Permit coverage is suspended until ADEQ issues the permit authorization certificate.

e. Ongoing Construction Activities.

For operators of ongoing construction activities that are in process as of the effective date of this permit:

i. Within the first 60 calendar days from the effective date of this permit, the operator shall update the SWPPP as necessary to comply with the requirements of Part 6 of this permit; and

ii. Within the first 60 calendar days from the effective date of this permit, the operator shall submit a new NOI in myDEQ. The operator may continue to comply with the terms and conditions of the expired permit (AZG2013-001) until the NOI is submitted and payment is made for the permit application fee.

iii. If eligible, an operator may submit an NOT within the first 60 calendar days from the effective date of this permit, if construction is finished and final stabilization has been achieved.

f. Change in Operators. For construction activities where the operator changes, including instances where an operator is added after an NOI has been submitted, the new operator shall submit an NOI and receive an authorization certificate before assuming operational control or commencing work on-site (see Appendix B, Subsection 19).

g. Certificate of Authorization. The operator will receive a Certification of Authorization from myDEQ assigning an authorization number and approval date. The Certificate of Authorization is not the permit. It acknowledges that ADEQ received the NOI and that the operator is authorized to discharge stormwater, subject to the terms and conditions of this permit. Correspondence with ADEQ concerning any construction activity covered by this permit shall reference the authorization number.

4. Late Applications. The operator is only permitted for eligible discharges that occur after a complete and accurate NOI is submitted in myDEQ and authorization is granted. ADEQ reserves the right to take enforcement action for any un-permitted discharges or permit noncompliance that occur between the time construction commenced and either permit authorization is granted, denied, or a complete and accurate Erosivity Waiver is submitted and approved in myDEQ.

5. Modified NOI. The operator may modify the NOI in myDEQ if there are revisions to personnel contact information or if outfall locations change. There is no fee for either of these modifications. Any other modifications require the submission of a NOT, terminating the existing NOI, and obtaining a new NOI for continued coverage in myDEQ, including the application fee.

2.4 Fee Requirements.

In accordance with A.A.C R18-14-109, the operator shall pay the initial AZPDES water quality protection services fee for coverage under this permit at the time the NOI is submitted. In addition, the operator shall pay the applicable annual fee when billed, unless a notice of termination has been submitted to ADEQ. The annual fee is due on the anniversary of the date of the authorization certificate (see Part 2.3(3)). Both fees are based on the amount of acreage identified in the NOI, in accordance with A.A.C. R18-14-109, Table 6.

2.5 Authorization of Emergency-Related Construction Activities.

Emergency-related construction activities are automatically authorized provided that:

1. The activity is being performed in order to avoid imminent endangerment to human health or the environment or in response to an emergency and the activity requires immediate authorization;

2. If the activity continues for more than 30 calendar days after the initial emergency-related start date, the operator shall prepare a SWPPP and submit a complete and accurate NOI;

3. The operator provides documentation in the SWPPP to substantiate the occurrence of the public emergency; and

4. The operator complies with all other applicable requirements in the permit regarding discharges associated with the construction activities.

2.6 Terminating Coverage.

1. Notice Required. To terminate permit coverage, the operator shall submit a complete and accurate Notice of Termination (NOT) in myDEQ. The operator is responsible for meeting the terms and conditions of this permit until the construction site's authorization is terminated. The operator may submit a complete and accurate NOT in myDEQ after any of the following conditions have been met:

a. The operator has established final stabilization on all portions of the site for which the operator is responsible, in accordance with Part 3.4(2).

b. Another operator who has a valid authorization number under this general permit or an individual AZPDES permit has assumed control over all areas of the site that have not been finally stabilized (see Appendix B, Subsection 19);

c. For residential construction activities, temporary stabilization has been completed and the residence has been transferred to the homeowner (or a homeowner's association) in accordance with Part 3.4(2);

d. The planned construction activity identified on the original NOI was never initiated (i.e., grading was never started) and plans for construction have been permanently abandoned or indefinitely postponed;

e. The operator has obtained coverage for the site under another authorizing AZPDES permit;

f. The operator qualifies for one of the alternatives in Part 3.4(3) and submits the required documentation demonstrating compliance with the NOT in myDEQ.

2. NOT Requirements. The operator shall submit a complete and accurate NOT in myDEQ.

3. Effective Date of Permit Termination. Authorization to discharge terminates under this permit when the permittee submits the NOT in myDEQ and receives the termination acknowledgement certificate.

2.7 Change of Operator Request due to Foreclosure or Bankruptcy.

If a lending institution or another person takes operational control of the permitted construction site due to foreclosure or bankruptcy, the new operator is responsible for discharges from the construction site. If the construction site has not achieved final stabilization as defined in Part 3.4(2), the new operator shall submit a NOI in myDEQ for permit coverage within 30 calendar days prior to taking control of the site. In the event the new operator taking control of the construction site fails to submit a NOI for the ongoing construction activities, the existing operator may submit a petition to the department to terminate permit coverage by submitting a Change of Operator Request (COR) form (available on the ADEQ website). In making this request, the existing operator must no longer have access to the property and shall submit the following information:

1. The date of the loss of control of the construction site;

2. The person that has control of the construction site;

3. The reasons for being unable to submit a NOT that complies with the requirements of Part 2.6;

4. A copy of the SWPPP documenting conditions at the time of loss of control. The existing operator shall indicate areas of exposed soils and material stockpiles; the location, type and quantity of chemicals storage; the existing control measures left in place and their condition; and areas that have been stabilized. The existing operator shall indicate if there is public access to the site (e.g., perimeter fence, gate, etc.) and shall identify any conditions, which may be dangerous or hazardous, or may pose a significant environmental threat.

5. Documentation that the permittee informed the person taking control of the construction site of the requirements of this permit.

ADEQ will review the COR, SWPPP and related information to determine appropriate actions, including (but not limited to) terminating permit coverage for the existing operator. As part of this

assessment, ADEQ may conduct a site inspection. Submitting a COR does not suspend ongoing enforcement actions and does not preclude ADEQ from taking enforcement actions for violations of this permit.

3.0 EFFLUENT LIMITATIONS AND WATER QUALITY STANDARDS APPLICABLE TO ALL DISCHARGES FROM CONSTRUCTION SITES

The control requirements in this Part incorporate the technology-based effluent limitations to meet water quality standards that, where applicable, apply to all stormwater and allowable non-stormwater discharges from construction sites eligible for coverage under this permit. These requirements apply the national effluent limitations guidelines and new source performance standards found at 40 CFR Part 450. The operator shall comply with the control measures requirements included in Part 3 through site planning and designing, installing, and maintaining these controls.

3.1 Non-numeric Effluent Limitations and Associated Control Measures.

At a minimum, the operator shall design, install and maintain the following effluent limitations reflecting the best practicable technology currently available on construction sites:

1. Erosion and Sediment Control (Part 3.3)
2. Site Stabilization (Part 3.4)
3. Pollution Prevention (Part 3.5)
4. Controls for Allowable Non-Stormwater Discharges and Dewatering Activities (Part 3.6)
5. Surface Outlets (Part 3.7)

3.2 General Maintenance Requirements.

1. Ensure that all control measures required, and described in Parts 3.3 through 3.7, remain in effective operating condition during permit coverage and are protected from activities that would reduce their effectiveness.
2. Inspect all control measures in accordance with the inspection requirements in Part 4. The operator shall document the findings in accordance with Part 4.4. When controls need to be replaced, repaired, or maintained, make the necessary repairs or revisions. Routine maintenance does not constitute a corrective action (see Part 5.1). The operator shall comply with the following schedule:
    a. If the identified control measure deficiency does not require significant maintenance, repair, or replacement, or if the problem can be corrected through routine maintenance, initiate work to fix the problem immediately after discovery, and complete such work by the close of the next work day, if feasible. SWPPP recordkeeping is not required for actions taken under this paragraph.
    b. When the installation of a new control (that is not in response to a corrective action in Part 5.1), or a significant repair of an existing control is needed, install the new or modified control and make it operational, or complete the repair, by no later than 7 calendar days from the time of discovery, or before the next storm event (whichever is sooner) where feasible. If it is infeasible to complete the installation or repair within 7 calendar days or before the next storm event, SWPPP records must document why it is infeasible. The SWPPP must also document the schedule for installing the control(s) and making it operational as soon as practicable after the 7-day timeframe. Where these actions result in changes to any of the controls or procedures documented in the SWPPP, modify the SWPPP accordingly within 7 calendar days of completing this work.

3.3 Erosion and Sediment Control Requirements.

Design, install, and maintain effective erosion and sediment controls to minimize the discharge of pollutants. The operator shall minimize the amount of soil exposed during construction activities. The operator is also subject to the deadlines for temporary and/or permanent stabilization of exposed portions of the site in accordance with Part 3.4.

The following general requirements are applicable to all construction sites that implement the erosion and sediment controls in Part 3.3.

1. Design Requirements.

   a. The operator shall account for the following factors in designing control measures:

      i. The expected amount, frequency, intensity, and duration of precipitation;

      ii. The nature of stormwater runoff and all sources of run-on at the site, including factors such as expected flow from impervious surfaces, slopes, and site drainage features. If any stormwater flow will be channelized at the site, control measures must be designed to control both peak flowrates and total stormwater volume to minimize erosion at outlets and to minimize downstream channel and stream bank erosion; and

      iii. The range of soil particle sizes expected to be present on the site.

   b. The operator shall direct stormwater flows to vegetated areas of the site to increase sediment removal and maximize stormwater infiltration, including any natural buffers established under Part 3.3(7), unless infeasible. Use velocity dissipation devices if necessary to prevent erosion when directing stormwater to vegetated areas.

2. Installation Requirements.

   a. Complete the installation of control measures by the time each phase of construction activity has begun. In the event it is infeasible to install one or more control measures prior to the start of construction activities, the operator shall ensure that those controls are installed as soon as possible. SWPPP records must document why it is infeasible.

      Following the installation of these initial control measures, all other controls planned for this portion of the site and described in the SWPPP must be installed and made operational as soon as conditions on the site allow. The requirement to install control measures prior to construction activities for each phase of the project does not apply to activities associated with the actual installation of these controls.

   b. Use standard industry practices and follow manufacturer's specifications. The operator shall install all control measures in accordance with standard industry practices, including applicable design specifications. Design specifications may be found in manufacturer specifications and/or in applicable erosion and sediment control manuals or local ordinances. Any departures from such specifications must reflect standard industry practice and must be explained in the SWPPP.

3. Control Stormwater Volume and Velocity.

   a. If off-site areas direct flow onto the construction site, divert run-on flows, and/or provide other appropriate control measures to account for off-site contributions of stormwater and non-stormwater flow.

      If stormwater conveyance channels are used at the site, the operator shall design and construct them to avoid unstabilized areas and to reduce erosion, unless infeasible. Minimize erosion of channels and their embankments, outlets, adjacent stream banks, slopes, and downstream waters during discharge conditions using

erosion controls and velocity dissipation devices within and along the length of any constructed stormwater conveyance channel, and at any outlet to provide a non-erosive flow velocity.

b. Sediment Basins and Traps. If necessary, the operator shall install and maintain sediment basin(s) and / or traps to manage run-on, runoff, and sediment discharge from the construction site.

i. Design Requirements. The SWPPP shall provide sizing and calculation requirements for sediment basin(s) and shall indicate whether the basin(s) will be temporary or permanent.

a. When discharging from the sediment basin, utilize outlet structures that minimize pollutants;

b. Prevent erosion of the sediment basin using stabilization controls (e.g., erosion control blankets), and the inlet and outlet using erosion controls and velocity dissipation devices; and

c. Sediment basins must be situated outside of surface waters and any natural buffers established under Part 3.3(7), unless approved under a CWA section 404 permit.

ii. Maintenance requirements. The operator shall maintain sediment basins, ponds, and traps, and remove accumulated sediment when design capacity has been reduced by 50%.

iii. Polymers, flocculants, or other cationic treatment shall be used in accordance with manufacturers' instructions to provide for adequate settling time and minimize or eliminate these chemicals in the discharge. Furthermore, the operator shall comply with the requirements in Part 6.3(10).

4. Control Stormwater Discharges.

Control stormwater discharges including both peak flowrates and total stormwater volume to minimize channel and streambank erosion and scour in the immediate vicinity of outfalls. Examples of control measures that can be used to comply with this requirement include the use of erosion controls and/or velocity dissipation devices (e.g., check dams, sediment traps) within and along the length of a stormwater conveyance and at the outfall to slow down runoff.

5. Minimize the amount of soil exposed and the disturbance of steep slopes by:

a. Preserving Natural Vegetation. Where practicable, existing vegetation should be preserved. If natural vegetation can be preserved, the operator shall clearly mark vegetation before clearing activities begin. Locations of trees and boundaries of buffer zones to be preserved shall be identified on the SWPPP site map;

b. Phase or sequence construction activities. Where practicable, minimize the area of disturbance at any one time.

c. Steep slopes. Where practicable, implement standard erosion and sediment control practices, such as phasing disturbances to these areas and using stabilization practices designed to be used on steep grades.

6. Minimize sediment discharges from the site. The design, installation and maintenance of erosion and sediment controls must address factors such as the amount, frequency, intensity and duration of precipitation, the nature of resulting stormwater runoff, and soil characteristics, including the range of soil particle sizes expected to be present on the site.

a. Perimeter Control. The operator shall use appropriate control measures (e.g., fiber rolls, berms, silt fences, vegetative buffer strips, sediment traps, or equivalent sediment controls) at all times for all down slope boundaries (and for those side slope boundaries deemed appropriate as dictated by individual site conditions) of the construction site.

For sites where stormwater from disturbed areas, exclusive of rights-of-way, is conveyed to one or more retention basins that are designed to retain stormwater runoff from a local 100 year / 2 hour storm event, as calculated by an Arizona registered professional engineer, geologist or landscape architect (A.R.S. § 32-144) or equivalent, the operator is not required to utilize perimeter controls.

For linear construction activities (see Appendix A) with rights-of-way that restrict or prevent the use of such perimeter controls, the operator shall maximize the use of these controls where practicable and document in the SWPPP why it is impracticable in other areas of the site.

b. Control discharges from stockpiles of sediment or soil. As necessary, implement the following measures for any stockpiled or land clearing debris composed, in whole or in part, of sediment or soil:

i. Place stockpiles outside of washes or other surface waters, stormwater conveyances (such as curb and gutter systems), or streets leading to stormwater conveyances, such that the placement does not conflict with local laws and local rights-of-way are not impacted.

ii. Locate the stockpiles outside of any buffers established consistent with Part 3.3(7);

iii. Protect from contact with stormwater (including run-on) using a temporary perimeter sediment barrier;

iv. Avoid rinsing sediment, debris, or other pollutants accumulated on pavement or other impervious surfaces after the stockpile has been removed into any stormwater conveyance (unless connected to a sediment basin, sediment trap, or similarly effective control), storm drain inlet, or surface water;

v. To the extent practicable, implement control measures to prevent the generation of wind-blown sediment and debris; and

vi. Use perimeter controls or other effective sediment control measures around soil stockpiles, except when they are being actively worked. For piles that will be unused for 14 calendar days or more, provide cover or appropriate temporary stabilization.

c. Storm Drain Inlet Protection. The operator shall assess the need for and install inlet protection measures necessary to remove sediment discharges from the site. If the site discharges to any storm drain inlet that carries stormwater flow to a surface water (and it is not first directed to a sediment basin, sediment trap, or similarly effective control and the operator has authority to access the storm drain inlet), then inlet protection is required.

Inlet protection measures may be removed in the event of flood conditions that may endanger the safety of the public. Such actions shall be documented in the SWPPP. The operator shall evaluate alternative control measures to be used in the future to prevent a recurrence of this problem.

d. If existing control measures need to be repaired or modified or if additional control measures are necessary, implementation shall be completed within 7 calendar days or before the next storm event (whichever is sooner), unless otherwise prescribed in i. – iv. below. If implementation before the next storm event is

impracticable, the reason(s) for delay shall be documented in the SWPPP and alternative control measures shall be implemented as soon as possible. Additionally, the following maintenance activities shall be implemented:

i. Remove accumulated sediment when it reaches a maximum of one-third the height of the silt fence or one-half the height of a fiber roll.

ii. Sediment shall be removed from temporary and permanent sedimentation basins, ponds and traps when the depth of sediment collected in the basin reaches 50% of the storage capacity.

iii. Construction site egress location(s) shall be inspected for evidence of off-site tracking of sediment, debris, and other pollutants onto paved surfaces. Removal of sediment, debris, and other pollutants from all off-site paved areas shall be completed as soon as practicable.

iv. Accumulations of sediment, debris, and other pollutants observed in off-site surface waters, drainage ways, catch basins, and other drainage features shall be removed in a manner and at a frequency sufficient to minimize impacts and to ensure no adverse effects on water quality.

7. Maintain natural buffers adjacent to perennial surface waters and direct stormwater to vegetated areas to increase sediment removal, unless infeasible.

a. Provide Natural Buffers or Equivalent Erosion and Sediment Controls. This requirement only applies when a perennial surface water or a lake (if feasible) is located within 50 feet of the site's construction activities:

i. Areas not owned or are otherwise outside the activities of the operator may be considered areas of undisturbed natural buffer for purposes of compliance with this part.

ii. Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve, in combination, the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

b. Alternatives. In areas where it is infeasible to maintain the 50-foot buffer, the operator shall:

i. Document in the SWPPP the reasons why the 50 foot buffer cannot be maintained, and identify the additional erosion and sediment controls selected;

ii. Preserve as much buffer as possible and design, implement and maintain additional erosion and sediment controls (such as berms, diversion dikes, sediment basins, etc.);

iii. Ensure that all discharges from the area of construction activity to the natural buffer are first treated by the site's erosion and sediment controls, and use velocity dissipation devices if necessary to prevent erosion caused by stormwater within the buffer;

iv. Document in the SWPPP the natural buffer width retained on the property, and show the buffer boundary on the site plan;

v. Delineate, and clearly mark off, with flags, tape, or other similar marking device all natural buffer areas; and

vi. Follow the additional stabilization requirements described in Part 3.4(1).

The operator is not required to enhance the quality of the vegetation that already exists in the buffer, or provide vegetation if none exists.

c. Exceptions.

i. If there is no discharge of stormwater to perennial waters through the area between the site and any perennial waters located within 50 feet of the site, the operator is not required to comply with the requirements in this Part. This includes situations where control measures, such as a berm or other barrier that will prevent such discharges, have been implemented.

ii. Where no natural buffer exists due to preexisting development disturbances (e.g., structures, impervious surfaces) that occurred prior to the initiation of planning for the current development of the site, operators are not required to comply with the requirements in this Part, unless portions of the preexisting development are removed.

Where some natural buffer exists but portions of the area within 50 feet of the perennial water are occupied by preexisting development disturbances, operators are required to comply with the requirements in this Part. For the purposes of calculating the sediment load reduction, an operator is not expected to compensate for the reduction in buffer function from the area covered by these preexisting disturbances.

If, during the life of the project, any portion of these preexisting disturbances will be disturbed, the area disturbed will be deducted from the area treated as natural buffer.

iii. Linear construction activities are not required to comply with the requirements in this Part if site constraints (e.g., limited right-of-way) prevent the operator from meeting any of the compliance alternatives in Part 3.3(7), provided that, to the extent practicable, disturbances are limited to within 50 feet of the perennial water and/or the operator provides supplemental erosion and sediment controls to treat stormwater discharges from construction activities within 50 feet of the perennial water. The operator shall document in the rationale for why it is infeasible to comply with the requirements in Part 3.3(7) in the SWPPP, and describe any buffer width retained and/or supplemental erosion and sediment controls installed.

iv. “Small residential lot” construction (see Appendix A) is exempt from buffer requirements, provided that the operator minimizes the discharge of pollutants by complying with the requirements of Parts 3.3 through 3.8.

v. The following disturbances within 50 feet of a perennial water are exempt from the requirements in this Part:

a. Construction approved under a CWA section 404 permit; or

b. Construction of a water-dependent structure or water access area (e.g., pier, boat ramp, trail).

Any of the above disturbances that occur within the buffer area shall be documented in the SWPPP.

8. The operator shall minimize soil compaction, unless minimizing soil compaction is not required because the intended function of a specific area of the site dictates that it be compacted. Preserve topsoil, unless preserving topsoil is not required because the intended function of a specific area of the site dictates that the topsoil be disturbed or removed.

3.4 Site Stabilization Requirements, Schedules and Deadlines.

The operator shall comply with the stabilization requirements in this Part to minimize the discharge of pollutants. If revegetation plans include seeding, the SWPPP shall include seed mix and application specifications that will be used for vegetative stabilization. If the operator uses fertilizers or tackifiers on-site to establish vegetation, additional control measures shall be implemented to minimize the presence of these chemicals in the discharge.

1. Temporary Stabilization.

   The operator must provide temporary stabilization, or initiate permanent stabilization, of disturbed areas within 14 calendar days of the most recent land disturbance in areas where construction or support activities have been temporarily suspended or have permanently ceased, except as follows:

   a. Where stabilization by the 14th day is precluded by snow cover or frozen ground conditions, stabilization measures shall be initiated as soon as practicable;

   b. When the site is using vegetative stabilization and is located in an area of the state experiencing drought conditions (see Appendix A), vegetative stabilization measures shall be initiated as soon as practicable, when growing conditions are best for planting or seeding;

   c. Stabilization shall be initiated within 7 calendar days, for areas within 50 feet of an impaired or not-attaining water or OAW.

   d. Where areas of construction activity are awaiting vegetative stabilization for periods greater than 14 calendar days after the most recent activity, non-vegetative methods of stabilization shall be employed. These methods shall be described in the SWPPP.

   The operator is not expected to apply temporary or permanent stabilization measures to areas that are intended to remain unvegetated or unstabilized following construction (e.g., dirt access roads, utility pole pads, areas being used for storage of vehicles, equipment, or materials).

2. Final Stabilization.

   Final stabilization means that one of the following conditions (a, b, or c) is met:

   a. All soil disturbing activities at the site have been completed; all construction materials, waste, and temporary erosion and sediment control measures (including any sediment that was being retained by the temporary erosion and sediment control measures) have been removed and properly disposed; and either i. and/or ii. below is met:

      i. A uniform (i.e., evenly distributed, without large bare areas) vegetative cover with a density of 70% of the native background vegetative cover for the area is in place on all unpaved areas and areas not covered by permanent structures.

         When preconstruction native background vegetation covered less than 100% of the ground (e.g., arid areas, beaches), the 70% coverage criteria is adjusted as follows: if the native vegetation covered 50% of the ground, 70% of 50% (.70 X .50 = .35) or 35% cover density would be required; or

      ii. Equivalent permanent stabilization measures (such as the use of riprap, gabions, gravel, or geotextiles) have been employed.

   b. For individual lots in residential construction, final stabilization means that the homebuilder:

i. Has completed final stabilization as specified in Part 3.4(2)(a) above; or

ii. Has established temporary stabilization, including perimeter controls, for an individual lot prior to occupation of the home by the homeowner and has informed the homeowner of the need for, and benefits of, final stabilization; and

iii. An NOT may be submitted in myDEQ.

c. For construction activities on land used for agricultural purposes (e.g., pipelines across crop or range land), final stabilization may be accomplished by returning the disturbed land to its preconstruction agricultural use. Areas disturbed that were not previously used for agricultural activities, such as buffer strips immediately adjacent to water of the U.S., and areas that are not being returned to their preconstruction agricultural use shall meet the final stabilization criteria above. Upon final stabilization, an NOT may be submitted in myDEQ.

Any non-vegetative stabilization methods (e.g., decomposed granite, geotextiles, or degradable mulch) must achieve the same requirements for final stabilization as specified in Part 3.4(2)(a).

3. Site Stabilization Alternatives.

An operator with an eligible site may choose one of the following alternatives instead of implementing the stabilization requirements in Parts 3.4(1) and 3.4(2). Documentation of eligibility of one of the alternative stabilization activities must be included in the SWPPP and identified on the NOT in myDEQ.

a. Sites with additional retention capacity (see A.R.S. § 49 – 255.01(L)). Stabilization deadline requirements in this permit do not apply to sites with retention capacity that meets or exceeds the 100 year/2 hour storm event as calculated by an Arizona registered professional engineer, geologist or landscape architect (A.R.S. § 32-144) or equivalent, and that meet the following conditions:

i. There are no outfalls that discharge to a perennial or intermittent water body;

ii. All stormwater generated by disturbed areas of the site, exclusive of public rights-of-way, is directed to one or more retention basins;

iii. The operator complies with pollution prevention measures;

iv. The operator maintains capacity of retention basin(s); and

v. The operator determines temporary and final stabilization requirements for the site to reduce or minimize the discharge of sediment and other pollutants to meet the requirements of Parts 3.4(1) and 3.4(2).

b. Sites returned to pre-construction discharge conditions. Construction operators may qualify for this alternative by demonstrating that stormwater discharges from the site's pre- and post-construction activities are equal or less than in volume and pollutant load from disturbed areas as calculated by an Arizona registered professional engineer, geologist or landscape architect (A.R.S. § 32-144) or equivalent; and where the site does not have outfalls that will discharge to an impaired or not-attaining water or OAW.

c. Arid, semi-arid, and drought-stricken areas: Final stabilization is met if the area has been seeded or planted to establish vegetation that provides 70 percent or more of the cover that is provided by vegetation native to local undisturbed areas within three (3) years and, to the extent necessary to prevent erosion

on the seeded or planted area, non-vegetative erosion controls have been applied that provide cover for at least three years without active maintenance.

3.5 Pollution Prevention Requirements.

1. The operator shall design, install, and maintain effective pollution prevention measures to prevent or minimize the discharge of pollutants from spilled or leaked materials from construction activities. To meet this requirement, the operator shall:

   a. Eliminate certain pollutant discharges from the site (see Part 1.4, Prohibited Discharges);

   b. Properly maintain all pollution prevention controls (see Part 3.2, General Maintenance Requirements); and

   c. Comply with pollution prevention control measures for pollutant-generating activities that occur at the site as outlined in this Part.

   The operator shall comply with the pollution prevention standards in this Part if any of the following activities are conducted at the site or at any construction support activity areas covered by this permit (see Part 1.3(1)(c)).

2. Minimize the Discharge of Pollutants – from equipment and vehicle washing, wheel wash water, and other wash waters.

   a. Concrete Washout. To comply with the prohibition in Part 1.4(1) for discharges of wastewater from washout of concrete:

      i. Where possible, concrete suppliers should conduct washout activities at their own plants or dispatch facilities.

      ii. If conducted at the construction site, the operator shall employ control measures to contain and manage on-site concrete washout to prevent discharge (see Part 6.3(8)).

      iii. Specify locations of concrete washout activities that will occur at the construction site.

   b. Washing of equipment and vehicles. Any operator that washes equipment or vehicles on-site shall implement the following control measures:

      i. Provide an effective means of minimizing the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other types of washing; and

      ii. To comply with the prohibition in Part 1.4(4), for storage of soaps, detergents, or solvents, the operator shall provide either cover (e.g., plastic sheeting or temporary roofs) to prevent these detergents from coming into contact with rainwater, or implement a similarly effective means designed to prevent the discharge of pollutants from these areas.

   c. Washing of Applicators and Containers used for Paint or Other Materials. To comply with the prohibition in Part 1.4(2), the operator shall provide an effective means of eliminating the discharge of water from the washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials. To comply with this requirement, the operator shall:

      i. Direct all wash water into a leak-proof container or leak-proof pit. The container or pit must be designed so that no overflows can occur due to inadequate sizing or precipitation;

ii. Locate any washout or cleanout activities as far away as possible from surface waters and stormwater inlets or conveyances, and, to the extent practicable, designate areas to be used for these activities and conduct such activities only in these areas; and

iii. Handle washout or cleanout wastes as follows:

a. Do not dump liquid wastes in storm sewers;

b. Dispose of liquid wastes in accordance with applicable requirements in Part 3.5(5);

d. Fueling and Maintenance of Equipment or Vehicles. Any operator that conducts fueling and/or maintenance of equipment or vehicles at the site shall provide an effective means of eliminating the discharge of spilled or leaked chemicals, including fuel, from the area where these activities will take place. To comply with the prohibition in Part 1.4(3), operators shall:

i. If applicable, comply with the Spill Prevention Control and Countermeasures (SPCC) requirements in 40 CFR 112 and Section 311 of the CWA;

ii. Ensure adequate supplies are available at all times to handle spills, leaks, and disposal of used liquids;

iii. Use drip pans and absorbents under or around leaky vehicles;

iv. Dispose of or recycle oil and oily wastes in accordance with other federal, state, tribal, or local requirements;

v. Clean up spills or contaminated surfaces immediately, using dry clean up measures where possible, and eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge; and

vi. Do not clean surfaces by hosing the area down.

3. Construction Site Egress. The operator shall implement effective control measures to minimize tracking of sediments, debris and other pollutants from vehicles and equipment leaving the site (e.g., stone pads, concrete or steel wash racks, or equivalent systems). Fine grains that remain visible *(i.e., staining)* on the surfaces of off-site streets, other paved areas, and sidewalks after you have implemented sediment removal practices are not a violation of this part.

If site conditions make it infeasible to install structural controls to prevent track-out (e.g., a linear operator conducting construction activities within a paved right-of-way or immediately adjacent and parallel to a paved right-of-way), the operator shall explain in the SWPPP why such controls cannot be installed; what alternative measures will be used to prevent sediment from being tracked-out or accumulated on paved areas; and what procedures will be used to ensure track-out is discovered and removed as soon as practicable.

The reasons for any departure from the use of standard ingress/ egress control measures to control track-out shall be documented in the SWPPP:

a. Explain why structural control measures cannot be installed;

b. Describe what alternative measures will be used to prevent sediment from being tracked-out or accumulated on paved areas; and

c. Describe what procedures will be used to ensure track-out is discovered and removed as soon as practicable.

4. The operator shall minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials present on the site to precipitation and to stormwater. These requirements do not apply to those products, materials, or wastes that are not a source of stormwater contamination or that are designed to be exposed to stormwater.

   a. Pollution Prevention Measures. The operator shall implement pollution prevention procedures to prevent litter, construction debris, and construction chemicals exposed to stormwater from becoming a pollutant source for stormwater discharges. These procedures shall include storage practices to minimize exposure of the materials to stormwater, and spill prevention and response practices.

   b. Storage, Handling, and Disposal of Construction Products, Materials, and Wastes. The operator shall minimize the exposure to stormwater of any of the products, materials, or wastes specified below that are present at the site by complying with the requirements in this Part.

   c. The operator shall consider and implement the following control measures, as appropriate:

      i. For building products: In storage areas, provide either cover (e.g., plastic sheeting or temporary roofs) to prevent these products from coming into contact with rainwater, or implement a similarly effective means designed to prevent the discharge of pollutants from these areas.

      ii. For pesticides, herbicides, insecticides, fertilizers, and landscape materials:

         a. In storage areas, provide either cover (e.g., plastic sheeting or temporary roofs) to prevent these chemicals from coming into contact with rainwater, or implement a similarly effective means designed to prevent the discharge of pollutants from these areas; and

         b. Comply with all application and disposal requirements included on the registered pesticide, herbicide, insecticide, and fertilizer label.

      iii. For diesel fuel, oil, hydraulic fluids, other petroleum products, and other chemicals:

         a. To comply with the prohibition in Part 1.4(3), store chemicals in water-tight containers, and provide either cover (e.g., plastic sheeting or temporary roofs) to prevent these containers from coming into contact with rainwater, or implement a similarly effective means designed to prevent the discharge of pollutants from these areas (e.g., spill kits), or provide secondary containment (e.g., spill berms, decks, spill containment pallets); and

         b. Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly. Do not clean surfaces or spills by hosing the area down. Eliminate the source of the spill to prevent a discharge or a continuation of an ongoing discharge.

      iv. For hazardous or toxic waste:

         a. Separate hazardous or toxic waste from construction and domestic waste;

b. Store in sealed containers, which are constructed of suitable materials to prevent leakage and corrosion, and which are labeled in accordance with applicable Resource Conservation and Recovery Act (RCRA) requirements and all other applicable federal, state, tribal, or local requirements;

c. Store all containers that will be stored outside within appropriately-sized secondary containment (e.g., spill berms, decks, spill containment pallets) to prevent spills from being discharged, or provide a similarly effective means designed to prevent the discharge of pollutants from these areas (e.g., storing chemicals in covered area or having a spill kit available on-site);

d. Dispose of hazardous or toxic waste in accordance with the manufacturer's recommended method of disposal and in compliance with federal, state, tribal, and local requirements; and

e. Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly. Do not clean surfaces or spills by hosing the area down. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge.

v. For construction and domestic waste: Provide waste containers (e.g., dumpster or trash receptacle with covers/ lids) of sufficient size and number to contain construction and domestic wastes. In addition:

a. On work days, clean up and dispose of waste in designated waste containers; and

b. Clean up immediately if containers overflow.

vi. For sanitary waste: Position portable toilets outside of washes or other surface waters, or stormwater conveyances, such as curb and gutter systems, or streets. Ensure that they are secured and will not be tipped over using stakes or tie downs or other similar control measures.

5. Spill Prevention and Response Procedures. Operators are prohibited from discharging toxic or hazardous substances from a spill or other release, consistent with Part 1.4. The operator shall minimize the potential for leaks, spills and other releases that may be exposed to stormwater and develop plans for timely and effective clean-up of spills if or when they occur by implementing measures such as:

a. Procedures for plainly labeling containers (e.g., "Used Oil," "Spent Solvents," "Fertilizers and Pesticides," etc.) that could be susceptible to spillage or leakage to encourage proper handling and facilitate rapid response if spills or leaks occur;

b. Preventative measures such as barriers between material storage and traffic areas, secondary containment provisions, and procedures for material storage and handling;

c. Procedures for expeditiously stopping, containing, and cleaning up leaks, spills, and other releases. Employees who may cause or detect a spill or leak should be knowledgeable in the proper reporting procedures established by their facility. Employees who are responsible for spill response and/or cleanup, must be properly trained and have necessary spill response equipment available; and

d. Procedures for notification of appropriate facility personnel and emergency response. Where a leak, spill, or other release occurs that contains a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Part 110, 40 CFR Part 117, or 40 CFR Part 302, the operator shall immediately notify ADEQ Emergency Response Duty Office at

(602) 771-2330, or toll free at (800) 234-5677. Contact information must be in locations that are readily accessible and available. Within 7 calendar days of knowledge of the release, operators shall provide a description in the SWPPP of: the release; the circumstances leading to the release; and the date of the release. Local requirements may necessitate additional reporting of spills or discharges to local emergency response, public health, or drinking water supply agencies.

6. Fertilizer Discharge Restrictions.

   Operators are required to minimize discharges of fertilizers containing nitrogen or phosphorus by applying these products consistent with manufacturer's specifications.

3.6 Controls for Allowable Non-Stormwater Discharges and Dewatering Activities.

Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, are prohibited unless managed by appropriate controls. Appropriate controls include, but may not be limited to sediment basins or traps; dewatering tanks; tube settlers; weir tanks; or filtration systems (e.g., bag or sand filters) that are designed to remove sediment; chemical treatment; or transportation offsite for disposal.

1. The operator shall ensure all water from dewatering or basin draining activities is discharged in a manner that does not cause nuisance conditions including erosion and / or sedimentation in receiving channels or on surrounding properties.
2. The operator shall retain superchlorinated wastewaters (i.e., containing chlorine above residual levels acceptable in drinking water systems) on-site until the chlorine dissipates, or shall otherwise effectively dechlorinate the water to concentrations that meet surface water quality standards of the surface water prior to discharge.

3.7 Surface Outlets.

When discharging from basins and impoundments, utilize outlet structures that withdraw water from the surface, unless infeasible.

3.8 Surface Water Quality Standards.

1. Surface Water Quality Standards.

   The operator shall control discharges from the site as necessary to not cause or contribute to an exceedance of an applicable surface water quality standard (SWQS).

   ADEQ expects that compliance with conditions in this permit will control discharges as necessary to not cause or contribute to an exceedance of an applicable surface water quality standard (A.A.C. Title 18, Chapter 11, Article 1). However, if at any time the operator becomes aware, or ADEQ determines, that the construction site's discharge causes or contributes to an exceedance of an applicable surface water quality standard, the operator shall take corrective action as required in Part 5.1, document the corrective actions as required in Parts 5.3 and 6.4, and report the corrective actions to ADEQ as required in Part 8.1.

   Additionally, ADEQ may impose additional surface water quality-based requirements on a site-specific basis, or require the operator to obtain coverage under an individual permit in accordance with Part 1.2, if information in the NOI, required reports, or from other sources indicates that additional controls are necessary to not cause or contribute to an exceedance of an applicable surface water quality standard.

2. Discharge Limitations for Impaired or Not-attaining Waters and OAWs.

Operators of construction sites that have one or more outfalls that are located within 1/4 mile upstream of an impaired or not-attaining water or OAW are required to comply with the following requirements, which supplement the requirements applicable to the site in other corresponding parts of this permit:

a. Frequency of Site Inspections. The operator shall conduct inspections at the frequency specified in Part 4.2(3).

b. Deadline to Complete Stabilization. The operator shall comply with the deadlines for completing site stabilization as specified in Part 3.4(1)(c).

c. Sampling and Analysis Plan. The operator shall prepare and submit a sampling and analysis plan as outlined in Part 7.2.

If the discharge is to an impaired or not-attaining water, ADEQ may notify the operator that additional limits or controls are necessary to not cause or contribute an exceedance of applicable surface water quality standards, any applicable waste load allocation (WLA), to prevent the site from contributing to an impairment, or if coverage under an individual permit is necessary in accordance with Appendix B, Subsection 17.

If during coverage under a previous permit, the operator was required to install and maintain control measures specifically to meet the assumptions and requirements of an USEPA approved or established TMDL (for any parameter) or to otherwise control a discharge to not cause or contribute an exceedance of applicable surface water quality standards, the operator shall continue to implement such controls as part of this permit.

4.0 INSPECTIONS

4.1 Inspector Qualifications.

The operator shall provide qualified personnel (as defined in Appendix A) to perform inspections according to the selected inspection schedule identified in the SWPPP. The operator shall conduct inspections of the site in accordance with Parts 4.2 through 4.5 of this permit.

4.2 Inspection Schedule.

At a minimum, the operator shall conduct a site inspection in accordance with one of the schedules listed below. The operator shall document in the SWPPP which schedule is being used and, when necessary, the location of the rain gauge or weather station used to obtain rainfall information. The Department encourages adding inspections before and/or during predicted storm events and "spot" inspections to ensure control measures will be effective in managing stormwater runoff and associated pollutants.

1. Routine Inspection Schedule. The operator shall ensure inspections are performed at the site as indicated below to ensure control measures are functional and that the SWPPP is being properly implemented. To determine the amount of rainfall from a storm event that occurs on the site (in accordance with options b. or c.), the operator shall obtain rainfall information (in accordance with Part 4.4(3)) from either a properly maintained rain gauge on the site, or a weather station that is representative of the site's location. For any day of rainfall during normal business hours that measures 0.25 inch or greater, the total rainfall measured for that day shall be recorded in accordance with Part 4.4(3).

   a. The site will be inspected a minimum of once within 7 calendar days, but not within 5 calendar days of the previous inspection; or

   b. The site will be inspected a minimum of once within 14 calendar days, but not within 10 calendar days of the previous inspection, and within 24 hours of the occurrence of each storm event of 0.5 inch or greater in 24 hours; or

   c. The site will be inspected a minimum of once per month, but not within 14calendar days of the previous inspection and within 24 hours of the occurrence of a storm event of 0.25 inch or greater.

   Note: Within 24 hours of the occurrence of a "storm event" means that you must conduct an inspection within 24 hours once a storm event has produced 0.5 inches of precipitation within a 24-hour period, even if the storm event is still continuing. Thus, if you have elected to inspect in accordance with (b) above, and there is a storm event at your site that continues for multiple days, and each day of the storm produces 0.5 inches or more of rain, you must conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the end of the storm.

2. Reduced Inspection Schedule. The operator may reduce inspections if the entire site has been temporarily stabilized, discharges are unlikely based on seasonal rainfall patterns, or runoff is unlikely due to winter conditions (e.g., site is covered with snow, ice, or frozen ground exists). With a reduced inspection schedule, the site shall be inspected at least once per month (but not within 14 calendar days of the previous inspection) and before an anticipated storm event and within 24 hours of each storm event of 0.5 inch or greater in 24 hours.

3. Inspection Schedule for Sites with Outfalls within 1/4 mile Upstream of Impaired or Not-Attaining Waters or OAWs. If any portion of the construction site has one or more outfalls within 1/4 mile upstream of an impaired or not-attaining water or OAW, the operator shall inspect the site at least once every 7-calendar days. The operator may reduce

inspections to the schedule specified in Part 4.2(2) for those areas of the construction site that have undergone temporary or final stabilization.

4. Inspection Schedule for Inactive and Unstaffed Sites. A site is inactive and unstaffed that will have an anticipated period of no construction activity for at least six consecutive months. Inactive and unstaffed sites that have one or more outfalls within 1/4 mile upstream of an impaired or not-attaining water or OAW are not eligible for this reduced inspection frequency unless they have undergone temporary stabilization. Operator's responsibilities include:

   a. Immediately before becoming inactive and unstaffed, the operator shall perform an inspection in accordance with Part 4.3. All control measures must be in operational condition in accordance with Part 3.2 prior to becoming inactive and unstaffed;

   b. During the time the site is inactive and unstaffed, the operator shall perform an inspection at least once every six months and within 24 hours of each storm event of 0.5 inch or greater in 24 hours;

   c. Non-storm event inspections must be at least three months apart;

   d. All control measures must be maintained in operational condition;

   e. The site shall be secured, such as limited access, blocking or fencing;

   f. Maintain a statement in the SWPPP as required in Part 6.4(11) indicating that the construction site is inactive and unstaffed. The statement must be signed and certified in accordance with Appendix B, Subsection 9; and

   g. If circumstances change and the site becomes active and/or staffed, this exception no longer applies and the operator shall immediately resume the routine inspection schedule. ADEQ retains the authority to revoke this exception from routine inspections where it is determined that the discharge causes, has a reasonable potential to cause, or contribute to an exceedance of an applicable water quality standard, including designated uses.

5. Inspections are only required during the site's normal working hours. If an inspection day (except those required relative to a rainfall event) falls on a Saturday or holiday, the inspection may be conducted on the preceding workday. If the inspection day falls on a Sunday, the inspection may be conducted on the following Monday. If rainfall events occur on the weekend or holiday, an inspection relative to that event may be conducted the following workday.

6. Inspections are not required under Adverse Conditions. The operator is not required to inspect areas that, at the time of the inspection, are considered unsafe for inspection personnel. Inspections may be postponed when conditions such as local flooding, high winds, or electrical storms, or situations that otherwise make inspections unsafe. The inspection must resume as soon as conditions are safe.

4.3 Scope of Inspections.

At a minimum, the inspector shall examine each of the following, during each inspection:

1. All structural controls identified in the SWPPP to ensure they are in place and functioning as intended. Repair, replace, or maintain any controls as necessary in accordance with Part 3.2;

2. The effectiveness of non-structural controls and practices (such as good housekeeping practices and pollution prevention measures);

3. All areas of the site used for storage of materials that are exposed to precipitation;

4. All locations where new or modified control measures are necessary to meet the requirements of Part 3;
5. Locations where vehicles and equipment enter or exit the site for evidence of tracking sediment, debris, and other pollutants onto and off the site;
6. Site conditions for evidence of, or the potential for, pollutants entering the municipal separate storm sewer;
7. The presence of materials or conditions subject to the CGP that are not addressed in accordance with the SWPPP;
8. Inspect outfalls, to ascertain whether erosion and sediment control measures are effective in preventing significant impacts to surface waters;
9. All locations where temporary stabilization measures have been implemented; and
10. When a discharge is occurring during an inspection, observe and note the physical characteristics (color, odor, clarity, floating, settled, or suspended solids, foam, oil sheen, and other obvious indicators of stormwater pollutants). In addition, when there is no discharge, examine each outfall for evidence of erosion, sedimentation and other their sources.

4.4 Inspection Report Form.

For each inspection, the operator shall complete an inspection report either on a form provided on the ADEQ website or an equivalent form developed by the operator that documents all of the information required by this permit. The operator may supplement the inspection report form as necessary with additional information, forms or drawings. Within 7 calendar days of completing the inspection, the corresponding inspection report shall be placed with previous reports (in chronological order) and kept with the SWPPP. At a minimum, the report shall include:

1. The inspection date;
2. Name(s) and title(s) of qualified person(s) making the inspection
3. Identification of discharges of sediment or other pollutants from the site. Identify the outfall(s) and associated control measures on the site map(s), in accordance with Part 6.3(6);
4. For inspections occurring during or after a storm event:
    a. Best estimate of the beginning of each storm event;
    b. Duration of each event;
    c. Approximate amount of rainfall for each event (in inches);
    d. A description of the physical characteristics of the stormwater discharge (Part 4.3(10)) from the site, when present;
    e. Document the evidence of erosion, sedimentation and other pollutants; and
    f. Document the presence of control measures in all areas inspected and whether such controls are operating effectively.
5. Identification of control measures that need to be maintained, failed to operate as designed, or proved inadequate. Until removed from the site, identify the location(s) of these control measures on the site map(s), in accordance with Part 6.3(6);
6. Identification of what additional control measures are needed, if any, that did not exist at the time of the inspection. Identify the location(s) of these control measures on the site map(s), in accordance with Part 6.3(6);

7. Identification of all sources of non-stormwater discharges occurring at the site and associated control measures in place;

8. Identification of material storage areas and, evidence of or potential for, pollutant discharge from such areas;

9. Corrective actions required (in accordance with Part 5.3), including any necessary changes to the SWPPP, and implementation dates (of corrective actions and SWPPP changes); and

10. Identification of any other instances of non-compliance with the conditions of this permit that are not associated with Part 4.4(10), or where the inspector does not identify any incidents of non-compliance, the inspection report shall contain a certification that the construction activities or site is being operated in compliance with the SWPPP and this permit.

11. If the operator determines that certain area(s) of the site are unsafe to inspect, the Inspection Report shall document the unsafe condition(s) and specify the locations where the unsafe condition(s) exists.

4.5 Inspection Follow-up.

1. Control Measure Assessment. Based on the findings and observations of the inspection, the operator shall implement the changes necessary to comply with the conditions in Part 3 and revise the SWPPP as needed in accordance with Part 6.5. The changes shall be implemented in accordance with the schedule described in “General Maintenance Requirements” in Part 3.2.

2. Corrective Actions. Based on the scope of inspection conducted in accordance with Part 4.3, the operator shall determine and implement appropriate corrective actions, and meet the applicable deadlines pursuant toPart5.

5.0 CORRECTIVE ACTIONS.

5.1 Corrective Action Triggers.

Corrective actions are actions the operator takes in compliance with this Part to modify, or replace any control measure that failed to meet the conditions of Part 3. Routine maintenance or repairs do not constitute corrective actions. If any of the following conditions at the construction site occur resulting in or from a failure of a control measure, the operator shall implement new or modified control(s):

1. A necessary control measure was never installed, was installed incorrectly, or was not installed in accordance with the requirements in Part 3.2; or
2. A stormwater control needs to be repaired or replaced (beyond routine maintenance required under Part 3.2); or
3. One of the prohibited discharges in Part 1.4 is occurring or has occurred; or
4. ADEQ or USEPA determines that revisions to the control measures are necessary to meet the requirements of Part 3; or
5. A discharge is causing an exceedance of an applicable surface water quality standard.

On the same day a condition requiring corrective action is discovered, the operator shall take all reasonable steps to minimize or prevent the discharge of pollutants until a permanent solution is installed and made operational. However, if the problem is identified when it is too late in the work day to initiate a corrective action, the corrective action shall be initiated on the following work day, unless the condition poses imminent endangerment to human health or the environment, in which case the operator shall take immediate action.

5.2 Corrective Action Deadlines.

Any control measures or repairs required must be made operational, or completed, by no later than 7 calendar days from the time of discovery. If the operator cannot complete the necessary repairs or installation of controls within 7 calendar days, the SWPPP shall include the following:

1. The reason it is infeasible to complete the installation or repair within the 7 calendar day timeframe; and
2. The schedule for installing and making the control measure(s) operational as soon as practicable after the 7-day timeframe.

Any corrective actions that result in changes to any of the control measures or procedures shall be documented in the SWPPP within 7 calendar days of completing the corrective action work. The operator shall complete all corrective actions in accordance with the deadlines specified in this Part.

5.3 Corrective Action Report.

For each corrective action taken in accordance with this Part, the operator shall document the details of the corrective action in the inspection report required by Part 4.4. These reports shall be signed in accordance with the signatory requirements in Appendix B, Subsection 9 and maintained with the SWPPP in accordance with the record keeping requirements in Appendix B, Subsection 11.

1. <u>Construction Sites with Outfalls Located within 1/4 Mile Upstream of an Impaired or Not-attaining Water or OAW</u>. When any condition listed in Part 5.1 occurs, the operator of a construction site that has one or more outfalls located within 1/4 miles upstream of an impaired or not-attaining water or OAW (in accordance with Parts 1.5(3) or (4)) shall

submit a corrective action report to ADEQ, on or before 30 calendar days (from the date of the incident), in accordance with Part 8.1. The operator shall retain a copy of the inspection report documenting the corrective action(s) on-site with the SWPPP as required in Part 6.4.

2. Report Schedule. Within 7 calendar days of discovery of any condition listed in Part 5.1, the operator shall document and maintain with the SWPPP the following information:

   a. Summary of corrective action taken or to be taken;

   b. Whether SWPPP revisions are required as a result of this discovery or corrective action;

   c. Date corrective action initiated or will be initiated; and

   d. Date corrective action completed or expected to be completed.

6.0 STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PREPARATION

6.1 General Information.

1. A site specific SWPPP shall be developed by a "qualified person" before the operator may submit the NOI for permit coverage, and before conducting any construction activity. Any SWPPP prepared for coverage under a previous version of this AZPDES construction general permit must be reviewed and updated by the operator to comply with this permit's requirements prior to submitting the NOI in accordance with Part 2.3.

   At least one SWPPP must be developed for each construction activity or site covered by this permit. A "joint" or "common" SWPPP may be developed and implemented as a cooperative effort where there is more than one operator at a site. All operators shall either implement their portion of a common SWPPP or develop and implement their own SWPPP.

2. The SWPPP shall be prepared and implemented in accordance with standard industry practices and shall:

   a. Identify all potential sources of pollution that may reasonably be expected to affect the quality of stormwater discharges from the construction site;

   b. Identify, describe, and ensure implementation of control measures that will be used to reduce pollutants in stormwater discharges from the construction site;

   c. Assure compliance with the terms and conditions of this permit; and

   d. Identify the responsible person for on-site SWPPP implementation.

3. All operator(s) shall sign and certify the SWPPP in accordance with the signatory requirements of Appendix B, Subsection 9.

4. The operator shall implement the SWPPP from initial commencement of construction activity until an NOT is submitted to ADEQ in accordance with Parts 2.5(1) or 2.6.

5. SWPPPs that do not meet all provisions of this permit are considered incomplete. Operating under an incomplete or inadequate SWPPP is a violation of the permit.

6. Emergency-Related Construction Activities. Operators conducting construction activities in response to an emergency (see Part 2.5), shall document the cause of the emergency (e.g., natural disaster, extreme flooding conditions, etc.), information substantiating its occurrence (e.g., state disaster declaration or similar state or local declaration), and describe the construction necessary to reestablish effected public services.

6.2 Types of Operators.

1. Operator Requirements. Either Part 6.1(2)(a) or (b), or both, will apply depending on the type of operational control a person exerts over the site. Part 6.1(2)(c) applies to all operators who have control over only a portion of a construction site.

   a. Operators with Operational Control over Construction Plans and Specifications shall ensure that:

      i. The SWPPP indicates the areas of the site where the operator has operational control over construction activity specifications, including the ability to make revisions in specifications;

      ii. All other operators implementing portions of the SWPPP impacted by any changes made to the SWPPP are notified of such revisions in a timely manner; and

iii. The SWPPP indicates the name(s) of the person(s) with day-to-day operational control of those activities necessary to ensure compliance with the SWPPP or other permit conditions.

b. Operators with Control over Day-to-Day Activities shall ensure that:

i. The SWPPP identifies the persons responsible for implementation of control measures identified in the SWPPP;

ii. The SWPPP indicates areas of the site where each operator has operational control over day-to-day activities; and

iii. The SWPPP indicates the name(s) of the person(s) with operational control over construction activity specifications (including the ability to make revisions in specifications).

c. Operators with Control over Only a Portion of a Larger Construction Site are responsible for compliance with the terms and conditions of this permit as it relates to the activities on the operator's portion of the construction site (including implementation of control measures required by the SWPPP). Operators shall ensure either directly or through coordination with other operators, that activities do not render another person's control measure(s) ineffective.

6.3 SWPPP Contents.

1. Stormwater Team. Each operator, or group of operators, must assemble a "stormwater team," which is responsible for overseeing the development of the SWPPP, any later revisions to it, and for compliance with the requirements in this permit. The SWPPP must identify the name, title and a description of the qualifications and a copy of any training certificates of team members, including inspector(s), as well as their individual responsibilities. Each member of the stormwater team must have ready access to an electronic or paper copy of applicable portions of this permit, the most updated copy of the SWPPP, and other relevant documents or information that must be kept with the SWPPP. The team may include members who are not employed by the operator (such as third party consultants).

2. Identification of Operators. The SWPPP shall identify all operators, including contact information, for the site and the areas and phases over which each operator has control.

3. Sequence and Estimated Dates of Construction Activities. The SWPPP must include a description of the intended sequence of construction activities, including a schedule of the estimated start dates and the duration of the activity, for the following activities:

a. Installation of control measures and when they will be made operational, including an explanation of the sequence and schedule for installation of the control measures;

b. Commencement and duration of construction activities, including clearing and grubbing, grading, site preparation (i.e., excavating, cutting and filling), underground utility installation, infrastructure installation, final grading, and creation of soil and vegetation stockpiles requiring stabilization;

c. Cessation, temporarily or permanently, of construction activities on the site, or in designated portions of the site including the beginning and ending dates of inactive/ unstaffed status, when applicable;

d. Final or temporary stabilization of areas of exposed soil. The dates for stabilization must reflect the applicable deadlines to which the operator is subject in Part 3.4(1); and

e. Removal of temporary stormwater conveyances, channels, and other control measures; removal of construction equipment and vehicles; and cessation of any pollutant-generating activities.

4. Site Description. The SWPPP shall describe the construction site, including:

a. A description of the site and its intended use after the NOT is submitted to ADEQ (e.g. low density residential, shopping mall, highway, etc.);

b. The total area of the site, and an estimate of the total area of the site expected to be disturbed by construction activities including off-site supporting activities, borrow and fill areas, staging and equipment storage areas;

c. The percentage of the site that is impervious (e.g., paved, roofed, etc.) before and after construction;

d. A description of the site's soils including potential for erosion;

e. Areas where it is infeasible to maintain a 50 foot buffer in accordance with Part 3.3(7), describe which alternative was selected for the site, and comply with any additional requirements to provide documentation;

f. On-site and Offsite Material Storage. The operator shall identify and describe all material storage areas (including overburden and stockpiles of dirt, borrow areas, etc.) used for the permitted site in the SWPPP unless those areas are covered by another AZPDES permit; and

g. A general location map (e.g., USGS quadrangle map, a portion of a city or county map, or other map) – with enough detail to identify:

i. The location of the construction site and one mile radius; and

ii. The surface waters including tributaries within one mile radius of the site.

5. Site Map(s). The SWPPP shall contain a legible site map or series of maps completed to scale, showing the entire site that identifies:

a. Topography of the site, existing types of cover (e.g., forest, pasture, pavement, structures), and drainage pattern(s) of flow onto, over, and from the site property before and after major grading activities;

b. Drainage divides and direction of stormwater flow for all drainage areas located within the site limits (i.e., use arrows to show which way stormwater will flow);

c. Areas of soil disturbance and areas that will not be disturbed. Boundaries of the property and of the locations where construction activities will occur, including:

i. Locations where construction activities will occur, noting any phasing of construction activities;

ii. Locations where sediment or soil will be stockpiled;

iii. Locations of any crossings of surface waters;

iv. Designated points on the site where vehicles will exit onto paved roads; and

v. Locations of construction support activity areas covered by this permit (see Part 1.3(1)(c)).

d. Locations of temporary and permanent control measures identified in the SWPPP;

e. Locations where stabilization control measures are expected to occur;

f. Areas protected by buffers (i.e., either the 50-foot buffer or other buffer areas retained on-site when within 50 feet of a perennial water) consistent with Part 3.3(7). The site map must show the boundary line of all such buffers;

g. Locations of on-site material, waste, borrow areas, or equipment storage areas, and other supporting activities (per Part 1.3(1)(c));

h. Locations of all potential pollutant-generating activities identified in Part 6.3(9). Examples include, but are not limited to: the pollutant-generating activities listed in Part 3.5 (fueling and maintenance operations; concrete, paint, and stucco washout); waste disposal; solid waste storage and disposal; and dewatering operations (Part 3.6);

i. Locations of all surface waters and any impaired or not-attaining waters or OAWs within 1/4 mile of the construction site. If none exist on-site, the SWPPP shall indicate so;

j. Stormwater outfall(s), using arrows to indicate discharge direction. Include the following:

   i. Location(s) where stormwater and/or allowable non-stormwater discharges are discharged to surface waters (in accordance with Part 1.3); and

   ii. Location(s) of any discharges to municipal separate storm sewer systems (MS4s) from the construction site.

k. Locations and registration numbers of all on-site drywells and drywells on adjacent properties that may receive stormwater runoff from the site, if available. If none exist, the SWPPP shall indicate so;

l. Areas where final stabilization has been accomplished and no further construction permit requirements apply (if none, the SWPPP shall indicate so); and

m. Location and boundaries of buffer zones to be preserved.

6. Receiving Waters. The SWPPP shall identify the nearest surface water that may receive stormwater discharges, including ephemeral and intermittent streams, dry washes, and arroyos. If applicable, the SWPPP shall also identify and describe any wetlands near the site that could be disturbed or that could potentially receive discharges from disturbed areas of the site. Indicate if the receiving surface water is listed as impaired, not-attaining or an OAW.

7. Control Measures to be used During Construction Activity. The SWPPP shall describe all control measures as required in Parts 3.3 through 3.7 that will be implemented and maintained as part of construction activities to control pollutants in discharges. For each control measure the SWPPP shall contain:

   a. A description of:

      i. The appropriate control measure, including measures to minimize or eliminate non-stormwater discharges;

      ii. The general sequence during the construction process or schedule of when the control measures will be implemented; and

      iii. Which operator is responsible for the implementation of control measures.

   b. Standard detail drawings and/or specifications for the structural control measures, including design or installation details, used on the site;

   c. Specific sediment controls that will be installed and made operational prior to conducting activities in any given portion of the site to meet the requirement of Parts 3.3 through 3.7;

   d. Documentation of controls for site egress points that are intended to minimize tracking of pollutants from vehicles leaving the site, consistent with Part 3.5(3).

8. Summary of Potential Pollutant Sources. The SWPPP shall identify the location and

description of any pollutant sources, including any non-stormwater discharges, associated with the construction activity, from:

- areas other than construction (i.e., support activities including stormwater discharges);
- dedicated asphalt or concrete plants; or
- other non-construction pollutant sources, such as fueling and maintenance operations, materials stored on-site, waste piles, equipment staging yards, etc.

The operator shall implement control measures in these areas to minimize pollutant discharges and shall detail these controls in the SWPPP.

If the construction site has one or more outfalls within 1/4 mile upstream of an impaired or not-attaining water, the SWPPP shall identify sources of the pollutants of concern listed on the 303(d) list that may potentially be discharged from the construction site and describe additional or enhanced control measures to minimize discharges of these pollutants.

9. Use of Treatment Chemicals. If polymers, flocculants, or other cationic treatment chemicals will be used at the site, the SWPPP shall include:

   a. A justification for the need for such chemicals and an assessment of potential water quality impacts;

   b. A description of the training specific personnel have or will receive on the use and storage of any cationic treatment chemicals and/or chemical treatment systems at the construction site;

   c. A listing of all treatment chemicals to be used at the site, a description of how the chemicals will be stored, and why the selection of these chemicals is suited to the soil characteristics of the site;

   d. The dosage of all treatment chemicals that will be used at the site or the methodology that will be used to determine dosage;

   e. A copy of any applicable Safety Data Sheets (SDS);

   f. Schematic drawings of any chemically-enhanced controls or chemical treatment systems to be used for application of the treatment chemicals;

   g. Copies of applicable manufacturer's specifications regarding the use of specific treatment chemicals and/or chemical treatment systems and references to state or local requirements affecting the use of these chemicals.

10. Pollution Prevention Procedures.

   a. Spill Prevention and Response Procedures. The SWPPP must describe procedures to prevent and respond to spills, leaks, and other releases consistent with Part 3.5, including:

      i. Procedures for plainly labeling containers (e.g., "Used Oil," "Spent Solvents," "Fertilizers and Pesticides," etc.) that could be susceptible to spillage or leakage to encourage proper handling and facilitate rapid response if spills or leaks occur;

      ii. Preventative measures such as barriers between material storage and traffic areas, secondary containment provisions, and procedures for material storage and handling;

      iii. Procedures for expeditiously stopping, containing, and cleaning up spills, leaks, and other releases. Identify the name or position of the employee(s) responsible for detection and response of spills or leaks; and

iv. Procedures for notification of appropriate site personnel, emergency response agencies, and regulatory agencies where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity consistent with Part 3.5(5) and established under either 40 CFR Part 110, 40 CFR Part 117, or 40 CFR Part 302, occurs during a 24-hour period. Contact information must be in locations that are readily accessible and available.

The operator may reference the existence of other plans, such as the Spill Prevention Control and Countermeasure (SPCC) plans developed for the construction activity under Part 311 of the CWA, or spill control programs otherwise required by an AZPDES permit for the construction activity, provided that a copy of that other plan is kept with the SWPPP on-site. If an SPCC or other spill prevention plan already exists, the operator may use such plans and incorporate them by reference in the SWPPP.

b. Waste Management Procedures. The SWPPP must describe procedures for handling and disposing all wastes generated at the site, including, but not limited to, clearing and demolition debris, sediment removed from the site, construction and domestic waste, hazardous or toxic waste, and sanitary waste.

6.4 Documentation Requirements including Permit Related Records.

The operator shall keep the following inspection, monitoring, and certification records complete and up-to-date. Retaining these records with the SWPPP (unless otherwise specified below) is necessary to demonstrate compliance with the conditions of this permit.

1. A copy of this permit (an electronic copy easily available to SWPPP personnel is also acceptable);
2. A copy of the NOI submitted to ADEQ, including any correspondence exchanged between the operator and ADEQ specific to coverage under this permit;
3. A copy of the authorization certificate received from ADEQ;
4. Identification of any municipality that received a copy of the authorization certificate;
5. Copies of any other agreements (such as a CWA section 404 permit, local grading permit, etc.) with any state, local, or federal agencies that would affect the provisions or implementation of the SWPPP, if applicable;
6. Descriptions and dates of any incidences of spills, leaks, or other releases that resulted in discharges of pollutants in stormwater to a regulated MS4 or to surface waters the circumstances leading to the release and actions taken in response to the release and measures taken to prevent the recurrence of such releases (see Part 3.5(5));
7. Documentation of repairs of structural control measures, including the date(s) of discovery of areas in need of repair/replacement, date(s) that the structural control measure(s) returned to full function, and the justification for any extended repair schedules (see Part 3.2). The maintenance records shall include the date(s) of regular maintenance;
8. All inspection reports (see Part 4.4);
9. Description of any corrective action taken at the site, including triggering event and dates when problems were discovered and revisions occurred;
10. If the construction site's activities are located within 50 feet of a perennial water, the operator shall describe which alternative was selected for the site, and comply with any additional documentation requirements in Part 3.3(7).

11. Documentation to support the operator's claim that the construction activities have changed from active to inactive and unstaffed with respect to the requirements to conduct inspections (see Part 4.2(4));

12. A Sampling and Analysis Plan – For operators required to conduct analytical monitoring (Part 7.2), a Sampling and Analysis Plan (SAP) shall be implemented and kept with the SWPPP (as part of the SWPPP or as an appendix to the SWPPP).

13. Post-Construction Stormwater Management.

    a. The SWPPP shall include a description of post-construction stormwater management control measures that will be installed during the construction process to control pollutants in stormwater discharges after construction has been completed.

    b. If 'temporary' sediment basins are to be used as, or converted to retention basins in the post-construction phase, the operator shall remove and properly dispose of sediments accumulated in the basin, as necessary, to meet the original capacity, or the capacity that is specified in the post-construction specifications.

    c. New discharge connections or permanent stormwater outfalls directly to OAWs are prohibited under this permit.

    This permit only authorizes and requires the operator to install and maintain stormwater control measures up to and including final stabilization of the site, and does not require continued maintenance after stormwater discharges associated with the construction activity have been eliminated from the site and a NOT has been submitted to ADEQ. However, post-construction control measures that discharge pollutants from point sources once construction is complete may require authorization under a separate AZPDES permit. See Part 1.5(1).

6.5 SWPPP Updates and Revision Requirements.

1. <u>Maintaining an Updated SWPPP</u>.

   The SWPPP shall be revised as necessary during permit coverage to reflect current conditions and to maintain accuracy. The operator shall make any required amendments to the SWPPP within 7 calendar days whenever:

   a. There is a change in design, construction, operation, or maintenance at the construction site that may have a significant effect on the discharge of pollutants to the surface that has not been previously addressed in the SWPPP; or

   b. During inspections, monitoring if required, or investigations by the operator or by ADEQ or USEPA, it is determined that the discharges are causing or contributing to surface water quality exceedances or the SWPPP is ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the construction site; or

   c. There is a change to the stormwater team.

2. <u>Conditions Requiring SWPPP Revisions</u>.

   The operator shall complete required revisions to the SWPPP within 7 calendar days following the occurrence of any of the conditions listed below. The operator shall modify the SWPPP, including the site map(s), in response to any of the following conditions:

   a. New operators become active in construction activities at the site, construction plans are changed (that will affect the quality of the discharge), control measures, pollution prevention measures, or other activities at the site are no longer

accurately reflected in the SWPPP. This includes changes made in response to corrective actions triggered under Part 5.1. Operators do not need to modify their SWPPPs if the estimated dates in Part 6.3(6) change during the course of construction;

b. Areas on the site map where operational control has been transferred (and the date of transfer) since initiating permit coverage;

c. If inspections or investigations by site staff, or by local, state, or federal officials determine that SWPPP revisions are necessary for compliance with this permit;

d. ADEQ determines it is necessary to impose additional requirements on the discharge (in accordance with Part 6.5.1), the following must be included in the SWPPP:

   i. A copy of any correspondence describing such requirements; and

   ii. A description of the control measures that will be used to meet such requirements.

e. To reflect any revisions to applicable federal, state, tribal, or local requirements that affect the control measures implemented at the site; and

f. If applicable, if a change in chemical treatment systems or chemically-enhanced control is made, including use of a different treatment chemical, different dosage rate, or different area of application.

g. SWPPP Revision Records. Operators are required to maintain records showing the dates of all SWPPP revisions. The records must include the name of the person authorizing each change (see Part 6.1(3)) and a brief summary of all changes.

3. Certification Requirements.

All revisions made to the SWPPP consistent with Part 6.5(2) must be authorized by a person identified in Appendix B, Subsection 9.

4. Required Notice to Other Operators.

When the operator determines that a revision to the SWPPP is required and there are multiple operators covered under a common SWPPP, any operators who may be impacted by the change to the SWPPP shall be notified at the address of record in the SWPPP.

6.6 Deficiencies in the SWPPP.

ADEQ may notify the operator at any time that the SWPPP does not meet one or more of the requirements of this permit. The notification shall identify the parts of this permit that are not being met and parts of the SWPPP that require revision to comply with the permit. Within 15 calendar days of receipt of the notification from ADEQ (or as otherwise provided by ADEQ), the operator shall make the required changes to the SWPPP and submit to ADEQ a written certification that the changes have been made. ADEQ may require re-submittal of the SWPPP to confirm all deficiencies have been adequately addressed.

In accordance with Appendix B, Subsection 1, ADEQ also is not precluded from taking enforcement action for any period of time the operator was operating under a SWPPP that did not meet the minimum requirements of this permit.

6.7 Posting, SWPPP Review and Making SWPPPs Available.

1. The operator must post the authorization number(s) in a conspicuous location near the main entrance of the construction site and retain a copy of the authorization certificate in the SWPPP. For linear construction activities, the authorization number(s) must be posted near the entrance where most of the construction activity is occurring.
2. The operator must post the following statement with the authorization number: "For stormwater complaints, please visit www.azdeq.gov." Lettering must be 2" or greater.
3. A copy of the SWPPP shall be on-site or at an easily accessible location, whenever construction or support activities are actively underway, and shall be available to ADEQ or any other federal, state or local authority having jurisdiction over the site at any reasonable time (generally Monday through Friday, 8:00 a.m. to 5:00 p.m.).
4. The SWPPP shall be made available to ADEQ or any other federal, state, tribal, or local authority having jurisdiction over stormwater discharges from the site at the time of an on-site inspection.
5. The operator shall provide a copy of the SWPPP to ADEQ upon request within 7 calendar days or at a time frame agreed upon with ADEQ.
6. Operators with sites that meet the requirements for inactive and unstaffed are not required to maintain the SWPPP on-site. However, the SWPPP must be locally available (i.e., in Arizona) and must be on-site when conducting the inspections required by Part 4. For the purpose of a regulatory inspection, the SWPPP shall be made available to ADEQ, USEPA, or other Federal, State or local authority having stormwater program authority, within 48 hours of request. If otherwise requested by ADEQ, the operator shall submit copies of these documents within 14 calendar days of request.

6.8 Procedures for Inspection, Maintenance, and Corrective Action.

The SWPPP must describe the procedures operators will follow for maintaining their control measures, conducting site inspections, and, where necessary, taking corrective actions, in accordance with Part 3.2, Part 4, and Part 5 of the permit. The following information must also be included in the SWPPP:

1. Personnel responsible for conducting inspections;
2. The inspection schedule that will be followed based on whether the site is subject to Part 4.2, and whether the site qualifies for any of the reduced inspection frequencies in Part 4.2(2) or 4.2(4). If conducting inspections in accordance with the inspection schedule in Part 4.2(3), document the weather information required in the inspection report;
3. If reducing the inspection frequency in accordance with Part 4.2(2) or 4.2(4), the beginning and ending dates of the reduced inspection period; and
4. Any inspection or maintenance checklists or other forms that will be used.
5. The operator shall ensure that all qualified personnel (see Appendix A) review the requirements of this permit. Qualified personnel are responsible for:
    a. The design, installation, maintenance, and/ or repair of control measures (including pollution prevention measures);
    b. The application and storage of treatment chemicals (if applicable);
    c. Conducting inspections as required in Part 4; and
    d. Taking corrective actions as required in Part 5.

7.0 STORMWATER MONITORING

The provisions of Part 7 apply only to construction sites with one or more outfalls within 1/4 mile upstream of an impaired, not-attaining or outstanding Arizona water (OAW), or as otherwise specified by ADEQ. Any portion of the construction site that extends within this distance is subject to the requirements of this Part, unless the operator provides a justification for not monitoring, consistent with Part 7.1. The monitoring plan, or justification, must be a part of the SWPPP and submitted to ADEQ for approval.

ADEQ may notify the operator, in writing, of additional discharge monitoring required to ensure protection of surface water if it is determined that a pollutant may be causing or contributing to an exceedance of a surface water quality standard.

7.1 Monitoring Program.

Operators of construction activities as described above in Part 7.0 shall prepare and implement a monitoring program that meets the requirements of this Part. Sites can be exempted from monitoring if the operator provides a demonstration acceptable to ADEQ that there is no potential for the discharge to reach the impaired, not-attaining or OAW, surface water.

Additionally, if the operator can demonstrate that there is no reasonable potential that construction activities will be an additional source of the specific pollutant for which the water is impaired, analytical monitoring for that parameter may not be required. As part of this demonstration, the operator must consider all on-site activities and pollutant sources, as well as any known pollutants (metals, nutrients, etc.) to be present in the on-site soils that will be disturbed.

7.2 Sampling and Analysis Plan (SAP).

The operator shall develop a written, site-specific, SAP for analytical monitoring of stormwater discharges, unless an acceptable rationale demonstrates that stormwater monitoring is not necessary, in accordance with Part 7.1. The SAP shall be a part of the SWPPP as either an appendix or separate SWPPP section. The SAP shall include:

1. Locations of monitoring sites;
2. The name(s) and title of the person(s) who will perform the monitoring;
3 A map showing the segments or portions of the surface water that are most likely to be impacted by the discharge of pollutant(s);
4. Water quality parameters and pollutants to be sampled;
5. The citation and description of the sampling protocols to be used;
6. Identification of the analytical methods and related method detection limits (if applicable) for each parameter required. Method detection limits shall be below applicable surface water quality standards as technology allows.

7.3 Analytical Monitoring Requirements.

1. <u>When to Sample.</u> The operator shall conduct analytical monitoring a minimum of two times per wet season throughout the duration of permit coverage. Analytical monitoring

is only required when stormwater or snowmelt exits the construction site by way of an outfall in sufficient quantity to allow for sample collection and analysis.

For the purposes of analytical monitoring, wet seasons are defined as follows:

Summer wet season: June 1 – October 31
Winter wet season: November 1 – May 31

2. Adverse Conditions. The operator is not required to collect samples under adverse conditions, in accordance with Part 4.2(6). Information about any adverse conditions that prevented sampling shall be documented in the SWPPP.

3. Where to Sample.

The operator shall conduct analytical monitoring at outfalls observed or suspected to contain the greatest pollutant load resulting from construction activities, using Table 7-1 below:

Table 7-1. Minimum Number of Samples to Collect

Number of Outfalls	Number of Samples
1 to 4	All
5 to 19	5
20 or more	25% of total

4. What to Sample.

a. OAWs: All operators of construction sites with outfalls that are located within 1/4 mile upstream of an OAW shall monitor for turbidity, in Nephelometric Turbidity Units (NTU), both immediately upstream and downstream of each outfall. The operator shall compare turbidity values from the outfalls and if there is a 25% or more increase at the downstream outfall, the operator shall evaluate and replace, maintain, or install additional control measures as necessary to reduce sediment transport.

b. OAWs: the operator shall also sample for any pollutants for which the OAW is impaired.

c. Impaired or Not-attaining Waters: All operators with construction sites with outfalls that are located within 1/4 mile upstream of impaired or not-attaining waters shall monitor for the pollutant(s) for which the receiving water is impaired.

d. Lakes: If the surface water is a lake that is impaired or not-attaining, or an OAW, a site-specific proposal for sampling the impact area shall be submitted with the SAP.

5. How to Sample. The operator shall establish written procedures for sample collection, preservation, tracking, handling, and analyses. The approved SAP (in accordance with Parts 1.5(3) and 1.5(4)) shall be a part of the SWPPP, either as an appendix or a separate SWPPP section. The SAP shall include the following:

a. Sample Collection, Preservation, Tracking, Handling and Analyses:

i. Designate and train personnel to collect, maintain, and handle samples in accordance with the appropriate sample protocols.
ii. Identify water quality parameters/pollutants to be sampled including any pollutant(s) of concern in accordance with this Part;

iii. Identify the required sample analyses and associated analytical method (analytical laboratory and field analyses).

b. Written procedures for:

i. Sample collection (equipment and containers, calibration procedures, document site conditions during sampling, field notes and conditions under which the sample was taken);

ii. Preservation (sample preparation to meet holding times);

iii. Tracking (including chain-of-custody procedures); and

iv. Handling (packing, transporting and shipping procedures to maximize sample integrity).

c. Calibration and Maintenance of Equipment and Monitoring Methods.

All monitoring instruments and equipment (including operators' own field instruments for measuring pH and turbidity) shall be calibrated and maintained in accordance with manufacturers' recommendations. All laboratory analyses shall be conducted according to test procedures specified in 40 CFR Part 136, unless other test procedures have been specified in this general permit.

All samples collected for analytical monitoring shall be analyzed by a laboratory that is licensed by the Arizona Department of Health Service (ADHS) Office of Laboratory Licensure and Certification. This requirement does not apply to parameters that require analysis at the time of sample collection as long as the testing methods used are approved by ADHS or ADEQ. These parameters may include flow, dissolved oxygen, pH, temperature, and total residual chlorine. The operator may conduct field analysis of turbidity if the operator has sufficient capability (qualified and trained employees, properly calibrated and maintained field instruments, etc.) to properly perform the field analysis.

d. Discharge Monitoring Report. All operators subject to analytical monitoring shall submit the results on the electronic Discharge Monitoring Report (DMR) in myDEQ. The operator shall retain records of all stormwater monitoring information with the SWPPP.

The DMR shall be submitted within 30 days after receiving laboratory results. In the event no samples are collected during a wet season, the DMR indicating “no data” using the appropriate No Discharge Information (NODI) code(s) shall be submitted no later than:

Winter Wet Season: June 30
Summer Wet Season: November 30

or at the time the conditions in Part 2.6 have been met and an NOT is submitted in myDEQ, whichever is sooner.

8.0 RECORDKEEPING

8.1 Records.

1. Address for Submittal of All Forms and Reports. All documents required by this permit (NOIs, SWPPPs, NOTs, and DMRs) shall be submitted, in electronic format, in myDEQ. Any other written correspondence, such as Corrective Action Forms (see Part 5.3) shall be signed and dated in accordance with Appendix B, Subsection 9 of this permit and submitted to ADEQ at the address below:

   Arizona Department of Environmental Quality
   Surface Water Protection Unit
   1110 W. Washington Street
   Phoenix, AZ 85007

2. Record Retention. The operator shall retain records of all stormwater monitoring information, corrective actions, inspection and other reports with the SWPPP for a period of at least three years from the date the NOT was submitted to ADEQ.

APPENDIX A.

Definitions

24-hour Period – any consecutive 24-hours.

Anticipated Storm Event – any storm event with at least a 30% chance of precipitation as predicted by the National Weather Service for the area local to the construction site.

Approved Total Maximum Daily Loads (TMDLs) – Approved TMDLs are those that are developed by the Arizona Department of Environmental Quality and approved by USEPA. See also, Total Maximum Daily Load.

Arid Areas – the parts of Arizona that receive an average annual rainfall of 0 to 10 inches.

Borrow Areas – areas where materials are dug for use as fill, either on-site or off-site.

Calendar Day - means the period of 24 consecutive hours commencing at 12:01 a.m. and concluding at midnight.

Cationic Treatment Chemical – polymers, flocculants, or other chemicals that contain an overall positive charge. Among other things, they are used to reduce turbidity in stormwater discharges by chemically bonding to the overall negative charge of suspended silts and other soil materials and causing them to bind together and settle out. Common examples of cationic treatment chemicals are chitosan and cationic PAM.

Commencement of Construction Activities – the initial disturbance of soils or 'breaking ground' associated with clearing, grading, excavating, or stockpiling of fill material activities or other construction-related activities, such as the placement of fertilizers, pesticides, herbicides, detergents, fuels, oils, or other chemicals, or the occurrence of authorized non-stormwater washout activities, or dewatering activities have begun on the site.

Common Plan of Development or Sale – A contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under one common plan. The "common plan" of development or sale is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating construction activities may occur on a specific plot.

Construction Activity – activities such as, clearing, grading, excavating, stockpiling of fill material and other similar activities. This definition encompasses both large construction activities defined in 40 CFR 122.26 (b)(14)(x), small construction activities in 40 CFR 122.26 (b)(15)(i), and includes construction support activities.

Construction Site or **Site** – the land or water area where construction activities will occur, including construction support activities, and where control measures will be installed and maintained. The construction support activities may be located at a different part of the property from where the primary construction activity will take place, or on a different piece of property altogether. Construction activities are often located on a smaller lot or parcel within the construction site.

Construction Support Activity – a construction-related activity that exclusively supports the construction site and involves activities such as clearing, grading, excavating, and stockpiling of fill materials or pollutant-generating activities of its own, and can include activities associated with concrete or asphalt batch plants, equipment staging yards, materials storage areas, excavated material disposal areas, and borrow areas. These activities may or may not be contiguous with

the construction site, but the acreage of the support area should be included in the total site acreage amount. When the term "support activities" is used without clarification, it means "construction support activities".

Construction Waste – discarded materials, such as packaging materials, scrap construction materials, masonry products, timber, steel, pipe, and electrical cuttings, plastics, and Styrofoam.

Control Measure – refers to any practice or method (including effluent limitations) used to prevent or reduce the discharge of pollutants to surface waters.

Conveyance Channel – a temporary or permanent waterway designed and installed to safely convey stormwater flow within and out of a construction site.

Director – means the director of environmental quality or the director's designee.

Discharge – when used without qualification, any addition of any pollutant to surface waters or to a MS4 from any point source.

Discharge of a Pollutant – any addition of any "pollutant" or combination of pollutants to surface waters from any "point source," or any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation. This includes additions of pollutants into surface waters from surface runoff which is collected or channeled by man. See 40 CFR 122.2.

Domestic Waste – typical household trash, garbage or rubbish items generated by construction activities.

Drought-Stricken Area – for the purposes of this permit, an area in which the National Oceanic and Atmospheric Administration's U.S. Seasonal Drought Outlook indicates for the period during which the construction will occur that any of the following conditions are likely:

1. Drought to persist or intensify
2. Drought ongoing, some improvement
3. Drought likely to improve, impacts ease
4. Drought development likely

Effective Operating Condition – a control measure is kept in effective operating condition if it has been implemented and maintained in such a manner that it is working as designed to minimize pollutant discharges.

Effluent Limitations – any of the Part 3 requirements.

Emergency-related Construction Activity – an activity initiated in response to an emergency (e.g., natural disaster, disruption in essential public services), for which the related work requires immediate authorization to avoid imminent endangerment to human health or the environment, or to reestablish essential public services.

Ephemeral water – a surface water that has a channel that is at all times above the water table, and that flows only in direct response to precipitation. [A.A.C. R18-11-101(22)]

Erosion Control – temporary or permanent measures to prevent soil particles from detaching and being transported in stormwater.

Hazardous Materials, Substances, or **Hazardous or Toxic Waste** – any liquid, solid, or contained gas that contain properties that are dangerous or potentially harmful to human health or the environment. Examples include paints, caulks, sealants, fluorescent light ballasts,

solvents, petroleum-based products, wood preservatives, additives, curing compounds, and acids. See also 40 CFR 261.2.

Impaired Waters – waters that have been assessed by ADEQ under the Clean Water Act, as not attaining a water quality standard for at least one designated use, and are listed in Arizona's current 303(d) List or on the 305(b) Category 4 list.

Infeasible – for the purpose of this permit, infeasible means not technologically possible or not economically practicable and achievable in light of best industry practices.

Intermittent waters – streams or reaches that flow continuously only at certain times of the year, as when it receives water from a spring or from another surface source, such as melting snow. [A.A.C. R18-11-101(25)]

Linear Construction Activities – includes the construction of roads, bridges, conduits, substructures, pipelines, sewer lines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment and associated ancillary facilities in a long, narrow area.

Minimize – to reduce and/or eliminate to the extent achievable, using control measures that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer – a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) that are:

a. Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or a designated and approved management agency under section 208 of the Clean Water Act (33 U.S.C. 1288) that discharges to surface waters;
b. Designed or used for collecting or conveying stormwater;
c. Which is not a combined sewer; and
d. Which is not part of a Publicly Owned Treatment Works.

Municipal Separate Storm Sewer System (MS4) – all separate storm sewers, defined as "large," "medium," or "small" municipal separate storm sewer systems; or any municipal separate storm sewers on a system-wide or jurisdiction-wide basis as determined by the Director under A.A.C. R18-9-C902(A)(1)(g)(i) through (iv). [A.A.C. R18-9-A901(23)]. This also includes similar systems owned or operated by separate storm sewer municipal jurisdictions not required to obtain stormwater discharge authorization.

myDEQ – ADEQ's e-Permitting/e-Compliance Portal that offers the "Regulated Community" a digital solution to better assist them in meeting their environmental priorities and responsibilities with an easy online tool, available 24/7 to meet business needs.

Natural Buffer – for the purposes of this permit, an area of undisturbed natural cover surrounding surface waters within which construction activities are restricted. Natural cover includes the vegetation, exposed rock, or barren ground that exists prior to commencement of construction activities.

Natural Vegetation – vegetation that occurs spontaneously without regular management, maintenance, or species introductions or removals, and that generally has a strong component of native species.

Not-Attaining Water – [R18-11-601(11)] a surface water that is assessed as impaired, but is not placed on the 303(d) List because a TMDL is prepared and implemented for the surface water; or

an action which meets the requirements of R18-11-604(D)(2)(h) is occurring and is expected to bring the surface water to "attaining" before the next 303(d) List submission; or the impairment of the surface water is due to pollution but not a pollutant, for which a TMDL load allocation cannot be developed.

Notice of Intent (NOI) – the form (electronic) required for authorization of coverage under the Construction General Permit.

Notice of Termination (NOT) – the form (electronic) required for terminating coverage under the Construction General Permit.

Outfall – a "*point source"* as defined by 40 CFR 122.2 at the point where construction site stormwater discharges to surface waters or to a Municipal Separate Storm Sewer.

Outstanding Arizona Water (OAW) – a surface water that has been designated by ADEQ as an outstanding state resource under A.A.C. R18-11-112.

Perennial Water – a surface water that flows continuously throughout the year (A.A.C. R18-11-101(30)).

Permittee - for the purposes of this permit**,** a person who is given authorization to discharge stormwater from construction activities.

Person – an individual, employee, officer, managing body, trust, firm, joint stock company, consortium, public or private corporation, including a government corporation, partnership, association or state, a political subdivision of this state, a commission, the United States government or any federal facility, interstate body or other entity. [A.R.S. § 49-201(27)]

Point Source – as defined in 40 CFR 122.2, as any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff.

Pollutant – sediment, fluids, contaminants, toxic wastes, toxic pollutants, dredged spoil, solid waste, substances and chemicals, pesticides, herbicides, fertilizers and other agricultural chemicals, incinerator residue, sewage, garbage, sewage sludge, munitions, petroleum products, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt (e.g., overburden material), and mining, industrial, municipal and agricultural wastes or any other liquid, solid, gaseous or hazardous substances. [A.R.S. § 49-201(29)]

Pollutant-generating Activities – at construction sites, those activities that lead to the discharge of pollutants, either as a result of construction activity or construction support activity. Types of pollutants that are typically associated with construction sites include, but are not limited to:

a. Sediment;
b. Nutrients;
c. Heavy metals;
d. Pesticides and herbicides;
e. Oil and grease;
f. Bacteria and viruses;
g. Trash, debris, and solids;
h. Treatment polymers; and
i. Any other toxic chemicals.

Pollution Prevention Measures – control measures designed to reduce or eliminate the addition of pollutants to construction site discharges through analysis of pollutant sources, implementation of proper handling/ disposal practices, employee education, and other actions.

Polymers – coagulants and flocculants used to control erosion on soil or to enhance the sediment removal capabilities of sediment traps or basins. Common construction site polymers include polyacrylamide (PAM), chitosan, alum, polyaluminum chloride, and gypsum.

Process Wastewater - any water which, during manufacturing or processing, comes into direct contact with or results from, the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Prohibited Discharges – discharges that are not allowed under this permit, including:

a. Wastewater from washout of concrete;
b. Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;
c. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
d. Soaps or solvents used in vehicle and equipment washing; and
e. Toxic or hazardous substances from a spill or other release.

Qualified Person or **Qualified Personnel** – those (either the operator's employees or outside personnel) who are knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention, who possess the skills and training to assess conditions at the construction site that could impact stormwater quality, and the skills and training to assess the effectiveness of any control measures selected to control the quality of stormwater discharges from the construction activity.

Received – for the purposes of this permit and in reference to NOIs, NOTs, Permit Waivers and SWPPPs, means the day the information was signed electronically in myDEQ and an Authorization to discharge was issued by myDEQ.

Receiving Water – a surface water as defined in A.A.C. R18-11-101(41) into which regulated stormwater discharges.

Reclaimed Water – water that has been treated or processed by a wastewater treatment plant or an on-site wastewater treatment facility. A.R.S. § 49-201(31).

Routine Maintenance – refers to any maintenance task that is done on a planned and ongoing basis to identify and prevent problems before they result in equipment failure.

Run-on – stormwater that drains from land located upslope or upstream from the regulated site in question.

Sediment Control – measures designed to intercept and settle out soil particles that have become detached and transported by water. Sediment control measures complement soil stabilization measures (erosion control).

Semi-Arid – the parts of Arizona that receive an annual rainfall of between 10 and 20 inches.

Site – see "construction site".

Small Residential Lot – for the purpose of this permit, a lot being developed for residential purposes that will disturb less than 1 acre of land, but is part of a larger residential project that will ultimately disturb greater than or equal to 1 acre.

Spill – the release of a hazardous or toxic substance from its container or containment (see Part 3.5(5)).

Stabilization – covering or maintaining an existing cover over soil that reduces and minimizes erosion. The use of vegetative and/or non-vegetative cover to prevent erosion and sediment loss in areas exposed through the construction process.

Steep Slope - where a state, tribe, local government, or industry technical manual (e.g., stormwater BMP manual) has defined what is to be considered a "steep slope", this permit's definition automatically adopts that definition. Where no such definition exists, steep slopes are automatically defined as those that are 15 percent or greater in grade.

Storm Event – a precipitation event that results in an amount of precipitation 0.25" or greater.

Stormwater – stormwater runoff, snow melt runoff, and surface runoff and drainage. See 40 CFR 122.26(b)(13).

Stormwater Discharges Associated with Construction Activity – a discharge of pollutants in stormwater runoff from areas where soil disturbing activities (e.g., clearing, grading, or excavating), construction materials, or equipment storage or maintenance (e.g., fill piles, borrow areas, concrete truck washout, fueling), or other industrial stormwater directly related to the construction process (e.g., concrete or asphalt batch plants) are located. See 40 CFR 122.26(b)(14)(x) and 40 CFR 122.26(b)(15).

Stormwater Pollution Prevention Plan (SWPPP) – a site-specific, written document that, among other things: (1) identifies potential sources of stormwater pollution at the construction site; (2) describes control measures to reduce or eliminate pollutants in stormwater discharges from the construction site; and (3) identifies procedures the operator will implement to comply with the terms and conditions of this general permit.

Stormwater Team – an individual or group of individuals responsible for oversight of the development and revisions of the SWPPP, and oversight of compliance with the permit requirements. The individual(s) on the "Stormwater Team" must be identified in the SWPPP.

Surface Water – a "Water of the United States" as defined in A.A.C. R18-11-101(41) and includes the following:

a. A water that is currently used, was used in the past, or may be susceptible to use in interstate or foreign commerce;
b. An interstate water, including an interstate wetland;
c. All other waters, such as an intrastate lake, reservoir, natural pond, river, stream (including an intermittent or ephemeral stream), creek, wash, draw, mudflat, sandflat, wetland, slough, backwater, prairie pothole, wet meadow, or playa lake, the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce, including any such water:
    i. That is or could be used by interstate or foreign travelers for recreational or other purposes;
    ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    iii. That is used or could be used for industrial purposes by industries in interstate or foreign commerce;
d. An impoundment of a surface water as defined by this definition;
e. A tributary of a surface water identified in subsections (41)(a) through (d); and
f. A wetland adjacent to a surface water identified in subsections (41)(a) through (e).

Surface Water Quality Standards (SWQS) –standards that define the water quality goals of a water body, or portion thereof, by designating the use or uses to be made of the water and by setting criteria necessary to protect the uses. States and USEPA adopt water quality standards to protect public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act (See CWA sections 101(a)(2) and 303(c)). SWQS also include an Antidegradation Policy.

Temporary Stabilization – a condition where exposed soils or disturbed areas are provided a temporary vegetative and/or non-vegetative protective cover to prevent erosion and sediment loss. Temporary stabilization may include temporary seeding, geotextiles, mulches, and other

techniques to reduce or eliminate erosion until either final stabilization can be achieved or until further construction activities take place to re-disturb this area.

Topsoil – the uppermost layer of naturally occurring soil for a particular area, and is often rich in organic matter, biological activity, and nutrients.

Total Maximum Daily Load (TMDL) – an estimation of the total amount of a pollutant from all sources that may be added to a water, while still allowing the water to achieve and maintain applicable surface water quality standards. Each total maximum daily load shall include allocations for sources that contribute the pollutant to the water, as required by section 303(d) of the Clean Water Act (33 United States Code, Section 1313(d)) and regulations implementing that statute to achieve applicable surface water quality standards. [A.R.S. § 49-231(4)]

Toxic Waste – see "Hazardous Materials"

Turbidity – a condition of water quality characterized by the presence of suspended solids and/or organic material; expressed as Nephelometric Turbidity Units (NTU).

Upstream - The term upstream (or up river) refers to the direction towards the source of the river, against the direction of flow. Likewise, the term downriver (or downstream) describes the direction towards the mouth of the river, in which the current flows.

Vegetative Buffer Strips – small areas or strips of land of permanent vegetation, designed to intercept pollutants and manage other environmental concerns. Vegetative buffers include: riparian buffers, filter strips, grassed waterways, shelterbelts, windbreaks, living snow fences, contour grass strips, cross-wind trap strips, shallow water areas for wildlife, field borders, alley cropping, herbaceous wind barriers, and vegetative barriers.

Waste Load Allocation (WLA) – the maximum load of pollutants each discharger of waste is allowed to release into a particular waterway. Discharge limits are usually required for each specific water quality criterion being, or expected to be, violated. WLAs constitute a type of water quality-based effluent limitation. (See 40 C.F.R. § 130.2(h))

Wetland – an area that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. A wetland includes a swamp, marsh, bog, cienega, tinaja, and similar areas. [A.A.C. R18-11-101(49)]

Work Day – a calendar day on which construction activities will take place.

Acronyms

A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
A.R.S.	Arizona Revised Statute
AZPDES	Arizona Pollutant Discharge Elimination System
CFR	Code of Federal Regulations
CWA	Clean Water Act
MS4	Municipal Separate Storm Sewer System
NOI	Notice of Intent
NOT	Notice of Termination
NTU	Nephelometric Turbidity Units
OAW	Outstanding Arizona Water
SAP	Sampling and Analysis Plan
SDS	Safety Data Sheet
SPCC	Spill Prevention Control and Countermeasure
SWPPP	Stormwater Pollution Prevention Plan
SWQS	Surface Water Quality Standard
TMDL	Total Maximum Daily Load
U.S. EPA	United States Environmental Protection Agency
USGS	United States Geologic Survey
WLA	Waste Load Allocation

APPENDIX B. STANDARD PERMIT CONDITIONS

Standard permit conditions in Appendix B are consistent with the general permit provisions required under 40 CFR 122.41 and A.A.C. R-18-9-A905(A)(3).

1. **Duty to Comply.** [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(a)(1) and A.R.S. §§ 49-261, 262, 263.01, and 263.02.]

   a. The operator shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act; A.R.S. Title 49, Chapter 2, Article 3.1; and A.A.C. Title 18, Chapter 9, Article 9, and is grounds for enforcement action, permit termination, revocation and reissuance, or revision, or denial of a permit renewal application.
   b. The issuance of this permit does not waive any federal, state, county, or local regulations or permit requirements with which an operator discharging under this permit is required to comply.
   c. The operator shall comply with any effluent standards or prohibitions established under section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if this permit has not yet been modified to incorporate the requirement.

2. **Duty to Reapply / Continuation of the Expired General Permit.** [A.A.C. R18-9-A905, which incorporates 40 CFR 122.41(b) and A.A.C. R18-9-C903]

   a. Upon reissuance of the general permit, the operator shall file an electronic Notice of Intent (NOI) through myDEQ, within the timeframe specified in the new general permit, and shall obtain new written authorization to discharge from the Director.

   a. If the Director does not reissue the general permit before the expiration date, the current general permit will be administratively continued and remain in force and effect until the general permit is reissued.
   b. Any operator granted authorization to discharge under the general permit before the expiration date automatically remains covered by the continued general permit until the earlier of:
      i. Reissuance or replacement of the general permit, at which time the operator shall comply with the NOI conditions of the new general permit to maintain authorization to discharge; or
      ii. The date the operator has submitted an electronic Notice of Termination; or
      iii. The date the Director has issued an individual permit for the discharge; or
      iv. The date the Director has issued a formal permit decision not to reissue the general permit, at which time the operator shall seek coverage under an alternative general permit or an individual permit, or cease discharge.

3. **Need To Halt or Reduce Activity Not a Defense.** [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(c)]

   It shall not be a defense for an operator in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

4. **Duty to Mitigate.** [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(d)]

   The operator shall take all reasonable steps to minimize or prevent any discharge in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment per A.R.S. § 49-255.01(E)(1)(d).

5. Proper Operation and Maintenance. [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(e)]

The operator shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the operator to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures.

6. Permit Actions. [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(f)]

This permit may be modified, revoked and reissued, or terminated for cause. Filing a request by the operator for a permit revision, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

7. Property Rights. [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(g)]

This permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or invasion of operatoral rights, nor any infringement of federal, state, Indian tribe, or local laws or regulations.

8. Duty to Provide Information. [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(h)]

The operator shall furnish to ADEQ, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The operator shall also furnish to ADEQ upon request, copies of records required to be kept by this permit.

9. Signatory Requirements. [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(k) and (l); A.A.C. R18-9-A905(A)(1)(c), which incorporates 40 CFR 122.22]

All Notices of Intent (NOI) and Notices of Termination (NOT) must be e-signed in the myDEQ online permitting system as follows:

a. NOIs:

i. For a corporation*:* By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other operator who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

ii. For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or

iii. For a municipality, state, federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this section, a

principal executive officer of a federal (or state) agency includes: (1) The chief executive officer (or director) of the agency, or (2) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

b. All NOTs, reports, including SWPPPs, inspection reports, monitoring reports, and other information required by this permit must be signed by an operator described in Appendix B, Subsection 9(a) above or by a duly authorized representative of that operator. An operator is a duly authorized representative only if:

   i. The authorization is made through myDEQ by an operator described in Subsection 9(a) above;

   ii. The authorization specifies either an individual or a position having responsibility for the overall operation of the site, such as the position of manager, operator, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may be either a named individual or any individual occupying a named position); and

   iii. The signed and dated authorization is included in the SWPPP. A copy must be submitted to ADEQ, upon request through myDEQ.

c. Certification. Any operator signing documents under the terms of this permit shall make the following certification:

   I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the operator or operators who manage the system, or those operators directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

10. Inspection and Entry. [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(i)]

The operator shall allow the Director or an authorized representative upon the presentation of credentials and such other documents as may be required by law to:

a. Enter upon the operator's premises where a regulated activity is located or conducted or where records must be kept under the conditions of this permit;

b. Have access to and copy at reasonable times, any records that must be kept under the conditions of this general permit;

c. Inspect at reasonable times any facility or equipment (including monitoring and control equipment), practices or operations regulated or required under this permit;

d. Sample or monitor at reasonable times any substances or parameters at any location, for the purposes of assuring permit compliance or as otherwise authorized by A.R.S. Title 49, Chapter 2, Article 3.1, and 18 A.A.C. 9, Articles 9.

11. Monitoring and Records. [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(j)]

a. Representative Samples/Measurements. Samples and measurements taken for the purpose of monitoring must be representative of the volume and nature of the monitored activity.

b. Retention of Records. The operator shall retain records of all monitoring

information, including all calibration and maintenance records, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date permit coverage ends. Operators shall submit any such records to the Director upon request. The operator shall retain the SWPPP developed in accordance with Part 6 of this permit, for at least three (3) years after the last revision or amendment is made to the plan. The Director may extend this retention period upon request by notifying the operator in writing at any time prior to the end of the standard three year retention period.

c. Records Contents. Records of monitoring information must include:

i. The date, exact place, and time of sampling or measurements;

ii. The initials or name(s) of the individual(s) who performed the sampling or measurements;

iii. The date(s) analyses were performed;

iv. The time(s) analyses were initiated;

v. The initials or name(s) of the individual(s) who performed the analyses;

vi. References and written procedures, when available, for the analytical techniques or methods used;

vii. The analytical techniques or methods used; and

viii. The results of such analyses.

d. Any operator who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained in this permit is subject to the enforcement actions established under A.R.S. Title 49, Chapter 2, Article 4, which includes the possibility of fines and/or imprisonment.

12. Reporting Requirements. [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(l)]

a. Planned changes. The operator shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted site. Notice is required only when:

i. The alteration or addition to a permitted site may meet one of the criteria for determining whether a site is a new source in 40 CFR 122.29(b) (incorporated by reference at A.A.C. R18-9-A905(A)(1)(e)); or

ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42(a)(1) (incorporated by reference at A.A.C. R18-9-A905(A)(3)(b)).

b. Monitoring reports. Monitoring results must be reported at the intervals specified elsewhere in this permit.

i. Monitoring results must be reported on a Discharge Monitoring Report (DMR) provided online by ADEQ. Pursuant to Section 7.4, all monitoring data collected pursuant to Part 7 must be submitted electronically to the Department using the e-Discharge Monitoring Report (e-DMR) form, available at www.azdeq.gov/mydeq.

ii. If the operator monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the e-DMR (if available), or submitted as a separate

report.

iii. Calculations for all limitations which require averaging of measurements must use an arithmetic mean and non-detected results must be incorporated in calculations as the limit of quantitation for the analysis.

c. Anticipated noncompliance. The operator shall give advance notice to the Director of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.

d. Twenty-four hour reporting.

i. The operator shall report to ADEQ any noncompliance with this permit which may endanger human health or the environment. The operator shall orally notify the office listed below within 24 hours:

Arizona Department of Environmental Quality – Surface Water Protection
1110 W. Washington Street, Phoenix, AZ 85007
602-771 – 2330

ii. A written submission shall also be provided to the office identified above within five (5) days of the time the operator becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

iii. The following shall be included as information which must be reported within 24 hours under this paragraph.

1) Any upset which exceeds any effluent limitation in the permit.

2) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within 24 hours. (See 40 CFR 122.44(g) which is incorporated by reference at A.A.C. R18-9-A905(A)(3)(d)).

iv. ADEQ may waive the written report on a case-by-case basis for reports under this subsection if the oral report has been received within 24 hours.

e. Other noncompliance. The operator shall report all instances of noncompliance not otherwise required to be reported under this subsection, at the time monitoring reports are submitted. The reports shall contain the information listed in subsection 12(d).

f. Other information. When the operator becomes aware that it failed to submit any relevant facts or submitted incorrect information in the Notice of Intent or in any other report to the Department, the operator shall promptly submit the facts or information to ADEQ in myDEQ.

13. Reopener Clause. [A.A.C. R18-9-A905(A)(3)(d), which incorporates 40 CFR 122.44(c)]

The Department may elect to modify the permit prior to its expiration (rather than waiting for the new permit cycle) to comply with any new statutory or regulatory requirements, such as for effluent limitation guidelines, which may be promulgated in the course of the current permit cycle.

14. Other Environmental Laws.

No condition of this general permit releases the operator from any responsibility or requirements under other environmental statutes or regulations. For example, this permit does not authorize the taking of endangered or threatened species as prohibited by

Section 9 of the Endangered Species Act, 16 U.S.C. 1538. Information regarding the location of endangered and threatened species and guidance on what activities constitute a taking are available from the U.S. Fish and Wildlife Service. The operator shall also comply with applicable State and Federal laws, including Spill Prevention Control and Countermeasures (SPCC).

15. State or Tribal Law. [Pursuant to A.A.C. R18-9-A904(C)]

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the operator from any responsibilities, liabilities, or penalties established pursuant to any applicable State or Tribal law or regulation under authority preserved by Section 510 of the Clean Water Act.

16. Severability.

The provisions of this general permit are severable, and if any provision of this general permit, or the application of any provision of this general permit to any circumstance, is held invalid, the application of the provision to other circumstances, and the remainder of this general permit shall not be affected.

17. Requiring Coverage under an Individual Permit or an Alternative General Permit. [Pursuant to A.A.C. R18-9-C902 and R18-9-A909]

a. The Director may require an operator authorized by this permit to apply for and/or obtain either an individual AZPDES permit or an alternative AZPDES general permit. Any interested operator may petition the Department to take action under this section. The Department may require an operator authorized to discharge under this permit to apply for an individual permit in any of the following cases:

   i. A change occurs in the availability of demonstrated technology or practices for the control or abatement of pollutants applicable to the point source;

   ii. Effluent limitation guidelines are promulgated for point sources covered by the general permit;

   iii. An Arizona Water Quality Management Plan containing requirements applicable to the point sources is approved;

   iv. Circumstances change after the time of the request to be covered so that the discharger is no longer appropriately controlled under the general permit, or either a temporary or permanent reduction or elimination of the authorized discharge is necessary;

   v. If the Director determines that the discharge is a significant contributor of pollutants. When making this determination, the Director shall consider:

      1) The location of the discharge with respect to surface waters

      2) The size of the discharge,

      3) The quantity and nature of the pollutants discharged to surface waters, and

      4) Any other relevant factors.

b. If an individual permit is required, the Director shall notify the discharger in writing of the decision. The notice shall include:

   i. A brief statement of the reasons for the decision;

   ii. An application form;

   iii. A statement setting a deadline to file the application;

   iv. A statement that on the effective date of issuance or denial of the individual permit, coverage under the general permit will automatically terminate;

v. The operator's right to appeal the individual permit requirement with the Water Quality Appeals Board under A.R.S. § 49-323, the number of days the operator has to file a protest challenging the individual permit requirement, and the name and telephone number of the Department contact operator who can answer questions regarding the appeals process; and

vi. The operator's right to request an informal settlement conference under A.R.S. 41-1092.03(A) and 41-1092.06.

c. The discharger shall apply for an individual permit within 90 days of receipt of the notice, unless the Director grants a later date. In no case shall the deadline be more than 180 days after the date of the notice.

d. If the discharger fails to submit the individual permit application within the time period established in Appendix B, Subsection 17(c) the applicability of the general permit to the discharger is automatically terminated at the end of the day specified by the Director for application submittal.

e. Coverage under the general permit shall continue until an individual permit is issued or denied unless the general permit coverage is terminated under Appendix B, Subsection 17(d).

18. Request for an Individual Permit. [Pursuant to A.A.C. R18-9-C902]

a. An operator may request an exclusion from coverage of a general permit by applying for an individual permit.

i. The operator shall submit an individual permit application under R18-9-B901(B) and include the reasons supporting the request no later than 90 days after publication of the general permit.

ii. The Director shall grant the request if the reasons cited by the operator are adequate to support the request.

b. If an individual permit is issued to an operator otherwise subject to a general permit, the applicability of the general permit to the discharge is automatically terminated on the effective date of the individual permit.

19. Change of Operator. [A.A.C. R18-9-C904]

If a change of ownership or operator occurs for a facility operating under a general permit:

a. Permitted owner or operator. The operator shall submit an electronic Notice of Termination within 30 days after the new owner or operator assumes responsibility for the site.

i. The e-Notice of Termination shall include all requirements for termination specified in the general permit for which the e-Notice of Termination is submitted.

ii. An operator shall comply with the permit conditions specified in the general permit for which the e-Notice of Termination is submitted until the e-Notice of Termination is submitted to the Department.

b. New owner or operator.

i. The new owner or operator shall submit an e-Notice of Intent to the Department within the time period specified in the general permit before taking over operational control of, or initiation of activities at, the site.

ii. If the previous permittee was required to implement a stormwater pollution prevention plan, the new owner shall develop a new stormwater pollution prevention plan, or may modify, certify, and implement the old stormwater

pollution prevention plan if the old stormwater pollution prevention plan complies with the requirements of the current general permit.

iii. The operator shall submit an e-Notice of Termination to the Department when:

1) The site ceases construction operations and the discharge is no longer associated with construction or construction-related activities,

2) The construction is complete and final site stabilization is achieved, or

3) The operator's status changes.

20. Bypass. [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(m)]

a. Definitions.

i. Bypass means the intentional diversion of waste streams from any portion of a treatment facility

ii. Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations. The operator may allow any bypass to occur that does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions Appendix B, Subsections 20(c) and 20(d).

c. Notice.

i. Anticipated bypass. If the operator knows in advance of the need for a bypass, if possible prior notice shall be submitted at least ten days before the date of the bypass.

ii. Unanticipated bypass. The operator shall submit notice of an unanticipated bypass as required in Appendix B, Subsection 12(d).

d. Prohibition of bypass.

i. Bypass is prohibited, and ADEQ may take enforcement action against the operator for bypass, unless:

1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable industry judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

3) The operator submitted notices as required under Appendix B, Subsection 20(c).

ii. ADEQ may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three conditions listed above in this Appendix B, Subsection 20(d).

21. Upset. [A.R.S. §§ 49-255(8) and 255.01(E), A.A.C. R18-9-A905(A)(3)(a), which

incorporates 40 CFR 122.41(n)]

a. Definition. Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the operator. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Appendix B, Subsection 21(c) are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. An operator who wishes to establish the affirmative defense of upset must demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

   i. An upset occurred and that the operator can identify the cause(s) of the upset;

   ii. The permitted facility was at the time being properly operated;

   iii. The operator submitted notice of the upset as required in Appendix B, Subsection 12(d)(iii); and

   iv. The operator complied with any remedial measures required under Appendix B, Subsection 4.

d. Burden of proof. In any enforcement proceeding, the operator, who is seeking to establish the occurrence of an upset, has the burden of proof.

22. Penalties for Violations of Permit Conditions.

Any permit noncompliance constitutes a violation and is grounds for an enforcement action, permit termination, revocation and reissuance, revision, or denial of a permit renewal application.

a. Civil Penalties. A.R.S. § 49-262 provides that any operator who violates any provision of A.R.S. Title 49, Chapter 2, Article 2, 3 or 3.1 or a rule, permit, discharge limitation or order issued or adopted under A.R.S. Title 49, Chapter 2, Article 3.1 is subject to a civil penalty not to exceed $25,000 per day per violation.

b. Criminal Penalties. Any operator who violates a condition of this general permit, or violates a provision under A.R.S. Title 49, Chapter 2, Article 3.1, or A.A.C. Title 18, Chapter 2, Article 9 is subject to the enforcement actions established under A.R.S. Title 49, Chapter 2, Article 4, which may include the possibility of fines and/or imprisonment.

Appendix F
SWPPP Training Log

Training Log

I have reviewed the SWPPP and received training in erosion controls, spill prevention and response, good housekeeping, proper material handling, disposal and control of waste, equipment fueling, and proper storage, washing, and inspection procedures.

Name/Title	Company	Description of Qualifications	Training Certificates/Dates	Responsibilities

Appendix G
Contractor Certification Log

CONTRACTOR CERTIFICATION

I certify under penalty of law that I understand the terms and conditions of the general AZPDES permit that authorizes stormwater discharges associated with industrial activity from the construction site identified as part of this certification.

Printed Name/Title/Signature	Company	Responsible For
Printed Name/Title		
Signature		
Date		

Construction Stormwater Pollution Prevention Plan

APS Former Prescott Manufactured Gas Plant, Prescott, Arizona

Prepared for

Arizona Public Service

June 4, 2020

JACOBS

1501 W. Fountainhead Parkway
Suite 401
Tempe, Arizona 85282

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Acronyms and Abbreviations

ADEQ	Arizona Department of Environmental Quality
APS	Arizona Public Service
AZPDES	Arizona Pollutant Discharge Elimination System
BMP	best management practice
BTEX	benzene, toluene, ethylbenzene, xylenes
CGP	construction general permit
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
ID	identification
MGP	Manufactured Gas Plant
MTBE	methyl tert-butyl ether
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration
PAH	polynuclear aromatic hydrocarbon
SDS	safety data sheet
SWPPP	Stormwater Pollution Prevention Plan
TAME	tertiary amyl methyl ether

SECTION 1

1 Introduction

1.1 Background

The National Pollutant Discharge Elimination System (NPDES) is a federal regulatory program to control discharges of pollutants to surface waters of the United States. On December 5, 2002, the U.S. Environmental Protection Agency (EPA) approved the State of Arizona's application for primacy of the NPDES program. As a result of this, the Arizona Department of Environmental Quality (ADEQ) became authorized and responsible for administering the NPDES program in all areas within the State except for Indian Lands and implementing the Arizona Pollutant Discharge Elimination System (AZPDES) program. AZPDES is the state program to carry out the NPDES program. In accordance with the AZPDES program, operators of construction sites disturbing 1 or more acres of land or smaller sites that are part of a common plan of development or sale are required to obtain AZPDES permit coverage for stormwater discharges. The AZPDES program allows construction sites to apply for coverage under a construction general permit (CGP). Arizona issued its first 5-year CGP in February 2003, which was revised in 2008 and again in 2013. ADEQ has revised the 2013 CGP, with the new 2020 permit becoming effective on July 1, 2020. If operating under the 2013 CGP, a new Notice of Intent (NOI) must be submitted within 60 calendar days of the 2020 permit issuance.

To apply for coverage under the 2020 CGP, the operator is required to develop a site-specific Stormwater Pollution Prevention Plan (SWPPP) describing how the CGP conditions will be met and to submit a NOI to ADEQ. The APS Former Prescott Manufactured Gas Plant located in Prescott Arizona is less than 1 acre and does not require permit coverage under 2020 CGP, however, this SWPPP has been prepared to conform to the requirements of the 2020 CGP (Permit AZG2020-001).

Development, implementation, and maintenance of this SWPPP will provide the Arizona Public Service (APS) contractor with the framework for reducing soil erosion and minimizing pollutants in stormwater during remedial activates at the Prescott Former Manufactured Gas Plant (MGP) Site (Site) in Prescott, Arizona.

The purpose of this SWPPP is to:

- Identify potential sources of pollution that may reasonably be expected to affect the quality of stormwater discharges from the Site.
- Identify, describe, and ensure implementation of control measures that will be used to reduce pollutants in stormwater discharges from the construction site.
- Present the procedures and activities that will be used to conform with the 2020 CGP.
- Identify the responsible team for onsite SWPPP implementation.

1.2 SWPPP Content

This SWPPP includes the information required by Section 6.0 of the CGP, which is presented as follows:

- **Section 2, Responsible Parties** – Presents the Stormwater Team and identifies all operators at the Site, including a description of their responsibilities and contact information (Section 6.3.1 6.3.2 of the CGP).
- **Section 3, Site Evaluation, Assessment, and Planning** –Includes the following information:
  - Project/site information describing the Site (Section 6.3.4 of the CGP).
  - Identification of the body(ies) of water that may receive runoff from the Site, including the ultimate body of water that receives the stormwater (Section 6.3.6 of the CGP).
  - Site map showing site topography, areas of soil disturbance, stormwater controls, and other required information (Section 6.3.5 of the CGP).
- **Section 4, Erosion and Sediment Controls –** Presents the stormwater management controls used to reduce erosion, sediment, and pollutants in stormwater discharge and minimize or eliminate non-stormwater discharges (Section 6.3.7 and 6.3.9 of the CGP).
- **Section 5, Potential Pollutant Source and Pollution Prevention Procedures –** Presents the potential pollutant sources and pollution prevention procedures, including best management practices (BMPs), to prevent and respond to spills and leaks (Sections 6.3.8 and 6.3.10 of the CGP).
- **Section 6, Inspection, Maintenance, and Corrective Action Procedures** – Describes the procedures operators will follow for maintaining control measures, conducting site inspections, and, if necessary, taking corrective actions (Section 6.8 of the CGP).
- **Section 7, SWPPP Record Keeping** – Describes documentation requirements, including inspection records, permit authorization, and other permit-required information, as well as posting and availability requirements for the SWPPP (Section 6.4, 6.5, 6.6, and 6.7 of the CGP).
- **Section 8, SWPPP Certifications** – Provides documentation that the SWPPP has been certified by the individual with responsibility to implement the actions in the SWPPP.

SECTION 2

2 Responsible Parties

2.1 Operators

An operator at a construction site is any person or entity who meets either of the following criteria:

- Has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or
- Has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the permit).

As the owner of the Site with operational control over construction plans and specifications, APS is considered an "operator" at the Site, along with the APS contractor. Operator information is presented below:

Owner/Operator

Company Name:	Arizona Public Service Company
Contact Name:	Judy Heywood, Project Manager
Address:	Mail Station 9303 Post Office Box 53999 Phoenix, Arizona 85072-3999
Phone (office)	602/250-3580
Phone (cell)	602/818-0259
Email:	Judith.heywood@aps.com

Responsibilities: APS or their authorized representative will direct the Contractor regarding the extent of excavation at the Site.

Contractor/Operator

Company Name:	Environmental Response Inc.
Contact Name:	Greg Laney
Address:	2202 W. Medtronic Way, Suite 108 Tempe, AZ 85281
Phone (office):	(480) 967-2802
Phone (cell):	(602) 757-1994

Email: GLaney@spray-eri.com

Responsibilities: Implementation of this SWPPP, including stormwater controls and inspections.

Emergency 24-Hour Contact

Company:	Environmental Response Inc.
Contact Name:	Greg Laney
Phone (cell):	(602) 757-1994

2.2 Stormwater Team

The Stormwater Team consists of the individuals who are responsible for overseeing the development and modification of the SWPPP and installing and maintaining stormwater controls, conducting site inspections, and taking corrective actions where required. The Stormwater Team for the Prescott remediation project is presented in **Table 1**.

TABLE 1
Stormwater Team
APS Former Prescott MGP Site

Position	Name/ Company	Role or Responsibility
Contractor Project Manager	Greg Laney/ERI	Operational control over construction plans and specifications, as well as day-to-day activities. Review and approval of initial SWPPP for the project.
Owner	Judy Heywood/APS	Oversight of construction/excavation plans.
Engineer	Jacobs Engineering	On-site project oversight construction/inspection of excavation plans.
Stormwater Coordinator		Onsite SWPPP implementation, including: • Installing, implementing, and maintaining the BMPs in the SWPPP. • Overseeing maintenance practices identified in the SWPPP. • Implementing and overseeing employee training. • Conducting or providing for inspection and monitoring activities. • Identifying new potential pollutant sources and ensuring the SWPPP is updated accordingly. • Updates to the SWPPP. • Completing and signing inspection and corrective action reports.
Spill Response Coordinator		Responsible for implementing spill and leak response procedures identified in the SWPPP in the event of a spill or leak.
Alternate Stormwater Coordinator (if applicable)		If the SWPPP coordinator is not available to implement the SWPPP, he or she will designate an appropriate individual to assume the responsibilities listed above.

Note: All members of the Stormwater Team have received training on applicable SWPPP procedures and are qualified to perform the duties identified in this table. Section 7 describes training documentation and record keeping.

Employees involved in implementing the SWPPP, including performing inspections, will be trained on the contents of the SWPPP. The training program will include reviewing the SWPPP and instruction in erosion controls, spill prevention and response, good housekeeping, proper material handling, disposal and control of waste, equipment fueling, and proper storage, washing, and inspection procedures. All employees will be trained prior to their first day on the site. Training will be documented as presented in Section 7.

SECTION 3

3 Site Evaluation, Assessment, and Planning

3.1 Project/Site Information

The project name is APS Former Prescott Manufactured Gas Plant Site and the Site is owned by APS. Manufactured gas was produced at the Prescott Manufactured Gas Plant (MGP) from approximately 1909 until 1949. APS performed remedial action activities with oversight from the Arizona Department of Environmental Quality (ADEQ) Voluntary Remediation Program (VRP). The ADEQ reference number for the APS Site is 502701-00. Construction/remediation operations will be conducted at the Site to remove approximately ¼ acre of remaining soil impacted by former MGP operations.

3.1.1 Site Location

The Site is in Yavapai County, at 300 North Granite Street, Prescott Arizona. The footprint of the overall construction area occupies approximately 0.95 acres. The Site property is owned by APS. Details of the Site location is presented below:

Project Name and Address

Project Name:	APS Former Prescott Manufactured Gas Plant Site
Site Address:	300 North Granite Street Prescott, Arizona, 86301
County:	Yavapai County

Latitude: 34.546288 W
Longitude: -112.472628 N

Figure 3-1 in **Appendix A** shows the location of the Site and the nearest receiving water.

3.1.2 Existing Site Conditions

The Site construction area is on property owned by APS is approximately 0.95 acres in size at an elevation of approximately 5,337 feet above mean sea level. The excavation area is approximately ¼ acre and contains concrete, gravel and soil, and is surrounded by an impervious asphalt surface. Approximately ¼ acre of the Site will be excavated to depth's ranging from 3 feet below the current ground surface to 13 feet below ground surface. The construction area is surrounded with a chain link fence and block wall. Impacted MGP soil will be removed using direct loading into haul trucks to eliminate the need to stockpile impacted soil. After excavation and backfill is complete the excavation surface will be completed with asphalt to match the existing grade and drainage. The Site location is shown on **Figure 3-1**. Previous excavation areas and Miller Creek receiving water are shown on the Site Plan **Figure 3-2**. The excavation area and Site extent is shown on **Figure 3-3**.

The Site property slopes slightly downward to the north towards a catch basin on the north side of the Site, shown on **Figure 3-3**. The catch basin outfalls to Miller Creek located north of the Site. Miller Creek is located approximately 1/8 mile upstream of a confluence with Granite Creek. Both receiving waters are within ¼ mile of the Site.

Soil that will be uncovered during excavation activities consists mostly of concrete, gravel, sand, and silt. Because the excavation area is surrounded by asphalt and the excavation will be below the

asphalt grade erosion potential of the exposed soil is low. During a routine precipitation event water will likely infiltrate onsite at the excavation area, and during a flood event there is potential for the excavation to accumulate stormwater which may require removal.

The climate of the Prescott area is temperate dry-hot summer with annual average rainfall of 17.95 inches. Highest average rainfall occurs in July and August. (US Climate Data, 2019; https://usclimatedata.com/).

3.2 Discharge Information

3.2.1 Nature of Construction Activities

General Description of Project

Construction-related activities involving land disturbance will be conducted at the Site during remedial activities. Remedial activities include the following:

- Excavation of soil that has been impacted by previous industrial operations including MGP-related waste management to depth's ranging from 3 to 13 feet below ground surface at the excavation area.
- Backfilling of excavated areas with clean fill.

Size of Construction Project

The Site encompasses approximately 0.95 acres with an excavated area of approximately 1/4-acre. Approximately ¼ acre will be disturbed during excavation activities. The remainder of the Site area is covered with asphalt and will not be disturbed. The construction support activity areas will be conducted on paved surfaces at the Site. A site map is presented on **Figure 3-3** showing the Site features and drainage based on ground elevation. The Site is enclosed with a 6-foot semi-permanent chain-link fence to the north, west, and south, and a block wall to the east during construction activities.

Construction Support Activities

Construction support activities will be located on the Site and include staging areas for heavy equipment, construction materials, and waste. All staging areas are inside the Site fence and stormwater controls, shown on **Figure 3-3**.

3.2.2 Sequence and Estimated Dates of Construction Activities.

Construction activities will commence when all permits for remedial activities have been received. Remedial activities, including earth-disturbing activities, are estimated to last between 1 to 2 months. The following is a general sequence of construction events:

1. Mobilize to the Site and prepare the Site for work activities.
2. Install stormwater controls, including erosion and perimeter controls, catch basin inlet barrier, and evaluate operational functionality.
3. Excavate impacted materials and remove it from the Site. If needed, excavated soil may be temporarily stored at the Site in covered roll-off bins.
4. Other BMPs, such as material storage, onsite equipment fueling/maintenance/cleaning, will be implemented as needed prior to the initiation of such activities.

5. If excavation activities temporarily cease, installation of temporary stabilization measures will occur within 14 days.
6. Backfill excavation areas with imported backfill as soon as possible.
7. Cover the disturbed site area with aggregate base and the final asphalt surfacing.
8. Remove erosion control measures and demobilize construction equipment and vehicles from the Site.

Construction/remediation activities are anticipated to be performed in accordance with the following anticipated schedule:

- Site preparation is expected to begin in June-July 2020.
- Installation of stormwater controls are expected to begin in June – July 2020.
- Construction completion is anticipated to occur in July/September 2020.
- Final or temporary stabilization will be initiated within 14 days of final land disturbance and will be completed within 60 days of construction completion.
- Removal of erosion controls and construction equipment and vehicles is anticipated to occur after construction completion.

Changes to the proposed construction schedule will be documented and maintained with this SWPPP.

3.2.3 Allowable Non-Stormwater Discharges

Dewatering may be required during excavation activities. If dewatering occurs, water will be stored in a storage tank at the Site and tested prior to disposal at a Publicly Owned Treatment Works or approved disposal/treatment facility. Non-stormwater discharges are not expected during construction activities.

3.2.4 Prohibited Discharges

The following discharges from the Site are prohibited:

- Wastewater from washout of concrete, unless managed by an appropriate control.
- Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials, unless managed by an appropriate control.
- Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance.
- Soaps or solvents used in vehicle and equipment washing.
- Toxic or hazardous substances from a spill or other release.

3.2.5 Receiving Waters

Precipitation from a heavy rain event would flow across the site in a northerly direction towards the catch basin located on the north side of the Site. Based on a review of ADEQ maps, Miller Creek is classified as a not-attaining water and Granite Creek is classified as an impaired water of the United States, both receiving waters are located within 1/4-mile upstream of the outflow from the catch basin (http://gisweb.azdeq.gov/arcgis/emaps/?topic=oaw). The Site is less than 1 acre; therefore, a sampling and analysis plan will not be required.

3.3 Site Map

A site map is presented on **Figure 3-3** in **Appendix A.** Stormwater protection is shown on **Figure 3-4** and stormwater details provided on **Figure 3-5**. A stormwater catch basin was identified that would receive runoff from the Site. Miller Creek receives stormwater flow from the catch basin. The site map includes or will be updated to include the following information, where applicable:

- Topography of the site, existing types of cover, and drainage pattern(s) of flow onto, over, and from the site property before and after major grading activities.
- Drainage divides and direction of stormwater flow for all drainage areas located within the project limits (i.e., use arrows to show which way stormwater will flow).
- Areas of soil disturbance and areas that will not be disturbed. Boundaries of the property and of the locations where construction activities will occur, including:
  - Locations where construction activities will occur, noting any phasing of construction activities
  - Locations of any crossings of surface waters (not applicable)
  - Designated points on the site where vehicles will exit onto paved roads (site is completely paved except for the excavation area)
  - Locations of construction support activity areas
- Locations of temporary and permanent control measures identified in the SWPPP
- Locations where stabilization control measures are expected to occur
- Locations of all potential pollutant-generating activities identified in Table 3
- Locations of all surface waters within ¼-mile of the facility. Miller Creek is a not-attaining water TMDL complete for E. coli (2010) and Granite Creek is an impaired water for E. coli (2010) and low dissolved oxygen (2004) (See Figure 3-2 for locations of receiving waters)
- Stormwater discharge location(s), using arrows to indicate discharge direction, and including the location(s) where stormwater and/or allowable non-stormwater discharges are discharged to waters of the United States (in accordance with Part 1.3).
- Areas where final stabilization has been accomplished and no further construction permit requirements apply during construction.
- Locations of onsite material or equipment storage areas, and other supporting activities - Areas where vehicles and equipment will be staged, and materials and waste will be stored will be added to the Site Plan prior to commencing construction.

SECTION 4

4 Erosion and Sediment Controls

This section identifies the types of erosion and sediment controls that will be used during construction activities. Erosion and sediment controls include soil stabilization for disturbed areas and/or structural controls to divert runoff and remove sediment. This section will also address the control of other potential stormwater pollutant sources such as construction materials, waste disposal, control of vehicle traffic, and sanitary waste disposal.

4.1 Erosion Controls

Temporary stabilization measures will be used during construction to prevent an increase in the sediment yield and flow velocity from pre-construction, undisturbed conditions. The structural controls selected for temporary stabilization are based on guidance from the *Drainage Design Manual for Maricopa County Volume III, Erosion Control,* dated December 2018, and will be installed prior to remediation activities. Identification (ID) numbers listed for each control measure are from the Maricopa County manual. Control measures that have been selected for erosion and sediment control at the site are listed below and presented on the Site **Figure 3-4**. Specifications for the structural control measures and ID numbers for each control measure are presented on **Figure 3-5**.

Maintenance and inspection of these items is discussed in **Section 6**.

4.1.1 Perimeter Controls (General and Specific) Description, Installation and Maintenance Requirements.

Perimeter Sediment Controls. Sediment control measures will be installed at the site perimeter to reduce runoff velocity and cause deposition of the transported sediment prior to runoff leaving the site. At a minimum, silt fencing or organic barriers will be used to control runoff, as shown on **Figure 3-3**. Based on conditions at the site, one or more of the following sediment controls will be used:

- ***Organic Filter Barriers (SPC-1)***. An organic filter barrier is a temporary linear sediment barrier consisting of straw bales or wattles, designed to intercept and slow sediment-laden sheet flow runoff.
- ***Sand Bag Barriers (SPC-2)***. A sand bag barrier is a temporary berm constructed of stacked sandbags along the perimeter of a site or along the right-of-way in a disturbed area, designed to intercept and slow the flow of sediment-laden runoff. Sandbag barriers allow sediment to settle from runoff before water leaves the Site.
- ***Gravel Filter Berm (SPC-3)***. A gravel filter berm is a temporary berm constructed of open graded rock or bags of gravel installed at the toe of a slope, or the perimeter of a developing or disturbed area, designed to intercept and detain sediment-laden water from an unprotected area, detain the sediment, and release the water in sheet flow.
- ***Silt Fences (SPC-5)***. A silt fence is a geotextile fabric stretched between either wooden or metal posts with the lower edge of the fabric securely embedded in the soil typically located downstream of disturbed areas to intercept sheet flow runoff. The two main purposes for silt fences are to intercept and detain small amounts of sediment from disturbed areas during construction and decrease the velocity of sheet flows and low-to-moderate level channel flows.

4.1.2 Sediment Track-Out

Stabilized Construction Entrances (EC-5). A stabilized construction entrance is a stabilized pad of aggregate underlain with filter cloth located at any point where traffic will be entering or exiting a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area. Stabilized construction entrances reduce or eliminate the tracking of sediment onto public rights-of-way or streets. Stabilized construction entrances or shaker plates with rock will be implemented at all areas of construction entrance and egress, as shown on **Figure 3-3**. Additional gravel will be added, as needed, to maintain proper functioning of the pad during construction activities. Trucks are anticipated to be direct loaded and remain on the Site asphalt surface and not enter the excavation area to reduce the potential for track-out.

4.1.3 Stockpiled Sediment or Soil

If soil is stockpiled at the Site, it will be surrounded by a fiber roll or an earthen berm or other impermeable berm to reduce the potential for stormwater runoff from the area to leave the Site. Additionally, it will be covered to minimize dust and erosion. Any stockpiled soil will be contained within the Site extent shown on **Figure 3-3**.

4.1.4 Minimize Dust

Dust control at the Site will be managed using misters along the property boundary and applied water using a water truck.

4.1.5 Top Soil

The construction project involves the removal of soil at the site due to site contamination. Depths of soil removal will vary depending on actual soil analytical laboratory results during remediation. Excavated top soil will not be preserved.

4.1.6 Permanent Stabilization Measures

Permanent or final stabilization will be used after construction operations are complete to prevent an increase in the sediment yield and flow velocity from pre-construction, undisturbed conditions. Areas which do not require excavation and are undisturbed will retain the same elevation grade and drainage pattern.

Final stabilization will include final grading of the Site and installation of asphalt to match the existing pre-construction grade and conditions. Final stabilization will commence within 14 days of construction completion and will be completed within 60 days. If final stabilization cannot take place within 14 days, then temporary stabilization consisting of geotextile, aggregate base course, or similar, will occur within 14 days of construction completion and final stabilization will be completed within 60 days.

4.1.7 Storm Drain Inlets

One storm drain inlet has been identified in the immediate vicinity of the Site. This storm drain inlet that has the potential to be impacted by stormwater from the Site will be protected in accordance with the control measure presented in this section.

Storm Drain Inlet Protection (SPC-7). Storm drain inlet protection measures prevent soil and debris from site erosion from entering storm drain drop inlets and clogging them. Storm drain inlet protection will consist of gravel and mesh inlet barriers and/or biofilter bag inlet barriers and will be implemented at all drop inlets, catch basins, and manholes to intercept sediment and provide detention or filtration to reduce sediment and floatable materials in stormwater.

4.1.8 Other Stormwater -Controls

Sediment Traps (SPC-9). A sediment trap is a temporary containment area that allows sediment in collected stormwater to settle out during infiltration or before the runoff is discharged through a stabilized spillway. Where necessary, sediment traps will be installed at stabilized construction entrances to collect sediment generated during entrance and egress of construction vehicles.

SECTION 5

5 Potential Pollutant Source and Pollution Prevention Procedures

5.1 Summary of Potential Pollutant Sources

5.1.1 Significant Material Inventory

Pollutants that result from clearing, grading, excavation, and the storage and use of materials that have the potential to be present in stormwater runoff are listed in **Table 2**. This table includes information regarding material type, chemical and physical description, and the specific regulated stormwater pollutants associated with each material.

TABLE 2
Potential Stormwater Pollutants
APS Former Prescott MGP Site

Material	Chemical/Physical Description[1]	Stormwater Pollutants
Erosion	Solid particulates and soil contaminants	Soil, sediment, petroleum hydrocarbons including polynuclear aromatic hydrocarbon (PAHs), benzene, and polychlorinated biphenyls (PCBs)
Gasoline	Colorless, pale brown petroleum hydrocarbon liquid	Benzene, toluene, ethylbenzene, xylenes (BTEX), butane, heptane, hexane, cyclohexane, methyl cyclohexane, pentane, naphthalene, ethanol, methyl tert-butyl ether (MTBE), tertiary amyl methyl ether (TAME), ethyl tert-butyl ether (ETBE)
Diesel	Clear, blue-green to yellow liquid	Petroleum distillates, naphthalene
Antifreeze/coolant	Clear green/yellow liquid	Ethylene glycol, diethylene, sodium tetraborate-pentahydrate
Motor Oil	Amber liquid, petroleum odor	Highly refined mineral oil
Hydraulic Fluid	Colorless liquid, petroleum odor	Highly refined mineral oil
Sanitary/septic waste from portable toilets	Human waste	Pathogenic biologics
Concrete	Alkaline water	Concrete washout

Note: If additional chemicals are brought on site during construction activities, this table will be updated.

5.1.2 Potential Areas for Stormwater Contamination

The following are potential source areas of stormwater contamination during construction/ remediation activities:

- Cleared and graded areas
- Site entrance
- Fuel and oil storage areas
- Heavy equipment staging area
- Chemical storage areas
- Waste storage areas, including roll-off bins
- Soil stockpiles

Table 3 presents site-specific information regarding stormwater pollution potential from each of these areas. These areas are noted on **Figure 3-3 and Figure 3-4**.

TABLE 3
Potential Pollutant Generating Activities
APS Former Prescott MGP Site

Potential Stormwater Contamination Point	Potential Pollutants	Potential Pollutant-Generating Activity
Cleared and Graded Areas	Sediment and soil contaminants (listed in Table 2 under Erosion Material)	Erosion of soils from cleared and graded areas have the potential to add sediment and soil contaminants to stormwater runoff
Site Entrance	Sediment and soil contaminants (listed in Table 2 under Erosion Material)	Tracking of soil off site by heavy equipment has the potential to add sediment and soil contaminants to stormwater runoff
Fuel and oil storage area	Gasoline, diesel, motor oil, hydraulic fluid, transformer lube oil	Leaks or spills from fuel or oil storage containers can contaminate stormwater.
Heavy equipment staging area	Fuel and oil	Leaks or spills of fuel or oil from the heavy equipment can contaminant stormwater.
Soil Stockpiles	Sediment and soil contaminants (listed in Table 2 under Erosion Material)	Runoff from stockpiles can contaminate stormwater
Waste storage areas	Solid waste, sanitary waste	Leaks or spills from solid or sanitary waste containers can contaminate stormwater.

5.1.3 Use of Treatment Chemicals

If needed, an anionic foam surfactant (Rusmar AC-645; not considered hazardous) will be applied to the surface of the soil within the excavation to control odors, or on soil excavated and stock piled within the excavation. No polymers, flocculants, or other cationic treatment chemicals will be used at the site.

5.2 Pollution Prevention Procedures

This section describes the pollution prevention BMPs that will be used to prevent and respond to releases and leaks at the Site during construction/remediation activities. The ID numbers listed for each control measure are from the *Drainage Design Manual for Maricopa County Volume III, Erosion Control,* dated December 2018.

5.2.1 Spill Prevention and Response

Spill Containment Plan (GH-5)

These practices are implemented to prevent and control spills to ensure that spills and leaks do not result in water quality impacts. This BMP applies to all construction activities. Spill prevention and control measures shall be implemented any time chemicals or hazardous substances are used, stored, or handled. The Spill Containment Plan includes the following activities:

Education

- Educate employees and subcontractors on what is a significant spill for each material they use, and what is the appropriate response for “significant” and “insignificant” spills.
- Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks
- Hold regular meetings to discuss and reinforce appropriate disposal procedures and establish a program to instruct new employees.

Spill Prevention Procedures

The following activities will be performed to prevent spills from occurring at the Site:

- Project areas and activities potentially susceptible to spills shall be identified. Areas and activities that are most vulnerable to spills include: loading and unloading areas, fuel and chemical storage areas, process activities, dust or particulate generating processes, and waste disposal activities.
- Inspections shall be performed in accordance with the procedures in Section 6.1.
- Spills will be contained and cleaned up as soon as possible.
- If complete cleanup is not immediately possible, spills will be fully covered and not exposed to rainfall.
- Spills will not be washed down or buried.
- Residuals left over from the cleanup activity such as absorbent pads or containers of spill material will be disposed of properly.
- Proper spill and illicit discharge reporting procedures will be followed for both hazardous and non-hazardous materials.

- An area where a spill has occurred will be inspected to verify that spill residuals are not present after the initial cleaning and that the area does not need to be re-cleaned.
- Emergency phone numbers will be posted at the construction area.
- Personnel will be trained in emergency response procedures.
- Proper notification of regulatory agencies will occur in the event of a reportable spill.

Spill Response Procedures

Spill Response Procedures

Response guidelines have been identified below for responding to spills that may potentially result in an illicit discharge. It is the contractor's responsibility to have all emergency phone numbers available at the Site as well to notify the proper response agencies in a timely manner. It is also the contractor's responsibility to have all Safety Data Sheets onsite for non-hazardous/hazardous determination and to ensure timely and proper cleanup of any spill.

For **non–hazardous materials** that may be spilled in small quantities which do not enter state waters or pose a potential to do so, the following measures shall be implemented:

- Use absorbent materials to contain spills and clean the area of residuals.
- Dispose of the absorbent material properly.
- Do not hose down spill area with water.
- Notify SWPPP Coordinator.

For spills involving **hazardous materials or an oil** in an amount equal to or in excess of a reportable quantity, the following measures shall be implemented:

- Report the spill to the SWPPP Coordinator (or designee).
- Contact the local emergency response team by dialing 911.
- The SWPPP Coordinator (or designee) shall **immediately** contact the ADEQ at 602-771-2330 after the spill event.
- Notify appropriate divisions with ADEQ at 602 771-2330 (emergency) or 602 771-4106 (Non-emergency), if applicable, depending on the nature of the spill.
- Immediately contact the National Response Center: 800-424-8802 if:
    - A film, sheen, or discoloration is observed on the receiving water (Miller Creek) originating from a discharge point from the site.
    - A gasoline spill of 25 gallons or more on site.
    - A spill in the reportable quantity listed in 40CFR117 for hazardous material other than gasoline
- Cleanup spill immediately; a licensed contractor or HazMat team shall be used to properly clean up spills.

- Reportable quantities for a hazardous substance leak or spill are listed in 40CFR117. Within 7 calendar days of knowledge of the release, operators shall provide a description in the SWPPP of: the release; the circumstances leading to the release; and the date of the release. Local requirements may necessitate additional reporting of spills or discharges to local emergency response, public health, or drinking water supply agencies.

5.2.2 Fueling, Maintenance, and Washing of Equipment or Vehicles

Equipment Maintenance Procedures (GH-3)

These practices are to be used during vehicle and equipment staging, fueling, cleaning, and maintenance to prevent associated stormwater pollutants from entering stormwater. These BMPs apply to facilities or designated construction work areas where vehicles and equipment are staged, fueled, cleaned, or maintained

- Use drip pans or absorbent materials under equipment to catch/contain leaks.
- All maintenance areas are required to have spill kits and/or use other spill protection devices.
- Absorbent spill clean-up materials should be available and should be disposed of properly after use.
- Dedicated maintenance areas should be protected from stormwater run-on and runoff and should be located at least 50 feet from downstream drainage facilities and watercourses.
- Use offsite maintenance facilities whenever practical.
- Properly dispose of used oils, fluids, lubricants, and spill cleanup materials. Do not dump fuels and lubricants onto the ground, place used oil in a dumpster, or pour into a storm drain or watercourse.
- Repair fluid and oil leaks immediately.
- Provide spill containment dikes or secondary containment around stored oil and chemical drums.
- Properly dispose or recycle used batteries.
- Inspect vehicle and equipment maintenance and staging areas regularly.
- Vehicles and equipment should be inspected on each day of use. Leaks should be repaired immediately, or the equipment/vehicle should be removed from the Site.
- Inspect equipment for damaged hoses and leaky gaskets routinely and repair or replace as needed.
- Perform cleaning, washing, and maintenance in a centralized station offsite where possible. Detergents shall not be used for onsite washing unless the wash water is fully contained for proper disposal.
- Proper spill and illicit discharge reporting and cleanup procedures shall be followed for both hazardous and non-hazardous materials.

5.2.3 Storage, Handling, and Disposal of Construction Products, Materials, and Wastes

Chemical/Materials Management (GH-1)

Several BMPs have been selected for use during this project to address potential stormwater contamination from leaks or spills and from the storage and handling of materials. Each BMP will be put in place and/or utilized as needed through the project duration. Protective measures shall be in place at all times and BMP procedures shall be followed at all times throughout the project duration to prevent or mitigate pollution. The BMPs are described in the following subsections. Materials of concern are listed in **Table 2**.

Storage and Labeling Procedures

These practices are to be implemented for the proper handling, storage, and labeling of materials in order to prevent spills or leaks into the stormwater. These practices are to be implemented in all areas where delivery and storage of materials may be detrimental to the environment.

- All containers and materials shall be properly and legibly labeled.
- Do not store chemicals, drums, and bagged materials directly on the ground. Use secondary containment platforms or wooden pallets.
- Safety Data Sheets (SDS) shall be made available for all materials.
- Hazardous material storage and handling shall comply with applicable regulations and requirements.
- Where possible, cover stockpiled materials. Do not allow water to pond around stored drums.
- Do not pinch a drum with a forklift when unloading or moving.
- Mark any damaged containers.
- Chemicals, drums, and bagged materials will not be stored directly on the ground. Materials will be stored in a bermed, lined area or on secondary containment.
- Chemically incompatible materials shall not be stored together or in the same storage facility.
- When possible, keep chemical products in their original containers, bungs on lids closed, and labeled in accordance with U.S. Department of Transportation (DOT) and EPA regulations.
- Containment areas that have collected precipitation will not be drained until SWPPP coordinator has ensured that drainage will not contaminate surrounding soil.
- Sufficient separation shall be allowed between storage containers to allow for cleanup and emergency response.
- Personnel shall be trained in proper material handling and storage techniques, how to identify potential sources of pollutants, and spill prevention and response procedures.
- Leaks or spills shall be contained and cleaned up immediately.
- Less hazardous, recycled, or non-toxic materials shall be used whenever possible.
- Used and excess materials shall be recycled and/or properly disposed of.

- Materials shall be used only where and when necessary to complete the construction activity. Excess application of materials shall be avoided.

Solid Waste Management (GH-2)

These practices are to be implemented for the proper handling and disposal of solid waste (including hazardous and special waste) in order to prevent spills or leaks into the stormwater. These practices are to be implemented in all areas where delivery and storage of materials may be detrimental to the environment:

Collection, Storage, and Disposal

- Provide covered dumpsters of sufficient size and number to contain the solid waste generated by Site operations.
- Keep the site clean of litter and debris.
- Remove full dumpsters from the project site as soon as possible.
- Dispose of litter stored in collection areas and containers every 2 weeks or more frequently.
- Prevent stormwater runoff from contacting stored solid waste with berms, dikes, or other temporary diversion structures.
- Locate solid waste storage areas more than 50 feet from drainage facilities and watercourses and away from areas prone to flooding or ponding.
- Dumpster washout is not allowed on the project site.

Sanitary Waste Management

- Locate portable toilets a minimum of 50 feet away from storm drain inlets, drainage facilities, watercourses, and from traffic circulation. Provide secondary containment for all portable toilets.
- Educate employees, subcontractors, and suppliers on sanitary waste storage and disposal procedures and potential dangers to humans and the environment from sanitary wastes.
- Hold regular meetings to discuss and reinforce disposal procedures and educate new employees.
- Properly connect temporary sanitary facilities that discharge to the sanitary sewer system to avoid illicit discharges. Comply with local, municipal, county, and sewer district requirements.
- Ensure that sanitary facilities are maintained in good working order by a licensed service. Use only reputable, licensed sanitary waste haulers.

Hazardous, Special, and Asbestos-Containing Waste Management

- Segregate hazardous, special, asbestos-containing, and non-hazardous construction debris and waste.
- Ensure adequate waste storage space is available, waste collection containers are conveniently located, and adequate cleanup and containment materials are available onsite.

- Store wastes in an appropriate type of container and properly labeled per EPA, Occupational Safety and Health Administration (OSHA), and DOT regulations.
- Hazardous material storage and handling shall comply with applicable regulations and requirements.

5.2.4 Washing of Applicators and Containers used for Paint, Concrete or Other Materials

Designated Washdown Areas (GH-4)

Designated washout areas and associated procedures ensure the proper washout of concrete trucks, tools, and equipment and prevent fresh concrete from entering a storm drain. No concrete washout is anticipated at the Site, however the following BMPs will be implemented if concrete washout occurs:

- Concrete-related waste will not be allowed to enter storm drains or watercourses but will be collected and properly disposed of or placed in a temporary concrete washout structure.
- Install a sign adjacent to each temporary concrete washout structure to inform operators to utilize the structures.
- Saw cutting or grinding residue should not be allowed to flow across the pavement or ground and should not be left on the surface of the pavement or ground. Vacuum slurry residue and dispose in a temporary facility and allow slurry to dry.
- Temporary concrete washout facilities should be located a minimum of 50 feet from storm drain inlets, open drainage facilities, and watercourses, unless determined infeasible by SWPPP coordinator. Each facility should be located away from construction traffic or access areas to prevent disturbance or tracking.
- Temporary concrete washout facilities should be constructed above grade or below grade at the option of the contractor and have sufficient quantity and size to contain all liquid and concrete waste generated by washout operations.
- Wash concrete only from mixer truck chutes into approved concrete washout facility. Washout may be collected in an impermeable bag for disposal.
- Above-grade temporary concrete washout structures should have a minimum length and width of 10 feet or larger to provide sufficient volume to contain all liquid and concrete waste generated by washout operations.
- Plastic lining should be a minimum of 10-mil polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.

5.2.5 Other Pollution Prevention Practices

Good housekeeping procedures will be followed throughout this project, including keeping the project area free of trash and debris, keeping material and equipment storage areas clean, and timely, proper disposal of project waste.

SECTION 6

6 Inspection, Maintenance, and Corrective Action Procedures

6.1 Inspections

Visual inspections of all cleared and graded areas of the Site, structural controls, and BMPs will be conducted periodically throughout the project.

6.1.1 Qualified Personnel

Qualified personnel from the Stormwater Team identified in **Table 1** will perform inspections associated with this SWPPP. These personnel will be knowledgeable in the implementation assessment of the erosion and sediment controls presented in Section 4 and the pollution prevention activities presented in Section 5.2.

6.1.2 Inspection Schedule

Routine inspections are required to occur on one of the following schedules, which must be identified below:

- Once every 7 calendar days, but not within 5 calendar days of the previous inspection OR
- Once every 14 calendar days, but not within 10 calendar days of the previous inspection AND also within 24 hours of the end of each rain event of 0.5 inch or greater, OR
- Once per month, but not within 14 calendar days of the previous inspection and within 24 hours of the occurrence of a storm event of 0.25 inch or greater.

For the Site, the inspections will occur with the following frequency: _Weekly (once every 7 calendar days).

Additional inspections will occur as follows.

- Whenever possible, before and during predicted rain events
- Periodic “spot” inspections to evaluate the effectiveness of BMPs

Rainfall information will be obtained from a properly maintained rain gauge at the Site or a weather station representative of the Site. Rainfall of 0.25 inch or greater during normal business hours, will be recorded on the inspection form presented in **Appendix B**. If an inspection day (except those required relative to a rainfall event) falls on a Saturday or holiday, the inspection may be conducted on the preceding workday. If the inspection day falls on a Sunday, the inspection may be conducted on the following Monday.

The inspection will verify that the structural controls described in **Section 4** of this SWPPP are functional, that pollution prevention procedures in **Section 5.2** are being implemented, and that practices and procedures contained in the SWPPP is being properly implemented. The inspection will also verify that the procedures used to prevent stormwater contamination from construction materials and petroleum products are effective.

6.1.3 Inspections of Erosion and Sediment Controls

Discharge locations will be inspected to determine if erosion control BMPs are adequate and effective. Additionally, the following inspection and maintenance practices will be used to maintain erosion and sediment controls:

Stabilized Construction Entrances (EC-5)

- Inspect monthly and after each rainfall.
- Replace gravel mat when surface voids are no longer visible. Periodic top dressing with additional stone will be required.
- All sediments deposited on paved roadways must be removed within 24 hours.
- Remove gravel and filter fabric upon completion of construction.

Sediment Traps (SPC-9)

- Inspect sediment traps before and after rainfall events and weekly during the rest of the rainy season. During extended rainfall events, inspect sediment traps on a more frequent basis.
  - If captured runoff has not completely drained within 36 hours, the sediment trap must be dewatered.
  - Inspect trap banks for embankment seepage and structural soundness.
  - Inspect outlet structure and rock spillway for any damage or obstructions. Repair damage and remove obstructions as needed.
  - Inspect outlet area for erosion and stabilize if required.
  - Remove accumulated sediment when the volume has reached one-third the original trap volume.
  - Inspect fencing for damage and repair as needed.

Organic Filter Barrier (SPC-1)

- Inspect organic filter barriers before and after each rainfall event and weekly throughout the rainy season for sediment accumulations and remove sediment when depth reaches one-third the barrier height.
- Replace or repair damage barriers as needed. Remove barriers or dismantle as mulching when no longer needed. Remove sediment accumulation, and clean, re-grade, and stabilize the area.

Sand Bag Barriers (SPC-2)

- Inspect sandbag barriers before and after each rainfall event, and weekly throughout the rainy season
- Reshape or replace sandbags as needed.
- Inspect sandbag barriers for sediment accumulations and remove sediments when accumulation reaches one-third the barrier height.
- Remove sandbags when no longer needed. Remove sediment accumulation, and clean, re-grade, and stabilize the area.

Gravel Filter Berm (SPC-3)

- Remove retained sediments when depth reaches one-third of berm height or 1 foot, whichever occurs first.
- Inspect monthly and after each rainfall. Reshape berm as needed, replace lost or dislodged rock.
- Remove gravel filter berm at the end of construction.

Silt Fence (SPC-5)

- Inspect regularly and frequently, as well as after each rainfall event to ensure they are intact, and that there are no gaps at the fence-ground interface or tears along the length of the fence. If gaps or tears are found, they should be repaired, or the fabric should be replaced immediately.
- Accumulated sediments should be removed from the fence base when the sediment reaches one-third to one-half the height of the fence. Sediment removal should occur more frequently if accumulated sediment is creating noticeable strain on the fabric and there is the possibility of the fence failing from a sudden storm event.
- Silt fences should not be removed until the upslope area has been permanently stabilized. When the silt fence is removed, the accumulated sediment also should be removed.

Storm Drain Inlet Protection (SPC-7)

- For systems using filter fabric, inspections should be made on a regular basis, especially after large storm events. If the fabric becomes clogged, it should be replaced.
- Sediment should be removed when it reaches approximately half the height of the barrier.
- If an excavated inlet sediment trap is used, sediment should be removed when it fills approximately half the depth of the hole.

6.1.4 Pollution Prevention BMP Inspections

The following additional measures will be taken to minimize pollutants from entering stormwater:

- Vehicles and equipment shall be routinely inspected for leaks and leak potential.
- A sufficient supply of cleanup materials (for example, absorbent pads) shall be kept at all storage and handling areas where leaks or spills are likely to occur.
- Material storage areas shall be routinely checked for accumulation of non-labeled materials and spills.
- Bermed areas shall be inspected routinely and repaired when signs of degradation are visible.

6.1.5 Inspection Reporting

The maintenance inspection report will be completed within 7 days after each inspection and the reports will be placed in chronological order in **Appendix B** of this SWPPP**.** Supplemental information regarding structural controls, BMPs, site conditions, or other factors that impact implementing the SWPPP, should be noted on the form. The form will be signed by the SWPPP Coordinator (or designee) as identified in **Table 1**. The completed forms will be maintained onsite

during the entire construction project. Any maintenance activity should be recorded on the form in **Appendix C**. Following construction, the completed forms will be retained for a minimum of 3 years.

If a stormwater control must be replaced, repaired, or maintained, work to fix the problem must be initiated immediately and complete by the next work day, if feasible. If a new control is installed or significant repair of existing controls is needed, the new or modified control must be installed and operational within 7 days of the time of discovery, or before the next storm event (whichever is sooner), where feasible. If it is infeasible to meet this timeline, records must be maintained in the SWPPP must documenting the reason and a schedule for installing the control must be included. The SWPPP must also be modified to include changes to stormwater controls within 7 days of completing the work.

6.2 Corrective Action

Corrective actions are actions the operator takes to modify or replace any control measure that fails to operate as designed to minimize the discharge of pollutants from the Site. Routine maintenance and repair are not considered corrective action. If any of the following conditions at the Site occur resulting in or from a failure of a control measure, new or modified controls must be implemented:

- A necessary control measure was never installed or was installed incorrectly
- A prohibited discharge listed in **Section 3.2.4** is occurring or has occurred
- ADEQ or USEPA determines that modifications to the control measures are necessary to meet the requirements of Part 3.

6.2.1 Corrective Action Deadlines

All reasonable steps to minimize or prevent the discharge of pollutants must be taken on the same day a condition requiring corrective action is discovered until a permanent solution is installed and made operational. However, if the problem is identified when it is too late in the work day to initiate a corrective action, the corrective action shall be initiated on the following work day, unless the condition poses imminent endangerment to human health or the environment, in which case the operator shall take immediate action.

Any control measures or repairs required must be made operational, or completed, by no later than 7 calendar days from the time of discovery. If the operator cannot complete the necessary repairs or installation of controls within 7 calendar days, documentation on the reason it is not feasible and a schedule for implementation must be included in the SWPPP.

6.2.2 Corrective Action Reporting

Within 7 calendar days of discovery of any activity requiring corrective action, the following information must be documented in the appropriate section of the Inspection and Corrective Action Report Form (see template in **Appendix B)**:

- Summary of corrective action taken or to be taken
- Whether SWPPP modifications are required as a result of this discovery or corrective action
- Date corrective action was initiated or will be initiated, and
- Date corrective action was completed or expected to be completed

6.3 Delegation of Authority

Table 1 identifies the individual who has been delegated appropriate authority in accordance with **Appendix B** of the 2020 CGP to sign inspection and corrective action reports.

SECTION 7

7 SWPPP Record Keeping

7.1 SWPPP Documentation

As part of the implementation of this SWPPP, the following records will be maintained in a field logbook or daily log sheets to be maintained by the Contractor:

- Dates when major excavation or grading activities occur
- Dates when construction activities temporarily or permanently cease on a portion of the site
- Dates when stabilization measures are initiated
- Dates of work stoppage and reasons for stoppage

The following documentation must be maintained and be available onsite during construction/remediation activities:

- All inspection reports (**Appendix B**)
- Description of any corrective action taken at the site, including triggering event and dates when problems were discovered, and modifications occurred (**Appendix B**)
- Documentation of maintenance and repairs of structural control measures (**Appendix C**)
- Descriptions and dates of any incidences of significant spills, leaks, or other releases that resulted in discharges of pollutants in stormwater (**Appendix D**)
- A copy of the 2020 CGP (**Appendix E**)
- Documentation that the Stormwater Team has received adequate training (**Appendix F**)

All copies of the SWPPP and all documentation required by the permit must be retained for at least three (3) years from the date of submittal of a Notice of Termination.

7.2 ADEQ Notifications

ADEQ shall be notified of any anticipated noncompliance in advance. Additionally, any noncompliance with the 2020 CGP that may endanger human health, or the environment must be reported in accordance with the terms of the permit within 24 hours of the event.

7.3 SWPPP Availability

The CGP 2020 authorization number and/or a copy of the ADEQ approval must be posted in a conspicuous location near the main entrance of the Site.

A copy of this SWPPP shall be retained at the Site (or other location easily accessible during normal business hours to ADEQ and any other federal, state, or local authority having jurisdiction over the project at any reasonable time. A copy of the SWPPP shall be available at a central location onsite for the use of all members of the Stormwater Team whenever they are on the Site. If an onsite location is unavailable to store the SWPPP when no personnel are present, notice of the plan's location must be posted near the main entrance at the Site.

7.4 SWPPP Modifications and Updates

The SWPPP will be revised as necessary to reflect current conditions and to maintain accuracy if there are changes in design or construction of the project, or if the SWPPP is found to be deficient. The operator will amend the SWPPP within 7 business days whenever:

1. There is a change in design, construction, operation, or maintenance at the Site that may have a significant effect on the discharge of pollutants to the waters of the U.S. that has not been previously addressed in the SWPPP; or
2. During inspections or investigations by the operator or by local, state, municipal separate storm sewer system, or federal officials, it is determined the discharges are causing or contributing to water quality exceedances or the SWPPP is ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the Site.
3. There is a change to the Stormwater Team

Changes in the revised SWPPP shall be implemented before the next rain event whenever practicable. If this is impracticable, then reason(s) shall be documented in the SWPPP and revisions implemented as soon as possible. An SWPPP amendment log is presented in the front of the SWPPP.

SECTION 8

8 SWPPP Certifications

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Greg Laney/Environmental Response Inc.

Printed Name/Title

Greg Laney

Digitally signed by Greg Laney
Date: 2020.06.05 08:45:51 -07'00'

Signature

Date

Judy Heywood/APS

Printed Name/Title

Heywood, Judith A(Z46770)

Digitally signed by Heywood, Judith A(Z46770)
Date: 2020.06.04 16:54:45 -07'00'

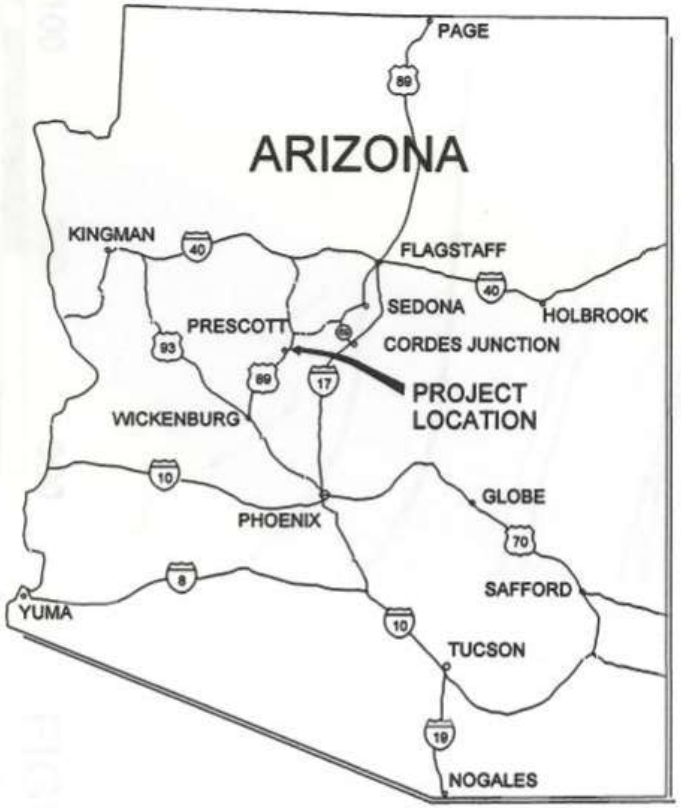
Signature

Date

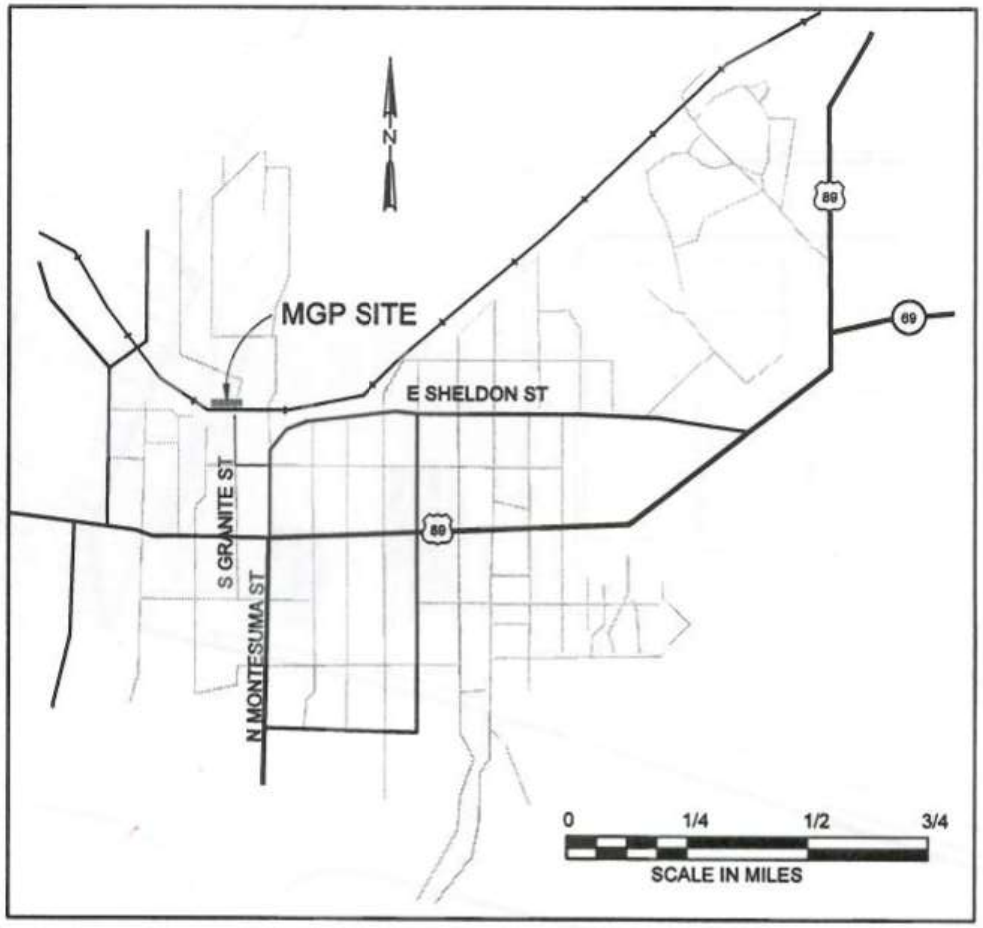
8.1 Contractor's Certification

Contractors and subcontractors that are involved in activities that have the potential to impact stormwater shall read this SWPPP and certify that they understand and will follow the requirements herein. Certification forms are contained in **Appendix G**.

Appendix A
SWPPP Figures



LOCATION MAP



VICINITY MAP

Figure 3-1. Site Location Map

APS Former MGP Plant Site
Prescott, Arizona

JACOBS

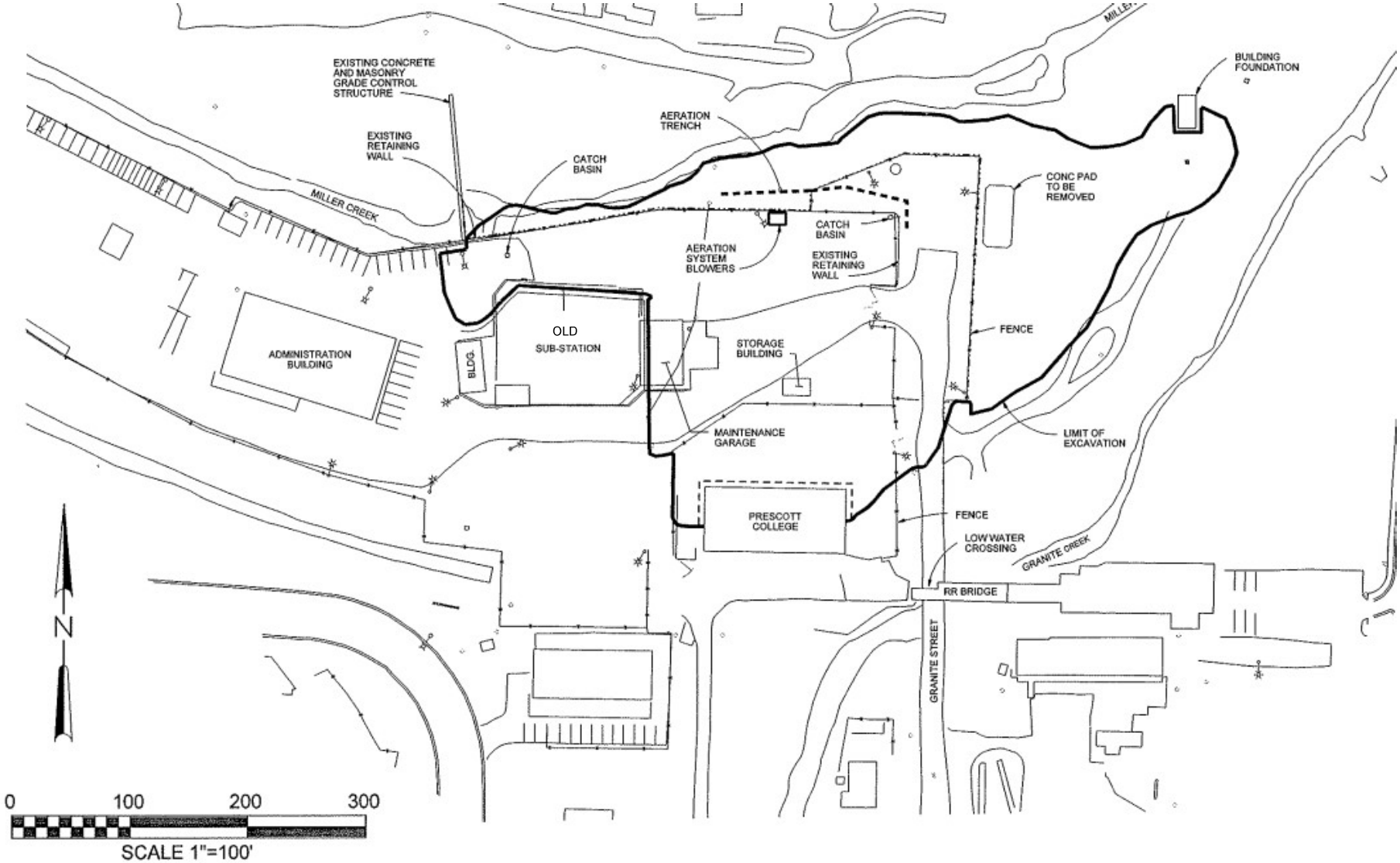


Figure 3-2 Previously Excavated Area and Old Sub-station Location

APS Former MGP Plant Site
Prescott, Arizona

JACOBS

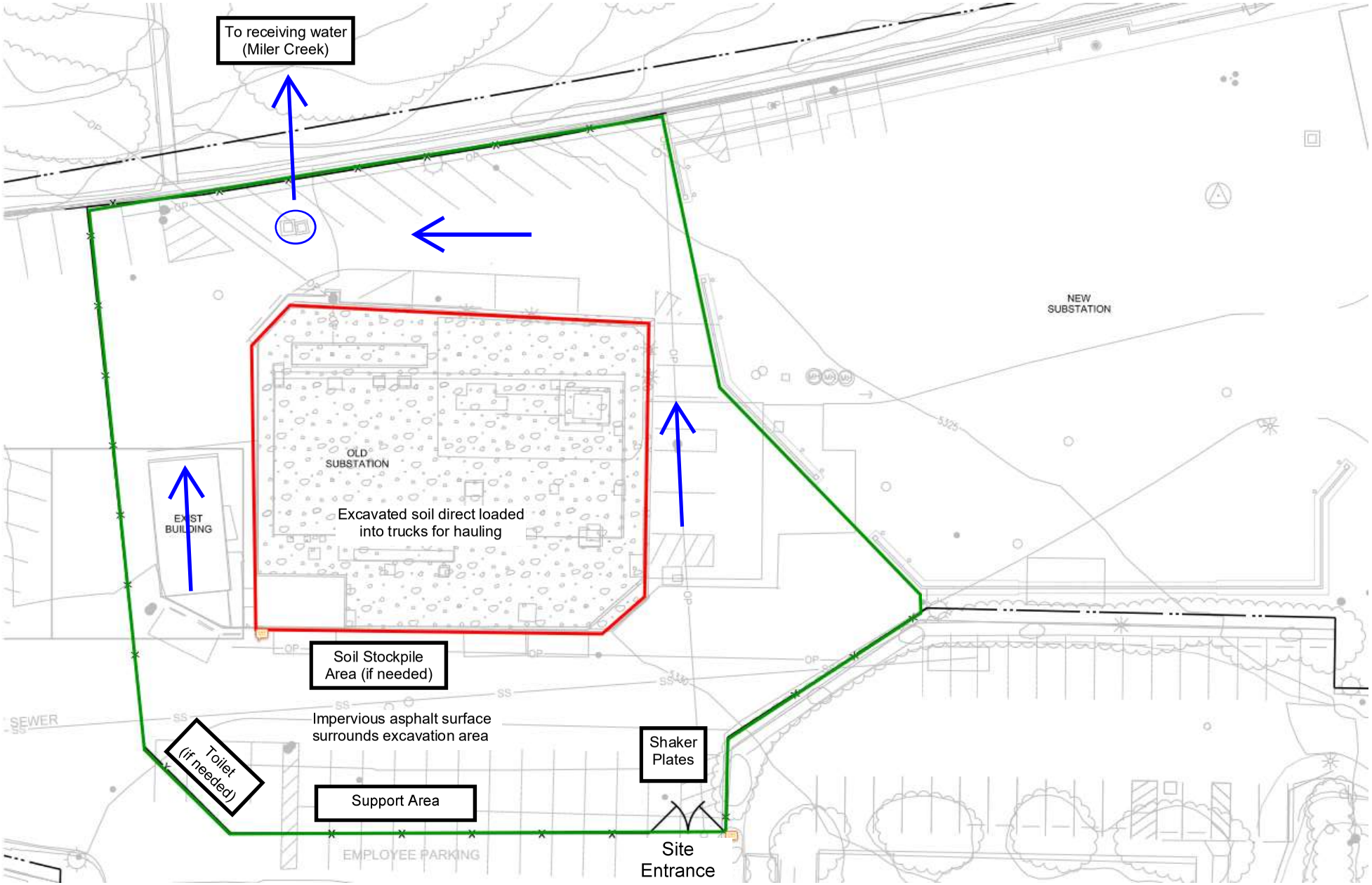
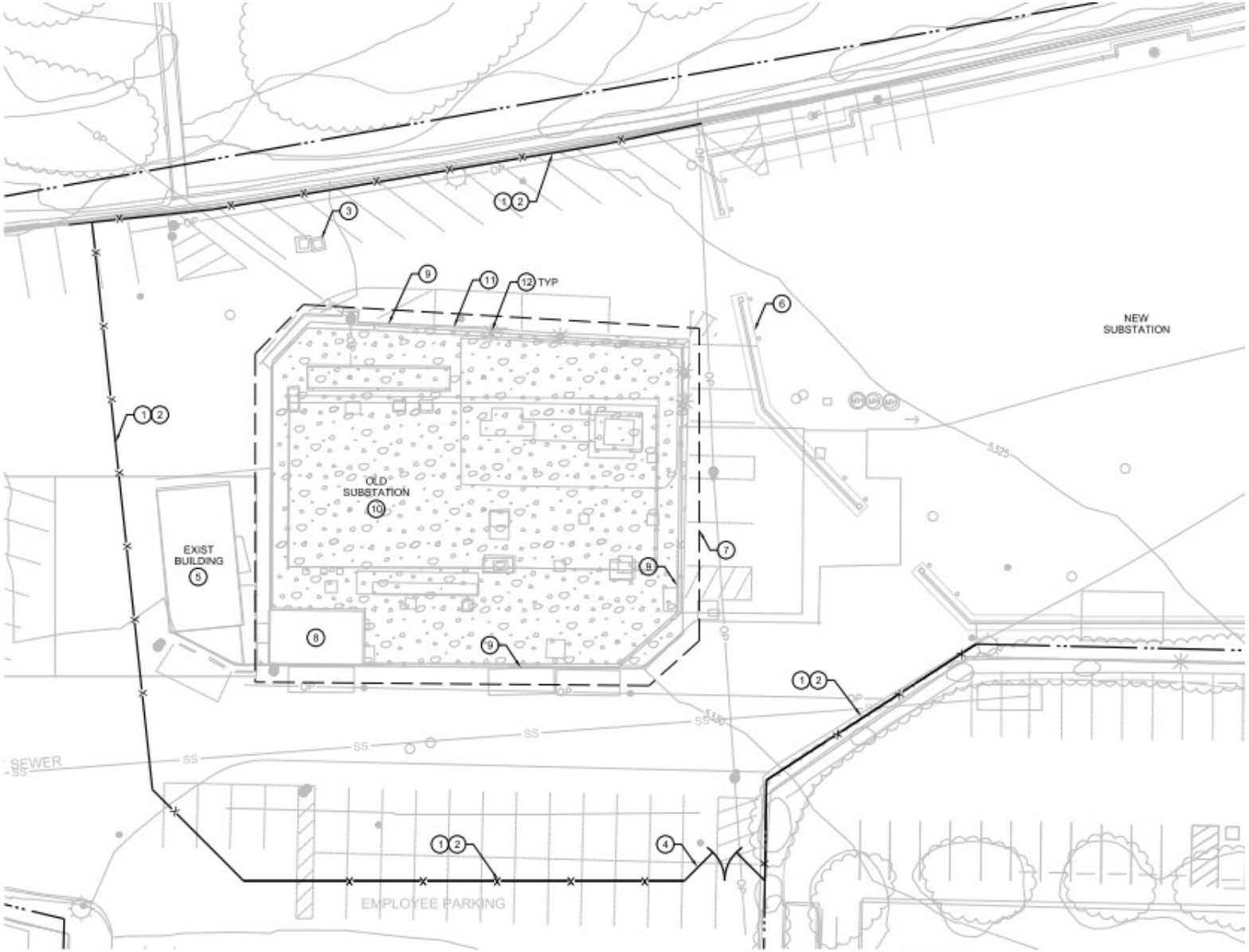


Figure 3-3 Site Map
APS Former MGP Plant Site
Prescott, Arizona

JACOBS

Notes:

- Anticipated excavation area
- Site extent: to be protected by SWPPP stormwater protection indicated on Figures 3.4 and 3.5
- Flow
- Catch basin



NOTES

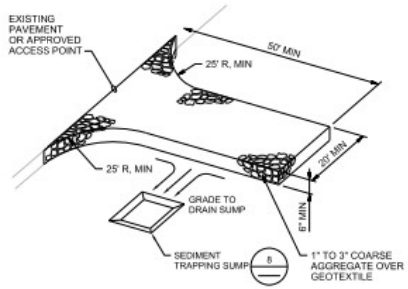
1. PROVIDE AND INSTALL FENCE LINE MISTING SYSTEM FOR DUST AND ODOR CONTROL ON ALL FENCING. COVER ENTIRE HEIGHT OF FENCE WITH FABRIC TO PREVENT BLOWING DUST DURING CONSTRUCTION.
2. PROVIDE SAND BAG SILT PROTECTION, SEE 6/C-5.
3. PROVIDE INLET BARRIER, SEE 7/C-5 AND 8/C-5.
4. STABILIZED CONSTRUCTION ENTRANCE OR CORRUGATED STEEL PLATES, SEE 1/C-5.
5. EXISTING HISTORIC BUILDING PROTECT DURING CONSTRUCTION.
6. NEW SUBSTATION MASONRY WALL AND GATES, PROTECT DURING CONSTRUCTION.

PLAN
1"=20'-0"

Figure 3-4
Stormwater Protection

APS Former MGP Plant Site
Prescott, Arizona

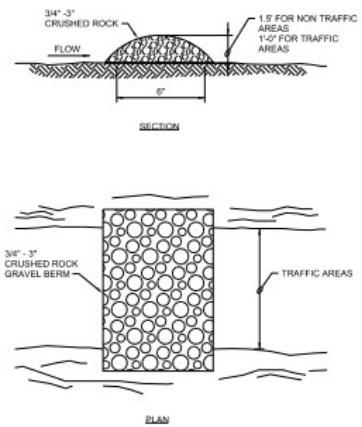
JACOBS



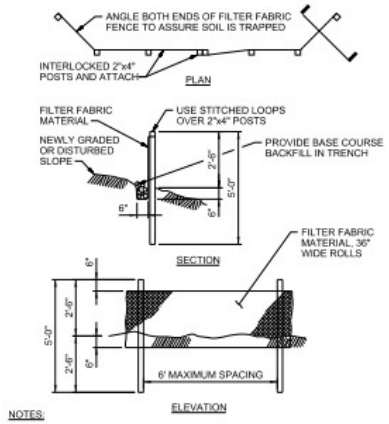
NOTES:

1. ADDITIONAL GRAVEL MAY HAVE TO BE ADDED PERIODICALLY TO MAINTAIN PROPER FUNCTION OF THE PAD.
2. REMOVE GRAVEL ENTRANCE AND REPLACE WITH NEW BASE COURSE PRIOR TO COMPLETION OF ACCESS ROAD.
3. CORRUGATED STEEL PLATES MAY BE USED IN PLACE OF AGGREGATE ON PAVED SURFACES.

1 C-1 EC-5 - STABILIZED CONSTRUCTION ENTRANCE
NTS



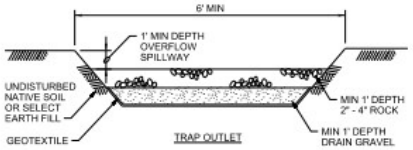
2 SPC-3 - GRAVEL FILTER BERM
NTS



NOTES:

1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. 2"x4" DOUGLAS FIR OR STEEL FENCE POSTS.
3. STITCHED LOOPS TO BE INSTALLED DOWNHILL SIDE OF SLOPE.
4. COMPACT ALL AREAS OF FILTER FABRIC TRENCH.

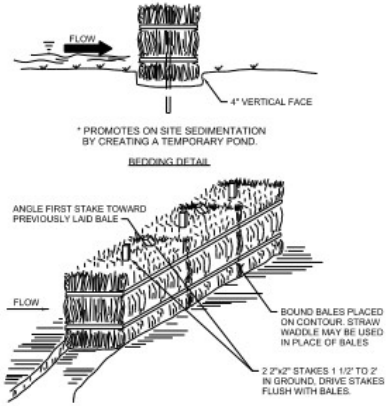
3 C-2, C-3 SPC-5 - SILT FENCE
NTS



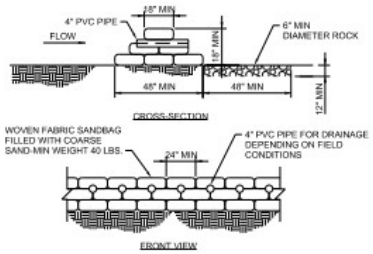
MAINTENANCE STANDARDS:

1. SEDIMENT SHALL BE REMOVED FROM THE TRAP WHEN IT REACHES 1 FOOT IN DEPTH.
2. ANY DAMAGE TO THE TRAP EMBANKMENTS OR SLOPES SHALL BE REPAIRED.

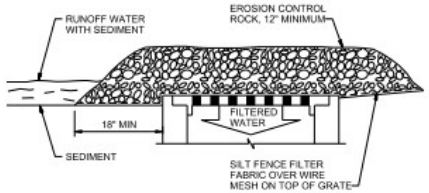
4 C-2 SPC-9 - SEDIMENT TRAP
NTS



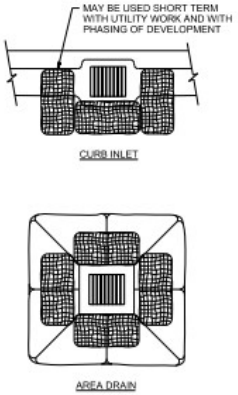
5 SPC-1 - ORGANIC FILTER BARRIER
NTS (MAY BE USED IN PLACE OF SILT FENCE) 5



6 SPC-2 - SAND BAG BARRIER
NTS



7 SPC-7 - GRAVEL AND WIRE MESH INLET BARRIER
NTS (MAY BE USED IN PLACE OF 8)



8 SPC-7 - BIOFILTER BAG INLET BARRIER
NTS

Figure 3-5
Stormwater Details

APS Former MGP Plant Site
Prescott, Arizona

JACOBS

Appendix B
Inspection and Corrective Action Form

2020 Construction General Permit (CGP)
Routine Inspection Report Form

Section I. General Information (see instructions)

Name of Project		CGP Authorization No.	AZCN- _____	Inspection Date	

○ **Check box when using this form to inspect an inactive/unstaffed construction site (this option applies to an entire site only).** See Part 4.2(4) of the permit. Inspect the site immediately before becoming inactive/unstaffed and every 6 months thereafter and within 24 hours of each storm event of 0.5 inch or greater in 24 hours.

Inspector Name, Title and Contact Information	**Name:**_____ **Title:** _____ **Contact information:** _____
Present Phase of Construction	

Inspection Schedule (all days are calendar days) *(Note: you may be subject to different inspection frequencies in different areas of the site. Check all that apply. * See Part 4.2 for qualifications)*

Routine Schedule: ○ Within 7 days* ○ Within 14 days* and within 24 hours of a 0.5" storm event

○ Once per month, but not within 14 days of the previous inspection and within 24 hours of a 0.25" storm event

Reduced Schedule: once per month (but not within 14 days of the previous inspection) and before an anticipated storm event and within 24 hours of the end of each storm event of 0.5 inch or greater in 24 hours.

○ Once per month (in stabilized areas)
○ Once per month (where discharges are unlikely based on seasonal rainfall patterns)
○ Once per month (where winter conditions exist and earth-disturbing activities are being conducted)

Outfalls within 1/4 mile of an impaired water or outstanding Arizona water (OAW): ○ Every 7 days and within 24 hours of a 0.5" storm event

Was this inspection triggered by either a 0.25" or 0.5" storm event? ○ Yes ○ No

If yes, duration of storm event: ○ < 1 hour ○ < 6 hrs ○ > 6 hrs

If yes, how was the storm event determined (either 0.25" or 0.5")?

○ Rain gauge on site ○ Weather station representative of site. Specify weather station source: _____

Total rainfall amount that triggered the inspection (in inches)**:** _____

Identify all sources of non-stormwater discharges occurring at the site and the associated control measures in place

sources of non-stormwater discharges:	control measures associated with the non-stormwater discharges:
1. _____	1. _____
2. _____	2. _____
3. _____	3. _____
4. _____	4. _____
5. _____	5. _____

Adverse or Unsafe Conditions for Inspection

Did you determine that any portion of the site was unsafe for inspection per CGP Part 4.2(6)? ○ Yes ○ No

If "yes", complete the following:

- Describe the conditions that prevented you from conducting the inspection in this location:

- Location(s) where conditions were found:

Note: *Inspections may be postponed when adverse or unsafe conditions exist such as local flooding, high winds, or electrical storms, or situations that otherwise make inspections unsafe. However, the inspection must resume as soon as conditions are safe.*

Section II. Description of Discharges and Condition of the Discharge Locations (CGP Part 4.3(10)) (see instructions)

Outfall(s)	Observations *(Note: discharges may not occur at every outfall on the site after a storm event. Check all that apply.)*
1.	Describe the discharge: ○ Stormwater ○ Non-stormwater ○ None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	
2.	Describe the discharge: ○ Stormwater ○ Non-stormwater ○ None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	
3.	Describe the discharge: ○ Stormwater ○ Non-stormwater ○ None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	

Section III. Condition and Effectiveness of All On-site Control Measures (Erosion and Sediment (E&S)), Stabilization and Pollution Prevention (P2) Practices (CGP Part 3.3 through 3.5) (see instructions)

Description of Control Measures	Type of Control Measure: ▪ Erosion and Sediment (E&S) ▪ Stabilization ▪ Pollution Prevention (P2)	Additional controls required?	Repairs or other maintenance needed?[1]	Corrective action required?[1, 2] Date of discovery	Specify stabilization method (mulch, rock, planted vegetation, etc.)
1.	○ E&S ○ Stabilization ○ P2	○ Yes ○ No	○ Yes ○ No	○ Yes ○ No	
Notes (e.g., provide details about needed additional control measures, maintenance performed, etc.)					

Description of Control Measures	Type of Control Measure: ▪ Erosion and Sediment (E&S) ▪ Stabilization ▪ Pollution Prevention (P2)	Additional controls required?	Repairs or other maintenance needed?[1]	Corrective action required?[1, 2] Date of discovery	Specify stabilization method (mulch, rock, planted vegetation, etc.)
2.	○ E&S ○ Stabilization ○ P2	○ Yes ○ No	○ Yes ○ No	○ Yes ○ No	
Notes (e.g., provide details about needed additional control measures, maintenance performed, etc.)					

Note 1: The permit differentiates between conditions requiring repairs and maintenance, and those requiring corrective action. The permit requires maintenance in order to keep controls in effective operating condition and requires repairs if controls are not operating as intended. Corrective actions are triggered only for specific, more serious conditions, which include: 1) A necessary stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 3.1 and/or Part 3.2; 2) One of the prohibited discharges in Part 1.4 is occurring or has occurred; or 3) ADEQ or USEPA determines that modifications to the control measures are necessary to meet the requirements of Part 3.

Note 2: If answering "Yes" (i.e., a site condition that meets one or more of the three criteria in Note 1 above requires a corrective action), you must complete a Corrective Action Report. See Part 5 of the permit for more information.

Section VI. Certification and Signature (CGP Appendix B. 9.)

Section IV.A. – Certification and Signature by Contractor or Subcontractor performing the inspections (if applicable)

Check one of the following:

- ○ No instances of non-compliance were discovered during this inspection and the project was in full compliance with the SWPPP and permit.
- ○ Inspection follow-up is required, in accordance with Parts 4.5(1) and 4.5(2) of the permit.

"*I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*"

Signature of Contractor or Subcontractor: _____ Title: _____

Printed name : _____ Date: _____

Business / Agency: _____ Phone number: _____

Section IV.B. – Certification and Signature by Permittee (permittee / operator or a duly authorized representative is required to sign)

Check one of the following:

- ○ No instances of non-compliance were discovered during this inspection and the project was in full compliance with the SWPPP and permit.
- ○ Inspection follow-up is required, in accordance with Parts 4.5(1) and 4.5(2) of the permit.

"*I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*"

Signature of Permittee or
"Duly Authorized Representative": _____ Title: _____

Printed Name: _____ Date: _____

Business / Agency: _____ Phone number: _____

Section I General Information

You must complete Section A of the CAR Form within 24 hours of discovering the condition that triggered corrective action.

Date/Time Problem First Discovered

Specify the date and time when the triggering condition was first discovered.

Name/Contact Information

Provide the individual's name, title, and contact information as directed in the form.

Section II.A Corrective Action Triggering Conditions

You must complete the Corrective Action Report Form no later than 7 calendar days after discovering the condition that triggered corrective action.

Site Condition That Triggered Corrective Action

Under the CGP, corrective action is required when one of 5 triggering conditions occurs at your site. See CGP Part 5.1. Check the box that corresponds to the condition that triggered this corrective action.

Description of the Site Condition

Provide a summary description of the condition you found that triggered corrective action under CGP Part 5.1 and the specific location where it was found. Be as specific as possible about the location; it is recommended that you refer to a precise point on your site map. If you have already provided this explanation in an inspection report, you can refer to that report.

Deadline for Completing a Corrective Action

This deadline is fixed in CGP Part 5.2. For all projects, the deadline is either:

(1) No more than 7 calendar days after the date you discovered the problem; or

(2) If it is infeasible to complete work within the first 7 calendar days, as soon as practicable following the 7th day.

If your estimated date of completion falls after the 7 calendar day deadline consistent with (2), above, explain:

(a) Why you believe it is infeasible to complete work within 7 calendar days; and

(b) The schedule for installing and making the new or modified stormwater control operational in the soonest practicable timeframe.

Section II.B Stormwater Control Modifications to be Implemented

Provide a list of changes (i.e., modifications and / or replacements) you plan to make to your control measures to correct the problem, and record either the actual date you completed the work or the planned date. Keep in mind that your work must be completed within the timeline that you specified in Section II.A for the completion of corrective action work. Refer to Part 5.2 for Corrective Action deadlines and Part 6.4(2)(a) for conditions requiring a SWPPP modification. Keep in mind that SWPPP changes must be made within 7 calendar days of completing the corrective action work.

Space is provided for you to include additional notes or observations regarding the changes that you implemented at your site to correct the problem.

Section III Signature/Certification

For each corrective action taken in accordance with this Part, the operator shall document the details of the corrective action in the inspection report required by Part 4.4. These reports shall be signed in accordance with the signatory requirements in Appendix B, Subsection 9 and maintained with the SWPPP in accordance with the record keeping requirements in Part 8.2 of the permit.

2020 Construction General Permit (CGP)
Corrective Action Report Form

Section I. General Information

(Complete this section within 24 hours of discovering the condition that triggered corrective action)

Name of Project		**CGP Authorization No.**	**AZCN** _____	**Authorization Date**	
Date/ Time Problem First Discovered		**Today's Date**			
Name and Contact Information of Individual Completing this Form	**Name:**_____ **Contact information:** _____				

Section II.A. Corrective Action Triggering Conditions

(Complete this section within 24 hours of discovering the condition that triggered corrective action)

What site conditions triggered the requirement to conduct corrective action? *(Check the box that applies)*

☐ A necessary control measure was never installed, was installed incorrectly, or was not installed in accordance with the requirements in Part 3.2; or

☐ A stormwater control needs to be repaired or replaced (beyond routine maintenance required under Part 3.2); or

☐ One of the prohibited discharges in Part 1.4 is occurring or has occurred; or

☐ ADEQ or USEPA determines that revisions to the control measures are necessary to meet the requirements of Part 3; or

☐ A discharge is causing an exceedance of an applicable surface water quality standard.

Provide a description of the problem: (Provide description of the specific problem that triggered the need for corrective action, and the specific location where it was found. If you have already provided this explanation in an inspection report, you can refer to that report.)

Deadline for completing corrective action:

☐ Work will be completed no more than 7 calendar days after the date the problem was discovered (enter date): ____ / ____ / ____

☐ It is infeasible to complete work within the first 7 days, therefore, the work will be completed as soon as practicable following the 7th day (enter date): ____ / ____ / ____

If the estimated date of completion falls after the 7-day deadline, document the following: (1) The reason it is infeasible to complete work within 7 days, and (2) The schedule for installing and making the new or modified stormwater control operational in the soonest practicable timeframe.

NOTE: *Any corrective actions that result in changes to any of the stormwater controls or procedures shall be documented in the SWPPP within 7 calendar days of completing the corrective action work.*

Section II.B. – Stormwater Control Modifications to be Implemented [Print additional sheets as necessary]

List of stormwater control(s) to be modified or replaced to correct the condition that required the Corrective Action	Date of Completion	SWPPP Update Necessary? If yes, specify date SWPPP modified	Notes and observations
1.		☐ Yes ☐ No	
2.		☐ Yes ☐ No	
3.		☐ Yes ☐ No	

Section III. – Certification and Signature by Permittee (permittee / operator or a duly authorized representative is required to sign)

Check the following as appropriate:

- ☐ The operator has retained a copy of the inspection report documenting the corrective action(s) on-site with the SWPPP as required in Part 6.4.
- ☐ One or more outfalls is/are located within 1/4 miles upstream of an impaired or OAW and the operator shall submit a corrective action report to ADEQ, within 30 calendar days (from the date of the incident), in accordance with Part 8.1. in accordance with Parts 1.5(3) and 1.5(4).

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Permittee or
"Duly Authorized Representative": _____ Title: _____

Printed Name: _____ Date: _____

Business / Agency: _____ Phone number: _____

Appendix C
Maintenance and Repair Activity Log

Maintenance and Repair Activity Log

Date of Discovery	Description of Maintenance or Repair Activity	Schedule for Completion (If applicable)[1]	Reason for Extended Repair Schedule	Completion Date

Notes:

1. This table is not used to document corrective actions as described in Section 6.2. Corrective actions will be documented on the inspection and corrective action form in Appendix C. Routine maintenance and repair do not constitute corrective action.

2. Repairs must be completed within 7 days unless justification for why an extended schedule is required is provided in this table

Appendix D
Spills, Leaks, and Release Reporting Form

Spills, Leaks, and Release Reporting Form

Date of Occurrence	Description of Event	Actions Taken in Response	Completion Date

Appendix E
Copy of 2020 CGP

State of Arizona
Department of Environmental Quality
Water Quality Division
Phoenix, Arizona 85007

Arizona Pollutant Discharge Elimination System
General Permit for Stormwater Discharges Associated with Construction Activity to Surface Waters

This permit provides authorization to discharge under the Arizona Pollutant Discharge Elimination System (AZPDES) program, in compliance with the provisions of the Arizona Revised Statutes, Title 49, Chapter 2, Article 3.1; the Arizona Administrative Code (A.A.C.), Title 18, Chapter 9, Article 9, and Chapter 11, Article 1; and the Clean Water Act as amended (33 U.S.C. 1251 et seq.).

This general permit specifically authorizes stormwater discharges associated with construction activity in Arizona, pursuant to 40 CFR § 122.26(b)(14)(x) and 40 CFR § 122.26(b)(15). All discharges authorized by this general permit shall be consistent with the terms and conditions of this general permit. Permit coverage is required from the "commencement of construction activities" until "final stabilization", as these terms are defined in this permit.

This general permit becomes effective on July 1, 2020.

This general permit and the authorization to discharge expire at midnight June 30, 2025.

Signed this 27th day of March, 2020.

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Trevor Baggiore, Director
Water Quality Division

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1.0 COVERAGE UNDER THIS GENERAL PERMIT

1.1 Permit Area.

This general permit covers the state of Arizona. This permit is not authorized for use by operators with stormwater discharges associated with construction activities on any Indian country in Arizona. U.S. EPA Region 9 remains the permitting authority for Indian country in Arizona.

1.2 Eligibility.

This general permit authorizes stormwater discharges to surface waters, either directly or by way of a conveyance, associated with "construction activities," as defined in Appendix A, that will disturb one or more acres of land, or will disturb less than one acre, but is part of a common plan of development or sale that will ultimately disturb one acre or more (see 40 CFR 122.26(b)(15)(ii).

This general permit is also applicable to stormwater discharges associated with support activities from temporary plants or operations set up to produce concrete, asphalt, or other materials exclusively for the permitted construction activity. See 40 CFR 122.26(b)(14)(x) and (15) and Appendix A.

Operators of small construction sites (less than five (5) acres – see 40 CFR 122.26(b)(15) and Appendix A) may, if eligible, choose a waiver from coverage under this permit, provided that site remains in compliance with the applicable requirements of Part 1.6 during construction.

Coverage under this permit is not required for routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the facility. See A.A.C. R18-9-A902(B)(8)(c)(iii).

Coverage under this permit may be required for any other discharges associated with construction activities that ADEQ determines are needed in accordance with A.A.C. R18-9-A902(B)(8)(d).

Any discharges that are not consistent with the eligibility conditions of this permit are not authorized by this permit. A person shall either apply for a separate Arizona Pollutant Discharge Elimination System (AZPDES) permit to cover such discharge(s), cease the discharge(s), or take necessary steps to make the discharge(s) eligible for coverage under this permit.

Individual Permit Requirements. An operator who chooses to obtain an individual stormwater permit (in accordance with the requirements of A.A.C. R18-9-C902(B), or is required by ADEQ to obtain an individual stormwater permit (in accordance with A.A.C. R18-9-C902(A)), shall comply with the requirements of Appendix B, Subsections 17 and 18(a)(i).

1.3 Authorized Discharges.

1. <u>Allowable Stormwater Discharges</u>.

    a. Stormwater runoff associated with construction activities provided the discharge is conducted in compliance with this permit;

    b. Discharges requiring a stormwater permit under 40 CFR 122.26(a)(1)(v); 40 CFR 122.26(b)(15)(ii); or under 40 CFR 122.26(a)(9);

    c. Stormwater discharges from construction support activities (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) provided:

i. The support activity is directly related to a construction activity that is required to have AZPDES permit coverage for discharges of stormwater associated with construction activity;

ii. The support activity is not a commercial operation (serving multiple unrelated construction activities by different operators) and does not operate beyond the completion of the construction activity for which the support activity is directly associated;

iii. The support activity is not otherwise covered by a separate AZPDES permit; and

iv. Appropriate control measures for the discharges from the support activity areas are identified in the Stormwater Pollution Prevention Plan (SWPPP) and implemented.

2. Allowable Non-Stormwater Discharges.

a. The following are the only non-stormwater discharges allowed under this permit. These discharges are allowed provided they are minimized to the extent practicable. When allowable non-stormwater discharges cannot be practicably eliminated, the operator shall install appropriate control measures to reduce or eliminate pollutants in the discharge to ensure compliance with Part 3 of this permit:

i. Discharges from emergency fire-fighting activities

ii. Water used to control dust, provided reclaimed water or other process wastewaters are not used;

iii. Routine external building wash down provided detergents are not used;

iv. Water used to rinse vehicles and equipment, provided that reclaimed water or other wastewater is not used and no soaps, solvents, detergents, oils, grease or fuels are present in the rinsate;

v. Pavement rinse waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used;

vi. Uncontaminated air conditioning or compressor condensate;

vii. Uncontaminated groundwater or spring water;

viii. Foundation or footing drains where flows are not contaminated with process materials such as solvents;

ix. Water from firefighting system testing and maintenance, including hydrant flushing;

x. Discharges related to installation and maintenance of potable water supply systems, including disinfection and flushing activities, discharges resulting from pressure releases or overflows, discharges due to potable water pipeline breaks and discharges from wells approved by ADEQ for drinking water use;

xi. Hydrostatic testing of new pipes, tanks or vessels using potable water, surface water, or uncontaminated groundwater;

xii. Water used for compacting soil, provided reclaimed water or other wastewaters are not used;

xiii. Water used for drilling and coring such as for evaluation of foundation materials, where flows are not contaminated with additives; and

xiv. Uncontaminated waters obtained from dewatering operations/ foundations in preparation for and during excavation and construction provided the discharge are managed as specified in Part 3.6 of this permit.

Note: Reclaimed water may be used for dust control, soil compaction, or landscape irrigation if a valid reuse permit is obtained and there are no discharges of reclaimed water off-site.

b. If the site is within 1/4 mile upstream of an Outstanding Arizona Water (OAW), the operator shall not discharge any non-stormwater under this permit, except for emergency fire-fighting activities, unless specifically authorized by the Department.

1.4 Prohibited Discharges.

The operator shall not allow any non-stormwater discharges from the site, except as provided in Part 1.3(2)(b). All other non-stormwater discharges (not listed above) shall be eliminated or authorized under a separate AZPDES permit as those discharges are not authorized under this permit. Stormwater discharges that are mixed with non-stormwater, other than the allowable non-stormwater discharges listed in Part 1.3(2) are not eligible for coverage under this permit.

The following discharges are prohibited:

1. Wastewater from washout of concrete, unless managed by an appropriate control as described in Part 3.5;
2. Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials, unless managed by an appropriate control as described in Part 3.5;
3. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
4. Soaps or solvents used in vehicle and equipment washing; and
5. Toxic or hazardous substances from a spill or other release.

1.5 Limitations of Coverage.

1. Post-Construction Discharges. This general permit does not authorize stormwater discharges that originate from the site after construction activities have been completed and the site, including any temporary support activity site, has achieved final stabilization and a Notice of Termination (NOT) has been submitted to ADEQ. Post-construction stormwater discharges from sites may need to be covered by a separate AZPDES permit. See Part 6.4(13).
2. Discharges Covered by Another AZPDES Permit. This general permit does not authorize stormwater discharges associated with construction activities that are covered under an individual permit or another applicable general permit.
3. Impaired or Not-Attaining Waters. The following conditions apply if outfalls from construction sites are located within 1/4 mile upstream of a surface water listed as impaired or not-attaining:

   a. The operator must submit a copy of the SWPPP and associated review fee with the NOI to ADEQ;

   b. The SWPPP must include a Sampling and Analysis Plan (SAP - see Part 7.2) for analytical monitoring, if there are discharges from the site that include the pollutant(s) for which the surface water is impaired or not-attaining. However, if the operator can demonstrate there are no pollutants that will be an additional source

to the impairment, analytical monitoring may not be required. As part of this demonstration, the operator must consider all on-site activities, including the presence of pollutants (metals, nutrients, etc.) in site soils. The demonstration must be included in the SWPPP submitted for ADEQ's review;

c. If a discharge contains pollutants for which an approved Total Maximum Daily Load (TMDL) has been established, the SWPPP shall specifically identify control measures necessary to ensure the discharges will be consistent with the provisions of the TMDL.

4. Outstanding Arizona Waters (OAW). The following conditions and requirements apply if one or more outfalls from construction sites are located within 1/4 mile upstream of a surface water listed as an OAW in A.A.C. R18-11-112(G):

a. The operator must submit a copy of the SWPPP and associated review fee with the NOI to ADEQ;

b. The SWPPP must include a sampling and analysis plan for analytical monitoring (see Part 7.2) of pollutants expected to discharge from the site, including sediment.

1.6 Erosivity Waivers for Small Construction Activities.

A person performing construction activity which disturbs between one and five acres may be eligible for a waiver from coverage under this permit based on a low potential for soil erosion (i.e., the Erosivity Waiver). Construction activities that disturb five acres or greater, or less than five acres but are part of a common plan of development or sale, are not eligible for the erosivity waiver.

1. Calculating the Erosivity Waiver.

Low potential for erosion is defined as a rainfall erosivity (R) factor of less than five (5) and is calculated in myDEQ, which uses the EPA's methodology for determining if a site qualifies for the erosivity waiver, based on the *USDA Handbook 703-Predicting Soil Erosion by Water: A Guide to Conservation Planning with the Revised Universal Soil Loss Equation (RUSLE)*, dated January 1997. EPA has updated its Rainfall Erosivity Factor Calculator to correct known problems and to use updated data from the Natural Resources Conservation Service's (NRCS) Revised Universal Soil Loss Equation, Version 2 (RUSLE2) database. myDEQ is using the Version 2 for erosivity calculations for the 2020 CGP. The small construction site's rainfall erosivity calculation shall be less than five (5) during the entire period of construction activity.

If one or more outfalls from the construction site are located within 1/4 mile upstream of an impaired or not-attaining water or OAW, the site is not eligible for the erosivity waiver. The erosivity waiver is predicated on the above criteria being met and proper application procedures being followed.

2. Permit Waiver Certification.

The operator shall obtain an AZPDES Permit Waiver Certification before commencing construction activities. All waiver certifications require an AZPDES fee in accordance with A.A.C. R18-14-109, Table 6.

An operator of a construction activity that is eligible for an Erosivity Waiver shall provide the following information:

a. The name, address, and telephone number of the construction site operator(s);

b. The name (or other identifier), address, county, and parcel or lot number as recorded by the county, of the construction activity or site;

c. Latitude and longitude (in decimal degree format to 6 decimal places) of the construction site at the outfall nearest to the surface water;

d. The construction activity's start and completion (final stabilization) dates;

e. The total construction site acreage and the acreage to be disturbed by the operator submitting the NOI, to the nearest 0.5 acre;

f. If discharges may occur to a municipal separate storm sewer system (including municipal streets and other improvements that can convey stormwater), the name of the municipal operator of the storm sewer;

g. The name of the waterbody(s) that would be receiving stormwater discharges from the construction site; and

h. The waiver certification form shall be signed using the electronic signature feature in myDEQ and in accordance with the signatory requirements of Appendix B, Subsection 9.

3. Construction Activities That Extend Past Certified Period.

If the small construction activity continues beyond the calculated "end date" as shown on the Permit Waiver Certification, the operator shall prepare a SWPPP and submit an NOI as required under Parts 2.3 and 6.0.

2.0 AUTHORIZATION UNDER THIS GENERAL PERMIT

The operator shall review all the conditions and requirements of the permit before submitting any documentation described in Part 2.

2.1 Responsibilities of Operators.

1. All Operators. All operators are required to obtain coverage for stormwater discharges associated with construction activity under this permit or an alternative AZPDES permit. For the purposes of this permit, an "operator" is any person associated with a construction activity that meets either of the following two criteria:

   a. The person has operational control over construction plans and specifications, including the ability to make revisions to those plans and specifications; or

   b. The person has day-to-day operational control of those activities at a construction site that are necessary to ensure compliance with the permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the permit).

   Subcontractors are generally not considered to be "operators" for the purposes of this permit.

2. Multiple Operators. Where there are multiple operators associated with the same construction activity, all operators are required to obtain permit coverage. The following applies in these situations:

   a. If one operator has control over plans and specifications and a different operator has control over activities at the construction site, they may divide responsibility for compliance with the terms of this permit as long as they jointly develop a common SWPPP (see Part 6.1(1)), which documents which operator has responsibility for each requirement of the permit.

   b. If an operator only has operational control over a portion of a larger construction site (e.g., one of four homebuilders in a subdivision), the operator is responsible for compliance with applicable effluent limits (see Part 3), terms, and conditions of this permit as it relates to their activities on their portion of the construction site and implementation of control measures described in the SWPPP in the areas under their control.

   c. Operators must ensure either directly or through coordination with other operators, that their activities do not render another person's pollutant discharge controls ineffective.

   d. If the operator of a construction support activity (Part 1.3(1)(c)) is different from the operator of the main construction site, that operator is also required to obtain permit coverage.

2.2 Prerequisites for Submitting a Notice of Intent (NOI).

A person may be authorized to discharge under this permit only if the stormwater discharge is associated with construction activities from a construction site. Prior to submission of an NOI, an applicant seeking authorization to discharge under this general permit shall:

1. Meet the eligibility requirements under Part 1.2; and

2. Develop a SWPPP that meets the requirements of Part 6 of this permit, and that covers either the entire site or all portions of the site for which the person is an operator.

a. The SWPPP shall be prepared by a qualified person, prior to submission of the NOI and shall be implemented prior to the start of construction.

b. The SWPPP is not required to be submitted to ADEQ unless the construction site has one or more outfalls within 1/4 mile upstream of an impaired or not-attaining water or OAW as described in Parts 1.5(3) and 1.5(4) but shall be retained and made available in accordance with Part 6.7.

2.3 Submitting an NOI.

1. Application Required.

a. The operator shall submit a separate, accurate, and complete NOI to ADEQ for each construction activity that disturbs one or more acres of land, or for each activity that is part of a common plan of development or sale that will ultimately disturb one or more acres of land. NOIs must be submitted in myDEQ.

b. Submission of the NOI demonstrates the operator's intent to be covered by this permit; it is not a determination by ADEQ that the operator has met the eligibility requirements for the permit. Discharges are not authorized if ADEQ notifies the operator that further evaluation is necessary, or that the discharges are not eligible for coverage under this permit.

c. If the operator changes or another operator is added before construction activities are complete, the new operator shall also submit an NOI to be authorized under this permit before taking over operational control or commencing construction activities at the site.

2. NOI Requirements. Construction site operators seeking authorization for stormwater discharges under this general permit shall submit a complete and accurate AZPDES NOI in myDEQ. The NOI in myDEQ requires, at a minimum, the following information:

a. The name, address, and telephone number of the construction site operator;

b. The type of construction activity (e.g., school, commercial, subdivision, roadway, etc.);

c. Whether the construction activity is part of a common plan of development or sale;

d. Estimates of the total construction site acreage and the acreage to be disturbed by the operator submitting the NOI;

e. The printed name (or other identifier), address and county of the construction site;

f. An accurate latitude and longitude (in decimal degree format to 6 decimal places) of the construction site at the point nearest to the closest surface water;

g. The latitude and longitude (in decimal degree format to 6 decimal places) of outfalls that may discharge stormwater to a receiving surface water;

h. Confirmation that a SWPPP meeting the requirements in Part 6 of this permit has been developed and will be implemented prior to commencement of construction activities;

i. If the NOI is a late application, the operator shall certify that a SWPPP has been developed and implemented prior to submittal of the NOI;

j. The name and telephone number of a contact person for the SWPPP;

k. The name of the closest surface water, which may include an unnamed wash, or canal;

l. The name(s) of the MS4 into which there is a potential to discharge, if applicable;

m. The construction activity's estimated start and completion dates; and

n. Fees are to be paid using a credit card or electronic check (ACH-debit) at the time of NOI submission in myDEQ.

3. Effective Date of Permit Coverage.

a. Routine Coverage. Except as set forth in subsection (c) below, an eligible operator is authorized to discharge stormwater from a construction site when an authorization certificate is issued, after the NOI information is entered and certified in myDEQ.

b. Incomplete NOI Submitted. If ADEQ notifies the operator that an NOI is incomplete or incorrect, the operator shall submit a revised or new NOI in myDEQ if the operator still intends to obtain coverage under this permit.

c. Discharges to Impaired, Not-Attaining or Outstanding Arizona Waters. Applicants seeking coverage for a construction site that has one or more outfalls within 1/4 mile upstream of an impaired or not-attaining water or an OAW are not authorized under this permit for 30 calendar days following submission of their NOI, SWPPP, SAP and initial application fees in myDEQ. ADEQ may notify operators within this time frame that the NOI is approved, or there is cause for a SWPPP amendment, or denial of coverage as specified in Parts 1.5(3) and 1.5(4) of this permit. If notification is not received in the 30 calendar day time period, the operator is deemed covered under this permit.

d. SWPPP Requiring Additional Information. If the operator receives notification from ADEQ that the SWPPP is incomplete or otherwise deficient, the operator shall submit a revised SWPPP to ADEQ that addresses the comments if the operator still intends to obtain permit coverage. If review of the revised SWPPP reveals that a discharge of pollutants may cause or contribute to an exceedance of an applicable surface water quality standard in the receiving surface water, monitoring may be required, in accordance with Part 7. The revised SWPPP must include the applicable re-review fee. Permit coverage is suspended until ADEQ issues the permit authorization certificate.

e. Ongoing Construction Activities.

For operators of ongoing construction activities that are in process as of the effective date of this permit:

i. Within the first 60 calendar days from the effective date of this permit, the operator shall update the SWPPP as necessary to comply with the requirements of Part 6 of this permit; and

ii. Within the first 60 calendar days from the effective date of this permit, the operator shall submit a new NOI in myDEQ. The operator may continue to comply with the terms and conditions of the expired permit (AZG2013-001) until the NOI is submitted and payment is made for the permit application fee.

iii. If eligible, an operator may submit an NOT within the first 60 calendar days from the effective date of this permit, if construction is finished and final stabilization has been achieved.

f. Change in Operators. For construction activities where the operator changes, including instances where an operator is added after an NOI has been submitted, the new operator shall submit an NOI and receive an authorization certificate before assuming operational control or commencing work on-site (see Appendix B, Subsection 19).

g. Certificate of Authorization. The operator will receive a Certification of Authorization from myDEQ assigning an authorization number and approval date. The Certificate of Authorization is not the permit. It acknowledges that ADEQ received the NOI and that the operator is authorized to discharge stormwater, subject to the terms and conditions of this permit. Correspondence with ADEQ concerning any construction activity covered by this permit shall reference the authorization number.

4. Late Applications. The operator is only permitted for eligible discharges that occur after a complete and accurate NOI is submitted in myDEQ and authorization is granted. ADEQ reserves the right to take enforcement action for any un-permitted discharges or permit noncompliance that occur between the time construction commenced and either permit authorization is granted, denied, or a complete and accurate Erosivity Waiver is submitted and approved in myDEQ.

5. Modified NOI. The operator may modify the NOI in myDEQ if there are revisions to personnel contact information or if outfall locations change. There is no fee for either of these modifications. Any other modifications require the submission of a NOT, terminating the existing NOI, and obtaining a new NOI for continued coverage in myDEQ, including the application fee.

2.4 Fee Requirements.

In accordance with A.A.C R18-14-109, the operator shall pay the initial AZPDES water quality protection services fee for coverage under this permit at the time the NOI is submitted. In addition, the operator shall pay the applicable annual fee when billed, unless a notice of termination has been submitted to ADEQ. The annual fee is due on the anniversary of the date of the authorization certificate (see Part 2.3(3)). Both fees are based on the amount of acreage identified in the NOI, in accordance with A.A.C. R18-14-109, Table 6.

2.5 Authorization of Emergency-Related Construction Activities.

Emergency-related construction activities are automatically authorized provided that:

1. The activity is being performed in order to avoid imminent endangerment to human health or the environment or in response to an emergency and the activity requires immediate authorization;

2. If the activity continues for more than 30 calendar days after the initial emergency-related start date, the operator shall prepare a SWPPP and submit a complete and accurate NOI;

3. The operator provides documentation in the SWPPP to substantiate the occurrence of the public emergency; and

4. The operator complies with all other applicable requirements in the permit regarding discharges associated with the construction activities.

2.6 Terminating Coverage.

1. Notice Required. To terminate permit coverage, the operator shall submit a complete and accurate Notice of Termination (NOT) in myDEQ. The operator is responsible for meeting the terms and conditions of this permit until the construction site's authorization is terminated. The operator may submit a complete and accurate NOT in myDEQ after any of the following conditions have been met:

a. The operator has established final stabilization on all portions of the site for which the operator is responsible, in accordance with Part 3.4(2).

b. Another operator who has a valid authorization number under this general permit or an individual AZPDES permit has assumed control over all areas of the site that have not been finally stabilized (see Appendix B, Subsection 19);

c. For residential construction activities, temporary stabilization has been completed and the residence has been transferred to the homeowner (or a homeowner's association) in accordance with Part 3.4(2);

d. The planned construction activity identified on the original NOI was never initiated (i.e., grading was never started) and plans for construction have been permanently abandoned or indefinitely postponed;

e. The operator has obtained coverage for the site under another authorizing AZPDES permit;

f. The operator qualifies for one of the alternatives in Part 3.4(3) and submits the required documentation demonstrating compliance with the NOT in myDEQ.

2. NOT Requirements. The operator shall submit a complete and accurate NOT in myDEQ.

3. Effective Date of Permit Termination. Authorization to discharge terminates under this permit when the permittee submits the NOT in myDEQ and receives the termination acknowledgement certificate.

2.7 Change of Operator Request due to Foreclosure or Bankruptcy.

If a lending institution or another person takes operational control of the permitted construction site due to foreclosure or bankruptcy, the new operator is responsible for discharges from the construction site. If the construction site has not achieved final stabilization as defined in Part 3.4(2), the new operator shall submit a NOI in myDEQ for permit coverage within 30 calendar days prior to taking control of the site. In the event the new operator taking control of the construction site fails to submit a NOI for the ongoing construction activities, the existing operator may submit a petition to the department to terminate permit coverage by submitting a Change of Operator Request (COR) form (available on the ADEQ website). In making this request, the existing operator must no longer have access to the property and shall submit the following information:

1. The date of the loss of control of the construction site;

2. The person that has control of the construction site;

3. The reasons for being unable to submit a NOT that complies with the requirements of Part 2.6;

4. A copy of the SWPPP documenting conditions at the time of loss of control. The existing operator shall indicate areas of exposed soils and material stockpiles; the location, type and quantity of chemicals storage; the existing control measures left in place and their condition; and areas that have been stabilized. The existing operator shall indicate if there is public access to the site (e.g., perimeter fence, gate, etc.) and shall identify any conditions, which may be dangerous or hazardous, or may pose a significant environmental threat.

5. Documentation that the permittee informed the person taking control of the construction site of the requirements of this permit.

ADEQ will review the COR, SWPPP and related information to determine appropriate actions, including (but not limited to) terminating permit coverage for the existing operator. As part of this

assessment, ADEQ may conduct a site inspection. Submitting a COR does not suspend ongoing enforcement actions and does not preclude ADEQ from taking enforcement actions for violations of this permit.

3.0 EFFLUENT LIMITATIONS AND WATER QUALITY STANDARDS APPLICABLE TO ALL DISCHARGES FROM CONSTRUCTION SITES

The control requirements in this Part incorporate the technology-based effluent limitations to meet water quality standards that, where applicable, apply to all stormwater and allowable non-stormwater discharges from construction sites eligible for coverage under this permit. These requirements apply the national effluent limitations guidelines and new source performance standards found at 40 CFR Part 450. The operator shall comply with the control measures requirements included in Part 3 through site planning and designing, installing, and maintaining these controls.

3.1 Non-numeric Effluent Limitations and Associated Control Measures.

At a minimum, the operator shall design, install and maintain the following effluent limitations reflecting the best practicable technology currently available on construction sites:

1. Erosion and Sediment Control (Part 3.3)
2. Site Stabilization (Part 3.4)
3. Pollution Prevention (Part 3.5)
4. Controls for Allowable Non-Stormwater Discharges and Dewatering Activities (Part 3.6)
5. Surface Outlets (Part 3.7)

3.2 General Maintenance Requirements.

1. Ensure that all control measures required, and described in Parts 3.3 through 3.7, remain in effective operating condition during permit coverage and are protected from activities that would reduce their effectiveness.
2. Inspect all control measures in accordance with the inspection requirements in Part 4. The operator shall document the findings in accordance with Part 4.4. When controls need to be replaced, repaired, or maintained, make the necessary repairs or revisions. Routine maintenance does not constitute a corrective action (see Part 5.1). The operator shall comply with the following schedule:
    a. If the identified control measure deficiency does not require significant maintenance, repair, or replacement, or if the problem can be corrected through routine maintenance, initiate work to fix the problem immediately after discovery, and complete such work by the close of the next work day, if feasible. SWPPP recordkeeping is not required for actions taken under this paragraph.
    b. When the installation of a new control (that is not in response to a corrective action in Part 5.1), or a significant repair of an existing control is needed, install the new or modified control and make it operational, or complete the repair, by no later than 7 calendar days from the time of discovery, or before the next storm event (whichever is sooner) where feasible. If it is infeasible to complete the installation or repair within 7 calendar days or before the next storm event, SWPPP records must document why it is infeasible. The SWPPP must also document the schedule for installing the control(s) and making it operational as soon as practicable after the 7-day timeframe. Where these actions result in changes to any of the controls or procedures documented in the SWPPP, modify the SWPPP accordingly within 7 calendar days of completing this work.

3.3 Erosion and Sediment Control Requirements.

Design, install, and maintain effective erosion and sediment controls to minimize the discharge of pollutants. The operator shall minimize the amount of soil exposed during construction activities. The operator is also subject to the deadlines for temporary and/or permanent stabilization of exposed portions of the site in accordance with Part 3.4.

The following general requirements are applicable to all construction sites that implement the erosion and sediment controls in Part 3.3.

1. Design Requirements.

   a. The operator shall account for the following factors in designing control measures:

      i. The expected amount, frequency, intensity, and duration of precipitation;

      ii. The nature of stormwater runoff and all sources of run-on at the site, including factors such as expected flow from impervious surfaces, slopes, and site drainage features. If any stormwater flow will be channelized at the site, control measures must be designed to control both peak flowrates and total stormwater volume to minimize erosion at outlets and to minimize downstream channel and stream bank erosion; and

      iii. The range of soil particle sizes expected to be present on the site.

   b. The operator shall direct stormwater flows to vegetated areas of the site to increase sediment removal and maximize stormwater infiltration, including any natural buffers established under Part 3.3(7), unless infeasible. Use velocity dissipation devices if necessary to prevent erosion when directing stormwater to vegetated areas.

2. Installation Requirements.

   a. Complete the installation of control measures by the time each phase of construction activity has begun. In the event it is infeasible to install one or more control measures prior to the start of construction activities, the operator shall ensure that those controls are installed as soon as possible. SWPPP records must document why it is infeasible.

      Following the installation of these initial control measures, all other controls planned for this portion of the site and described in the SWPPP must be installed and made operational as soon as conditions on the site allow. The requirement to install control measures prior to construction activities for each phase of the project does not apply to activities associated with the actual installation of these controls.

   b. Use standard industry practices and follow manufacturer's specifications. The operator shall install all control measures in accordance with standard industry practices, including applicable design specifications. Design specifications may be found in manufacturer specifications and/or in applicable erosion and sediment control manuals or local ordinances. Any departures from such specifications must reflect standard industry practice and must be explained in the SWPPP.

3. Control Stormwater Volume and Velocity.

   a. If off-site areas direct flow onto the construction site, divert run-on flows, and/or provide other appropriate control measures to account for off-site contributions of stormwater and non-stormwater flow.

      If stormwater conveyance channels are used at the site, the operator shall design and construct them to avoid unstabilized areas and to reduce erosion, unless infeasible. Minimize erosion of channels and their embankments, outlets, adjacent stream banks, slopes, and downstream waters during discharge conditions using

erosion controls and velocity dissipation devices within and along the length of any constructed stormwater conveyance channel, and at any outlet to provide a non-erosive flow velocity.

b. Sediment Basins and Traps. If necessary, the operator shall install and maintain sediment basin(s) and / or traps to manage run-on, runoff, and sediment discharge from the construction site.

i. Design Requirements. The SWPPP shall provide sizing and calculation requirements for sediment basin(s) and shall indicate whether the basin(s) will be temporary or permanent.

a. When discharging from the sediment basin, utilize outlet structures that minimize pollutants;

b. Prevent erosion of the sediment basin using stabilization controls (e.g., erosion control blankets), and the inlet and outlet using erosion controls and velocity dissipation devices; and

c. Sediment basins must be situated outside of surface waters and any natural buffers established under Part 3.3(7), unless approved under a CWA section 404 permit.

ii. Maintenance requirements. The operator shall maintain sediment basins, ponds, and traps, and remove accumulated sediment when design capacity has been reduced by 50%.

iii. Polymers, flocculants, or other cationic treatment shall be used in accordance with manufacturers' instructions to provide for adequate settling time and minimize or eliminate these chemicals in the discharge. Furthermore, the operator shall comply with the requirements in Part 6.3(10).

4. Control Stormwater Discharges.

Control stormwater discharges including both peak flowrates and total stormwater volume to minimize channel and streambank erosion and scour in the immediate vicinity of outfalls. Examples of control measures that can be used to comply with this requirement include the use of erosion controls and/or velocity dissipation devices (e.g., check dams, sediment traps) within and along the length of a stormwater conveyance and at the outfall to slow down runoff.

5. Minimize the amount of soil exposed and the disturbance of steep slopes by:

a. Preserving Natural Vegetation. Where practicable, existing vegetation should be preserved. If natural vegetation can be preserved, the operator shall clearly mark vegetation before clearing activities begin. Locations of trees and boundaries of buffer zones to be preserved shall be identified on the SWPPP site map;

b. Phase or sequence construction activities. Where practicable, minimize the area of disturbance at any one time.

c. Steep slopes. Where practicable, implement standard erosion and sediment control practices, such as phasing disturbances to these areas and using stabilization practices designed to be used on steep grades.

6. Minimize sediment discharges from the site. The design, installation and maintenance of erosion and sediment controls must address factors such as the amount, frequency, intensity and duration of precipitation, the nature of resulting stormwater runoff, and soil characteristics, including the range of soil particle sizes expected to be present on the site.

a. Perimeter Control. The operator shall use appropriate control measures (e.g., fiber rolls, berms, silt fences, vegetative buffer strips, sediment traps, or equivalent sediment controls) at all times for all down slope boundaries (and for those side slope boundaries deemed appropriate as dictated by individual site conditions) of the construction site.

For sites where stormwater from disturbed areas, exclusive of rights-of-way, is conveyed to one or more retention basins that are designed to retain stormwater runoff from a local 100 year / 2 hour storm event, as calculated by an Arizona registered professional engineer, geologist or landscape architect (A.R.S. § 32-144) or equivalent, the operator is not required to utilize perimeter controls.

For linear construction activities (see Appendix A) with rights-of-way that restrict or prevent the use of such perimeter controls, the operator shall maximize the use of these controls where practicable and document in the SWPPP why it is impracticable in other areas of the site.

b. Control discharges from stockpiles of sediment or soil. As necessary, implement the following measures for any stockpiled or land clearing debris composed, in whole or in part, of sediment or soil:

i. Place stockpiles outside of washes or other surface waters, stormwater conveyances (such as curb and gutter systems), or streets leading to stormwater conveyances, such that the placement does not conflict with local laws and local rights-of-way are not impacted.

ii. Locate the stockpiles outside of any buffers established consistent with Part 3.3(7);

iii. Protect from contact with stormwater (including run-on) using a temporary perimeter sediment barrier;

iv. Avoid rinsing sediment, debris, or other pollutants accumulated on pavement or other impervious surfaces after the stockpile has been removed into any stormwater conveyance (unless connected to a sediment basin, sediment trap, or similarly effective control), storm drain inlet, or surface water;

v. To the extent practicable, implement control measures to prevent the generation of wind-blown sediment and debris; and

vi. Use perimeter controls or other effective sediment control measures around soil stockpiles, except when they are being actively worked. For piles that will be unused for 14 calendar days or more, provide cover or appropriate temporary stabilization.

c. Storm Drain Inlet Protection. The operator shall assess the need for and install inlet protection measures necessary to remove sediment discharges from the site. If the site discharges to any storm drain inlet that carries stormwater flow to a surface water (and it is not first directed to a sediment basin, sediment trap, or similarly effective control and the operator has authority to access the storm drain inlet), then inlet protection is required.

Inlet protection measures may be removed in the event of flood conditions that may endanger the safety of the public. Such actions shall be documented in the SWPPP. The operator shall evaluate alternative control measures to be used in the future to prevent a recurrence of this problem.

d. If existing control measures need to be repaired or modified or if additional control measures are necessary, implementation shall be completed within 7 calendar days or before the next storm event (whichever is sooner), unless otherwise prescribed in i. – iv. below. If implementation before the next storm event is

impracticable, the reason(s) for delay shall be documented in the SWPPP and alternative control measures shall be implemented as soon as possible. Additionally, the following maintenance activities shall be implemented:

i. Remove accumulated sediment when it reaches a maximum of one-third the height of the silt fence or one-half the height of a fiber roll.

ii. Sediment shall be removed from temporary and permanent sedimentation basins, ponds and traps when the depth of sediment collected in the basin reaches 50% of the storage capacity.

iii. Construction site egress location(s) shall be inspected for evidence of off-site tracking of sediment, debris, and other pollutants onto paved surfaces. Removal of sediment, debris, and other pollutants from all off-site paved areas shall be completed as soon as practicable.

iv. Accumulations of sediment, debris, and other pollutants observed in off-site surface waters, drainage ways, catch basins, and other drainage features shall be removed in a manner and at a frequency sufficient to minimize impacts and to ensure no adverse effects on water quality.

7. Maintain natural buffers adjacent to perennial surface waters and direct stormwater to vegetated areas to increase sediment removal, unless infeasible.

a. Provide Natural Buffers or Equivalent Erosion and Sediment Controls. This requirement only applies when a perennial surface water or a lake (if feasible) is located within 50 feet of the site's construction activities:

i. Areas not owned or are otherwise outside the activities of the operator may be considered areas of undisturbed natural buffer for purposes of compliance with this part.

ii. Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve, in combination, the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

b. Alternatives. In areas where it is infeasible to maintain the 50-foot buffer, the operator shall:

i. Document in the SWPPP the reasons why the 50 foot buffer cannot be maintained, and identify the additional erosion and sediment controls selected;

ii. Preserve as much buffer as possible and design, implement and maintain additional erosion and sediment controls (such as berms, diversion dikes, sediment basins, etc.);

iii. Ensure that all discharges from the area of construction activity to the natural buffer are first treated by the site's erosion and sediment controls, and use velocity dissipation devices if necessary to prevent erosion caused by stormwater within the buffer;

iv. Document in the SWPPP the natural buffer width retained on the property, and show the buffer boundary on the site plan;

v. Delineate, and clearly mark off, with flags, tape, or other similar marking device all natural buffer areas; and

vi. Follow the additional stabilization requirements described in Part 3.4(1).

The operator is not required to enhance the quality of the vegetation that already exists in the buffer, or provide vegetation if none exists.

c. Exceptions.

i. If there is no discharge of stormwater to perennial waters through the area between the site and any perennial waters located within 50 feet of the site, the operator is not required to comply with the requirements in this Part. This includes situations where control measures, such as a berm or other barrier that will prevent such discharges, have been implemented.

ii. Where no natural buffer exists due to preexisting development disturbances (e.g., structures, impervious surfaces) that occurred prior to the initiation of planning for the current development of the site, operators are not required to comply with the requirements in this Part, unless portions of the preexisting development are removed.

Where some natural buffer exists but portions of the area within 50 feet of the perennial water are occupied by preexisting development disturbances, operators are required to comply with the requirements in this Part. For the purposes of calculating the sediment load reduction, an operator is not expected to compensate for the reduction in buffer function from the area covered by these preexisting disturbances.

If, during the life of the project, any portion of these preexisting disturbances will be disturbed, the area disturbed will be deducted from the area treated as natural buffer.

iii. Linear construction activities are not required to comply with the requirements in this Part if site constraints (e.g., limited right-of-way) prevent the operator from meeting any of the compliance alternatives in Part 3.3(7), provided that, to the extent practicable, disturbances are limited to within 50 feet of the perennial water and/or the operator provides supplemental erosion and sediment controls to treat stormwater discharges from construction activities within 50 feet of the perennial water. The operator shall document in the rationale for why it is infeasible to comply with the requirements in Part 3.3(7) in the SWPPP, and describe any buffer width retained and/or supplemental erosion and sediment controls installed.

iv. “Small residential lot” construction (see Appendix A) is exempt from buffer requirements, provided that the operator minimizes the discharge of pollutants by complying with the requirements of Parts 3.3 through 3.8.

v. The following disturbances within 50 feet of a perennial water are exempt from the requirements in this Part:

a. Construction approved under a CWA section 404 permit; or

b. Construction of a water-dependent structure or water access area (e.g., pier, boat ramp, trail).

Any of the above disturbances that occur within the buffer area shall be documented in the SWPPP.

8. The operator shall minimize soil compaction, unless minimizing soil compaction is not required because the intended function of a specific area of the site dictates that it be compacted. Preserve topsoil, unless preserving topsoil is not required because the intended function of a specific area of the site dictates that the topsoil be disturbed or removed.

3.4 Site Stabilization Requirements, Schedules and Deadlines.

The operator shall comply with the stabilization requirements in this Part to minimize the discharge of pollutants. If revegetation plans include seeding, the SWPPP shall include seed mix and application specifications that will be used for vegetative stabilization. If the operator uses fertilizers or tackifiers on-site to establish vegetation, additional control measures shall be implemented to minimize the presence of these chemicals in the discharge.

1. Temporary Stabilization.

   The operator must provide temporary stabilization, or initiate permanent stabilization, of disturbed areas within 14 calendar days of the most recent land disturbance in areas where construction or support activities have been temporarily suspended or have permanently ceased, except as follows:

   a. Where stabilization by the 14th day is precluded by snow cover or frozen ground conditions, stabilization measures shall be initiated as soon as practicable;

   b. When the site is using vegetative stabilization and is located in an area of the state experiencing drought conditions (see Appendix A), vegetative stabilization measures shall be initiated as soon as practicable, when growing conditions are best for planting or seeding;

   c. Stabilization shall be initiated within 7 calendar days, for areas within 50 feet of an impaired or not-attaining water or OAW.

   d. Where areas of construction activity are awaiting vegetative stabilization for periods greater than 14 calendar days after the most recent activity, non-vegetative methods of stabilization shall be employed. These methods shall be described in the SWPPP.

   The operator is not expected to apply temporary or permanent stabilization measures to areas that are intended to remain unvegetated or unstabilized following construction (e.g., dirt access roads, utility pole pads, areas being used for storage of vehicles, equipment, or materials).

2. Final Stabilization.

   Final stabilization means that one of the following conditions (a, b, or c) is met:

   a. All soil disturbing activities at the site have been completed; all construction materials, waste, and temporary erosion and sediment control measures (including any sediment that was being retained by the temporary erosion and sediment control measures) have been removed and properly disposed; and either i. and/or ii. below is met:

      i. A uniform (i.e., evenly distributed, without large bare areas) vegetative cover with a density of 70% of the native background vegetative cover for the area is in place on all unpaved areas and areas not covered by permanent structures.

         When preconstruction native background vegetation covered less than 100% of the ground (e.g., arid areas, beaches), the 70% coverage criteria is adjusted as follows: if the native vegetation covered 50% of the ground, 70% of 50% (.70 X .50 = .35) or 35% cover density would be required; or

      ii. Equivalent permanent stabilization measures (such as the use of riprap, gabions, gravel, or geotextiles) have been employed.

   b. For individual lots in residential construction, final stabilization means that the homebuilder:

i. Has completed final stabilization as specified in Part 3.4(2)(a) above; or

ii. Has established temporary stabilization, including perimeter controls, for an individual lot prior to occupation of the home by the homeowner and has informed the homeowner of the need for, and benefits of, final stabilization; and

iii. An NOT may be submitted in myDEQ.

c. For construction activities on land used for agricultural purposes (e.g., pipelines across crop or range land), final stabilization may be accomplished by returning the disturbed land to its preconstruction agricultural use. Areas disturbed that were not previously used for agricultural activities, such as buffer strips immediately adjacent to water of the U.S., and areas that are not being returned to their preconstruction agricultural use shall meet the final stabilization criteria above. Upon final stabilization, an NOT may be submitted in myDEQ.

Any non-vegetative stabilization methods (e.g., decomposed granite, geotextiles, or degradable mulch) must achieve the same requirements for final stabilization as specified in Part 3.4(2)(a).

3. Site Stabilization Alternatives.

An operator with an eligible site may choose one of the following alternatives instead of implementing the stabilization requirements in Parts 3.4(1) and 3.4(2). Documentation of eligibility of one of the alternative stabilization activities must be included in the SWPPP and identified on the NOT in myDEQ.

a. Sites with additional retention capacity (see A.R.S. § 49 – 255.01(L)). Stabilization deadline requirements in this permit do not apply to sites with retention capacity that meets or exceeds the 100 year/2 hour storm event as calculated by an Arizona registered professional engineer, geologist or landscape architect (A.R.S. § 32-144) or equivalent, and that meet the following conditions:

i. There are no outfalls that discharge to a perennial or intermittent water body;

ii. All stormwater generated by disturbed areas of the site, exclusive of public rights-of-way, is directed to one or more retention basins;

iii. The operator complies with pollution prevention measures;

iv. The operator maintains capacity of retention basin(s); and

v. The operator determines temporary and final stabilization requirements for the site to reduce or minimize the discharge of sediment and other pollutants to meet the requirements of Parts 3.4(1) and 3.4(2).

b. Sites returned to pre-construction discharge conditions. Construction operators may qualify for this alternative by demonstrating that stormwater discharges from the site's pre- and post-construction activities are equal or less than in volume and pollutant load from disturbed areas as calculated by an Arizona registered professional engineer, geologist or landscape architect (A.R.S. § 32-144) or equivalent; and where the site does not have outfalls that will discharge to an impaired or not-attaining water or OAW.

c. Arid, semi-arid, and drought-stricken areas: Final stabilization is met if the area has been seeded or planted to establish vegetation that provides 70 percent or more of the cover that is provided by vegetation native to local undisturbed areas within three (3) years and, to the extent necessary to prevent erosion

on the seeded or planted area, non-vegetative erosion controls have been applied that provide cover for at least three years without active maintenance.

3.5 Pollution Prevention Requirements.

1. The operator shall design, install, and maintain effective pollution prevention measures to prevent or minimize the discharge of pollutants from spilled or leaked materials from construction activities. To meet this requirement, the operator shall:

   a. Eliminate certain pollutant discharges from the site (see Part 1.4, Prohibited Discharges);

   b. Properly maintain all pollution prevention controls (see Part 3.2, General Maintenance Requirements); and

   c. Comply with pollution prevention control measures for pollutant-generating activities that occur at the site as outlined in this Part.

   The operator shall comply with the pollution prevention standards in this Part if any of the following activities are conducted at the site or at any construction support activity areas covered by this permit (see Part 1.3(1)(c)).

2. Minimize the Discharge of Pollutants – from equipment and vehicle washing, wheel wash water, and other wash waters.

   a. Concrete Washout. To comply with the prohibition in Part 1.4(1) for discharges of wastewater from washout of concrete:

      i. Where possible, concrete suppliers should conduct washout activities at their own plants or dispatch facilities.

      ii. If conducted at the construction site, the operator shall employ control measures to contain and manage on-site concrete washout to prevent discharge (see Part 6.3(8)).

      iii. Specify locations of concrete washout activities that will occur at the construction site.

   b. Washing of equipment and vehicles. Any operator that washes equipment or vehicles on-site shall implement the following control measures:

      i. Provide an effective means of minimizing the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other types of washing; and

      ii. To comply with the prohibition in Part 1.4(4), for storage of soaps, detergents, or solvents, the operator shall provide either cover (e.g., plastic sheeting or temporary roofs) to prevent these detergents from coming into contact with rainwater, or implement a similarly effective means designed to prevent the discharge of pollutants from these areas.

   c. Washing of Applicators and Containers used for Paint or Other Materials. To comply with the prohibition in Part 1.4(2), the operator shall provide an effective means of eliminating the discharge of water from the washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials. To comply with this requirement, the operator shall:

      i. Direct all wash water into a leak-proof container or leak-proof pit. The container or pit must be designed so that no overflows can occur due to inadequate sizing or precipitation;

ii. Locate any washout or cleanout activities as far away as possible from surface waters and stormwater inlets or conveyances, and, to the extent practicable, designate areas to be used for these activities and conduct such activities only in these areas; and

iii. Handle washout or cleanout wastes as follows:

a. Do not dump liquid wastes in storm sewers;

b. Dispose of liquid wastes in accordance with applicable requirements in Part 3.5(5);

d. Fueling and Maintenance of Equipment or Vehicles. Any operator that conducts fueling and/or maintenance of equipment or vehicles at the site shall provide an effective means of eliminating the discharge of spilled or leaked chemicals, including fuel, from the area where these activities will take place. To comply with the prohibition in Part 1.4(3), operators shall:

i. If applicable, comply with the Spill Prevention Control and Countermeasures (SPCC) requirements in 40 CFR 112 and Section 311 of the CWA;

ii. Ensure adequate supplies are available at all times to handle spills, leaks, and disposal of used liquids;

iii. Use drip pans and absorbents under or around leaky vehicles;

iv. Dispose of or recycle oil and oily wastes in accordance with other federal, state, tribal, or local requirements;

v. Clean up spills or contaminated surfaces immediately, using dry clean up measures where possible, and eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge; and

vi. Do not clean surfaces by hosing the area down.

3. Construction Site Egress. The operator shall implement effective control measures to minimize tracking of sediments, debris and other pollutants from vehicles and equipment leaving the site (e.g., stone pads, concrete or steel wash racks, or equivalent systems). Fine grains that remain visible *(i.e., staining)* on the surfaces of off-site streets, other paved areas, and sidewalks after you have implemented sediment removal practices are not a violation of this part.

If site conditions make it infeasible to install structural controls to prevent track-out (e.g., a linear operator conducting construction activities within a paved right-of-way or immediately adjacent and parallel to a paved right-of-way), the operator shall explain in the SWPPP why such controls cannot be installed; what alternative measures will be used to prevent sediment from being tracked-out or accumulated on paved areas; and what procedures will be used to ensure track-out is discovered and removed as soon as practicable.

The reasons for any departure from the use of standard ingress/ egress control measures to control track-out shall be documented in the SWPPP:

a. Explain why structural control measures cannot be installed;

b. Describe what alternative measures will be used to prevent sediment from being tracked-out or accumulated on paved areas; and

c. Describe what procedures will be used to ensure track-out is discovered and removed as soon as practicable.

4. The operator shall minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials present on the site to precipitation and to stormwater. These requirements do not apply to those products, materials, or wastes that are not a source of stormwater contamination or that are designed to be exposed to stormwater.

   a. Pollution Prevention Measures. The operator shall implement pollution prevention procedures to prevent litter, construction debris, and construction chemicals exposed to stormwater from becoming a pollutant source for stormwater discharges. These procedures shall include storage practices to minimize exposure of the materials to stormwater, and spill prevention and response practices.

   b. Storage, Handling, and Disposal of Construction Products, Materials, and Wastes. The operator shall minimize the exposure to stormwater of any of the products, materials, or wastes specified below that are present at the site by complying with the requirements in this Part.

   c. The operator shall consider and implement the following control measures, as appropriate:

      i. For building products: In storage areas, provide either cover (e.g., plastic sheeting or temporary roofs) to prevent these products from coming into contact with rainwater, or implement a similarly effective means designed to prevent the discharge of pollutants from these areas.

      ii. For pesticides, herbicides, insecticides, fertilizers, and landscape materials:

         a. In storage areas, provide either cover (e.g., plastic sheeting or temporary roofs) to prevent these chemicals from coming into contact with rainwater, or implement a similarly effective means designed to prevent the discharge of pollutants from these areas; and

         b. Comply with all application and disposal requirements included on the registered pesticide, herbicide, insecticide, and fertilizer label.

      iii. For diesel fuel, oil, hydraulic fluids, other petroleum products, and other chemicals:

         a. To comply with the prohibition in Part 1.4(3), store chemicals in water-tight containers, and provide either cover (e.g., plastic sheeting or temporary roofs) to prevent these containers from coming into contact with rainwater, or implement a similarly effective means designed to prevent the discharge of pollutants from these areas (e.g., spill kits), or provide secondary containment (e.g., spill berms, decks, spill containment pallets); and

         b. Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly. Do not clean surfaces or spills by hosing the area down. Eliminate the source of the spill to prevent a discharge or a continuation of an ongoing discharge.

      iv. For hazardous or toxic waste:

         a. Separate hazardous or toxic waste from construction and domestic waste;

b. Store in sealed containers, which are constructed of suitable materials to prevent leakage and corrosion, and which are labeled in accordance with applicable Resource Conservation and Recovery Act (RCRA) requirements and all other applicable federal, state, tribal, or local requirements;

c. Store all containers that will be stored outside within appropriately-sized secondary containment (e.g., spill berms, decks, spill containment pallets) to prevent spills from being discharged, or provide a similarly effective means designed to prevent the discharge of pollutants from these areas (e.g., storing chemicals in covered area or having a spill kit available on-site);

d. Dispose of hazardous or toxic waste in accordance with the manufacturer's recommended method of disposal and in compliance with federal, state, tribal, and local requirements; and

e. Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly. Do not clean surfaces or spills by hosing the area down. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge.

v. For construction and domestic waste: Provide waste containers (e.g., dumpster or trash receptacle with covers/ lids) of sufficient size and number to contain construction and domestic wastes. In addition:

a. On work days, clean up and dispose of waste in designated waste containers; and

b. Clean up immediately if containers overflow.

vi. For sanitary waste: Position portable toilets outside of washes or other surface waters, or stormwater conveyances, such as curb and gutter systems, or streets. Ensure that they are secured and will not be tipped over using stakes or tie downs or other similar control measures.

5. Spill Prevention and Response Procedures. Operators are prohibited from discharging toxic or hazardous substances from a spill or other release, consistent with Part 1.4. The operator shall minimize the potential for leaks, spills and other releases that may be exposed to stormwater and develop plans for timely and effective clean-up of spills if or when they occur by implementing measures such as:

a. Procedures for plainly labeling containers (e.g., "Used Oil," "Spent Solvents," "Fertilizers and Pesticides," etc.) that could be susceptible to spillage or leakage to encourage proper handling and facilitate rapid response if spills or leaks occur;

b. Preventative measures such as barriers between material storage and traffic areas, secondary containment provisions, and procedures for material storage and handling;

c. Procedures for expeditiously stopping, containing, and cleaning up leaks, spills, and other releases. Employees who may cause or detect a spill or leak should be knowledgeable in the proper reporting procedures established by their facility. Employees who are responsible for spill response and/or cleanup, must be properly trained and have necessary spill response equipment available; and

d. Procedures for notification of appropriate facility personnel and emergency response. Where a leak, spill, or other release occurs that contains a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Part 110, 40 CFR Part 117, or 40 CFR Part 302, the operator shall immediately notify ADEQ Emergency Response Duty Office at

(602) 771-2330, or toll free at (800) 234-5677. Contact information must be in locations that are readily accessible and available. Within 7 calendar days of knowledge of the release, operators shall provide a description in the SWPPP of: the release; the circumstances leading to the release; and the date of the release. Local requirements may necessitate additional reporting of spills or discharges to local emergency response, public health, or drinking water supply agencies.

6. Fertilizer Discharge Restrictions.

   Operators are required to minimize discharges of fertilizers containing nitrogen or phosphorus by applying these products consistent with manufacturer's specifications.

3.6 Controls for Allowable Non-Stormwater Discharges and Dewatering Activities.

Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, are prohibited unless managed by appropriate controls. Appropriate controls include, but may not be limited to sediment basins or traps; dewatering tanks; tube settlers; weir tanks; or filtration systems (e.g., bag or sand filters) that are designed to remove sediment; chemical treatment; or transportation offsite for disposal.

1. The operator shall ensure all water from dewatering or basin draining activities is discharged in a manner that does not cause nuisance conditions including erosion and / or sedimentation in receiving channels or on surrounding properties.
2. The operator shall retain superchlorinated wastewaters (i.e., containing chlorine above residual levels acceptable in drinking water systems) on-site until the chlorine dissipates, or shall otherwise effectively dechlorinate the water to concentrations that meet surface water quality standards of the surface water prior to discharge.

3.7 Surface Outlets.

When discharging from basins and impoundments, utilize outlet structures that withdraw water from the surface, unless infeasible.

3.8 Surface Water Quality Standards.

1. Surface Water Quality Standards.

   The operator shall control discharges from the site as necessary to not cause or contribute to an exceedance of an applicable surface water quality standard (SWQS).

   ADEQ expects that compliance with conditions in this permit will control discharges as necessary to not cause or contribute to an exceedance of an applicable surface water quality standard (A.A.C. Title 18, Chapter 11, Article 1). However, if at any time the operator becomes aware, or ADEQ determines, that the construction site's discharge causes or contributes to an exceedance of an applicable surface water quality standard, the operator shall take corrective action as required in Part 5.1, document the corrective actions as required in Parts 5.3 and 6.4, and report the corrective actions to ADEQ as required in Part 8.1.

   Additionally, ADEQ may impose additional surface water quality-based requirements on a site-specific basis, or require the operator to obtain coverage under an individual permit in accordance with Part 1.2, if information in the NOI, required reports, or from other sources indicates that additional controls are necessary to not cause or contribute to an exceedance of an applicable surface water quality standard.

2. Discharge Limitations for Impaired or Not-attaining Waters and OAWs.

Operators of construction sites that have one or more outfalls that are located within 1/4 mile upstream of an impaired or not-attaining water or OAW are required to comply with the following requirements, which supplement the requirements applicable to the site in other corresponding parts of this permit:

a. Frequency of Site Inspections. The operator shall conduct inspections at the frequency specified in Part 4.2(3).

b. Deadline to Complete Stabilization. The operator shall comply with the deadlines for completing site stabilization as specified in Part 3.4(1)(c).

c. Sampling and Analysis Plan. The operator shall prepare and submit a sampling and analysis plan as outlined in Part 7.2.

If the discharge is to an impaired or not-attaining water, ADEQ may notify the operator that additional limits or controls are necessary to not cause or contribute an exceedance of applicable surface water quality standards, any applicable waste load allocation (WLA), to prevent the site from contributing to an impairment, or if coverage under an individual permit is necessary in accordance with Appendix B, Subsection 17.

If during coverage under a previous permit, the operator was required to install and maintain control measures specifically to meet the assumptions and requirements of an USEPA approved or established TMDL (for any parameter) or to otherwise control a discharge to not cause or contribute an exceedance of applicable surface water quality standards, the operator shall continue to implement such controls as part of this permit.

4.0 INSPECTIONS

4.1 Inspector Qualifications.

The operator shall provide qualified personnel (as defined in Appendix A) to perform inspections according to the selected inspection schedule identified in the SWPPP. The operator shall conduct inspections of the site in accordance with Parts 4.2 through 4.5 of this permit.

4.2 Inspection Schedule.

At a minimum, the operator shall conduct a site inspection in accordance with one of the schedules listed below. The operator shall document in the SWPPP which schedule is being used and, when necessary, the location of the rain gauge or weather station used to obtain rainfall information. The Department encourages adding inspections before and/or during predicted storm events and "spot" inspections to ensure control measures will be effective in managing stormwater runoff and associated pollutants.

1. Routine Inspection Schedule. The operator shall ensure inspections are performed at the site as indicated below to ensure control measures are functional and that the SWPPP is being properly implemented. To determine the amount of rainfall from a storm event that occurs on the site (in accordance with options b. or c.), the operator shall obtain rainfall information (in accordance with Part 4.4(3)) from either a properly maintained rain gauge on the site, or a weather station that is representative of the site's location. For any day of rainfall during normal business hours that measures 0.25 inch or greater, the total rainfall measured for that day shall be recorded in accordance with Part 4.4(3).

   a. The site will be inspected a minimum of once within 7 calendar days, but not within 5 calendar days of the previous inspection; or

   b. The site will be inspected a minimum of once within 14 calendar days, but not within 10 calendar days of the previous inspection, and within 24 hours of the occurrence of each storm event of 0.5 inch or greater in 24 hours; or

   c. The site will be inspected a minimum of once per month, but not within 14calendar days of the previous inspection and within 24 hours of the occurrence of a storm event of 0.25 inch or greater.

   Note: Within 24 hours of the occurrence of a "storm event" means that you must conduct an inspection within 24 hours once a storm event has produced 0.5 inches of precipitation within a 24-hour period, even if the storm event is still continuing. Thus, if you have elected to inspect in accordance with (b) above, and there is a storm event at your site that continues for multiple days, and each day of the storm produces 0.5 inches or more of rain, you must conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the end of the storm.

2. Reduced Inspection Schedule. The operator may reduce inspections if the entire site has been temporarily stabilized, discharges are unlikely based on seasonal rainfall patterns, or runoff is unlikely due to winter conditions (e.g., site is covered with snow, ice, or frozen ground exists). With a reduced inspection schedule, the site shall be inspected at least once per month (but not within 14 calendar days of the previous inspection) and before an anticipated storm event and within 24 hours of each storm event of 0.5 inch or greater in 24 hours.

3. Inspection Schedule for Sites with Outfalls within 1/4 mile Upstream of Impaired or Not-Attaining Waters or OAWs. If any portion of the construction site has one or more outfalls within 1/4 mile upstream of an impaired or not-attaining water or OAW, the operator shall inspect the site at least once every 7-calendar days. The operator may reduce

inspections to the schedule specified in Part 4.2(2) for those areas of the construction site that have undergone temporary or final stabilization.

4. Inspection Schedule for Inactive and Unstaffed Sites. A site is inactive and unstaffed that will have an anticipated period of no construction activity for at least six consecutive months. Inactive and unstaffed sites that have one or more outfalls within 1/4 mile upstream of an impaired or not-attaining water or OAW are not eligible for this reduced inspection frequency unless they have undergone temporary stabilization. Operator's responsibilities include:

   a. Immediately before becoming inactive and unstaffed, the operator shall perform an inspection in accordance with Part 4.3. All control measures must be in operational condition in accordance with Part 3.2 prior to becoming inactive and unstaffed;

   b. During the time the site is inactive and unstaffed, the operator shall perform an inspection at least once every six months and within 24 hours of each storm event of 0.5 inch or greater in 24 hours;

   c. Non-storm event inspections must be at least three months apart;

   d. All control measures must be maintained in operational condition;

   e. The site shall be secured, such as limited access, blocking or fencing;

   f. Maintain a statement in the SWPPP as required in Part 6.4(11) indicating that the construction site is inactive and unstaffed. The statement must be signed and certified in accordance with Appendix B, Subsection 9; and

   g. If circumstances change and the site becomes active and/or staffed, this exception no longer applies and the operator shall immediately resume the routine inspection schedule. ADEQ retains the authority to revoke this exception from routine inspections where it is determined that the discharge causes, has a reasonable potential to cause, or contribute to an exceedance of an applicable water quality standard, including designated uses.

5. Inspections are only required during the site's normal working hours. If an inspection day (except those required relative to a rainfall event) falls on a Saturday or holiday, the inspection may be conducted on the preceding workday. If the inspection day falls on a Sunday, the inspection may be conducted on the following Monday. If rainfall events occur on the weekend or holiday, an inspection relative to that event may be conducted the following workday.

6. Inspections are not required under Adverse Conditions. The operator is not required to inspect areas that, at the time of the inspection, are considered unsafe for inspection personnel. Inspections may be postponed when conditions such as local flooding, high winds, or electrical storms, or situations that otherwise make inspections unsafe. The inspection must resume as soon as conditions are safe.

4.3 Scope of Inspections.

At a minimum, the inspector shall examine each of the following, during each inspection:

1. All structural controls identified in the SWPPP to ensure they are in place and functioning as intended. Repair, replace, or maintain any controls as necessary in accordance with Part 3.2;

2. The effectiveness of non-structural controls and practices (such as good housekeeping practices and pollution prevention measures);

3. All areas of the site used for storage of materials that are exposed to precipitation;

4. All locations where new or modified control measures are necessary to meet the requirements of Part 3;
5. Locations where vehicles and equipment enter or exit the site for evidence of tracking sediment, debris, and other pollutants onto and off the site;
6. Site conditions for evidence of, or the potential for, pollutants entering the municipal separate storm sewer;
7. The presence of materials or conditions subject to the CGP that are not addressed in accordance with the SWPPP;
8. Inspect outfalls, to ascertain whether erosion and sediment control measures are effective in preventing significant impacts to surface waters;
9. All locations where temporary stabilization measures have been implemented; and
10. When a discharge is occurring during an inspection, observe and note the physical characteristics (color, odor, clarity, floating, settled, or suspended solids, foam, oil sheen, and other obvious indicators of stormwater pollutants). In addition, when there is no discharge, examine each outfall for evidence of erosion, sedimentation and other their sources.

4.4 Inspection Report Form.

For each inspection, the operator shall complete an inspection report either on a form provided on the ADEQ website or an equivalent form developed by the operator that documents all of the information required by this permit. The operator may supplement the inspection report form as necessary with additional information, forms or drawings. Within 7 calendar days of completing the inspection, the corresponding inspection report shall be placed with previous reports (in chronological order) and kept with the SWPPP. At a minimum, the report shall include:

1. The inspection date;
2. Name(s) and title(s) of qualified person(s) making the inspection
3. Identification of discharges of sediment or other pollutants from the site. Identify the outfall(s) and associated control measures on the site map(s), in accordance with Part 6.3(6);
4. For inspections occurring during or after a storm event:
    a. Best estimate of the beginning of each storm event;
    b. Duration of each event;
    c. Approximate amount of rainfall for each event (in inches);
    d. A description of the physical characteristics of the stormwater discharge (Part 4.3(10)) from the site, when present;
    e. Document the evidence of erosion, sedimentation and other pollutants; and
    f. Document the presence of control measures in all areas inspected and whether such controls are operating effectively.
5. Identification of control measures that need to be maintained, failed to operate as designed, or proved inadequate. Until removed from the site, identify the location(s) of these control measures on the site map(s), in accordance with Part 6.3(6);
6. Identification of what additional control measures are needed, if any, that did not exist at the time of the inspection. Identify the location(s) of these control measures on the site map(s), in accordance with Part 6.3(6);

7. Identification of all sources of non-stormwater discharges occurring at the site and associated control measures in place;

8. Identification of material storage areas and, evidence of or potential for, pollutant discharge from such areas;

9. Corrective actions required (in accordance with Part 5.3), including any necessary changes to the SWPPP, and implementation dates (of corrective actions and SWPPP changes); and

10. Identification of any other instances of non-compliance with the conditions of this permit that are not associated with Part 4.4(10), or where the inspector does not identify any incidents of non-compliance, the inspection report shall contain a certification that the construction activities or site is being operated in compliance with the SWPPP and this permit.

11. If the operator determines that certain area(s) of the site are unsafe to inspect, the Inspection Report shall document the unsafe condition(s) and specify the locations where the unsafe condition(s) exists.

4.5 Inspection Follow-up.

1. Control Measure Assessment. Based on the findings and observations of the inspection, the operator shall implement the changes necessary to comply with the conditions in Part 3 and revise the SWPPP as needed in accordance with Part 6.5. The changes shall be implemented in accordance with the schedule described in “General Maintenance Requirements” in Part 3.2.

2. Corrective Actions. Based on the scope of inspection conducted in accordance with Part 4.3, the operator shall determine and implement appropriate corrective actions, and meet the applicable deadlines pursuant toPart5.

5.0 CORRECTIVE ACTIONS.

5.1 Corrective Action Triggers.

Corrective actions are actions the operator takes in compliance with this Part to modify, or replace any control measure that failed to meet the conditions of Part 3. Routine maintenance or repairs do not constitute corrective actions. If any of the following conditions at the construction site occur resulting in or from a failure of a control measure, the operator shall implement new or modified control(s):

1. A necessary control measure was never installed, was installed incorrectly, or was not installed in accordance with the requirements in Part 3.2; or
2. A stormwater control needs to be repaired or replaced (beyond routine maintenance required under Part 3.2); or
3. One of the prohibited discharges in Part 1.4 is occurring or has occurred; or
4. ADEQ or USEPA determines that revisions to the control measures are necessary to meet the requirements of Part 3; or
5. A discharge is causing an exceedance of an applicable surface water quality standard.

On the same day a condition requiring corrective action is discovered, the operator shall take all reasonable steps to minimize or prevent the discharge of pollutants until a permanent solution is installed and made operational. However, if the problem is identified when it is too late in the work day to initiate a corrective action, the corrective action shall be initiated on the following work day, unless the condition poses imminent endangerment to human health or the environment, in which case the operator shall take immediate action.

5.2 Corrective Action Deadlines.

Any control measures or repairs required must be made operational, or completed, by no later than 7 calendar days from the time of discovery. If the operator cannot complete the necessary repairs or installation of controls within 7 calendar days, the SWPPP shall include the following:

1. The reason it is infeasible to complete the installation or repair within the 7 calendar day timeframe; and
2. The schedule for installing and making the control measure(s) operational as soon as practicable after the 7-day timeframe.

Any corrective actions that result in changes to any of the control measures or procedures shall be documented in the SWPPP within 7 calendar days of completing the corrective action work. The operator shall complete all corrective actions in accordance with the deadlines specified in this Part.

5.3 Corrective Action Report.

For each corrective action taken in accordance with this Part, the operator shall document the details of the corrective action in the inspection report required by Part 4.4. These reports shall be signed in accordance with the signatory requirements in Appendix B, Subsection 9 and maintained with the SWPPP in accordance with the record keeping requirements in Appendix B, Subsection 11.

1. <u>Construction Sites with Outfalls Located within 1/4 Mile Upstream of an Impaired or Not-attaining Water or OAW</u>. When any condition listed in Part 5.1 occurs, the operator of a construction site that has one or more outfalls located within 1/4 miles upstream of an impaired or not-attaining water or OAW (in accordance with Parts 1.5(3) or (4)) shall

submit a corrective action report to ADEQ, on or before 30 calendar days (from the date of the incident), in accordance with Part 8.1. The operator shall retain a copy of the inspection report documenting the corrective action(s) on-site with the SWPPP as required in Part 6.4.

2. Report Schedule. Within 7 calendar days of discovery of any condition listed in Part 5.1, the operator shall document and maintain with the SWPPP the following information:

   a. Summary of corrective action taken or to be taken;

   b. Whether SWPPP revisions are required as a result of this discovery or corrective action;

   c. Date corrective action initiated or will be initiated; and

   d. Date corrective action completed or expected to be completed.

6.0 STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PREPARATION

6.1 General Information.

1. A site specific SWPPP shall be developed by a "qualified person" before the operator may submit the NOI for permit coverage, and before conducting any construction activity. Any SWPPP prepared for coverage under a previous version of this AZPDES construction general permit must be reviewed and updated by the operator to comply with this permit's requirements prior to submitting the NOI in accordance with Part 2.3.

   At least one SWPPP must be developed for each construction activity or site covered by this permit. A "joint" or "common" SWPPP may be developed and implemented as a cooperative effort where there is more than one operator at a site. All operators shall either implement their portion of a common SWPPP or develop and implement their own SWPPP.

2. The SWPPP shall be prepared and implemented in accordance with standard industry practices and shall:

   a. Identify all potential sources of pollution that may reasonably be expected to affect the quality of stormwater discharges from the construction site;

   b. Identify, describe, and ensure implementation of control measures that will be used to reduce pollutants in stormwater discharges from the construction site;

   c. Assure compliance with the terms and conditions of this permit; and

   d. Identify the responsible person for on-site SWPPP implementation.

3. All operator(s) shall sign and certify the SWPPP in accordance with the signatory requirements of Appendix B, Subsection 9.

4. The operator shall implement the SWPPP from initial commencement of construction activity until an NOT is submitted to ADEQ in accordance with Parts 2.5(1) or 2.6.

5. SWPPPs that do not meet all provisions of this permit are considered incomplete. Operating under an incomplete or inadequate SWPPP is a violation of the permit.

6. Emergency-Related Construction Activities. Operators conducting construction activities in response to an emergency (see Part 2.5), shall document the cause of the emergency (e.g., natural disaster, extreme flooding conditions, etc.), information substantiating its occurrence (e.g., state disaster declaration or similar state or local declaration), and describe the construction necessary to reestablish effected public services.

6.2 Types of Operators.

1. Operator Requirements. Either Part 6.1(2)(a) or (b), or both, will apply depending on the type of operational control a person exerts over the site. Part 6.1(2)(c) applies to all operators who have control over only a portion of a construction site.

   a. Operators with Operational Control over Construction Plans and Specifications shall ensure that:

      i. The SWPPP indicates the areas of the site where the operator has operational control over construction activity specifications, including the ability to make revisions in specifications;

      ii. All other operators implementing portions of the SWPPP impacted by any changes made to the SWPPP are notified of such revisions in a timely manner; and

iii. The SWPPP indicates the name(s) of the person(s) with day-to-day operational control of those activities necessary to ensure compliance with the SWPPP or other permit conditions.

b. Operators with Control over Day-to-Day Activities shall ensure that:

i. The SWPPP identifies the persons responsible for implementation of control measures identified in the SWPPP;

ii. The SWPPP indicates areas of the site where each operator has operational control over day-to-day activities; and

iii. The SWPPP indicates the name(s) of the person(s) with operational control over construction activity specifications (including the ability to make revisions in specifications).

c. Operators with Control over Only a Portion of a Larger Construction Site are responsible for compliance with the terms and conditions of this permit as it relates to the activities on the operator's portion of the construction site (including implementation of control measures required by the SWPPP). Operators shall ensure either directly or through coordination with other operators, that activities do not render another person's control measure(s) ineffective.

6.3 SWPPP Contents.

1. Stormwater Team. Each operator, or group of operators, must assemble a "stormwater team," which is responsible for overseeing the development of the SWPPP, any later revisions to it, and for compliance with the requirements in this permit. The SWPPP must identify the name, title and a description of the qualifications and a copy of any training certificates of team members, including inspector(s), as well as their individual responsibilities. Each member of the stormwater team must have ready access to an electronic or paper copy of applicable portions of this permit, the most updated copy of the SWPPP, and other relevant documents or information that must be kept with the SWPPP. The team may include members who are not employed by the operator (such as third party consultants).

2. Identification of Operators. The SWPPP shall identify all operators, including contact information, for the site and the areas and phases over which each operator has control.

3. Sequence and Estimated Dates of Construction Activities. The SWPPP must include a description of the intended sequence of construction activities, including a schedule of the estimated start dates and the duration of the activity, for the following activities:

a. Installation of control measures and when they will be made operational, including an explanation of the sequence and schedule for installation of the control measures;

b. Commencement and duration of construction activities, including clearing and grubbing, grading, site preparation (i.e., excavating, cutting and filling), underground utility installation, infrastructure installation, final grading, and creation of soil and vegetation stockpiles requiring stabilization;

c. Cessation, temporarily or permanently, of construction activities on the site, or in designated portions of the site including the beginning and ending dates of inactive/ unstaffed status, when applicable;

d. Final or temporary stabilization of areas of exposed soil. The dates for stabilization must reflect the applicable deadlines to which the operator is subject in Part 3.4(1); and

e. Removal of temporary stormwater conveyances, channels, and other control measures; removal of construction equipment and vehicles; and cessation of any pollutant-generating activities.

4. Site Description. The SWPPP shall describe the construction site, including:

a. A description of the site and its intended use after the NOT is submitted to ADEQ (e.g. low density residential, shopping mall, highway, etc.);

b. The total area of the site, and an estimate of the total area of the site expected to be disturbed by construction activities including off-site supporting activities, borrow and fill areas, staging and equipment storage areas;

c. The percentage of the site that is impervious (e.g., paved, roofed, etc.) before and after construction;

d. A description of the site's soils including potential for erosion;

e. Areas where it is infeasible to maintain a 50 foot buffer in accordance with Part 3.3(7), describe which alternative was selected for the site, and comply with any additional requirements to provide documentation;

f. On-site and Offsite Material Storage. The operator shall identify and describe all material storage areas (including overburden and stockpiles of dirt, borrow areas, etc.) used for the permitted site in the SWPPP unless those areas are covered by another AZPDES permit; and

g. A general location map (e.g., USGS quadrangle map, a portion of a city or county map, or other map) – with enough detail to identify:

i. The location of the construction site and one mile radius; and

ii. The surface waters including tributaries within one mile radius of the site.

5. Site Map(s). The SWPPP shall contain a legible site map or series of maps completed to scale, showing the entire site that identifies:

a. Topography of the site, existing types of cover (e.g., forest, pasture, pavement, structures), and drainage pattern(s) of flow onto, over, and from the site property before and after major grading activities;

b. Drainage divides and direction of stormwater flow for all drainage areas located within the site limits (i.e., use arrows to show which way stormwater will flow);

c. Areas of soil disturbance and areas that will not be disturbed. Boundaries of the property and of the locations where construction activities will occur, including:

i. Locations where construction activities will occur, noting any phasing of construction activities;

ii. Locations where sediment or soil will be stockpiled;

iii. Locations of any crossings of surface waters;

iv. Designated points on the site where vehicles will exit onto paved roads; and

v. Locations of construction support activity areas covered by this permit (see Part 1.3(1)(c)).

d. Locations of temporary and permanent control measures identified in the SWPPP;

e. Locations where stabilization control measures are expected to occur;

f. Areas protected by buffers (i.e., either the 50-foot buffer or other buffer areas retained on-site when within 50 feet of a perennial water) consistent with Part 3.3(7). The site map must show the boundary line of all such buffers;

g. Locations of on-site material, waste, borrow areas, or equipment storage areas, and other supporting activities (per Part 1.3(1)(c));

h. Locations of all potential pollutant-generating activities identified in Part 6.3(9). Examples include, but are not limited to: the pollutant-generating activities listed in Part 3.5 (fueling and maintenance operations; concrete, paint, and stucco washout); waste disposal; solid waste storage and disposal; and dewatering operations (Part 3.6);

i. Locations of all surface waters and any impaired or not-attaining waters or OAWs within 1/4 mile of the construction site. If none exist on-site, the SWPPP shall indicate so;

j. Stormwater outfall(s), using arrows to indicate discharge direction. Include the following:

   i. Location(s) where stormwater and/or allowable non-stormwater discharges are discharged to surface waters (in accordance with Part 1.3); and

   ii. Location(s) of any discharges to municipal separate storm sewer systems (MS4s) from the construction site.

k. Locations and registration numbers of all on-site drywells and drywells on adjacent properties that may receive stormwater runoff from the site, if available. If none exist, the SWPPP shall indicate so;

l. Areas where final stabilization has been accomplished and no further construction permit requirements apply (if none, the SWPPP shall indicate so); and

m. Location and boundaries of buffer zones to be preserved.

6. Receiving Waters. The SWPPP shall identify the nearest surface water that may receive stormwater discharges, including ephemeral and intermittent streams, dry washes, and arroyos. If applicable, the SWPPP shall also identify and describe any wetlands near the site that could be disturbed or that could potentially receive discharges from disturbed areas of the site. Indicate if the receiving surface water is listed as impaired, not-attaining or an OAW.

7. Control Measures to be used During Construction Activity. The SWPPP shall describe all control measures as required in Parts 3.3 through 3.7 that will be implemented and maintained as part of construction activities to control pollutants in discharges. For each control measure the SWPPP shall contain:

   a. A description of:

      i. The appropriate control measure, including measures to minimize or eliminate non-stormwater discharges;

      ii. The general sequence during the construction process or schedule of when the control measures will be implemented; and

      iii. Which operator is responsible for the implementation of control measures.

   b. Standard detail drawings and/or specifications for the structural control measures, including design or installation details, used on the site;

   c. Specific sediment controls that will be installed and made operational prior to conducting activities in any given portion of the site to meet the requirement of Parts 3.3 through 3.7;

   d. Documentation of controls for site egress points that are intended to minimize tracking of pollutants from vehicles leaving the site, consistent with Part 3.5(3).

8. Summary of Potential Pollutant Sources. The SWPPP shall identify the location and

description of any pollutant sources, including any non-stormwater discharges, associated with the construction activity, from:

- areas other than construction (i.e., support activities including stormwater discharges);
- dedicated asphalt or concrete plants; or
- other non-construction pollutant sources, such as fueling and maintenance operations, materials stored on-site, waste piles, equipment staging yards, etc.

The operator shall implement control measures in these areas to minimize pollutant discharges and shall detail these controls in the SWPPP.

If the construction site has one or more outfalls within 1/4 mile upstream of an impaired or not-attaining water, the SWPPP shall identify sources of the pollutants of concern listed on the 303(d) list that may potentially be discharged from the construction site and describe additional or enhanced control measures to minimize discharges of these pollutants.

9. Use of Treatment Chemicals. If polymers, flocculants, or other cationic treatment chemicals will be used at the site, the SWPPP shall include:

   a. A justification for the need for such chemicals and an assessment of potential water quality impacts;

   b. A description of the training specific personnel have or will receive on the use and storage of any cationic treatment chemicals and/or chemical treatment systems at the construction site;

   c. A listing of all treatment chemicals to be used at the site, a description of how the chemicals will be stored, and why the selection of these chemicals is suited to the soil characteristics of the site;

   d. The dosage of all treatment chemicals that will be used at the site or the methodology that will be used to determine dosage;

   e. A copy of any applicable Safety Data Sheets (SDS);

   f. Schematic drawings of any chemically-enhanced controls or chemical treatment systems to be used for application of the treatment chemicals;

   g. Copies of applicable manufacturer's specifications regarding the use of specific treatment chemicals and/or chemical treatment systems and references to state or local requirements affecting the use of these chemicals.

10. Pollution Prevention Procedures.

   a. Spill Prevention and Response Procedures. The SWPPP must describe procedures to prevent and respond to spills, leaks, and other releases consistent with Part 3.5, including:

      i. Procedures for plainly labeling containers (e.g., "Used Oil," "Spent Solvents," "Fertilizers and Pesticides," etc.) that could be susceptible to spillage or leakage to encourage proper handling and facilitate rapid response if spills or leaks occur;

      ii. Preventative measures such as barriers between material storage and traffic areas, secondary containment provisions, and procedures for material storage and handling;

      iii. Procedures for expeditiously stopping, containing, and cleaning up spills, leaks, and other releases. Identify the name or position of the employee(s) responsible for detection and response of spills or leaks; and

iv. Procedures for notification of appropriate site personnel, emergency response agencies, and regulatory agencies where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity consistent with Part 3.5(5) and established under either 40 CFR Part 110, 40 CFR Part 117, or 40 CFR Part 302, occurs during a 24-hour period. Contact information must be in locations that are readily accessible and available.

The operator may reference the existence of other plans, such as the Spill Prevention Control and Countermeasure (SPCC) plans developed for the construction activity under Part 311 of the CWA, or spill control programs otherwise required by an AZPDES permit for the construction activity, provided that a copy of that other plan is kept with the SWPPP on-site. If an SPCC or other spill prevention plan already exists, the operator may use such plans and incorporate them by reference in the SWPPP.

b. Waste Management Procedures. The SWPPP must describe procedures for handling and disposing all wastes generated at the site, including, but not limited to, clearing and demolition debris, sediment removed from the site, construction and domestic waste, hazardous or toxic waste, and sanitary waste.

6.4 Documentation Requirements including Permit Related Records.

The operator shall keep the following inspection, monitoring, and certification records complete and up-to-date. Retaining these records with the SWPPP (unless otherwise specified below) is necessary to demonstrate compliance with the conditions of this permit.

1. A copy of this permit (an electronic copy easily available to SWPPP personnel is also acceptable);
2. A copy of the NOI submitted to ADEQ, including any correspondence exchanged between the operator and ADEQ specific to coverage under this permit;
3. A copy of the authorization certificate received from ADEQ;
4. Identification of any municipality that received a copy of the authorization certificate;
5. Copies of any other agreements (such as a CWA section 404 permit, local grading permit, etc.) with any state, local, or federal agencies that would affect the provisions or implementation of the SWPPP, if applicable;
6. Descriptions and dates of any incidences of spills, leaks, or other releases that resulted in discharges of pollutants in stormwater to a regulated MS4 or to surface waters the circumstances leading to the release and actions taken in response to the release and measures taken to prevent the recurrence of such releases (see Part 3.5(5));
7. Documentation of repairs of structural control measures, including the date(s) of discovery of areas in need of repair/replacement, date(s) that the structural control measure(s) returned to full function, and the justification for any extended repair schedules (see Part 3.2). The maintenance records shall include the date(s) of regular maintenance;
8. All inspection reports (see Part 4.4);
9. Description of any corrective action taken at the site, including triggering event and dates when problems were discovered and revisions occurred;
10. If the construction site's activities are located within 50 feet of a perennial water, the operator shall describe which alternative was selected for the site, and comply with any additional documentation requirements in Part 3.3(7).

11. Documentation to support the operator's claim that the construction activities have changed from active to inactive and unstaffed with respect to the requirements to conduct inspections (see Part 4.2(4));

12. A Sampling and Analysis Plan – For operators required to conduct analytical monitoring (Part 7.2), a Sampling and Analysis Plan (SAP) shall be implemented and kept with the SWPPP (as part of the SWPPP or as an appendix to the SWPPP).

13. Post-Construction Stormwater Management.

    a. The SWPPP shall include a description of post-construction stormwater management control measures that will be installed during the construction process to control pollutants in stormwater discharges after construction has been completed.

    b. If 'temporary' sediment basins are to be used as, or converted to retention basins in the post-construction phase, the operator shall remove and properly dispose of sediments accumulated in the basin, as necessary, to meet the original capacity, or the capacity that is specified in the post-construction specifications.

    c. New discharge connections or permanent stormwater outfalls directly to OAWs are prohibited under this permit.

    This permit only authorizes and requires the operator to install and maintain stormwater control measures up to and including final stabilization of the site, and does not require continued maintenance after stormwater discharges associated with the construction activity have been eliminated from the site and a NOT has been submitted to ADEQ. However, post-construction control measures that discharge pollutants from point sources once construction is complete may require authorization under a separate AZPDES permit. See Part 1.5(1).

6.5 SWPPP Updates and Revision Requirements.

1. <u>Maintaining an Updated SWPPP</u>.

    The SWPPP shall be revised as necessary during permit coverage to reflect current conditions and to maintain accuracy. The operator shall make any required amendments to the SWPPP within 7 calendar days whenever:

    a. There is a change in design, construction, operation, or maintenance at the construction site that may have a significant effect on the discharge of pollutants to the surface that has not been previously addressed in the SWPPP; or

    b. During inspections, monitoring if required, or investigations by the operator or by ADEQ or USEPA, it is determined that the discharges are causing or contributing to surface water quality exceedances or the SWPPP is ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the construction site; or

    c. There is a change to the stormwater team.

2. <u>Conditions Requiring SWPPP Revisions</u>.

    The operator shall complete required revisions to the SWPPP within 7 calendar days following the occurrence of any of the conditions listed below. The operator shall modify the SWPPP, including the site map(s), in response to any of the following conditions:

    a. New operators become active in construction activities at the site, construction plans are changed (that will affect the quality of the discharge), control measures, pollution prevention measures, or other activities at the site are no longer

accurately reflected in the SWPPP. This includes changes made in response to corrective actions triggered under Part 5.1. Operators do not need to modify their SWPPPs if the estimated dates in Part 6.3(6) change during the course of construction;

b. Areas on the site map where operational control has been transferred (and the date of transfer) since initiating permit coverage;

c. If inspections or investigations by site staff, or by local, state, or federal officials determine that SWPPP revisions are necessary for compliance with this permit;

d. ADEQ determines it is necessary to impose additional requirements on the discharge (in accordance with Part 6.5.1), the following must be included in the SWPPP:

   i. A copy of any correspondence describing such requirements; and

   ii. A description of the control measures that will be used to meet such requirements.

e. To reflect any revisions to applicable federal, state, tribal, or local requirements that affect the control measures implemented at the site; and

f. If applicable, if a change in chemical treatment systems or chemically-enhanced control is made, including use of a different treatment chemical, different dosage rate, or different area of application.

g. SWPPP Revision Records. Operators are required to maintain records showing the dates of all SWPPP revisions. The records must include the name of the person authorizing each change (see Part 6.1(3)) and a brief summary of all changes.

3. Certification Requirements.

All revisions made to the SWPPP consistent with Part 6.5(2) must be authorized by a person identified in Appendix B, Subsection 9.

4. Required Notice to Other Operators.

When the operator determines that a revision to the SWPPP is required and there are multiple operators covered under a common SWPPP, any operators who may be impacted by the change to the SWPPP shall be notified at the address of record in the SWPPP.

6.6 Deficiencies in the SWPPP.

ADEQ may notify the operator at any time that the SWPPP does not meet one or more of the requirements of this permit. The notification shall identify the parts of this permit that are not being met and parts of the SWPPP that require revision to comply with the permit. Within 15 calendar days of receipt of the notification from ADEQ (or as otherwise provided by ADEQ), the operator shall make the required changes to the SWPPP and submit to ADEQ a written certification that the changes have been made. ADEQ may require re-submittal of the SWPPP to confirm all deficiencies have been adequately addressed.

In accordance with Appendix B, Subsection 1, ADEQ also is not precluded from taking enforcement action for any period of time the operator was operating under a SWPPP that did not meet the minimum requirements of this permit.

6.7 Posting, SWPPP Review and Making SWPPPs Available.

1. The operator must post the authorization number(s) in a conspicuous location near the main entrance of the construction site and retain a copy of the authorization certificate in the SWPPP. For linear construction activities, the authorization number(s) must be posted near the entrance where most of the construction activity is occurring.
2. The operator must post the following statement with the authorization number: "For stormwater complaints, please visit www.azdeq.gov." Lettering must be 2" or greater.
3. A copy of the SWPPP shall be on-site or at an easily accessible location, whenever construction or support activities are actively underway, and shall be available to ADEQ or any other federal, state or local authority having jurisdiction over the site at any reasonable time (generally Monday through Friday, 8:00 a.m. to 5:00 p.m.).
4. The SWPPP shall be made available to ADEQ or any other federal, state, tribal, or local authority having jurisdiction over stormwater discharges from the site at the time of an on-site inspection.
5. The operator shall provide a copy of the SWPPP to ADEQ upon request within 7 calendar days or at a time frame agreed upon with ADEQ.
6. Operators with sites that meet the requirements for inactive and unstaffed are not required to maintain the SWPPP on-site. However, the SWPPP must be locally available (i.e., in Arizona) and must be on-site when conducting the inspections required by Part 4. For the purpose of a regulatory inspection, the SWPPP shall be made available to ADEQ, USEPA, or other Federal, State or local authority having stormwater program authority, within 48 hours of request. If otherwise requested by ADEQ, the operator shall submit copies of these documents within 14 calendar days of request.

6.8 Procedures for Inspection, Maintenance, and Corrective Action.

The SWPPP must describe the procedures operators will follow for maintaining their control measures, conducting site inspections, and, where necessary, taking corrective actions, in accordance with Part 3.2, Part 4, and Part 5 of the permit. The following information must also be included in the SWPPP:

1. Personnel responsible for conducting inspections;
2. The inspection schedule that will be followed based on whether the site is subject to Part 4.2, and whether the site qualifies for any of the reduced inspection frequencies in Part 4.2(2) or 4.2(4). If conducting inspections in accordance with the inspection schedule in Part 4.2(3), document the weather information required in the inspection report;
3. If reducing the inspection frequency in accordance with Part 4.2(2) or 4.2(4), the beginning and ending dates of the reduced inspection period; and
4. Any inspection or maintenance checklists or other forms that will be used.
5. The operator shall ensure that all qualified personnel (see Appendix A) review the requirements of this permit. Qualified personnel are responsible for:
    a. The design, installation, maintenance, and/ or repair of control measures (including pollution prevention measures);
    b. The application and storage of treatment chemicals (if applicable);
    c. Conducting inspections as required in Part 4; and
    d. Taking corrective actions as required in Part 5.

7.0 STORMWATER MONITORING

The provisions of Part 7 apply only to construction sites with one or more outfalls within 1/4 mile upstream of an impaired, not-attaining or outstanding Arizona water (OAW), or as otherwise specified by ADEQ. Any portion of the construction site that extends within this distance is subject to the requirements of this Part, unless the operator provides a justification for not monitoring, consistent with Part 7.1. The monitoring plan, or justification, must be a part of the SWPPP and submitted to ADEQ for approval.

ADEQ may notify the operator, in writing, of additional discharge monitoring required to ensure protection of surface water if it is determined that a pollutant may be causing or contributing to an exceedance of a surface water quality standard.

7.1 Monitoring Program.

Operators of construction activities as described above in Part 7.0 shall prepare and implement a monitoring program that meets the requirements of this Part. Sites can be exempted from monitoring if the operator provides a demonstration acceptable to ADEQ that there is no potential for the discharge to reach the impaired, not-attaining or OAW, surface water.

Additionally, if the operator can demonstrate that there is no reasonable potential that construction activities will be an additional source of the specific pollutant for which the water is impaired, analytical monitoring for that parameter may not be required. As part of this demonstration, the operator must consider all on-site activities and pollutant sources, as well as any known pollutants (metals, nutrients, etc.) to be present in the on-site soils that will be disturbed.

7.2 Sampling and Analysis Plan (SAP).

The operator shall develop a written, site-specific, SAP for analytical monitoring of stormwater discharges, unless an acceptable rationale demonstrates that stormwater monitoring is not necessary, in accordance with Part 7.1. The SAP shall be a part of the SWPPP as either an appendix or separate SWPPP section. The SAP shall include:

1. Locations of monitoring sites;
2. The name(s) and title of the person(s) who will perform the monitoring;
3 A map showing the segments or portions of the surface water that are most likely to be impacted by the discharge of pollutant(s);
4. Water quality parameters and pollutants to be sampled;
5. The citation and description of the sampling protocols to be used;
6. Identification of the analytical methods and related method detection limits (if applicable) for each parameter required. Method detection limits shall be below applicable surface water quality standards as technology allows.

7.3 Analytical Monitoring Requirements.

1. <u>When to Sample.</u> The operator shall conduct analytical monitoring a minimum of two times per wet season throughout the duration of permit coverage. Analytical monitoring

is only required when stormwater or snowmelt exits the construction site by way of an outfall in sufficient quantity to allow for sample collection and analysis.

For the purposes of analytical monitoring, wet seasons are defined as follows:

Summer wet season: June 1 – October 31
Winter wet season: November 1 – May 31

2. Adverse Conditions. The operator is not required to collect samples under adverse conditions, in accordance with Part 4.2(6). Information about any adverse conditions that prevented sampling shall be documented in the SWPPP.

3. Where to Sample.

The operator shall conduct analytical monitoring at outfalls observed or suspected to contain the greatest pollutant load resulting from construction activities, using Table 7-1 below:

Table 7-1. Minimum Number of Samples to Collect

Number of Outfalls	Number of Samples
1 to 4	All
5 to 19	5
20 or more	25% of total

4. What to Sample.

a. OAWs: All operators of construction sites with outfalls that are located within 1/4 mile upstream of an OAW shall monitor for turbidity, in Nephelometric Turbidity Units (NTU), both immediately upstream and downstream of each outfall. The operator shall compare turbidity values from the outfalls and if there is a 25% or more increase at the downstream outfall, the operator shall evaluate and replace, maintain, or install additional control measures as necessary to reduce sediment transport.

b. OAWs: the operator shall also sample for any pollutants for which the OAW is impaired.

c. Impaired or Not-attaining Waters: All operators with construction sites with outfalls that are located within 1/4 mile upstream of impaired or not-attaining waters shall monitor for the pollutant(s) for which the receiving water is impaired.

d. Lakes: If the surface water is a lake that is impaired or not-attaining, or an OAW, a site-specific proposal for sampling the impact area shall be submitted with the SAP.

5. How to Sample. The operator shall establish written procedures for sample collection, preservation, tracking, handling, and analyses. The approved SAP (in accordance with Parts 1.5(3) and 1.5(4)) shall be a part of the SWPPP, either as an appendix or a separate SWPPP section. The SAP shall include the following:

a. Sample Collection, Preservation, Tracking, Handling and Analyses:

i. Designate and train personnel to collect, maintain, and handle samples in accordance with the appropriate sample protocols.
ii. Identify water quality parameters/pollutants to be sampled including any pollutant(s) of concern in accordance with this Part;

iii. Identify the required sample analyses and associated analytical method (analytical laboratory and field analyses).

b. Written procedures for:

i. Sample collection (equipment and containers, calibration procedures, document site conditions during sampling, field notes and conditions under which the sample was taken);

ii. Preservation (sample preparation to meet holding times);

iii. Tracking (including chain-of-custody procedures); and

iv. Handling (packing, transporting and shipping procedures to maximize sample integrity).

c. Calibration and Maintenance of Equipment and Monitoring Methods.

All monitoring instruments and equipment (including operators' own field instruments for measuring pH and turbidity) shall be calibrated and maintained in accordance with manufacturers' recommendations. All laboratory analyses shall be conducted according to test procedures specified in 40 CFR Part 136, unless other test procedures have been specified in this general permit.

All samples collected for analytical monitoring shall be analyzed by a laboratory that is licensed by the Arizona Department of Health Service (ADHS) Office of Laboratory Licensure and Certification. This requirement does not apply to parameters that require analysis at the time of sample collection as long as the testing methods used are approved by ADHS or ADEQ. These parameters may include flow, dissolved oxygen, pH, temperature, and total residual chlorine. The operator may conduct field analysis of turbidity if the operator has sufficient capability (qualified and trained employees, properly calibrated and maintained field instruments, etc.) to properly perform the field analysis.

d. Discharge Monitoring Report. All operators subject to analytical monitoring shall submit the results on the electronic Discharge Monitoring Report (DMR) in myDEQ. The operator shall retain records of all stormwater monitoring information with the SWPPP.

The DMR shall be submitted within 30 days after receiving laboratory results. In the event no samples are collected during a wet season, the DMR indicating “no data” using the appropriate No Discharge Information (NODI) code(s) shall be submitted no later than:

Winter Wet Season: June 30
Summer Wet Season: November 30

or at the time the conditions in Part 2.6 have been met and an NOT is submitted in myDEQ, whichever is sooner.

8.0 RECORDKEEPING

8.1 Records.

1. Address for Submittal of All Forms and Reports. All documents required by this permit (NOIs, SWPPPs, NOTs, and DMRs) shall be submitted, in electronic format, in myDEQ. Any other written correspondence, such as Corrective Action Forms (see Part 5.3) shall be signed and dated in accordance with Appendix B, Subsection 9 of this permit and submitted to ADEQ at the address below:

   Arizona Department of Environmental Quality
   Surface Water Protection Unit
   1110 W. Washington Street
   Phoenix, AZ 85007

2. Record Retention. The operator shall retain records of all stormwater monitoring information, corrective actions, inspection and other reports with the SWPPP for a period of at least three years from the date the NOT was submitted to ADEQ.

APPENDIX A.

Definitions

24-hour Period – any consecutive 24-hours.

Anticipated Storm Event – any storm event with at least a 30% chance of precipitation as predicted by the National Weather Service for the area local to the construction site.

Approved Total Maximum Daily Loads (TMDLs) – Approved TMDLs are those that are developed by the Arizona Department of Environmental Quality and approved by USEPA. See also, Total Maximum Daily Load.

Arid Areas – the parts of Arizona that receive an average annual rainfall of 0 to 10 inches.

Borrow Areas – areas where materials are dug for use as fill, either on-site or off-site.

Calendar Day - means the period of 24 consecutive hours commencing at 12:01 a.m. and concluding at midnight.

Cationic Treatment Chemical – polymers, flocculants, or other chemicals that contain an overall positive charge. Among other things, they are used to reduce turbidity in stormwater discharges by chemically bonding to the overall negative charge of suspended silts and other soil materials and causing them to bind together and settle out. Common examples of cationic treatment chemicals are chitosan and cationic PAM.

Commencement of Construction Activities – the initial disturbance of soils or 'breaking ground' associated with clearing, grading, excavating, or stockpiling of fill material activities or other construction-related activities, such as the placement of fertilizers, pesticides, herbicides, detergents, fuels, oils, or other chemicals, or the occurrence of authorized non-stormwater washout activities, or dewatering activities have begun on the site.

Common Plan of Development or Sale – A contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under one common plan. The "common plan" of development or sale is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating construction activities may occur on a specific plot.

Construction Activity – activities such as, clearing, grading, excavating, stockpiling of fill material and other similar activities. This definition encompasses both large construction activities defined in 40 CFR 122.26 (b)(14)(x), small construction activities in 40 CFR 122.26 (b)(15)(i), and includes construction support activities.

Construction Site or **Site** – the land or water area where construction activities will occur, including construction support activities, and where control measures will be installed and maintained. The construction support activities may be located at a different part of the property from where the primary construction activity will take place, or on a different piece of property altogether. Construction activities are often located on a smaller lot or parcel within the construction site.

Construction Support Activity – a construction-related activity that exclusively supports the construction site and involves activities such as clearing, grading, excavating, and stockpiling of fill materials or pollutant-generating activities of its own, and can include activities associated with concrete or asphalt batch plants, equipment staging yards, materials storage areas, excavated material disposal areas, and borrow areas. These activities may or may not be contiguous with

the construction site, but the acreage of the support area should be included in the total site acreage amount. When the term "support activities" is used without clarification, it means "construction support activities".

Construction Waste – discarded materials, such as packaging materials, scrap construction materials, masonry products, timber, steel, pipe, and electrical cuttings, plastics, and Styrofoam.

Control Measure – refers to any practice or method (including effluent limitations) used to prevent or reduce the discharge of pollutants to surface waters.

Conveyance Channel – a temporary or permanent waterway designed and installed to safely convey stormwater flow within and out of a construction site.

Director – means the director of environmental quality or the director's designee.

Discharge – when used without qualification, any addition of any pollutant to surface waters or to a MS4 from any point source.

Discharge of a Pollutant – any addition of any "pollutant" or combination of pollutants to surface waters from any "point source," or any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation. This includes additions of pollutants into surface waters from surface runoff which is collected or channeled by man. See 40 CFR 122.2.

Domestic Waste – typical household trash, garbage or rubbish items generated by construction activities.

Drought-Stricken Area – for the purposes of this permit, an area in which the National Oceanic and Atmospheric Administration's U.S. Seasonal Drought Outlook indicates for the period during which the construction will occur that any of the following conditions are likely:

1. Drought to persist or intensify
2. Drought ongoing, some improvement
3. Drought likely to improve, impacts ease
4. Drought development likely

Effective Operating Condition – a control measure is kept in effective operating condition if it has been implemented and maintained in such a manner that it is working as designed to minimize pollutant discharges.

Effluent Limitations – any of the Part 3 requirements.

Emergency-related Construction Activity – an activity initiated in response to an emergency (e.g., natural disaster, disruption in essential public services), for which the related work requires immediate authorization to avoid imminent endangerment to human health or the environment, or to reestablish essential public services.

Ephemeral water – a surface water that has a channel that is at all times above the water table, and that flows only in direct response to precipitation. [A.A.C. R18-11-101(22)]

Erosion Control – temporary or permanent measures to prevent soil particles from detaching and being transported in stormwater.

Hazardous Materials, Substances, or **Hazardous or Toxic Waste** – any liquid, solid, or contained gas that contain properties that are dangerous or potentially harmful to human health or the environment. Examples include paints, caulks, sealants, fluorescent light ballasts,

solvents, petroleum-based products, wood preservatives, additives, curing compounds, and acids. See also 40 CFR 261.2.

Impaired Waters – waters that have been assessed by ADEQ under the Clean Water Act, as not attaining a water quality standard for at least one designated use, and are listed in Arizona's current 303(d) List or on the 305(b) Category 4 list.

Infeasible – for the purpose of this permit, infeasible means not technologically possible or not economically practicable and achievable in light of best industry practices.

Intermittent waters – streams or reaches that flow continuously only at certain times of the year, as when it receives water from a spring or from another surface source, such as melting snow. [A.A.C. R18-11-101(25)]

Linear Construction Activities – includes the construction of roads, bridges, conduits, substructures, pipelines, sewer lines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment and associated ancillary facilities in a long, narrow area.

Minimize – to reduce and/or eliminate to the extent achievable, using control measures that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer – a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) that are:

a. Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or a designated and approved management agency under section 208 of the Clean Water Act (33 U.S.C. 1288) that discharges to surface waters;
b. Designed or used for collecting or conveying stormwater;
c. Which is not a combined sewer; and
d. Which is not part of a Publicly Owned Treatment Works.

Municipal Separate Storm Sewer System (MS4) – all separate storm sewers, defined as "large," "medium," or "small" municipal separate storm sewer systems; or any municipal separate storm sewers on a system-wide or jurisdiction-wide basis as determined by the Director under A.A.C. R18-9-C902(A)(1)(g)(i) through (iv). [A.A.C. R18-9-A901(23)]. This also includes similar systems owned or operated by separate storm sewer municipal jurisdictions not required to obtain stormwater discharge authorization.

myDEQ – ADEQ's e-Permitting/e-Compliance Portal that offers the "Regulated Community" a digital solution to better assist them in meeting their environmental priorities and responsibilities with an easy online tool, available 24/7 to meet business needs.

Natural Buffer – for the purposes of this permit, an area of undisturbed natural cover surrounding surface waters within which construction activities are restricted. Natural cover includes the vegetation, exposed rock, or barren ground that exists prior to commencement of construction activities.

Natural Vegetation – vegetation that occurs spontaneously without regular management, maintenance, or species introductions or removals, and that generally has a strong component of native species.

Not-Attaining Water – [R18-11-601(11)] a surface water that is assessed as impaired, but is not placed on the 303(d) List because a TMDL is prepared and implemented for the surface water; or

an action which meets the requirements of R18-11-604(D)(2)(h) is occurring and is expected to bring the surface water to "attaining" before the next 303(d) List submission; or the impairment of the surface water is due to pollution but not a pollutant, for which a TMDL load allocation cannot be developed.

Notice of Intent (NOI) – the form (electronic) required for authorization of coverage under the Construction General Permit.

Notice of Termination (NOT) – the form (electronic) required for terminating coverage under the Construction General Permit.

Outfall – a "*point source"* as defined by 40 CFR 122.2 at the point where construction site stormwater discharges to surface waters or to a Municipal Separate Storm Sewer.

Outstanding Arizona Water (OAW) – a surface water that has been designated by ADEQ as an outstanding state resource under A.A.C. R18-11-112.

Perennial Water – a surface water that flows continuously throughout the year (A.A.C. R18-11-101(30)).

Permittee - for the purposes of this permit**,** a person who is given authorization to discharge stormwater from construction activities.

Person – an individual, employee, officer, managing body, trust, firm, joint stock company, consortium, public or private corporation, including a government corporation, partnership, association or state, a political subdivision of this state, a commission, the United States government or any federal facility, interstate body or other entity. [A.R.S. § 49-201(27)]

Point Source – as defined in 40 CFR 122.2, as any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff.

Pollutant – sediment, fluids, contaminants, toxic wastes, toxic pollutants, dredged spoil, solid waste, substances and chemicals, pesticides, herbicides, fertilizers and other agricultural chemicals, incinerator residue, sewage, garbage, sewage sludge, munitions, petroleum products, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt (e.g., overburden material), and mining, industrial, municipal and agricultural wastes or any other liquid, solid, gaseous or hazardous substances. [A.R.S. § 49-201(29)]

Pollutant-generating Activities – at construction sites, those activities that lead to the discharge of pollutants, either as a result of construction activity or construction support activity. Types of pollutants that are typically associated with construction sites include, but are not limited to:

a. Sediment;
b. Nutrients;
c. Heavy metals;
d. Pesticides and herbicides;
e. Oil and grease;
f. Bacteria and viruses;
g. Trash, debris, and solids;
h. Treatment polymers; and
i. Any other toxic chemicals.

Pollution Prevention Measures – control measures designed to reduce or eliminate the addition of pollutants to construction site discharges through analysis of pollutant sources, implementation of proper handling/ disposal practices, employee education, and other actions.

Polymers – coagulants and flocculants used to control erosion on soil or to enhance the sediment removal capabilities of sediment traps or basins. Common construction site polymers include polyacrylamide (PAM), chitosan, alum, polyaluminum chloride, and gypsum.

Process Wastewater - any water which, during manufacturing or processing, comes into direct contact with or results from, the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Prohibited Discharges – discharges that are not allowed under this permit, including:

a. Wastewater from washout of concrete;
b. Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;
c. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
d. Soaps or solvents used in vehicle and equipment washing; and
e. Toxic or hazardous substances from a spill or other release.

Qualified Person or **Qualified Personnel** – those (either the operator's employees or outside personnel) who are knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention, who possess the skills and training to assess conditions at the construction site that could impact stormwater quality, and the skills and training to assess the effectiveness of any control measures selected to control the quality of stormwater discharges from the construction activity.

Received – for the purposes of this permit and in reference to NOIs, NOTs, Permit Waivers and SWPPPs, means the day the information was signed electronically in myDEQ and an Authorization to discharge was issued by myDEQ.

Receiving Water – a surface water as defined in A.A.C. R18-11-101(41) into which regulated stormwater discharges.

Reclaimed Water – water that has been treated or processed by a wastewater treatment plant or an on-site wastewater treatment facility. A.R.S. § 49-201(31).

Routine Maintenance – refers to any maintenance task that is done on a planned and ongoing basis to identify and prevent problems before they result in equipment failure.

Run-on – stormwater that drains from land located upslope or upstream from the regulated site in question.

Sediment Control – measures designed to intercept and settle out soil particles that have become detached and transported by water. Sediment control measures complement soil stabilization measures (erosion control).

Semi-Arid – the parts of Arizona that receive an annual rainfall of between 10 and 20 inches.

Site – see "construction site".

Small Residential Lot – for the purpose of this permit, a lot being developed for residential purposes that will disturb less than 1 acre of land, but is part of a larger residential project that will ultimately disturb greater than or equal to 1 acre.

Spill – the release of a hazardous or toxic substance from its container or containment (see Part 3.5(5)).

Stabilization – covering or maintaining an existing cover over soil that reduces and minimizes erosion. The use of vegetative and/or non-vegetative cover to prevent erosion and sediment loss in areas exposed through the construction process.

Steep Slope - where a state, tribe, local government, or industry technical manual (e.g., stormwater BMP manual) has defined what is to be considered a "steep slope", this permit's definition automatically adopts that definition. Where no such definition exists, steep slopes are automatically defined as those that are 15 percent or greater in grade.

Storm Event – a precipitation event that results in an amount of precipitation 0.25" or greater.

Stormwater – stormwater runoff, snow melt runoff, and surface runoff and drainage. See 40 CFR 122.26(b)(13).

Stormwater Discharges Associated with Construction Activity – a discharge of pollutants in stormwater runoff from areas where soil disturbing activities (e.g., clearing, grading, or excavating), construction materials, or equipment storage or maintenance (e.g., fill piles, borrow areas, concrete truck washout, fueling), or other industrial stormwater directly related to the construction process (e.g., concrete or asphalt batch plants) are located. See 40 CFR 122.26(b)(14)(x) and 40 CFR 122.26(b)(15).

Stormwater Pollution Prevention Plan (SWPPP) – a site-specific, written document that, among other things: (1) identifies potential sources of stormwater pollution at the construction site; (2) describes control measures to reduce or eliminate pollutants in stormwater discharges from the construction site; and (3) identifies procedures the operator will implement to comply with the terms and conditions of this general permit.

Stormwater Team – an individual or group of individuals responsible for oversight of the development and revisions of the SWPPP, and oversight of compliance with the permit requirements. The individual(s) on the "Stormwater Team" must be identified in the SWPPP.

Surface Water – a "Water of the United States" as defined in A.A.C. R18-11-101(41) and includes the following:

a. A water that is currently used, was used in the past, or may be susceptible to use in interstate or foreign commerce;
b. An interstate water, including an interstate wetland;
c. All other waters, such as an intrastate lake, reservoir, natural pond, river, stream (including an intermittent or ephemeral stream), creek, wash, draw, mudflat, sandflat, wetland, slough, backwater, prairie pothole, wet meadow, or playa lake, the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce, including any such water:
    i. That is or could be used by interstate or foreign travelers for recreational or other purposes;
    ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    iii. That is used or could be used for industrial purposes by industries in interstate or foreign commerce;
d. An impoundment of a surface water as defined by this definition;
e. A tributary of a surface water identified in subsections (41)(a) through (d); and
f. A wetland adjacent to a surface water identified in subsections (41)(a) through (e).

Surface Water Quality Standards (SWQS) –standards that define the water quality goals of a water body, or portion thereof, by designating the use or uses to be made of the water and by setting criteria necessary to protect the uses. States and USEPA adopt water quality standards to protect public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act (See CWA sections 101(a)(2) and 303(c)). SWQS also include an Antidegradation Policy.

Temporary Stabilization – a condition where exposed soils or disturbed areas are provided a temporary vegetative and/or non-vegetative protective cover to prevent erosion and sediment loss. Temporary stabilization may include temporary seeding, geotextiles, mulches, and other

techniques to reduce or eliminate erosion until either final stabilization can be achieved or until further construction activities take place to re-disturb this area.

Topsoil – the uppermost layer of naturally occurring soil for a particular area, and is often rich in organic matter, biological activity, and nutrients.

Total Maximum Daily Load (TMDL) – an estimation of the total amount of a pollutant from all sources that may be added to a water, while still allowing the water to achieve and maintain applicable surface water quality standards. Each total maximum daily load shall include allocations for sources that contribute the pollutant to the water, as required by section 303(d) of the Clean Water Act (33 United States Code, Section 1313(d)) and regulations implementing that statute to achieve applicable surface water quality standards. [A.R.S. § 49-231(4)]

Toxic Waste – see "Hazardous Materials"

Turbidity – a condition of water quality characterized by the presence of suspended solids and/or organic material; expressed as Nephelometric Turbidity Units (NTU).

Upstream - The term upstream (or up river) refers to the direction towards the source of the river, against the direction of flow. Likewise, the term downriver (or downstream) describes the direction towards the mouth of the river, in which the current flows.

Vegetative Buffer Strips – small areas or strips of land of permanent vegetation, designed to intercept pollutants and manage other environmental concerns. Vegetative buffers include: riparian buffers, filter strips, grassed waterways, shelterbelts, windbreaks, living snow fences, contour grass strips, cross-wind trap strips, shallow water areas for wildlife, field borders, alley cropping, herbaceous wind barriers, and vegetative barriers.

Waste Load Allocation (WLA) – the maximum load of pollutants each discharger of waste is allowed to release into a particular waterway. Discharge limits are usually required for each specific water quality criterion being, or expected to be, violated. WLAs constitute a type of water quality-based effluent limitation. (See 40 C.F.R. § 130.2(h))

Wetland – an area that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. A wetland includes a swamp, marsh, bog, cienega, tinaja, and similar areas. [A.A.C. R18-11-101(49)]

Work Day – a calendar day on which construction activities will take place.

Acronyms

A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
A.R.S.	Arizona Revised Statute
AZPDES	Arizona Pollutant Discharge Elimination System
CFR	Code of Federal Regulations
CWA	Clean Water Act
MS4	Municipal Separate Storm Sewer System
NOI	Notice of Intent
NOT	Notice of Termination
NTU	Nephelometric Turbidity Units
OAW	Outstanding Arizona Water
SAP	Sampling and Analysis Plan
SDS	Safety Data Sheet
SPCC	Spill Prevention Control and Countermeasure
SWPPP	Stormwater Pollution Prevention Plan
SWQS	Surface Water Quality Standard
TMDL	Total Maximum Daily Load
U.S. EPA	United States Environmental Protection Agency
USGS	United States Geologic Survey
WLA	Waste Load Allocation

APPENDIX B. STANDARD PERMIT CONDITIONS

Standard permit conditions in Appendix B are consistent with the general permit provisions required under 40 CFR 122.41 and A.A.C. R-18-9-A905(A)(3).

1. **Duty to Comply.** [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(a)(1) and A.R.S. §§ 49-261, 262, 263.01, and 263.02.]

   a. The operator shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act; A.R.S. Title 49, Chapter 2, Article 3.1; and A.A.C. Title 18, Chapter 9, Article 9, and is grounds for enforcement action, permit termination, revocation and reissuance, or revision, or denial of a permit renewal application.
   b. The issuance of this permit does not waive any federal, state, county, or local regulations or permit requirements with which an operator discharging under this permit is required to comply.
   c. The operator shall comply with any effluent standards or prohibitions established under section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if this permit has not yet been modified to incorporate the requirement.

2. **Duty to Reapply / Continuation of the Expired General Permit.** [A.A.C. R18-9-A905, which incorporates 40 CFR 122.41(b) and A.A.C. R18-9-C903]

   a. Upon reissuance of the general permit, the operator shall file an electronic Notice of Intent (NOI) through myDEQ, within the timeframe specified in the new general permit, and shall obtain new written authorization to discharge from the Director.

   a. If the Director does not reissue the general permit before the expiration date, the current general permit will be administratively continued and remain in force and effect until the general permit is reissued.
   b. Any operator granted authorization to discharge under the general permit before the expiration date automatically remains covered by the continued general permit until the earlier of:
      i. Reissuance or replacement of the general permit, at which time the operator shall comply with the NOI conditions of the new general permit to maintain authorization to discharge; or
      ii. The date the operator has submitted an electronic Notice of Termination; or
      iii. The date the Director has issued an individual permit for the discharge; or
      iv. The date the Director has issued a formal permit decision not to reissue the general permit, at which time the operator shall seek coverage under an alternative general permit or an individual permit, or cease discharge.

3. **Need To Halt or Reduce Activity Not a Defense.** [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(c)]

   It shall not be a defense for an operator in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

4. **Duty to Mitigate.** [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(d)]

   The operator shall take all reasonable steps to minimize or prevent any discharge in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment per A.R.S. § 49-255.01(E)(1)(d).

5. Proper Operation and Maintenance. [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(e)]

The operator shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the operator to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures.

6. Permit Actions. [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(f)]

This permit may be modified, revoked and reissued, or terminated for cause. Filing a request by the operator for a permit revision, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

7. Property Rights. [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(g)]

This permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or invasion of operatoral rights, nor any infringement of federal, state, Indian tribe, or local laws or regulations.

8. Duty to Provide Information. [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(h)]

The operator shall furnish to ADEQ, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The operator shall also furnish to ADEQ upon request, copies of records required to be kept by this permit.

9. Signatory Requirements. [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(k) and (l); A.A.C. R18-9-A905(A)(1)(c), which incorporates 40 CFR 122.22]

All Notices of Intent (NOI) and Notices of Termination (NOT) must be e-signed in the myDEQ online permitting system as follows:

a. NOIs:

i. For a corporation*:* By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other operator who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

ii. For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or

iii. For a municipality, state, federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this section, a

principal executive officer of a federal (or state) agency includes: (1) The chief executive officer (or director) of the agency, or (2) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

b. All NOTs, reports, including SWPPPs, inspection reports, monitoring reports, and other information required by this permit must be signed by an operator described in Appendix B, Subsection 9(a) above or by a duly authorized representative of that operator. An operator is a duly authorized representative only if:

   i. The authorization is made through myDEQ by an operator described in Subsection 9(a) above;

   ii. The authorization specifies either an individual or a position having responsibility for the overall operation of the site, such as the position of manager, operator, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may be either a named individual or any individual occupying a named position); and

   iii. The signed and dated authorization is included in the SWPPP. A copy must be submitted to ADEQ, upon request through myDEQ.

c. Certification. Any operator signing documents under the terms of this permit shall make the following certification:

   I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the operator or operators who manage the system, or those operators directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

10. Inspection and Entry. [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(i)]

The operator shall allow the Director or an authorized representative upon the presentation of credentials and such other documents as may be required by law to:

a. Enter upon the operator's premises where a regulated activity is located or conducted or where records must be kept under the conditions of this permit;

b. Have access to and copy at reasonable times, any records that must be kept under the conditions of this general permit;

c. Inspect at reasonable times any facility or equipment (including monitoring and control equipment), practices or operations regulated or required under this permit;

d. Sample or monitor at reasonable times any substances or parameters at any location, for the purposes of assuring permit compliance or as otherwise authorized by A.R.S. Title 49, Chapter 2, Article 3.1, and 18 A.A.C. 9, Articles 9.

11. Monitoring and Records. [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(j)]

a. Representative Samples/Measurements. Samples and measurements taken for the purpose of monitoring must be representative of the volume and nature of the monitored activity.

b. Retention of Records. The operator shall retain records of all monitoring

information, including all calibration and maintenance records, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date permit coverage ends. Operators shall submit any such records to the Director upon request. The operator shall retain the SWPPP developed in accordance with Part 6 of this permit, for at least three (3) years after the last revision or amendment is made to the plan. The Director may extend this retention period upon request by notifying the operator in writing at any time prior to the end of the standard three year retention period.

c. Records Contents. Records of monitoring information must include:

i. The date, exact place, and time of sampling or measurements;

ii. The initials or name(s) of the individual(s) who performed the sampling or measurements;

iii. The date(s) analyses were performed;

iv. The time(s) analyses were initiated;

v. The initials or name(s) of the individual(s) who performed the analyses;

vi. References and written procedures, when available, for the analytical techniques or methods used;

vii. The analytical techniques or methods used; and

viii. The results of such analyses.

d. Any operator who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained in this permit is subject to the enforcement actions established under A.R.S. Title 49, Chapter 2, Article 4, which includes the possibility of fines and/or imprisonment.

12. Reporting Requirements. [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(l)]

a. Planned changes. The operator shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted site. Notice is required only when:

i. The alteration or addition to a permitted site may meet one of the criteria for determining whether a site is a new source in 40 CFR 122.29(b) (incorporated by reference at A.A.C. R18-9-A905(A)(1)(e)); or

ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42(a)(1) (incorporated by reference at A.A.C. R18-9-A905(A)(3)(b)).

b. Monitoring reports. Monitoring results must be reported at the intervals specified elsewhere in this permit.

i. Monitoring results must be reported on a Discharge Monitoring Report (DMR) provided online by ADEQ. Pursuant to Section 7.4, all monitoring data collected pursuant to Part 7 must be submitted electronically to the Department using the e-Discharge Monitoring Report (e-DMR) form, available at www.azdeq.gov/mydeq.

ii. If the operator monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the e-DMR (if available), or submitted as a separate

report.

iii. Calculations for all limitations which require averaging of measurements must use an arithmetic mean and non-detected results must be incorporated in calculations as the limit of quantitation for the analysis.

c. Anticipated noncompliance. The operator shall give advance notice to the Director of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.

d. Twenty-four hour reporting.

i. The operator shall report to ADEQ any noncompliance with this permit which may endanger human health or the environment. The operator shall orally notify the office listed below within 24 hours:

Arizona Department of Environmental Quality – Surface Water Protection
1110 W. Washington Street, Phoenix, AZ 85007
602-771 – 2330

ii. A written submission shall also be provided to the office identified above within five (5) days of the time the operator becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

iii. The following shall be included as information which must be reported within 24 hours under this paragraph.

1) Any upset which exceeds any effluent limitation in the permit.

2) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within 24 hours. (See 40 CFR 122.44(g) which is incorporated by reference at A.A.C. R18-9-A905(A)(3)(d)).

iv. ADEQ may waive the written report on a case-by-case basis for reports under this subsection if the oral report has been received within 24 hours.

e. Other noncompliance. The operator shall report all instances of noncompliance not otherwise required to be reported under this subsection, at the time monitoring reports are submitted. The reports shall contain the information listed in subsection 12(d).

f. Other information. When the operator becomes aware that it failed to submit any relevant facts or submitted incorrect information in the Notice of Intent or in any other report to the Department, the operator shall promptly submit the facts or information to ADEQ in myDEQ.

13. Reopener Clause. [A.A.C. R18-9-A905(A)(3)(d), which incorporates 40 CFR 122.44(c)]

The Department may elect to modify the permit prior to its expiration (rather than waiting for the new permit cycle) to comply with any new statutory or regulatory requirements, such as for effluent limitation guidelines, which may be promulgated in the course of the current permit cycle.

14. Other Environmental Laws.

No condition of this general permit releases the operator from any responsibility or requirements under other environmental statutes or regulations. For example, this permit does not authorize the taking of endangered or threatened species as prohibited by

Section 9 of the Endangered Species Act, 16 U.S.C. 1538. Information regarding the location of endangered and threatened species and guidance on what activities constitute a taking are available from the U.S. Fish and Wildlife Service. The operator shall also comply with applicable State and Federal laws, including Spill Prevention Control and Countermeasures (SPCC).

15. State or Tribal Law. [Pursuant to A.A.C. R18-9-A904(C)]

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the operator from any responsibilities, liabilities, or penalties established pursuant to any applicable State or Tribal law or regulation under authority preserved by Section 510 of the Clean Water Act.

16. Severability.

The provisions of this general permit are severable, and if any provision of this general permit, or the application of any provision of this general permit to any circumstance, is held invalid, the application of the provision to other circumstances, and the remainder of this general permit shall not be affected.

17. Requiring Coverage under an Individual Permit or an Alternative General Permit. [Pursuant to A.A.C. R18-9-C902 and R18-9-A909]

a. The Director may require an operator authorized by this permit to apply for and/or obtain either an individual AZPDES permit or an alternative AZPDES general permit. Any interested operator may petition the Department to take action under this section. The Department may require an operator authorized to discharge under this permit to apply for an individual permit in any of the following cases:

   i. A change occurs in the availability of demonstrated technology or practices for the control or abatement of pollutants applicable to the point source;

   ii. Effluent limitation guidelines are promulgated for point sources covered by the general permit;

   iii. An Arizona Water Quality Management Plan containing requirements applicable to the point sources is approved;

   iv. Circumstances change after the time of the request to be covered so that the discharger is no longer appropriately controlled under the general permit, or either a temporary or permanent reduction or elimination of the authorized discharge is necessary;

   v. If the Director determines that the discharge is a significant contributor of pollutants. When making this determination, the Director shall consider:

      1) The location of the discharge with respect to surface waters

      2) The size of the discharge,

      3) The quantity and nature of the pollutants discharged to surface waters, and

      4) Any other relevant factors.

b. If an individual permit is required, the Director shall notify the discharger in writing of the decision. The notice shall include:

   i. A brief statement of the reasons for the decision;

   ii. An application form;

   iii. A statement setting a deadline to file the application;

   iv. A statement that on the effective date of issuance or denial of the individual permit, coverage under the general permit will automatically terminate;

v. The operator's right to appeal the individual permit requirement with the Water Quality Appeals Board under A.R.S. § 49-323, the number of days the operator has to file a protest challenging the individual permit requirement, and the name and telephone number of the Department contact operator who can answer questions regarding the appeals process; and

vi. The operator's right to request an informal settlement conference under A.R.S. 41-1092.03(A) and 41-1092.06.

c. The discharger shall apply for an individual permit within 90 days of receipt of the notice, unless the Director grants a later date. In no case shall the deadline be more than 180 days after the date of the notice.

d. If the discharger fails to submit the individual permit application within the time period established in Appendix B, Subsection 17(c) the applicability of the general permit to the discharger is automatically terminated at the end of the day specified by the Director for application submittal.

e. Coverage under the general permit shall continue until an individual permit is issued or denied unless the general permit coverage is terminated under Appendix B, Subsection 17(d).

18. Request for an Individual Permit. [Pursuant to A.A.C. R18-9-C902]

a. An operator may request an exclusion from coverage of a general permit by applying for an individual permit.

i. The operator shall submit an individual permit application under R18-9-B901(B) and include the reasons supporting the request no later than 90 days after publication of the general permit.

ii. The Director shall grant the request if the reasons cited by the operator are adequate to support the request.

b. If an individual permit is issued to an operator otherwise subject to a general permit, the applicability of the general permit to the discharge is automatically terminated on the effective date of the individual permit.

19. Change of Operator. [A.A.C. R18-9-C904]

If a change of ownership or operator occurs for a facility operating under a general permit:

a. Permitted owner or operator. The operator shall submit an electronic Notice of Termination within 30 days after the new owner or operator assumes responsibility for the site.

i. The e-Notice of Termination shall include all requirements for termination specified in the general permit for which the e-Notice of Termination is submitted.

ii. An operator shall comply with the permit conditions specified in the general permit for which the e-Notice of Termination is submitted until the e-Notice of Termination is submitted to the Department.

b. New owner or operator.

i. The new owner or operator shall submit an e-Notice of Intent to the Department within the time period specified in the general permit before taking over operational control of, or initiation of activities at, the site.

ii. If the previous permittee was required to implement a stormwater pollution prevention plan, the new owner shall develop a new stormwater pollution prevention plan, or may modify, certify, and implement the old stormwater

pollution prevention plan if the old stormwater pollution prevention plan complies with the requirements of the current general permit.

iii. The operator shall submit an e-Notice of Termination to the Department when:

1) The site ceases construction operations and the discharge is no longer associated with construction or construction-related activities,

2) The construction is complete and final site stabilization is achieved, or

3) The operator's status changes.

20. Bypass. [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(m)]

a. Definitions.

i. Bypass means the intentional diversion of waste streams from any portion of a treatment facility

ii. Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations. The operator may allow any bypass to occur that does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions Appendix B, Subsections 20(c) and 20(d).

c. Notice.

i. Anticipated bypass. If the operator knows in advance of the need for a bypass, if possible prior notice shall be submitted at least ten days before the date of the bypass.

ii. Unanticipated bypass. The operator shall submit notice of an unanticipated bypass as required in Appendix B, Subsection 12(d).

d. Prohibition of bypass.

i. Bypass is prohibited, and ADEQ may take enforcement action against the operator for bypass, unless:

1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable industry judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

3) The operator submitted notices as required under Appendix B, Subsection 20(c).

ii. ADEQ may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three conditions listed above in this Appendix B, Subsection 20(d).

21. Upset. [A.R.S. §§ 49-255(8) and 255.01(E), A.A.C. R18-9-A905(A)(3)(a), which

incorporates 40 CFR 122.41(n)]

a. Definition. Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the operator. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Appendix B, Subsection 21(c) are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. An operator who wishes to establish the affirmative defense of upset must demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

   i. An upset occurred and that the operator can identify the cause(s) of the upset;

   ii. The permitted facility was at the time being properly operated;

   iii. The operator submitted notice of the upset as required in Appendix B, Subsection 12(d)(iii); and

   iv. The operator complied with any remedial measures required under Appendix B, Subsection 4.

d. Burden of proof. In any enforcement proceeding, the operator, who is seeking to establish the occurrence of an upset, has the burden of proof.

22. Penalties for Violations of Permit Conditions.

Any permit noncompliance constitutes a violation and is grounds for an enforcement action, permit termination, revocation and reissuance, revision, or denial of a permit renewal application.

a. Civil Penalties. A.R.S. § 49-262 provides that any operator who violates any provision of A.R.S. Title 49, Chapter 2, Article 2, 3 or 3.1 or a rule, permit, discharge limitation or order issued or adopted under A.R.S. Title 49, Chapter 2, Article 3.1 is subject to a civil penalty not to exceed $25,000 per day per violation.

b. Criminal Penalties. Any operator who violates a condition of this general permit, or violates a provision under A.R.S. Title 49, Chapter 2, Article 3.1, or A.A.C. Title 18, Chapter 2, Article 9 is subject to the enforcement actions established under A.R.S. Title 49, Chapter 2, Article 4, which may include the possibility of fines and/or imprisonment.

Appendix F
SWPPP Training Log

Training Log

I have reviewed the SWPPP and received training in erosion controls, spill prevention and response, good housekeeping, proper material handling, disposal and control of waste, equipment fueling, and proper storage, washing, and inspection procedures.

Name/Title	Company	Description of Qualifications	Training Certificates/Dates	Responsibilities

Appendix G
Contractor Certification Log

CONTRACTOR CERTIFICATION

I certify under penalty of law that I understand the terms and conditions of the general AZPDES permit that authorizes stormwater discharges associated with industrial activity from the construction site identified as part of this certification.

Printed Name/Title/Signature	Company	Responsible For
Printed Name/Title		
Signature		
Date		

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
ASBESTOS NESHAP NOTIFICATION FOR RENOVATION AND DEMOLITION ACTIVITIES

National Emission Standards for Hazardous Air Pollutants (NESHAP)

1. TYPE OF NOTIFICATION: ☐Original ☐Revision 1 ☐Revision 2 ☐Revision 3 ☐Revision 4 ☐Revision 5 ☐Revision 6 Revision 7 ☐Cancel

2a. FACILITY OWNER INFORMATION

Name of Company or Individual: Arizona Public Service Company

Address: P.O. Box 53933, Mail Station 3171

City/Community: Phoenix | State: AZ | Zip: 85041

Contact Person: Kristina DaSilva | Contact No.: 602-371-5922 | Email: kristina.dasilva@aps.com

2b. ASBESTOS REMOVAL CONTRACTOR/OPERATOR: Environmental Response, Inc.

Address: 2202 W. Medtronic Way, Suite 108

City: Tempe | State: AZ | Zip: 85281

Contact Person: Eric Smith | Contact No.: 480-967-2802 | Email: esmith@spray-eri.com

2c. DEMOLITION CONTRACTOR/OPERATOR:

Address: Environmental Response, Inc. - 2202 W. Medtronic Way, Suite 108

City: Tempe | State: AZ | Zip: 85281

Contact Person: Eric Smith | Contact No.: 480-967-2802 | Email: esmith@spray-eri.com

3. TYPE OF OPERATION: ☐ Renovation ☐ Emergency Renovation ■ Demolition ☐ Ordered Demolition ☐ Annual Non-scheduled Operations

4. PROVIDE DATE OF THOROUGH INSPECTION OF FACILITY, OR AFFECTED PART BY AN AHERA (Asbestos Hazard Emergency Response Act) CERTIFIED BUILDING INSPECTOR — DATE: February 21 & 27, 2020

5. FACILITY DESCRIPTION (Attach site location map for multiple structures at one street address or installation)

Building Name: APS Prescott City Sub Control House

Area/Location of Activities: (building # - floor # - units - equipment - identifying features) Former substation

Street Address: 300 N. Granite Street | City: Prescott | Zip: 86301 | County: Yavapai

6. PROCEDURE, INCLUDING ANALYTICAL METHOD, EMPLOYED TO DETECT THE PRESENCE OF RACM AND CATEGORY I AND CATEGORY II NONFRIABLE ACM. ■ Polarized Light Microscopy-PLM ☐ Point Counting ☐ Assumed ☐ Other _____

NVLAP Laboratory Name: Fiberquant Analytical Services | Number of Samples: 102 | Date Analyzed: March 4, 2020

7. APPROXIMATE AMOUNT OF ASBESTOS, INCLUDING: *NOTE: Update notice as necessary including when the amount of asbestos affected changes by a least 20%	Amount of RACM to be Removed or Generated	Amount of Nonfriable ACM to be removed		Amount of Nonfriable ACM not to be removed during demo	
		CAT I	CAT II	CAT I	CAT II
On Facility Components; Pipes (Linear Feet)					
On Facility Components; Surface Area (Square Feet)			16		
Off Facility Components; Volume (Cubic Feet)					

8. DATES FOR ASBESTOS REMOVAL — Start Date: 6/30/2020 Completion Date: 7/1/2020 — Days of Operations: M T W TH F SA SU — Hours of Operations:

9. DATES FOR DEMOLITION — Start Date: 8/3/20 Completion Date: 8/6/20 — Days of Operations: M T W TH F SA SU — Hours of Operations: 0700 - 1500

MAIL / DELIVER TO:

ADEQ - Asbestos NESHAP Program
1110 West Washington Street
Phoenix, Arizona 85007
(602) 771-2333 or (602) 771-4553

THIS AREA FOR NESHAP REGULATORY AGENCY USE ONLY

U.S. Postal Service Postmark Date:

Commercial / Hand Delivery Date:

10. DESCRIPTION OF PLANNED DEMOLITION/RENOVATION WORK: (Check all that apply)

☐ Thermal System Insulation ☐ Ceiling Texture/Tiles ☐ Duct/Seam Tape ☐ Regulated Drywall System ☐ Asbestos-Containing Roof Removal
☐ Asbestos Cement Pipe ☐ Asbestos Cement Shingles ☐ VAT/Mastic ☐ Asbestos Cement Siding ≥5580 sq ft w/rotating blade cut

Other, please specify: Remove ACM caulking from windows and paneling, then demolish control house, demolish concrete foundations in former substation

REMOVAL METHODS: ☒ Hand/Non-Mechanical Tools ☒ Mechanical/Power Tools ☐ Mastic Solvents
Other:

11. DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT ASBESTOS EMISSIONS: (Check all that apply)

☒ Adequately Wet ☐ Full Containment ☐ Critical Barriers ☐ Negative Air Machines
☐ Glove-Bag ☒ Leak-Tight Wrap ☒ 6-mil Bags ☐ Mini-containment
☐ Decontamination Unit with Hot/Cold Water and Soap for OSHA Class I work Other:

12a. ASBESTOS WASTE TRANSPORTER #1:

Company Name: Enivronmental Response, Inc.			
Address: 2202 W. Medtronic Way, Suite 108			
City: Tempe		State: AZ	Zip: 85281
Contact Person: Eric Smith	Contact No.: 480-967-2802	Email: esmith@spray-eri.com	

12b. ASBESTOS WASTE TRANSPORTER #2:

Company Name:			
Address:			
City:		State:	Zip:
Contact Person:	Contact No.:	Email:	

13. ASBESTOS WASTE DISPOSAL SITE:

Company Name: Gray Wolf Landfill			
Address: 23355 E. Highway 169, Milepost 11			
City: Dewey		State: AZ	Zip: 86327
Contact Person: Landfill Manager	Contact No.: 928-999-1033	Email:	

14. FOR ORDERED DEMOLITIONS (40 CFR 61, §61.145(A)(3), ATTACH A COPY OF THE AGENCY'S ORDERED DEMOLITION LETTER

Name:	Title:
State or Local Government Agency:	Authority:
Date of Order (MM/DD/YY):	Date Demolition Ordered to Begin (MM/DD/YY):

15. FOR EMERGENCY RENOVATIONS (40 CFR 61, §61.145(a)(4)(iv))

Date and Hour of Emergency (MM/DD/YY - HH:MM):

Description of the Sudden, Unexpected Event:

Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:

16. In the event that unexpected RACM is found or discovered or CATEGORY I or CATEGORY II NONFRIABLE ACM becomes crumbled, pulverized, or reduced to powder the following procedures will be followed: Stop Work, Notify Owner, Revise Notification , Follow 40 CFR 61, §61.145(c) Procedures with an AHERA Certified Contractor/Supervisor on-site.

17. I CERTIFY THAT AT LEAST ONE AHERA CERTIFIED CONTRACTOR/SUPERVISOR WILL SUPERVISE THE STRIPPING AND REMOVAL OF RACM DESCRIBED IN THIS NOTIFICATION AND THAT THE TRAINING CERTIFICATE WILL BE POSTED OR READILY AVAILABLE **ON-SITE.**

Eric Smith	Project Manager	Eric Smith (Digitally signed by Eric Smith Date: 2020.05.21 08:19:39 -07'00')	July 31, 2020
(Print Name: Owner/Operator)	(Title)	(Signature of Owner/Operator)	(Date)

18. CERTIFICATION OF INSPECTION BY AN AHERA CERTIFIED ASBESTOS BUILDING INSPECTOR (All areas of Arizona):

Augustine Anderson	Asbestos Institute	4608-991-013120	January 31, 2021
(Print Name of Inspector)	(Training Provider)	(AHERA Certificate Number)	(Expiration Date)

19. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT: Company Name: Environmental Response, Inc.

Eric Smith	Project Manager	Eric Smith (Digitally signed by Eric Smith Date: 2020.05.21 08:19:29 -07'00')	July 31, 2020
(Print Name: Owner/Operator)	(Title)	(Signature of Owner/Operator)	(Date)

References: Title 40, Code of Federal Regulations, Part 61, Subpart M, Asbestos NESHAP §61.145(b): Arizona Revised Statutes. Title 49 §49-421 & 471 et. seq.: and Arizona Administrative Code. Title 18, Chapter 2, Air Pollution Control, Article II. §R18-2-1101.
For more information, contact the Asbestos NESHAP Program in Arizona at (800) 234-5677 x2333 x4553.

ADEQ Arizona Department of Environmental Quality

2020 Construction General Permit (CGP) Routine Inspection Report Form

Section I. General Information (see instructions)

Name of Project	APS Prescott Substation Remediation	CGP Authorization No.	AZCN- NA	Inspection Date	7/31/20

○ **Check box when using this form to inspect an inactive/unstaffed construction site (this option applies to an entire site only).** See Part 4.2(4) of the permit. Inspect the site immediately before becoming inactive/unstaffed and every 6 months thereafter and within 24 hours of each storm event of 0.5 inch or greater in 24 hours.

Inspector Name, Title and Contact Information	**Name:** Robert O'dell **Title:** Supervisor/SWPPP inspector **Contact information:** 602-757-4400
Present Phase of Construction	Site preparation/excavation. A CGP is not required for the Site, the SWPPP is implemented for storm water pollution protection.

Inspection Schedule (all days are calendar days) *(Note: you may be subject to different inspection frequencies in different areas of the site. Check all that apply. * See Part 4.2 for qualifications)*

Routine Schedule: ◉ Within 7 days* ○ Within 14 days* and within 24 hours of a 0.5" storm event

○ Once per month, but not within 14 days of the previous inspection and within 24 hours of a 0.25" storm event

Reduced Schedule: once per month (but not within 14 days of the previous inspection) and before an anticipated storm event and within 24 hours of the end of each storm event of 0.5 inch or greater in 24 hours.

○ Once per month (in stabilized areas)
○ Once per month (where discharges are unlikely based on seasonal rainfall patterns)
○ Once per month (where winter conditions exist and earth-disturbing activities are being conducted)

Outfalls within 1/4 mile of an impaired water or outstanding Arizona water (OAW): ◉ Every 7 days and within 24 hours of a 0.5" storm event

Was this inspection triggered by either a 0.25" or 0.5" storm event? ○ Yes ● No

If yes, duration of storm event: ○ < 1 hour ○ < 6 hrs ○ > 6 hrs

If yes, how was the storm event determined (either 0.25" or 0.5")?

◉ Rain gauge on site ○ Weather station representative of site. Specify weather station source: _____

Total rainfall amount that triggered the inspection (in inches): _____

Identify all sources of non-stormwater discharges occurring at the site and the associated control measures in place

sources of non-stormwater discharges:	control measures associated with the non-stormwater discharges:
1. Dust control water, potable or reclaimed water	1. Straw wattles
2.	2.
3.	3.
4.	4.
5.	5.

Adverse or Unsafe Conditions for Inspection

Did you determine that any portion of the site was unsafe for inspection per CGP Part 4.2(6)? ○ Yes ○ No

If "yes", complete the following:

- Describe the conditions that prevented you from conducting the inspection in this location:

- Location(s) where conditions were found:

Note: *Inspections may be postponed when adverse or unsafe conditions exist such as local flooding, high winds, or electrical storms, or situations that otherwise make inspections unsafe. However, the inspection must resume as soon as conditions are safe.*

Section II. Description of Discharges and Condition of the Discharge Locations (CGP Part 4.3(10)) (see instructions)

Outfall(s)	Observations *(Note: discharges may not occur at every outfall on the site after a storm event. Check all that apply.)*
1. Catch basin (see Figure 3-3 of SWPPP)	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation. Site impervious surfaces outside excavation area drains to the catch basin.	
2.	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ● No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	
3.	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	

Section III. Condition and Effectiveness of All On-site Control Measures (Erosion and Sediment (E&S)), Stabilization and Pollution Prevention (P2) Practices (CGP Part 3.3 through 3.5) (see instructions)

Description of Control Measures	Type of Control Measure: ▪ Erosion and Sediment (E&S) ▪ Stabilization ▪ Pollution Prevention (P2)	Additional controls required?	Repairs or other maintenance needed?[1]	Corrective action required?[1, 2] Date of discovery	Specify stabilization method (mulch, rock, planted vegetation, etc.)
1. Straw wattles	● E&S ○ Stabilization ○ P2	○ Yes ● No	○ Yes ● No	○ Yes ● No	

Notes (e.g., provide details about needed additional control measures, maintenance performed, etc.)

Pollution prevention and containment controls are inspected, maintained, and replaced as necessary.

Description of Control Measures	Type of Control Measure: ▪ Erosion and Sediment (E&S) ▪ Stabilization ▪ Pollution Prevention (P2)	Additional controls required?	Repairs or other maintenance needed?[1]	Corrective action required?[1, 2] Date of discovery	Specify stabilization method (mulch, rock, planted vegetation, etc.)
2. Plastic Secondary containment	○ E&S ○ Stabilization ● P2	○ Yes ● No	○ Yes ● No	○ Yes ● No	

Notes (e.g., provide details about needed additional control measures, maintenance performed, etc.)

Pollution prevention and containment controls are inspected, maintained, and replaced as necessary.

Note 1: The permit differentiates between conditions requiring repairs and maintenance, and those requiring corrective action. The permit requires maintenance in order to keep controls in effective operating condition and requires repairs if controls are not operating as intended. Corrective actions are triggered only for specific, more serious conditions, which include: 1) A necessary stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 3.1 and/or Part 3.2; 2) One of the prohibited discharges in Part 1.4 is occurring or has occurred; or 3) ADEQ or USEPA determines that modifications to the control measures are necessary to meet the requirements of Part 3.

Note 2: If answering "Yes" (i.e., a site condition that meets one or more of the three criteria in Note 1 above requires a corrective action), you must complete a Corrective Action Report. See Part 5 of the permit for more information.

ADEQ Arizona Department of Environmental Quality

Section VI. Certification and Signature (CGP Appendix B. 9.)

Section IV.A. – Certification and Signature by Contractor or Subcontractor performing the inspections (if applicable)

Check one of the following:

- ● No instances of non-compliance were discovered during this inspection and the project was in full compliance with the SWPPP and permit.
- ○ Inspection follow-up is required, in accordance with Parts 4.5(1) and 4.5(2) of the permit.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Contractor or Subcontractor: * Certification is not required because an NOI is not required Title: Supervisor/SWPPP inspector

Printed name : Robert O'Dell Date: 7/31/20

Business / Agency: Environmental Response Inc. Phone number: 602-757-4400

Section IV.B. – Certification and Signature by Permittee (permittee / operator or a duly authorized representative is required to sign)

Check one of the following:

- ● No instances of non-compliance were discovered during this inspection and the project was in full compliance with the SWPPP and permit.
- ○ Inspection follow-up is required, in accordance with Parts 4.5(1) and 4.5(2) of the permit.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Permittee or "Duly Authorized Representative": * Certification is not required because an NOI is not required Title: Construction Manager

Printed Name: Matt Branche Date: 7/31/20

Business / Agency: Jacobs Engineering on behalf of APS Phone number: 480-273-4084

2020 Construction General Permit (CGP) Routine Inspection Report Form

ADEQ Arizona Department of Environmental Quality

Section I. General Information (see instructions)

Name of Project	APS Prescott Substation Remediation	CGP Authorization No.	AZCN- NA	Inspection Date	8-7-2020

○ **Check box when using this form to inspect an inactive/unstaffed construction site (this option applies to an entire site only).** See Part 4.2(4) of the permit. Inspect the site immediately before becoming inactive/unstaffed and every 6 months thereafter and within 24 hours of each storm event of 0.5 inch or greater in 24 hours.

Inspector Name, Title and Contact Information	**Name:** Robert O'dell **Title:** Supervisor/SWPPP inspector **Contact information:** 602-757-4400
Present Phase of Construction	Site preparation/excavation. A CGP is not required for the Site, the SWPPP is implemented for storm water pollution protection.

Inspection Schedule (all days are calendar days) *(Note: you may be subject to different inspection frequencies in different areas of the site. Check all that apply. * See Part 4.2 for qualifications)*

Routine Schedule: ◉ Within 7 days* ○ Within 14 days* and within 24 hours of a 0.5" storm event

○ Once per month, but not within 14 days of the previous inspection and within 24 hours of a 0.25" storm event

Reduced Schedule: once per month (but not within 14 days of the previous inspection) and before an anticipated storm event and within 24 hours of the end of each storm event of 0.5 inch or greater in 24 hours.

○ Once per month (in stabilized areas)
○ Once per month (where discharges are unlikely based on seasonal rainfall patterns)
○ Once per month (where winter conditions exist and earth-disturbing activities are being conducted)

Outfalls within 1/4 mile of an impaired water or outstanding Arizona water (OAW): ◉ Every 7 days and within 24 hours of a 0.5" storm event

Was this inspection triggered by either a 0.25" or 0.5" storm event? ○ Yes ○ No

If yes, duration of storm event: ○ < 1 hour ○ < 6 hrs ○ > 6 hrs

If yes, how was the storm event determined (either 0.25" or 0.5")?

◉ Rain gauge on site ○ Weather station representative of site. Specify weather station source: _____

Total rainfall amount that triggered the inspection (in inches): Ø

Identify all sources of non-stormwater discharges occurring at the site and the associated control measures in place

sources of non-stormwater discharges:	control measures associated with the non-stormwater discharges:
1. Dust control water, potable water	1. Straw wattles
2.	2.
3.	3.
4.	4.
5.	5.

Adverse or Unsafe Conditions for Inspection

Did you determine that any portion of the site was unsafe for inspection per CGP Part 4.2(6)? ○ Yes ● No

If "yes", complete the following:

- Describe the conditions that prevented you from conducting the inspection in this location:

- Location(s) where conditions were found:

Note: *Inspections may be postponed when adverse or unsafe conditions exist such as local flooding, high winds, or electrical storms, or situations that otherwise make inspections unsafe. However, the inspection must resume as soon as conditions are safe.*

Section II. Description of Discharges and Condition of the Discharge Locations (CGP Part 4.3(10)) (see instructions)

Outfall(s)	Observations *(Note: discharges may not occur at every outfall on the site after a storm event. Check all that apply.)*
1. Catch basin (see Figure 3-3 of SWPPP)	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation. Site impervious surfaces outside excavation area drains to the catch basin.	
2.	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	
3.	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	

Section III. Condition and Effectiveness of All On-site Control Measures (Erosion and Sediment (E&S)), Stabilization and Pollution Prevention (P2) Practices (CGP Part 3.3 through 3.5) (see instructions)

Description of Control Measures	Type of Control Measure: ▪ Erosion and Sediment (E&S) ▪ Stabilization ▪ Pollution Prevention (P2)	Additional controls required?	Repairs or other maintenance needed?[1]	Corrective action required?[1, 2] Date of discovery	Specify stabilization method (mulch, rock, planted vegetation, etc.)
1. Straw wattles	● E&S ○ Stabilization ○ P2	○ Yes ● No	○ Yes ● No	○ Yes ● No	

Notes (e.g., provide details about needed additional control measures, maintenance performed, etc.)

Pollution prevention and containment controls are inspected, maintained, and replaced as necessary.

Description of Control Measures	Type of Control Measure: ▪ Erosion and Sediment (E&S) ▪ Stabilization ▪ Pollution Prevention (P2)	Additional controls required?	Repairs or other maintenance needed?[1]	Corrective action required?[1, 2] Date of discovery	Specify stabilization method (mulch, rock, planted vegetation, etc.)
2. Plastic Secondary containment	○ E&S ○ Stabilization ● P2	○ Yes ● No	○ Yes ● No	○ Yes ● No	

Notes (e.g., provide details about needed additional control measures, maintenance performed, etc.)

Pollution prevention and containment controls are inspected, maintained, and replaced as necessary.

Note 1: The permit differentiates between conditions requiring repairs and maintenance, and those requiring corrective action. The permit requires maintenance in order to keep controls in effective operating condition and requires repairs if controls are not operating as intended. Corrective actions are triggered only for specific, more serious conditions, which include: 1) A necessary stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 3.1 and/or Part 3.2; 2) One of the prohibited discharges in Part 1.4 is occurring or has occurred; or 3) ADEQ or USEPA determines that modifications to the control measures are necessary to meet the requirements of Part 3.

Note 2: If answering "Yes" (i.e., a site condition that meets one or more of the three criteria in Note 1 above requires a corrective action), you must complete a Corrective Action Report. See Part 5 of the permit for more information.

ADEQ Arizona Department of Environmental Quality

Section VI. Certification and Signature (CGP Appendix B. 9.)

Section IV.A. – Certification and Signature by Contractor or Subcontractor performing the inspections (if applicable)

Check one of the following:

- ● No instances of non-compliance were discovered during this inspection and the project was in full compliance with the SWPPP and permit.
- ○ Inspection follow-up is required, in accordance with Parts 4.5(1) and 4.5(2) of the permit.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Contractor or Subcontractor: * Certification is not required because an NOI is not required Title: Supervisor/SWPPP inspector

Printed name : Robert O'Dell Date: 8/7/20

Business / Agency: Environmental Response Inc. Phone number: 602-757-4400

Section IV.B. – Certification and Signature by Permittee (permittee / operator or a duly authorized representative is required to sign)

Check one of the following:

- ● No instances of non-compliance were discovered during this inspection and the project was in full compliance with the SWPPP and permit.
- ○ Inspection follow-up is required, in accordance with Parts 4.5(1) and 4.5(2) of the permit.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Permittee or "Duly Authorized Representative": * Certification is not required because an NOI is not required Title: Construction Manager

Printed Name: Matt Branche Date: 8/7/20

Business / Agency: Jacobs Engineering on behalf of APS Phone number: 480-273-4084

ADEQ Arizona Department of Environmental Quality

2020 Construction General Permit (CGP) Routine Inspection Report Form

Section I. General Information (see instructions)

Name of Project	APS Prescott Substation Remediation	**CGP Authorization No.**	**AZCN-** NA	**Inspection Date**	8/14/20

○ **Check box when using this form to inspect an inactive/unstaffed construction site (this option applies to an entire site only).** See Part 4.2(4) of the permit. Inspect the site immediately before becoming inactive/unstaffed and every 6 months thereafter and within 24 hours of each storm event of 0.5 inch or greater in 24 hours.

Inspector Name, Title and Contact Information	**Name:** Robert O'dell **Title:** Supervisor/SWPPP inspector **Contact information:** 602-757-4400
Present Phase of Construction	Site preparation/excavation. A CGP is not required for the Site, the SWPPP is implemented for storm water pollution protection.

Inspection Schedule (all days are calendar days) *(Note: you may be subject to different inspection frequencies in different areas of the site. Check all that apply. * See Part 4.2 for qualifications)*

Routine Schedule: ◉ Within 7 days* ○ Within 14 days* and within 24 hours of a 0.5" storm event

○ Once per month, but not within 14 days of the previous inspection and within 24 hours of a 0.25" storm event

Reduced Schedule: once per month (but not within 14 days of the previous inspection) and before an anticipated storm event and within 24 hours of the end of each storm event of 0.5 inch or greater in 24 hours.

○ Once per month (in stabilized areas)
○ Once per month (where discharges are unlikely based on seasonal rainfall patterns)
○ Once per month (where winter conditions exist and earth-disturbing activities are being conducted)

Outfalls within 1/4 mile of an impaired water or outstanding Arizona water (OAW): ◉ Every 7 days and within 24 hours of a 0.5" storm event

Was this inspection triggered by either a 0.25" or 0.5" storm event? ○ Yes ○ No

If yes, duration of storm event: ○ < 1 hour ○ < 6 hrs ○ > 6 hrs

If yes, how was the storm event determined (either 0.25" or 0.5")?

◉ Rain gauge on site ○ Weather station representative of site. Specify weather station source: _____

Total rainfall amount that triggered the inspection (in inches): Ø

Identify all sources of non-stormwater discharges occurring at the site and the associated control measures in place

sources of non-stormwater discharges:	control measures associated with the non-stormwater discharges:
1. Dust control water, potable water	1. Straw wattles
2.	2.
3.	3.
4.	4.
5.	5.

Adverse or Unsafe Conditions for Inspection

Did you determine that any portion of the site was unsafe for inspection per CGP Part 4.2(6)? ○ Yes ● No

If "yes", complete the following:

- Describe the conditions that prevented you from conducting the inspection in this location:

- Location(s) where conditions were found:

Note: *Inspections may be postponed when adverse or unsafe conditions exist such as local flooding, high winds, or electrical storms, or situations that otherwise make inspections unsafe. However, the inspection must resume as soon as conditions are safe.*

Section II. Description of Discharges and Condition of the Discharge Locations (CGP Part 4.3(10)) (see instructions)

Outfall(s)	**Observations** *(Note: discharges may not occur at every outfall on the site after a storm event. Check all that apply.)*
1. Catch basin (see Figure 3-3 of SWPPP)	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ● No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation. Site impervious surfaces outside excavation area drains to the catch basin.	
2.	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	
3.	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	

Section III. Condition and Effectiveness of All On-site Control Measures (Erosion and Sediment (E&S)), Stabilization and Pollution Prevention (P2) Practices (CGP Part 3.3 through 3.5) (see instructions)

Description of Control Measures	Type of Control Measure: ▪ Erosion and Sediment (E&S) ▪ Stabilization ▪ Pollution Prevention (P2)	Additional controls required?	Repairs or other maintenance needed?[1]	Corrective action required?[1, 2] Date of discovery	Specify stabilization method (mulch, rock, planted vegetation, etc.)
1. Straw wattles	● E&S ○ Stabilization ○ P2	○ Yes ● No	○ Yes ● No	○ Yes ○ No	

Notes (e.g., provide details about needed additional control measures, maintenance performed, etc.)

Pollution prevention and containment controls are inspected, maintained, and replaced as necessary.

Description of Control Measures	Type of Control Measure: ▪ Erosion and Sediment (E&S) ▪ Stabilization ▪ Pollution Prevention (P2)	Additional controls required?	Repairs or other maintenance needed?[1]	Corrective action required?[1, 2] Date of discovery	Specify stabilization method (mulch, rock, planted vegetation, etc.)
2. Plastic Secondary containment	○ E&S ○ Stabilization ● P2	○ Yes ● No	○ Yes ● No	○ Yes ○ No	

Notes (e.g., provide details about needed additional control measures, maintenance performed, etc.)

Pollution prevention and containment controls are inspected, maintained, and replaced as necessary.

Note 1: The permit differentiates between conditions requiring repairs and maintenance, and those requiring corrective action. The permit requires maintenance in order to keep controls in effective operating condition and requires repairs if controls are not operating as intended. Corrective actions are triggered only for specific, more serious conditions, which include: 1) A necessary stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 3.1 and/or Part 3.2; 2) One of the prohibited discharges in Part 1.4 is occurring or has occurred; or 3) ADEQ or USEPA determines that modifications to the control measures are necessary to meet the requirements of Part 3.

Note 2: If answering "Yes" (i.e., a site condition that meets one or more of the three criteria in Note 1 above requires a corrective action), you must complete a Corrective Action Report. See Part 5 of the permit for more information.

ADEQ Arizona Department of Environmental Quality

Section VI. Certification and Signature (CGP Appendix B. 9.)

Section IV.A. – Certification and Signature by Contractor or Subcontractor performing the inspections (if applicable)

Check one of the following:

- ○ No instances of non-compliance were discovered during this inspection and the project was in full compliance with the SWPPP and permit.
- ○ Inspection follow-up is required, in accordance with Parts 4.5(1) and 4.5(2) of the permit.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Contractor or Subcontractor: * Certification is not required because an NOI is not required Title: Supervisor/SWPPP inspector

Printed name : Robert O'Dell Date: 8-14-20

Business / Agency: Environmental Response Inc. Phone number: 602-757-4400

Section IV.B. – Certification and Signature by Permittee (permittee / operator or a duly authorized representative is required to sign)

Check one of the following:

- ● No instances of non-compliance were discovered during this inspection and the project was in full compliance with the SWPPP and permit.
- ○ Inspection follow-up is required, in accordance with Parts 4.5(1) and 4.5(2) of the permit.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Permittee or "Duly Authorized Representative": * Certification is not required because an NOI is not required Title: Construction Manager

Printed Name: Matt Branche Date: 8/14/20

Business / Agency: Jacobs Engineering on behalf of APS Phone number: 480-273-4084

ADEQ Arizona Department of Environmental Quality

2020 Construction General Permit (CGP) Routine Inspection Report Form

Section I. General Information (see instructions)

Name of Project	APS Prescott Substation Remediation	CGP Authorization No.	AZCN- NA	Inspection Date	8/21/20

○ **Check box when using this form to inspect an inactive/unstaffed construction site (this option applies to an entire site only).** See Part 4.2(4) of the permit. Inspect the site immediately before becoming inactive/unstaffed and every 6 months thereafter and within 24 hours of each storm event of 0.5 inch or greater in 24 hours.

Inspector Name, Title and Contact Information	**Name:** Robert O'dell **Title:** Supervisor/SWPPP inspector **Contact information:** 602-757-4400
Present Phase of Construction	Site preparation/excavation. A CGP is not required for the Site, the SWPPP is implemented for storm water pollution protection.

Inspection Schedule (all days are calendar days) *(Note: you may be subject to different inspection frequencies in different areas of the site. Check all that apply. * See Part 4.2 for qualifications)*

Routine Schedule: ◉ Within 7 days* ○ Within 14 days* and within 24 hours of a 0.5" storm event

○ Once per month, but not within 14 days of the previous inspection and within 24 hours of a 0.25" storm event

Reduced Schedule: once per month (but not within 14 days of the previous inspection) and before an anticipated storm event and within 24 hours of the end of each storm event of 0.5 inch or greater in 24 hours.

○ Once per month (in stabilized areas)
○ Once per month (where discharges are unlikely based on seasonal rainfall patterns)
○ Once per month (where winter conditions exist and earth-disturbing activities are being conducted)

Outfalls within 1/4 mile of an impaired water or outstanding Arizona water (OAW): ◉ Every 7 days and within 24 hours of a 0.5" storm event

Was this inspection triggered by either a 0.25" or 0.5" storm event? ○ Yes ○ No

If yes, duration of storm event: ○ < 1 hour ○ < 6 hrs ○ > 6 hrs

If yes, how was the storm event determined (either 0.25" or 0.5")?

◉ Rain gauge on site ○ Weather station representative of site. Specify weather station source: _____

Total rainfall amount that triggered the inspection (in inches): _____

Identify all sources of non-stormwater discharges occurring at the site and the associated control measures in place

sources of non-stormwater discharges:	control measures associated with the non-stormwater discharges:
1. Dust control water, potable water	1. Straw wattles
2.	2.
3.	3.
4.	4.
5.	5.

Adverse or Unsafe Conditions for Inspection

Did you determine that any portion of the site was unsafe for inspection per CGP Part 4.2(6)? ○ Yes ● No

If "yes", complete the following:

- Describe the conditions that prevented you from conducting the inspection in this location:

- Location(s) where conditions were found:

Note: *Inspections may be postponed when adverse or unsafe conditions exist such as local flooding, high winds, or electrical storms, or situations that otherwise make inspections unsafe. However, the inspection must resume as soon as conditions are safe.*

Section II. Description of Discharges and Condition of the Discharge Locations (CGP Part 4.3(10)) (see instructions)

Outfall(s)	Observations *(Note: discharges may not occur at every outfall on the site after a storm event. Check all that apply.)*
1. Catch basin (see Figure 3-3 of SWPPP)	Describe the discharge: ○ Stormwater ○ Non-stormwater ○ None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation. Site impervious surfaces outside excavation area drains to the catch basin.	
2.	Describe the discharge: ○ Stormwater ○ Non-stormwater ○ None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	
3.	Describe the discharge: ○ Stormwater ○ Non-stormwater ○ None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	

Section III. Condition and Effectiveness of All On-site Control Measures (Erosion and Sediment (E&S)), Stabilization and Pollution Prevention (P2) Practices (CGP Part 3.3 through 3.5) (see instructions)

Description of Control Measures	Type of Control Measure: ▪ Erosion and Sediment (E&S) ▪ Stabilization ▪ Pollution Prevention (P2)	Additional controls required?	Repairs or other maintenance needed?[1]	Corrective action required?[1, 2] Date of discovery	Specify stabilization method (mulch, rock, planted vegetation, etc.)
1. Straw wattles	◉ E&S ○ Stabilization ○ P2	○ Yes ● No	○ Yes ● No	○ Yes ● No	

Notes (e.g., provide details about needed additional control measures, maintenance performed, etc.)

Pollution prevention and containment controls are inspected, maintained, and replaced as necessary.

Description of Control Measures	Type of Control Measure: ▪ Erosion and Sediment (E&S) ▪ Stabilization ▪ Pollution Prevention (P2)	Additional controls required?	Repairs or other maintenance needed?[1]	Corrective action required?[1, 2] Date of discovery	Specify stabilization method (mulch, rock, planted vegetation, etc.)
2. Plastic Secondary containment	○ E&S ○ Stabilization ◉ P2	○ Yes ● No	○ Yes ● No	○ Yes ● No	

Notes (e.g., provide details about needed additional control measures, maintenance performed, etc.)

Pollution prevention and containment controls are inspected, maintained, and replaced as necessary.

Note 1: The permit differentiates between conditions requiring repairs and maintenance, and those requiring corrective action. The permit requires maintenance in order to keep controls in effective operating condition and requires repairs if controls are not operating as intended. Corrective actions are triggered only for specific, more serious conditions, which include: 1) A necessary stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 3.1 and/or Part 3.2; 2) One of the prohibited discharges in Part 1.4 is occurring or has occurred; or 3) ADEQ or USEPA determines that modifications to the control measures are necessary to meet the requirements of Part 3.

Note 2: If answering "Yes" (i.e., a site condition that meets one or more of the three criteria in Note 1 above requires a corrective action), you must complete a Corrective Action Report. See Part 5 of the permit for more information.

ADEQ Arizona Department of Environmental Quality

Section VI. Certification and Signature (CGP Appendix B. 9.)

Section IV.A. – Certification and Signature by Contractor or Subcontractor performing the inspections (if applicable)

Check one of the following:

- ○ No instances of non-compliance were discovered during this inspection and the project was in full compliance with the SWPPP and permit.
- ○ Inspection follow-up is required, in accordance with Parts 4.5(1) and 4.5(2) of the permit.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Contractor or Subcontractor: * Certification is not required because an NOI is not required Title: Supervisor/SWPPP inspector

Printed name : Robert O'Dell Date: 8/21/20

Business / Agency: Environmental Response Inc. Phone number: 602-757-4400

Section IV.B. – Certification and Signature by Permittee (permittee / operator or a duly authorized representative is required to sign)

Check one of the following:

- ● No instances of non-compliance were discovered during this inspection and the project was in full compliance with the SWPPP and permit.
- ○ Inspection follow-up is required, in accordance with Parts 4.5(1) and 4.5(2) of the permit.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Permittee or "Duly Authorized Representative": * Certification is not required because an NOI is not required Title: Construction Manager

Printed Name: Matt Branche Date: 8/21/20

Business / Agency: Jacobs Engineering on behalf of APS Phone number: 480-273-4084

ADEQ Arizona Department of Environmental Quality

2020 Construction General Permit (CGP) Routine Inspection Report Form

Section I. General Information (see instructions)

Name of Project	APS Prescott Substation Remediation	CGP Authorization No.	AZCN- NA	Inspection Date	8-24-2020

○ **Check box when using this form to inspect an inactive/unstaffed construction site (this option applies to an entire site only).** See Part 4.2(4) of the permit. Inspect the site immediately before becoming inactive/unstaffed and every 6 months thereafter and within 24 hours of each storm event of 0.5 inch or greater in 24 hours.

Inspector Name, Title and Contact Information	**Name:** Robert O'dell **Title:** Supervisor/SWPPP inspector **Contact information:** 602-757-4400
Present Phase of Construction	Site preparation/excavation. A CGP is not required for the Site, the SWPPP is implemented for storm water pollution protection.

Inspection Schedule (all days are calendar days) *(Note: you may be subject to different inspection frequencies in different areas of the site. Check all that apply. * See Part 4.2 for qualifications)*

Routine Schedule: ◉ Within 7 days* ○ Within 14 days* and within 24 hours of a 0.5" storm event

○ Once per month, but not within 14 days of the previous inspection and within 24 hours of a 0.25" storm event

Reduced Schedule: once per month (but not within 14 days of the previous inspection) and before an anticipated storm event and within 24 hours of the end of each storm event of 0.5 inch or greater in 24 hours.

○ Once per month (in stabilized areas)
○ Once per month (where discharges are unlikely based on seasonal rainfall patterns)
○ Once per month (where winter conditions exist and earth-disturbing activities are being conducted)

Outfalls within 1/4 mile of an impaired water or outstanding Arizona water (OAW): ◉ Every 7 days and within 24 hours of a 0.5" storm event

Was this inspection triggered by either a 0.25" or 0.5" storm event? ● Yes ○ No

If yes, duration of storm event: ○ < 1 hour ○ < 6 hrs ● > 6 hrs

If yes, how was the storm event determined (either 0.25" or 0.5")?

◉ Rain gauge on site ○ Weather station representative of site. Specify weather station source: _____

Total rainfall amount that triggered the inspection (in inches): 0.5" over weekend, trace amount during entire weekend

Identify all sources of non-stormwater discharges occurring at the site and the associated control measures in place

sources of non-stormwater discharges:	control measures associated with the non-stormwater discharges:
1. Dust control water, potable water	1. Straw wattles
2.	2.
3.	3.
4.	4.
5.	5.

Adverse or Unsafe Conditions for Inspection

Did you determine that any portion of the site was unsafe for inspection per CGP Part 4.2(6)? ○ Yes ● No

If "yes", complete the following:

- Describe the conditions that prevented you from conducting the inspection in this location:

- Location(s) where conditions were found:

Note: *Inspections may be postponed when adverse or unsafe conditions exist such as local flooding, high winds, or electrical storms, or situations that otherwise make inspections unsafe. However, the inspection must resume as soon as conditions are safe.*

Section II. Description of Discharges and Condition of the Discharge Locations (CGP Part 4.3(10)) (see instructions)

Outfall(s)	Observations *(Note: discharges may not occur at every outfall on the site after a storm event. Check all that apply.)*
1. Catch basin (see Figure 3-3 of SWPPP)	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation. Site impervious surfaces outside excavation area drains to the catch basin.	
2.	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	
3.	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	

Section III. Condition and Effectiveness of All On-site Control Measures (Erosion and Sediment (E&S)), Stabilization and Pollution Prevention (P2) Practices (CGP Part 3.3 through 3.5) (see instructions)

Description of Control Measures	Type of Control Measure: ▪ Erosion and Sediment (E&S) ▪ Stabilization ▪ Pollution Prevention (P2)	Additional controls required?	Repairs or other maintenance needed?[1]	Corrective action required?[1, 2] Date of discovery	Specify stabilization method (mulch, rock, planted vegetation, etc.)
1. Straw wattles	● E&S ○ Stabilization ○ P2	○ Yes ● No	○ Yes ● No	○ Yes ● No	

Notes (e.g., provide details about needed additional control measures, maintenance performed, etc.)

Pollution prevention and containment controls are inspected, maintained, and replaced as necessary.

Description of Control Measures	Type of Control Measure: ▪ Erosion and Sediment (E&S) ▪ Stabilization ▪ Pollution Prevention (P2)	Additional controls required?	Repairs or other maintenance needed?[1]	Corrective action required?[1, 2] Date of discovery	Specify stabilization method (mulch, rock, planted vegetation, etc.)
2. Plastic Secondary containment	○ E&S ○ Stabilization ● P2	○ Yes ● No	○ Yes ● No	○ Yes ● No	

Notes (e.g., provide details about needed additional control measures, maintenance performed, etc.)

Pollution prevention and containment controls are inspected, maintained, and replaced as necessary.

Note 1: The permit differentiates between conditions requiring repairs and maintenance, and those requiring corrective action. The permit requires maintenance in order to keep controls in effective operating condition and requires repairs if controls are not operating as intended. Corrective actions are triggered only for specific, more serious conditions, which include: 1) A necessary stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 3.1 and/or Part 3.2; 2) One of the prohibited discharges in Part 1.4 is occurring or has occurred; or 3) ADEQ or USEPA determines that modifications to the control measures are necessary to meet the requirements of Part 3.

Note 2: If answering "Yes" (i.e., a site condition that meets one or more of the three criteria in Note 1 above requires a corrective action), you must complete a Corrective Action Report. See Part 5 of the permit for more information.

ADEQ Arizona Department of Environmental Quality

Section VI. Certification and Signature (CGP Appendix B. 9.)

Section IV.A. – Certification and Signature by Contractor or Subcontractor performing the inspections (if applicable)

Check one of the following:

- ● No instances of non-compliance were discovered during this inspection and the project was in full compliance with the SWPPP and permit.
- ○ Inspection follow-up is required, in accordance with Parts 4.5(1) and 4.5(2) of the permit.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Contractor or Subcontractor: * Certification is not required because an NOI is not required Title: Supervisor/SWPPP inspector

Printed name : Robert O'Dell Robert O'Dell Date: 8/24/20

Business / Agency: Environmental Response Inc. Phone number: 602-757-4400

Section IV.B. – Certification and Signature by Permittee (permittee / operator or a duly authorized representative is required to sign)

Check one of the following:

- ● No instances of non-compliance were discovered during this inspection and the project was in full compliance with the SWPPP and permit.
- ○ Inspection follow-up is required, in accordance with Parts 4.5(1) and 4.5(2) of the permit.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Permittee or "Duly Authorized Representative": * Certification is not required because an NOI is not required Title: Construction Manager

Printed Name: Matt Branche Date: 8/24/20

Business / Agency: Jacobs Engineering on behalf of APS Phone number: 480-273-4084

ADEQ Arizona Department of Environmental Quality

2020 Construction General Permit (CGP) Routine Inspection Report Form

Section I. General Information (see instructions)

Name of Project	APS Prescott Substation Remediation	**CGP Authorization No.**	**AZCN-** NA	**Inspection Date**	8/28/20

○ **Check box when using this form to inspect an inactive/unstaffed construction site (this option applies to an entire site only).** See Part 4.2(4) of the permit. Inspect the site immediately before becoming inactive/unstaffed and every 6 months thereafter and within 24 hours of each storm event of 0.5 inch or greater in 24 hours.

Inspector Name, Title and Contact Information	**Name:** Robert O'dell **Title:** Supervisor/SWPPP inspector **Contact information:** 602-757-4400
Present Phase of Construction	Site preparation/excavation. A CGP is not required for the Site, the SWPPP is implemented for storm water pollution protection.

Inspection Schedule (all days are calendar days) *(Note: you may be subject to different inspection frequencies in different areas of the site. Check all that apply. * See Part 4.2 for qualifications)*

Routine Schedule: ◉ Within 7 days* ○ Within 14 days* and within 24 hours of a 0.5" storm event

○ Once per month, but not within 14 days of the previous inspection and within 24 hours of a 0.25" storm event

Reduced Schedule: once per month (but not within 14 days of the previous inspection) and before an anticipated storm event and within 24 hours of the end of each storm event of 0.5 inch or greater in 24 hours.

○ Once per month (in stabilized areas)
○ Once per month (where discharges are unlikely based on seasonal rainfall patterns)
○ Once per month (where winter conditions exist and earth-disturbing activities are being conducted)

Outfalls within 1/4 mile of an impaired water or outstanding Arizona water (OAW): ◉ Every 7 days and within 24 hours of a 0.5" storm event

Was this inspection triggered by either a 0.25" or 0.5" storm event? ○ Yes ○ No

If yes, duration of storm event: ○ < 1 hour ○ < 6 hrs ○ > 6 hrs

If yes, how was the storm event determined (either 0.25" or 0.5")?

◉ Rain gauge on site ○ Weather station representative of site. Specify weather station source: _____

Total rainfall amount that triggered the inspection (in inches): _____

Identify all sources of non-stormwater discharges occurring at the site and the associated control measures in place

sources of non-stormwater discharges:	control measures associated with the non-stormwater discharges:
1. Dust control water, potable water	1. Straw wattles
2.	2.
3.	3.
4.	4.
5.	5.

Adverse or Unsafe Conditions for Inspection

Did you determine that any portion of the site was unsafe for inspection per CGP Part 4.2(6)? ○ Yes ● No

If "yes", complete the following:

- Describe the conditions that prevented you from conducting the inspection in this location:

- Location(s) where conditions were found:

Note: *Inspections may be postponed when adverse or unsafe conditions exist such as local flooding, high winds, or electrical storms, or situations that otherwise make inspections unsafe. However, the inspection must resume as soon as conditions are safe.*

Section II. Description of Discharges and Condition of the Discharge Locations (CGP Part 4.3(10)) (see instructions)

Outfall(s)	Observations *(Note: discharges may not occur at every outfall on the site after a storm event. Check all that apply.)*
1. Catch basin (see Figure 3-3 of SWPPP)	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation. Site impervious surfaces outside excavation area drains to the catch basin.	
2.	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	
3.	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	

Section III. Condition and Effectiveness of All On-site Control Measures (Erosion and Sediment (E&S)), Stabilization and Pollution Prevention (P2) Practices (CGP Part 3.3 through 3.5) (see instructions)

Description of Control Measures	Type of Control Measure: ▪ Erosion and Sediment (E&S) ▪ Stabilization ▪ Pollution Prevention (P2)	Additional controls required?	Repairs or other maintenance needed?[1]	Corrective action required?[1, 2] Date of discovery	Specify stabilization method (mulch, rock, planted vegetation, etc.)
1. Straw wattles	● E&S ○ Stabilization ○ P2	○ Yes ● No	○ Yes ● No	○ Yes ● No	

Notes (e.g., provide details about needed additional control measures, maintenance performed, etc.)

Pollution prevention and containment controls are inspected, maintained, and replaced as necessary.

Description of Control Measures	Type of Control Measure: ▪ Erosion and Sediment (E&S) ▪ Stabilization ▪ Pollution Prevention (P2)	Additional controls required?	Repairs or other maintenance needed?[1]	Corrective action required?[1, 2] Date of discovery	Specify stabilization method (mulch, rock, planted vegetation, etc.)
2. Plastic Secondary containment	○ E&S ○ Stabilization ● P2	○ Yes ● No	○ Yes ● No	○ Yes ● No	

Notes (e.g., provide details about needed additional control measures, maintenance performed, etc.)

Pollution prevention and containment controls are inspected, maintained, and replaced as necessary.

Note 1: The permit differentiates between conditions requiring repairs and maintenance, and those requiring corrective action. The permit requires maintenance in order to keep controls in effective operating condition and requires repairs if controls are not operating as intended. Corrective actions are triggered only for specific, more serious conditions, which include: 1) A necessary stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 3.1 and/or Part 3.2; 2) One of the prohibited discharges in Part 1.4 is occurring or has occurred; or 3) ADEQ or USEPA determines that modifications to the control measures are necessary to meet the requirements of Part 3.

Note 2: If answering "Yes" (i.e., a site condition that meets one or more of the three criteria in Note 1 above requires a corrective action), you must complete a Corrective Action Report. See Part 5 of the permit for more information.

ADEQ Arizona Department of Environmental Quality

Section VI. Certification and Signature (CGP Appendix B. 9.)

Section IV.A. – Certification and Signature by Contractor or Subcontractor performing the inspections (if applicable)

Check one of the following:

- ● No instances of non-compliance were discovered during this inspection and the project was in full compliance with the SWPPP and permit.
- ○ Inspection follow-up is required, in accordance with Parts 4.5(1) and 4.5(2) of the permit.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Contractor or Subcontractor: * Certification is not required because an NOI is not required Title: Supervisor/SWPPP inspector

Printed name : Robert O'Dell Date: 8/28/20

Business / Agency: Environmental Response Inc. Phone number: 602-757-4400

Section IV.B. – Certification and Signature by Permittee (permittee / operator or a duly authorized representative is required to sign)

Check one of the following:

- ● No instances of non-compliance were discovered during this inspection and the project was in full compliance with the SWPPP and permit.
- ○ Inspection follow-up is required, in accordance with Parts 4.5(1) and 4.5(2) of the permit.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Permittee or "Duly Authorized Representative": * Certification is not required because an NOI is not required Title: Construction Manager

Printed Name: Matt Branche Date: 8/28/20

Business / Agency: Jacobs Engineering on behalf of APS Phone number: 480-273-4084

ADEQ Arizona Department of Environmental Quality

2020 Construction General Permit (CGP) Routine Inspection Report Form

Section I. General Information (see instructions)

Name of Project	APS Prescott Substation Remediation	**CGP Authorization No.**	**AZCN-** NA	**Inspection Date**	9/4/20

○ **Check box when using this form to inspect an inactive/unstaffed construction site (this option applies to an entire site only).** See Part 4.2(4) of the permit. Inspect the site immediately before becoming inactive/unstaffed and every 6 months thereafter and within 24 hours of each storm event of 0.5 inch or greater in 24 hours.

Inspector Name, Title and Contact Information	**Name:** Robert O'dell **Title:** Supervisor/SWPPP inspector **Contact information:** 602-757-4400
Present Phase of Construction	Site preparation/excavation. A CGP is not required for the Site, the SWPPP is implemented for storm water pollution protection.

Inspection Schedule (all days are calendar days) *(Note: you may be subject to different inspection frequencies in different areas of the site. Check all that apply. * See Part 4.2 for qualifications)*

Routine Schedule: ◉ Within 7 days* ○ Within 14 days* and within 24 hours of a 0.5" storm event

○ Once per month, but not within 14 days of the previous inspection and within 24 hours of a 0.25" storm event

Reduced Schedule: once per month (but not within 14 days of the previous inspection) and before an anticipated storm event and within 24 hours of the end of each storm event of 0.5 inch or greater in 24 hours.

○ Once per month (in stabilized areas)
○ Once per month (where discharges are unlikely based on seasonal rainfall patterns)
○ Once per month (where winter conditions exist and earth-disturbing activities are being conducted)

Outfalls within 1/4 mile of an impaired water or outstanding Arizona water (OAW): ◉ Every 7 days and within 24 hours of a 0.5" storm event

Was this inspection triggered by either a 0.25" or 0.5" storm event? ○ Yes ○ No

If yes, duration of storm event: ○ < 1 hour ○ < 6 hrs ○ > 6 hrs

If yes, how was the storm event determined (either 0.25" or 0.5")?

◉ Rain gauge on site ○ Weather station representative of site. Specify weather station source: _____

Total rainfall amount that triggered the inspection (in inches): _____

Identify all sources of non-stormwater discharges occurring at the site and the associated control measures in place

sources of non-stormwater discharges:	control measures associated with the non-stormwater discharges:
1. Dust control water, potable water	1. Straw wattles
2.	2.
3.	3.
4.	4.
5.	5.

Adverse or Unsafe Conditions for Inspection

Did you determine that any portion of the site was unsafe for inspection per CGP Part 4.2(6)? ○ Yes ● No

If "yes", complete the following:

- Describe the conditions that prevented you from conducting the inspection in this location:

- Location(s) where conditions were found:

Note: *Inspections may be postponed when adverse or unsafe conditions exist such as local flooding, high winds, or electrical storms, or situations that otherwise make inspections unsafe. However, the inspection must resume as soon as conditions are safe.*

Section II. Description of Discharges and Condition of the Discharge Locations (CGP Part 4.3(10)) (see instructions)

Outfall(s)	Observations *(Note: discharges may not occur at every outfall on the site after a storm event. Check all that apply.)*
1. Catch basin (see Figure 3-3 of SWPPP)	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation. Site impervious surfaces outside excavation area drains to the catch basin.	
2.	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	
3.	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	

Section III. Condition and Effectiveness of All On-site Control Measures (Erosion and Sediment (E&S)), Stabilization and Pollution Prevention (P2) Practices (CGP Part 3.3 through 3.5) (see instructions)

Description of Control Measures	Type of Control Measure: ▪ Erosion and Sediment (E&S) ▪ Stabilization ▪ Pollution Prevention (P2)	Additional controls required?	Repairs or other maintenance needed?[1]	Corrective action required?[1, 2] Date of discovery	Specify stabilization method (mulch, rock, planted vegetation, etc.)
1. Straw wattles	◉ E&S ○ Stabilization ○ P2	○ Yes ● No	○ Yes ● No	○ Yes ● No	

Notes (e.g., provide details about needed additional control measures, maintenance performed, etc.)

Pollution prevention and containment controls are inspected, maintained, and replaced as necessary.

Description of Control Measures	Type of Control Measure: ▪ Erosion and Sediment (E&S) ▪ Stabilization ▪ Pollution Prevention (P2)	Additional controls required?	Repairs or other maintenance needed?[1]	Corrective action required?[1, 2] Date of discovery	Specify stabilization method (mulch, rock, planted vegetation, etc.)
2. Plastic Secondary containment	○ E&S ○ Stabilization ◉ P2	○ Yes ● No	○ Yes ● No	○ Yes ● No	

Notes (e.g., provide details about needed additional control measures, maintenance performed, etc.)

Pollution prevention and containment controls are inspected, maintained, and replaced as necessary.

Note 1: The permit differentiates between conditions requiring repairs and maintenance, and those requiring corrective action. The permit requires maintenance in order to keep controls in effective operating condition and requires repairs if controls are not operating as intended. Corrective actions are triggered only for specific, more serious conditions, which include: 1) A necessary stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 3.1 and/or Part 3.2; 2) One of the prohibited discharges in Part 1.4 is occurring or has occurred; or 3) ADEQ or USEPA determines that modifications to the control measures are necessary to meet the requirements of Part 3.

Note 2: If answering "Yes" (i.e., a site condition that meets one or more of the three criteria in Note 1 above requires a corrective action), you must complete a Corrective Action Report. See Part 5 of the permit for more information.

ADEQ Arizona Department of Environmental Quality

Section VI. Certification and Signature (CGP Appendix B. 9.)

Section IV.A. – Certification and Signature by Contractor or Subcontractor performing the inspections (if applicable)

Check one of the following:

- ● No instances of non-compliance were discovered during this inspection and the project was in full compliance with the SWPPP and permit.
- ○ Inspection follow-up is required, in accordance with Parts 4.5(1) and 4.5(2) of the permit.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Contractor or Subcontractor: * Certification is not required because an NOI is not required Title: Supervisor/SWPPP inspector

Printed name : Robert O'Dell Date: 9/4/20

Business / Agency: Environmental Response Inc. Phone number: 602-757-4400

Section IV.B. – Certification and Signature by Permittee (permittee / operator or a duly authorized representative is required to sign)

Check one of the following:

- ● No instances of non-compliance were discovered during this inspection and the project was in full compliance with the SWPPP and permit.
- ○ Inspection follow-up is required, in accordance with Parts 4.5(1) and 4.5(2) of the permit.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Permittee or "Duly Authorized Representative": * Certification is not required because an NOI is not required Title: Construction Manager

Printed Name: Matt Branche Date: 9/4/20

Business / Agency: Jacobs Engineering on behalf of APS Phone number: 480-273-4084

ADEQ Arizona Department of Environmental Quality

2020 Construction General Permit (CGP) Routine Inspection Report Form

Section I. General Information (see instructions)

Name of Project	APS Prescott Substation Remediation	**CGP Authorization No.**	**AZCN-** NA	**Inspection Date**	9/11/20

○ **Check box when using this form to inspect an inactive/unstaffed construction site (this option applies to an entire site only).** See Part 4.2(4) of the permit. Inspect the site immediately before becoming inactive/unstaffed and every 6 months thereafter and within 24 hours of each storm event of 0.5 inch or greater in 24 hours.

Inspector Name, Title and Contact Information	**Name:** Robert O'dell **Title:** Supervisor/SWPPP inspector **Contact information:** 602-757-4400
Present Phase of Construction	Site preparation/excavation. A CGP is not required for the Site, the SWPPP is implemented for storm water pollution protection.

Inspection Schedule (all days are calendar days) *(Note: you may be subject to different inspection frequencies in different areas of the site. Check all that apply. * See Part 4.2 for qualifications)*

Routine Schedule: ◉ Within 7 days* ○ Within 14 days* and within 24 hours of a 0.5" storm event

○ Once per month, but not within 14 days of the previous inspection and within 24 hours of a 0.25" storm event

Reduced Schedule: once per month (but not within 14 days of the previous inspection) and before an anticipated storm event and within 24 hours of the end of each storm event of 0.5 inch or greater in 24 hours.

○ Once per month (in stabilized areas)
○ Once per month (where discharges are unlikely based on seasonal rainfall patterns)
○ Once per month (where winter conditions exist and earth-disturbing activities are being conducted)

Outfalls within 1/4 mile of an impaired water or outstanding Arizona water (OAW): ◉ Every 7 days and within 24 hours of a 0.5" storm event

Was this inspection triggered by either a 0.25" or 0.5" storm event? ○ Yes ○ No

If yes, duration of storm event: ○ < 1 hour ○ < 6 hrs ○ > 6 hrs

If yes, how was the storm event determined (either 0.25" or 0.5")?

◉ Rain gauge on site ○ Weather station representative of site. Specify weather station source: _____

Total rainfall amount that triggered the inspection (in inches): _____

Identify all sources of non-stormwater discharges occurring at the site and the associated control measures in place

sources of non-stormwater discharges:	control measures associated with the non-stormwater discharges:
1. Dust control water, potable water	1. Straw wattles
2.	2.
3.	3.
4.	4.
5.	5.

Adverse or Unsafe Conditions for Inspection

Did you determine that any portion of the site was unsafe for inspection per CGP Part 4.2(6)? ○ Yes ● No

If "yes", complete the following:

- Describe the conditions that prevented you from conducting the inspection in this location:

- Location(s) where conditions were found:

Note: *Inspections may be postponed when adverse or unsafe conditions exist such as local flooding, high winds, or electrical storms, or situations that otherwise make inspections unsafe. However, the inspection must resume as soon as conditions are safe.*

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1. Catch basin (see Figure 3-3 of SWPPP)	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation. Site impervious surfaces outside excavation area drains to the catch basin.	
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If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	
3.	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
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Section III. Condition and Effectiveness of All On-site Control Measures (Erosion and Sediment (E&S)), Stabilization and Pollution Prevention (P2) Practices (CGP Part 3.3 through 3.5) (see instructions)

Description of Control Measures	Type of Control Measure: ▪ Erosion and Sediment (E&S) ▪ Stabilization ▪ Pollution Prevention (P2)	Additional controls required?	Repairs or other maintenance needed?[1]	Corrective action required?[1, 2] Date of discovery	Specify stabilization method (mulch, rock, planted vegetation, etc.)
1. Straw wattles	◉ E&S ○ Stabilization ○ P2	○ Yes ○ No	○ Yes ○ No	○ Yes ○ No	

Notes (e.g., provide details about needed additional control measures, maintenance performed, etc.)

Pollution prevention and containment controls are inspected, maintained, and replaced as necessary.

Description of Control Measures	Type of Control Measure: ▪ Erosion and Sediment (E&S) ▪ Stabilization ▪ Pollution Prevention (P2)	Additional controls required?	Repairs or other maintenance needed?[1]	Corrective action required?[1, 2] Date of discovery	Specify stabilization method (mulch, rock, planted vegetation, etc.)
2. Plastic Secondary containment	○ E&S ○ Stabilization ◉ P2	○ Yes ○ No	○ Yes ○ No	○ Yes ○ No	

Notes (e.g., provide details about needed additional control measures, maintenance performed, etc.)

Pollution prevention and containment controls are inspected, maintained, and replaced as necessary.

Note 1: The permit differentiates between conditions requiring repairs and maintenance, and those requiring corrective action. The permit requires maintenance in order to keep controls in effective operating condition and requires repairs if controls are not operating as intended. Corrective actions are triggered only for specific, more serious conditions, which include: 1) A necessary stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 3.1 and/or Part 3.2; 2) One of the prohibited discharges in Part 1.4 is occurring or has occurred; or 3) ADEQ or USEPA determines that modifications to the control measures are necessary to meet the requirements of Part 3.

Note 2: If answering "Yes" (i.e., a site condition that meets one or more of the three criteria in Note 1 above requires a corrective action), you must complete a Corrective Action Report. See Part 5 of the permit for more information.

ADEQ Arizona Department of Environmental Quality

Section VI. Certification and Signature (CGP Appendix B. 9.)

Section IV.A. – Certification and Signature by Contractor or Subcontractor performing the inspections (if applicable)

Check one of the following:

- ● No instances of non-compliance were discovered during this inspection and the project was in full compliance with the SWPPP and permit.
- ○ Inspection follow-up is required, in accordance with Parts 4.5(1) and 4.5(2) of the permit.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Contractor or Subcontractor: * Certification is not required because an NOI is not required Title: Supervisor/SWPPP inspector

Printed name : Robert O'Dell Date: 9/11/20

Business / Agency: Environmental Response Inc. Phone number: 602-757-4400

Section IV.B. – Certification and Signature by Permittee (permittee / operator or a duly authorized representative is required to sign)

Check one of the following:

- ● No instances of non-compliance were discovered during this inspection and the project was in full compliance with the SWPPP and permit.
- ○ Inspection follow-up is required, in accordance with Parts 4.5(1) and 4.5(2) of the permit.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Permittee or "Duly Authorized Representative": * Certification is not required because an NOI is not required Title: Construction Manager

Printed Name: Matt Branche Date: 9/11/20

Business / Agency: Jacobs Engineering on behalf of APS Phone number: 480-273-4084

ADEQ Arizona Department of Environmental Quality

2020 Construction General Permit (CGP) Routine Inspection Report Form

Section I. General Information (see instructions)

Name of Project	APS Prescott Substation Remediation	**CGP Authorization No.**	**AZCN-** NA	**Inspection Date**	9/18/20

○ **Check box when using this form to inspect an inactive/unstaffed construction site (this option applies to an entire site only).** See Part 4.2(4) of the permit. Inspect the site immediately before becoming inactive/unstaffed and every 6 months thereafter and within 24 hours of each storm event of 0.5 inch or greater in 24 hours.

Inspector Name, Title and Contact Information	**Name:** Robert O'dell **Title:** Supervisor/SWPPP inspector **Contact information:** 602-757-4400
Present Phase of Construction	Site preparation/excavation. A CGP is not required for the Site, the SWPPP is implemented for storm water pollution protection.

Inspection Schedule (all days are calendar days) *(Note: you may be subject to different inspection frequencies in different areas of the site. Check all that apply. * See Part 4.2 for qualifications)*

Routine Schedule: ◉ Within 7 days* ○ Within 14 days* and within 24 hours of a 0.5" storm event

○ Once per month, but not within 14 days of the previous inspection and within 24 hours of a 0.25" storm event

Reduced Schedule: once per month (but not within 14 days of the previous inspection) and before an anticipated storm event and within 24 hours of the end of each storm event of 0.5 inch or greater in 24 hours.

○ Once per month (in stabilized areas)
○ Once per month (where discharges are unlikely based on seasonal rainfall patterns)
○ Once per month (where winter conditions exist and earth-disturbing activities are being conducted)

Outfalls within 1/4 mile of an impaired water or outstanding Arizona water (OAW): ◉ Every 7 days and within 24 hours of a 0.5" storm event

Was this inspection triggered by either a 0.25" or 0.5" storm event? ○ Yes ● No

If yes, duration of storm event: ○ < 1 hour ○ < 6 hrs ○ > 6 hrs

If yes, how was the storm event determined (either 0.25" or 0.5")?

◉ Rain gauge on site ○ Weather station representative of site. Specify weather station source: _____

Total rainfall amount that triggered the inspection (in inches): _____

Identify all sources of non-stormwater discharges occurring at the site and the associated control measures in place

sources of non-stormwater discharges:	control measures associated with the non-stormwater discharges:
1. Dust control water, potable water	1. Straw wattles
2.	2.
3.	3.
4.	4.
5.	5.

Adverse or Unsafe Conditions for Inspection

Did you determine that any portion of the site was unsafe for inspection per CGP Part 4.2(6)? ○ Yes ● No

If "yes", complete the following:

- Describe the conditions that prevented you from conducting the inspection in this location:

- Location(s) where conditions were found:

Note: *Inspections may be postponed when adverse or unsafe conditions exist such as local flooding, high winds, or electrical storms, or situations that otherwise make inspections unsafe. However, the inspection must resume as soon as conditions are safe.*

Section II. Description of Discharges and Condition of the Discharge Locations (CGP Part 4.3(10)) (see instructions)

Outfall(s)	Observations *(Note: discharges may not occur at every outfall on the site after a storm event. Check all that apply.)*
1. Catch basin (see Figure 3-3 of SWPPP)	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation. Site impervious surfaces outside excavation area drains to the catch basin.	
2.	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	
3.	Describe the discharge: ○ Stormwater ○ Non-stormwater ● None Since the last inspection, do you see any evidence of erosion, sediment accumulation and/ or other pollutants that can be attributed to your discharge? ○ Yes ○ No
If yes, describe the characteristics of the discharge (color, odor, clarity, etc.) specify the location(s) of these conditions, and indicate whether modification, maintenance, or corrective action is needed to correct the problem. Also, describe any visible signs of erosion or sediment accumulation.	

Section III. Condition and Effectiveness of All On-site Control Measures (Erosion and Sediment (E&S)), Stabilization and Pollution Prevention (P2) Practices (CGP Part 3.3 through 3.5) (see instructions)

Description of Control Measures	Type of Control Measure: ▪ Erosion and Sediment (E&S) ▪ Stabilization ▪ Pollution Prevention (P2)	Additional controls required?	Repairs or other maintenance needed?[1]	Corrective action required?[1, 2] Date of discovery	Specify stabilization method (mulch, rock, planted vegetation, etc.)
1. Straw wattles	● E&S ○ Stabilization ○ P2	○ Yes ● No	○ Yes ● No	○ Yes ● No	

Notes (e.g., provide details about needed additional control measures, maintenance performed, etc.)

Pollution prevention and containment controls are inspected, maintained, and replaced as necessary.

Description of Control Measures	Type of Control Measure: ▪ Erosion and Sediment (E&S) ▪ Stabilization ▪ Pollution Prevention (P2)	Additional controls required?	Repairs or other maintenance needed?[1]	Corrective action required?[1, 2] Date of discovery	Specify stabilization method (mulch, rock, planted vegetation, etc.)
2. Plastic Secondary containment	○ E&S ○ Stabilization ● P2	○ Yes ● No	○ Yes ● No	○ Yes ● No	

Notes (e.g., provide details about needed additional control measures, maintenance performed, etc.)

Pollution prevention and containment controls are inspected, maintained, and replaced as necessary.

Note 1: The permit differentiates between conditions requiring repairs and maintenance, and those requiring corrective action. The permit requires maintenance in order to keep controls in effective operating condition and requires repairs if controls are not operating as intended. Corrective actions are triggered only for specific, more serious conditions, which include: 1) A necessary stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 3.1 and/or Part 3.2; 2) One of the prohibited discharges in Part 1.4 is occurring or has occurred; or 3) ADEQ or USEPA determines that modifications to the control measures are necessary to meet the requirements of Part 3.

Note 2: If answering "Yes" (i.e., a site condition that meets one or more of the three criteria in Note 1 above requires a corrective action), you must complete a Corrective Action Report. See Part 5 of the permit for more information.

ADEQ Arizona Department of Environmental Quality

Section VI. Certification and Signature (CGP Appendix B. 9.)

Section IV.A. – Certification and Signature by Contractor or Subcontractor performing the inspections (if applicable)

Check one of the following:

- ○ No instances of non-compliance were discovered during this inspection and the project was in full compliance with the SWPPP and permit.
- ○ Inspection follow-up is required, in accordance with Parts 4.5(1) and 4.5(2) of the permit.

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Signature of Contractor or Subcontractor: * Certification is not required because an NOI is not required Title: Supervisor/SWPPP inspector

Printed name : Robert O'Dell Date: 9/18/20

Business / Agency: Environmental Response Inc. Phone number: 602-757-4400

Section IV.B. – Certification and Signature by Permittee (permittee / operator or a duly authorized representative is required to sign)

Check one of the following:

- ● No instances of non-compliance were discovered during this inspection and the project was in full compliance with the SWPPP and permit.
- ○ Inspection follow-up is required, in accordance with Parts 4.5(1) and 4.5(2) of the permit.

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Signature of Permittee or "Duly Authorized Representative": * Certification is not required because an NOI is not required Title: Construction Manager

Printed Name: Matt Branche Date: 9/18/20

Business / Agency: Jacobs Engineering on behalf of APS Phone number: 480-273-4084

Closed Construction Permit on file with the City of Prescott

Appendix E
Public Notice and Community Outreach

June 29, 2020

Dear Neighbor,

We hope you are well and staying healthy. APS recently shut down a former facility located at 300 N. Granite Street in downtown Prescott. A new facility was energized so that we could remove the former facility to complete the last phase of an environmental clean-up project.

The site is part of a property once home to a manufactured gas plant (MGP), which operated from Arizona's territorial days to 1949. We conducted an extensive cleanup of all accessible MGP materials in 2001 as part of the Arizona Department of Environmental Quality Voluntary Remediation Program (VRP). We're now able to remove remaining MGP materials not previously accessible. Our same attention to detail and sensitivity to community needs will be central to completing this final phase of remediation.

Work is expected to begin this month and be completed within 2–3 months. Remediation involves excavating and removing impacted soil and replacing it with clean fill dirt. Our goal is to achieve residential soil remediation levels, the highest clean up standard, as the land will be transferred to Prescott College for future use.

Our commitment to the health and safety of our customers, employees, contractors and communities is unwavering. We are working collaboratively with the City of Prescott and other groups to complete this remediation. The work will be conducted to meet VRP requirements and align with APS policies and protocols related to COVID-19. More information and updates will be coming your way as work progresses.

If you have any questions, please don't hesitate to contact our Principal Environmental Scientist Judy Heywood for this project.

APS
Attention: Judy Heywood, Environmental Department
P.O. Box 53999, MS 9303
Phoenix, AZ 85004
E: judith.heywood@aps.com
P: (602) 818-0259

29 de junio, 2020

Querido(a) Vecino(a),

Esperamos que se encuentre bien y con plena salud. APS cerró recientemente una antigua instalación ubicada en 300 N. Granite Street en el centro de Prescott. Se ha activado una nueva instalación para poder retirar la antigua instalación y completar la última fase de un proyecto de limpieza ambiental.

El sitio es parte de una propiedad que una vez fue el hogar de una planta de gas manufacturado (MGP por sus siglas en inglés), que operó desde los días territoriales de Arizona hasta 1949. Realizamos una amplia limpieza de todos los materiales MGP accesibles en 2001 como parte del Programa de Descontaminación Voluntaria de Calidad Ambiental del Departamento de Arizona (VRP por sus siglas en inglés). Ahora podemos eliminar los materiales MGP restantes a los que no se había tenido acceso anteriormente. Nuestra atención al detalle y consideración a las necesidades de la comunidad será fundamental para completar esta fase final de descontaminación.

Se espera que los trabajos comiencen este mes y se completen dentro de 2 a 3 meses. La descontaminación consiste en excavar y eliminar el suelo impactado y reemplazarlo con tierra limpia para relleno. Nuestro objetivo es lograr niveles de descontaminación de suelos residenciales, con el estándar de limpieza más alto, ya que la tierra será transferida a Prescott College para uso futuro.

Nuestro compromiso con la salud y la seguridad de nuestros clientes, empleados, contratistas y comunidades es inquebrantable. Estamos trabajando en colaboración con la Ciudad de Prescott y otros grupos para completar esta descontaminación. El trabajo se llevará a cabo para cumplir con los requisitos de VRP y alinearse con las pólizas y protocolos de APS relacionados con COVID-19. Más información y actualizaciones serán proporcionadas a medida que avance el trabajo.

Si tiene alguna pregunta, no dude en ponerse en contacto con nuestra Científica Ambiental Judy Heywood para este proyecto.

APS
Atención: Judy Heywood, Environmental Department
P.O. Box 53999, MS 9303
Phoenix, AZ 85004
E: judith.heywood@aps.com
P: (602) 818-0259

Appendix F
Hutzel ACM, LCM, Hazardous Materials, and Chemical Container Reports

March 26, 2020

APS Corporate Safety
400 North 5th Street
Mail Station 9306
Phoenix, Arizona 85004
Attn: Katherine Merems

Project #20-12557: Limited Non-Destructive Asbestos Containing Material (ACM), Lead Containing Paint (LCP), Polychlorinated Biphenyls (PCBs) and Soil Sampling Survey, APS Prescott City Substation, 300 North Granite Street, Prescott, Arizona 86301; PO #700677332

Dear Katherine:

Hutzel & Associates, Inc. conducted a limited non-destructive asbestos containing material (ACM), lead containing paint (LCP), polychlorinated biphenyls (PCB) and soil sampling survey at the Arizona Public Service (APS) Prescott City Substation located at 300 North Granite Street, Prescott, Arizona 86301. The survey was conducted on February 21 and 27, 2020 by Augustine Anderson, EPA AHERA Certified Building Inspector (Certification #4608-991-013120, Expires 01/31/2021), and Ron Gilbert, EPA AHERA Certified Building Inspector (Certification #H1328, Expires 10/30/2020) Industrial Hygiene Consultants, under the direction of Robert L. Hutzel, CIH, CSP, Hutzel & Associates, Inc. The purpose of the inspection was to identify ACMs, LCPs, PCBs and soil sampling demolition activities in accordance with the Occupational Safety and Health Administration (OSHA) and the United States Environmental Protection Agency (US EPA) National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements. The following summarizes our findings.

Executive Summary

Hutzel & Associates collected bulk samples at the APS Prescott City Substation located at 300 North Granite Street, Prescott, Arizona 86301. Laboratory sample analysis results indicate that **asbestos** was detected in four (4) building materials (two ACM and two <1% chrysotile asbestos) and lead was detected in six (6) paint samples collected on February 21 and 27, 2020. The inspection was conducted prior to any demolition activities in accordance with the OSHA and the Yavapai County NESHAP requirements. All PCB and soil sample analysis results are to be interpreted by APS, as requested.

1626 E. ALICIA DRIVE • PHOENIX, AZ 85042 • (602) 323-0222
www.hutzel.net

Background

APS requested that Hutzel & Associates perform a limited non-destructive ACM inspection prior to demolition activities that would impact building materials. This inspection was non-destructive due to the building still being in use. Bulk samples of electrical wiring system located in the APS Prescott City Substation transformers, distribution breakers and control house building were not collected during the Hutzel & Associates asbestos inspection; it will be sampled prior to demolition. The purpose of the survey was to identify ACMs, LCPs, PCBs and soil sampling prior to demolition activities in accordance with the Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency's (EPA) National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements and stained concrete and caulk samples was analyzed for PCBs utilizing EPA method 8082 and to collect a composite soil samples for Volatile Organic Compounds (VOCs), Resource Conservation and Recovery Act (RCRA) Metals, Polychlorinated Biphenyls (PCBs), and Semi Volatile Compounds/Polycyclic Aromatic Hydrocarbons (PAHs) analysis.

Asbestos Sampling

One hundred-two (102) bulk samples of suspect building materials were collected from the APS Prescott City Substation and delivered to Fiberquant Analytical Services, Inc. in Phoenix, AZ. Fiberquant, Inc. is fully accredited by the National Institute of Standards and Technology's (NIST) National Voluntary Laboratory Accreditation Program (NVLAP #101031) to perform the analysis of bulk samples for asbestos using Polarized Light Microscopy (PLM).

Analysis Result Interpretations

Laboratory sample analysis results indicate that several building materials listed below met the definition of Asbestos Containing Material (ACM) as defined by the Occupational Safety & Health Administration (OSHA) and the United States Environmental Protection Agency's (USEPA) National Emission Standards for Hazardous Air Pollutants (NESHAP) asbestos regulations. An ACM is defined as any building material that contains asbestos (chrysotile, amosite, crocidolite, tremolite, actinolite, or anthophyllite) in the amount of greater than one percent (>1%). The Arizona Department of Occupational Safety & Health (ADOSH) enforces the OSHA asbestos regulations and the Arizona Department of Environmental Quality (ADEQ) enforces the NESHAP asbestos regulations outside of Maricopa, Pima and Pinal Counties. In addition, analysis results also indicate that two (2) building materials contain asbestos in an amount of less than or equal to one percent ($\leq$ 1%), which ADOSH regulates in a limited manner.

Asbestos Sampling Results (<=1% Chrysotile Asbestos)

Caulk /Door with Window <=1%Chrysotile Asbestos

- Approximately 5 ft^2
- OSHA Limited Regulations
- Control House Building

Drywall System/ Texture / Joint Compound <=1%Chrysotile Asbestos

- Approximately 480 ft^2
- OSHA Limited Regulations
- Control House Building

Applicability Of Asbestos Regulations On Non-ACMs That Contain Asbestos (<=1%)

OSHA enforces a set of limited requirements when working with materials that contain asbestos in the amount of less than or equal to one percent (<=1%) asbestos. Materials discovered during this survey that contain asbestos in this amount were the **caulk on the doors with windows and the drywall system located in the control house building**. The OSHA requirements for these materials during disturbance are discussed below.

The OSHA regulations that apply are 29 CFR 1926.1101 (g)(1)(ii), (iii), (g)(3), and 29 CFR 1926.1101 (n) as it relates to a negative exposure assessment.

- 29 CFR 1926.1101 (g)(1)(ii) requires: "Wet methods, or wetting agents, to control employee exposures during asbestos handling, mixing, removal, cutting, application, and cleanup, except where employers demonstrate that the use of wet methods is infeasible due to for example, the creation of electrical hazards, equipment malfunctions, and, in roofing, except as provided in paragraph (g)(8)(ii) of this section."

- 29 CFR 1926.1101 (g)(1)(iii) requires: "Prompt clean-up and disposal of wastes and debris contaminated with asbestos in leak-tight containers except in roofing operations, where the procedures specified in paragraph (g)(8)(ii) of this section apply."

- 29 CFR 1926.1101 (g)(3) Prohibitions: "The following work practices and engineering controls shall not be used for work related to asbestos or for work which disturbs ACM or PACM, regardless of measured levels of asbestos exposure or the results of initial exposure assessments."

- 29 CFR 1926.1101 (n): Recordkeeping: Records must be kept and made available regarding the production of a negative exposure assessment when working with these materials, either by objective data or exposure measurements.

The **EPA NESHAP** does not have applicable regulations on Non-ACM building materials that contain <=1% asbestos.

Asbestos Sampling Results (>1% Asbestos)

The following are approximate amounts of the identified Asbestos Containing Material (ACM) discovered by Hutzel & Associates on February 27, 2020:

Caulk - Contains 5-10% Chrysotile Asbestos

- Located on the exterior window frame to the control house building.
- NESHAP Category II Non-Friable Material
- OSHA Class II
- Approximately 8 ft^2

Caulk - Contains 2-5% Chrysotile Asbestos

- Located between building panels of the control house building.
- NESHAP Category II Non-Friable Material
- OSHA Class II
- Approximately 8 ft^2

Hutzel & Associates recommends abatement of the identified ACM prior to demolition activities. Asbestos abatement should be conducted by a certified abatement contractor. The ACM window frame caulking and ACM caulk between the building panel are considered Category II non-friable materials by NESHAP. The EPA's NESHAP does not regulate CAT II non-friable ACMs, unless more than 160 square feet is scheduled to be disturbed using mechanical means during the renovation project. A NESHAP notification would be required ten (10) business days prior to abatement activities in this case.

If suspect building materials that were not sampled during this inspection are discovered in concealed or inaccessible areas during demolition activities, stop all activities and have the materials sampled by an EPA Certified Building Inspector and analyzed for asbestos content by a NVLAP accredited laboratory OR assume these materials to be asbestos containing materials (ACM).

Assumed ACM Results

Assumed ACMs were cataloged of building materials that were inaccessible during the survey. All assumed ACMs should be treated as ACM and abated prior to demolition or, when accessible, have the areas sampled by Hutzel & Associates and have the samples analyzed for asbestos content by a NVLAP accredited laboratory to determine asbestos content and OSHA/EPA NESHAP applicability.

Hutzel & Associates was contacted to also identify and quantify all assumed ACM during this survey. The following are approximate amounts of assumed ACM:

Electrical Cables Including Black Braided Wires Assumed Asbestos Containing Material

- Unquantified – Suspect Electrical Cable and Black Braided Wires throughout APS Prescott City Substation
- NESHAP Regulated Asbestos Containing Material, Friable Material
- OSHA Class II Work
- Located throughout APS Prescott City Substation transformers, distribution breakers and control house building

If any building materials that were not sampled previously are exposed during renovation/demolition activities, stop work and request that the new materials be sampled by Hutzel & Associates' EPA certified AHERA Building Inspectors.

Lead Containing Paint Sampling

Eight (8) bulk paint samples were collected from the APS Prescott City Substation on February 27, 2020 and delivered to Fiberquant for the analysis of lead content using Flame Atomic Absorption NIOSH 7082 methodology. Fiberquant is fully accredited by the American Industrial Hygiene Association (AIHA Lab #101593) and is recognized by the National Lead Laboratory Accreditation Program (NLLAP) for the analysis of lead in paint.

Lead Containing Paint Sampling Results

Lead Containing Paint >3,000 ppm

Laboratory bulk sample results indicate a level of 11,000 parts per million (ppm) or 1.1% lead in the **silver paint** located on the fence post and metal structures, 5,300 ppm or 0.53% lead in the **two tone paint (green and pink)** located on the entry and exit doors on the control house building, and 9,500 ppm or 0.95% lead in the **dark brown paint** located on the door frames on the control house building.

An objective estimated exposure assessment was conducted for the sampled paints and is contained in Appendix 3. Based on the objective exposure assessment for these paints**,** the potential for airborne exposures to lead during manual demolition, manual scraping, manual sanding, heat applications, and power tool cleaning with dust collection systems **will exceed** the OSHA Action Level of 30 ug/m^3. **Therefore, the requirements of the OSHA Lead Standard will apply to this type of work being performed on the paints listed in the paragraph above.**

Disturbance of these paints is regulated by the OSHA Lead Standard (29 CFR 1926.62) and contractors shall follow the worker protection requirements in the standard. In addition, disposal of potentially hazardous lead containing coating/paints is regulated by the Environmental Protection Agency (EPA) Resource Conservation & Recovery Act (RCRA) which requires this material to be analyzed by the Toxicity Leaching Characteristic Procedure (TCLP) to determine it's environmental hazard and determine the type of landfill it should be disposed in. An alternative to disposal is to have this material recycled by a qualified recycling company.

HIGH TEMPERATURE DISTURBANCE (e.g. torch cutting, welding) OF THIS LEAD CONTAINING PAINT MAY EXPOSE WORKERS TO UNSAFE LEVELS OF AIRBORNE LEAD; THEREFORE, HUTZEL & ASSOCIATES RECOMMENDS THAT WORKERS CONDUCTING THIS TYPE OF WORK COMPLY WITH THE OSHA 29 CFR 1926.62.

Lead Containing Paint <3,000ppm

Laboratory bulk sample results indicate a level of 55 ppm or 0.0055% lead in the **light grey paint** located on the transformers and breakers, 130 ppm or 0.013% lead in the **white paint** located on the exterior panel walls of the control house building, and 2,800 ppm or 0.28% lead in the **white paint with green under layer/control house interior walls.**

An objective estimated exposure assessment was conducted for the sampled paints and is contained in Appendix 3. Based on the objective exposure assessment the potential for airborne exposures to lead during manual demolition, manual scraping, manual sanding, heat applications, and power tool cleaning with dust collection systems **will not exceed** the OSHA Action Level of 30 ug/m^3. **Therefore, the requirements of the OSHA Lead Standard will not apply to this type of work being performed on these paints.**

<u>IMPORTANT NOTE</u>: This objective estimated exposure assessment is intended for APS employees only, while performing small maintenance types of activities (cutting out drywall for a new electrical outlet, drilling of wall systems to install white boards, etc.). This exposure assessment shall not be used by non-APS contractors or their subcontractors. All third-party contractors shall follow the OSHA 29 CFR 1926.62 Lead Standard when working with lead containing materials on all APS facilities.

HIGH TEMPERATURE DISTURBANCE (e.g. torch cutting, welding) OF LEAD CONTAINING PAINT REGARDLESS OF AMOUNT MAY EXPOSE WORKERS TO UNSAFE LEVELS OF AIRBORNE LEAD; THEREFORE, HUTZEL & ASSOCIATES RECOMMENDS THAT WORKERS CONDUCTING THIS TYPE OF WORK COMPLY WITH THE OSHA 29 CFR 1926.62.

NON-LEAD CONTAINING

Laboratory bulk sample results indicate a level of less than <42 ppm or < 0.0042% lead on the off-white paint located north of sulfur hexafluoride circuit breaker PC262 on the 7 ft. x 40 ft. abandoned concrete pad and 46 ppm or < 0.0046% lead in the yellow paint located on the hand rails near the control house building, The less than symbol (<) result indicates that the result was below the limits of detection or none detect for lead. **Therefore, the requirements of the OSHA Lead Standard will not apply to this type of work being performed on the paints listed in the paragraph above.**

POLYCHLORINATED BIPHENYL (PCB)

PCB Stained Concrete Sampling

Hutzel & Associates collected one (1) composite PCB sample of the stained concrete from the 3 Phase Transformer #NO2 XFMR concrete foundation for PCB analysis utilizing EPA method 8082. The composite PCB sample was then placed into one sample container as per the sampling methodology. Once the sample was containerized in laboratory containers, it was directly transported in a refrigerated ice chest to Pace Analytical located at 3702 East Roeser, Suite 19, Phoenix, Arizona. Pace Analytical is accredited by the United States Environmental Protection Agency (USEPA), Accreditation #OK00092, the American Industrial Hygiene Association (AIHA), Accreditation #100789, and by the State of Arizona (ID# AZ0612).

PCB Caulk Sampling

Hutzel & Associates collected one (1) composite PCB sample of the caulk from the control house for PCB analysis utilizing EPA method 8082. The composite PCB sample was then placed into one sample container as per the sampling methodology. Once the sample was containerized in laboratory containers, it was directly transported in a refrigerated ice chest to Pace Analytical located at 3702 East Roeser, Suite 19, Phoenix, Arizona. Pace Analytical is accredited by the United States Environmental Protection Agency (USEPA), Accreditation #OK00092, the American Industrial Hygiene Association (AIHA), Accreditation #100789, and by the State of Arizona (ID# AZ0612).

Sampling Results

The stained concrete and caulk samples were analyzed for PCBs utilizing EPA method 8082.

All PCB analysis results are to be interpreted by APS, as requested. Appendix 2 contains the Pace National analytical report.

Soil Sampling

Hutzel & Associates collected three (3) composite soil samples from five (5) to eight (8) locations throughout the projected demolition work area inside the APS Prescott City Substation. The composite soil sample was then placed into four different sample containers as per the sampling methodology. The soil for this sample was collected prior to disposal of the soil. The soil sample was directly transported in a refrigerated ice chest to Pace Analytical Local Service Center located 3702 East Roeser Road, Suite 19, Tempe, Arizona 85040. Pace Analytical is accredited by the United States Environmental Protection Agency (USEPA), Accreditation #OK00092, the American Industrial Hygiene Association (AIHA), Accreditation #100789, and by the State of Arizona (ID# AZ0612).

Soil Sampling Results

The soil sample was analyzed for VOCs utilizing EPA method 8260B, for RCRA Metals utilizing EPA method 7471A and 6010B, for PCBs utilizing EPA method 8082, and for Semi-VOCs and PAHs utilizing EPA method 8270C and 8270C-SIM.

All soil analysis results are to be interpreted by APS, as requested. Appendix 2 contains the Pace Analytical analysis report.

Tables and Appendices

Table 1 contains the sample number, description of material, representative photograph, analysis results, NESHAP category, OSHA Class of work and condition of material sampled for asbestos. Table 2 contains the location number, sample number, description of material, representative photograph, analysis results, "Worst Case" Objective Exposure Assessment, OSHA Action Level, Exposure Above "ACTION LEVEL" trigger, and condition of material sampled for lead. Appendix 1 contains the Fiberquant, Inc. laboratory reports for the bulk samples collected for asbestos and lead content. Appendix 2 contains the Pace Analytical analysis report. Appendix 3 contains the APS Estimated Exposure Assessment for Airborne Lead. Appendix 4 contains the asbestos, lead, PCB and soil sample location maps. Appendix 5 contains the AHERA Building Inspector Certificate.

Hutzel & Associates, Inc. has performed the tasks set forth above in a thorough and professional manner consistent with industry standards and under supervision of a certified professional. Hutzel & Associates, Inc. cannot guarantee and does not warrant that this limited assessment has revealed all adverse environmental conditions affecting the site. Hidden or changed conditions and/or activities that were not present at the time of this inspection may have a significant bearing on findings, conclusions, and recommendations.

Please contact me if there are any questions regarding this survey or the results. Thank you for using Hutzel & Associates, Inc. on this project.

Sincerely,

Augustine Anderson, IH Consultant
Hutzel & Associates, Inc.

Robert L. Hutzel, CIH, CSP
Hutzel & Associates, Inc.

CC: Anne Carlton
CC: Phil Smithers
CC: Angela Ott
CC: Benjamin Dowler
CC: Frances Lawson
CC: Judith Heywood
CC: Dusty Alcook - Burns & McDonnell
CC: Kristina DaSilva

TABLE 1

ASBESTOS RESULTS
ARIZONA PUBLIC SERVICE
Prescott City Substation
300 North Granite Street, Prescott, Arizona 86301
February 27, 2020

Sample No.	Sample Description/Location	Representative Photograph	Analysis Results	NESHAP Category	OSHA Class	Condition
HA-APS-0227-01	Concrete, fence footers/Perimeter chain link fence		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-02	Concrete, fence footers/Perimeter chain link fence		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-03	Concrete, fence footers/Perimeter chain link fence		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-04	24 in. x 24 in. abandoned concrete footer/Near control house		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-05	24 in. x 24 in. abandoned concrete footer/Near control house		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-06	24 in. x 24 in. abandoned concrete footer/Near control house		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-07	40 in x 40 in concrete footer/metal structure		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-08	40 in x 40 in concrete footer/metal structure		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-09	40 in x 40 in concrete footer/metal structure		No Asbestos Detected	Not Applicable	Not Applicable	Good

Sample No.	Sample Description/Location	Representative Photograph	Analysis Results	NESHAP Category	OSHA Class	Condition
HA-APS-0227-10	3 ft. x 5 ft. concrete footer/ Sulfur Hexafluoride Circuit Breaker-PC162		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-11	3 ft. x 5 ft. concrete footer/Sulfur Hexafluoride Circuit Breaker-PC362		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-12	3 ft. x 5 ft. concrete footer/Sulfur Hexafluoride Circuit Breaker-PC462		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-13	5 ft. x 14 ft concrete pad/ East of Sulfur Hexafluoride Circuit Breaker PC262		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-14	5 ft. x 14 ft concrete pad/ East of Sulfur Hexafluoride Circuit Breaker PC262		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-15	5 ft. x 14 ft concrete pad/ East of Sulfur Hexafluoride Circuit Breaker PC262		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-16	3 ft. x 4 ft. abandoned concrete foundation/North of Sulfur Hexafluoride Circuit Breaker PC462		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-17	3 ft. x 4 ft. abandoned concrete foundation/North of Sulfur Hexafluoride Circuit Breaker PC462		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-18	3 ft. x 4 ft. abandoned concrete foundation/North of Sulfur Hexafluoride Circuit Breaker PC462		No Asbestos Detected	Not Applicable	Not Applicable	Good

Sample No.	Sample Description/Location	Representative Photograph	Analysis Results	NESHAP Category	OSHA Class	Condition
HA-APS-0227-19	7 ft. x 40 ft. abandoned concrete pad/Center North of PC462 & PC262		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-20	7 ft. x 40 ft. abandoned concrete pad/Center North of PC462 & PC262		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-21	7 ft. x 40 ft. abandoned concrete pad/Center North of PC462 & PC262		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-22	4 ft. x 4 ft. concrete pad with plate cover/South of PC262		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-23	4 ft. x 4 ft. concrete pad with plate cover/South of PC262		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-24	4 ft. x 4 ft. concrete pad with plate cover/South of PC262		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-25	6 1/2 ft. x 20 ft. abandoned concrete footer with metal rails/Northeast of Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-26	6 1/2 ft. x 20 ft. abandoned concrete footer with metal rails/Northeast of Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-27	6 1/2 ft. x 20 ft. abandoned concrete footer with metal rails/Northeast of Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good

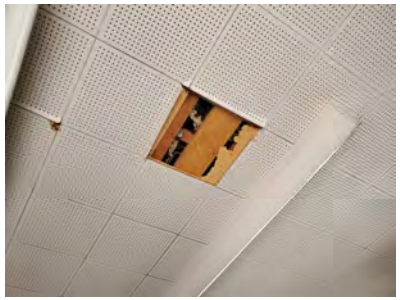
Sample No.	Sample Description/Location	Representative Photograph	Analysis Results	NESHAP Category	OSHA Class	Condition
HA-APS-0227-28	5 ft. x 9 ft. concrete foundation/GE Distribution Break PC142		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-29	5 ft. x 9 ft. concrete foundation/GE Distribution Break PC142		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-30	5 ft. x 9 ft. concrete foundation/GE Distribution Break PC742		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-31	Abandoned rough finish foundation/North of GE Distribution Break PC142		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-32	Abandoned rough finish foundation/North of GE Distribution Break PC142		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-33	Abandoned rough finish foundation/North of GE Distribution Break PC142		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-34	7 ft. x 6 ft. abandoned concrete slab/North of GE Distribution Break PC142		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-35	7 ft. x 6 ft. abandoned concrete slab/North of GE Distribution Break PC142		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-36	7 ft. x 6 ft. abandoned concrete slab/North of GE Distribution Break PC142		No Asbestos Detected	Not Applicable	Not Applicable	Good

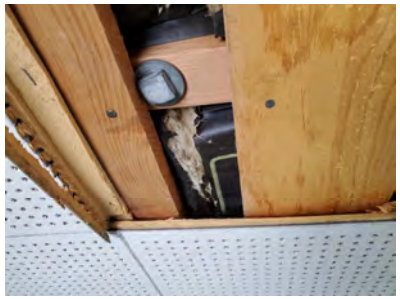
Sample No.	Sample Description/Location	Representative Photograph	Analysis Results	NESHAP Category	OSHA Class	Condition
HA-APS-0227-37	Secondary concrete containment/Perimeter of 3 Phase Transformer NO2 XFMR & XFMR6		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-38	Secondary concrete containment/Perimeter of 3 Phase Transformer NO2 XFMR & XFMR6		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-39	Secondary concrete containment/Perimeter of 3 Phase Transformer NO2 XFMR & XFMR6		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-40	7 ft. x 29 ft. with metal rails/3 phase transformer NO2 XFMR		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-41	7 ft. x 29 ft. with metal rails/3 phase transformer NO2 XFMR		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-42	7 ft. x 29 ft. with metal rails/3 phase transformer NO2 XFMR		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-43	30 in x 26 in. concrete foundation with plate cover/NE of 3 Phase Transformer NO2 XFMR		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-44	30 in x 26 in. concrete foundation with plate cover/NE of 3 Phase Transformer NO2 XFMR		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-45	30 in x 26 in. concrete foundation with plate cover/NE of 3 Phase Transformer NO2 XFMR		No Asbestos Detected	Not Applicable	Not Applicable	Good

Sample No.	Sample Description/Location	Representative Photograph	Analysis Results	NESHAP Category	OSHA Class	Condition
HA-APS-0227-46	10 ft. 14 ft. concrete pad/ 3 phase transformer XFMR6		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-47	10 ft. 14 ft. concrete pad/ 3 phase transformer XFMR6		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-48	10 ft. 14 ft. concrete pad/ 3 phase transformer XFMR6		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-49	Unearthed concrete with rebar/Northwest of XFMR6		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-50	Unearthed concrete with rebar/Northwest of XFMR6		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-51	Unearthed concrete with rebar/Northwest of XFMR6		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-52	CMU wall/Outside of chain-link fence		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-53	CMU wall/Outside of chain-link fence		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-54	CMU wall/Outside of chain-link fence		No Asbestos Detected	Not Applicable	Not Applicable	Good

Sample No.	Sample Description/Location	Representative Photograph	Analysis Results	NESHAP Category	OSHA Class	Condition
HA-APS-0227-55	Concrete perimeter fence wall/perimeter of substation		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-56	Concrete perimeter fence wall/perimeter of substation		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-57	Concrete perimeter fence wall/perimeter of substation		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-58	Concrete Foundation/ Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-59	Concrete Foundation/ Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-60	Concrete Foundation/ Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-61	**Caulk-Exterior window / Control House**		**No Asbestos Detected**	**Category II Non-friable ACM**	**Class II Work**	**Good**
HA-APS-0227-62	**Caulk-Exterior window / Control House**		**5-10% Chrysotile Asbestos (Caulk)**	**Category II Non-friable ACM**	**Class II Work**	**Good**
HA-APS-0227-63	**Caulk-Exterior window / Control House**		**5-10% Chrysotile Asbestos (Caulk)**	**Category II Non-friable ACM**	**Class II Work**	**Good**

Sample No.	Sample Description/Location	Representative Photograph	Analysis Results	NESHAP Category	OSHA Class	Condition
HA-APS-0227-64	**Caulk-Door w/window / Control House**		**Caulk <= 1% Chrysotile Asbestos**	**Not Applicable**	**Limited OSHA Regulations**	**Good**
HA-APS-0227-65	**Caulk-Door w/window / Control House**					**Good**
HA-APS-0227-66	**Caulk-Door w/window / Control House**					**Good**
HA-APS-0227-67	**Caulk-Between building panels / Control House**		**No Asbestos Detected**	**Category II Non-friable ACM**	**Class II Work**	**Good**
HA-APS-0227-68	**Caulk-Between building panels / Control House**		**2-5 % Chrysotile Asbestos (Caulk)**	**Category II Non-friable ACM**	**Class II Work**	**Good**
HA-APS-0227-69	**Caulk-Between building panels / Control House**		**2-5 % Chrysotile Asbestos (Caulk)**	**Category II Non-friable ACM**	**Class II Work**	**Good**
HA-APS-0227-70	Black Pipe Wrap / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-71	Black Pipe Wrap / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-72	Black Pipe Wrap / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-73	Panel Insulation / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-74	Panel Insulation / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-75	Panel Insulation / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good

Sample No.	Sample Description/Location	Representative Photograph	Analysis Results	NESHAP Category	OSHA Class	Condition
HA-APS-0227-76	Caulk-Clear Patchwork / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-77	Caulk-Clear Patchwork / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-78	Caulk-Clear Patchwork / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-79	12"x12" VCT Floor Tile & Mastic / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-80	12"x12" VCT Floor Tile & Mastic / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-81	12"x12" VCT Floor Tile & Mastic / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-82	**Drywall System / Control House**		**Texture / Joint Compound <= 1% Chrysotile Asbestos**	**Not Applicable**	**Limited OSHA Regulations**	**Good**
HA-APS-0227-83	**Drywall System / Control House**					**Good**
HA-APS-0227-84	**Drywall System / Control House**					**Good**
HA-APS-0227-85	12"x12" Ceiling Tile, No mastic / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-86	12"x12" Ceiling Tile, No mastic / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-87	12"x12" Ceiling Tile, No mastic / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good

Sample No.	Sample Description/Location	Representative Photograph	Analysis Results	NESHAP Category	OSHA Class	Condition
HA-APS-0227-88	Brown Cove Base & Mastic / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-89	Brown Cove Base & Mastic / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-90	Brown Cove Base & Mastic / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-91	Building Insulation-Above Ceiling Tiles/ Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-92	Building Insulation-Above Ceiling Tiles/ Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-93	Building Insulation-Above Ceiling Tiles/ Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-94	Caulk-Window Interior / Control House	No Image	No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-95	Caulk-Window Interior / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-96	Caulk-Window Interior / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-97	Concrete-Side walk / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-98	Concrete-Side walk / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-99	Concrete-Side walk / Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good

Sample No.	Sample Description/Location	Representative Photograph	Analysis Results	NESHAP Category	OSHA Class	Condition
HA-APS-0227-100	Asphalt/ Control House	No Image	No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-101	Asphalt/ Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good
HA-APS-0227-102	Asphalt/ Control House		No Asbestos Detected	Not Applicable	Not Applicable	Good

TABLE 2

LEAD PAINT SAMPLE RESULTS
ARIZONA PUBLIC SERVICE
Prescott City Substation
300 North Granite Street, Prescott, Arizona 86301
February 27, 2020

Sample No.	Sample Description/Location	Representative Photograph	Analysis Results	"Worst Case" Objective Exposure Assessment	OSHA ACTION LEVEL	Exposure Above "ACTION LEVEL"	Condition
HA-APS-0227-1Pb	Off white paint/North of Sulfur Hexafluoride Circuit Breaker PC262 on 7 ft. x 40 ft. abandoned concrete pad		<42 ppm or <0.0042%	N/A	30 µg/m^3	NO	Good
HA-APS-0227-2Pb	**Silver paint/Fence posts & metal structuring**		**11,000 ppm or 1.1%**	**110 µg/m^3**	**30 µg/m^3**	**Yes**	**Good**

Sample No.	Sample Description/Location	Representative Photograph	Analysis Results	"Worst Case" Objective Exposure Assessment	OSHA ACTION LEVEL	Exposure Above "ACTION LEVEL"	Condition
HA-APS-0227-3Pb	Light grey paint/Transformers & breakers		55 ppm or 0.55%	0.55 µg/m³	30 µg/m³	NO	Good
HA-APS-0227-4Pb	White paint/Control house exterior walls		130 ppm or 0.013%	1.3 µg/m³	30 µg/m³	NO	Good
HA-APS-0227-5Pb	**Two-tone paint (green & pink)/Entry & exit doors**		**5,300 ppm or 0.53%**	**53 µg/m3**	**30 µg/m3**	**Yes**	**Good**

Sample No.	Sample Description/Location	Representative Photograph	Analysis Results	"Worst Case" Objective Exposure Assessment	OSHA ACTION LEVEL	Exposure Above "ACTION LEVEL"	Condition
HA-APS-0227-6Pb	White paint with green under layer/Control house interior walls		2,800 ppm or 0.28%	28 µg/m^3	30 µg/m^3	Yes	Good
HA-APS-0227-7Pb	**Dark brown paint/Control house door frames**		**9,500 ppm or 0.95%**	**95 µg/m^3**	**30 µg/m^3**	**Yes**	**Good**
HA-APS-0227-8Pb	Yellow paint/Handrails West of control house	No Image	<46 ppm or <0.0046%	N/A	30 µg/m3	NO	Good

APPENDIX 1

FIBERQUANT ANALYTICAL LABORATORY REPORT FOR ASBESTOS & LEAD

FIBERQUANT ANALYTICAL SERVICES

Polarized Light Microscope (PLM) Analysis for Asbestos in Bulk Sample

JobNumber:	202002207

Client: **HUTZEL AND ASSOCIATES**
1626 E ALICIA DRIVE

PHOENIX, AZ 85042-0000
Office Phone: (602) 323-0222
FAX:

 # Samples: 102 PLM **Rec:** 2/28/2020 **Method:** EPA 600/R-93/116 The "New" Method; see below
Client Job: 20-12557 APS Prescott City Substation **PO Number:** APS Pricing
Report Date: 3/5/2020 **Date Analyzed:** 3/4/2020 **Routing Number:** -

Method and Analysis Information: **Fiberquant Internal SOP:** PLMn

Each bulk sample is first dissected under a 7-30x magnification stereo-microscope. This examination is used to determine the general type of sample, how many and what type of layers it has, and initial estimates of fiber types and quantities. Second, liquid media mounts are made of each layer - such mounts may be of selected fibers (used solely for identification purposes) or may be representative of the layer as a whole (used for quantitation purposes). The mounts may be made in a synthetic Canadian balsam, one of several solvents, or in refractive index oils (media of known refractive index). Generally, a variety of different mounts are made: some optimized for fiber visibility, some optimized for fiber identification, and some optimized for fiber quantitation. The mounted slides are then examined at 50-400x magnification on a Nikon Labphot-pol microscope. Optical characteristics are used to identify each observed fiber type; the optical data are contained for each sample on its detail analysis sheet, attached.

Current EPA and NESHAP regulations designate a result of ≤1 % asbestos as "negative" or "non-regulated"and >1 % asbestos as "positive" or "regulated." Samples containing layers that have been determined to be "positive" may have to be handled differently during a renovation or demolition than samples whose layers have been determined to be "negative." OSHA under CFR 1926.1101 regulates work done involving any detectable concentration of asbestos.

The method of fiber identification and quantitation is the "Standard Operating Procedures for the Analysis of Asbestos in Bulk Samples using Polarized Light Microscopy", Chapter 7 of the Quality Assurance and Management Manual. This SOP and its associated reporting have been designed to satisfy all requirements in both EPA Method 600/M4-82-020 (The Interim Method) and EPA Method 600/R-93/116 (The New Method). The Interim Method is the required method for AHERA (US EPA 40 CFR Pt. 763), but this method calls for the reporting of composited results of multi-layered samples that is no longer an acceptable reporting practice in most circumstances. Current EPA rules, such as NESHAP (US EPA 40 CFR Pt. 61), as well as NVLAP accreditation policies, call for separate reporting for each layer of multi-layered samples. The New Method contains the same procedures for identification and quantification of asbestos as does the Interim Method, except that multi-layered samples are reported to comply with the latest US EPA rule. Fiberquant not only reports the asbestos content of each layer of multi-layered samples separately (satisfying current EPA and NVLAP reporting requirements), but Fiberquant also reports what percentage of the sample each layer comprises. Therefore, the results may be arithmetically composited to satisfy the reporting requirements of the Interim Method. The method of fiber quantitation is an estimation technique in which the analysts quantitation is routinely calibrated by reference quantitation standards, and which has been shown to be equivalent in precision and accuracy to point counting. Friability is estimated for the purposes of deciding when to point count. Friabilities determined in the field take precedence over those determined in the laboratory. Those sample layers which are friable and estimated by the analyst to contain <= 1% asbestos are point counted using 400 points. Such point counting is required by NESHAP (National Emission Standards for Hazardous Air Polutants, Nov. 1990) in order to rely on analytical results that are ≤ 1%. The coefficient of variation for the estimation quantitation technique is 100% in the range 0-5%. This means that PLM analysis is not capable of conclusively determining whether a layer containing close to 1% asbestos is actually "positive" or "negative". For this reason, Fiberquant refers to results where asbestos was detected but ≤ 1% as "borderline negative", and results where asbestos was >1 % but <= 2% as "borderline positive" to indicate the uncertainty in assigning a "positive" or "negative" label. In the sample summary, "ND" means that no asbestos was detected during the analysis. A "Tr" or "Trace" of asbestos reported is defined for our purposes as the detection of several asbestos fibers during the analysis; this level would be right at the limit of detection for the method. Trace is only reported on the analysis detail - in the summary a trace would be reported as <=1%. The limit of detection (the smallest % of asbestos that can be detected) varies greatly depending on the matrix in which the asbestos is found. As little as 0.001% asbestos can be detected in favorable samples, while detection in unfavorable samples may approach the detection limit of 1% stated in the method. During the analysis, the analyst, for Fiberquant identification purposes only, determines the "apparent sample type" and "apparent layer types." It must be emphasized that these types are only what is apparent. Often, different materials appear similar or identical after sampling, so the analyst may assign a type other than what was sampled.

Floor tiles present a special problem for PLM asbestos analysis. Floor tile can contain chrysotile fibers so thin that they cannot be resolved by optical methods. In such a case, we may observe a percentage of asbestos which is lower than the actual percentage, or not observe asbestos at all when some is present. For this reason, floor tiles reported as negative should be confirmed to be negative using transmission electron microscope (TEM) analysis. Likewise, vermiculite insulation materials containing traces of asbestiform asbestos present a problem for routine PLM analysis - the amphiboles are sometimes present in trace amounts inhomogeneously distributed. For this reason, loose vermiculite samples reported as negative should be confirmed to contain no amphibole using hydroseparation techniques.

The samples were analyzed under the following ongoing quality assurance program: Blank samples are routinely analyzed to maintain contamination-free materials. Each analyst has at least a bachelor's degree in physical science, and has also completed extensive training specific to asbestos analysis for 1-3 months before being allowed to analyze client samples. Qualitative reference samples are routinely analyzed to assure that analysts

can identify asbestos and asbestos-look-alike fibers. Quantitative reference samples are routinely analyzed to calibrate and characterize the estimation procedure. Microscope alignment is checked each day. Refractive index oils are calibrated at least quarterly. At least 10% of client samples are re-analyzed from scratch by a different analyst than the original, and any discrepancies are resolved for the sample and similar sample types before the results are reported. All quality checks performed for these samples were in control except as detailed in the "Analytical Notes" below. All analysts participate in interlab round robins and proficiency testing to assure competence. Fiberquant is accredited by NVLAP (Lab code #101031) for the analysis of bulk samples for asbestos using PLM. Accreditation does not imply endorsement by the EPA, any other United States governmental agency or any private agency or association. Each lab analysis refers only to the sample tested, and may not, due to the sampling process, be representative of the material sampled. This report may not be reproduced except in full, without the approval of Fiberquant Analytical Services.

Some results may have been calculated using client supplied data, such as volume or area sampled, for which Fiberquant assumes no liability for accuracy.

Job Analysis Notes:

PLM Analysis Summary: **Job Number: 202002207** 20-12557 APS Prescott City Substation

Sample Number	Layer	Color	Apparent Layer Type *	Lab Number	Apparent Sample Type *	Asbestos Results	Asbestos Detected Yes or No
Sample # **HA-APS-0227-01**	Layer # 1	gray	concrete	2020-02207- 1	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-02**	Layer # 1	gray	concrete	2020-02207- 2	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-03**	Layer # 1	gray	concrete	2020-02207- 3	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-04**	Layer # 1	gray	concrete	2020-02207- 4	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-05**	Layer # 1	gray	concrete	2020-02207- 5	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-06**	Layer # 1	gray	concrete	2020-02207- 6	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-07**	Layer # 1	gray	concrete	2020-02207- 7	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-08**	Layer # 1	gray	concrete	2020-02207- 8	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-09**	Layer # 1	gray	concrete	2020-02207- 9	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-10**	Layer # 1	gray	concrete	2020-02207- 10	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-11**	Layer # 1	gray	concrete	2020-02207- 11	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-12**	Layer # 1	gray	concrete	2020-02207- 12	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-13**	Layer # 1	gray	concrete	2020-02207- 13	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-14**	Layer # 1	gray	concrete	2020-02207- 14	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-15**	Layer # 1	gray	concrete	2020-02207- 15	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-16**	Layer # 1	gray	concrete	2020-02207- 16	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-17**	Layer # 1	gray	concrete	2020-02207- 17	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-18**	Layer # 1	gray	concrete	2020-02207- 18	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-19**	Layer # 1	gray	concrete	2020-02207- 19	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-20**	Layer # 1	gray	concrete	2020-02207- 20	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-21**	Layer # 1	gray	concrete	2020-02207- 21	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-22**	Layer # 1	gray	concrete	2020-02207- 22	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-23**	Layer # 1	gray	concrete	2020-02207- 23	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-24**	Layer # 1	gray	concrete	2020-02207- 24	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-25**	Layer # 1	gray	concrete	2020-02207- 25	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-26**	Layer # 1	gray	concrete	2020-02207- 26	Cementitious	*no asbestos detected*	Asbestos Detected? No
Sample # **HA-APS-0227-27**	Layer # 1	gray	concrete	2020-02207- 27	Cementitious	*no asbestos detected*	Asbestos Detected? No

Sample #	**HA-APS-0227-28**		2020-02207- 28	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-29**		2020-02207- 29	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-30**		2020-02207- 30	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-31**		2020-02207- 31	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-32**		2020-02207- 32	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-33**		2020-02207- 33	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-34**		2020-02207- 34	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-35**		2020-02207- 35	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-36**		2020-02207- 36	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-37**		2020-02207- 37	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-38**		2020-02207- 38	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-39**		2020-02207- 39	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-40**		2020-02207- 40	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-41**		2020-02207- 41	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-42**		2020-02207- 42	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-43**		2020-02207- 43	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-44**		2020-02207- 44	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-45**		2020-02207- 45	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-46**		2020-02207- 46	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-47**		2020-02207- 47	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-48**		2020-02207- 48	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-49**		2020-02207- 49	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-50**		2020-02207- 50	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-51**		2020-02207- 51	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-52**		2020-02207- 52	Miscellaneous	Asbestos Detected? No
Layer # 1	gray	block	*no asbestos detected*		
Layer # 2	gray	mortar	*no asbestos detected*		
Sample #	**HA-APS-0227-53**		2020-02207- 53	Miscellaneous	Asbestos Detected? No
Layer # 1	gray	block	*no asbestos detected*		
Layer # 2	gray	mortar	*no asbestos detected*		
Sample #	**HA-APS-0227-54**		2020-02207- 54	Miscellaneous	Asbestos Detected? No
Layer # 1	gray	block	*no asbestos detected*		
Layer # 2	gray	mortar	*no asbestos detected*		
Sample #	**HA-APS-0227-55**		2020-02207- 55	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-56**		2020-02207- 56	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-57**		2020-02207- 57	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-58**		2020-02207- 58	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-59**		2020-02207- 59	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-60**		2020-02207- 60	Cementitious	Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*		
Sample #	**HA-APS-0227-61**		2020-02207- 61	Adhesive/caulk	Asbestos Detected? No
Layer # 1	gray	sealant	*no asbestos detected*		
Sample #	**HA-APS-0227-62**		2020-02207- 62	Adhesive/caulk	Asbestos Detected? Yes
Layer # 1	black	sealant	*5-10% chrysotile asbestos*		
Sample #	**HA-APS-0227-63**		2020-02207- 63	Adhesive/caulk	Asbestos Detected? Yes
Layer # 1	black	sealant	*5-10% chrysotile asbestos*		

Sample #	**HA-APS-0227-64**		2020-02207- 64	Adhesive/caulk		Asbestos Detected? No
Layer # 1	white	putty		*no asbestos detected*		
Sample #	**HA-APS-0227-65**		2020-02207- 65	Adhesive/caulk		Asbestos Detected? Yes
Layer # 1	off-white	putty		*<=1% chrysotile asbestos*		
Sample #	**HA-APS-0227-66**		2020-02207- 66	Adhesive/caulk		Asbestos Detected? No
Layer # 1	white	putty		*no asbestos detected*		
Sample #	**HA-APS-0227-67**		2020-02207- 67	Adhesive/caulk		Asbestos Detected? No
Layer # 1	clear	sealant		*no asbestos detected*		
Sample #	**HA-APS-0227-68**		2020-02207- 68	Adhesive/caulk		Asbestos Detected? Yes
Layer # 1	off-white	paint		*no asbestos detected*		
Layer # 2	tan	sealant		*2-5% chrysotile asbestos*		
Sample #	**HA-APS-0227-69**		2020-02207- 69	Adhesive/caulk		Asbestos Detected? Yes
Layer # 1	off-white	paint		*no asbestos detected*		
Layer # 2	tan	sealant		*2-5% chrysotile asbestos*		
Sample #	**HA-APS-0227-70**		2020-02207- 70	TSI		Asbestos Detected? No
Layer # 1	black	duct tape		*no asbestos detected*		
Layer # 2	black	mastic		*no asbestos detected*		
Sample #	**HA-APS-0227-71**		2020-02207- 71	TSI		Asbestos Detected? No
Layer # 1	off-white	paint		*no asbestos detected*		
Layer # 2	black	duct tape		*no asbestos detected*		
Layer # 3	gray	debris		*no asbestos detected*		
Sample #	**HA-APS-0227-72**		2020-02207- 72	TSI		Asbestos Detected? No
Layer # 1	off-white	paint		*no asbestos detected*		
Layer # 2	black	duct tape		*no asbestos detected*		
Layer # 3	gray	debris		*no asbestos detected*		
Sample #	**HA-APS-0227-73**		2020-02207- 73	Insulation		Asbestos Detected? No
Layer # 1	tan	insulation		*no asbestos detected*		
Sample #	**HA-APS-0227-74**		2020-02207- 74	Insulation		Asbestos Detected? No
Layer # 1	tan	insulation		*no asbestos detected*		
Sample #	**HA-APS-0227-75**		2020-02207- 75	Insulation		Asbestos Detected? No
Layer # 1	tan	insulation		*no asbestos detected*		
Sample #	**HA-APS-0227-76**		2020-02207- 76	Adhesive/caulk		Asbestos Detected? No
Layer # 1	clear	sealant		*no asbestos detected*		
Sample #	**HA-APS-0227-77**		2020-02207- 77	Adhesive/caulk		Asbestos Detected? No
Layer # 1	clear	sealant		*no asbestos detected*		
Sample #	**HA-APS-0227-78**		2020-02207- 78	Adhesive/caulk		Asbestos Detected? No
Layer # 1	clear	sealant		*no asbestos detected*		
Sample #	**HA-APS-0227-79**		2020-02207- 79	Flooring		Asbestos Detected? No
Layer # 1	off-white	floor tile		*no asbestos detected*		
Layer # 2	black	mastic		*no asbestos detected*		
Sample #	**HA-APS-0227-80**		2020-02207- 80	Flooring		Asbestos Detected? No
Layer # 1	off-white	floor tile		*no asbestos detected*		
Layer # 2	black	mastic		*no asbestos detected*		
Sample #	**HA-APS-0227-81**		2020-02207- 81	Flooring		Asbestos Detected? No
Layer # 1	off-white	floor tile		*no asbestos detected*		
Layer # 2	black	mastic		*no asbestos detected*		
Sample #	**HA-APS-0227-82**		2020-02207- 82	Wall System		Asbestos Detected? Yes
Layer # 1	off-white	paint		*no asbestos detected*		
Layer # 2	white	texture/joint compound		*no asbestos detected*		
Layer # 3	green	paint		*no asbestos detected*		
Layer # 4	white	texture/joint compound		*<=1% chrysotile asbestos*		
Layer # 5	off-white	paper/cardboard		*no asbestos detected*		
Layer # 6	white	texture/joint compound		*<=1% chrysotile asbestos*		
Layer # 7	tan	paper/cardboard		*no asbestos detected*		
Layer # 8	white	drywall core		*no asbestos detected*		
Sample #	**HA-APS-0227-83**		2020-02207- 83	Wall System		Asbestos Detected? No
Layer # 1	various	paint		*no asbestos detected*		
Layer # 2	tan	paper/cardboard		*no asbestos detected*		
Layer # 3	white	drywall core		*no asbestos detected*		
Sample #	**HA-APS-0227-84**		2020-02207- 84	Wall System		Asbestos Detected? No
Layer # 1	off-white	paint		*no asbestos detected*		
Layer # 2	tan	paper/cardboard		*no asbestos detected*		
Layer # 3	white	drywall core		*no asbestos detected*		
Sample #	**HA-APS-0227-85**		2020-02207- 85	Acoustical Tile		Asbestos Detected? No
Layer # 1	white	paint		*no asbestos detected*		
Layer # 2	tan	acoustical tile		*no asbestos detected*		
Sample #	**HA-APS-0227-86**		2020-02207- 86	Acoustical Tile		Asbestos Detected? No
Layer # 1	white	paint		*no asbestos detected*		
Layer # 2	tan	acoustical tile		*no asbestos detected*		
Sample #	**HA-APS-0227-87**		2020-02207- 87	Acoustical Tile		Asbestos Detected? No
Layer # 1	white	paint		*no asbestos detected*		
Layer # 2	tan	acoustical tile		*no asbestos detected*		
Sample #	**HA-APS-0227-88**		2020-02207- 88	Miscellaneous		Asbestos Detected? No
Layer # 1	gray	base cove		*no asbestos detected*		
Layer # 2	tan	mastic		*no asbestos detected*		

Sample #	**HA-APS-0227-89**		2020-02207- 89	Miscellaneous		Asbestos Detected? No
Layer # 1	gray	base cove	*no asbestos detected*			
Layer # 2	tan	mastic	*no asbestos detected*			
Sample #	**HA-APS-0227-90**		2020-02207- 90	Miscellaneous		Asbestos Detected? No
Layer # 1	gray	base cove	*no asbestos detected*			
Layer # 2	tan	mastic	*no asbestos detected*			
Sample #	**HA-APS-0227-91**		2020-02207- 91	Insulation		Asbestos Detected? No
Layer # 1	black	bitumen-paper	*no asbestos detected*			
Layer # 2	yellow	insulation	*no asbestos detected*			
Sample #	**HA-APS-0227-92**		2020-02207- 92	Insulation		Asbestos Detected? No
Layer # 1	black	bitumen-paper	*no asbestos detected*			
Layer # 2	yellow	insulation	*no asbestos detected*			
Sample #	**HA-APS-0227-93**		2020-02207- 93	Insulation		Asbestos Detected? No
Layer # 1	black	bitumen-paper	*no asbestos detected*			
Layer # 2	yellow	insulation	*no asbestos detected*			
Sample #	**HA-APS-0227-94**		2020-02207- 94	Adhesive/caulk		Asbestos Detected? No
Layer # 1	white	paint	*no asbestos detected*			
Layer # 2	off-white	sealant	*no asbestos detected*			
Sample #	**HA-APS-0227-95**		2020-02207- 95	Adhesive/caulk		Asbestos Detected? No
Layer # 1	white	paint	*no asbestos detected*			
Layer # 2	off-white	sealant	*no asbestos detected*			
Sample #	**HA-APS-0227-96**		2020-02207- 96	Adhesive/caulk		Asbestos Detected? No
Layer # 1	white	paint	*no asbestos detected*			
Layer # 2	off-white	sealant	*no asbestos detected*			
Sample #	**HA-APS-0227-97**		2020-02207- 97	Cementitious		Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*			
Sample #	**HA-APS-0227-98**		2020-02207- 98	Cementitious		Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*			
Sample #	**HA-APS-0227-99**		2020-02207- 99	Cementitious		Asbestos Detected? No
Layer # 1	gray	concrete	*no asbestos detected*			
Sample #	**HA-APS-0227-100**		2020-02207- 100	Surfacing		Asbestos Detected? No
Layer # 1	black	asphalt	*no asbestos detected*			
Sample #	**HA-APS-0227-101**		2020-02207- 101	Surfacing		Asbestos Detected? No
Layer # 1	black	asphalt	*no asbestos detected*			
Sample #	**HA-APS-0227-102**		2020-02207- 102	Surfacing		Asbestos Detected? No
Layer # 1	black	asphalt	*no asbestos detected*			

* Apparent Sample Types and Apparent Layer Types are as they appeared to the analyst. Since many types of materials appear similar after sampling damage, the apparent type of material may not be the actual type of material.

Sample HA-APS-0227-01 **Lab Number** 2020-02207- 1 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-02 **Lab Number** 2020-02207- 2 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-03 **Lab Number** 2020-02207- 3 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-04 **Lab Number** 2020-02207- 4 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-05 **Lab Number** 2020-02207- 5 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-06 **Lab Number** 2020-02207- 6 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-07 **Lab Number** 2020-02207- 7 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-08 **Lab Number** 2020-02207- 8 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-09 **Lab Number** 2020-02207- 9 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-10 **Lab Number** 2020-02207- 10 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-11 **Lab Number** 2020-02207- 11 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-12 **Lab Number** 2020-02207- 12 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-13 **Lab Number** 2020-02207- 13 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-14 **Lab Number** 2020-02207- 14 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-15 **Lab Number** 2020-02207- 15 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-16 **Lab Number** 2020-02207- 16 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-17 **Lab Number** 2020-02207- 17 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-18 **Lab Number** 2020-02207- 18 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-19 **Lab Number** 2020-02207- 19 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-20 **Lab Number** 2020-02207- 20 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-21 **Lab Number** 2020-02207- 21 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-22 **Lab Number** 2020-02207- 22 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-23 **Lab Number** 2020-02207- 23 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-24 **Lab Number** 2020-02207- 24 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/4/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-25 **Lab Number** 2020-02207- 25 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-26 **Lab Number** 2020-02207- 26 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-27 **Lab Number** 2020-02207- 27 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-28 **Lab Number** 2020-02207- 28 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-29 **Lab Number** 2020-02207- 29 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-30 **Lab Number** 2020-02207- 30 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-31 **Lab Number** 2020-02207- 31 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): rock, powder,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-32 **Lab Number** 2020-02207- 32 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-33 **Lab Number** 2020-02207- 33 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-34 **Lab Number** 2020-02207- 34 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-35 **Lab Number** 2020-02207- 35 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-36 **Lab Number** 2020-02207- 36 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-37 **Lab Number** 2020-02207- 37 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-38 **Lab Number** 2020-02207- 38 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-39 **Lab Number** 2020-02207- 39 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-40 **Lab Number** 2020-02207- 40 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-41 **Lab Number** 2020-02207- 41 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-42 **Lab Number** 2020-02207- 42 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-43 **Lab Number** 2020-02207- 43 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-44 **Lab Number** 2020-02207- 44 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-45 **Lab Number** 2020-02207- 45 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-46 **Lab Number** 2020-02207- 46 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-47 **Lab Number** 2020-02207- 47 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-48 **Lab Number** 2020-02207- 48 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-49 **Lab Number** 2020-02207- 49 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-50 **Lab Number** 2020-02207- 50 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-51 **Lab Number** 2020-02207- 51 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-52 **Lab Number** 2020-02207- 52 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Miscellaneous Non-fibrous Solid
Homogeneous No **# Layers** 2 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	block	75	gray	1	n.d.	-	-	-	-	-
2	mortar	25	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of cementitious components using acid.

Sample HA-APS-0227-53 **Lab Number** 2020-02207- 53 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Miscellaneous Non-fibrous Solid
Homogeneous No **# Layers** 2 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	block	55	gray	1	n.d.	-	-	-	-	-
2	mortar	45	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of cementitious components using acid.

Sample HA-APS-0227-54 **Lab Number** 2020-02207- 54 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Miscellaneous Non-fibrous Solid
Homogeneous No **# Layers** 2 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	block	90	gray	1	n.d.	-	-	-	-	-
2	mortar	10	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of cementitious components using acid.

Sample HA-APS-0227-55 **Lab Number** 2020-02207- 55 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-56 **Lab Number** 2020-02207- 56 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-57 **Lab Number** 2020-02207- 57 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-58 **Lab Number** 2020-02207- 58 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-59 **Lab Number** 2020-02207- 59 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-60 **Lab Number** 2020-02207- 60 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-61 **Lab Number** 2020-02207- 61 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Adhesive/caulk Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): filler, binder,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	sealant	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent.

Sample HA-APS-0227-62 **Lab Number** 2020-02207- 62 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Adhesive/caulk Fibrous Mat
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** Yes
Non-Fibrous Components (in approx. decreasing order): filler, bitumen,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	sealant	100	black	1	5-10%	-	-	-	-	-
	Total %	100		**Overall %**	5-10%	-	-	-	-	-
				Fiber Identification:	chrysotile asbestos					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	chrysotile asbestos	W	A	N	N	L	+	P	1.550	db/ly	sb/o	1.561	1.553
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent.

Sample HA-APS-0227-63 **Lab Number** 2020-02207- 63 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Adhesive/caulk Fibrous Mat
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** Yes
Non-Fibrous Components (in approx. decreasing order): filler, bitumen,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	sealant	100	black	1	5-10%	-	-	-	-	-
	Total %	100		**Overall %**	5-10%	-	-	-	-	-
				Fiber Identification:	chrysotile asbestos					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	chrysotile asbestos	W	A	N	N	L	+	P	1.550	db/ly	sb/o	1.561	1.553
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent.

Sample HA-APS-0227-64 **Lab Number** 2020-02207- 64 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Adhesive/caulk Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): filler, calcite, binder

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	putty	100	white	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-65 **Lab Number** 2020-02207- 65 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Adhesive/caulk Fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** Yes
Non-Fibrous Components (in approx. decreasing order): calcite, binder,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	putty	100	off-white	1	<=1%	-	-	-	-	-
	Total %	100		**Overall %**	<=1%	-	-	-	-	-
				Fiber Identification:	chrysotile asbestos					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	chrysotile asbestos	W	A	N	N	L	+	P	1.550	db/ly	sb/o	1.561	1.553
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-66 **Lab Number** 2020-02207- 66 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Adhesive/caulk Fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): filler, calcite, binder

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	putty	100	white	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-67 **Lab Number** 2020-02207- 67 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Adhesive/caulk Sticky
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): polymer, filler,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	sealant	100	clear	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent.

Sample HA-APS-0227-68 **Lab Number** 2020-02207- 68 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Adhesive/caulk Non-fibrous Solid
Homogeneous No **# Layers** 2 **Asbestos Detected?** Yes
Non-Fibrous Components (in approx. decreasing order): filler, binder,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	paint	20	off-white	1	n.d.	-	-	-	-	-
2	sealant	80	tan	1	2-5%	-	-	-	-	-
	Total %	100		**Overall %**	2-5%	-	-	-	-	-
				Fiber Identification:	chrysotile asbestos					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	chrysotile asbestos	W	A	N	N	L	+	P	1.550	db/ly	sb/o	1.561	1.553
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent.

Sample HA-APS-0227-69 **Lab Number** 2020-02207- 69 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Adhesive/caulk Non-fibrous Solid
Homogeneous No **# Layers** 2 **Asbestos Detected?** Yes
Non-Fibrous Components (in approx. decreasing order): filler, binder,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	paint	10	off-white	1	n.d.	-	-	-	-	-
2	sealant	90	tan	1	2-5%	-	-	-	-	-
	Total %	100		**Overall %**	2-5%	-	-	-	-	-
				Fiber Identification:	chrysotile asbestos					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	chrysotile asbestos	W	A	N	N	L	+	P	1.550	db/ly	sb/o	1.561	1.553
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent.

Sample HA-APS-0227-70 **Lab Number** 2020-02207- 70 **Sampled:** 2/27/2020 **Condition:** acceptable

Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** TSI Sticky

Homogeneous No **# Layers** 2 **Asbestos Detected?** No

Non-Fibrous Components (in approx. decreasing order): polymer, filler, binder

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	duct tape	70	black	1	n.d.	n.d.	-	-	-	-
2	mastic	30	black	1	<=1%	<=1%	-	-	-	-
	Total %	100		**Overall %**	<=1%	<=1%	-	-	-	-
				Fiber Identification:	cellulose	synthetic fiber (extr				

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	cellulose	W	F	N	N	H	+	U					
2	synthetic fiber (extruded)	W	E	N	N	H	+	P					
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent.

Sample HA-APS-0227-71 **Lab Number** 2020-02207- 71 **Sampled:** 2/27/2020 **Condition:** acceptable

Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** TSI Non-fibrous Solid

Homogeneous No **# Layers** 3 **Asbestos Detected?** No

Non-Fibrous Components (in approx. decreasing order): polymer, filler, binder

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	paint	10	off-white	1	n.d.	-	-	-	-	-
2	duct tape	60	black	1	n.d.	-	-	-	-	-
3	debris	30	gray	3	<=1%	-	-	-	-	-
	Total %	100		**Overall %**	<=1%	-	-	-	-	-
				Fiber Identification:	cellulose					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	cellulose	W	F	N	N	H	+	U					
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent.

Sample HA-APS-0227-72 **Lab Number** 2020-02207- 72 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** TSI Non-fibrous Solid
Homogeneous No **# Layers** 3 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): polymer, filler, binder

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	paint	10	off-white	1	n.d.	-	-	-	-	-
2	duct tape	70	black	1	n.d.	-	-	-	-	-
3	debris	20	gray	3	<=1%	-	-	-	-	-
	Total %	100		**Overall %**	<=1%	-	-	-	-	-
				Fiber Identification:	cellulose					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	cellulose	W	F	N	N	H	+	U					
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent.

Sample HA-APS-0227-73 **Lab Number** 2020-02207- 73 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Insulation Fibrous Mat
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): binder, glass,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	insulation	100	tan	3	90-100%	-	-	-	-	-
	Total %	100		**Overall %**	90-100%	-	-	-	-	-
				Fiber Identification:	glass fiber					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	glass fiber	CL	D	Y									
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-74 **Lab Number** 2020-02207- 74 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Insulation Fibrous Mat
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): binder, glass, debris

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	insulation	100	tan	3	90-100%	-	-	-	-	-
	Total %	100		**Overall %**	90-100%	-	-	-	-	-
				Fiber Identification:	glass fiber					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	glass fiber	CL	D	Y									
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-75 **Lab Number** 2020-02207- 75 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Insulation Fibrous Mat
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): binder, glass, debris

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	insulation	100	tan	3	90-100%	-	-	-	-	-
	Total %	100		**Overall %**	90-100%	-	-	-	-	-
				Fiber Identification:	glass fiber					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	glass fiber	CL	D	Y									
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-76 **Lab Number** 2020-02207- 76 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Adhesive/caulk Sticky
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): polymer, filler,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	sealant	100	clear	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent.

Sample HA-APS-0227-77 **Lab Number** 2020-02207- 77 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Adhesive/caulk Sticky
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): polymer, filler,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	sealant	100	clear	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent.

Sample HA-APS-0227-78 **Lab Number** 2020-02207- 78 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Adhesive/caulk Sticky
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): polymer, filler,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	sealant	100	clear	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent.

Sample HA-APS-0227-79 **Lab Number** 2020-02207- 79 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Flooring Non-fibrous Solid
Homogeneous No **# Layers** 2 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): filler, polymer,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	floor tile	97	off-white	1	n.d.	-	-	-	-	-
2	mastic	3	black	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of floor tile matrix and mastic using solvent.

Sample HA-APS-0227-80 **Lab Number** 2020-02207- 80 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Flooring Non-fibrous Solid
Homogeneous No **# Layers** 2 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): filler, polymer,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	floor tile	98	off-white	1	n.d.	-	-	-	-	-
2	mastic	2	black	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of floor tile matrix and mastic using solvent.

Sample HA-APS-0227-81 **Lab Number** 2020-02207- 81 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Flooring Non-fibrous Solid
Homogeneous No **# Layers** 2 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): filler, polymer,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	floor tile	98	off-white	1	n.d.	-	-	-	-	-
2	mastic	2	black	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of floor tile matrix and mastic using solvent.

Sample HA-APS-0227-82 **Lab Number** 2020-02207- 82 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Wall System Fibrous Solid
Homogeneous No **# Layers** 8 **Asbestos Detected?** Yes
Non-Fibrous Components (in approx. decreasing order): powder, binder,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	paint	1	off-white	1	n.d.	n.d.	-	-	-	-
2	texture/joint compound	2	white	3	n.d.	n.d.	-	-	-	-
3	paint	1	green	1	n.d.	n.d.	-	-	-	-
4	texture/joint compound	2	white	3	<=1%	n.d.	-	-	-	-
5	paper/cardboard	2	off-white	2	n.d.	90-100%	-	-	-	-
6	texture/joint compound	3	white	3	<=1%	n.d.	-	-	-	-
7	paper/cardboard	5	tan	2	n.d.	90-100%	-	-	-	-
8	drywall core	84	white	3	n.d.	>1-2%	-	-	-	-
	Total %	100		**Overall %**	<=1%	5-10%	-	-	-	-
				Fiber Identification:	chrysotile asbestos	cellulose fiber				

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	chrysotile asbestos	W	A	N	N	L	+	P	1.550	db/ly	sb/o	1.561	1.553
2	cellulose fiber	W	F	N	N	H	+	U					
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of paint matrix using solvent. Procedure: dissolution of joint compound/texture matrix using acid. Point Count: Layer Number 4,6; 1 asbestos counts per 400 total counts = .25 percent. Note: the texture/joint compound layers were identical in appearance and asbestos content. One point count was used to quantify them.

Sample HA-APS-0227-83 **Lab Number** 2020-02207- 83 **Sampled:** 2/27/2020 **Condition:** acceptable

Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Wall System Fibrous Solid

Homogeneous No **# Layers** 3 **Asbestos Detected?** No

Non-Fibrous Components (in approx. decreasing order): powder, binder,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	paint	2	various	1	n.d.	-	-	-	-	-
2	paper/cardboard	5	tan	2	90-100%	-	-	-	-	-
3	drywall core	93	white	3	>1-2%	-	-	-	-	-
	Total %	100		**Overall %**	5-10%	-	-	-	-	-
				Fiber Identification:	cellulose fiber					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	cellulose fiber	W	F	N	N	H	+	U					
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of paint matrix using solvent. No texture.

Sample HA-APS-0227-84 **Lab Number** 2020-02207- 84 **Sampled:** 2/27/2020 **Condition:** acceptable

Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Wall System Fibrous Solid

Homogeneous No **# Layers** 3 **Asbestos Detected?** No

Non-Fibrous Components (in approx. decreasing order): powder, binder,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	paint	2	off-white	1	n.d.	-	-	-	-	-
2	paper/cardboard	5	tan	2	90-100%	-	-	-	-	-
3	drywall core	93	white	3	>1-2%	-	-	-	-	-
	Total %	100		**Overall %**	5-10%	-	-	-	-	-
				Fiber Identification:	cellulose fiber					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	cellulose fiber	W	F	N	N	H	+	U					
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of paint matrix using solvent. No texture.

Sample HA-APS-0227-85 **Lab Number** 2020-02207- 85 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Acoustical Tile Fibrous Mat
Homogeneous No **# Layers** 2 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): filler, binder,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	paint	2	white	1	n.d.	-	-	-	-	-
2	acoustical tile	98	tan	3	80-90%	-	-	-	-	-
	Total %	100		**Overall %**	80-90%	-	-	-	-	-
				Fiber Identification:	cellulose fiber					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	cellulose fiber	W	F	N	N	H	+	U					
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent.

Sample HA-APS-0227-86 **Lab Number** 2020-02207- 86 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Acoustical Tile Fibrous Mat
Homogeneous No **# Layers** 2 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): filler, binder,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	paint	2	white	1	n.d.	-	-	-	-	-
2	acoustical tile	98	tan	3	80-90%	-	-	-	-	-
	Total %	100		**Overall %**	80-90%	-	-	-	-	-
				Fiber Identification:	cellulose fiber					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	cellulose fiber	W	F	N	N	H	+	U					
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent.

Sample HA-APS-0227-87 **Lab Number** 2020-02207- 87 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Acoustical Tile Fibrous Mat
Homogeneous No **# Layers** 2 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): filler, binder,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	paint	2	white	1	n.d.	-	-	-	-	-
2	acoustical tile	98	tan	3	80-90%	-	-	-	-	-
	Total %	100		**Overall %**	80-90%	-	-	-	-	-
				Fiber Identification:	cellulose fiber					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	cellulose fiber	W	F	N	N	H	+	U					
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent.

Sample HA-APS-0227-88 **Lab Number** 2020-02207- 88 **Sampled:** 2/27/2020 **Condition:** acceptable

Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Miscellaneous Rubbery

Homogeneous No **# Layers** 2 **Asbestos Detected?** No

Non-Fibrous Components (in approx. decreasing order): polymer, filler,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	base cove	95	gray	1	n.d.	-	-	-	-	-
2	mastic	5	tan	1	<=1%	-	-	-	-	-
	Total %	100		**Overall %**	<=1%	-	-	-	-	-
				Fiber Identification:	cellulose fiber					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	cellulose fiber	W	F	N	N	H	+	U					
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of polymer matrix using solvent. Minor adhering wall paint and/or texture, etc. not analyzed.

Sample HA-APS-0227-89 **Lab Number** 2020-02207- 89 **Sampled:** 2/27/2020 **Condition:** acceptable

Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Miscellaneous Rubbery

Homogeneous No **# Layers** 2 **Asbestos Detected?** No

Non-Fibrous Components (in approx. decreasing order): polymer, filler,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	base cove	97	gray	1	n.d.	-	-	-	-	-
2	mastic	3	tan	1	<=1%	-	-	-	-	-
	Total %	100		**Overall %**	<=1%	-	-	-	-	-
				Fiber Identification:	cellulose fiber					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	cellulose fiber	W	F	N	N	H	+	U					
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of polymer matrix using solvent. Minor adhering wall paint and/or texture, etc. not analyzed.

Sample HA-APS-0227-90 **Lab Number** 2020-02207- 90 **Sampled:** 2/27/2020 **Condition:** acceptable

Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Miscellaneous Rubbery

Homogeneous No **# Layers** 2 **Asbestos Detected?** No

Non-Fibrous Components (in approx. decreasing order): polymer, filler,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	base cove	65	gray	1	n.d.	-	-	-	-	-
2	mastic	35	tan	1	<=1%	-	-	-	-	-
	Total %	100		**Overall %**	<=1%	-	-	-	-	-
				Fiber Identification:	cellulose fiber					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	cellulose fiber	W	F	N	N	H	+	U					
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of polymer matrix using solvent. Minor adhering wall paint and/or texture, etc. not analyzed.

Sample HA-APS-0227-91 **Lab Number** 2020-02207- 91 **Sampled:** 2/27/2020 **Condition:** acceptable

Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Insulation Fibrous Mat

Homogeneous No **# Layers** 2 **Asbestos Detected?** No

Non-Fibrous Components (in approx. decreasing order): binder, glass, bitumen

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	bitumen-paper	20	black	1	80-90%	n.d.	-	-	-	-
2	insulation	80	yellow	3	<=1%	90-100%	-	-	-	-
	Total %	100		**Overall %**	10-20%	70-80%	-	-	-	-
				Fiber Identification:	cellulose fiber	glass fiber				

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	cellulose fiber	W	F	N	N	H	+	U					
2	glass fiber	CL	D	Y									
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-92 **Lab Number** 2020-02207- 92 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Insulation Fibrous Mat
Homogeneous No **# Layers** 2 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): binder, glass, bitumen

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	bitumen-paper	15	black	1	80-90%	n.d.	-	-	-	-
2	insulation	85	yellow	3	<=1%	90-100%	-	-	-	-
	Total %	100		**Overall %**	10-20%	70-80%	-	-	-	-
				Fiber Identification:	cellulose fiber	glass fiber				

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	cellulose fiber	W	F	N	N	H	+	U					
2	glass fiber	CL	D	Y									
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-93 **Lab Number** 2020-02207- 93 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Insulation Fibrous Mat
Homogeneous No **# Layers** 2 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): binder, glass, bitumen

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	bitumen-paper	35	black	1	80-90%	n.d.	-	-	-	-
2	insulation	65	yellow	3	<=1%	90-100%	-	-	-	-
	Total %	100		**Overall %**	30-40%	50-60%	-	-	-	-
				Fiber Identification:	cellulose fiber	glass fiber				

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	cellulose fiber	W	F	N	N	H	+	U					
2	glass fiber	CL	D	Y									
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-94 **Lab Number** 2020-02207- 94 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Adhesive/caulk Rubbery
Homogeneous No **# Layers** 2 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, binder, filler

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	paint	1	white	1	n.d.	-	-	-	-	-
2	sealant	99	off-white	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of polymer matrix using solvent.

Sample HA-APS-0227-95 **Lab Number** 2020-02207- 95 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Adhesive/caulk Rubbery
Homogeneous No **# Layers** 2 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, binder, filler

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	paint	1	white	1	n.d.	-	-	-	-	-
2	sealant	99	off-white	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of polymer matrix using solvent.

Sample HA-APS-0227-96 **Lab Number** 2020-02207- 96 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Adhesive/caulk Rubbery
Homogeneous No **# Layers** 2 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, binder, filler

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	paint	1	white	1	n.d.	-	-	-	-	-
2	sealant	99	off-white	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of polymer matrix using solvent.

Sample HA-APS-0227-97 **Lab Number** 2020-02207- 97 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-98 **Lab Number** 2020-02207- 98 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-99 **Lab Number** 2020-02207- 99 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample HA-APS-0227-100 **Lab Number** 2020-02207- 100 **Sampled:** 2/27/2020 **Condition:** acceptable
Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Surfacing Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No
Non-Fibrous Components (in approx. decreasing order): rock, bitumen, filler

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	asphalt	100	black	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note
Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent.

Sample HA-APS-0227-101 **Lab Number** 2020-02207- 101 **Sampled:** 2/27/2020 **Condition:** acceptable

Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Surfacing Non-fibrous Solid

Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No

Non-Fibrous Components (in approx. decreasing order): rock, bitumen, filler

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	asphalt	100	black	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent.

Sample HA-APS-0227-102 **Lab Number** 2020-02207- 102 **Sampled:** 2/27/2020 **Condition:** acceptable

Analyzed By RAM 3/5/2020 **An?** OK **Apparent Smp Type** Surfacing Non-fibrous Solid

Homogeneous Yes **# Layers** 1 **Asbestos Detected?** No

Non-Fibrous Components (in approx. decreasing order): rock, bitumen, filler

Layers

#	Layer Type	%	Color	Friability	Calibrated Visual Estimate of Percents of Each Fiber: Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	asphalt	100	black	1	n.d.	-	-	-	-	-
	Total %	100		**Overall %**	n.d.	-	-	-	-	-
				Fiber Identification:	none					

Fibers

		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations: Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent.

Fr=Friability: 1=very non-friable; 2= non-friable; 3=friable; 4=highly friable
Colors: B=black;BL=blue;BR=brown;CL=clear;G=Green;GY=gray;OR=orange;OW=off-white;PN=pink;PU=purple;R=red;TN=tan;W=white;Y=yellow;V=various
Fiber Morphology: A=fine fibers/bundles, white, sinewy, flexible; B=fine fibers/bundles, w-br, straight, broomed ends; C=fine fibers/bundles, blue, straight, broomed ends; D=fine to coarse fibers, CL-B, brittle; E=coarse fibers,CL or dyed, striated; F=coarse fibers or splinters, W-BR, ribbon-like; G=lath-like or shards, low aspect ratio, may taper
Iso=isotropism - may be yes or no; Pleo=pleochroism - may be yes or no; Bi=birefringence - may be None, Low, Medium or High
Elg=sign of elongation - may be +, - or B (both); Ext=extinction - may be Parallel, Oblique, None or Undulating; Oil=medium used to for dispersion staining
Col Par=dispersion staining colors parallel to the fiber (fiber/halo): b/w=black/white; dg/py=dark gray/pale yellow; vg/y=violet gray/yellow; db/ly=dark blue/lemon yellow; vb/g= vivid blue/gold; sb/o=sky blue/orange; pb/r=pale blue/red; gb/dr=gray blue/dark red; w/b=white/black. Col Perp=same only perpendicular to fiber.
RI Par=refractive index parallel to fiber; RI Perp=refractive index perpendicular to fiber

Analyst: ROBERT A. McCORMICK

Printed: 05-Mar-20

Original Print Date: 05-Mar-20

Larry S. Pierce, Approved Accreditation Signatory

FIBERQUANT ANALYTICAL SERVICES

Fiberquant Analytical Services 5025 S. 33rd St.; Phoenix, AZ 85040; Phone: 602-276-6139; FAX: 602-276-4558; info@fiberquant.com

Analysis Request/Chain-of-Custody Form

Submitted by (Company)	**HUTZEL AND ASSOCIATES**
Address	1626 E ALICIA DRIVE
City, State, Zip Code	PHOENIX, AZ 85042
Phone (602) 323-0222	FAX
Email	aanderson@hutzel.net

Invoice to (Company)	ERM / ERAP
Address	
City, State, Zip Code	
Phone	FAX

Contact (print)	Augustine Anderson (602)549-6820
Sampled by (signature)	
Job Number or Project Name	20-12557 APS Prescott City Substation
PO Number	

<Analysis Method Requested> ONLY ONE METHOD per COC			Turn-around-time (circle one) Rush		Norm	Ext.
Asbestos by PLM	Method > Improved Interim		Urgent Rush <3 hrs	<6 hrs	1-3 days	15-30 days
	Analyze > All ATPF					
	If ATPF then > by Layer by Sample					
	Single Layer Protocol > Yes No					
Fibers by PCM	Method > 7400 (Area) ORM (Personal)		<4 hrs		24 hrs	-
Asbestos by TEM	in Air > AHERA Mod. AHERA		<6 hrs		24 hrs	3-5 days
	in Water* > Water Sludge		1-2 days		3-5 days	N/A
	in Bulk (Annex2) > Chatfield Full Quant.					
	in Dust > ASTM D5755		3-5 days		5-10 days	N/A
Pb by FLAA	Analyte > Pb Other		<6 hrs		2-3 days	N/A
	Matrix > Filter > MCE FG					
	Paint > by Area (mg/cm²) by Weight (ppm)					
	Soil >					
	Wipe >					
	Initial here certifying wipes used are ASTM E1792 compliant _____					
Fungi	Air Sample > Zefon Aller Other		<6 hrs		1-2 days	N/A
	Bulk > Sample Swab					
	Tape Lift > Qualitative (% & type)					
	Quantitative (type/cm2)					
Soot	ASTM D6602-03b	Optical	<6 hrs		1-2 days	N/A
		Optical & TEM	1-2 days		3-5 days	N/A
Other			Call		Call	

Sample # (1 per line)	Description/Location	Sample Date	Sample Time	Vol. or Area
HA-APS-0227-01	Concrete, fence footers/Perimeter chain link fence	2/27/2020	N/A	N/A
HA-APS-0227-02	Concrete, fence footers/Perimeter chain link fence	2/27/2020	N/A	N/A
HA-APS-0227-03	Concrete, fence footers/Perimeter chain link fence	2/27/2020	N/A	N/A
HA-APS-0227-04	24 in. x 24 in. abandoned concrete footer/Near control house	2/27/2020	N/A	N/A
HA-APS-0227-05	24 in. x 24 in. abandoned concrete footer/Near control house	2/27/2020	N/A	N/A
HA-APS-0227-06	24 in. x 24 in. abandoned concrete footer/Near control house	2/27/2020	N/A	N/A
HA-APS-0227-07	40 in x 40 in concrete footer/metal structure	2/27/2020	N/A	N/A
HA-APS-0227-08	40 in x 40 in concrete footer/metal structure	2/27/2020	N/A	N/A
HA-APS-0227-09	40 in x 40 in concrete footer/metal structure	2/27/2020	N/A	N/A
HA-APS-0227-10	3 ft. x 5 ft. concrete footer/ Sulfur Hexafluoride Circuit Breaker-PC162	2/27/2020	N/A	N/A
HA-APS-0227-11	3 ft. x 5 ft. concrete footer/Sulfur Hexafluoride Circuit Breaker-PC362	2/27/2020	N/A	N/A
HA-APS-0227-12	3 ft. x 5 ft. concrete footer/Sulfur Hexafluoride Circuit Breaker-PC462	2/27/2020	N/A	N/A
HA-APS-0227-13	5 ft. x 14 ft concrete pad/ East of Sulfur Hexafluoride Circuit Breaker PC262	2/27/2020	N/A	N/A
HA-APS-0227-14	5 ft. x 14 ft concrete pad/ East of Sulfur Hexafluoride Circuit Breaker PC262	2/27/2020	N/A	N/A
HA-APS-0227-15	5 ft. x 14 ft concrete pad/ East of Sulfur Hexafluoride Circuit Breaker PC262	2/27/2020	N/A	N/A

1)Relinquished by:	Date: 2-28	Time: 10:04	3)Relinquished by:	Date:	Time:
2)Received by:	Date: 2-28-2020	Time: 1009	4)Received by:	Date:	Time:
* TEM Water Sampler's name Required by State of Arizona	Print Name		Fiberquant assigned Job Number>		
Review of Analysis Request (Initials):				Page 1 of 7	

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Email	aanderson@hutzel.net

Invoice to (Company)	ERM / ERAP
Address	
City, State, Zip Code	
Phone	FAX

Contact (print)	Augustine Anderson (602)549-6820
Sampled by (signature)	
Job Number or Project Name	20-12557 APS Prescott City Substation
PO Number	

<Analysis Method Requested> ONLY ONE METHOD per COC		Turn-around-time (circle one) Rush		Norm	Ext.
Asbestos by **PLM**	Method > Improved Interim Analyze > All ATPF If ATPF then > by Layer by Sample Single Layer Protocol > Yes No	Urgent Rush <3 hrs	<6 hrs	1-3 days	15-30 days
Fibers by **PCM**	Method > 7400 (Area) ORM (Personal)	<4 hrs		24 hrs	-
Asbestos by **TEM**	in Air > AHERA Mod. AHERA	<6 hrs		24 hrs	3-5 days
	in Water* > Water Sludge	1-2 days		3-5 days	N/A
	in Bulk (Annex2) > Chatfield Full Quant.				
	in Dust > ASTM D5755	3-5 days		5-10 days	N/A
Pb by **FLAA**	Analyte > Pb Other Matrix > Filter > MCE FG Paint > by Area (mg/cm²) by Weight (ppm) Soil > Wipe > Initial here certifying wipes used are ASTM E1792 compliant _____	<6 hrs		2-3 days	N/A
Fungi	Air Sample > Zefon Aller Other Bulk > Sample Swab Tape Lift > Qualitative (% & type) Quantitative (type/cm2)	<6 hrs		1-2 days	N/A
Soot	ASTM D6602-03b Optical	<6 hrs		1-2 days	N/A
	Optical & TEM	1-2 days		3-5 days	N/A
Other		Call		Call	

Sample # (1 per line)	Description/Location	Sample Date	Sample Time	Vol. or Area
HA-APS-0227-16	3 ft. x 4 ft. abandoned concrete foundation/North of Sulfur Hexafluoride Circuit Breaker PC462	2/27/2020	N/A	N/A
HA-APS-0227-17	3 ft. x 4 ft. abandoned concrete foundation/North of Sulfur Hexafluoride Circuit Breaker PC462	2/27/2020	N/A	N/A
HA-APS-0227-18	3 ft. x 4 ft. abandoned concrete foundation/North of Sulfur Hexafluoride Circuit Breaker PC462	2/27/2020	N/A	N/A
HA-APS-0227-19	7 ft. x 40 ft. abandoned concrete pad/Center North of PC462 & PC262	2/27/2020	N/A	N/A
HA-APS-0227-20	7 ft. x 40 ft. abandoned concrete pad/Center North of PC462 & PC262	2/27/2020	N/A	N/A
HA-APS-0227-21	7 ft. x 40 ft. abandoned concrete pad/Center North of PC462 & PC262	2/27/2020	N/A	N/A
HA-APS-0227-22	4 ft. x 4 ft. concrete pad with plate cover/South of PC262	2/27/2020	N/A	N/A
HA-APS-0227-23	4 ft. x 4 ft. concrete pad with plate cover/South of PC262	2/27/2020	N/A	N/A
HA-APS-0227-24	4 ft. x 4 ft. concrete pad with plate cover/South of PC262	2/27/2020	N/A	N/A
HA-APS-0227-25	6 1/2 ft. x 20 ft. abandoned concrete footer with metal rails/Northeast of Control House	2/27/2020	N/A	N/A
HA-APS-0227-26	6 1/2 ft. x 20 ft. abandoned concrete footer with metal rails/Northeast of Control House	2/27/2020	N/A	N/A
HA-APS-0227-27	6 1/2 ft. x 20 ft. abandoned concrete footer with metal rails/Northeast of Control House	2/27/2020	N/A	N/A
HA-APS-0227-28	5 ft. x 9 ft. concrete foundation/GE Distribution Break PC142	2/27/2020	N/A	N/A
HA-APS-0227-29	5 ft. x 9 ft. concrete foundation/GE Distribution Break PC142	2/27/2020	N/A	N/A
HA-APS-0227-30	5 ft. x 9 ft. concrete foundation/GE Distribution Break PC742	2/27/2020	N/A	N/A

1)Relinquished by:	Date: 2-28	Time: 10:09	3)Relinquished by:	Date:	Time:
2)Received by:	Date: 2-28-2020	Time: 10:09	4)Received by:	Date:	Time:
* TEM Water: Sampler's name Required by State of Arizona	Print Name		Fiberquant assigned Job Number>		
Review of Analysis Request (Initials):				Page 2 of 7	

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Invoice to (Company)	ERM / ERAP
Address	
City, State, Zip Code	
Phone	FAX

Contact (print)	Augustine Anderson (602)549-6820
Sampled by (signature)	
Job Number or Project Name	20-12557 APS Prescott City Substation
PO Number	

<Analysis Method Requested> ONLY ONE METHOD per COC			Turn-around-time (circle one) Rush		Norm	Ext.
Asbestos by **PLM**	Method >	Improved / Interim	Urgent Rush <3 hrs	<6 hrs	1-3 days	15-30 days
	Analyze >	All / ATPF				
	If ATPF then >	by Layer / by Sample				
	Single Layer Protocol >	Yes / No				
Fibers by **PCM**	Method >	7400 (Area) / ORM (Personal)	<4 hrs		24 hrs	-
Asbestos by **TEM**	in Air >	AHERA / Mod. AHERA	<6 hrs		24 hrs	3-5 days
	in Water* >	Water / Sludge	1-2 days		3-5 days	N/A
	in Bulk (Annex2) >	Chatfield / Full Quant.				
	in Dust >	ASTM D5755	3-5 days		5-10 days	N/A
Pb by **FLAA**	Analyte >	Pb / Other	<6 hrs		2-3 days	N/A
	Matrix >	Filter > MCE / FG				
		Paint > by Area (mg/cm²) / by Weight (ppm)				
		Soil >				
		Wipe >				
	Initial here certifying wipes used are ASTM E1792 compliant _____					
Fungi	Air Sample >	Zefon / Aller / Other	<6 hrs		1-2 days	N/A
	Bulk >	Sample / Swab				
	Tape Lift >	Qualitative (% & type)				
		Quantitative (type/cm2)				
Soot	ASTM D6602-03b	Optical	<6 hrs		1-2 days	N/A
		Optical & TEM	1-2 days		3-5 days	N/A
Other			Call		Call	

Sample # (1 per line)	Description/Location	Sample Date	Sample Time	Vol. or Area
HA-APS-0227-31	Abandoned rough finish foundation/North of GE Distribution Break PC142	2/27/2020	N/A	N/A
HA-APS-0227-32	Abandoned rough finish foundation/North of GE Distribution Break PC142	2/27/2020	N/A	N/A
HA-APS-0227-33	Abandoned rough finish foundation/North of GE Distribution Break PC142	2/27/2020	N/A	N/A
HA-APS-0227-34	7 ft. x 6 ft. abandoned concrete slab/North of GE Distribution Break PC142	2/27/2020	N/A	N/A
HA-APS-0227-35	7 ft. x 6 ft. abandoned concrete slab/North of GE Distribution Break PC142	2/27/2020	N/A	N/A
HA-APS-0227-36	7 ft. x 6 ft. abandoned concrete slab/North of GE Distribution Break PC142	2/27/2020	N/A	N/A
HA-APS-0227-37	Secondary concrete containment/Perimeter of 3 Phase Transformer NO2 XFMR & XFMR6	2/27/2020	N/A	N/A
HA-APS-0227-38	Secondary concrete containment/Perimeter of 3 Phase Transformer NO2 XFMR & XFMR6	2/27/2020	N/A	N/A
HA-APS-0227-39	Secondary concrete containment/Perimeter of 3 Phase Transformer NO2 XFMR & XFMR6	2/27/2020	N/A	N/A
HA-APS-0227-40	7 ft. x 29 ft. with metal rails/3 phase transformer NO2 XFMR	2/27/2020	N/A	N/A
HA-APS-0227-41	7 ft. x 29 ft. with metal rails/3 phase transformer NO2 XFMR	2/27/2020	N/A	N/A
HA-APS-0227-42	7 ft. x 29 ft. with metal rails/3 phase transformer NO2 XFMR	2/27/2020	N/A	N/A
HA-APS-0227-43	30 in x 26 in. concrete foundation with plate cover/NE of 3 Phase Transformer NO2 XFMR	2/27/2020	N/A	N/A
HA-APS-0227-44	30 in x 26 in. concrete foundation with plate cover/NE of 3 Phase Transformer NO2 XFMR	2/27/2020	N/A	N/A
HA-APS-0227-45	30 in x 26 in. concrete foundation with plate cover/NE of 3 Phase Transformer NO2 XFMR	2/27/2020	N/A	N/A

1)Relinquished by:	Date: 2.28	Time: 10:09	3)Relinquished by:	Date:	Time:
2)Received by:	Date: 2-28-2020	Time: 10:09	4)Received by:	Date:	Time:
* TEM Water: Sampler's name Required by State of Arizona	Print Name		Fiberquant assigned Job Number>		

Review of Analysis Request (Initials): EH

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FIBERQUANT ANALYTICAL SERVICES

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Invoice to (Company)	ERM / ERAP
Address	
City, State, Zip Code	
Phone	FAX

Contact (print)	Augustine Anderson (602)549-6820
Sampled by (signature)	
Job Number or Project Name	20-12557 APS Prescott City Substation
PO Number	

<Analysis Method Requested> ONLY ONE METHOD per COC		Turn-around-time (circle one) Rush		Norm	Ext.
Asbestos by **PLM**	Method > Improved Interim	Urgent Rush <3 hrs	<6 hrs	1-2 days	15-30 days
	Analyze > All ATPF				
	If ATPF then > by Layer by Sample				
	Single Layer Protocol > Yes No				
Fibers by **PCM**	Method > 7400 (Area) ORM (Personal)	<4 hrs		24 hrs	-
Asbestos by **TEM**	in Air > AHERA Mod. AHERA	<6 hrs		24 hrs	3-5 days
	in Water* > Water Sludge	1-2 days		3-5 days	N/A
	in Bulk (Annex2) > Chatfield Full Quant.				
	in Dust > ASTM D5755	3-5 days		5-10 days	N/A
Pb by **FLAA**	Analyte > Pb Other	<6 hrs		2-3 days	N/A
	Matrix > Filter > MCE FG				
	Paint > by Area (mg/cm²) by Weight (ppm)				
	Soil >				
	Wipe >				
	Initial here certifying wipes used are ASTM E1792 compliant _____				
Fungi	Air Sample > Zefon Aller Other	<6 hrs		1-2 days	N/A
	Bulk > Sample Swab				
	Tape Lift > Qualitative (% & type)				
	Quantitative (type/cm2)				
Soot	ASTM D6602-03b Optical	<6 hrs		1-2 days	N/A
	Optical & TEM	1-2 days		3-5 days	N/A
Other		Call		Call	

Sample # (1 per line)	Description/Location	Sample Date	Sample Time	Vol. or Area
HA-APS-0227-46	10 ft. 14 ft. concrete pad/ 3 phase transformer XFMR6	2/27/2020	N/A	N/A
HA-APS-0227-47	10 ft. 14 ft. concrete pad/ 3 phase transformer XFMR6	2/27/2020	N/A	N/A
HA-APS-0227-48	10 ft. 14 ft. concrete pad/ 3 phase transformer XFMR6	2/27/2020	N/A	N/A
HA-APS-0227-49	Unearthed concrete with rebar/Northwest of XFMR6	2/27/2020	N/A	N/A
HA-APS-0227-50	Unearthed concrete with rebar/Northwest of XFMR6	2/27/2020	N/A	N/A
HA-APS-0227-51	Unearthed concrete with rebar/Northwest of XFMR6	2/27/2020	N/A	N/A
HA-APS-0227-52	CMU wall/Outside of chain-link fence	2/27/2020	N/A	N/A
HA-APS-0227-53	CMU wall/Outside of chain-link fence	2/27/2020	N/A	N/A
HA-APS-0227-54	CMU wall/Outside of chain-link fence	2/27/2020	N/A	N/A
HA-APS-0227-55	Concrete perimeter fence wall/perimeter of substation	2/27/2020	N/A	N/A
HA-APS-0227-56	Concrete perimeter fence wall/perimeter of substation	2/27/2020	N/A	N/A
HA-APS-0227-57	Concrete perimeter fence wall/perimeter of substation	2/27/2020	N/A	N/A
HA-APS-0227-58	Concrete Foundation/ Control House	2/27/2020	N/A	N/A
HA-APS-0227-59	Concrete Foundation/ Control House	2/27/2020	N/A	N/A
HA-APS-0227-60	Concrete Foundation/ Control House	2/27/2020	N/A	N/A

1)Relinquished by:	Date: 2-28	Time: 1009	3)Relinquished by:	Date:	Time:
2)Received by:	Date: 2-28-2020	Time: 1009	4)Received by:	Date:	Time:
* Total Water Sampler's name Required by State of Arizona	Print Name		Fiberquant assigned Job Number>		
Review of Analysis Request (Initials):				Page 4 of 7	

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PO Number	

<Analysis Method Requested> ONLY ONE METHOD per COC			Turn-around-time (circle one) Rush		Norm	Ext.
Asbestos by **PLM**	Method > Improved Interim		Urgent Rush <3 hrs	<6 hrs	1-3 days	15-30 days
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	If ATPF then > by Layer by Sample					
	Single Layer Protocol > Yes No					
Fibers by **PCM**	Method > 7400 (Area) ORM (Personal)		<4 hrs		24 hrs	-
Asbestos by **TEM**	in Air > AHERA Mod. AHERA		<6 hrs		24 hrs	3-5 days
	in Water* > Water Sludge		1-2 days		3-5 days	N/A
	in Bulk (Annex2) > Chatfield Full Quant.					
	in Dust > ASTM D5755		3-5 days		5-10 days	N/A
Pb by **FLAA**	Analyte > Pb Other		<6 hrs		2-3 days	N/A
	Matrix > Filter > MCE FG					
	Paint > by Area (mg/cm²) by Weight (ppm)					
	Soil >					
	Wipe >					
	Initial here certifying wipes used are ASTM E1792 compliant _____					
Fungi	Air Sample > Zefon Aller Other		<6 hrs		1-2 days	N/A
	Bulk > Sample Swab					
	Tape Lift > Qualitative (% & type)					
	Quantitative (type/cm2)					
Soot	ASTM D6602-03b	Optical	<6 hrs		1-2 days	N/A
		Optical & TEM	1-2 days		3-5 days	N/A
Other			Call		Call	

Sample # (1 per line)	Description/Location	Sample Date	Sample Time	Vol. or Area
HA-APS-0227-61	Caulk-Exterior window / Control House	2/27/2020	N/A	N/A
HA-APS-0227-62	Caulk-Exterior window / Control House	2/27/2020	N/A	N/A
HA-APS-0227-63	Caulk-Exterior window / Control House	2/27/2020	N/A	N/A
HA-APS-0227-64	Caulk-Door w/window / Control House	2/27/2020	N/A	N/A
HA-APS-0227-65	Caulk-Door w/window / Control House	2/27/2020	N/A	N/A
HA-APS-0227-66	Caulk-Door w/window / Control House	2/27/2020	N/A	N/A
HA-APS-0227-67	Caulk-Between building panels / Control House	2/27/2020	N/A	N/A
HA-APS-0227-68	Caulk-Between building panels / Control House	2/27/2020	N/A	N/A
HA-APS-0227-69	Caulk-Between building panels / Control House	2/27/2020	N/A	N/A
HA-APS-0227-70	Black Pipe Wrap / Control House	2/27/2020	N/A	N/A
HA-APS-0227-71	Black Pipe Wrap / Control House	2/27/2020	N/A	N/A
HA-APS-0227-72	Black Pipe Wrap / Control House	2/27/2020	N/A	N/A
HA-APS-0227-73	Panel Insulation / Control House	2/27/2020	N/A	N/A
HA-APS-0227-74	Panel Insulation / Control House	2/27/2020	N/A	N/A
HA-APS-0227-75	Panel Insulation / Control House	2/27/2020	N/A	N/A

1)Relinquished by:	Date: 2-28	Time: 1069	3)Relinquished by:	Date:	Time:
2)Received by:	Date: 2-28-2020	Time: 1009	4)Received by:	Date:	Time:
* TEM Water: Sampler's name Required by State of Arizona	Print Name		Fiberquant assigned Job Number>		
Review of Analysis Request (Initials):				Page 5 of 7	

Important: By signing above you as Fiberquant's customer are agreeing to payment within 30 days unless other arrangements are made in writing.
Note: Data completed by client (including number and identity of samples) is assumed to be correct until it is verified at time of sample preparation.

FIBERQUANT ANALYTICAL SERVICES

Fiberquant Analytical Services 5025 S. 33rd St.; Phoenix, AZ 85040; Phone: 602-276-6139; FAX: 602-276-4558; info@fiberquant.com

Analysis Request/Chain-of-Custody Form

Submitted by (Company)	**HUTZEL AND ASSOCIATES**
Address	1626 E ALICIA DRIVE
City, State, Zip Code	PHOENIX, AZ 85042
Phone (602) 323-0222	FAX
Email	aanderson@hutzel.net

Invoice to (Company)	ERM / ERAP
Address	
City, State, Zip Code	
Phone	FAX

Contact (print)	Augustine Anderson (602)549-6820
Sampled by (signature)	
Job Number or Project Name	20-12557 APS Prescott City Substation
PO Number	

<Analysis Method Requested> ONLY ONE METHOD per COC		Turn-around-time (circle one) Rush		Norm	Ext.
Asbestos by PLM	Method > Improved Interim	Urgent Rush <3 hrs	<6 hrs	1-3 days	15-30 days
	Analyze > All ATPF				
	If ATPF then > by Layer by Sample				
	Single Layer Protocol > Yes No				
Fibers by PCM	Method > 7400 (Area) ORM (Personal)	<4 hrs		24 hrs	-
Asbestos by TEM	in Air > AHERA Mod. AHERA	<6 hrs		24 hrs	3-5 days
	in Water* > Water Sludge	1-2 days		3-5 days	N/A
	in Bulk (Annex2) > Chatfield Full Quant.				
	in Dust > ASTM D5755	3-5 days		5-10 days	N/A
Pb by FLAA	Analyte > Pb Other	<6 hrs		2-3 days	N/A
	Matrix > Filter > MCE FG				
	Paint > by Area (mg/cm²) by Weight (ppm)				
	Soil >				
	Wipe >				
	Initial here certifying wipes used are ASTM E1792 compliant _____				
Fungi	Air Sample > Zefon Aller Other	<6 hrs		1-2 days	N/A
	Bulk > Sample Swab				
	Tape Lift > Qualitative (% & type)				
	Quantitative (type/cm2)				
Soot	ASTM D6602-03b Optical	<6 hrs		1-2 days	N/A
	Optical & TEM	1-2 days		3-5 days	N/A
Other		Call		Call	

Sample # (1 per line)	Description/Location	Sample Date	Sample Time	Vol. or Area
HA-APS-0227-76	Caulk-Clear Patchwork / Control House	2/27/2020	N/A	N/A
HA-APS-0227-77	Caulk-Clear Patchwork / Control House	2/27/2020	N/A	N/A
HA-APS-0227-78	Caulk-Clear Patchwork / Control House	2/27/2020	N/A	N/A
HA-APS-0227-79	12"x12" VCT Floor Tile & Mastic / Control House	2/27/2020	N/A	N/A
HA-APS-0227-80	12"x12" VCT Floor Tile & Mastic / Control House	2/27/2020	N/A	N/A
HA-APS-0227-81	12"x12" VCT Floor Tile & Mastic / Control House	2/27/2020	N/A	N/A
HA-APS-0227-82	Drywall System / Control House	2/27/2020	N/A	N/A
HA-APS-0227-83	Drywall System / Control House	2/27/2020	N/A	N/A
HA-APS-0227-84	Drywall System / Control House	2/27/2020	N/A	N/A
HA-APS-0227-85	12"x12" Ceiling Tile, No mastic / Control House	2/27/2020	N/A	N/A
HA-APS-0227-86	12"x12" Ceiling Tile, No mastic / Control House	2/27/2020	N/A	N/A
HA-APS-0227-87	12"x12" Ceiling Tile, No mastic / Control House	2/27/2020	N/A	N/A
HA-APS-0227-88	Brown Cove Base & Mastic / Control House	2/27/2020	N/A	N/A
HA-APS-0227-89	Brown Cove Base & Mastic / Control House	2/27/2020	N/A	N/A
HA-APS-0227-90	Brown Cove Base & Mastic / Control House	2/27/2020	N/A	N/A

1)Relinquished by:	Date: 2/28	Time: 1109	3)Relinquished by:	Date:	Time:
2)Received by:	Date: 2-28-2020	Time: 1009	4)Received by:	Date:	Time:
* TEM Water: Sampler's name Required by State of Arizona	Print Name		Fiberquant assigned Job Number>		

Review of Analysis Request (Initials) SA

@ 6-7 pages

FIBERQUANT ANALYTICAL SERVICES

Fiberquant Analytical Services 5025 S. 33rd St.; Phoenix, AZ 85040; Phone: 602-276-6139; FAX: 602-276-4558; info@fiberquant.com

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City, State, Zip Code	PHOENIX, AZ 85042
Phone (602) 323-0222	FAX
Email	aanderson@hutzel.net

Invoice to (Company)	ERM / ERAP
Address	
City, State, Zip Code	
Phone	FAX

Contact (print)	Augustine Anderson (602)549-6820
Sampled by (signature)	
Job Number or Project Name	20-12557 APS Prescott City Substation
PO Number	

<Analysis Method Requested> ONLY ONE METHOD per COC			Turn-around-time (circle one) Rush		Norm	Ext.
Asbestos by **PLM**	Method > Improved Interim		Urgent Rush <3 hrs	<6 hrs	1-3 days	15-30 days
	Analyze > All ATPF					
	If ATPF then by Layer by Sample					
	Single Layer Protocol > Yes No					
Fibers by **PCM**	Method > 7400 (Area) ORM (Personal)		<4 hrs		24 hrs	-
Asbestos by **TEM**	in Air > AHERA Mod. AHERA		<6 hrs		24 hrs	3-5 days
	in Water* > Water Sludge		1-2 days		3-5 days	N/A
	in Bulk (Annex2) > Chatfield Full Quant.					
	in Dust > ASTM D5755		3-5 days		5-10 days	N/A
Pb by **FLAA**	Analyte > Pb Other		<6 hrs		2-3 days	N/A
	Matrix > Filter > MCE FG					
	Paint > by Area (mg/cm²) by Weight (ppm)					
	Soil >					
	Wipe >					
	Initial here certifying wipes used are ASTM E1792 compliant _____					
Fungi	Air Sample > Zefon Aller Other		<6 hrs		1-2 days	N/A
	Bulk > Sample Swab					
	Tape Lift > Qualitative (% & type)					
	Quantitative (type/cm2)					
Soot	ASTM D6602-03b Optical		<6 hrs		1-2 days	N/A
	Optical & TEM		1-2 days		3-5 days	N/A
Other			Call		Call	

Sample # (1 per line)	Description/Location	Sample Date	Sample Time	Vol. or Area
HA-APS-0227-91	Building Insulation-Above Ceiling Tiles/ Control House	2/27/2020	N/A	N/A
HA-APS-0227-92	Building Insulation-Above Ceiling Tiles/ Control House	2/27/2020	N/A	N/A
HA-APS-0227-93	Building Insulation-Above Ceiling Tiles/ Control House	2/27/2020	N/A	N/A
HA-APS-0227-94	Caulk-Window Interior / Control House	2/27/2020	N/A	N/A
HA-APS-0227-95	Caulk-Window Interior / Control House	2/27/2020	N/A	N/A
HA-APS-0227-96	Caulk-Window Interior / Control House	2/27/2020	N/A	N/A
HA-APS-0227-97	Concrete-Side walk / Control House	2/27/2020	N/A	N/A
HA-APS-0227-98	Concrete-Side walk / Control House	2/27/2020	N/A	N/A
HA-APS-0227-99	Concrete-Side walk / Control House	2/27/2020	N/A	N/A
HA-APS-0227-100	Asphalt/ Control House	2/27/2020	N/A	N/A
HA-APS-0227-101	Asphalt/ Control House	2/27/2020	N/A	N/A
HA-APS-0227-102	Asphalt/ Control House	2/27/2020	N/A	N/A

1)Relinquished by:	Date: 2-28	Time: 1009	3)Relinquished by:	Date:	Time:
2)Received by:	Date: 2-28-2020	Time: 1009	4)Received by:	Date:	Time:
* TEM Water Sampler's name Required by State of Arizona	Print Name		Fiberquant assigned Job Number>		
Review of Analysis Request (Initials):				Page 7 of 7	

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FIBERQUANT ANALYTICAL SERVICES

Atomic Absorption Spectrometer (AAS) Analysis of Paint

JobNumber:	**202002209**

Client: **HUTZEL AND ASSOCIATES**

1626 E ALICIA DRIVE

PHOENIX, AZ 85042-0000

Office Phone: (602) 323-0222

FAX:

 # Samples: 8 AA **Rec:** 2/28/2020 **Method:** Modified SW 846 3050b/7420 Pb in paint by weight AA Analysis

Client Job: 20-12557 APS Prescott City Substation **PO Number:** APS Pricing

Report Date: 3/4/2020 **Date Analyzed:** 3/4/2020 **Routing Number:** -

Method and Analysis Information: **Fiberquant Internal SOP:** AApw

The received samples were analyzed for Pb (total) using "Test Methods for Evaluating Solid Waste" (SW 846, December 1996 updates). The extraction/digestion method was SW 3050b. The analytical method is "flame atomic absorption, direct aspiration", SW 7420.. Briefly the procedures are as follows. The incoming paint samples are first homogenized by mixing and crushing. A sub-sample is weighed to 0.0001 gm into a 50ml centrifuge tube. To the run stream are added the quality assurance samples described below. Six mls of concentrated HNO3 and one ml of 30% H2O2 are added to each container. The tubes are caped and heated for 1 hour at 95 deg. C. After cooling, the contents of the centrifuge tube are brought up to exactly 25 mls, completing the digestion/extraction.

The sample and quality assurance extractions are then analyzed on a Thermo M5 flame atomic absorption spectrometer or a Perkin Elmer Aanalyst 200. The wavelengths and other instrumental settings are set according to the manufacturer's recommendations, or as otherwise specified in the published method. Absorptions are recorded from sample and standard solutions. A calibration curve is fitted to at least three standard solutions, and the concentrations of the sample extracts are calculated from the curve. The ppm (ug/gm) and weight percent for each sample is calculated from the sub-sample weight, extract volume, and extract concentration.

The results from this analysis is generally compared to either the HUD guidelines, in which a sample is positive if it contains >0.5% (5000 ppm) Pb, or the Consumer Products Safety Commission (CPSC) limit, in which a paint or surface coating containing greater than 90 ppm is defined as lead-containing. The expected coefficient of variation for this method is approximately 20-30%. The results are reported to two significant figures. The Sample Reporting Limit (RL) listed below is twice the Sample Detection Limit, which is calculated for each sample from the experimentally determined Method Detection Limit. The limit of reliable quantitatiion is generally regarded as five to ten times the limit of detection. Therefore, samples smaller than 0.1 gm may give results too near the CPSC standard to be reliable. Problems in analysis or other information is provided in the "Analytical Notes" below. Blanks, if analyzed, are treated the same as samples and are not used for correcting non-blank results.

The following on-going quality assurance program was followed to ensure reproducible and dependable results: All analysts are degreed chemists trained extensively in-house for at least six months prior to un-supervised runs. Blank matrix samples are analyzed at a rate of 5% (at least one per run). Reference standards are analyzed at a rate of 5% (at least one per run), and compared to statistical records via control charts. Spiked matrix samples are analyzed at a rate of 5% (at least one per run), and compared to statistical records via control charts. Duplicate samples are analyzed at a rate of 5% (at least one per run), and compared to statistical records via control charts. For each instrumental run, the spectrometer is checked for sensitivity and stability. The calibration standards are made fresh weekly, and checked each run against a calibration verification standard from another source. All calculations are performed twice - once in a calibration spreadsheet, and once during the report generation, and also checked by hand. All quality checks performed for these samples were in control except as detailed in the "Analytical Notes" below. Fiberquant participates in the Environmental Lead Proficiency Analytical Testing (ELPAT) program, is accredited by AIHA-LAP, LLC for environmental lead in paint (Lab # 101593), and is recognized by the National Lead Laboratory Accreditation Program (NLLAP) for the analysis of Pb in paint. Accreditation does not imply endorsement by the EPA, any other United States governmental agency or any private agency or association. Each lab analysis refers only to the sample tested, and may not, due to the sampling process, be representative of the material sampled. This report may not be reproduced except in full, without the approval of Fiberquant Analytical Services.

Some results may have been calculated using client supplied data, such as volume or area sampled, for which Fiberquant assumes no liability for accuracy.

Job Analysis Notes:

Calibration Curve:

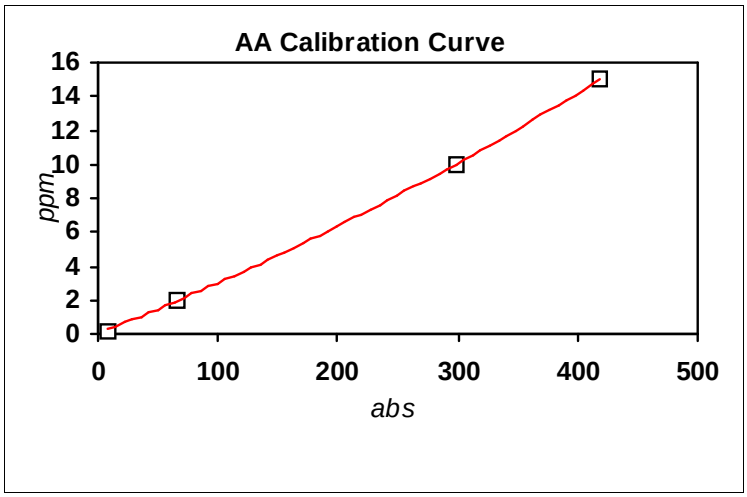
Pb

Run # ***14351*** ***3/4/2020***

Instrument: *AA200*

Standards:	ppm	avg. mAbs.
1	0.2	7
2	2	66
3	10	299
4	15	419

ax2	0.00001887
bx	0.02777344
c	0.0371878
R2	0.99997018



Analysis Results:

Job Number:	202002209

AApw

Lab Number	Client Number	Date	Condition	Weight (gm)	ug/ml	ml	Dil	Analyte	wt %	ppm	RL(ppm)
2020-02209- 1	HA-APS-0227-1Pb	2/27/2020	acceptable	0.1184	0.0928	25	1	Pb	<0.0042	<42	42
2020-02209- 2	HA-APS-0227-2Pb	2/27/2020	acceptable	0.0857	3.7064	25	10	Pb	1.1	11000	58
2020-02209- 3	HA-APS-0227-3Pb	2/27/2020	acceptable	0.1051	0.2325	25	1	Pb	0.0055	55	48
2020-02209- 4	HA-APS-0227-4Pb	2/27/2020	acceptable	0.1006	0.5148	25	1	Pb	0.013	130	50
2020-02209- 5	HA-APS-0227-5Pb	2/27/2020	acceptable	0.0417	8.7979	25	1	Pb	0.53	5300	120
2020-02209- 6	HA-APS-0227-6Pb	2/27/2020	acceptable	0.1021	11.459	25	1	Pb	0.28	2800	49
2020-02209- 7	HA-APS-0227-7Pb	2/27/2020	acceptable	0.1061	4.0321	25	10	Pb	0.95	9500	47
2020-02209- 8	HA-APS-0227-8Pb	2/27/2020	acceptable	0.1098	0.0928	25	1	Pb	<0.0046	<46	46

Martin Esquer

Analyst: MARTIN A. ESQUER

Printed: 04-Mar-20

Original Print Date: 04-Mar-20

Larry S. Pierce

Larry S. Pierce, Approved Accreditation Signatory

FIBERQUANT ANALYTICAL SERVICES

Fiberquant Analytical Services 5025 S. 33rd St.; Phoenix, AZ 85040; Phone: 602-276-6139; FAX: 602-276-4558; info@fiberquant.com

Analysis Request/Chain-of-Custody Form

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Phone (602) 323-0222	FAX
Email	aanderson@hutzel.net

Invoice to (Company)	ERM / ERAP
Address	
City, State, Zip Code	
Phone	FAX

Contact (print)	Augustine Anderson (602)549-6820
Sampled by (signature)	
Job Number or Project Name	20-12557 APS Prescott City Substation
PO Number	

<Analysis Method Requested> ONLY ONE METHOD per COC			Turn-around-time (circle one) Rush		Norm	Ext.
Asbestos by **PLM**	Method > Improved Interim		Urgent Rush <3 hrs	<6 hrs	1-3 days	15-30 days
	Analyze > All ATPF					
	If ATPF then > by Layer by Sample					
	Single Layer Protocol > Yes No					
Fibers by **PCM**	Method > 7400 (Area) ORM (Personal)		<4 hrs		24 hrs	-
Asbestos by **TEM**	in Air > AHERA Mod. AHERA		<6 hrs		24 hrs	3-5 days
	in Water* > Water Sludge		1-2 days		3-5 days	N/A
	in Bulk (Annex2) > Chatfield Full Quant.					
	in Dust > ASTM D5755		3-5 days		5-10 days	N/A
Pb by FLAA	Analyte > Pb Other		<6 hrs		2-3 days	N/A
	Matrix > Filter > MCE FG					
	Paint > by Area (mg/cm²) by Weight (ppm)					
	Soil >					
	Wipe >					
	Initial here certifying wipes used are ASTM E1792 compliant _____					
Fungi	Air Sample > Zefon Aller Other		<6 hrs		1-2 days	N/A
	Bulk > Sample Swab					
	Tape Lift > Qualitative (% & type)					
	Quantitative (type/cm2)					
Soot	ASTM D6602-03b	Optical	<6 hrs		1-2 days	N/A
		Optical & TEM	1-2 days		3-5 days	N/A
Other			Call		Call	

Sample # (1 per line)	Description/Location	Sample Date	Sample Time	Vol. or Area
HA-APS-0227-1Pb	Off white paint/North of Sulfur Hexafluoride Circuit Breaker PC262 on 7 ft. x 40 ft. abandoned concrete pad	2/27/2020	N/A	N/A
HA-APS-0227-2Pb	Silver paint/Fence posts & metal structuring	2/27/2020	N/A	N/A
HA-APS-0227-3Pb	Light grey paint/Transformers & breakers	2/27/2020	N/A	N/A
HA-APS-0227-4Pb	White paint/Control house exterior walls	2/27/2020	N/A	N/A
HA-APS-0227-5Pb	Two-tone paint (green & pink)/Entry & exit doors	2/27/2020	N/A	N/A
HA-APS-0227-6Pb	White paint with green under layer/Control house interior walls	2/27/2020	N/A	N/A
HA-APS-0227-7Pb	Dark brown paint/Control house door frames	2/27/2020	N/A	N/A
HA-APS-0227-8Pb	Yellow paint/Handrails West of control house	2/27/2020	N/A	N/A

1)Relinquished by:	Date: 2-28	Time: 10:09	3)Relinquished by:	Date:	Time:
2)Received by:	Date: 2-28-2020	Time: 1009	4)Received by:	Date:	Time:
* TEM Water Sampler's name Required by State of Arizona	Print Name		Fiberquant assigned Job Number>		
Review of Analysis Request (Initials):				Page of	

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APPENDIX 2

PACE ANALYTICAL LABORATORY REPORT FOR PCBS

ANALYTICAL REPORT

March 02, 2020

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 Sc

Hutzel and Associates

Sample Delivery Group:	L1192445
Samples Received:	02/24/2020
Project Number:	20-12557
Description:	20-12557 APS Prescott City Substation
Site:	PRESCOTT CITY SUBSTATION
Report To:	Augustine Anderson 1626 E. Alicia Drive Phoenix, AZ 85042

Entire Report Reviewed By: Daphne R Richards

Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

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Cn: Case Narrative	4
Sr: Sample Results	5
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HA-APS-0221-04 L1192445-02	6
Qc: Quality Control Summary	7
Total Solids by Method 2540 G-2011	7
Polychlorinated Biphenyls (GC) by Method 8082 A	8
Is: Internal Standard Summary	9
Polychlorinated Biphenyls (GC) by Method 8082 A	9
Polychlorinated Biphenyls (GC) by Method 8082 A	10
Gl: Glossary of Terms	11
Al: Accreditations & Locations	12
Sc: Sample Chain of Custody	13

HA-APS-0221-02 L1192445-01 Solid

Collected by	Collected date/time	Received date/time
Augustine Anderson	02/21/20 15:00	02/24/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1433754	1	02/26/20 10:32	02/26/20 10:45	KDW	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1434370	1	02/26/20 19:17	02/27/20 15:26	RP	Mt. Juliet, TN

HA-APS-0221-04 L1192445-02 Solid

Collected by	Collected date/time	Received date/time
Augustine Anderson	02/21/20 16:00	02/24/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1434370	1	02/26/20 19:17	02/27/20 15:40	MTJ	Mt. Juliet, TN

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 Sc

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne R Richards

Daphne Richards
Project Manager

Total Solids by Method 2540 G-2011

Analyte	Result %	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	97.3		1	02/26/2020 10:45	WG1433754

Polychlorinated Biphenyls (GC) by Method 8082 A

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
PCB 1016	U		0.00360	0.0175	1	02/27/2020 15:26	WG1434370
PCB 1221	U		0.00552	0.0175	1	02/27/2020 15:26	WG1434370
PCB 1232	U		0.00428	0.0175	1	02/27/2020 15:26	WG1434370
PCB 1242	U		0.00327	0.0175	1	02/27/2020 15:26	WG1434370
PCB 1248	U		0.00324	0.0175	1	02/27/2020 15:26	WG1434370
PCB 1254	U		0.00485	0.0175	1	02/27/2020 15:26	WG1434370
PCB 1260	0.390	P	0.00508	0.0175	1	02/27/2020 15:26	WG1434370
(S) Decachlorobiphenyl	*61.4*			*10.0-135*		*02/27/2020 15:26*	WG1434370
(S) Tetrachloro-m-xylene	*75.8*			*10.0-139*		*02/27/2020 15:26*	WG1434370

Polychlorinated Biphenyls (GC) by Method 8082 A

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
PCB 1016	U		0.00350	0.0170	1	02/27/2020 15:40	WG1434370
PCB 1221	U		0.00537	0.0170	1	02/27/2020 15:40	WG1434370
PCB 1232	U		0.00417	0.0170	1	02/27/2020 15:40	WG1434370
PCB 1242	U		0.00318	0.0170	1	02/27/2020 15:40	WG1434370
PCB 1248	U		0.00315	0.0170	1	02/27/2020 15:40	WG1434370
PCB 1254	U		0.00472	0.0170	1	02/27/2020 15:40	WG1434370
PCB 1260	U		0.00494	0.0170	1	02/27/2020 15:40	WG1434370
(S) Decachlorobiphenyl	*61.9*			*10.0-135*		*02/27/2020 15:40*	WG1434370
(S) Tetrachloro-m-xylene	*42.9*			*10.0-139*		*02/27/2020 15:40*	WG1434370

Method Blank (MB)

(MB) R3503418-1 02/26/20 10:45

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.00100			

L1192652-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1192652-01 02/26/20 10:45 • (DUP) R3503418-3 02/26/20 10:45

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	84.7	85.6	1	0.971		10

Laboratory Control Sample (LCS)

(LCS) R3503418-2 02/26/20 10:45

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85.0-115	

Method Blank (MB)

(MB) R3503598-1 02/27/20 10:18

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
PCB 1016	U		0.00350	0.0170
PCB 1221	U		0.00537	0.0170
PCB 1232	U		0.00417	0.0170
PCB 1242	U		0.00318	0.0170
PCB 1248	U		0.00315	0.0170
PCB 1254	U		0.00472	0.0170
PCB 1260	U		0.00494	0.0170
(S) Decachlorobiphenyl	*97.0*			*10.0-135*
(S) Tetrachloro-m-xylene	*90.2*			*10.0-139*

Laboratory Control Sample (LCS)

(LCS) R3503598-2 02/27/20 10:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
PCB 1260	0.167	0.174	104	37.0-145	
PCB 1016	0.167	0.177	106	36.0-141	
(S) Decachlorobiphenyl			*137*	*10.0-135*	S10
(S) Tetrachloro-m-xylene			*130*	*10.0-139*	

INTERNAL STANDARD SUMMARY

Instrument: SVGC20 • File ID: AVG

Sample ID	File ID	1-BROMO-2-DINITROBENZENE Response
Standard	AVG	27703750
Upper Limit		41555620
Lower Limit		13851880
BLANK R3503598-1 WG1434370 1x	0227_06	19656640
LCS R3503598-2 WG1434370 1x	0227_07	14799480
L1192445-01 WG1434370 1x	0227_28	35425930
L1192445-02 WG1434370 1x	0227_29	27484000

INTERNAL STANDARD SUMMARY

Instrument: SVGC20 • File ID: AVG

Sample ID	File ID	1-BROMO-2-DINITROBENZENE Response
Standard	AVG	27703750
Upper Limit		41555620
Lower Limit		13851880
BLANK R3503598-1 WG1434370 1x	0227_06	19656640
LCS R3503598-2 WG1434370 1x	0227_07	14799480
L1192445-01 WG1434370 1x	0227_28	35425930
L1192445-02 WG1434370 1x	0227_29	27484000

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
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7 Is
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9 Al
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Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
MDL (dry)	Method Detection Limit.
RDL	Reported Detection Limit.
RDL (dry)	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
P	RPD between the primary and confirmatory analysis exceeded 40%.
S10	Surrogate recovery was above laboratory and method acceptance limits.

ACCREDITATIONS & LOCATIONS

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

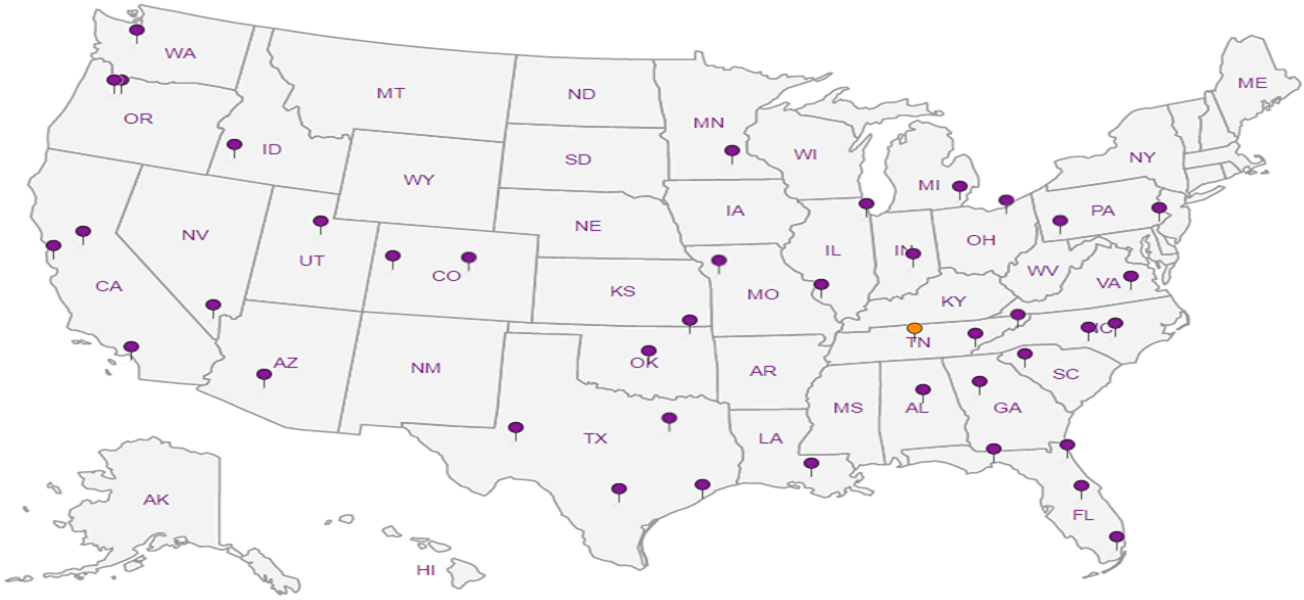
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Hutzel & Associates
1626 E Alicia Drive
Phoenix, AZ 85042

Billing Information: Hutzel + Associates

Pres Chk

Report to: Augustine Anderson

Email To: aanderson@hutzel.net

Project Description: 20-12557 APS Prescott City Substation

City/State Collected: Prescott AZ

Phone: 602-549-6820
Fax:

Client Project # 20-12557

Lab Project #

Collected by (print): Augustine Anderson

Site/Facility ID # Prescott City Substation

P.O. # 700677332

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day X Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed: Feb. 28 2020

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace Analytical® National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L # L1192445

G081

Acctnum: HUTZELTAZ
Template:
Prelogin:
TSR:
PB:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOCs 8260B/ 40mL amber/ MeOH	Total RCRA8 metals/ 2oz jar	PCBs 8082/ 4oz jar	SVOCs/PAHs 8270AP9/ 4oz jar	PCBs 8082/ 8oz jar	Remarks	Sample # (lab only)
HA-APS-0221-01	Comp	SS	9"-10"	2-21-20	1:45	4	X	X	X	X			
HA-APS-0221-02	Comp	OT	0"-1"	2-21-20	3:00	1					X		-01
HA-APS-0221-03	Comp	SS	4'-8"	2-21-20	3:30	4	X	X	X	X			
HA-APS-0221-04	Comp	OT	0"	2-21-20	4:00	1					X		-02
HA-APS-0221-05	Comp	SS	4'-6"	2-21-20	4:30	4	X	X	X	X			

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other

Remarks: Report on a dry weight basis

pH ___ Temp ___
Flow ___ Other ___

Samples returned via: __ UPS __ FedEx __ Courier __

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP X Y __N
COC Signed/Accurate: __Y __N
Bottles arrive intact: __Y __N
Correct bottles used: __Y __N
Sufficient volume sent: __Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
	2-21-20	4:15			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:	If preservation required by Login: Date/Time
				16.0+0=16.0 AG CK 14	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: Time:	Hold: Condition: NCF / OK
			Carol Kemp	2/24/20 9:00	

Pace Analytical®
National Center for Testing & Innovation

Login #: L1192445	Client: HUTZELTAZ	Date: 2/24/20	Evaluated by: Troy Dunlap

Non-Conformance (check applicable items)

	Sample Integrity		Chain of Custody Clarification		
	Parameter(s) past holding time		Login Clarification Needed		**If Broken Container:**
X	Temperature not in range		Chain of custody is incomplete		Insufficient packing material around container
	Improper container type		Please specify Metals requested.		Insufficient packing material inside cooler
	pH not in range.		Please specify TCLP requested.		Improper handling by carrier (FedEx / UPS / Cour
	Insufficient sample volume.		Received additional samples not listed on coc.		Sample was frozen
	Sample is biphasic.		Sample ids on containers do not match ids on coc		Container lid not intact
	Vials received with headspace.		Trip Blank not received.		**If no Chain of Custody:**
	Broken container		Client did not "X" analysis.		Received by:
	Broken container:		Chain of Custody is missing		Date/Time:
	Sufficient sample remains				Temp./Cont. Rec./pH:
					Carrier:
					Tracking#

Login Comments: Received out of temperature at 16°c.

Client informed by:		Call	X	Email		Voice Mail		Date: 2/24	Time: 1625
TSR Initials: DR	Client Contact: AA								

Login Instructions:

The OT samples do not have a temperature requirement. Please run -02 and -04 for all analysis. Client will recollect the SS

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

March 06, 2020

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 Sc

Hutzel and Associates

Sample Delivery Group:	L1194025
Samples Received:	02/28/2020
Project Number:	20-12557
Description:	APS Prescott City Substation
Site:	APS PRESCOTT CITY SUBSTAION
Report To:	Augustine Anderson 1626 E. Alicia Drive Phoenix, AZ 85042

Entire Report Reviewed By: Daphne R Richards

Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

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HA-APS-0227-01 L1194025-01 Solid

Collected by	Collected date/time	Received date/time
Augustine Anderson	02/27/20 10:00	02/28/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1436007	1	02/29/20 17:31	02/29/20 17:44	KDW	Mt. Juliet, TN
Mercury by Method 7471B	WG1436283	1	03/02/20 13:48	03/02/20 22:48	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010C	WG1436051	1	02/29/20 10:17	03/01/20 11:46	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1436256	1	02/27/20 10:00	03/01/20 22:18	ACG	Mt. Juliet, TN
Pesticides (GC) by Method 8081B	WG1436431	1	03/01/20 18:26	03/02/20 17:08	LEL	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1436421	10	03/02/20 08:20	03/03/20 17:18	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1436421	10	03/02/20 08:20	03/04/20 14:32	AO	Mt. Juliet, TN

HA-APS-0227-02 L1194025-02 Solid

Collected by	Collected date/time	Received date/time
Augustine Anderson	02/27/20 10:15	02/28/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1436007	1	02/29/20 17:31	02/29/20 17:44	KDW	Mt. Juliet, TN
Mercury by Method 7471B	WG1436283	1	03/02/20 13:48	03/02/20 22:50	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010C	WG1436051	1	02/29/20 10:17	03/01/20 11:49	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1436256	1.06	02/27/20 10:15	03/01/20 22:39	ACG	Mt. Juliet, TN
Pesticides (GC) by Method 8081B	WG1436431	1	03/01/20 18:26	03/02/20 17:21	LEL	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1436421	10	03/02/20 08:20	03/03/20 16:59	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1436421	10	03/02/20 08:20	03/04/20 14:12	AO	Mt. Juliet, TN

HA-APS-0227-03 L1194025-03 Solid

Collected by	Collected date/time	Received date/time
Augustine Anderson	02/27/20 10:30	02/28/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1436007	1	02/29/20 17:31	02/29/20 17:44	KDW	Mt. Juliet, TN
Mercury by Method 7471B	WG1436283	1	03/02/20 13:48	03/02/20 22:53	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010C	WG1436051	1	02/29/20 10:17	03/01/20 11:51	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1436256	1	02/27/20 10:30	03/01/20 22:59	ACG	Mt. Juliet, TN
Pesticides (GC) by Method 8081B	WG1436431	1	03/01/20 18:26	03/03/20 16:35	HMH	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1436421	10	03/02/20 08:20	03/03/20 16:39	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1436421	10	03/02/20 08:20	03/04/20 13:52	AO	Mt. Juliet, TN

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 Sc

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne R Richards

Daphne Richards
Project Manager

Total Solids by Method 2540 G-2011

Analyte	Result %	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	89.3		1	02/29/2020 17:44	WG1436007

Mercury by Method 7471B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.426		0.00313	0.0336	1	03/02/2020 22:48	WG1436283

Metals (ICP) by Method 6010C

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.64		0.515	2.24	1	03/01/2020 11:46	WG1436051
Barium	122		0.190	0.560	1	03/01/2020 11:46	WG1436051
Cadmium	3.78		0.0784	0.560	1	03/01/2020 11:46	WG1436051
Chromium	24.2		0.157	1.12	1	03/01/2020 11:46	WG1436051
Lead	125		0.213	0.560	1	03/01/2020 11:46	WG1436051
Selenium	U		0.694	2.24	1	03/01/2020 11:46	WG1436051
Silver	1.26		0.134	1.12	1	03/01/2020 11:46	WG1436051

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Acetone	U		0.384	0.700	1	03/01/2020 22:18	WG1436256
Acrylonitrile	U		0.0532	0.350	1	03/01/2020 22:18	WG1436256
Benzene	U		0.0112	0.0280	1	03/01/2020 22:18	WG1436256
Bromobenzene	U		0.0294	0.350	1	03/01/2020 22:18	WG1436256
Bromodichloromethane	U		0.0221	0.0700	1	03/01/2020 22:18	WG1436256
Bromoform	U		0.167	0.700	1	03/01/2020 22:18	WG1436256
Bromomethane	U		0.104	0.350	1	03/01/2020 22:18	WG1436256
1,3-Butadiene	U		0.236	0.700	1	03/01/2020 22:18	WG1436256
n-Butylbenzene	U		0.107	0.350	1	03/01/2020 22:18	WG1436256
sec-Butylbenzene	U		0.0709	0.350	1	03/01/2020 22:18	WG1436256
tert-Butylbenzene	U		0.0434	0.140	1	03/01/2020 22:18	WG1436256
Carbon disulfide	U		0.114	0.350	1	03/01/2020 22:18	WG1436256
Carbon tetrachloride	U		0.0302	0.140	1	03/01/2020 22:18	WG1436256
Chlorobenzene	U		0.0160	0.0700	1	03/01/2020 22:18	WG1436256
Chlorodibromomethane	U		0.0127	0.0700	1	03/01/2020 22:18	WG1436256
Chloroethane	U		0.0302	0.140	1	03/01/2020 22:18	WG1436256
Chloroform	0.0471	E4	0.0116	0.0700	1	03/01/2020 22:18	WG1436256
Chloromethane	U		0.0390	0.350	1	03/01/2020 22:18	WG1436256
2-Chlorotoluene	U		0.0257	0.0700	1	03/01/2020 22:18	WG1436256
4-Chlorotoluene	U		0.0317	0.140	1	03/01/2020 22:18	WG1436256
Cyclohexane	U		0.0142	0.0700	1	03/01/2020 22:18	WG1436256
1,2-Dibromo-3-Chloropropane	U		0.143	0.700	1	03/01/2020 22:18	WG1436256
1,2-Dibromoethane	U		0.0147	0.0700	1	03/01/2020 22:18	WG1436256
Dibromomethane	U		0.0280	0.140	1	03/01/2020 22:18	WG1436256
1,2-Dichlorobenzene	U		0.0406	0.140	1	03/01/2020 22:18	WG1436256
1,3-Dichlorobenzene	U		0.0476	0.140	1	03/01/2020 22:18	WG1436256
1,4-Dichlorobenzene	U		0.0552	0.140	1	03/01/2020 22:18	WG1436256
Dichlorodifluoromethane	U		0.0229	0.0700	1	03/01/2020 22:18	WG1436256
1,1-Dichloroethane	U		0.0161	0.0700	1	03/01/2020 22:18	WG1436256
1,2-Dichloroethane	U		0.0133	0.0700	1	03/01/2020 22:18	WG1436256
1,1-Dichloroethene	U		0.0140	0.0700	1	03/01/2020 22:18	WG1436256
cis-1,2-Dichloroethene	U		0.0194	0.0700	1	03/01/2020 22:18	WG1436256
trans-1,2-Dichloroethene	U		0.0400	0.140	1	03/01/2020 22:18	WG1436256

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
1,2-Dichloropropane	U		0.0356	0.140	1	03/01/2020 22:18	WG1436256
1,1-Dichloropropene	U		0.0196	0.0700	1	03/01/2020 22:18	WG1436256
1,3-Dichloropropane	U		0.0490	0.140	1	03/01/2020 22:18	WG1436256
cis-1,3-Dichloropropene	U		0.0189	0.0700	1	03/01/2020 22:18	WG1436256
trans-1,3-Dichloropropene	U		0.0429	0.140	1	03/01/2020 22:18	WG1436256
2,2-Dichloropropane	U		0.0222	0.0700	1	03/01/2020 22:18	WG1436256
Dicyclopentadiene	U		0.102	0.350	1	03/01/2020 22:18	WG1436256
Di-isopropyl ether	U		0.00980	0.0280	1	03/01/2020 22:18	WG1436256
Ethylbenzene	U		0.0149	0.0700	1	03/01/2020 22:18	WG1436256
4-Ethyltoluene	U		0.0300	0.140	1	03/01/2020 22:18	WG1436256
Hexachloro-1,3-butadiene	U		0.356	0.700	1	03/01/2020 22:18	WG1436256
n-Hexane	U		0.0297	0.140	1	03/01/2020 22:18	WG1436256
Isopropylbenzene	U		0.0242	0.0700	1	03/01/2020 22:18	WG1436256
p-Isopropyltoluene	U		0.0653	0.140	1	03/01/2020 22:18	WG1436256
2-Butanone (MEK)	U		0.350	0.700	1	03/01/2020 22:18	WG1436256
Methylene Chloride	U		0.186	0.700	1	03/01/2020 22:18	WG1436256
4-Methyl-2-pentanone (MIBK)	U		0.280	0.700	1	03/01/2020 22:18	WG1436256
Methyl tert-butyl ether	U		0.00825	0.0280	1	03/01/2020 22:18	WG1436256
Methyl Cyclohexane	U		0.0289	0.140	1	03/01/2020 22:18	WG1436256
Naphthalene	U	L2 R7	0.0873	0.350	1	03/01/2020 22:18	WG1436256
Propene	U		0.585	1.40	1	03/01/2020 22:18	WG1436256
n-Propylbenzene	U		0.0330	0.140	1	03/01/2020 22:18	WG1436256
Styrene	U		0.0765	0.350	1	03/01/2020 22:18	WG1436256
1,1,1,2-Tetrachloroethane	U		0.0140	0.0700	1	03/01/2020 22:18	WG1436256
1,1,2,2-Tetrachloroethane	U		0.0109	0.0700	1	03/01/2020 22:18	WG1436256
1,1,2-Trichlorotrifluoroethane	U		0.0189	0.0700	1	03/01/2020 22:18	WG1436256
Tetrachloroethene	U		0.0196	0.0700	1	03/01/2020 22:18	WG1436256
Toluene	U		0.0350	0.140	1	03/01/2020 22:18	WG1436256
1,2,3-Trichlorobenzene	U	R7	0.0175	0.350	1	03/01/2020 22:18	WG1436256
1,2,4-Trichlorobenzene	U		0.135	0.350	1	03/01/2020 22:18	WG1436256
1,1,1-Trichloroethane	U		0.00770	0.0700	1	03/01/2020 22:18	WG1436256
1,1,2-Trichloroethane	U		0.0247	0.0700	1	03/01/2020 22:18	WG1436256
Trichloroethene	U		0.0112	0.0280	1	03/01/2020 22:18	WG1436256
Trichlorofluoromethane	U		0.0140	0.0700	1	03/01/2020 22:18	WG1436256
1,2,3-Trichloropropane	U		0.143	0.350	1	03/01/2020 22:18	WG1436256
1,2,4-Trimethylbenzene	U		0.0325	0.140	1	03/01/2020 22:18	WG1436256
1,2,3-Trimethylbenzene	U		0.0322	0.140	1	03/01/2020 22:18	WG1436256
1,3,5-Trimethylbenzene	U		0.0302	0.140	1	03/01/2020 22:18	WG1436256
Vinyl chloride	U		0.0191	0.0700	1	03/01/2020 22:18	WG1436256
Xylenes, Total	U		0.133	0.182	1	03/01/2020 22:18	WG1436256
(S) Toluene-d8	*102*			*75.0-131*		*03/01/2020 22:18*	WG1436256
(S) 4-Bromofluorobenzene	*107*			*67.0-138*		*03/01/2020 22:18*	WG1436256
(S) 1,2-Dichloroethane-d4	*94.6*			*70.0-130*		*03/01/2020 22:18*	WG1436256

Pesticides (GC) by Method 8081B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Aldrin	U		0.00151	0.0224	1	03/02/2020 17:08	WG1436431
Alpha BHC	U		0.00152	0.0224	1	03/02/2020 17:08	WG1436431
Beta BHC	U		0.00179	0.0224	1	03/02/2020 17:08	WG1436431
Delta BHC	U		0.00160	0.0224	1	03/02/2020 17:08	WG1436431
Gamma BHC	U		0.00162	0.0224	1	03/02/2020 17:08	WG1436431
Chlordane	U		0.0437	0.224	1	03/02/2020 17:08	WG1436431
4,4-DDD	U		0.00175	0.0224	1	03/02/2020 17:08	WG1436431
4,4-DDE	U		0.00172	0.0224	1	03/02/2020 17:08	WG1436431
4,4-DDT	U		0.00224	0.0224	1	03/02/2020 17:08	WG1436431

Pesticides (GC) by Method 8081B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Dieldrin	U		0.00170	0.0224	1	03/02/2020 17:08	WG1436431
Endosulfan I	U		0.00167	0.0224	1	03/02/2020 17:08	WG1436431
Endosulfan II	U		0.00179	0.0224	1	03/02/2020 17:08	WG1436431
Endosulfan sulfate	U		0.00169	0.0224	1	03/02/2020 17:08	WG1436431
Endrin	U		0.00176	0.0224	1	03/02/2020 17:08	WG1436431
Endrin aldehyde	U		0.00144	0.0224	1	03/02/2020 17:08	WG1436431
Endrin ketone	U		0.00185	0.0224	1	03/02/2020 17:08	WG1436431
Hexachlorobenzene	U		0.00139	0.0224	1	03/02/2020 17:08	WG1436431
Heptachlor	U		0.00172	0.0224	1	03/02/2020 17:08	WG1436431
Heptachlor epoxide	U		0.00180	0.0224	1	03/02/2020 17:08	WG1436431
Methoxychlor	U		0.00199	0.0224	1	03/02/2020 17:08	WG1436431
Toxaphene	U		0.0403	0.448	1	03/02/2020 17:08	WG1436431
(S) Decachlorobiphenyl	*55.0*			*10.0-135*		*03/02/2020 17:08*	WG1436431
(S) Tetrachloro-m-xylene	*63.3*			*10.0-139*		*03/02/2020 17:08*	WG1436431

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	0.0805	E4	0.0719	0.373	10	03/03/2020 17:18	WG1436421
Acenaphthylene	0.405		0.0751	0.373	10	03/03/2020 17:18	WG1436421
Anthracene	0.350	E4	0.0708	0.373	10	03/03/2020 17:18	WG1436421
Benzidine	U	M2	0.713	3.73	10	03/03/2020 17:18	WG1436421
Benzo(a)anthracene	1.57	M2	0.0479	0.373	10	03/03/2020 17:18	WG1436421
Benzo(b)fluoranthene	2.10	M2	0.0778	0.373	10	03/03/2020 17:18	WG1436421
Benzo(k)fluoranthene	0.636		0.0652	0.373	10	03/03/2020 17:18	WG1436421
Benzo(g,h,i)perylene	2.92	M2	0.0807	0.373	10	03/03/2020 17:18	WG1436421
Benzo(a)pyrene	2.16	M2	0.0613	0.373	10	03/03/2020 17:18	WG1436421
Bis(2-chlorethoxy)methane	U		0.0862	3.73	10	03/03/2020 17:18	WG1436421
Bis(2-chloroethyl)ether	U		0.100	3.73	10	03/03/2020 17:18	WG1436421
2,2-Oxybis(1-Chloropropane)	U		0.0851	3.73	10	03/03/2020 17:18	WG1436421
4-Bromophenyl-phenylether	U		0.128	3.73	10	03/03/2020 17:18	WG1436421
2-Chloronaphthalene	U		0.0715	0.373	10	03/03/2020 17:18	WG1436421
4-Chlorophenyl-phenylether	U		0.0702	3.73	10	03/03/2020 17:18	WG1436421
Chrysene	1.59	M2	0.0621	0.373	10	03/03/2020 17:18	WG1436421
Dibenz(a,h)anthracene	0.212	E4	0.0919	0.373	10	03/03/2020 17:18	WG1436421
3,3-Dichlorobenzidine	U	M2	0.889	3.73	10	03/03/2020 17:18	WG1436421
2,4-Dinitrotoluene	U		0.0680	3.73	10	03/03/2020 17:18	WG1436421
2,6-Dinitrotoluene	U		0.0825	3.73	10	03/03/2020 17:18	WG1436421
Fluoranthene	4.14	M3	0.0555	0.373	10	03/03/2020 17:18	WG1436421
Fluorene	0.122	E4	0.0763	0.373	10	03/03/2020 17:18	WG1436421
Hexachlorobenzene	U		0.0958	3.73	10	03/03/2020 17:18	WG1436421
Hexachloro-1,3-butadiene	U		0.112	3.73	10	03/03/2020 17:18	WG1436421
Hexachlorocyclopentadiene	U	M2	0.657	3.73	10	03/03/2020 17:18	WG1436421
Hexachloroethane	U		0.150	3.73	10	03/03/2020 17:18	WG1436421
Indeno(1,2,3-cd)pyrene	2.19	M2	0.0864	0.373	10	03/03/2020 17:18	WG1436421
Isophorone	U		0.0584	3.73	10	03/03/2020 17:18	WG1436421
Naphthalene	0.170	E4	0.0995	0.373	10	03/03/2020 17:18	WG1436421
Nitrobenzene	U		0.0778	3.73	10	03/03/2020 17:18	WG1436421
n-Nitrosodimethylamine	U	M2	0.724	3.73	10	03/03/2020 17:18	WG1436421
n-Nitrosodiphenylamine	U	M2	1.01	3.73	10	03/03/2020 17:18	WG1436421
n-Nitrosodi-n-propylamine	U		0.101	3.73	10	03/03/2020 17:18	WG1436421
Phenanthrene	2.65	M2	0.0591	0.373	10	03/03/2020 17:18	WG1436421
Benzylbutyl phthalate	U		0.115	3.73	10	03/03/2020 17:18	WG1436421
Bis(2-ethylhexyl)phthalate	U		0.134	3.73	10	03/03/2020 17:18	WG1436421
Di-n-butyl phthalate	U		0.122	3.73	10	03/03/2020 17:18	WG1436421
Diethyl phthalate	U		0.0774	3.73	10	03/03/2020 17:18	WG1436421

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Dimethyl phthalate	U		0.0605	3.73	10	03/03/2020 17:18	WG1436421
Di-n-octyl phthalate	U		0.102	3.73	10	03/03/2020 17:18	WG1436421
Pyrene	5.28	M3	0.138	0.373	10	03/03/2020 17:18	WG1436421
1,2,4-Trichlorobenzene	U		0.0981	3.73	10	03/03/2020 17:18	WG1436421
Aniline	U	M2 R5	0.358	3.73	10	03/03/2020 17:18	WG1436421
1,2-Diphenylhydrazine	U		0.0591	3.73	10	03/03/2020 17:18	WG1436421
Benzyl alcohol	U	M1	0.0840	3.73	10	03/03/2020 17:18	WG1436421
4-Chloroaniline	U	M2 R5	0.394	3.73	10	03/03/2020 17:18	WG1436421
4-Chloro-3-methylphenol	U		0.0534	3.73	10	03/03/2020 17:18	WG1436421
2-Chlorophenol	U		0.0930	3.73	10	03/03/2020 17:18	WG1436421
Dibenzofuran	U		0.0580	3.73	10	03/03/2020 17:18	WG1436421
2,4-Dichlorophenol	U		0.0835	3.73	10	03/03/2020 17:18	WG1436421
2,4-Dimethylphenol	U		0.527	3.73	10	03/03/2020 17:18	WG1436421
4,6-Dinitro-2-methylphenol	U	M2	1.39	3.73	10	03/03/2020 17:18	WG1436421
2,4-Dinitrophenol	U	M2	1.10	3.73	10	03/03/2020 17:18	WG1436421
2-Methylnaphthalene	U		0.0964	0.373	10	03/03/2020 17:18	WG1436421
2-Methylphenol	U		0.110	3.73	10	03/03/2020 17:18	WG1436421
3&4-Methyl Phenol	U		0.0877	3.73	10	03/03/2020 17:18	WG1436421
2-Nitroaniline	U		0.0845	3.73	10	03/03/2020 17:18	WG1436421
3-Nitroaniline	U		0.0952	3.73	10	03/03/2020 17:18	WG1436421
4-Nitroaniline	U		0.0715	3.73	10	03/03/2020 17:18	WG1436421
2-Nitrophenol	U		0.146	3.73	10	03/03/2020 17:18	WG1436421
4-Nitrophenol	U	M2	0.588	3.73	10	03/03/2020 17:18	WG1436421
Pentachlorophenol	U		0.537	3.73	10	03/03/2020 17:18	WG1436421
Phenol	U		0.0778	3.73	10	03/03/2020 17:18	WG1436421
Pyridine	U	M2	0.703	3.73	10	03/03/2020 17:18	WG1436421
2,4,6-Trichlorophenol	U		0.0872	3.73	10	03/03/2020 17:18	WG1436421
Acetophenone	U	M2	0.842	3.73	10	03/03/2020 17:18	WG1436421
2-Acetylaminofluorene	U		0.611	3.73	10	03/04/2020 14:32	WG1436421
4-Aminobiphenyl	U	M2	0.547	3.73	10	03/04/2020 14:32	WG1436421
Chlorobenzilate	U		0.638	3.73	10	03/04/2020 14:32	WG1436421
Diallate	U	L2 M2	0.664	3.73	10	03/04/2020 14:32	WG1436421
2,6-Dichlorophenol	U		0.517	3.73	10	03/04/2020 14:32	WG1436421
Dimethoate	U	M2	1.01	3.73	10	03/04/2020 14:32	WG1436421
P-(Dimethylamino) Azobenzene	U	M2	0.712	3.73	10	03/04/2020 14:32	WG1436421
Dimethylbenz (A) Anthracene	U	M2	0.592	3.73	10	03/04/2020 14:32	WG1436421
3,3-Dimethylbenzidine	U	L2 M2	0.811	3.73	10	03/04/2020 14:32	WG1436421
a,a-Dimethylphenethylamine	U	L2 M2	5.30	18.6	10	03/04/2020 14:32	WG1436421
1,3-Dinitrobenzene	U		0.691	3.73	10	03/04/2020 14:32	WG1436421
Diphenylamine	U	M2	1.01	3.73	10	03/03/2020 17:18	WG1436421
Dinoseb	U	M2	1.09	3.73	10	03/04/2020 14:32	WG1436421
Disulfoton	U	M2	0.738	3.73	10	03/04/2020 14:32	WG1436421
Ethyl methanesulfonate	U	M2	0.847	3.73	10	03/04/2020 14:32	WG1436421
Ethyl Parathion	U	M1	0.886	3.73	10	03/04/2020 14:32	WG1436421
Famphur	U		0.527	3.73	10	03/04/2020 14:32	WG1436421
Hexachloropropene	U	M2	1.23	3.73	10	03/04/2020 14:32	WG1436421
Hexachlorophene	U	M2	1.23	3.73	10	03/04/2020 14:32	WG1436421
Isodrin	U	M2	0.740	3.73	10	03/04/2020 14:32	WG1436421
Isosafrole	U		0.410	3.73	10	03/04/2020 14:32	WG1436421
Kepone	U	M2	0.550	3.73	10	03/04/2020 14:32	WG1436421
Methapyrilene	U	L2 M2	3.73	18.6	10	03/04/2020 14:32	WG1436421
3-Methylcholanthrene	U	M2	0.667	3.73	10	03/04/2020 14:32	WG1436421
Methyl methanesulfonate	U	M2	0.743	3.73	10	03/04/2020 14:32	WG1436421
Methyl parathion	U	M1	0.722	3.73	10	03/04/2020 14:32	WG1436421
1,4-Naphthoquinone	U	L2 M2	0.469	3.73	10	03/04/2020 14:32	WG1436421
1-Naphthylamine	U	M2	0.898	3.73	10	03/04/2020 14:32	WG1436421

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
2-Naphthylamine	U	M2	0.731	3.73	10	03/04/2020 14:32	WG1436421
5-Nitro-o-toluidine	U	M2	0.752	3.73	10	03/04/2020 14:32	WG1436421
4-Nitroquinoline 1-oxide	U	M2	0.723	3.73	10	03/04/2020 14:32	WG1436421
n-Nitrosodiethylamine	U	M2	2.12	3.73	10	03/04/2020 14:32	WG1436421
n-Nitrosodi-n-butylamine	U	M2	1.23	3.73	10	03/04/2020 14:32	WG1436421
n-Nitrosomethylethylamine	U	M2	1.24	3.73	10	03/04/2020 14:32	WG1436421
n-Nitrosomorpholine	U	M2	1.68	3.73	10	03/04/2020 14:32	WG1436421
n-Nitrosopiperidine	U	M2	0.672	3.73	10	03/04/2020 14:32	WG1436421
n-Nitrosopyrrolidine	U	M2	2.25	3.73	10	03/04/2020 14:32	WG1436421
Pentachlorobenzene	U		0.541	3.73	10	03/04/2020 14:32	WG1436421
Pentachloroethane	U	M2	0.791	3.73	10	03/04/2020 14:32	WG1436421
Pentachloronitrobenzene	U	M2	0.827	3.73	10	03/04/2020 14:32	WG1436421
Phenacetin	U	M2	0.858	3.73	10	03/04/2020 14:32	WG1436421
p-Phenylenediamine	U	L2 M2	1.63	3.73	10	03/04/2020 14:32	WG1436421
Phorate	U	M2	1.24	3.73	10	03/04/2020 14:32	WG1436421
2-Picoline	U	M2	1.23	3.73	10	03/04/2020 14:32	WG1436421
Pronamide	U	M2	0.851	3.73	10	03/04/2020 14:32	WG1436421
Safrole	U	M2	0.709	3.73	10	03/04/2020 14:32	WG1436421
Sulfotep	U	M2	0.847	3.73	10	03/04/2020 14:32	WG1436421
1,2,4,5-Tetrachlorobenzene	U	M2	0.853	3.73	10	03/03/2020 17:18	WG1436421
2,3,4,6-Tetrachlorophenol	U	M2	1.35	3.73	10	03/03/2020 17:18	WG1436421
Thionazin	U		0.638	3.73	10	03/04/2020 14:32	WG1436421
o-Toluidine	U	M2	1.24	3.73	10	03/04/2020 14:32	WG1436421
2,4,5-Trichlorophenol	U		0.116	3.73	10	03/03/2020 17:18	WG1436421
O,O,O-Triethyl phosphorothioate	U	M2	0.893	3.73	10	03/04/2020 14:32	WG1436421
1,3,5-Trinitrobenzene	U	M2	0.638	3.73	10	03/04/2020 14:32	WG1436421
(S) 2-Fluorophenol	*93.7*			*12.0-120*		*03/03/2020 17:18*	WG1436421
(S) Phenol-d5	*83.0*			*10.0-120*		*03/03/2020 17:18*	WG1436421
(S) Nitrobenzene-d5	*83.9*			*10.0-122*		*03/03/2020 17:18*	WG1436421
(S) 2-Fluorobiphenyl	*84.2*			*15.0-120*		*03/03/2020 17:18*	WG1436421
(S) 2,4,6-Tribromophenol	*107*			*10.0-127*		*03/03/2020 17:18*	WG1436421
(S) p-Terphenyl-d14	*93.8*			*10.0-120*		*03/03/2020 17:18*	WG1436421

Sample Narrative:

L1194025-01 WG1436421: Dilution due to matrix impact during extraction procedure

L1194025-01 WG1436421: Dilution due to matrix impact during extract concentration procedure

Total Solids by Method 2540 G-2011

Analyte	Result %	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	89.0		1	02/29/2020 17:44	WG1436007

Mercury by Method 7471B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0709		0.00315	0.0337	1	03/02/2020 22:50	WG1436283

Metals (ICP) by Method 6010C

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.19		0.517	2.25	1	03/01/2020 11:49	WG1436051
Barium	120		0.191	0.562	1	03/01/2020 11:49	WG1436051
Cadmium	0.645		0.0786	0.562	1	03/01/2020 11:49	WG1436051
Chromium	18.5		0.157	1.12	1	03/01/2020 11:49	WG1436051
Lead	68.8		0.213	0.562	1	03/01/2020 11:49	WG1436051
Selenium	U		0.697	2.25	1	03/01/2020 11:49	WG1436051
Silver	U		0.135	1.12	1	03/01/2020 11:49	WG1436051

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Acetone	U		0.408	0.745	1.06	03/01/2020 22:39	WG1436256
Acrylonitrile	U		0.0566	0.372	1.06	03/01/2020 22:39	WG1436256
Benzene	U		0.0119	0.0298	1.06	03/01/2020 22:39	WG1436256
Bromobenzene	U		0.0312	0.372	1.06	03/01/2020 22:39	WG1436256
Bromodichloromethane	U		0.0235	0.0745	1.06	03/01/2020 22:39	WG1436256
Bromoform	U		0.177	0.745	1.06	03/01/2020 22:39	WG1436256
Bromomethane	U		0.110	0.372	1.06	03/01/2020 22:39	WG1436256
1,3-Butadiene	U		0.251	0.745	1.06	03/01/2020 22:39	WG1436256
n-Butylbenzene	U		0.115	0.372	1.06	03/01/2020 22:39	WG1436256
sec-Butylbenzene	U		0.0753	0.372	1.06	03/01/2020 22:39	WG1436256
tert-Butylbenzene	U		0.0462	0.149	1.06	03/01/2020 22:39	WG1436256
Carbon disulfide	U		0.121	0.372	1.06	03/01/2020 22:39	WG1436256
Carbon tetrachloride	U		0.0321	0.149	1.06	03/01/2020 22:39	WG1436256
Chlorobenzene	U		0.0171	0.0745	1.06	03/01/2020 22:39	WG1436256
Chlorodibromomethane	U		0.0134	0.0745	1.06	03/01/2020 22:39	WG1436256
Chloroethane	U		0.0321	0.149	1.06	03/01/2020 22:39	WG1436256
Chloroform	0.113		0.0124	0.0745	1.06	03/01/2020 22:39	WG1436256
Chloromethane	U		0.0413	0.372	1.06	03/01/2020 22:39	WG1436256
2-Chlorotoluene	U		0.0274	0.0745	1.06	03/01/2020 22:39	WG1436256
4-Chlorotoluene	U		0.0336	0.149	1.06	03/01/2020 22:39	WG1436256
Cyclohexane	U		0.0152	0.0745	1.06	03/01/2020 22:39	WG1436256
1,2-Dibromo-3-Chloropropane	U		0.152	0.745	1.06	03/01/2020 22:39	WG1436256
1,2-Dibromoethane	U		0.0156	0.0745	1.06	03/01/2020 22:39	WG1436256
Dibromomethane	U		0.0298	0.149	1.06	03/01/2020 22:39	WG1436256
1,2-Dichlorobenzene	U		0.0431	0.149	1.06	03/01/2020 22:39	WG1436256
1,3-Dichlorobenzene	U		0.0507	0.149	1.06	03/01/2020 22:39	WG1436256
1,4-Dichlorobenzene	U		0.0586	0.149	1.06	03/01/2020 22:39	WG1436256
Dichlorodifluoromethane	U		0.0244	0.0745	1.06	03/01/2020 22:39	WG1436256
1,1-Dichloroethane	U		0.0171	0.0745	1.06	03/01/2020 22:39	WG1436256
1,2-Dichloroethane	U		0.0142	0.0745	1.06	03/01/2020 22:39	WG1436256
1,1-Dichloroethene	U		0.0149	0.0745	1.06	03/01/2020 22:39	WG1436256
cis-1,2-Dichloroethene	U		0.0206	0.0745	1.06	03/01/2020 22:39	WG1436256
trans-1,2-Dichloroethene	U		0.0426	0.149	1.06	03/01/2020 22:39	WG1436256

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
1,2-Dichloropropane	U		0.0379	0.149	1.06	03/01/2020 22:39	WG1436256
1,1-Dichloropropene	U		0.0209	0.0745	1.06	03/01/2020 22:39	WG1436256
1,3-Dichloropropane	U		0.0521	0.149	1.06	03/01/2020 22:39	WG1436256
cis-1,3-Dichloropropene	U		0.0202	0.0745	1.06	03/01/2020 22:39	WG1436256
trans-1,3-Dichloropropene	U		0.0455	0.149	1.06	03/01/2020 22:39	WG1436256
2,2-Dichloropropane	U		0.0236	0.0745	1.06	03/01/2020 22:39	WG1436256
Dicyclopentadiene	U		0.108	0.372	1.06	03/01/2020 22:39	WG1436256
Di-isopropyl ether	U		0.0104	0.0298	1.06	03/01/2020 22:39	WG1436256
Ethylbenzene	U		0.0157	0.0745	1.06	03/01/2020 22:39	WG1436256
4-Ethyltoluene	U		0.0319	0.149	1.06	03/01/2020 22:39	WG1436256
Hexachloro-1,3-butadiene	U		0.379	0.745	1.06	03/01/2020 22:39	WG1436256
n-Hexane	U		0.0316	0.149	1.06	03/01/2020 22:39	WG1436256
Isopropylbenzene	U		0.0257	0.0745	1.06	03/01/2020 22:39	WG1436256
p-Isopropyltoluene	U		0.0693	0.149	1.06	03/01/2020 22:39	WG1436256
2-Butanone (MEK)	U		0.372	0.745	1.06	03/01/2020 22:39	WG1436256
Methylene Chloride	U		0.198	0.745	1.06	03/01/2020 22:39	WG1436256
4-Methyl-2-pentanone (MIBK)	U		0.298	0.745	1.06	03/01/2020 22:39	WG1436256
Methyl tert-butyl ether	U		0.00878	0.0298	1.06	03/01/2020 22:39	WG1436256
Methyl Cyclohexane	U		0.0307	0.149	1.06	03/01/2020 22:39	WG1436256
Naphthalene	U	L2 R7	0.0929	0.372	1.06	03/01/2020 22:39	WG1436256
Propene	U		0.622	1.49	1.06	03/01/2020 22:39	WG1436256
n-Propylbenzene	U		0.0352	0.149	1.06	03/01/2020 22:39	WG1436256
Styrene	U		0.0812	0.372	1.06	03/01/2020 22:39	WG1436256
1,1,1,2-Tetrachloroethane	U		0.0149	0.0745	1.06	03/01/2020 22:39	WG1436256
1,1,2,2-Tetrachloroethane	U		0.0116	0.0745	1.06	03/01/2020 22:39	WG1436256
1,1,2-Trichlorotrifluoroethane	U		0.0201	0.0745	1.06	03/01/2020 22:39	WG1436256
Tetrachloroethene	U		0.0209	0.0745	1.06	03/01/2020 22:39	WG1436256
Toluene	U		0.0372	0.149	1.06	03/01/2020 22:39	WG1436256
1,2,3-Trichlorobenzene	U	R7	0.0186	0.372	1.06	03/01/2020 22:39	WG1436256
1,2,4-Trichlorobenzene	U		0.144	0.372	1.06	03/01/2020 22:39	WG1436256
1,1,1-Trichloroethane	U		0.00819	0.0745	1.06	03/01/2020 22:39	WG1436256
1,1,2-Trichloroethane	U		0.0263	0.0745	1.06	03/01/2020 22:39	WG1436256
Trichloroethene	U		0.0119	0.0298	1.06	03/01/2020 22:39	WG1436256
Trichlorofluoromethane	U		0.0149	0.0745	1.06	03/01/2020 22:39	WG1436256
1,2,3-Trichloropropane	U		0.152	0.372	1.06	03/01/2020 22:39	WG1436256
1,2,4-Trimethylbenzene	U		0.0345	0.149	1.06	03/01/2020 22:39	WG1436256
1,2,3-Trimethylbenzene	U		0.0343	0.149	1.06	03/01/2020 22:39	WG1436256
1,3,5-Trimethylbenzene	U		0.0321	0.149	1.06	03/01/2020 22:39	WG1436256
Vinyl chloride	U		0.0203	0.0745	1.06	03/01/2020 22:39	WG1436256
Xylenes, Total	U		0.143	0.193	1.06	03/01/2020 22:39	WG1436256
(S) Toluene-d8	*101*			*75.0-131*		*03/01/2020 22:39*	WG1436256
(S) 4-Bromofluorobenzene	*105*			*67.0-138*		*03/01/2020 22:39*	WG1436256
(S) 1,2-Dichloroethane-d4	*93.8*			*70.0-130*		*03/01/2020 22:39*	WG1436256

Pesticides (GC) by Method 8081B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Aldrin	U		0.00152	0.0225	1	03/02/2020 17:21	WG1436431
Alpha BHC	U		0.00153	0.0225	1	03/02/2020 17:21	WG1436431
Beta BHC	U		0.00180	0.0225	1	03/02/2020 17:21	WG1436431
Delta BHC	U		0.00161	0.0225	1	03/02/2020 17:21	WG1436431
Gamma BHC	U		0.00163	0.0225	1	03/02/2020 17:21	WG1436431
Chlordane	U		0.0438	0.225	1	03/02/2020 17:21	WG1436431
4,4-DDD	U		0.00175	0.0225	1	03/02/2020 17:21	WG1436431
4,4-DDE	U		0.00173	0.0225	1	03/02/2020 17:21	WG1436431
4,4-DDT	U		0.00225	0.0225	1	03/02/2020 17:21	WG1436431

Pesticides (GC) by Method 8081B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Dieldrin	U		0.00171	0.0225	1	03/02/2020 17:21	WG1436431
Endosulfan I	U		0.00167	0.0225	1	03/02/2020 17:21	WG1436431
Endosulfan II	U		0.00180	0.0225	1	03/02/2020 17:21	WG1436431
Endosulfan sulfate	U		0.00170	0.0225	1	03/02/2020 17:21	WG1436431
Endrin	U		0.00176	0.0225	1	03/02/2020 17:21	WG1436431
Endrin aldehyde	U		0.00145	0.0225	1	03/02/2020 17:21	WG1436431
Endrin ketone	U		0.00185	0.0225	1	03/02/2020 17:21	WG1436431
Hexachlorobenzene	U		0.00139	0.0225	1	03/02/2020 17:21	WG1436431
Heptachlor	U		0.00173	0.0225	1	03/02/2020 17:21	WG1436431
Heptachlor epoxide	U		0.00181	0.0225	1	03/02/2020 17:21	WG1436431
Methoxychlor	U		0.00200	0.0225	1	03/02/2020 17:21	WG1436431
Toxaphene	U		0.0404	0.449	1	03/02/2020 17:21	WG1436431
(S) Decachlorobiphenyl	*57.0*			*10.0-135*		*03/02/2020 17:21*	WG1436431
(S) Tetrachloro-m-xylene	*64.1*			*10.0-139*		*03/02/2020 17:21*	WG1436431

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.0721	0.374	10	03/03/2020 16:59	WG1436421
Acenaphthylene	0.180	E4	0.0754	0.374	10	03/03/2020 16:59	WG1436421
Anthracene	0.115	E4	0.0710	0.374	10	03/03/2020 16:59	WG1436421
Benzidine	U		0.716	3.74	10	03/03/2020 16:59	WG1436421
Benzo(a)anthracene	0.672		0.0481	0.374	10	03/03/2020 16:59	WG1436421
Benzo(b)fluoranthene	1.00		0.0781	0.374	10	03/03/2020 16:59	WG1436421
Benzo(k)fluoranthene	0.374		0.0654	0.374	10	03/03/2020 16:59	WG1436421
Benzo(g,h,i)perylene	1.28		0.0810	0.374	10	03/03/2020 16:59	WG1436421
Benzo(a)pyrene	0.985		0.0616	0.374	10	03/03/2020 16:59	WG1436421
Bis(2-chlorethoxy)methane	U		0.0865	3.74	10	03/03/2020 16:59	WG1436421
Bis(2-chloroethyl)ether	U		0.101	3.74	10	03/03/2020 16:59	WG1436421
2,2-Oxybis(1-Chloropropane)	U		0.0854	3.74	10	03/03/2020 16:59	WG1436421
4-Bromophenyl-phenylether	U		0.128	3.74	10	03/03/2020 16:59	WG1436421
2-Chloronaphthalene	U		0.0718	0.374	10	03/03/2020 16:59	WG1436421
4-Chlorophenyl-phenylether	U		0.0704	3.74	10	03/03/2020 16:59	WG1436421
Chrysene	0.681		0.0623	0.374	10	03/03/2020 16:59	WG1436421
Dibenz(a,h)anthracene	U		0.0922	0.374	10	03/03/2020 16:59	WG1436421
3,3-Dichlorobenzidine	U		0.892	3.74	10	03/03/2020 16:59	WG1436421
2,4-Dinitrotoluene	U		0.0682	3.74	10	03/03/2020 16:59	WG1436421
2,6-Dinitrotoluene	U		0.0828	3.74	10	03/03/2020 16:59	WG1436421
Fluoranthene	1.47		0.0557	0.374	10	03/03/2020 16:59	WG1436421
Fluorene	U		0.0766	0.374	10	03/03/2020 16:59	WG1436421
Hexachlorobenzene	U		0.0962	3.74	10	03/03/2020 16:59	WG1436421
Hexachloro-1,3-butadiene	U		0.112	3.74	10	03/03/2020 16:59	WG1436421
Hexachlorocyclopentadiene	U		0.659	3.74	10	03/03/2020 16:59	WG1436421
Hexachloroethane	U		0.151	3.74	10	03/03/2020 16:59	WG1436421
Indeno(1,2,3-cd)pyrene	1.04		0.0867	0.374	10	03/03/2020 16:59	WG1436421
Isophorone	U		0.0586	3.74	10	03/03/2020 16:59	WG1436421
Naphthalene	U		0.0999	0.374	10	03/03/2020 16:59	WG1436421
Nitrobenzene	U		0.0781	3.74	10	03/03/2020 16:59	WG1436421
n-Nitrosodimethylamine	U		0.727	3.74	10	03/03/2020 16:59	WG1436421
n-Nitrosodiphenylamine	U		1.01	3.74	10	03/03/2020 16:59	WG1436421
n-Nitrosodi-n-propylamine	U		0.102	3.74	10	03/03/2020 16:59	WG1436421
Phenanthrene	0.707		0.0593	0.374	10	03/03/2020 16:59	WG1436421
Benzylbutyl phthalate	U		0.116	3.74	10	03/03/2020 16:59	WG1436421
Bis(2-ethylhexyl)phthalate	U		0.135	3.74	10	03/03/2020 16:59	WG1436421
Di-n-butyl phthalate	U		0.122	3.74	10	03/03/2020 16:59	WG1436421
Diethyl phthalate	U		0.0776	3.74	10	03/03/2020 16:59	WG1436421

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Dimethyl phthalate	U		0.0607	3.74	10	03/03/2020 16:59	WG1436421
Di-n-octyl phthalate	U		0.102	3.74	10	03/03/2020 16:59	WG1436421
Pyrene	1.86		0.138	0.374	10	03/03/2020 16:59	WG1436421
1,2,4-Trichlorobenzene	U		0.0984	3.74	10	03/03/2020 16:59	WG1436421
Aniline	U		0.359	3.74	10	03/03/2020 16:59	WG1436421
1,2-Diphenylhydrazine	U		0.0593	3.74	10	03/03/2020 16:59	WG1436421
Benzyl alcohol	U		0.0843	3.74	10	03/03/2020 16:59	WG1436421
4-Chloroaniline	U		0.395	3.74	10	03/03/2020 16:59	WG1436421
4-Chloro-3-methylphenol	U		0.0536	3.74	10	03/03/2020 16:59	WG1436421
2-Chlorophenol	U		0.0934	3.74	10	03/03/2020 16:59	WG1436421
Dibenzofuran	U		0.0582	3.74	10	03/03/2020 16:59	WG1436421
2,4-Dichlorophenol	U		0.0838	3.74	10	03/03/2020 16:59	WG1436421
2,4-Dimethylphenol	U		0.529	3.74	10	03/03/2020 16:59	WG1436421
4,6-Dinitro-2-methylphenol	U		1.39	3.74	10	03/03/2020 16:59	WG1436421
2,4-Dinitrophenol	U		1.10	3.74	10	03/03/2020 16:59	WG1436421
2-Methylnaphthalene	U		0.0967	0.374	10	03/03/2020 16:59	WG1436421
2-Methylphenol	U		0.111	3.74	10	03/03/2020 16:59	WG1436421
3&4-Methyl Phenol	U		0.0880	3.74	10	03/03/2020 16:59	WG1436421
2-Nitroaniline	U		0.0848	3.74	10	03/03/2020 16:59	WG1436421
3-Nitroaniline	U		0.0955	3.74	10	03/03/2020 16:59	WG1436421
4-Nitroaniline	U		0.0718	3.74	10	03/03/2020 16:59	WG1436421
2-Nitrophenol	U		0.146	3.74	10	03/03/2020 16:59	WG1436421
4-Nitrophenol	U		0.590	3.74	10	03/03/2020 16:59	WG1436421
Pentachlorophenol	U		0.539	3.74	10	03/03/2020 16:59	WG1436421
Phenol	U		0.0781	3.74	10	03/03/2020 16:59	WG1436421
Pyridine	U		0.705	3.74	10	03/03/2020 16:59	WG1436421
2,4,6-Trichlorophenol	U		0.0875	3.74	10	03/03/2020 16:59	WG1436421
Acetophenone	U		0.845	3.74	10	03/03/2020 16:59	WG1436421
2-Acetylaminofluorene	U		0.613	3.74	10	03/04/2020 14:12	WG1436421
4-Aminobiphenyl	U		0.549	3.74	10	03/04/2020 14:12	WG1436421
Chlorobenzilate	U		0.640	3.74	10	03/04/2020 14:12	WG1436421
Diallate	U	L2	0.666	3.74	10	03/04/2020 14:12	WG1436421
2,6-Dichlorophenol	U		0.519	3.74	10	03/04/2020 14:12	WG1436421
Dimethoate	U		1.02	3.74	10	03/04/2020 14:12	WG1436421
P-(Dimethylamino) Azobenzene	U		0.714	3.74	10	03/04/2020 14:12	WG1436421
Dimethylbenz (A) Anthracene	U		0.594	3.74	10	03/04/2020 14:12	WG1436421
3,3-Dimethylbenzidine	U	L2	0.813	3.74	10	03/04/2020 14:12	WG1436421
a,a-Dimethylphenethylamine	U	L2	5.31	18.6	10	03/04/2020 14:12	WG1436421
1,3-Dinitrobenzene	U		0.693	3.74	10	03/04/2020 14:12	WG1436421
Diphenylamine	U		1.01	3.74	10	03/03/2020 16:59	WG1436421
Dinoseb	U		1.09	3.74	10	03/04/2020 14:12	WG1436421
Disulfoton	U		0.740	3.74	10	03/04/2020 14:12	WG1436421
Ethyl methanesulfonate	U		0.850	3.74	10	03/04/2020 14:12	WG1436421
Ethyl Parathion	U		0.889	3.74	10	03/04/2020 14:12	WG1436421
Famphur	U		0.529	3.74	10	03/04/2020 14:12	WG1436421
Hexachloropropene	U		1.24	3.74	10	03/04/2020 14:12	WG1436421
Hexachlorophene	U		1.24	3.74	10	03/04/2020 14:12	WG1436421
Isodrin	U		0.743	3.74	10	03/04/2020 14:12	WG1436421
Isosafrole	U		0.411	3.74	10	03/04/2020 14:12	WG1436421
Kepone	U		0.552	3.74	10	03/04/2020 14:12	WG1436421
Methapyrilene	U	L2	3.74	18.6	10	03/04/2020 14:12	WG1436421
3-Methylcholanthrene	U		0.670	3.74	10	03/04/2020 14:12	WG1436421
Methyl methanesulfonate	U		0.746	3.74	10	03/04/2020 14:12	WG1436421
Methyl parathion	U		0.725	3.74	10	03/04/2020 14:12	WG1436421
1,4-Naphthoquinone	U	L2	0.471	3.74	10	03/04/2020 14:12	WG1436421
1-Naphthylamine	U		0.901	3.74	10	03/04/2020 14:12	WG1436421

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
2-Naphthylamine	U		0.734	3.74	10	03/04/2020 14:12	WG1436421
5-Nitro-o-toluidine	U		0.755	3.74	10	03/04/2020 14:12	WG1436421
4-Nitroquinoline 1-oxide	U		0.726	3.74	10	03/04/2020 14:12	WG1436421
n-Nitrosodiethylamine	U		2.12	3.74	10	03/04/2020 14:12	WG1436421
n-Nitrosodi-n-butylamine	U		1.24	3.74	10	03/04/2020 14:12	WG1436421
n-Nitrosomethylethylamine	U		1.25	3.74	10	03/04/2020 14:12	WG1436421
n-Nitrosomorpholine	U		1.69	3.74	10	03/04/2020 14:12	WG1436421
n-Nitrosopiperidine	U		0.674	3.74	10	03/04/2020 14:12	WG1436421
n-Nitrosopyrrolidine	U		2.26	3.74	10	03/04/2020 14:12	WG1436421
Pentachlorobenzene	U		0.543	3.74	10	03/04/2020 14:12	WG1436421
Pentachloroethane	U		0.794	3.74	10	03/04/2020 14:12	WG1436421
Pentachloronitrobenzene	U		0.830	3.74	10	03/04/2020 14:12	WG1436421
Phenacetin	U		0.861	3.74	10	03/04/2020 14:12	WG1436421
p-Phenylenediamine	U	L2	1.64	3.74	10	03/04/2020 14:12	WG1436421
Phorate	U		1.25	3.74	10	03/04/2020 14:12	WG1436421
2-Picoline	U		1.24	3.74	10	03/04/2020 14:12	WG1436421
Pronamide	U		0.854	3.74	10	03/04/2020 14:12	WG1436421
Safrole	U		0.711	3.74	10	03/04/2020 14:12	WG1436421
Sulfotep	U		0.850	3.74	10	03/04/2020 14:12	WG1436421
1,2,4,5-Tetrachlorobenzene	U		0.856	3.74	10	03/03/2020 16:59	WG1436421
2,3,4,6-Tetrachlorophenol	U		1.36	3.74	10	03/03/2020 16:59	WG1436421
Thionazin	U		0.640	3.74	10	03/04/2020 14:12	WG1436421
o-Toluidine	U		1.25	3.74	10	03/04/2020 14:12	WG1436421
2,4,5-Trichlorophenol	U		0.117	3.74	10	03/03/2020 16:59	WG1436421
O,O,O-Triethyl phosphorothioate	U		0.896	3.74	10	03/04/2020 14:12	WG1436421
1,3,5-Trinitrobenzene	U		0.640	3.74	10	03/04/2020 14:12	WG1436421
(S) 2-Fluorophenol	*101*			*12.0-120*		*03/03/2020 16:59*	WG1436421
(S) Phenol-d5	*80.9*			*10.0-120*		*03/03/2020 16:59*	WG1436421
(S) Nitrobenzene-d5	*77.5*			*10.0-122*		*03/03/2020 16:59*	WG1436421
(S) 2-Fluorobiphenyl	*97.0*			*15.0-120*		*03/03/2020 16:59*	WG1436421
(S) 2,4,6-Tribromophenol	*125*			*10.0-127*		*03/03/2020 16:59*	WG1436421
(S) p-Terphenyl-d14	*103*			*10.0-120*		*03/03/2020 16:59*	WG1436421

Sample Narrative:

L1194025-02 WG1436421: Dilution due to matrix impact during extract concentration procedure

Total Solids by Method 2540 G-2011

Analyte	Result %	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	91.1		1	02/29/2020 17:44	WG1436007

Mercury by Method 7471B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0876		0.00307	0.0329	1	03/02/2020 22:53	WG1436283

Metals (ICP) by Method 6010C

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Arsenic	10.5		0.505	2.20	1	03/01/2020 11:51	WG1436051
Barium	146		0.187	0.549	1	03/01/2020 11:51	WG1436051
Cadmium	0.935		0.0769	0.549	1	03/01/2020 11:51	WG1436051
Chromium	34.9		0.154	1.10	1	03/01/2020 11:51	WG1436051
Lead	83.8		0.209	0.549	1	03/01/2020 11:51	WG1436051
Selenium	U		0.681	2.20	1	03/01/2020 11:51	WG1436051
Silver	U		0.132	1.10	1	03/01/2020 11:51	WG1436051

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Acetone	U		0.377	0.686	1	03/01/2020 22:59	WG1436256
Acrylonitrile	U		0.0522	0.344	1	03/01/2020 22:59	WG1436256
Benzene	U		0.0110	0.0275	1	03/01/2020 22:59	WG1436256
Bromobenzene	U		0.0289	0.344	1	03/01/2020 22:59	WG1436256
Bromodichloromethane	U		0.0216	0.0686	1	03/01/2020 22:59	WG1436256
Bromoform	U		0.164	0.686	1	03/01/2020 22:59	WG1436256
Bromomethane	U		0.102	0.344	1	03/01/2020 22:59	WG1436256
1,3-Butadiene	U		0.232	0.686	1	03/01/2020 22:59	WG1436256
n-Butylbenzene	U		0.105	0.344	1	03/01/2020 22:59	WG1436256
sec-Butylbenzene	U		0.0695	0.344	1	03/01/2020 22:59	WG1436256
tert-Butylbenzene	U		0.0426	0.137	1	03/01/2020 22:59	WG1436256
Carbon disulfide	U		0.112	0.344	1	03/01/2020 22:59	WG1436256
Carbon tetrachloride	U		0.0296	0.137	1	03/01/2020 22:59	WG1436256
Chlorobenzene	U		0.0157	0.0686	1	03/01/2020 22:59	WG1436256
Chlorodibromomethane	U		0.0124	0.0686	1	03/01/2020 22:59	WG1436256
Chloroethane	U		0.0296	0.137	1	03/01/2020 22:59	WG1436256
Chloroform	0.0240	E4	0.0114	0.0686	1	03/01/2020 22:59	WG1436256
Chloromethane	U		0.0382	0.344	1	03/01/2020 22:59	WG1436256
2-Chlorotoluene	U		0.0253	0.0686	1	03/01/2020 22:59	WG1436256
4-Chlorotoluene	U		0.0311	0.137	1	03/01/2020 22:59	WG1436256
Cyclohexane	U		0.0139	0.0686	1	03/01/2020 22:59	WG1436256
1,2-Dibromo-3-Chloropropane	U		0.141	0.686	1	03/01/2020 22:59	WG1436256
1,2-Dibromoethane	U		0.0144	0.0686	1	03/01/2020 22:59	WG1436256
Dibromomethane	U		0.0275	0.137	1	03/01/2020 22:59	WG1436256
1,2-Dichlorobenzene	U		0.0399	0.137	1	03/01/2020 22:59	WG1436256
1,3-Dichlorobenzene	U		0.0467	0.137	1	03/01/2020 22:59	WG1436256
1,4-Dichlorobenzene	U		0.0541	0.137	1	03/01/2020 22:59	WG1436256
Dichlorodifluoromethane	U		0.0225	0.0686	1	03/01/2020 22:59	WG1436256
1,1-Dichloroethane	U		0.0158	0.0686	1	03/01/2020 22:59	WG1436256
1,2-Dichloroethane	U		0.0131	0.0686	1	03/01/2020 22:59	WG1436256
1,1-Dichloroethene	U		0.0137	0.0686	1	03/01/2020 22:59	WG1436256
cis-1,2-Dichloroethene	U		0.0190	0.0686	1	03/01/2020 22:59	WG1436256
trans-1,2-Dichloroethene	U		0.0392	0.137	1	03/01/2020 22:59	WG1436256

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
1,2-Dichloropropane	U		0.0349	0.137	1	03/01/2020 22:59	WG1436256
1,1-Dichloropropene	U		0.0192	0.0686	1	03/01/2020 22:59	WG1436256
1,3-Dichloropropane	U		0.0481	0.137	1	03/01/2020 22:59	WG1436256
cis-1,3-Dichloropropene	U		0.0186	0.0686	1	03/01/2020 22:59	WG1436256
trans-1,3-Dichloropropene	U		0.0421	0.137	1	03/01/2020 22:59	WG1436256
2,2-Dichloropropane	U		0.0217	0.0686	1	03/01/2020 22:59	WG1436256
Dicyclopentadiene	U		0.0999	0.344	1	03/01/2020 22:59	WG1436256
Di-isopropyl ether	U		0.00961	0.0275	1	03/01/2020 22:59	WG1436256
Ethylbenzene	U		0.0146	0.0686	1	03/01/2020 22:59	WG1436256
4-Ethyltoluene	U		0.0294	0.137	1	03/01/2020 22:59	WG1436256
Hexachloro-1,3-butadiene	U		0.349	0.686	1	03/01/2020 22:59	WG1436256
n-Hexane	U		0.0291	0.137	1	03/01/2020 22:59	WG1436256
Isopropylbenzene	U		0.0237	0.0686	1	03/01/2020 22:59	WG1436256
p-Isopropyltoluene	U		0.0640	0.137	1	03/01/2020 22:59	WG1436256
2-Butanone (MEK)	U		0.344	0.686	1	03/01/2020 22:59	WG1436256
Methylene Chloride	U		0.182	0.686	1	03/01/2020 22:59	WG1436256
4-Methyl-2-pentanone (MIBK)	U		0.275	0.686	1	03/01/2020 22:59	WG1436256
Methyl tert-butyl ether	U		0.00809	0.0275	1	03/01/2020 22:59	WG1436256
Methyl Cyclohexane	U		0.0283	0.137	1	03/01/2020 22:59	WG1436256
Naphthalene	U	L2 R7	0.0856	0.344	1	03/01/2020 22:59	WG1436256
Propene	U		0.574	1.37	1	03/01/2020 22:59	WG1436256
n-Propylbenzene	U		0.0324	0.137	1	03/01/2020 22:59	WG1436256
Styrene	U		0.0750	0.344	1	03/01/2020 22:59	WG1436256
1,1,1,2-Tetrachloroethane	U		0.0137	0.0686	1	03/01/2020 22:59	WG1436256
1,1,2,2-Tetrachloroethane	U		0.0107	0.0686	1	03/01/2020 22:59	WG1436256
1,1,2-Trichlorotrifluoroethane	U		0.0186	0.0686	1	03/01/2020 22:59	WG1436256
Tetrachloroethene	U		0.0192	0.0686	1	03/01/2020 22:59	WG1436256
Toluene	U		0.0344	0.137	1	03/01/2020 22:59	WG1436256
1,2,3-Trichlorobenzene	U	R7	0.0171	0.344	1	03/01/2020 22:59	WG1436256
1,2,4-Trichlorobenzene	U		0.133	0.344	1	03/01/2020 22:59	WG1436256
1,1,1-Trichloroethane	U		0.00755	0.0686	1	03/01/2020 22:59	WG1436256
1,1,2-Trichloroethane	U		0.0243	0.0686	1	03/01/2020 22:59	WG1436256
Trichloroethene	U		0.0110	0.0275	1	03/01/2020 22:59	WG1436256
Trichlorofluoromethane	U		0.0137	0.0686	1	03/01/2020 22:59	WG1436256
1,2,3-Trichloropropane	U		0.141	0.344	1	03/01/2020 22:59	WG1436256
1,2,4-Trimethylbenzene	U		0.0318	0.137	1	03/01/2020 22:59	WG1436256
1,2,3-Trimethylbenzene	U		0.0316	0.137	1	03/01/2020 22:59	WG1436256
1,3,5-Trimethylbenzene	U		0.0296	0.137	1	03/01/2020 22:59	WG1436256
Vinyl chloride	U		0.0188	0.0686	1	03/01/2020 22:59	WG1436256
Xylenes, Total	U		0.131	0.179	1	03/01/2020 22:59	WG1436256
(S) Toluene-d8	*102*			*75.0-131*		*03/01/2020 22:59*	WG1436256
(S) 4-Bromofluorobenzene	*105*			*67.0-138*		*03/01/2020 22:59*	WG1436256
(S) 1,2-Dichloroethane-d4	*92.5*			*70.0-130*		*03/01/2020 22:59*	WG1436256

Pesticides (GC) by Method 8081B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Aldrin	U		0.00148	0.0220	1	03/03/2020 16:35	WG1436431
Alpha BHC	U		0.00149	0.0220	1	03/03/2020 16:35	WG1436431
Beta BHC	U		0.00176	0.0220	1	03/03/2020 16:35	WG1436431
Delta BHC	U		0.00157	0.0220	1	03/03/2020 16:35	WG1436431
Gamma BHC	U		0.00159	0.0220	1	03/03/2020 16:35	WG1436431
Chlordane	U		0.0428	0.220	1	03/03/2020 16:35	WG1436431
4,4-DDD	U		0.00171	0.0220	1	03/03/2020 16:35	WG1436431
4,4-DDE	U		0.00169	0.0220	1	03/03/2020 16:35	WG1436431
4,4-DDT	U		0.00220	0.0220	1	03/03/2020 16:35	WG1436431

Pesticides (GC) by Method 8081B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Dieldrin	U		0.00167	0.0220	1	03/03/2020 16:35	WG1436431
Endosulfan I	U		0.00164	0.0220	1	03/03/2020 16:35	WG1436431
Endosulfan II	U		0.00176	0.0220	1	03/03/2020 16:35	WG1436431
Endosulfan sulfate	U		0.00166	0.0220	1	03/03/2020 16:35	WG1436431
Endrin	U		0.00172	0.0220	1	03/03/2020 16:35	WG1436431
Endrin aldehyde	U		0.00142	0.0220	1	03/03/2020 16:35	WG1436431
Endrin ketone	U		0.00181	0.0220	1	03/03/2020 16:35	WG1436431
Hexachlorobenzene	U		0.00136	0.0220	1	03/03/2020 16:35	WG1436431
Heptachlor	U		0.00169	0.0220	1	03/03/2020 16:35	WG1436431
Heptachlor epoxide	U		0.00177	0.0220	1	03/03/2020 16:35	WG1436431
Methoxychlor	U		0.00195	0.0220	1	03/03/2020 16:35	WG1436431
Toxaphene	U		0.0395	0.439	1	03/03/2020 16:35	WG1436431
(S) Decachlorobiphenyl	*63.6*			*10.0-135*		*03/03/2020 16:35*	WG1436431
(S) Tetrachloro-m-xylene	*63.3*			*10.0-139*		*03/03/2020 16:35*	WG1436431

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.0705	0.366	10	03/03/2020 16:39	WG1436421
Acenaphthylene	U		0.0737	0.366	10	03/03/2020 16:39	WG1436421
Anthracene	U		0.0694	0.366	10	03/03/2020 16:39	WG1436421
Benzidine	U		0.699	3.66	10	03/03/2020 16:39	WG1436421
Benzo(a)anthracene	U		0.0470	0.366	10	03/03/2020 16:39	WG1436421
Benzo(b)fluoranthene	U		0.0763	0.366	10	03/03/2020 16:39	WG1436421
Benzo(k)fluoranthene	U		0.0639	0.366	10	03/03/2020 16:39	WG1436421
Benzo(g,h,i)perylene	U		0.0792	0.366	10	03/03/2020 16:39	WG1436421
Benzo(a)pyrene	U		0.0602	0.366	10	03/03/2020 16:39	WG1436421
Bis(2-chlorethoxy)methane	U		0.0845	3.66	10	03/03/2020 16:39	WG1436421
Bis(2-chloroethyl)ether	U		0.0984	3.66	10	03/03/2020 16:39	WG1436421
2,2-Oxybis(1-Chloropropane)	U		0.0834	3.66	10	03/03/2020 16:39	WG1436421
4-Bromophenyl-phenylether	U		0.125	3.66	10	03/03/2020 16:39	WG1436421
2-Chloronaphthalene	U		0.0702	0.366	10	03/03/2020 16:39	WG1436421
4-Chlorophenyl-phenylether	U		0.0688	3.66	10	03/03/2020 16:39	WG1436421
Chrysene	0.0815	E4	0.0609	0.366	10	03/03/2020 16:39	WG1436421
Dibenz(a,h)anthracene	U		0.0901	0.366	10	03/03/2020 16:39	WG1436421
3,3-Dichlorobenzidine	U		0.872	3.66	10	03/03/2020 16:39	WG1436421
2,4-Dinitrotoluene	U		0.0666	3.66	10	03/03/2020 16:39	WG1436421
2,6-Dinitrotoluene	U		0.0809	3.66	10	03/03/2020 16:39	WG1436421
Fluoranthene	0.152	E4	0.0545	0.366	10	03/03/2020 16:39	WG1436421
Fluorene	U		0.0749	0.366	10	03/03/2020 16:39	WG1436421
Hexachlorobenzene	U		0.0940	3.66	10	03/03/2020 16:39	WG1436421
Hexachloro-1,3-butadiene	U		0.110	3.66	10	03/03/2020 16:39	WG1436421
Hexachlorocyclopentadiene	U		0.645	3.66	10	03/03/2020 16:39	WG1436421
Hexachloroethane	U		0.147	3.66	10	03/03/2020 16:39	WG1436421
Indeno(1,2,3-cd)pyrene	U		0.0848	0.366	10	03/03/2020 16:39	WG1436421
Isophorone	U		0.0573	3.66	10	03/03/2020 16:39	WG1436421
Naphthalene	U		0.0976	0.366	10	03/03/2020 16:39	WG1436421
Nitrobenzene	U		0.0763	3.66	10	03/03/2020 16:39	WG1436421
n-Nitrosodimethylamine	U		0.710	3.66	10	03/03/2020 16:39	WG1436421
n-Nitrosodiphenylamine	U		0.988	3.66	10	03/03/2020 16:39	WG1436421
n-Nitrosodi-n-propylamine	U		0.0995	3.66	10	03/03/2020 16:39	WG1436421
Phenanthrene	0.0704	E4	0.0580	0.366	10	03/03/2020 16:39	WG1436421
Benzylbutyl phthalate	U		0.113	3.66	10	03/03/2020 16:39	WG1436421
Bis(2-ethylhexyl)phthalate	U		0.132	3.66	10	03/03/2020 16:39	WG1436421
Di-n-butyl phthalate	U		0.120	3.66	10	03/03/2020 16:39	WG1436421
Diethyl phthalate	U		0.0759	3.66	10	03/03/2020 16:39	WG1436421

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Dimethyl phthalate	0.137	E4	0.0593	3.66	10	03/03/2020 16:39	WG1436421
Di-n-octyl phthalate	U		0.0996	3.66	10	03/03/2020 16:39	WG1436421
Pyrene	0.135	E4	0.135	0.366	10	03/03/2020 16:39	WG1436421
1,2,4-Trichlorobenzene	U		0.0962	3.66	10	03/03/2020 16:39	WG1436421
Aniline	U		0.351	3.66	10	03/03/2020 16:39	WG1436421
1,2-Diphenylhydrazine	U		0.0580	3.66	10	03/03/2020 16:39	WG1436421
Benzyl alcohol	U		0.0824	3.66	10	03/03/2020 16:39	WG1436421
4-Chloroaniline	U		0.387	3.66	10	03/03/2020 16:39	WG1436421
4-Chloro-3-methylphenol	U		0.0524	3.66	10	03/03/2020 16:39	WG1436421
2-Chlorophenol	U		0.0912	3.66	10	03/03/2020 16:39	WG1436421
Dibenzofuran	U		0.0569	3.66	10	03/03/2020 16:39	WG1436421
2,4-Dichlorophenol	U		0.0819	3.66	10	03/03/2020 16:39	WG1436421
2,4-Dimethylphenol	U		0.517	3.66	10	03/03/2020 16:39	WG1436421
4,6-Dinitro-2-methylphenol	U		1.36	3.66	10	03/03/2020 16:39	WG1436421
2,4-Dinitrophenol	U		1.08	3.66	10	03/03/2020 16:39	WG1436421
2-Methylnaphthalene	U		0.0945	0.366	10	03/03/2020 16:39	WG1436421
2-Methylphenol	U		0.108	3.66	10	03/03/2020 16:39	WG1436421
3&4-Methyl Phenol	U		0.0860	3.66	10	03/03/2020 16:39	WG1436421
2-Nitroaniline	U		0.0829	3.66	10	03/03/2020 16:39	WG1436421
3-Nitroaniline	U		0.0933	3.66	10	03/03/2020 16:39	WG1436421
4-Nitroaniline	U		0.0702	3.66	10	03/03/2020 16:39	WG1436421
2-Nitrophenol	U		0.143	3.66	10	03/03/2020 16:39	WG1436421
4-Nitrophenol	U		0.576	3.66	10	03/03/2020 16:39	WG1436421
Pentachlorophenol	U		0.527	3.66	10	03/03/2020 16:39	WG1436421
Phenol	U		0.0763	3.66	10	03/03/2020 16:39	WG1436421
Pyridine	U		0.690	3.66	10	03/03/2020 16:39	WG1436421
2,4,6-Trichlorophenol	U		0.0855	3.66	10	03/03/2020 16:39	WG1436421
Acetophenone	U		0.826	3.66	10	03/03/2020 16:39	WG1436421
2-Acetylaminofluorene	U		0.600	3.66	10	03/04/2020 13:52	WG1436421
4-Aminobiphenyl	U		0.537	3.66	10	03/04/2020 13:52	WG1436421
Chlorobenzilate	U		0.626	3.66	10	03/04/2020 13:52	WG1436421
Diallate	U	L2	0.651	3.66	10	03/04/2020 13:52	WG1436421
2,6-Dichlorophenol	U		0.507	3.66	10	03/04/2020 13:52	WG1436421
Dimethoate	U		0.994	3.66	10	03/04/2020 13:52	WG1436421
P-(Dimethylamino) Azobenzene	U		0.698	3.66	10	03/04/2020 13:52	WG1436421
Dimethylbenz (A) Anthracene	U		0.581	3.66	10	03/04/2020 13:52	WG1436421
3,3-Dimethylbenzidine	U	L2	0.795	3.66	10	03/04/2020 13:52	WG1436421
a,a-Dimethylphenethylamine	U	L2	5.19	18.2	10	03/04/2020 13:52	WG1436421
1,3-Dinitrobenzene	U		0.677	3.66	10	03/04/2020 13:52	WG1436421
Diphenylamine	U		0.988	3.66	10	03/03/2020 16:39	WG1436421
Dinoseb	U		1.07	3.66	10	03/04/2020 13:52	WG1436421
Disulfoton	U		0.724	3.66	10	03/04/2020 13:52	WG1436421
Ethyl methanesulfonate	U		0.831	3.66	10	03/04/2020 13:52	WG1436421
Ethyl Parathion	U		0.869	3.66	10	03/04/2020 13:52	WG1436421
Famphur	U		0.517	3.66	10	03/04/2020 13:52	WG1436421
Hexachloropropene	U		1.21	3.66	10	03/04/2020 13:52	WG1436421
Hexachlorophene	U		1.21	3.66	10	03/04/2020 13:52	WG1436421
Isodrin	U		0.726	3.66	10	03/04/2020 13:52	WG1436421
Isosafrole	U		0.402	3.66	10	03/04/2020 13:52	WG1436421
Kepone	U		0.539	3.66	10	03/04/2020 13:52	WG1436421
Methapyrilene	U	L2	3.66	18.2	10	03/04/2020 13:52	WG1436421
3-Methylcholanthrene	U		0.654	3.66	10	03/04/2020 13:52	WG1436421
Methyl methanesulfonate	U		0.729	3.66	10	03/04/2020 13:52	WG1436421
Methyl parathion	U		0.708	3.66	10	03/04/2020 13:52	WG1436421
1,4-Naphthoquinone	U	L2	0.460	3.66	10	03/04/2020 13:52	WG1436421
1-Naphthylamine	U		0.881	3.66	10	03/04/2020 13:52	WG1436421

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
2-Naphthylamine	U		0.717	3.66	10	03/04/2020 13:52	WG1436421
5-Nitro-o-toluidine	U		0.738	3.66	10	03/04/2020 13:52	WG1436421
4-Nitroquinoline 1-oxide	U		0.709	3.66	10	03/04/2020 13:52	WG1436421
n-Nitrosodiethylamine	U		2.08	3.66	10	03/04/2020 13:52	WG1436421
n-Nitrosodi-n-butylamine	U		1.21	3.66	10	03/04/2020 13:52	WG1436421
n-Nitrosomethylethylamine	U		1.22	3.66	10	03/04/2020 13:52	WG1436421
n-Nitrosomorpholine	U		1.65	3.66	10	03/04/2020 13:52	WG1436421
n-Nitrosopiperidine	U		0.659	3.66	10	03/04/2020 13:52	WG1436421
n-Nitrosopyrrolidine	U		2.21	3.66	10	03/04/2020 13:52	WG1436421
Pentachlorobenzene	U		0.530	3.66	10	03/04/2020 13:52	WG1436421
Pentachloroethane	U		0.776	3.66	10	03/04/2020 13:52	WG1436421
Pentachloronitrobenzene	U		0.811	3.66	10	03/04/2020 13:52	WG1436421
Phenacetin	U		0.841	3.66	10	03/04/2020 13:52	WG1436421
p-Phenylenediamine	U	L2	1.60	3.66	10	03/04/2020 13:52	WG1436421
Phorate	U		1.22	3.66	10	03/04/2020 13:52	WG1436421
2-Picoline	U		1.21	3.66	10	03/04/2020 13:52	WG1436421
Pronamide	U		0.834	3.66	10	03/04/2020 13:52	WG1436421
Safrole	U		0.695	3.66	10	03/04/2020 13:52	WG1436421
Sulfotep	U		0.831	3.66	10	03/04/2020 13:52	WG1436421
1,2,4,5-Tetrachlorobenzene	U		0.837	3.66	10	03/03/2020 16:39	WG1436421
2,3,4,6-Tetrachlorophenol	U		1.33	3.66	10	03/03/2020 16:39	WG1436421
Thionazin	U		0.626	3.66	10	03/04/2020 13:52	WG1436421
o-Toluidine	U		1.22	3.66	10	03/04/2020 13:52	WG1436421
2,4,5-Trichlorophenol	U		0.114	3.66	10	03/03/2020 16:39	WG1436421
O,O,O-Triethyl phosphorothioate	U		0.876	3.66	10	03/04/2020 13:52	WG1436421
1,3,5-Trinitrobenzene	U		0.626	3.66	10	03/04/2020 13:52	WG1436421
(S) 2-Fluorophenol	*91.6*			*12.0-120*		*03/03/2020 16:39*	WG1436421
(S) Phenol-d5	*78.3*			*10.0-120*		*03/03/2020 16:39*	WG1436421
(S) Nitrobenzene-d5	*77.1*			*10.0-122*		*03/03/2020 16:39*	WG1436421
(S) 2-Fluorobiphenyl	*92.4*			*15.0-120*		*03/03/2020 16:39*	WG1436421
(S) 2,4,6-Tribromophenol	*108*			*10.0-127*		*03/03/2020 16:39*	WG1436421
(S) p-Terphenyl-d14	*89.9*			*10.0-120*		*03/03/2020 16:39*	WG1436421

Sample Narrative:

L1194025-03 WG1436421: Dilution due to matrix impact during extract concentration procedure

Method Blank (MB)

(MB) R3504390-1 02/29/20 17:44

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.00200			

L1194025-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1194025-01 02/29/20 17:44 • (DUP) R3504390-3 02/29/20 17:44

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	89.3	89.7	1	0.388		10

Laboratory Control Sample (LCS)

(LCS) R3504390-2 02/29/20 17:44

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85.0-115	

Method Blank (MB)

(MB) R3504715-1 03/02/20 22:30

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Mercury	U		0.00280	0.0300

Laboratory Control Sample (LCS)

(LCS) R3504715-2 03/02/20 22:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.500	0.469	93.8	80.0-120	

L1194059-21 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1194059-21 03/02/20 22:35 • (MS) R3504715-3 03/02/20 22:43 • (MSD) R3504715-4 03/02/20 22:45

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.500	0.0124	0.479	0.464	93.3	90.4	1	75.0-125			3.04	20

Method Blank (MB)

(MB) R3504354-1 03/01/20 11:15

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.460	2.00
Barium	U		0.170	0.500
Cadmium	U		0.0700	0.500
Chromium	U		0.140	1.00
Lead	U		0.190	0.500
Selenium	U		0.620	2.00
Silver	U		0.120	1.00

Laboratory Control Sample (LCS)

(LCS) R3504354-2 03/01/20 11:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	101	101	80.0-120	
Barium	100	108	108	80.0-120	
Cadmium	100	103	103	80.0-120	
Chromium	100	107	107	80.0-120	
Lead	100	104	104	80.0-120	
Selenium	100	102	102	80.0-120	
Silver	20.0	19.4	96.8	80.0-120	

L1194059-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1194059-01 03/01/20 11:20 • (MS) R3504354-5 03/01/20 11:28 • (MSD) R3504354-6 03/01/20 11:30

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	5.35	105	103	99.7	98.0	1	75.0-125			1.64	20
Barium	100	128	230	230	102	102	1	75.0-125			0.00816	20
Cadmium	100	0.263	102	100	102	99.9	1	75.0-125			1.90	20
Chromium	100	20.1	121	119	101	98.9	1	75.0-125			1.44	20
Lead	100	5.73	109	106	103	100	1	75.0-125			2.17	20
Selenium	100	U	100	97.5	100	97.5	1	75.0-125			2.67	20
Silver	20.0	U	19.3	18.9	96.6	94.5	1	75.0-125			2.25	20

Method Blank (MB)

(MB) R3504423-3 03/01/20 15:33

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acetone	U		0.343	0.625
Acrylonitrile	U		0.0475	0.313
Benzene	U		0.0100	0.0250
Bromobenzene	U		0.0263	0.313
Bromodichloromethane	U		0.0197	0.0625
Bromoform	U		0.150	0.625
Bromomethane	U		0.0925	0.313
1,3-Butadiene	U		0.211	0.625
n-Butylbenzene	U		0.0960	0.313
sec-Butylbenzene	U		0.0633	0.313
tert-Butylbenzene	U		0.0388	0.125
Carbon disulfide	U		0.102	0.313
Carbon tetrachloride	U		0.0270	0.125
Chlorobenzene	U		0.0143	0.0625
Chlorodibromomethane	U		0.0113	0.0625
Chloroethane	U		0.0270	0.125
Chloroform	U		0.0104	0.0625
Chloromethane	U		0.0348	0.313
Cyclohexane	U		0.0127	0.0625
2-Chlorotoluene	U		0.0230	0.0625
4-Chlorotoluene	U		0.0283	0.125
1,2-Dibromo-3-Chloropropane	U		0.128	0.625
1,2-Dibromoethane	U		0.0131	0.0625
Dibromomethane	U		0.0250	0.125
1,2-Dichlorobenzene	U		0.0363	0.125
1,3-Dichlorobenzene	U		0.0425	0.125
1,4-Dichlorobenzene	U		0.0493	0.125
Dichlorodifluoromethane	U		0.0205	0.0625
1,1-Dichloroethane	U		0.0144	0.0625
1,2-Dichloroethane	U		0.0119	0.0625
1,1-Dichloroethene	U		0.0125	0.0625
cis-1,2-Dichloroethene	U		0.0173	0.0625
trans-1,2-Dichloroethene	U		0.0358	0.125
1,2-Dichloropropane	U		0.0318	0.125
1,1-Dichloropropene	U		0.0175	0.0625
1,3-Dichloropropane	U		0.0438	0.125
cis-1,3-Dichloropropene	U		0.0170	0.0625
trans-1,3-Dichloropropene	U		0.0383	0.125
2,2-Dichloropropane	U		0.0198	0.0625
Dicyclopentadiene	U		0.0910	0.313

Method Blank (MB)

(MB) R3504423-3 03/01/20 15:33

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Di-isopropyl ether	U		0.00875	0.0250
Ethylbenzene	U		0.0133	0.0625
4-Ethyltoluene	U		0.0268	0.125
Hexachloro-1,3-butadiene	U		0.318	0.625
n-Hexane	U		0.0265	0.125
Isopropylbenzene	U		0.0216	0.0625
p-Isopropyltoluene	U		0.0583	0.125
2-Butanone (MEK)	U		0.313	0.625
Methyl Cyclohexane	U		0.0258	0.125
Methylene Chloride	U		0.166	0.625
4-Methyl-2-pentanone (MIBK)	U		0.250	0.625
Methyl tert-butyl ether	U		0.00738	0.0250
Naphthalene	U		0.0780	0.313
Propene	U		0.523	1.25
n-Propylbenzene	U		0.0295	0.125
Styrene	U		0.0683	0.313
1,1,1,2-Tetrachloroethane	U		0.0125	0.0625
1,1,2,2-Tetrachloroethane	U		0.00975	0.0625
Tetrachloroethene	U		0.0175	0.0625
Toluene	U		0.0313	0.125
1,1,2-Trichlorotrifluoroethane	U		0.0169	0.0625
1,2,3-Trichlorobenzene	U		0.0156	0.313
1,2,4-Trichlorobenzene	U		0.121	0.313
1,1,1-Trichloroethane	U		0.00688	0.0625
1,1,2-Trichloroethane	U		0.0221	0.0625
Trichloroethene	U		0.0100	0.0250
Trichlorofluoromethane	U		0.0125	0.0625
1,2,3-Trichloropropane	U		0.128	0.313
1,2,3-Trimethylbenzene	U		0.0288	0.125
1,2,4-Trimethylbenzene	U		0.0290	0.125
1,3,5-Trimethylbenzene	U		0.0270	0.125
Vinyl chloride	U		0.0171	0.0625
Xylenes, Total	U		0.120	0.163
(S) Toluene-d8	*102*			*75.0-131*
(S) 4-Bromofluorobenzene	*104*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*95.2*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3504423-1 03/01/20 14:12 • (LCSD) R3504423-2 03/01/20 14:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.625	0.722	0.813	116	130	10.0-160			11.9	31
Acrylonitrile	0.625	0.598	0.617	95.7	98.7	45.0-153			3.13	22
Benzene	0.125	0.128	0.129	102	103	70.0-123			0.778	20
Bromobenzene	0.125	0.117	0.121	93.6	96.8	73.0-121			3.36	20
Bromodichloromethane	0.125	0.106	0.110	84.8	88.0	73.0-121			3.70	20
Bromoform	0.125	0.108	0.112	86.4	89.6	64.0-132			3.64	20
Bromomethane	0.125	0.105	0.106	84.0	84.8	56.0-147			0.948	20
1,3-Butadiene	0.125	0.0803	0.0814	64.2	65.1	32.0-150			1.36	20
n-Butylbenzene	0.125	0.113	0.119	90.4	95.2	68.0-135			5.17	20
sec-Butylbenzene	0.125	0.116	0.124	92.8	99.2	74.0-130			6.67	20
tert-Butylbenzene	0.125	0.117	0.123	93.6	98.4	75.0-127			5.00	20
Carbon disulfide	0.125	0.123	0.124	98.4	99.2	56.0-133			0.810	20
Carbon tetrachloride	0.125	0.116	0.121	92.8	96.8	66.0-128			4.22	20
Chlorobenzene	0.125	0.116	0.120	92.8	96.0	76.0-128			3.39	20
Chlorodibromomethane	0.125	0.108	0.114	86.4	91.2	74.0-127			5.41	20
Chloroethane	0.125	0.123	0.124	98.4	99.2	61.0-134			0.810	20
Chloroform	0.125	0.122	0.125	97.6	100	72.0-123			2.43	20
Chloromethane	0.125	0.134	0.138	107	110	51.0-138			2.94	20
Cyclohexane	0.125	0.116	0.118	92.8	94.4	70.0-130			1.71	20
2-Chlorotoluene	0.125	0.119	0.128	95.2	102	75.0-124			7.29	20
4-Chlorotoluene	0.125	0.129	0.131	103	105	75.0-124			1.54	20
1,2-Dibromo-3-Chloropropane	0.125	0.0856	0.0909	68.5	72.7	59.0-130			6.01	20
1,2-Dibromoethane	0.125	0.105	0.110	84.0	88.0	74.0-128			4.65	20
Dibromomethane	0.125	0.106	0.112	84.8	89.6	75.0-122			5.50	20
1,2-Dichlorobenzene	0.125	0.113	0.118	90.4	94.4	76.0-124			4.33	20
1,3-Dichlorobenzene	0.125	0.123	0.127	98.4	102	76.0-125			3.20	20
1,4-Dichlorobenzene	0.125	0.116	0.120	92.8	96.0	77.0-121			3.39	20
Dichlorodifluoromethane	0.125	0.103	0.107	82.4	85.6	43.0-156			3.81	20
1,1-Dichloroethane	0.125	0.115	0.118	92.0	94.4	70.0-127			2.58	20
1,2-Dichloroethane	0.125	0.115	0.116	92.0	92.8	65.0-131			0.866	20
1,1-Dichloroethene	0.125	0.126	0.128	101	102	65.0-131			1.57	20
cis-1,2-Dichloroethene	0.125	0.118	0.120	94.4	96.0	73.0-125			1.68	20
trans-1,2-Dichloroethene	0.125	0.120	0.120	96.0	96.0	71.0-125			0.000	20
1,2-Dichloropropane	0.125	0.122	0.122	97.6	97.6	74.0-125			0.000	20
1,1-Dichloropropene	0.125	0.129	0.128	103	102	73.0-125			0.778	20
1,3-Dichloropropane	0.125	0.121	0.126	96.8	101	80.0-125			4.05	20
cis-1,3-Dichloropropene	0.125	0.135	0.136	108	109	76.0-127			0.738	20
trans-1,3-Dichloropropene	0.125	0.119	0.123	95.2	98.4	73.0-127			3.31	20
2,2-Dichloropropane	0.125	0.109	0.111	87.2	88.8	59.0-135			1.82	20
Dicyclopentadiene	0.125	0.108	0.114	86.4	91.2	71.0-132			5.41	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3504423-1 03/01/20 14:12 • (LCSD) R3504423-2 03/01/20 14:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Di-isopropyl ether	0.125	0.111	0.113	88.8	90.4	60.0-136			1.79	20
Ethylbenzene	0.125	0.113	0.117	90.4	93.6	74.0-126			3.48	20
4-Ethyltoluene	0.125	0.122	0.130	97.6	104	71.0-129			6.35	20
Hexachloro-1,3-butadiene	0.125	0.110	0.126	88.0	101	57.0-150			13.6	20
n-Hexane	0.125	0.127	0.134	102	107	55.0-137			5.36	20
Isopropylbenzene	0.125	0.112	0.116	89.6	92.8	72.0-127			3.51	20
p-Isopropyltoluene	0.125	0.108	0.114	86.4	91.2	72.0-133			5.41	20
2-Butanone (MEK)	0.625	0.597	0.632	95.5	101	30.0-160			5.70	24
Methyl Cyclohexane	0.125	0.118	0.126	94.4	101	67.0-129			6.56	20
Methylene Chloride	0.125	0.123	0.126	98.4	101	68.0-123			2.41	20
4-Methyl-2-pentanone (MIBK)	0.625	0.511	0.532	81.8	85.1	56.0-143			4.03	20
Methyl tert-butyl ether	0.125	0.123	0.126	98.4	101	66.0-132			2.41	20
Naphthalene	0.125	0.0732	0.0919	58.6	73.5	59.0-130	L2	R7	22.7	20
Propene	0.125	0.0721	0.0764	57.7	61.1	10.0-160			5.79	20
n-Propylbenzene	0.125	0.122	0.126	97.6	101	74.0-126			3.23	20
Styrene	0.125	0.101	0.103	80.8	82.4	72.0-127			1.96	20
1,1,1,2-Tetrachloroethane	0.125	0.103	0.108	82.4	86.4	74.0-129			4.74	20
1,1,2,2-Tetrachloroethane	0.125	0.109	0.112	87.2	89.6	68.0-128			2.71	20
Tetrachloroethene	0.125	0.119	0.124	95.2	99.2	70.0-136			4.12	20
Toluene	0.125	0.117	0.120	93.6	96.0	75.0-121			2.53	20
1,1,2-Trichlorotrifluoroethane	0.125	0.131	0.132	105	106	61.0-139			0.760	20
1,2,3-Trichlorobenzene	0.125	0.0794	0.0980	63.5	78.4	59.0-139		R7	21.0	20
1,2,4-Trichlorobenzene	0.125	0.0970	0.112	77.6	89.6	62.0-137			14.4	20
1,1,1-Trichloroethane	0.125	0.117	0.119	93.6	95.2	69.0-126			1.69	20
1,1,2-Trichloroethane	0.125	0.121	0.128	96.8	102	78.0-123			5.62	20
Trichloroethene	0.125	0.119	0.119	95.2	95.2	76.0-126			0.000	20
Trichlorofluoromethane	0.125	0.111	0.111	88.8	88.8	61.0-142			0.000	20
1,2,3-Trichloropropane	0.125	0.110	0.111	88.0	88.8	67.0-129			0.905	20
1,2,3-Trimethylbenzene	0.125	0.113	0.116	90.4	92.8	74.0-124			2.62	20
1,2,4-Trimethylbenzene	0.125	0.114	0.120	91.2	96.0	70.0-126			5.13	20
1,3,5-Trimethylbenzene	0.125	0.121	0.126	96.8	101	73.0-127			4.05	20
Vinyl chloride	0.125	0.100	0.100	80.0	80.0	63.0-134			0.000	20
Xylenes, Total	0.375	0.327	0.344	87.2	91.7	72.0-127			5.07	20
(S) Toluene-d8				*100*	*101*	*75.0-131*				
(S) 4-Bromofluorobenzene				*104*	*104*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*98.9*	*97.6*	*70.0-130*				

Method Blank (MB)

(MB) R3504566-1 03/02/20 12:34

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Aldrin	U		0.00135	0.0200
Alpha BHC	U		0.00136	0.0200
Beta BHC	U		0.00160	0.0200
Delta BHC	U		0.00143	0.0200
Gamma BHC	U		0.00145	0.0200
4,4-DDD	U		0.00156	0.0200
4,4-DDE	U		0.00154	0.0200
4,4-DDT	U		0.00200	0.0200
Dieldrin	U		0.00152	0.0200
Endosulfan I	U		0.00149	0.0200
Endosulfan II	U		0.00160	0.0200
Endosulfan sulfate	U		0.00151	0.0200
Endrin	U		0.00157	0.0200
Endrin aldehyde	U		0.00129	0.0200
Endrin ketone	U		0.00165	0.0200
Heptachlor	U		0.00154	0.0200
Heptachlor epoxide	U		0.00161	0.0200
Hexachlorobenzene	U		0.00124	0.0200
Methoxychlor	U		0.00178	0.0200
Chlordane	U		0.0390	0.200
Toxaphene	U		0.0360	0.400
(S) Decachlorobiphenyl	*69.7*			*10.0-135*
(S) Tetrachloro-m-xylene	*75.1*			*10.0-139*

Laboratory Control Sample (LCS)

(LCS) R3504566-2 03/02/20 12:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aldrin	0.0666	0.0462	69.4	34.0-136	
Alpha BHC	0.0666	0.0474	71.2	34.0-139	
Beta BHC	0.0666	0.0488	73.3	34.0-133	
Delta BHC	0.0666	0.0484	72.7	34.0-135	
Gamma BHC	0.0666	0.0490	73.6	34.0-136	
4,4-DDD	0.0666	0.0501	75.2	33.0-141	
4,4-DDE	0.0666	0.0518	77.8	34.0-134	
4,4-DDT	0.0666	0.0523	78.5	30.0-143	
Dieldrin	0.0666	0.0506	76.0	35.0-137	
Endosulfan I	0.0666	0.0502	75.4	34.0-134	

Laboratory Control Sample (LCS)

(LCS) R3504566-2 03/02/20 12:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Endosulfan II	0.0666	0.0496	74.5	35.0-132	
Endosulfan sulfate	0.0666	0.0467	70.1	35.0-132	
Endrin	0.0666	0.0470	70.6	34.0-137	
Endrin aldehyde	0.0666	0.0446	67.0	23.0-121	
Endrin ketone	0.0666	0.0502	75.4	35.0-144	
Heptachlor	0.0666	0.0447	67.1	36.0-141	
Heptachlor epoxide	0.0666	0.0491	73.7	36.0-134	
Hexachlorobenzene	0.0666	0.0437	65.6	33.0-129	
Methoxychlor	0.0666	0.0444	66.7	28.0-150	
(S) Decachlorobiphenyl			*64.7*	*10.0-135*	
(S) Tetrachloro-m-xylene			*70.6*	*10.0-139*	

L1193587-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1193587-06 03/02/20 15:29 • (MS) R3504566-3 03/02/20 15:41 • (MSD) R3504566-4 03/02/20 15:53

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Aldrin	0.0779	U	0.0396	0.0450	50.9	57.8	1	20.0-135			12.7	37
Alpha BHC	0.0779	U	0.0567	0.0541	72.8	69.5	1	27.0-140			4.64	35
Beta BHC	0.0779	U	0.0576	0.0547	74.0	70.3	1	23.0-141			5.20	37
Delta BHC	0.0779	U	0.0574	0.0544	73.7	69.8	1	21.0-138			5.44	35
Gamma BHC	0.0779	U	0.0586	0.0527	75.2	67.7	1	27.0-137			10.5	36
4,4-DDD	0.0779	U	0.0561	0.0628	72.1	80.6	1	15.0-152			11.2	39
4,4-DDE	0.0779	U	0.0426	0.0496	54.7	63.7	1	10.0-152			15.2	40
4,4-DDT	0.0779	U	0.0150	0.0188	19.2	24.2	1	10.0-151			22.8	40
Dieldrin	0.0779	0.0210	0.0597	0.0568	49.7	45.9	1	17.0-145			5.02	37
Endosulfan I	0.0779	U	0.0532	0.0532	68.3	68.3	1	20.0-137			0.000	36
Endosulfan II	0.0779	U	0.0541	0.0533	69.5	68.5	1	15.0-141			1.52	37
Endosulfan sulfate	0.0779	U	0.0549	0.0535	70.6	68.8	1	15.0-143			2.59	38
Endrin	0.0779	U	0.0456	0.0458	58.6	58.9	1	19.0-143			0.512	37
Endrin aldehyde	0.0779	U	0.0530	0.0554	68.0	71.2	1	10.0-139			4.53	40
Endrin ketone	0.0779	U	0.0535	0.0526	68.8	67.6	1	17.0-149			1.76	38
Heptachlor	0.0779	U	0.0365	0.0396	46.8	50.9	1	22.0-138			8.29	37
Heptachlor epoxide	0.0779	0.0104	0.0566	0.0513	59.3	52.5	1	22.0-138			9.75	36
Hexachlorobenzene	0.0779	U	0.0423	0.0452	54.4	58.1	1	25.0-126			6.68	35
Methoxychlor	0.0779	U	0.0173	0.0207	22.2	26.6	1	10.0-159			17.8	40
(S) Decachlorobiphenyl					*69.1*	*67.4*		*10.0-135*				
(S) Tetrachloro-m-xylene					*69.7*	*67.1*		*10.0-139*				

Method Blank (MB)

(MB) R3504917-2 03/03/20 11:06

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acenaphthene	U		0.00642	0.0333
Acenaphthylene	U		0.00671	0.0333
Acetophenone	U		0.0752	0.333
Aniline	U		0.0320	0.333
Anthracene	U		0.00632	0.0333
Azobenzene	U		0.00528	0.333
Benzidine	U		0.0637	0.333
Benzo(a)anthracene	U		0.00428	0.0333
Benzo(b)fluoranthene	U		0.00695	0.0333
Benzo(k)fluoranthene	U		0.00582	0.0333
Benzo(g,h,i)perylene	U		0.00721	0.0333
Benzo(a)pyrene	U		0.00548	0.0333
Bis(2-chlorethoxy)methane	U		0.00770	0.333
Bis(2-chloroethyl)ether	U		0.00896	0.333
2,2-oxybis(1-chloropropane)	U		0.00760	0.333
4-Bromophenyl-phenylether	U		0.0114	0.333
4-Chloroaniline	U		0.0352	0.333
2-Chloronaphthalene	U		0.00639	0.0333
4-Chlorophenyl-phenylether	U		0.00627	0.333
Chrysene	U		0.00555	0.0333
Dibenz(a,h)anthracene	U		0.00821	0.0333
Dibenzofuran	U		0.00518	0.333
3,3-Dichlorobenzidine	U		0.0794	0.333
2,4-Dinitrotoluene	U		0.00607	0.333
2,6-Dinitrotoluene	U		0.00737	0.333
Fluoranthene	U		0.00496	0.0333
Fluorene	U		0.00682	0.0333
Hexachlorobenzene	U		0.00856	0.333
Hexachloro-1,3-butadiene	U		0.0100	0.333
Hexachlorocyclopentadiene	U		0.0587	0.333
Hexachloroethane	U		0.0134	0.333
Indeno(1,2,3-cd)pyrene	U		0.00772	0.0333
Isophorone	U		0.00522	0.333
2-Methylnaphthalene	U		0.00861	0.0333
Naphthalene	U		0.00889	0.0333
2-Nitroaniline	U		0.00755	0.333
3-Nitroaniline	U		0.00850	0.333
4-Nitroaniline	U		0.00639	0.333
Nitrobenzene	U		0.00695	0.333
n-Nitrosodimethylamine	U		0.0647	0.333

Method Blank (MB)

(MB) R3504917-2 03/03/20 11:06

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
n-Nitrosodiphenylamine	U		0.0900	0.333
n-Nitrosodi-n-propylamine	U		0.00906	0.333
Phenanthrene	U		0.00528	0.0333
Benzylbutyl phthalate	U		0.0103	0.333
Bis(2-ethylhexyl)phthalate	U		0.0120	0.333
Di-n-butyl phthalate	U		0.0109	0.333
Diethyl phthalate	U		0.00691	0.333
Dimethyl phthalate	U		0.00540	0.333
Di-n-octyl phthalate	U		0.00907	0.333
Pyrene	U		0.0123	0.0333
Pyridine	U		0.0628	0.333
1,2,4-Trichlorobenzene	U		0.00876	0.333
Benzyl Alcohol	U		0.00750	0.333
4-Chloro-3-methylphenol	U		0.00477	0.333
2-Chlorophenol	U		0.00831	0.333
2-Methylphenol	U		0.00986	0.333
3&4-Methyl Phenol	U		0.00783	0.333
2,4-Dichlorophenol	U		0.00746	0.333
2,4-Dimethylphenol	U		0.0471	0.333
4,6-Dinitro-2-methylphenol	U		0.124	0.333
2,4-Dinitrophenol	U		0.0980	0.333
2-Nitrophenol	U		0.0130	0.333
4-Nitrophenol	U		0.0525	0.333
Pentachlorophenol	U		0.0480	0.333
Phenol	U		0.00695	0.333
1,2,4,5-Tetrachlorobenzene	U		0.0762	0.333
2,4,5-Trichlorophenol	U		0.0104	0.333
2,4,6-Trichlorophenol	U		0.00779	0.333
Diphenylamine	U		0.0900	0.333
2,3,4,6-Tetrachlorophenol	U		0.121	0.333
(S) Nitrobenzene-d5	*73.6*			*10.0-122*
(S) 2-Fluorobiphenyl	*80.5*			*15.0-120*
(S) p-Terphenyl-d14	*95.5*			*10.0-120*
(S) Phenol-d5	*75.8*			*10.0-120*
(S) 2-Fluorophenol	*85.0*			*12.0-120*
(S) 2,4,6-Tribromophenol	*91.3*			*10.0-127*

Method Blank (MB)

(MB) R3505319-2 03/04/20 13:33

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
2-Acetylaminofluorene	U		0.0546	0.333
4-Aminobiphenyl	U		0.0489	0.333
Chlorobenzilate	U		0.0570	0.333
Diallate	U		0.0593	0.333
Dinoseb	U		0.0970	0.333
Ethyl methanesulfonate	U		0.0757	0.333
Famphur	U		0.0471	0.333
Hexachloropropene	U		0.110	0.333
Isodrin	U		0.0661	0.333
Isosafrole	U		0.0366	0.333
Kepone	U		0.0491	0.333
Methapyrilene	U		0.333	1.66
3-Methylcholanthrene	U		0.0596	0.333
Methyl methanesulfonate	U		0.0664	0.333
Methyl parathion	U		0.0645	0.333
1,4-Naphthoquinone	U		0.0419	0.333
1-Naphthylamine	U		0.0802	0.333
2-Naphthylamine	U		0.0653	0.333
n-Nitrosodi-n-butylamine	U		0.110	0.333
n-Nitrosodiethylamine	U		0.189	0.333
n-Nitrosomethylethylamine	U		0.111	0.333
n-Nitrosomorpholine	U		0.150	0.333
n-Nitrosopiperidine	U		0.0600	0.333
n-Nitrosopyrrolidine	U		0.201	0.333
5-Nitro-o-toluidine	U		0.0672	0.333
Ethyl Parathion	U		0.0791	0.333
Pentachlorobenzene	U		0.0483	0.333
Pentachloronitrobenzene	U		0.0739	0.333
Phenacetin	U		0.0766	0.333
p-Phenylenediamine	U		0.146	0.333
Phorate	U		0.111	0.333
Pronamide	U		0.0760	0.333
Dimethoate	U		0.0905	0.333
P-(Dimethylamino) Azobenzene	U		0.0636	0.333
Dimethylbenz (A) Anthracene	U		0.0529	0.333
3,3-Dimethylbenzidine	U		0.0724	0.333
1,3-Dinitrobenzene	U		0.0617	0.333
Diphenylamine	U		0.0900	0.333
Disulfoton	U		0.0659	0.333
Safrole	U		0.0633	0.333

Method Blank (MB)

(MB) R3505319-2 03/04/20 13:33

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Thionazin	U		0.0570	0.333
o-Toluidine	U		0.111	0.333
O,O,O-Triethyl phosphorothioate	U		0.0798	0.333
2,6-Dichlorophenol	U		0.0462	0.333
a,a-Dimethylphenethylamine	U		0.473	1.66
4-Nitroquinoline 1-oxide	U		0.0646	0.333
Pentachloroethane	U		0.0707	0.333
2-Picoline	U		0.110	0.333
Sulfotep	U		0.0757	0.333
1,3,5-Trinitrobenzene	U		0.0570	0.333
Hexachlorophene	U		0.110	0.333

Laboratory Control Sample (LCS)

(LCS) R3504917-1 03/03/20 10:46

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.666	0.451	67.7	38.0-120	
Acenaphthylene	0.666	0.485	72.8	40.0-120	
Acetophenone	0.666	0.471	70.7	29.0-120	
Aniline	0.666	0.318	47.7	15.0-120	
Anthracene	0.666	0.514	77.2	42.0-120	
Azobenzene	0.666	0.453	68.0	43.0-120	
Benzidine	1.33	0.154	11.6	10.0-120	
Benzo(a)anthracene	0.666	0.572	85.9	44.0-120	
Benzo(b)fluoranthene	0.666	0.564	84.7	43.0-120	
Benzo(k)fluoranthene	0.666	0.552	82.9	44.0-120	
Benzo(g,h,i)perylene	0.666	0.554	83.2	43.0-120	
Benzo(a)pyrene	0.666	0.593	89.0	45.0-120	
Bis(2-chlorethoxy)methane	0.666	0.336	50.5	20.0-120	
Bis(2-chloroethyl)ether	0.666	0.367	55.1	16.0-120	
2,2-Oxybis(1-Chloropropane)	0.666	0.431	64.7	23.0-120	
4-Bromophenyl-phenylether	0.666	0.541	81.2	40.0-120	
4-Chloroaniline	0.666	0.305	45.8	18.0-120	
2-Chloronaphthalene	0.666	0.458	68.8	35.0-120	
4-Chlorophenyl-phenylether	0.666	0.477	71.6	40.0-120	
Chrysene	0.666	0.534	80.2	43.0-120	
Dibenz(a,h)anthracene	0.666	0.542	81.4	44.0-120	
Dibenzofuran	0.666	0.481	72.2	44.0-120	

Laboratory Control Sample (LCS)

(LCS) R3504917-1 03/03/20 10:46

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
3,3-Dichlorobenzidine	1.33	0.976	73.4	28.0-120	
2,4-Dinitrotoluene	0.666	0.564	84.7	45.0-120	
2,6-Dinitrotoluene	0.666	0.514	77.2	42.0-120	
Fluoranthene	0.666	0.547	82.1	44.0-120	
Fluorene	0.666	0.498	74.8	41.0-120	
Hexachlorobenzene	0.666	0.544	81.7	39.0-120	
Hexachloro-1,3-butadiene	0.666	0.409	61.4	15.0-120	
Hexachlorocyclopentadiene	0.666	0.296	44.4	15.0-120	
Hexachloroethane	0.666	0.375	56.3	17.0-120	
Indeno(1,2,3-cd)pyrene	0.666	0.554	83.2	45.0-120	
Isophorone	0.666	0.339	50.9	23.0-120	
2-Methylnaphthalene	0.666	0.374	56.2	34.0-120	
Naphthalene	0.666	0.358	53.8	18.0-120	
2-Nitroaniline	0.666	0.499	74.9	46.0-120	
3-Nitroaniline	0.666	0.509	76.4	36.0-120	
4-Nitroaniline	0.666	0.547	82.1	36.0-120	
Nitrobenzene	0.666	0.340	51.1	17.0-120	
n-Nitrosodimethylamine	0.666	0.342	51.4	10.0-125	
n-Nitrosodiphenylamine	0.666	0.552	82.9	40.0-120	
n-Nitrosodi-n-propylamine	0.666	0.395	59.3	26.0-120	
Phenanthrene	0.666	0.516	77.5	42.0-120	
Benzylbutyl phthalate	0.666	0.541	81.2	40.0-120	
Bis(2-ethylhexyl)phthalate	0.666	0.524	78.7	41.0-120	
Di-n-butyl phthalate	0.666	0.558	83.8	43.0-120	
Diethyl phthalate	0.666	0.510	76.6	43.0-120	
Dimethyl phthalate	0.666	0.521	78.2	43.0-120	
Di-n-octyl phthalate	0.666	0.510	76.6	40.0-120	
Pyrene	0.666	0.553	83.0	41.0-120	
Pyridine	0.666	0.191	28.7	10.0-120	
1,2,4-Trichlorobenzene	0.666	0.355	53.3	17.0-120	
Benzyl Alcohol	0.666	0.465	69.8	10.0-120	
4-Chloro-3-methylphenol	0.666	0.419	62.9	28.0-120	
2-Chlorophenol	0.666	0.430	64.6	28.0-120	
2-Methylphenol	0.666	0.449	67.4	35.0-120	
3&4-Methyl Phenol	0.666	0.466	70.0	42.0-120	
2,4-Dichlorophenol	0.666	0.434	65.2	25.0-120	
2,4-Dimethylphenol	0.666	0.425	63.8	15.0-120	
4,6-Dinitro-2-methylphenol	0.666	0.458	68.8	16.0-120	
2,4-Dinitrophenol	0.666	0.215	32.3	10.0-120	
2-Nitrophenol	0.666	0.375	56.3	20.0-120	

Laboratory Control Sample (LCS)

(LCS) R3504917-1 03/03/20 10:46

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
4-Nitrophenol	0.666	0.483	72.5	27.0-120	
Pentachlorophenol	0.666	0.632	94.9	29.0-120	
Phenol	0.666	0.443	66.5	28.0-120	
1,2,4,5-Tetrachlorobenzene	0.666	0.511	76.7	30.0-120	
2,4,5-Trichlorophenol	0.666	0.500	75.1	38.0-120	
2,4,6-Trichlorophenol	0.666	0.497	74.6	37.0-120	
Diphenylamine	0.666	0.552	82.9	32.0-120	
2,3,4,6-Tetrachlorophenol	0.666	0.512	76.9	39.0-120	
(S) Nitrobenzene-d5			*50.8*	*10.0-122*	
(S) 2-Fluorobiphenyl			*73.3*	*15.0-120*	
(S) p-Terphenyl-d14			*87.7*	*10.0-120*	
(S) Phenol-d5			*66.2*	*10.0-120*	
(S) 2-Fluorophenol			*72.1*	*12.0-120*	
(S) 2,4,6-Tribromophenol			*91.4*	*10.0-127*	

Laboratory Control Sample (LCS)

(LCS) R3505319-1 03/04/20 13:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
2-Acetylaminofluorene	0.666	0.730	110	26.0-120	
4-Aminobiphenyl	0.666	0.364	54.7	10.0-120	
Chlorobenzilate	0.666	0.682	102	37.0-120	
Diallate	0.666	0.0969	14.5	32.0-120	L2
Dinoseb	0.666	0.618	92.8	26.0-120	
Ethyl methanesulfonate	0.666	0.392	58.9	10.0-120	
Famphur	0.666	0.601	90.2	18.0-120	
Hexachloropropene	0.666	0.218	32.7	11.0-120	
Isodrin	0.666	0.483	72.5	13.0-152	
Isosafrole	0.666	0.407	61.1	35.0-120	
Kepone	0.666	0.468	70.3	50.0-150	
Methapyrilene	0.666	0.00364	0.547	50.0-150	L2
3-Methylcholanthrene	0.666	0.623	93.5	32.0-155	
Methyl methanesulfonate	0.666	0.325	48.8	10.0-120	
Methyl parathion	0.666	0.641	96.2	28.0-121	
1,4-Naphthoquinone	0.666	0.00861	1.29	50.0-150	L2
1-Naphthylamine	0.666	0.324	48.6	10.0-120	
2-Naphthylamine	0.666	0.0940	14.1	10.0-120	
n-Nitrosodi-n-butylamine	0.666	0.336	50.5	23.0-120	

Laboratory Control Sample (LCS)

(LCS) R3505319-1 03/04/20 13:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
n-Nitrosodiethylamine	0.666	0.435	65.3	10.0-120	
n-Nitrosomethylethylamine	0.666	0.414	62.2	10.0-120	
n-Nitrosomorpholine	0.666	0.436	65.5	10.0-143	
n-Nitrosopiperidine	0.666	0.335	50.3	10.0-160	
n-Nitrosopyrrolidine	0.666	0.498	74.8	10.0-143	
5-Nitro-o-toluidine	0.666	0.705	106	24.0-120	
Ethyl Parathion	0.666	0.638	95.8	30.0-135	
Pentachlorobenzene	0.666	0.515	77.3	32.0-120	
Pentachloronitrobenzene	0.666	0.571	85.7	34.0-131	
Phenacetin	0.666	0.583	87.5	34.0-127	
p-Phenylenediamine	0.666	ND	0.000	50.0-150	L2
Phorate	0.666	0.479	71.9	10.0-160	
Pronamide	0.666	0.589	88.4	39.0-122	
Dimethoate	0.666	0.587	88.1	19.0-139	
P-(Dimethylamino) Azobenzene	0.666	0.542	81.4	18.0-120	
Dimethylbenz (A) Anthracene	0.666	0.610	91.6	27.0-124	
3,3-Dimethylbenzidine	0.666	0.0600	9.01	10.0-120	L2
1,3-Dinitrobenzene	0.666	0.565	84.8	29.0-120	
Diphenylamine	0.666	0.563	84.5	32.0-120	
Disulfoton	0.666	0.504	75.7	28.0-120	
Safrole	0.666	0.435	65.3	34.0-120	
Thionazin	0.666	0.485	72.8	34.0-120	
o-Toluidine	0.666	0.359	53.9	10.0-120	
O,O,O-Triethyl phosphorothioate	0.666	0.416	62.5	32.0-120	
2,6-Dichlorophenol	0.666	0.428	64.3	10.0-123	
a,a-Dimethylphenethylamine	0.666	0.0113	1.70	50.0-150	L2
4-Nitroquinoline 1-oxide	0.666	0.395	59.3	10.0-120	
Pentachloroethane	0.666	0.413	62.0	10.0-120	
2-Picoline	0.666	0.246	36.9	10.0-120	
Sulfotep	0.666	0.492	73.9	29.0-120	
1,3,5-Trinitrobenzene	0.666	0.491	73.7	17.0-157	
Hexachlorophene	1.33	0.375	28.2	10.0-120	

L1194025-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1194025-01 03/03/20 17:18 • (MS) R3504917-3 03/03/20 17:38 • (MSD) R3504917-4 03/03/20 17:58

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acenaphthene	0.746	0.0805	0.666	0.681	78.5	80.5	10	18.0-120			2.16	32
Acenaphthylene	0.746	0.405	0.899	0.946	66.2	72.5	10	25.0-120			5.10	32
Acetophenone	0.746	U	ND	ND	0.000	0.000	10	10.0-120	M2	M2	0.000	37
Aniline	0.746	U	0.359	ND	48.2	0.000	10	10.0-120		M2 R5	200	40
Anthracene	0.746	0.350	0.800	0.870	60.4	69.7	10	22.0-120			8.31	29
Azobenzene	0.746	U	0.561	0.577	75.2	77.3	10	18.0-120			2.76	27
Benzidine	1.49	U	ND	ND	0.000	0.000	10	10.0-120	M2	M2	0.000	40
Benzo(a)anthracene	0.746	1.57	1.47	1.49	0.000	0.000	10	25.0-120	M2	M2	1.52	29
Benzo(b)fluoranthene	0.746	2.10	1.76	2.18	0.000	10.5	10	19.0-122	M2	M2	21.6	31
Benzo(k)fluoranthene	0.746	0.636	1.02	1.08	50.9	60.1	10	23.0-120			6.51	30
Benzo(g,h,i)perylene	0.746	2.92	2.10	2.51	0.000	0.000	10	10.0-120	M2	M2	17.5	33
Benzo(a)pyrene	0.746	2.16	1.88	2.15	0.000	0.000	10	24.0-120	M2	M2	13.3	30
Bis(2-chlorethoxy)methane	0.746	U	0.583	0.582	78.2	78.1	10	10.0-120			0.192	34
Bis(2-chloroethyl)ether	0.746	U	0.544	0.611	73.0	82.0	10	10.0-120			11.6	40
2,2-Oxybis(1-Chloropropane)	0.746	U	0.692	0.705	92.8	94.6	10	10.0-120			1.92	40
4-Bromophenyl-phenylether	0.746	U	0.736	0.752	98.6	101	10	27.0-120			2.26	30
4-Chloroaniline	0.746	U	0.568	ND	76.1	0.000	10	10.0-120		M2 R5	200	36
2-Chloronaphthalene	0.746	U	0.658	0.658	88.3	88.3	10	20.0-120			0.000	32
4-Chlorophenyl-phenylether	0.746	U	0.676	0.672	90.7	90.1	10	24.0-120			0.664	29
Chrysene	0.746	1.59	1.58	1.68	0.000	12.0	10	21.0-120	M2	M2	6.19	29
Dibenz(a,h)anthracene	0.746	0.212	0.738	0.778	70.6	76.0	10	10.0-120			5.32	32
Dibenzofuran	0.746	U	0.671	0.692	89.9	92.8	10	24.0-120			3.12	30
3,3-Dichlorobenzidine	1.49	U	ND	ND	0.000	0.000	10	10.0-120	M2	M2	0.000	34
2,4-Dinitrotoluene	0.746	U	0.552	0.608	74.0	81.5	10	30.0-120			9.65	31
2,6-Dinitrotoluene	0.746	U	0.562	0.663	75.4	88.9	10	25.0-120			16.5	31
Fluoranthene	0.746	4.14	2.78	3.44	0.000	0.000	10	18.0-126	M3	M3	21.3	32
Fluorene	0.746	0.122	0.724	0.705	80.8	78.2	10	25.0-120			2.66	30
Hexachlorobenzene	0.746	U	0.662	0.714	88.7	95.8	10	27.0-120			7.65	28
Hexachloro-1,3-butadiene	0.746	U	0.723	0.823	97.0	110	10	10.0-120			12.9	38
Hexachlorocyclopentadiene	0.746	U	ND	ND	0.000	0.000	10	10.0-120	M2	M2	0.000	40
Hexachloroethane	0.746	U	0.625	0.588	83.8	78.8	10	10.0-120			6.09	40
Indeno(1,2,3-cd)pyrene	0.746	2.19	1.75	2.08	0.000	0.000	10	10.0-120	M2	M2	17.5	32
Isophorone	0.746	U	0.569	0.593	76.3	79.6	10	13.0-120			4.24	34
2-Methylnaphthalene	0.746	U	0.681	0.673	91.3	90.2	10	10.0-120			1.16	37
Naphthalene	0.746	0.170	0.884	0.819	95.8	87.1	10	10.0-120			7.62	35
2-Nitroaniline	0.746	U	0.694	0.590	93.1	79.1	10	24.0-120			16.2	30
3-Nitroaniline	0.746	U	0.508	0.524	68.2	70.3	10	11.0-120			3.04	32
4-Nitroaniline	0.746	U	0.565	0.517	75.8	69.4	10	15.0-120			8.89	31
Nitrobenzene	0.746	U	0.611	0.609	82.0	81.7	10	10.0-120			0.367	36

L1194025-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1194025-01 03/03/20 17:18 • (MS) R3504917-3 03/03/20 17:38 • (MSD) R3504917-4 03/03/20 17:58

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
n-Nitrosodimethylamine	0.746	U	ND	ND	0.000	0.000	10	10.0-127	M2	M2	0.000	40
n-Nitrosodiphenylamine	0.746	U	ND	ND	0.000	0.000	10	17.0-120	M2	M2	0.000	29
n-Nitrosodi-n-propylamine	0.746	U	0.583	0.583	78.2	78.2	10	10.0-120			0.000	37
Phenanthrene	0.746	2.65	2.22	2.35	0.000	0.000	10	17.0-120	M2	M2	5.88	31
Benzylbutyl phthalate	0.746	U	0.766	0.790	103	106	10	23.0-120			3.17	30
Bis(2-ethylhexyl)phthalate	0.746	U	0.705	0.712	94.6	95.5	10	17.0-126			0.948	30
Di-n-butyl phthalate	0.746	U	0.693	0.666	92.9	89.3	10	30.0-120			3.95	29
Diethyl phthalate	0.746	U	0.627	0.664	84.1	89.0	10	26.0-120			5.72	28
Dimethyl phthalate	0.746	U	0.685	0.710	91.9	95.2	10	25.0-120			3.53	29
Di-n-octyl phthalate	0.746	U	0.638	0.655	85.6	87.8	10	21.0-123			2.60	29
Pyrene	0.746	5.28	3.58	4.09	0.000	0.000	10	16.0-121	M3	M3	13.1	32
Pyridine	0.746	U	ND	ND	0.000	0.000	10	10.0-120	M2	M2	0.000	40
1,2,4-Trichlorobenzene	0.746	U	0.658	0.625	88.3	83.8	10	12.0-120			5.24	37
Benzyl Alcohol	0.746	U	1.48	1.40	198	188	10	10.0-136	M1	M1	5.45	40
4-Chloro-3-methylphenol	0.746	U	0.738	0.728	98.9	97.6	10	15.0-120			1.38	30
2-Chlorophenol	0.746	U	0.631	0.666	84.7	89.3	10	15.0-120			5.35	37
2-Methylphenol	0.746	U	0.607	0.620	81.4	83.2	10	11.0-120			2.19	40
3&4-Methyl Phenol	0.746	U	0.697	0.662	93.5	88.7	10	12.0-123			5.27	38
2,4-Dichlorophenol	0.746	U	0.701	0.696	94.0	93.4	10	20.0-120			0.641	31
2,4-Dimethylphenol	0.746	U	0.701	0.628	94.0	84.2	10	10.0-120			11.0	33
4,6-Dinitro-2-methylphenol	0.746	U	ND	ND	0.000	0.000	10	10.0-120	M2	M2	0.000	39
2,4-Dinitrophenol	0.746	U	ND	ND	0.000	0.000	10	10.0-121	M2	M2	0.000	40
2-Nitrophenol	0.746	U	0.564	0.564	75.7	75.7	10	12.0-120			0.000	39
4-Nitrophenol	0.746	U	ND	ND	0.000	0.000	10	10.0-137	M2	M2	0.000	32
Pentachlorophenol	0.746	U	0.628	0.695	84.2	93.2	10	10.0-160			10.2	31
Phenol	0.746	U	0.695	0.658	93.2	88.3	10	12.0-120			5.46	38
1,2,4,5-Tetrachlorobenzene	0.746	U	ND	ND	0.000	0.000	10	14.0-120	M2	M2	0.000	36
2,4,5-Trichlorophenol	0.746	U	0.720	0.669	96.5	89.8	10	20.0-120			7.25	30
2,4,6-Trichlorophenol	0.746	U	0.686	0.655	92.0	87.8	10	19.0-120			4.67	32
Diphenylamine	0.746	U	ND	ND	0.000	0.000	10	32.0-120	M2	M2	0.000	30
2,3,4,6-Tetrachlorophenol	0.746	U	ND	ND	0.000	0.000	10	20.0-120	M2	M2	0.000	31
(S) Nitrobenzene-d5					*76.3*	*80.2*		*10.0-122*				
(S) 2-Fluorobiphenyl					*91.9*	*94.0*		*15.0-120*				
(S) p-Terphenyl-d14					*105*	*93.1*		*10.0-120*				
(S) Phenol-d5					*81.4*	*85.7*		*10.0-120*				
(S) 2-Fluorophenol					*92.5*	*92.0*		*12.0-120*				
(S) 2,4,6-Tribromophenol					*120*	*125*		*10.0-127*				

Sample Narrative:

L1194025-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1194025-01 03/03/20 17:18 • (MS) R3504917-3 03/03/20 17:38 • (MSD) R3504917-4 03/03/20 17:58

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %

OS: Dilution due to matrix impact during extraction procedure

L1194025-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1194025-01 03/04/20 14:32 • (MS) R3505319-3 03/04/20 14:52

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
2-Acetylaminofluorene	0.723	U	0.771	107	10	26.0-120	
4-Aminobiphenyl	0.723	U	ND	0.000	10	10.0-120	M2
Chlorobenzilate	0.723	U	0.787	109	10	37.0-120	
Diallate	0.723	U	ND	0.000	10	32.0-120	M2
Dinoseb	0.723	U	ND	0.000	10	26.0-120	M2
Ethyl methanesulfonate	0.723	U	ND	0.000	10	10.0-120	M2
Famphur	0.723	U	0.674	93.2	10	18.0-120	
Hexachloropropene	0.723	U	ND	0.000	10	11.0-120	M2
Isodrin	0.723	U	ND	0.000	10	13.0-152	M2
Isosafrole	0.723	U	0.608	84.1	10	35.0-120	
Kepone	0.723	U	ND	0.000	10	50.0-150	M2
Methapyrilene	0.723	U	ND	0.000	10	60.0-140	M2
3-Methylcholanthrene	0.723	U	ND	0.000	10	32.0-155	M2
Methyl methanesulfonate	0.723	U	ND	0.000	10	10.0-120	M2
Methyl parathion	0.723	U	1.07	148	10	28.0-121	M1
1,4-Naphthoquinone	0.723	U	ND	0.000	10	21.0-129	M2
1-Naphthylamine	0.723	U	ND	0.000	10	10.0-120	M2
2-Naphthylamine	0.723	U	ND	0.000	10	10.0-120	M2
n-Nitrosodi-n-butylamine	0.723	U	ND	0.000	10	23.0-120	M2
n-Nitrosodiethylamine	0.723	U	ND	0.000	10	10.0-120	M2
n-Nitrosomethylethylamine	0.723	U	ND	0.000	10	10.0-120	M2
n-Nitrosomorpholine	0.723	U	ND	0.000	10	10.0-143	M2
n-Nitrosopiperidine	0.723	U	ND	0.000	10	10.0-160	M2
n-Nitrosopyrrolidine	0.723	U	ND	0.000	10	10.0-143	M2
5-Nitro-o-toluidine	0.723	U	ND	0.000	10	24.0-120	M2
Ethyl Parathion	0.723	U	1.33	184	10	30.0-135	M1
Pentachlorobenzene	0.723	U	0.703	97.2	10	32.0-120	
Pentachloronitrobenzene	0.723	U	ND	0.000	10	34.0-131	M2
Phenacetin	0.723	U	ND	0.000	10	34.0-127	M2
p-Phenylenediamine	0.723	U	ND	0.000	10	60.0-140	M2
Phorate	0.723	U	ND	0.000	10	10.0-160	M2

L1194025-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1194025-01 03/04/20 14:32 • (MS) R3505319-3 03/04/20 14:52

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Pronamide	0.723	U	ND	0.000	10	39.0-122	M2
Dimethoate	0.723	U	ND	0.000	10	19.0-139	M2
P-(Dimethylamino) Azobenzene	0.723	U	ND	0.000	10	18.0-120	M2
Dimethylbenz (A) Anthracene	0.723	U	ND	0.000	10	27.0-124	M2
3,3-Dimethylbenzidine	0.723	U	ND	0.000	10	10.0-120	M2
1,3-Dinitrobenzene	0.723	U	0.858	119	10	29.0-120	
Diphenylamine	0.723	U	ND	0.000	10	32.0-120	M2
Disulfoton	0.723	U	ND	0.000	10	28.0-120	M2
Safrole	0.723	U	0.709	0.000	10	34.0-120	M2
Thionazin	0.723	U	0.655	90.6	10	34.0-120	
o-Toluidine	0.723	U	ND	0.000	10	10.0-120	M2
O,O,O-Triethyl phosphorothioate	0.723	U	ND	0.000	10	32.0-120	M2
2,6-Dichlorophenol	0.723	U	0.686	94.9	10	10.0-123	
a,a-Dimethylphenethylamine	0.723	U	ND	0.000	10	60.0-140	M2
4-Nitroquinoline 1-oxide	0.723	U	ND	0.000	10	10.0-120	M2
Pentachloroethane	0.723	U	ND	0.000	10	10.0-120	M2
2-Picoline	0.723	U	ND	0.000	10	10.0-120	M2
Sulfotep	0.723	U	ND	0.000	10	29.0-120	M2
1,3,5-Trinitrobenzene	0.723	U	ND	0.000	10	17.0-157	M2
Hexachlorophene	1.44	U	ND	0.000	10	60.0-140	M2

Sample Narrative:

OS: Dilution due to matrix impact during extract concentration procedure

INTERNAL STANDARD SUMMARY

Instrument: VOCMS26 • File ID: 0301a_02

03/01/20 14:12

Sample ID	File ID	8260-FLUOROBENZENE	8260-CHLOROBENZENE-D5	8260-1,4-DICHLOROBENZENE-D4
		Response	Response	Response
Standard	0301a_02	582793	277706	236824
Upper Limit		1165586	555412	473648
Lower Limit		291397	138853	118412
LCS R3504423-1 WG1436256 1x	0301a_02LCS	582793	277706	236824
LCSD R3504423-2 WG1436256 1x	0301a_03	561247	262333	225474
BLANK R3504423-3 WG1436256 1x	0301A_06A	561899	264322	229867
L1194025-01 WG1436256 1x	0301A_26	608647	281718	252034
L1194025-02 WG1436256 1.06x	0301A_27	606564	286233	256862
L1194025-03 WG1436256 1x	0301A_28	595967	277609	242229

Instrument: SVGC30 • File ID: AVG

Sample ID	File ID	1-BROMO-2-DINITROBENZENE Response
Standard	AVG	1133944900
Upper Limit		3984972000
Lower Limit		1328324000
BLANK R3504566-1 WG1436431 1x	0302_08	1166123000
LCS R3504566-2 WG1436431 1x	0302_09	1242853000
MS R3504566-3 WG1436431 1x	0302_23	1223201000
MSD R3504566-4 WG1436431 1x	0302_24	1239456000
L1194025-01 WG1436431 1x	0302_30	1251898000
L1194025-02 WG1436431 1x	0302_31	1281694000

Instrument: SVGC30 • File ID: AVG

Sample ID	File ID	1-BROMO-2-DINITROBENZENE Response
Standard	AVG	1133944900
Upper Limit		3984972000
Lower Limit		1328324000
L1194025-03 WG1436431 1x	0303_26	1277699000

INTERNAL STANDARD SUMMARY

Instrument: BNAMS1 • File ID: 0304A_02-1

03/04/20 11:55

Sample ID	File ID	1,4-DICHLOROBENZENE-D4	NAPHTHALENE-D8	ACENAPHTHENE-D10	PHENANTHRENE-D10	CHRYSENE-D12	PERYLENE-D12
		Response	Response	Response	Response	Response	Response
Standard	0304A_02-1	86415	382109	180918	282836	237240	232958
Upper Limit		172830	764218	361836	565672	474480	465916
Lower Limit		43208	191055	90459	141418	118620	116479
LCS R3505319-1 WG1436421 1x	0304A_06	83777	401627	182133	289126	248417	223041
BLANK R3505319-2 WG1436421 1x	0304A_07	98799	402091	210537	313444	263804	254579
L1194025-03 WG1436421 10x	0304A_08	101986	389716	215579	318906	271654	267150
L1194025-02 WG1436421 10x	0304A_09	97651	374599	201274	299365	266911	248505
L1194025-01 WG1436421 10x	0304A_10	99629	367733	202355	302152	275250	227830
MS R3505319-3 WG1436421 10x	0304A_11	91584	350541	187597	288881	259574	194585

Instrument: BNAMS4 • File ID: 0303_03-1

03/03/20 10:07

Sample ID	File ID	1,4-DICHLOROBENZENE-D4	NAPHTHALENE-D8	ACENAPHTHENE-D10	PHENANTHRENE-D10	CHRYSENE-D12	PERYLENE-D12
		Response	Response	Response	Response	Response	Response
Standard	0303_03-1	15961	65719	40921	74790	75657	79784
Upper Limit		31922	131438	81842	149580	151314	159568
Lower Limit		7981	32860	20461	37395	37829	39892
LCS R3504917-1 WG1436421 1x	0303_05	19594	97103	46701	83048	79853	78581
BLANK R3504917-2 WG1436421 1x	0303_06	18722	75740	44102	78869	73917	77670
L1194025-03 WG1436421 10x	0303_23	20872	83227	47995	81166	81419	85811
L1194025-02 WG1436421 10x	0303_24	20146	82148	49482	84086	79942	83457
L1194025-01 WG1436421 10x	0303_25	20133	83020	49408	82615	79323	85252
MS R3504917-3 WG1436421 10x	0303_26	20562	88325	50940	86795	79960	85390
MSD R3504917-4 WG1436421 10x	0303_27	20519	87114	49269	83517	80354	84536

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 Sc

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
MDL (dry)	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
RDL (dry)	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting level (MRL) but above MDL.
L2	The associated blank spike recovery was below laboratory acceptance limits.
M1	Matrix spike recovery was high, the method control sample recovery was acceptable.
M2	Matrix spike recovery was low, the method control sample recovery was acceptable.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The associated blank spike recovery was acceptable.
R5	MS/MSD RPD exceeded the laboratory acceptance limit. Recovery met acceptance criteria.
R7	LFB/LFBD RPD exceeded the laboratory acceptance limit. Recovery met acceptance criteria.

ACCREDITATIONS & LOCATIONS

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

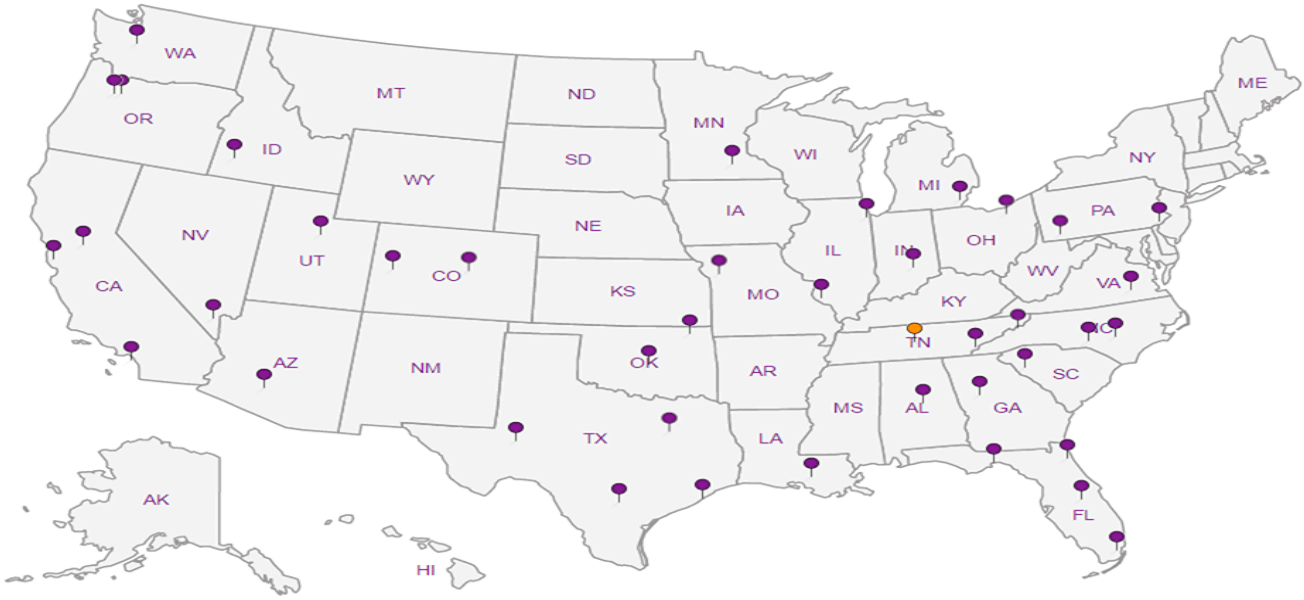
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Hutzel & Associates
1626 E Alicia Drive
Phoenix, AZ 85042

Billing Information: Hutzel + Associates

Pres Chk

Report to: Augustine Anderson

Email To: aanderson@Hutzel.net

Project Description: **APS Prescott City Substation**

City/State Collected: **Prescott, AZ**

Phone: **602-549-6820**
Fax:

Client Project # **20-12557**

Lab Project #

Collected by (print): Augustine Anderson

Site/Facility ID # **APS Prescott City Substation**

P.O. # 700677332

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
X Three Day

Quote #

Date Results Needed: March 4, 2020

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace Analytical®
National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 1194025
G004

Acctnum: **HUTZELTAZ**
Template:
Prelogin:
TSR:
PB:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOCs 8260B/ 40mL amber/ MeOH	Total RCRA8 metals/ 2oz jar	PCBs 8082/ 4oz jar	SVOCs/PAHs 8270AP9/ 4oz jar	PCBs 8082/ 8oz jar	Remarks	Sample # (lab only)
HA-APS-0227-01	Comp	SS	6"-10"	02-27-20	10:00am	4	X	X	X	X			-01
HA-APS-0227-02	Comp	SS	6"-10"	02-27-20	10:15am	4	X	X	X	X			02
HA-APS-0227-03	Comp	SS	6"-10"	02-27-20	10:30am	4	X	X	X	X			03

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: Report on a dry weight basis

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier ____

Tracking # 1275 8603 8778

Sample Receipt Checklist
COC Seal Present/Intact: __NP __Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N
RAD SCREEN: <0.5 mR/hr

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeOH TBR	If preservation required by Login: Date/Time
	2-27	11:02			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: NPR6 °C .6+.4=1.0 Bottles Received: 12	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 2/28/20 Time: 9:00	Hold: / Condition: NCF / OK

APPENDIX 3

APS ESTIMATED EXPOSURE ASSESSMENT FOR AIRBORNE LEAD

Sample Number	HA-APS-0227-02Pb
	Silver Paint

ESTIMATED EXPOSURE ASSESSMENT BASED ON OBJECTIVE DATA

Estimated Exposure Assessment

ppm	11000	
ug/m3	110	ppm/100
Result	110	ug/m3

Maximum Estimated Exposure Assessment Result 110 ug/m3

OSHA Action Level 30 ug/m^3

This estimated exposure assessment is based on 10 mg/m3 total dust sample and the lead paint content of the sample being

11000 ppm

Sample Number	HA-APS-0227-03Pb
	Light Grey Paint

ESTIMATED EXPOSURE ASSESSMENT BASED ON OBJECTIVE DATA

Estimated Exposure Assessment

ppm	55	
ug/m3	0.55	ppm/100
Result	0.55	ug/m3

Maximum Estimated Exposure Assessment Result 0.55 ug/m3

OSHA Action Level 30 ug/m^3

This estimated exposure assessment is based on 10 mg/m3 total dust sample and the lead paint content of the sample being

55 ppm

Sample Number	HA-APS-0227-04Pb
	White Paint

ESTIMATED EXPOSURE ASSESSMENT BASED ON OBJECTIVE DATA

Estimated Exposure Assessment

ppm	130	
ug/m3	1.3	ppm/100
Result	1.3	ug/m3

Maximum Estimated Exposure Assessment Result 1.3 ug/m3

OSHA Action Level 30 ug/m^3

This estimated exposure assessment is based on 10 mg/m3 total dust sample and the lead paint content of the sample being

130 ppm

Sample Number	HA-APS-0227-05Pb
	Two tone Paint Green & Pink

ESTIMATED EXPOSURE ASSESSMENT BASED ON OBJECTIVE DATA

Estimated Exposure Assessment

ppm	5300	
ug/m3	53	ppm/100
Result	53	ug/m3

Maximum Estimated Exposure Assessment Result 53 ug/m3

OSHA Action Level 30 ug/m^3

This estimated exposure assessment is based on 10 mg/m3 total dust sample and the lead paint content of the sample being

5300 ppm

Sample Number	HA-APS-0227-06Pb
	Two tone Paint Green & Pink

ESTIMATED EXPOSURE ASSESSMENT BASED ON OBJECTIVE DATA

Estimated Exposure Assessment

ppm	2800	
ug/m3	28	ppm/100
Result	28	ug/m3

Maximum Estimated Exposure Assessment Result 28 ug/m3

OSHA Action Level 30 ug/m^3

This estimated exposure assessment is based on 10 mg/m3 total dust sample and the lead paint content of the sample being

2800 ppm

Sample Number	HA-APS-0227-07Pb
	Dark Brown Paint

ESTIMATED EXPOSURE ASSESSMENT BASED ON OBJECTIVE DATA

Estimated Exposure Assessment

ppm	9500	
ug/m3	95	ppm/100
Result	95	ug/m3

Maximum Estimated Exposure Assessment Result 95 ug/m3

OSHA Action Level 30 ug/m^3

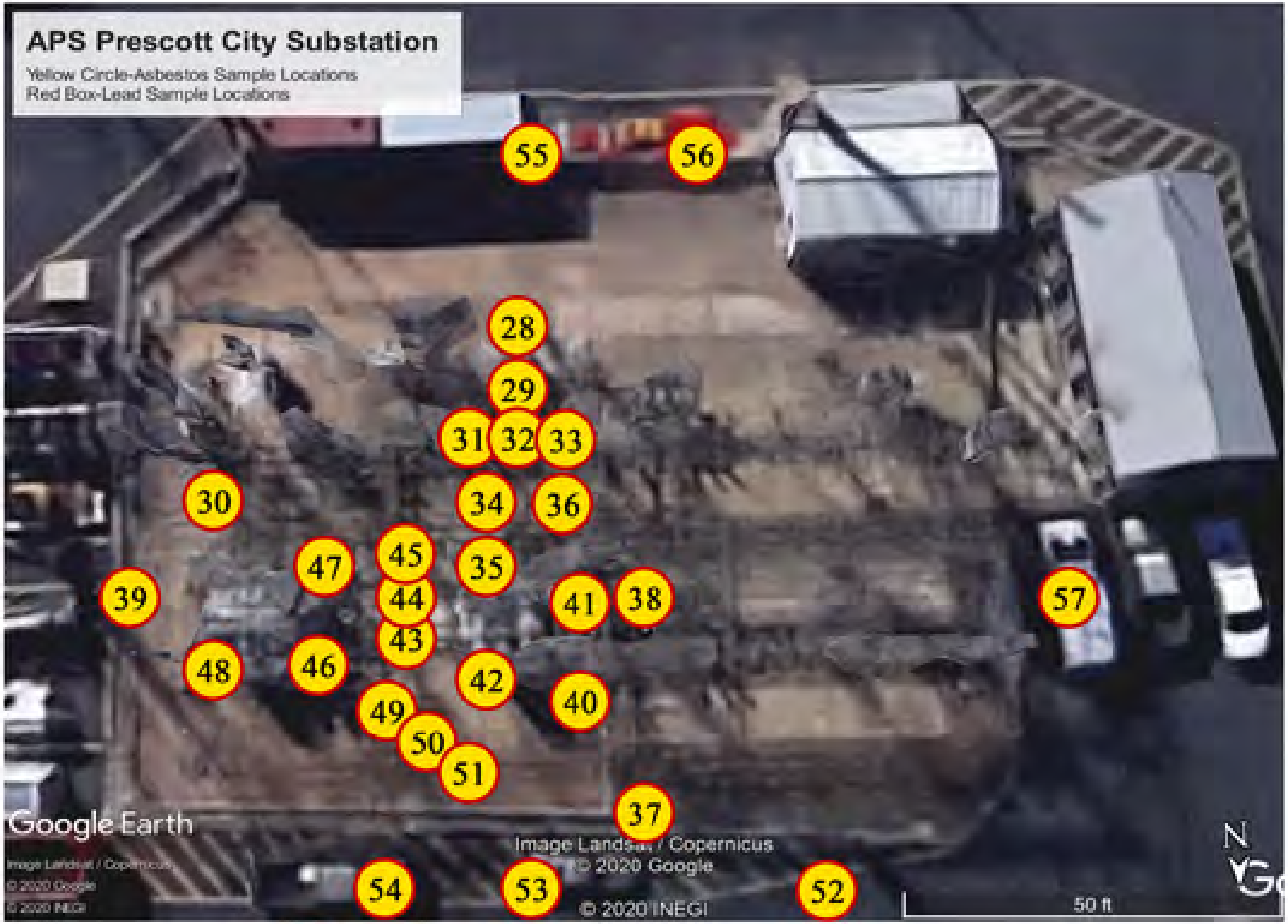
This estimated exposure assessment is based on 10 mg/m3 total dust sample and the lead paint content of the sample being

9500 ppm

APPENDIX 4

MAP OF SAMPLE LOCATIONS

= ASBESTOS SAMPLE LOCATIONS | 1-27



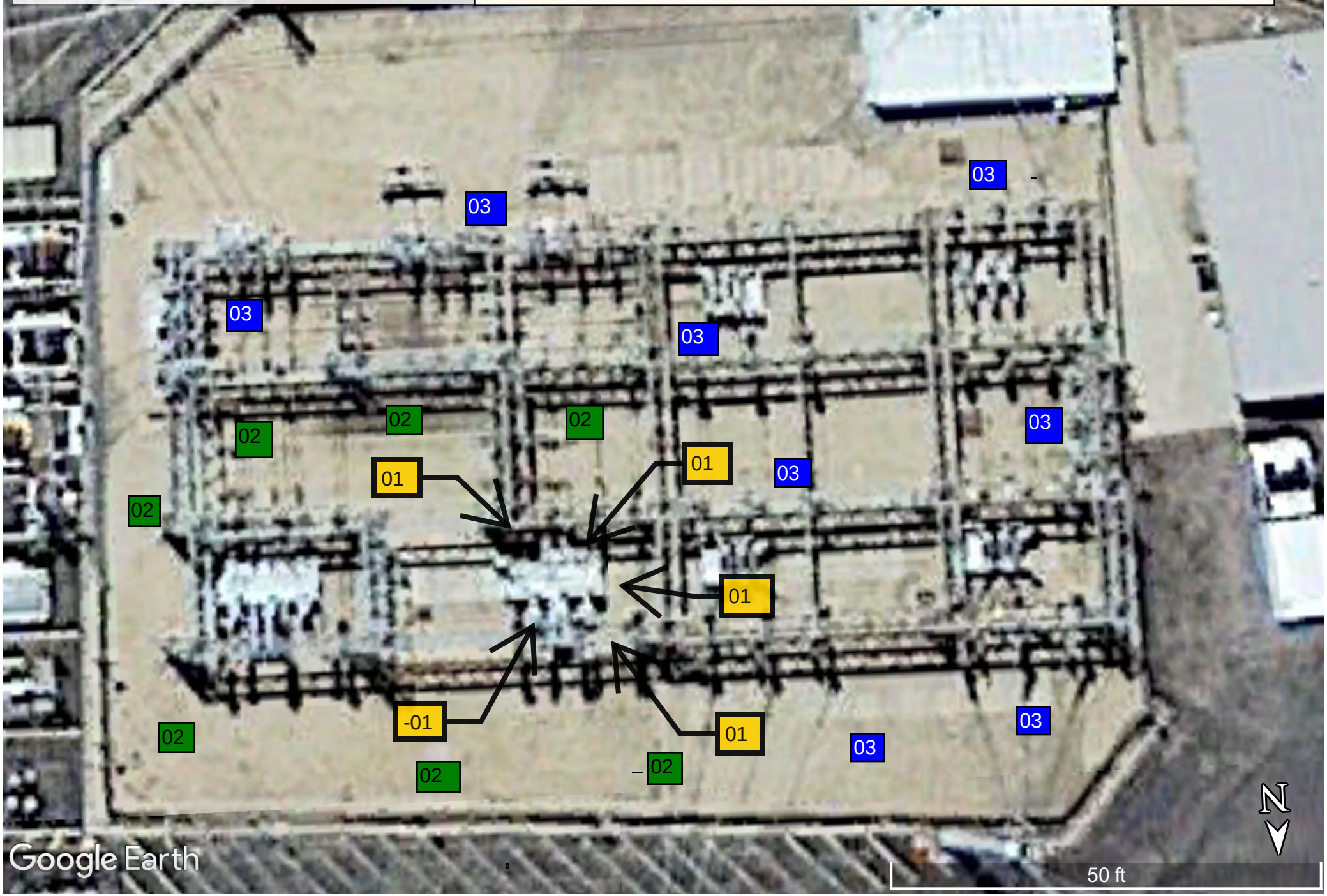
= ASBESTOS SAMPLE LOCATIONS | 28-57

= LEAD SAMPLE LOCATIONS | 1Pb-8Pb

APS Prescott City Substation

Soil Sample Locations

HA-APS-0227-01 = Stained Soil Around Transformer N02 XFMR
HA-APS-0227-02 = Secondary Containment Around Transformers N02 XFMR & XFMR6
HA-APS-0227-03 = Outside the Secondary Containmnet



APS Prescott City Substation

Green Box = PCB's Sample Location

HA-APS-0221-02; Stained Concrete Pad/ N02-XFMR6 Three Phase Transformer

HA-APS-0221-04; Bulk Caulk/ Control House

APPENDIX 5

AHERA BUILDING INSPECTOR CERTIFICATION

H 1328

THE ASBESTOS INSTITUTE

Certifies that

Ronald R Gilbert

has attended the EPA approved course

AHERA Building Inspector Initial
October 28-30, 2019

and successfully passed the competency exam.

Date of Examination: October 30, 2019

Date of Expiration: October 30, 2020

William T. Cavness
Director

Approved Instructor

THE ASBESTOS INSTITUTE
20033 N. 19th Avenue
Building #6
Phoenix, AZ 85027
602-864-6564

This training meets all requirements for asbestos accreditation under Toxic Substance Control Act Title II and California OSHA.

THE ASBESTOS INSTITUTE

Certifies that

Augustine Anderson

has attended and received instruction in the EPA approved course

AHERA Building Inspector Refresher

Approval Code: CA-089-06

on

January 31, 2020

and successfully completed and passed the competency exam.

Certificate:
4608-991-013120

Date of Examination:
31-Jan-2020

Date of Expiration:
31-Jan-2021

William T. Cavness
Director

Approved Instructor

THE ASBESTOS INSTITUTE
20033 N. 19th Ave, Building 6, Phoenix, AZ 85027
602-864-6564 – www.theasbestosinstitute.com

This training meets all requirements for asbestos certification under Toxic Substance Control Act Title II.

ANALYTICAL REPORT

April 06, 2020

Hutzel and Associates

Sample Delivery Group:	L1194025
Samples Received:	02/28/2020
Project Number:	20-12557
Description:	APS Prescott City Substation
Site:	APS PRESCOTT CITY SUBSTAION
Report To:	Augustine Anderson 1626 E. Alicia Drive Phoenix, AZ 85042

Entire Report Reviewed By: Daphne R Richards

Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

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HA-APS-0227-01 L1194025-01 Solid

Collected by	Collected date/time	Received date/time
Augustine Anderson	02/27/20 10:00	02/28/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1436007	1	02/29/20 17:31	02/29/20 17:44	KDW	Mt. Juliet, TN
Mercury by Method 7471B	WG1436283	1	03/02/20 13:48	03/02/20 22:48	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1436051	1	02/29/20 10:17	03/01/20 11:46	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1436256	1	02/27/20 10:00	03/01/20 22:18	ACG	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1454981	1	04/03/20 07:43	04/03/20 11:30	RP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1436421	10	03/02/20 08:20	03/03/20 17:18	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1436421	10	03/02/20 08:20	03/04/20 14:32	AO	Mt. Juliet, TN

HA-APS-0227-02 L1194025-02 Solid

Collected by	Collected date/time	Received date/time
Augustine Anderson	02/27/20 10:15	02/28/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1436007	1	02/29/20 17:31	02/29/20 17:44	KDW	Mt. Juliet, TN
Mercury by Method 7471B	WG1436283	1	03/02/20 13:48	03/02/20 22:50	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1436051	1	02/29/20 10:17	03/01/20 11:49	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1436256	1.06	02/27/20 10:15	03/01/20 22:39	ACG	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1454981	1	04/03/20 07:43	04/03/20 11:42	RP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1436421	10	03/02/20 08:20	03/03/20 16:59	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1436421	10	03/02/20 08:20	03/04/20 14:12	AO	Mt. Juliet, TN

HA-APS-0227-03 L1194025-03 Solid

Collected by	Collected date/time	Received date/time
Augustine Anderson	02/27/20 10:30	02/28/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1436007	1	02/29/20 17:31	02/29/20 17:44	KDW	Mt. Juliet, TN
Mercury by Method 7471B	WG1436283	1	03/02/20 13:48	03/02/20 22:53	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1436051	1	02/29/20 10:17	03/01/20 11:51	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1436256	1	02/27/20 10:30	03/01/20 22:59	ACG	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1454981	1	04/03/20 07:43	04/03/20 11:54	ADF	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1454981	1	04/03/20 07:43	04/03/20 17:44	SSH	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1436421	10	03/02/20 08:20	03/03/20 16:39	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1436421	10	03/02/20 08:20	03/04/20 13:52	AO	Mt. Juliet, TN

HA-APS-0227-01 L1194025-04 Waste

Collected by	Collected date/time	Received date/time
Augustine Anderson	02/27/20 10:00	02/28/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1454593	1	04/02/20 13:37	04/02/20 13:37	IDW	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1454505	1	04/03/20 08:14	04/03/20 10:53	TRB	Mt. Juliet, TN

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 Sc

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne R Richards

Daphne Richards
Project Manager

Report Revision History

Level II Report - Version 1: 03/06/20 12:15

Total Solids by Method 2540 G-2011

Analyte	Result %	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	89.3		1	02/29/2020 17:44	WG1436007

Mercury by Method 7471B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.426		0.00313	0.0336	1	03/02/2020 22:48	WG1436283

Metals (ICP) by Method 6010D

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.64		0.515	2.24	1	03/01/2020 11:46	WG1436051
Barium	122		0.190	0.560	1	03/01/2020 11:46	WG1436051
Cadmium	3.78		0.0784	0.560	1	03/01/2020 11:46	WG1436051
Chromium	24.2		0.157	1.12	1	03/01/2020 11:46	WG1436051
Lead	125		0.213	0.560	1	03/01/2020 11:46	WG1436051
Selenium	U		0.694	2.24	1	03/01/2020 11:46	WG1436051
Silver	1.26		0.134	1.12	1	03/01/2020 11:46	WG1436051

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Acetone	U		0.384	0.700	1	03/01/2020 22:18	WG1436256
Acrylonitrile	U		0.0532	0.350	1	03/01/2020 22:18	WG1436256
Benzene	U		0.0112	0.0280	1	03/01/2020 22:18	WG1436256
Bromobenzene	U		0.0294	0.350	1	03/01/2020 22:18	WG1436256
Bromodichloromethane	U		0.0221	0.0700	1	03/01/2020 22:18	WG1436256
Bromoform	U		0.167	0.700	1	03/01/2020 22:18	WG1436256
Bromomethane	U		0.104	0.350	1	03/01/2020 22:18	WG1436256
1,3-Butadiene	U		0.236	0.700	1	03/01/2020 22:18	WG1436256
n-Butylbenzene	U		0.107	0.350	1	03/01/2020 22:18	WG1436256
sec-Butylbenzene	U		0.0709	0.350	1	03/01/2020 22:18	WG1436256
tert-Butylbenzene	U		0.0434	0.140	1	03/01/2020 22:18	WG1436256
Carbon disulfide	U		0.114	0.350	1	03/01/2020 22:18	WG1436256
Carbon tetrachloride	U		0.0302	0.140	1	03/01/2020 22:18	WG1436256
Chlorobenzene	U		0.0160	0.0700	1	03/01/2020 22:18	WG1436256
Chlorodibromomethane	U		0.0127	0.0700	1	03/01/2020 22:18	WG1436256
Chloroethane	U		0.0302	0.140	1	03/01/2020 22:18	WG1436256
Chloroform	0.0471	E4	0.0116	0.0700	1	03/01/2020 22:18	WG1436256
Chloromethane	U		0.0390	0.350	1	03/01/2020 22:18	WG1436256
2-Chlorotoluene	U		0.0257	0.0700	1	03/01/2020 22:18	WG1436256
4-Chlorotoluene	U		0.0317	0.140	1	03/01/2020 22:18	WG1436256
Cyclohexane	U		0.0142	0.0700	1	03/01/2020 22:18	WG1436256
1,2-Dibromo-3-Chloropropane	U		0.143	0.700	1	03/01/2020 22:18	WG1436256
1,2-Dibromoethane	U		0.0147	0.0700	1	03/01/2020 22:18	WG1436256
Dibromomethane	U		0.0280	0.140	1	03/01/2020 22:18	WG1436256
1,2-Dichlorobenzene	U		0.0406	0.140	1	03/01/2020 22:18	WG1436256
1,3-Dichlorobenzene	U		0.0476	0.140	1	03/01/2020 22:18	WG1436256
1,4-Dichlorobenzene	U		0.0552	0.140	1	03/01/2020 22:18	WG1436256
Dichlorodifluoromethane	U		0.0229	0.0700	1	03/01/2020 22:18	WG1436256
1,1-Dichloroethane	U		0.0161	0.0700	1	03/01/2020 22:18	WG1436256
1,2-Dichloroethane	U		0.0133	0.0700	1	03/01/2020 22:18	WG1436256
1,1-Dichloroethene	U		0.0140	0.0700	1	03/01/2020 22:18	WG1436256
cis-1,2-Dichloroethene	U		0.0194	0.0700	1	03/01/2020 22:18	WG1436256
trans-1,2-Dichloroethene	U		0.0400	0.140	1	03/01/2020 22:18	WG1436256

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
1,2-Dichloropropane	U		0.0356	0.140	1	03/01/2020 22:18	WG1436256
1,1-Dichloropropene	U		0.0196	0.0700	1	03/01/2020 22:18	WG1436256
1,3-Dichloropropane	U		0.0490	0.140	1	03/01/2020 22:18	WG1436256
cis-1,3-Dichloropropene	U		0.0189	0.0700	1	03/01/2020 22:18	WG1436256
trans-1,3-Dichloropropene	U		0.0429	0.140	1	03/01/2020 22:18	WG1436256
2,2-Dichloropropane	U		0.0222	0.0700	1	03/01/2020 22:18	WG1436256
Dicyclopentadiene	U		0.102	0.350	1	03/01/2020 22:18	WG1436256
Di-isopropyl ether	U		0.00980	0.0280	1	03/01/2020 22:18	WG1436256
Ethylbenzene	U		0.0149	0.0700	1	03/01/2020 22:18	WG1436256
4-Ethyltoluene	U		0.0300	0.140	1	03/01/2020 22:18	WG1436256
Hexachloro-1,3-butadiene	U		0.356	0.700	1	03/01/2020 22:18	WG1436256
n-Hexane	U		0.0297	0.140	1	03/01/2020 22:18	WG1436256
Isopropylbenzene	U		0.0242	0.0700	1	03/01/2020 22:18	WG1436256
p-Isopropyltoluene	U		0.0653	0.140	1	03/01/2020 22:18	WG1436256
2-Butanone (MEK)	U		0.350	0.700	1	03/01/2020 22:18	WG1436256
Methylene Chloride	U		0.186	0.700	1	03/01/2020 22:18	WG1436256
4-Methyl-2-pentanone (MIBK)	U		0.280	0.700	1	03/01/2020 22:18	WG1436256
Methyl tert-butyl ether	U		0.00825	0.0280	1	03/01/2020 22:18	WG1436256
Methyl Cyclohexane	U		0.0289	0.140	1	03/01/2020 22:18	WG1436256
Naphthalene	U	L2 R7	0.0873	0.350	1	03/01/2020 22:18	WG1436256
Propene	U		0.585	1.40	1	03/01/2020 22:18	WG1436256
n-Propylbenzene	U		0.0330	0.140	1	03/01/2020 22:18	WG1436256
Styrene	U		0.0765	0.350	1	03/01/2020 22:18	WG1436256
1,1,1,2-Tetrachloroethane	U		0.0140	0.0700	1	03/01/2020 22:18	WG1436256
1,1,2,2-Tetrachloroethane	U		0.0109	0.0700	1	03/01/2020 22:18	WG1436256
1,1,2-Trichlorotrifluoroethane	U		0.0189	0.0700	1	03/01/2020 22:18	WG1436256
Tetrachloroethene	U		0.0196	0.0700	1	03/01/2020 22:18	WG1436256
Toluene	U		0.0350	0.140	1	03/01/2020 22:18	WG1436256
1,2,3-Trichlorobenzene	U	R7	0.0175	0.350	1	03/01/2020 22:18	WG1436256
1,2,4-Trichlorobenzene	U		0.135	0.350	1	03/01/2020 22:18	WG1436256
1,1,1-Trichloroethane	U		0.00770	0.0700	1	03/01/2020 22:18	WG1436256
1,1,2-Trichloroethane	U		0.0247	0.0700	1	03/01/2020 22:18	WG1436256
Trichloroethene	U		0.0112	0.0280	1	03/01/2020 22:18	WG1436256
Trichlorofluoromethane	U		0.0140	0.0700	1	03/01/2020 22:18	WG1436256
1,2,3-Trichloropropane	U		0.143	0.350	1	03/01/2020 22:18	WG1436256
1,2,4-Trimethylbenzene	U		0.0325	0.140	1	03/01/2020 22:18	WG1436256
1,2,3-Trimethylbenzene	U		0.0322	0.140	1	03/01/2020 22:18	WG1436256
1,3,5-Trimethylbenzene	U		0.0302	0.140	1	03/01/2020 22:18	WG1436256
Vinyl chloride	U		0.0191	0.0700	1	03/01/2020 22:18	WG1436256
Xylenes, Total	U		0.133	0.182	1	03/01/2020 22:18	WG1436256
(S) Toluene-d8	*102*			*75.0-131*		*03/01/2020 22:18*	WG1436256
(S) 4-Bromofluorobenzene	*107*			*67.0-138*		*03/01/2020 22:18*	WG1436256
(S) 1,2-Dichloroethane-d4	*94.6*			*70.0-130*		*03/01/2020 22:18*	WG1436256

Polychlorinated Biphenyls (GC) by Method 8082 A

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
PCB 1016	U		0.0132	0.0381	1	04/03/2020 11:30	WG1454981
PCB 1221	U		0.0132	0.0381	1	04/03/2020 11:30	WG1454981
PCB 1232	U		0.0132	0.0381	1	04/03/2020 11:30	WG1454981
PCB 1242	U		0.0132	0.0381	1	04/03/2020 11:30	WG1454981
PCB 1248	U		0.00826	0.0190	1	04/03/2020 11:30	WG1454981
PCB 1254	U		0.00826	0.0190	1	04/03/2020 11:30	WG1454981
PCB 1260	0.905		0.00826	0.0190	1	04/03/2020 11:30	WG1454981
(S) Decachlorobiphenyl	*118*			*10.0-135*		*04/03/2020 11:30*	WG1454981
(S) Tetrachloro-m-xylene	*100*			*10.0-139*		*04/03/2020 11:30*	WG1454981

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	0.0805	E4	0.0719	0.373	10	03/03/2020 17:18	WG1436421
Acenaphthylene	0.405		0.0751	0.373	10	03/03/2020 17:18	WG1436421
Anthracene	0.350	E4	0.0708	0.373	10	03/03/2020 17:18	WG1436421
Benzidine	U	M2	0.713	3.73	10	03/03/2020 17:18	WG1436421
Benzo(a)anthracene	1.57	M2	0.0479	0.373	10	03/03/2020 17:18	WG1436421
Benzo(b)fluoranthene	2.10	M2	0.0778	0.373	10	03/03/2020 17:18	WG1436421
Benzo(k)fluoranthene	0.636		0.0652	0.373	10	03/03/2020 17:18	WG1436421
Benzo(g,h,i)perylene	2.92	M2	0.0807	0.373	10	03/03/2020 17:18	WG1436421
Benzo(a)pyrene	2.16	M2	0.0613	0.373	10	03/03/2020 17:18	WG1436421
Bis(2-chlorethoxy)methane	U		0.0862	3.73	10	03/03/2020 17:18	WG1436421
Bis(2-chloroethyl)ether	U		0.100	3.73	10	03/03/2020 17:18	WG1436421
2,2-Oxybis(1-Chloropropane)	U		0.0851	3.73	10	03/03/2020 17:18	WG1436421
4-Bromophenyl-phenylether	U		0.128	3.73	10	03/03/2020 17:18	WG1436421
2-Chloronaphthalene	U		0.0715	0.373	10	03/03/2020 17:18	WG1436421
4-Chlorophenyl-phenylether	U		0.0702	3.73	10	03/03/2020 17:18	WG1436421
Chrysene	1.59	M2	0.0621	0.373	10	03/03/2020 17:18	WG1436421
Dibenz(a,h)anthracene	0.212	E4	0.0919	0.373	10	03/03/2020 17:18	WG1436421
3,3-Dichlorobenzidine	U	M2	0.889	3.73	10	03/03/2020 17:18	WG1436421
2,4-Dinitrotoluene	U		0.0680	3.73	10	03/03/2020 17:18	WG1436421
2,6-Dinitrotoluene	U		0.0825	3.73	10	03/03/2020 17:18	WG1436421
Fluoranthene	4.14	M3	0.0555	0.373	10	03/03/2020 17:18	WG1436421
Fluorene	0.122	E4	0.0763	0.373	10	03/03/2020 17:18	WG1436421
Hexachlorobenzene	U		0.0958	3.73	10	03/03/2020 17:18	WG1436421
Hexachloro-1,3-butadiene	U		0.112	3.73	10	03/03/2020 17:18	WG1436421
Hexachlorocyclopentadiene	U	M2	0.657	3.73	10	03/03/2020 17:18	WG1436421
Hexachloroethane	U		0.150	3.73	10	03/03/2020 17:18	WG1436421
Indeno(1,2,3-cd)pyrene	2.19	M2	0.0864	0.373	10	03/03/2020 17:18	WG1436421
Isophorone	U		0.0584	3.73	10	03/03/2020 17:18	WG1436421
Naphthalene	0.170	E4	0.0995	0.373	10	03/03/2020 17:18	WG1436421
Nitrobenzene	U		0.0778	3.73	10	03/03/2020 17:18	WG1436421
n-Nitrosodimethylamine	U	M2	0.724	3.73	10	03/03/2020 17:18	WG1436421
n-Nitrosodiphenylamine	U	M2	1.01	3.73	10	03/03/2020 17:18	WG1436421
n-Nitrosodi-n-propylamine	U		0.101	3.73	10	03/03/2020 17:18	WG1436421
Phenanthrene	2.65	M2	0.0591	0.373	10	03/03/2020 17:18	WG1436421
Benzylbutyl phthalate	U		0.115	3.73	10	03/03/2020 17:18	WG1436421
Bis(2-ethylhexyl)phthalate	U		0.134	3.73	10	03/03/2020 17:18	WG1436421
Di-n-butyl phthalate	U		0.122	3.73	10	03/03/2020 17:18	WG1436421
Diethyl phthalate	U		0.0774	3.73	10	03/03/2020 17:18	WG1436421
Dimethyl phthalate	U		0.0605	3.73	10	03/03/2020 17:18	WG1436421
Di-n-octyl phthalate	U		0.102	3.73	10	03/03/2020 17:18	WG1436421
Pyrene	5.28	M3	0.138	0.373	10	03/03/2020 17:18	WG1436421
1,2,4-Trichlorobenzene	U		0.0981	3.73	10	03/03/2020 17:18	WG1436421
Aniline	U	M2 R5	0.358	3.73	10	03/03/2020 17:18	WG1436421
1,2-Diphenylhydrazine	U		0.0591	3.73	10	03/03/2020 17:18	WG1436421
Benzyl alcohol	U	M1	0.0840	3.73	10	03/03/2020 17:18	WG1436421
4-Chloroaniline	U	M2 R5	0.394	3.73	10	03/03/2020 17:18	WG1436421
4-Chloro-3-methylphenol	U		0.0534	3.73	10	03/03/2020 17:18	WG1436421
2-Chlorophenol	U		0.0930	3.73	10	03/03/2020 17:18	WG1436421
Dibenzofuran	U		0.0580	3.73	10	03/03/2020 17:18	WG1436421
2,4-Dichlorophenol	U		0.0835	3.73	10	03/03/2020 17:18	WG1436421
2,4-Dimethylphenol	U		0.527	3.73	10	03/03/2020 17:18	WG1436421
4,6-Dinitro-2-methylphenol	U	M2	1.39	3.73	10	03/03/2020 17:18	WG1436421
2,4-Dinitrophenol	U	M2	1.10	3.73	10	03/03/2020 17:18	WG1436421
2-Methylnaphthalene	U		0.0964	0.373	10	03/03/2020 17:18	WG1436421
2-Methylphenol	U		0.110	3.73	10	03/03/2020 17:18	WG1436421
3&4-Methyl Phenol	U		0.0877	3.73	10	03/03/2020 17:18	WG1436421

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
2-Nitroaniline	U		0.0845	3.73	10	03/03/2020 17:18	WG1436421
3-Nitroaniline	U		0.0952	3.73	10	03/03/2020 17:18	WG1436421
4-Nitroaniline	U		0.0715	3.73	10	03/03/2020 17:18	WG1436421
2-Nitrophenol	U		0.146	3.73	10	03/03/2020 17:18	WG1436421
4-Nitrophenol	U	M2	0.588	3.73	10	03/03/2020 17:18	WG1436421
Pentachlorophenol	U		0.537	3.73	10	03/03/2020 17:18	WG1436421
Phenol	U		0.0778	3.73	10	03/03/2020 17:18	WG1436421
Pyridine	U	M2	0.703	3.73	10	03/03/2020 17:18	WG1436421
2,4,6-Trichlorophenol	U		0.0872	3.73	10	03/03/2020 17:18	WG1436421
Acetophenone	U	M2	0.842	3.73	10	03/03/2020 17:18	WG1436421
2-Acetylaminofluorene	U		0.611	3.73	10	03/04/2020 14:32	WG1436421
4-Aminobiphenyl	U	M2	0.547	3.73	10	03/04/2020 14:32	WG1436421
Chlorobenzilate	U		0.638	3.73	10	03/04/2020 14:32	WG1436421
Diallate	U	L2 M2	0.664	3.73	10	03/04/2020 14:32	WG1436421
2,6-Dichlorophenol	U		0.517	3.73	10	03/04/2020 14:32	WG1436421
Dimethoate	U	M2	1.01	3.73	10	03/04/2020 14:32	WG1436421
P-(Dimethylamino) Azobenzene	U	M2	0.712	3.73	10	03/04/2020 14:32	WG1436421
Dimethylbenz (A) Anthracene	U	M2	0.592	3.73	10	03/04/2020 14:32	WG1436421
3,3-Dimethylbenzidine	U	L2 M2	0.811	3.73	10	03/04/2020 14:32	WG1436421
a,a-Dimethylphenethylamine	U	L2 M2	5.30	18.6	10	03/04/2020 14:32	WG1436421
1,3-Dinitrobenzene	U		0.691	3.73	10	03/04/2020 14:32	WG1436421
Diphenylamine	U	M2	1.01	3.73	10	03/03/2020 17:18	WG1436421
Dinoseb	U	M2	1.09	3.73	10	03/04/2020 14:32	WG1436421
Disulfoton	U	M2	0.738	3.73	10	03/04/2020 14:32	WG1436421
Ethyl methanesulfonate	U	M2	0.847	3.73	10	03/04/2020 14:32	WG1436421
Ethyl Parathion	U	M1	0.886	3.73	10	03/04/2020 14:32	WG1436421
Famphur	U		0.527	3.73	10	03/04/2020 14:32	WG1436421
Hexachloropropene	U	M2	1.23	3.73	10	03/04/2020 14:32	WG1436421
Hexachlorophene	U	M2	1.23	3.73	10	03/04/2020 14:32	WG1436421
Isodrin	U	M2	0.740	3.73	10	03/04/2020 14:32	WG1436421
Isosafrole	U		0.410	3.73	10	03/04/2020 14:32	WG1436421
Kepone	U	M2	0.550	3.73	10	03/04/2020 14:32	WG1436421
Methapyrilene	U	L2 M2	3.73	18.6	10	03/04/2020 14:32	WG1436421
3-Methylcholanthrene	U	M2	0.667	3.73	10	03/04/2020 14:32	WG1436421
Methyl methanesulfonate	U	M2	0.743	3.73	10	03/04/2020 14:32	WG1436421
Methyl parathion	U	M1	0.722	3.73	10	03/04/2020 14:32	WG1436421
1,4-Naphthoquinone	U	L2 M2	0.469	3.73	10	03/04/2020 14:32	WG1436421
1-Naphthylamine	U	M2	0.898	3.73	10	03/04/2020 14:32	WG1436421
2-Naphthylamine	U	M2	0.731	3.73	10	03/04/2020 14:32	WG1436421
5-Nitro-o-toluidine	U	M2	0.752	3.73	10	03/04/2020 14:32	WG1436421
4-Nitroquinoline 1-oxide	U	M2	0.723	3.73	10	03/04/2020 14:32	WG1436421
n-Nitrosodiethylamine	U	M2	2.12	3.73	10	03/04/2020 14:32	WG1436421
n-Nitrosodi-n-butylamine	U	M2	1.23	3.73	10	03/04/2020 14:32	WG1436421
n-Nitrosomethylethylamine	U	M2	1.24	3.73	10	03/04/2020 14:32	WG1436421
n-Nitrosomorpholine	U	M2	1.68	3.73	10	03/04/2020 14:32	WG1436421
n-Nitrosopiperidine	U	M2	0.672	3.73	10	03/04/2020 14:32	WG1436421
n-Nitrosopyrrolidine	U	M2	2.25	3.73	10	03/04/2020 14:32	WG1436421
Pentachlorobenzene	U		0.541	3.73	10	03/04/2020 14:32	WG1436421
Pentachloroethane	U	M2	0.791	3.73	10	03/04/2020 14:32	WG1436421
Pentachloronitrobenzene	U	M2	0.827	3.73	10	03/04/2020 14:32	WG1436421
Phenacetin	U	M2	0.858	3.73	10	03/04/2020 14:32	WG1436421
p-Phenylenediamine	U	L2 M2	1.63	3.73	10	03/04/2020 14:32	WG1436421
Phorate	U	M2	1.24	3.73	10	03/04/2020 14:32	WG1436421
2-Picoline	U	M2	1.23	3.73	10	03/04/2020 14:32	WG1436421
Pronamide	U	M2	0.851	3.73	10	03/04/2020 14:32	WG1436421
Safrole	U	M2	0.709	3.73	10	03/04/2020 14:32	WG1436421

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Sulfotep	U	M2	0.847	3.73	10	03/04/2020 14:32	WG1436421
1,2,4,5-Tetrachlorobenzene	U	M2	0.853	3.73	10	03/03/2020 17:18	WG1436421
2,3,4,6-Tetrachlorophenol	U	M2	1.35	3.73	10	03/03/2020 17:18	WG1436421
Thionazin	U		0.638	3.73	10	03/04/2020 14:32	WG1436421
o-Toluidine	U	M2	1.24	3.73	10	03/04/2020 14:32	WG1436421
2,4,5-Trichlorophenol	U		0.116	3.73	10	03/03/2020 17:18	WG1436421
O,O,O-Triethyl phosphorothioate	U	M2	0.893	3.73	10	03/04/2020 14:32	WG1436421
1,3,5-Trinitrobenzene	U	M2	0.638	3.73	10	03/04/2020 14:32	WG1436421
(S) 2-Fluorophenol	*93.7*			*12.0-120*		*03/03/2020 17:18*	WG1436421
(S) Phenol-d5	*83.0*			*10.0-120*		*03/03/2020 17:18*	WG1436421
(S) Nitrobenzene-d5	*83.9*			*10.0-122*		*03/03/2020 17:18*	WG1436421
(S) 2-Fluorobiphenyl	*84.2*			*15.0-120*		*03/03/2020 17:18*	WG1436421
(S) 2,4,6-Tribromophenol	*107*			*10.0-127*		*03/03/2020 17:18*	WG1436421
(S) p-Terphenyl-d14	*93.8*			*10.0-120*		*03/03/2020 17:18*	WG1436421

Sample Narrative:

L1194025-01 WG1436421: Dilution due to matrix impact during extraction procedure

L1194025-01 WG1436421: Dilution due to matrix impact during extract concentration procedure

Total Solids by Method 2540 G-2011

Analyte	Result %	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	89.0		1	02/29/2020 17:44	WG1436007

Mercury by Method 7471B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0709		0.00315	0.0337	1	03/02/2020 22:50	WG1436283

Metals (ICP) by Method 6010D

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.19		0.517	2.25	1	03/01/2020 11:49	WG1436051
Barium	120		0.191	0.562	1	03/01/2020 11:49	WG1436051
Cadmium	0.645		0.0786	0.562	1	03/01/2020 11:49	WG1436051
Chromium	18.5		0.157	1.12	1	03/01/2020 11:49	WG1436051
Lead	68.8		0.213	0.562	1	03/01/2020 11:49	WG1436051
Selenium	U		0.697	2.25	1	03/01/2020 11:49	WG1436051
Silver	U		0.135	1.12	1	03/01/2020 11:49	WG1436051

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Acetone	U		0.408	0.745	1.06	03/01/2020 22:39	WG1436256
Acrylonitrile	U		0.0566	0.372	1.06	03/01/2020 22:39	WG1436256
Benzene	U		0.0119	0.0298	1.06	03/01/2020 22:39	WG1436256
Bromobenzene	U		0.0312	0.372	1.06	03/01/2020 22:39	WG1436256
Bromodichloromethane	U		0.0235	0.0745	1.06	03/01/2020 22:39	WG1436256
Bromoform	U		0.177	0.745	1.06	03/01/2020 22:39	WG1436256
Bromomethane	U		0.110	0.372	1.06	03/01/2020 22:39	WG1436256
1,3-Butadiene	U		0.251	0.745	1.06	03/01/2020 22:39	WG1436256
n-Butylbenzene	U		0.115	0.372	1.06	03/01/2020 22:39	WG1436256
sec-Butylbenzene	U		0.0753	0.372	1.06	03/01/2020 22:39	WG1436256
tert-Butylbenzene	U		0.0462	0.149	1.06	03/01/2020 22:39	WG1436256
Carbon disulfide	U		0.121	0.372	1.06	03/01/2020 22:39	WG1436256
Carbon tetrachloride	U		0.0321	0.149	1.06	03/01/2020 22:39	WG1436256
Chlorobenzene	U		0.0171	0.0745	1.06	03/01/2020 22:39	WG1436256
Chlorodibromomethane	U		0.0134	0.0745	1.06	03/01/2020 22:39	WG1436256
Chloroethane	U		0.0321	0.149	1.06	03/01/2020 22:39	WG1436256
Chloroform	0.113		0.0124	0.0745	1.06	03/01/2020 22:39	WG1436256
Chloromethane	U		0.0413	0.372	1.06	03/01/2020 22:39	WG1436256
2-Chlorotoluene	U		0.0274	0.0745	1.06	03/01/2020 22:39	WG1436256
4-Chlorotoluene	U		0.0336	0.149	1.06	03/01/2020 22:39	WG1436256
Cyclohexane	U		0.0152	0.0745	1.06	03/01/2020 22:39	WG1436256
1,2-Dibromo-3-Chloropropane	U		0.152	0.745	1.06	03/01/2020 22:39	WG1436256
1,2-Dibromoethane	U		0.0156	0.0745	1.06	03/01/2020 22:39	WG1436256
Dibromomethane	U		0.0298	0.149	1.06	03/01/2020 22:39	WG1436256
1,2-Dichlorobenzene	U		0.0431	0.149	1.06	03/01/2020 22:39	WG1436256
1,3-Dichlorobenzene	U		0.0507	0.149	1.06	03/01/2020 22:39	WG1436256
1,4-Dichlorobenzene	U		0.0586	0.149	1.06	03/01/2020 22:39	WG1436256
Dichlorodifluoromethane	U		0.0244	0.0745	1.06	03/01/2020 22:39	WG1436256
1,1-Dichloroethane	U		0.0171	0.0745	1.06	03/01/2020 22:39	WG1436256
1,2-Dichloroethane	U		0.0142	0.0745	1.06	03/01/2020 22:39	WG1436256
1,1-Dichloroethene	U		0.0149	0.0745	1.06	03/01/2020 22:39	WG1436256
cis-1,2-Dichloroethene	U		0.0206	0.0745	1.06	03/01/2020 22:39	WG1436256
trans-1,2-Dichloroethene	U		0.0426	0.149	1.06	03/01/2020 22:39	WG1436256

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
1,2-Dichloropropane	U		0.0379	0.149	1.06	03/01/2020 22:39	WG1436256
1,1-Dichloropropene	U		0.0209	0.0745	1.06	03/01/2020 22:39	WG1436256
1,3-Dichloropropane	U		0.0521	0.149	1.06	03/01/2020 22:39	WG1436256
cis-1,3-Dichloropropene	U		0.0202	0.0745	1.06	03/01/2020 22:39	WG1436256
trans-1,3-Dichloropropene	U		0.0455	0.149	1.06	03/01/2020 22:39	WG1436256
2,2-Dichloropropane	U		0.0236	0.0745	1.06	03/01/2020 22:39	WG1436256
Dicyclopentadiene	U		0.108	0.372	1.06	03/01/2020 22:39	WG1436256
Di-isopropyl ether	U		0.0104	0.0298	1.06	03/01/2020 22:39	WG1436256
Ethylbenzene	U		0.0157	0.0745	1.06	03/01/2020 22:39	WG1436256
4-Ethyltoluene	U		0.0319	0.149	1.06	03/01/2020 22:39	WG1436256
Hexachloro-1,3-butadiene	U		0.379	0.745	1.06	03/01/2020 22:39	WG1436256
n-Hexane	U		0.0316	0.149	1.06	03/01/2020 22:39	WG1436256
Isopropylbenzene	U		0.0257	0.0745	1.06	03/01/2020 22:39	WG1436256
p-Isopropyltoluene	U		0.0693	0.149	1.06	03/01/2020 22:39	WG1436256
2-Butanone (MEK)	U		0.372	0.745	1.06	03/01/2020 22:39	WG1436256
Methylene Chloride	U		0.198	0.745	1.06	03/01/2020 22:39	WG1436256
4-Methyl-2-pentanone (MIBK)	U		0.298	0.745	1.06	03/01/2020 22:39	WG1436256
Methyl tert-butyl ether	U		0.00878	0.0298	1.06	03/01/2020 22:39	WG1436256
Methyl Cyclohexane	U		0.0307	0.149	1.06	03/01/2020 22:39	WG1436256
Naphthalene	U	L2 R7	0.0929	0.372	1.06	03/01/2020 22:39	WG1436256
Propene	U		0.622	1.49	1.06	03/01/2020 22:39	WG1436256
n-Propylbenzene	U		0.0352	0.149	1.06	03/01/2020 22:39	WG1436256
Styrene	U		0.0812	0.372	1.06	03/01/2020 22:39	WG1436256
1,1,1,2-Tetrachloroethane	U		0.0149	0.0745	1.06	03/01/2020 22:39	WG1436256
1,1,2,2-Tetrachloroethane	U		0.0116	0.0745	1.06	03/01/2020 22:39	WG1436256
1,1,2-Trichlorotrifluoroethane	U		0.0201	0.0745	1.06	03/01/2020 22:39	WG1436256
Tetrachloroethene	U		0.0209	0.0745	1.06	03/01/2020 22:39	WG1436256
Toluene	U		0.0372	0.149	1.06	03/01/2020 22:39	WG1436256
1,2,3-Trichlorobenzene	U	R7	0.0186	0.372	1.06	03/01/2020 22:39	WG1436256
1,2,4-Trichlorobenzene	U		0.144	0.372	1.06	03/01/2020 22:39	WG1436256
1,1,1-Trichloroethane	U		0.00819	0.0745	1.06	03/01/2020 22:39	WG1436256
1,1,2-Trichloroethane	U		0.0263	0.0745	1.06	03/01/2020 22:39	WG1436256
Trichloroethene	U		0.0119	0.0298	1.06	03/01/2020 22:39	WG1436256
Trichlorofluoromethane	U		0.0149	0.0745	1.06	03/01/2020 22:39	WG1436256
1,2,3-Trichloropropane	U		0.152	0.372	1.06	03/01/2020 22:39	WG1436256
1,2,4-Trimethylbenzene	U		0.0345	0.149	1.06	03/01/2020 22:39	WG1436256
1,2,3-Trimethylbenzene	U		0.0343	0.149	1.06	03/01/2020 22:39	WG1436256
1,3,5-Trimethylbenzene	U		0.0321	0.149	1.06	03/01/2020 22:39	WG1436256
Vinyl chloride	U		0.0203	0.0745	1.06	03/01/2020 22:39	WG1436256
Xylenes, Total	U		0.143	0.193	1.06	03/01/2020 22:39	WG1436256
(S) Toluene-d8	*101*			*75.0-131*		*03/01/2020 22:39*	WG1436256
(S) 4-Bromofluorobenzene	*105*			*67.0-138*		*03/01/2020 22:39*	WG1436256
(S) 1,2-Dichloroethane-d4	*93.8*			*70.0-130*		*03/01/2020 22:39*	WG1436256

Polychlorinated Biphenyls (GC) by Method 8082 A

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
PCB 1016	U		0.0133	0.0382	1	04/03/2020 11:42	WG1454981
PCB 1221	U		0.0133	0.0382	1	04/03/2020 11:42	WG1454981
PCB 1232	U		0.0133	0.0382	1	04/03/2020 11:42	WG1454981
PCB 1242	U		0.0133	0.0382	1	04/03/2020 11:42	WG1454981
PCB 1248	U		0.00829	0.0191	1	04/03/2020 11:42	WG1454981
PCB 1254	U		0.00829	0.0191	1	04/03/2020 11:42	WG1454981
PCB 1260	0.768		0.00829	0.0191	1	04/03/2020 11:42	WG1454981
(S) Decachlorobiphenyl	*114*			*10.0-135*		*04/03/2020 11:42*	WG1454981
(S) Tetrachloro-m-xylene	*105*			*10.0-139*		*04/03/2020 11:42*	WG1454981

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.0721	0.374	10	03/03/2020 16:59	WG1436421
Acenaphthylene	0.180	E4	0.0754	0.374	10	03/03/2020 16:59	WG1436421
Anthracene	0.115	E4	0.0710	0.374	10	03/03/2020 16:59	WG1436421
Benzidine	U		0.716	3.74	10	03/03/2020 16:59	WG1436421
Benzo(a)anthracene	0.672		0.0481	0.374	10	03/03/2020 16:59	WG1436421
Benzo(b)fluoranthene	1.00		0.0781	0.374	10	03/03/2020 16:59	WG1436421
Benzo(k)fluoranthene	0.374		0.0654	0.374	10	03/03/2020 16:59	WG1436421
Benzo(g,h,i)perylene	1.28		0.0810	0.374	10	03/03/2020 16:59	WG1436421
Benzo(a)pyrene	0.985		0.0616	0.374	10	03/03/2020 16:59	WG1436421
Bis(2-chlorethoxy)methane	U		0.0865	3.74	10	03/03/2020 16:59	WG1436421
Bis(2-chloroethyl)ether	U		0.101	3.74	10	03/03/2020 16:59	WG1436421
2,2-Oxybis(1-Chloropropane)	U		0.0854	3.74	10	03/03/2020 16:59	WG1436421
4-Bromophenyl-phenylether	U		0.128	3.74	10	03/03/2020 16:59	WG1436421
2-Chloronaphthalene	U		0.0718	0.374	10	03/03/2020 16:59	WG1436421
4-Chlorophenyl-phenylether	U		0.0704	3.74	10	03/03/2020 16:59	WG1436421
Chrysene	0.681		0.0623	0.374	10	03/03/2020 16:59	WG1436421
Dibenz(a,h)anthracene	U		0.0922	0.374	10	03/03/2020 16:59	WG1436421
3,3-Dichlorobenzidine	U		0.892	3.74	10	03/03/2020 16:59	WG1436421
2,4-Dinitrotoluene	U		0.0682	3.74	10	03/03/2020 16:59	WG1436421
2,6-Dinitrotoluene	U		0.0828	3.74	10	03/03/2020 16:59	WG1436421
Fluoranthene	1.47		0.0557	0.374	10	03/03/2020 16:59	WG1436421
Fluorene	U		0.0766	0.374	10	03/03/2020 16:59	WG1436421
Hexachlorobenzene	U		0.0962	3.74	10	03/03/2020 16:59	WG1436421
Hexachloro-1,3-butadiene	U		0.112	3.74	10	03/03/2020 16:59	WG1436421
Hexachlorocyclopentadiene	U		0.659	3.74	10	03/03/2020 16:59	WG1436421
Hexachloroethane	U		0.151	3.74	10	03/03/2020 16:59	WG1436421
Indeno(1,2,3-cd)pyrene	1.04		0.0867	0.374	10	03/03/2020 16:59	WG1436421
Isophorone	U		0.0586	3.74	10	03/03/2020 16:59	WG1436421
Naphthalene	U		0.0999	0.374	10	03/03/2020 16:59	WG1436421
Nitrobenzene	U		0.0781	3.74	10	03/03/2020 16:59	WG1436421
n-Nitrosodimethylamine	U		0.727	3.74	10	03/03/2020 16:59	WG1436421
n-Nitrosodiphenylamine	U		1.01	3.74	10	03/03/2020 16:59	WG1436421
n-Nitrosodi-n-propylamine	U		0.102	3.74	10	03/03/2020 16:59	WG1436421
Phenanthrene	0.707		0.0593	0.374	10	03/03/2020 16:59	WG1436421
Benzylbutyl phthalate	U		0.116	3.74	10	03/03/2020 16:59	WG1436421
Bis(2-ethylhexyl)phthalate	U		0.135	3.74	10	03/03/2020 16:59	WG1436421
Di-n-butyl phthalate	U		0.122	3.74	10	03/03/2020 16:59	WG1436421
Diethyl phthalate	U		0.0776	3.74	10	03/03/2020 16:59	WG1436421
Dimethyl phthalate	U		0.0607	3.74	10	03/03/2020 16:59	WG1436421
Di-n-octyl phthalate	U		0.102	3.74	10	03/03/2020 16:59	WG1436421
Pyrene	1.86		0.138	0.374	10	03/03/2020 16:59	WG1436421
1,2,4-Trichlorobenzene	U		0.0984	3.74	10	03/03/2020 16:59	WG1436421
Aniline	U		0.359	3.74	10	03/03/2020 16:59	WG1436421
1,2-Diphenylhydrazine	U		0.0593	3.74	10	03/03/2020 16:59	WG1436421
Benzyl alcohol	U		0.0843	3.74	10	03/03/2020 16:59	WG1436421
4-Chloroaniline	U		0.395	3.74	10	03/03/2020 16:59	WG1436421
4-Chloro-3-methylphenol	U		0.0536	3.74	10	03/03/2020 16:59	WG1436421
2-Chlorophenol	U		0.0934	3.74	10	03/03/2020 16:59	WG1436421
Dibenzofuran	U		0.0582	3.74	10	03/03/2020 16:59	WG1436421
2,4-Dichlorophenol	U		0.0838	3.74	10	03/03/2020 16:59	WG1436421
2,4-Dimethylphenol	U		0.529	3.74	10	03/03/2020 16:59	WG1436421
4,6-Dinitro-2-methylphenol	U		1.39	3.74	10	03/03/2020 16:59	WG1436421
2,4-Dinitrophenol	U		1.10	3.74	10	03/03/2020 16:59	WG1436421
2-Methylnaphthalene	U		0.0967	0.374	10	03/03/2020 16:59	WG1436421
2-Methylphenol	U		0.111	3.74	10	03/03/2020 16:59	WG1436421
3&4-Methyl Phenol	U		0.0880	3.74	10	03/03/2020 16:59	WG1436421

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
2-Nitroaniline	U		0.0848	3.74	10	03/03/2020 16:59	WG1436421
3-Nitroaniline	U		0.0955	3.74	10	03/03/2020 16:59	WG1436421
4-Nitroaniline	U		0.0718	3.74	10	03/03/2020 16:59	WG1436421
2-Nitrophenol	U		0.146	3.74	10	03/03/2020 16:59	WG1436421
4-Nitrophenol	U		0.590	3.74	10	03/03/2020 16:59	WG1436421
Pentachlorophenol	U		0.539	3.74	10	03/03/2020 16:59	WG1436421
Phenol	U		0.0781	3.74	10	03/03/2020 16:59	WG1436421
Pyridine	U		0.705	3.74	10	03/03/2020 16:59	WG1436421
2,4,6-Trichlorophenol	U		0.0875	3.74	10	03/03/2020 16:59	WG1436421
Acetophenone	U		0.845	3.74	10	03/03/2020 16:59	WG1436421
2-Acetylaminofluorene	U		0.613	3.74	10	03/04/2020 14:12	WG1436421
4-Aminobiphenyl	U		0.549	3.74	10	03/04/2020 14:12	WG1436421
Chlorobenzilate	U		0.640	3.74	10	03/04/2020 14:12	WG1436421
Diallate	U	L2	0.666	3.74	10	03/04/2020 14:12	WG1436421
2,6-Dichlorophenol	U		0.519	3.74	10	03/04/2020 14:12	WG1436421
Dimethoate	U		1.02	3.74	10	03/04/2020 14:12	WG1436421
P-(Dimethylamino) Azobenzene	U		0.714	3.74	10	03/04/2020 14:12	WG1436421
Dimethylbenz (A) Anthracene	U		0.594	3.74	10	03/04/2020 14:12	WG1436421
3,3-Dimethylbenzidine	U	L2	0.813	3.74	10	03/04/2020 14:12	WG1436421
a,a-Dimethylphenethylamine	U	L2	5.31	18.6	10	03/04/2020 14:12	WG1436421
1,3-Dinitrobenzene	U		0.693	3.74	10	03/04/2020 14:12	WG1436421
Diphenylamine	U		1.01	3.74	10	03/03/2020 16:59	WG1436421
Dinoseb	U		1.09	3.74	10	03/04/2020 14:12	WG1436421
Disulfoton	U		0.740	3.74	10	03/04/2020 14:12	WG1436421
Ethyl methanesulfonate	U		0.850	3.74	10	03/04/2020 14:12	WG1436421
Ethyl Parathion	U		0.889	3.74	10	03/04/2020 14:12	WG1436421
Famphur	U		0.529	3.74	10	03/04/2020 14:12	WG1436421
Hexachloropropene	U		1.24	3.74	10	03/04/2020 14:12	WG1436421
Hexachlorophene	U		1.24	3.74	10	03/04/2020 14:12	WG1436421
Isodrin	U		0.743	3.74	10	03/04/2020 14:12	WG1436421
Isosafrole	U		0.411	3.74	10	03/04/2020 14:12	WG1436421
Kepone	U		0.552	3.74	10	03/04/2020 14:12	WG1436421
Methapyrilene	U	L2	3.74	18.6	10	03/04/2020 14:12	WG1436421
3-Methylcholanthrene	U		0.670	3.74	10	03/04/2020 14:12	WG1436421
Methyl methanesulfonate	U		0.746	3.74	10	03/04/2020 14:12	WG1436421
Methyl parathion	U		0.725	3.74	10	03/04/2020 14:12	WG1436421
1,4-Naphthoquinone	U	L2	0.471	3.74	10	03/04/2020 14:12	WG1436421
1-Naphthylamine	U		0.901	3.74	10	03/04/2020 14:12	WG1436421
2-Naphthylamine	U		0.734	3.74	10	03/04/2020 14:12	WG1436421
5-Nitro-o-toluidine	U		0.755	3.74	10	03/04/2020 14:12	WG1436421
4-Nitroquinoline 1-oxide	U		0.726	3.74	10	03/04/2020 14:12	WG1436421
n-Nitrosodiethylamine	U		2.12	3.74	10	03/04/2020 14:12	WG1436421
n-Nitrosodi-n-butylamine	U		1.24	3.74	10	03/04/2020 14:12	WG1436421
n-Nitrosomethylethylamine	U		1.25	3.74	10	03/04/2020 14:12	WG1436421
n-Nitrosomorpholine	U		1.69	3.74	10	03/04/2020 14:12	WG1436421
n-Nitrosopiperidine	U		0.674	3.74	10	03/04/2020 14:12	WG1436421
n-Nitrosopyrrolidine	U		2.26	3.74	10	03/04/2020 14:12	WG1436421
Pentachlorobenzene	U		0.543	3.74	10	03/04/2020 14:12	WG1436421
Pentachloroethane	U		0.794	3.74	10	03/04/2020 14:12	WG1436421
Pentachloronitrobenzene	U		0.830	3.74	10	03/04/2020 14:12	WG1436421
Phenacetin	U		0.861	3.74	10	03/04/2020 14:12	WG1436421
p-Phenylenediamine	U	L2	1.64	3.74	10	03/04/2020 14:12	WG1436421
Phorate	U		1.25	3.74	10	03/04/2020 14:12	WG1436421
2-Picoline	U		1.24	3.74	10	03/04/2020 14:12	WG1436421
Pronamide	U		0.854	3.74	10	03/04/2020 14:12	WG1436421
Safrole	U		0.711	3.74	10	03/04/2020 14:12	WG1436421

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Sulfotep	U		0.850	3.74	10	03/04/2020 14:12	WG1436421
1,2,4,5-Tetrachlorobenzene	U		0.856	3.74	10	03/03/2020 16:59	WG1436421
2,3,4,6-Tetrachlorophenol	U		1.36	3.74	10	03/03/2020 16:59	WG1436421
Thionazin	U		0.640	3.74	10	03/04/2020 14:12	WG1436421
o-Toluidine	U		1.25	3.74	10	03/04/2020 14:12	WG1436421
2,4,5-Trichlorophenol	U		0.117	3.74	10	03/03/2020 16:59	WG1436421
O,O,O-Triethyl phosphorothioate	U		0.896	3.74	10	03/04/2020 14:12	WG1436421
1,3,5-Trinitrobenzene	U		0.640	3.74	10	03/04/2020 14:12	WG1436421
(S) 2-Fluorophenol	*101*			*12.0-120*		*03/03/2020 16:59*	WG1436421
(S) Phenol-d5	*80.9*			*10.0-120*		*03/03/2020 16:59*	WG1436421
(S) Nitrobenzene-d5	*77.5*			*10.0-122*		*03/03/2020 16:59*	WG1436421
(S) 2-Fluorobiphenyl	*97.0*			*15.0-120*		*03/03/2020 16:59*	WG1436421
(S) 2,4,6-Tribromophenol	*125*			*10.0-127*		*03/03/2020 16:59*	WG1436421
(S) p-Terphenyl-d14	*103*			*10.0-120*		*03/03/2020 16:59*	WG1436421

Sample Narrative:

L1194025-02 WG1436421: Dilution due to matrix impact during extract concentration procedure

Total Solids by Method 2540 G-2011

Analyte	Result %	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	91.1		1	02/29/2020 17:44	WG1436007

Mercury by Method 7471B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0876		0.00307	0.0329	1	03/02/2020 22:53	WG1436283

Metals (ICP) by Method 6010D

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Arsenic	10.5		0.505	2.20	1	03/01/2020 11:51	WG1436051
Barium	146		0.187	0.549	1	03/01/2020 11:51	WG1436051
Cadmium	0.935		0.0769	0.549	1	03/01/2020 11:51	WG1436051
Chromium	34.9		0.154	1.10	1	03/01/2020 11:51	WG1436051
Lead	83.8		0.209	0.549	1	03/01/2020 11:51	WG1436051
Selenium	U		0.681	2.20	1	03/01/2020 11:51	WG1436051
Silver	U		0.132	1.10	1	03/01/2020 11:51	WG1436051

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Acetone	U		0.377	0.686	1	03/01/2020 22:59	WG1436256
Acrylonitrile	U		0.0522	0.344	1	03/01/2020 22:59	WG1436256
Benzene	U		0.0110	0.0275	1	03/01/2020 22:59	WG1436256
Bromobenzene	U		0.0289	0.344	1	03/01/2020 22:59	WG1436256
Bromodichloromethane	U		0.0216	0.0686	1	03/01/2020 22:59	WG1436256
Bromoform	U		0.164	0.686	1	03/01/2020 22:59	WG1436256
Bromomethane	U		0.102	0.344	1	03/01/2020 22:59	WG1436256
1,3-Butadiene	U		0.232	0.686	1	03/01/2020 22:59	WG1436256
n-Butylbenzene	U		0.105	0.344	1	03/01/2020 22:59	WG1436256
sec-Butylbenzene	U		0.0695	0.344	1	03/01/2020 22:59	WG1436256
tert-Butylbenzene	U		0.0426	0.137	1	03/01/2020 22:59	WG1436256
Carbon disulfide	U		0.112	0.344	1	03/01/2020 22:59	WG1436256
Carbon tetrachloride	U		0.0296	0.137	1	03/01/2020 22:59	WG1436256
Chlorobenzene	U		0.0157	0.0686	1	03/01/2020 22:59	WG1436256
Chlorodibromomethane	U		0.0124	0.0686	1	03/01/2020 22:59	WG1436256
Chloroethane	U		0.0296	0.137	1	03/01/2020 22:59	WG1436256
Chloroform	0.0240	E4	0.0114	0.0686	1	03/01/2020 22:59	WG1436256
Chloromethane	U		0.0382	0.344	1	03/01/2020 22:59	WG1436256
2-Chlorotoluene	U		0.0253	0.0686	1	03/01/2020 22:59	WG1436256
4-Chlorotoluene	U		0.0311	0.137	1	03/01/2020 22:59	WG1436256
Cyclohexane	U		0.0139	0.0686	1	03/01/2020 22:59	WG1436256
1,2-Dibromo-3-Chloropropane	U		0.141	0.686	1	03/01/2020 22:59	WG1436256
1,2-Dibromoethane	U		0.0144	0.0686	1	03/01/2020 22:59	WG1436256
Dibromomethane	U		0.0275	0.137	1	03/01/2020 22:59	WG1436256
1,2-Dichlorobenzene	U		0.0399	0.137	1	03/01/2020 22:59	WG1436256
1,3-Dichlorobenzene	U		0.0467	0.137	1	03/01/2020 22:59	WG1436256
1,4-Dichlorobenzene	U		0.0541	0.137	1	03/01/2020 22:59	WG1436256
Dichlorodifluoromethane	U		0.0225	0.0686	1	03/01/2020 22:59	WG1436256
1,1-Dichloroethane	U		0.0158	0.0686	1	03/01/2020 22:59	WG1436256
1,2-Dichloroethane	U		0.0131	0.0686	1	03/01/2020 22:59	WG1436256
1,1-Dichloroethene	U		0.0137	0.0686	1	03/01/2020 22:59	WG1436256
cis-1,2-Dichloroethene	U		0.0190	0.0686	1	03/01/2020 22:59	WG1436256
trans-1,2-Dichloroethene	U		0.0392	0.137	1	03/01/2020 22:59	WG1436256

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
1,2-Dichloropropane	U		0.0349	0.137	1	03/01/2020 22:59	WG1436256
1,1-Dichloropropene	U		0.0192	0.0686	1	03/01/2020 22:59	WG1436256
1,3-Dichloropropane	U		0.0481	0.137	1	03/01/2020 22:59	WG1436256
cis-1,3-Dichloropropene	U		0.0186	0.0686	1	03/01/2020 22:59	WG1436256
trans-1,3-Dichloropropene	U		0.0421	0.137	1	03/01/2020 22:59	WG1436256
2,2-Dichloropropane	U		0.0217	0.0686	1	03/01/2020 22:59	WG1436256
Dicyclopentadiene	U		0.0999	0.344	1	03/01/2020 22:59	WG1436256
Di-isopropyl ether	U		0.00961	0.0275	1	03/01/2020 22:59	WG1436256
Ethylbenzene	U		0.0146	0.0686	1	03/01/2020 22:59	WG1436256
4-Ethyltoluene	U		0.0294	0.137	1	03/01/2020 22:59	WG1436256
Hexachloro-1,3-butadiene	U		0.349	0.686	1	03/01/2020 22:59	WG1436256
n-Hexane	U		0.0291	0.137	1	03/01/2020 22:59	WG1436256
Isopropylbenzene	U		0.0237	0.0686	1	03/01/2020 22:59	WG1436256
p-Isopropyltoluene	U		0.0640	0.137	1	03/01/2020 22:59	WG1436256
2-Butanone (MEK)	U		0.344	0.686	1	03/01/2020 22:59	WG1436256
Methylene Chloride	U		0.182	0.686	1	03/01/2020 22:59	WG1436256
4-Methyl-2-pentanone (MIBK)	U		0.275	0.686	1	03/01/2020 22:59	WG1436256
Methyl tert-butyl ether	U		0.00809	0.0275	1	03/01/2020 22:59	WG1436256
Methyl Cyclohexane	U		0.0283	0.137	1	03/01/2020 22:59	WG1436256
Naphthalene	U	L2 R7	0.0856	0.344	1	03/01/2020 22:59	WG1436256
Propene	U		0.574	1.37	1	03/01/2020 22:59	WG1436256
n-Propylbenzene	U		0.0324	0.137	1	03/01/2020 22:59	WG1436256
Styrene	U		0.0750	0.344	1	03/01/2020 22:59	WG1436256
1,1,1,2-Tetrachloroethane	U		0.0137	0.0686	1	03/01/2020 22:59	WG1436256
1,1,2,2-Tetrachloroethane	U		0.0107	0.0686	1	03/01/2020 22:59	WG1436256
1,1,2-Trichlorotrifluoroethane	U		0.0186	0.0686	1	03/01/2020 22:59	WG1436256
Tetrachloroethene	U		0.0192	0.0686	1	03/01/2020 22:59	WG1436256
Toluene	U		0.0344	0.137	1	03/01/2020 22:59	WG1436256
1,2,3-Trichlorobenzene	U	R7	0.0171	0.344	1	03/01/2020 22:59	WG1436256
1,2,4-Trichlorobenzene	U		0.133	0.344	1	03/01/2020 22:59	WG1436256
1,1,1-Trichloroethane	U		0.00755	0.0686	1	03/01/2020 22:59	WG1436256
1,1,2-Trichloroethane	U		0.0243	0.0686	1	03/01/2020 22:59	WG1436256
Trichloroethene	U		0.0110	0.0275	1	03/01/2020 22:59	WG1436256
Trichlorofluoromethane	U		0.0137	0.0686	1	03/01/2020 22:59	WG1436256
1,2,3-Trichloropropane	U		0.141	0.344	1	03/01/2020 22:59	WG1436256
1,2,4-Trimethylbenzene	U		0.0318	0.137	1	03/01/2020 22:59	WG1436256
1,2,3-Trimethylbenzene	U		0.0316	0.137	1	03/01/2020 22:59	WG1436256
1,3,5-Trimethylbenzene	U		0.0296	0.137	1	03/01/2020 22:59	WG1436256
Vinyl chloride	U		0.0188	0.0686	1	03/01/2020 22:59	WG1436256
Xylenes, Total	U		0.131	0.179	1	03/01/2020 22:59	WG1436256
(S) Toluene-d8	*102*			*75.0-131*		*03/01/2020 22:59*	WG1436256
(S) 4-Bromofluorobenzene	*105*			*67.0-138*		*03/01/2020 22:59*	WG1436256
(S) 1,2-Dichloroethane-d4	*92.5*			*70.0-130*		*03/01/2020 22:59*	WG1436256

Polychlorinated Biphenyls (GC) by Method 8082 A

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
PCB 1016	U		0.0130	0.0373	1	04/03/2020 11:54	WG1454981
PCB 1221	U		0.0130	0.0373	1	04/03/2020 11:54	WG1454981
PCB 1232	U		0.0130	0.0373	1	04/03/2020 11:54	WG1454981
PCB 1242	U		0.0130	0.0373	1	04/03/2020 11:54	WG1454981
PCB 1248	U		0.00810	0.0187	1	04/03/2020 11:54	WG1454981
PCB 1254	U		0.00810	0.0187	1	04/03/2020 11:54	WG1454981
PCB 1260	U		0.00810	0.0187	1	04/03/2020 11:54	WG1454981
PCB 1268	0.0912		0.00810	0.0187	1	04/03/2020 17:44	WG1454981
(S) Decachlorobiphenyl	*129*			*10.0-135*		*04/03/2020 11:54*	WG1454981

Polychlorinated Biphenyls (GC) by Method 8082 A

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
(S) Decachlorobiphenyl	*136*	S10		*10.0-135*		*04/03/2020 17:44*	WG1454981
(S) Tetrachloro-m-xylene	*115*			*10.0-139*		*04/03/2020 11:54*	WG1454981
(S) Tetrachloro-m-xylene	*117*			*10.0-139*		*04/03/2020 17:44*	WG1454981

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.0705	0.366	10	03/03/2020 16:39	WG1436421
Acenaphthylene	U		0.0737	0.366	10	03/03/2020 16:39	WG1436421
Anthracene	U		0.0694	0.366	10	03/03/2020 16:39	WG1436421
Benzidine	U		0.699	3.66	10	03/03/2020 16:39	WG1436421
Benzo(a)anthracene	U		0.0470	0.366	10	03/03/2020 16:39	WG1436421
Benzo(b)fluoranthene	U		0.0763	0.366	10	03/03/2020 16:39	WG1436421
Benzo(k)fluoranthene	U		0.0639	0.366	10	03/03/2020 16:39	WG1436421
Benzo(g,h,i)perylene	U		0.0792	0.366	10	03/03/2020 16:39	WG1436421
Benzo(a)pyrene	U		0.0602	0.366	10	03/03/2020 16:39	WG1436421
Bis(2-chlorethoxy)methane	U		0.0845	3.66	10	03/03/2020 16:39	WG1436421
Bis(2-chloroethyl)ether	U		0.0984	3.66	10	03/03/2020 16:39	WG1436421
2,2-Oxybis(1-Chloropropane)	U		0.0834	3.66	10	03/03/2020 16:39	WG1436421
4-Bromophenyl-phenylether	U		0.125	3.66	10	03/03/2020 16:39	WG1436421
2-Chloronaphthalene	U		0.0702	0.366	10	03/03/2020 16:39	WG1436421
4-Chlorophenyl-phenylether	U		0.0688	3.66	10	03/03/2020 16:39	WG1436421
Chrysene	0.0815	E4	0.0609	0.366	10	03/03/2020 16:39	WG1436421
Dibenz(a,h)anthracene	U		0.0901	0.366	10	03/03/2020 16:39	WG1436421
3,3-Dichlorobenzidine	U		0.872	3.66	10	03/03/2020 16:39	WG1436421
2,4-Dinitrotoluene	U		0.0666	3.66	10	03/03/2020 16:39	WG1436421
2,6-Dinitrotoluene	U		0.0809	3.66	10	03/03/2020 16:39	WG1436421
Fluoranthene	0.152	E4	0.0545	0.366	10	03/03/2020 16:39	WG1436421
Fluorene	U		0.0749	0.366	10	03/03/2020 16:39	WG1436421
Hexachlorobenzene	U		0.0940	3.66	10	03/03/2020 16:39	WG1436421
Hexachloro-1,3-butadiene	U		0.110	3.66	10	03/03/2020 16:39	WG1436421
Hexachlorocyclopentadiene	U		0.645	3.66	10	03/03/2020 16:39	WG1436421
Hexachloroethane	U		0.147	3.66	10	03/03/2020 16:39	WG1436421
Indeno(1,2,3-cd)pyrene	U		0.0848	0.366	10	03/03/2020 16:39	WG1436421
Isophorone	U		0.0573	3.66	10	03/03/2020 16:39	WG1436421
Naphthalene	U		0.0976	0.366	10	03/03/2020 16:39	WG1436421
Nitrobenzene	U		0.0763	3.66	10	03/03/2020 16:39	WG1436421
n-Nitrosodimethylamine	U		0.710	3.66	10	03/03/2020 16:39	WG1436421
n-Nitrosodiphenylamine	U		0.988	3.66	10	03/03/2020 16:39	WG1436421
n-Nitrosodi-n-propylamine	U		0.0995	3.66	10	03/03/2020 16:39	WG1436421
Phenanthrene	0.0704	E4	0.0580	0.366	10	03/03/2020 16:39	WG1436421
Benzylbutyl phthalate	U		0.113	3.66	10	03/03/2020 16:39	WG1436421
Bis(2-ethylhexyl)phthalate	U		0.132	3.66	10	03/03/2020 16:39	WG1436421
Di-n-butyl phthalate	U		0.120	3.66	10	03/03/2020 16:39	WG1436421
Diethyl phthalate	U		0.0759	3.66	10	03/03/2020 16:39	WG1436421
Dimethyl phthalate	0.137	E4	0.0593	3.66	10	03/03/2020 16:39	WG1436421
Di-n-octyl phthalate	U		0.0996	3.66	10	03/03/2020 16:39	WG1436421
Pyrene	0.135	E4	0.135	0.366	10	03/03/2020 16:39	WG1436421
1,2,4-Trichlorobenzene	U		0.0962	3.66	10	03/03/2020 16:39	WG1436421
Aniline	U		0.351	3.66	10	03/03/2020 16:39	WG1436421
1,2-Diphenylhydrazine	U		0.0580	3.66	10	03/03/2020 16:39	WG1436421
Benzyl alcohol	U		0.0824	3.66	10	03/03/2020 16:39	WG1436421
4-Chloroaniline	U		0.387	3.66	10	03/03/2020 16:39	WG1436421
4-Chloro-3-methylphenol	U		0.0524	3.66	10	03/03/2020 16:39	WG1436421
2-Chlorophenol	U		0.0912	3.66	10	03/03/2020 16:39	WG1436421
Dibenzofuran	U		0.0569	3.66	10	03/03/2020 16:39	WG1436421

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
2,4-Dichlorophenol	U		0.0819	3.66	10	03/03/2020 16:39	WG1436421
2,4-Dimethylphenol	U		0.517	3.66	10	03/03/2020 16:39	WG1436421
4,6-Dinitro-2-methylphenol	U		1.36	3.66	10	03/03/2020 16:39	WG1436421
2,4-Dinitrophenol	U		1.08	3.66	10	03/03/2020 16:39	WG1436421
2-Methylnaphthalene	U		0.0945	0.366	10	03/03/2020 16:39	WG1436421
2-Methylphenol	U		0.108	3.66	10	03/03/2020 16:39	WG1436421
3&4-Methyl Phenol	U		0.0860	3.66	10	03/03/2020 16:39	WG1436421
2-Nitroaniline	U		0.0829	3.66	10	03/03/2020 16:39	WG1436421
3-Nitroaniline	U		0.0933	3.66	10	03/03/2020 16:39	WG1436421
4-Nitroaniline	U		0.0702	3.66	10	03/03/2020 16:39	WG1436421
2-Nitrophenol	U		0.143	3.66	10	03/03/2020 16:39	WG1436421
4-Nitrophenol	U		0.576	3.66	10	03/03/2020 16:39	WG1436421
Pentachlorophenol	U		0.527	3.66	10	03/03/2020 16:39	WG1436421
Phenol	U		0.0763	3.66	10	03/03/2020 16:39	WG1436421
Pyridine	U		0.690	3.66	10	03/03/2020 16:39	WG1436421
2,4,6-Trichlorophenol	U		0.0855	3.66	10	03/03/2020 16:39	WG1436421
Acetophenone	U		0.826	3.66	10	03/03/2020 16:39	WG1436421
2-Acetylaminofluorene	U		0.600	3.66	10	03/04/2020 13:52	WG1436421
4-Aminobiphenyl	U		0.537	3.66	10	03/04/2020 13:52	WG1436421
Chlorobenzilate	U		0.626	3.66	10	03/04/2020 13:52	WG1436421
Diallate	U	L2	0.651	3.66	10	03/04/2020 13:52	WG1436421
2,6-Dichlorophenol	U		0.507	3.66	10	03/04/2020 13:52	WG1436421
Dimethoate	U		0.994	3.66	10	03/04/2020 13:52	WG1436421
P-(Dimethylamino) Azobenzene	U		0.698	3.66	10	03/04/2020 13:52	WG1436421
Dimethylbenz (A) Anthracene	U		0.581	3.66	10	03/04/2020 13:52	WG1436421
3,3-Dimethylbenzidine	U	L2	0.795	3.66	10	03/04/2020 13:52	WG1436421
a,a-Dimethylphenethylamine	U	L2	5.19	18.2	10	03/04/2020 13:52	WG1436421
1,3-Dinitrobenzene	U		0.677	3.66	10	03/04/2020 13:52	WG1436421
Diphenylamine	U		0.988	3.66	10	03/03/2020 16:39	WG1436421
Dinoseb	U		1.07	3.66	10	03/04/2020 13:52	WG1436421
Disulfoton	U		0.724	3.66	10	03/04/2020 13:52	WG1436421
Ethyl methanesulfonate	U		0.831	3.66	10	03/04/2020 13:52	WG1436421
Ethyl Parathion	U		0.869	3.66	10	03/04/2020 13:52	WG1436421
Famphur	U		0.517	3.66	10	03/04/2020 13:52	WG1436421
Hexachloropropene	U		1.21	3.66	10	03/04/2020 13:52	WG1436421
Hexachlorophene	U		1.21	3.66	10	03/04/2020 13:52	WG1436421
Isodrin	U		0.726	3.66	10	03/04/2020 13:52	WG1436421
Isosafrole	U		0.402	3.66	10	03/04/2020 13:52	WG1436421
Kepone	U		0.539	3.66	10	03/04/2020 13:52	WG1436421
Methapyrilene	U	L2	3.66	18.2	10	03/04/2020 13:52	WG1436421
3-Methylcholanthrene	U		0.654	3.66	10	03/04/2020 13:52	WG1436421
Methyl methanesulfonate	U		0.729	3.66	10	03/04/2020 13:52	WG1436421
Methyl parathion	U		0.708	3.66	10	03/04/2020 13:52	WG1436421
1,4-Naphthoquinone	U	L2	0.460	3.66	10	03/04/2020 13:52	WG1436421
1-Naphthylamine	U		0.881	3.66	10	03/04/2020 13:52	WG1436421
2-Naphthylamine	U		0.717	3.66	10	03/04/2020 13:52	WG1436421
5-Nitro-o-toluidine	U		0.738	3.66	10	03/04/2020 13:52	WG1436421
4-Nitroquinoline 1-oxide	U		0.709	3.66	10	03/04/2020 13:52	WG1436421
n-Nitrosodiethylamine	U		2.08	3.66	10	03/04/2020 13:52	WG1436421
n-Nitrosodi-n-butylamine	U		1.21	3.66	10	03/04/2020 13:52	WG1436421
n-Nitrosomethylethylamine	U		1.22	3.66	10	03/04/2020 13:52	WG1436421
n-Nitrosomorpholine	U		1.65	3.66	10	03/04/2020 13:52	WG1436421
n-Nitrosopiperidine	U		0.659	3.66	10	03/04/2020 13:52	WG1436421
n-Nitrosopyrrolidine	U		2.21	3.66	10	03/04/2020 13:52	WG1436421
Pentachlorobenzene	U		0.530	3.66	10	03/04/2020 13:52	WG1436421
Pentachloroethane	U		0.776	3.66	10	03/04/2020 13:52	WG1436421

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Pentachloronitrobenzene	U		0.811	3.66	10	03/04/2020 13:52	WG1436421
Phenacetin	U		0.841	3.66	10	03/04/2020 13:52	WG1436421
p-Phenylenediamine	U	L2	1.60	3.66	10	03/04/2020 13:52	WG1436421
Phorate	U		1.22	3.66	10	03/04/2020 13:52	WG1436421
2-Picoline	U		1.21	3.66	10	03/04/2020 13:52	WG1436421
Pronamide	U		0.834	3.66	10	03/04/2020 13:52	WG1436421
Safrole	U		0.695	3.66	10	03/04/2020 13:52	WG1436421
Sulfotep	U		0.831	3.66	10	03/04/2020 13:52	WG1436421
1,2,4,5-Tetrachlorobenzene	U		0.837	3.66	10	03/03/2020 16:39	WG1436421
2,3,4,6-Tetrachlorophenol	U		1.33	3.66	10	03/03/2020 16:39	WG1436421
Thionazin	U		0.626	3.66	10	03/04/2020 13:52	WG1436421
o-Toluidine	U		1.22	3.66	10	03/04/2020 13:52	WG1436421
2,4,5-Trichlorophenol	U		0.114	3.66	10	03/03/2020 16:39	WG1436421
O,O,O-Triethyl phosphorothioate	U		0.876	3.66	10	03/04/2020 13:52	WG1436421
1,3,5-Trinitrobenzene	U		0.626	3.66	10	03/04/2020 13:52	WG1436421
(S) 2-Fluorophenol	*91.6*			*12.0-120*		*03/03/2020 16:39*	WG1436421
(S) Phenol-d5	*78.3*			*10.0-120*		*03/03/2020 16:39*	WG1436421
(S) Nitrobenzene-d5	*77.1*			*10.0-122*		*03/03/2020 16:39*	WG1436421
(S) 2-Fluorobiphenyl	*92.4*			*15.0-120*		*03/03/2020 16:39*	WG1436421
(S) 2,4,6-Tribromophenol	*108*			*10.0-127*		*03/03/2020 16:39*	WG1436421
(S) p-Terphenyl-d14	*89.9*			*10.0-120*		*03/03/2020 16:39*	WG1436421

Sample Narrative:

L1194025-03 WG1436421: Dilution due to matrix impact during extract concentration procedure

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		4/2/2020 1:37:40 PM	WG1454593
Fluid	1		4/2/2020 1:37:40 PM	WG1454593
Initial pH	9.01		4/2/2020 1:37:40 PM	WG1454593
Final pH	5.25		4/2/2020 1:37:40 PM	WG1454593

Metals (ICP) by Method 6010D

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
Lead	ND		0.100	5	1	04/03/2020 10:53	WG1454505

Method Blank (MB)

(MB) R3504390-1 02/29/20 17:44

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.00200			

L1194025-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1194025-01 02/29/20 17:44 • (DUP) R3504390-3 02/29/20 17:44

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	89.3	89.7	1	0.388		10

Laboratory Control Sample (LCS)

(LCS) R3504390-2 02/29/20 17:44

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85.0-115	

Method Blank (MB)

(MB) R3504715-1 03/02/20 22:30

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Mercury	U		0.00280	0.0300

Laboratory Control Sample (LCS)

(LCS) R3504715-2 03/02/20 22:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.500	0.469	93.8	80.0-120	

L1194059-21 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1194059-21 03/02/20 22:35 • (MS) R3504715-3 03/02/20 22:43 • (MSD) R3504715-4 03/02/20 22:45

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.500	0.0124	0.479	0.464	93.3	90.4	1	75.0-125			3.04	20

Method Blank (MB)

(MB) R3504423-3 03/01/20 15:33

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acetone	U		0.343	0.625
Acrylonitrile	U		0.0475	0.313
Benzene	U		0.0100	0.0250
Bromobenzene	U		0.0263	0.313
Bromodichloromethane	U		0.0197	0.0625
Bromoform	U		0.150	0.625
Bromomethane	U		0.0925	0.313
1,3-Butadiene	U		0.211	0.625
n-Butylbenzene	U		0.0960	0.313
sec-Butylbenzene	U		0.0633	0.313
tert-Butylbenzene	U		0.0388	0.125
Carbon disulfide	U		0.102	0.313
Carbon tetrachloride	U		0.0270	0.125
Chlorobenzene	U		0.0143	0.0625
Chlorodibromomethane	U		0.0113	0.0625
Chloroethane	U		0.0270	0.125
Chloroform	U		0.0104	0.0625
Chloromethane	U		0.0348	0.313
Cyclohexane	U		0.0127	0.0625
2-Chlorotoluene	U		0.0230	0.0625
4-Chlorotoluene	U		0.0283	0.125
1,2-Dibromo-3-Chloropropane	U		0.128	0.625
1,2-Dibromoethane	U		0.0131	0.0625
Dibromomethane	U		0.0250	0.125
1,2-Dichlorobenzene	U		0.0363	0.125
1,3-Dichlorobenzene	U		0.0425	0.125
1,4-Dichlorobenzene	U		0.0493	0.125
Dichlorodifluoromethane	U		0.0205	0.0625
1,1-Dichloroethane	U		0.0144	0.0625
1,2-Dichloroethane	U		0.0119	0.0625
1,1-Dichloroethene	U		0.0125	0.0625
cis-1,2-Dichloroethene	U		0.0173	0.0625
trans-1,2-Dichloroethene	U		0.0358	0.125
1,2-Dichloropropane	U		0.0318	0.125
1,1-Dichloropropene	U		0.0175	0.0625
1,3-Dichloropropane	U		0.0438	0.125
cis-1,3-Dichloropropene	U		0.0170	0.0625
trans-1,3-Dichloropropene	U		0.0383	0.125
2,2-Dichloropropane	U		0.0198	0.0625
Dicyclopentadiene	U		0.0910	0.313

Method Blank (MB)

(MB) R3504423-3 03/01/20 15:33

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Di-isopropyl ether	U		0.00875	0.0250
Ethylbenzene	U		0.0133	0.0625
4-Ethyltoluene	U		0.0268	0.125
Hexachloro-1,3-butadiene	U		0.318	0.625
n-Hexane	U		0.0265	0.125
Isopropylbenzene	U		0.0216	0.0625
p-Isopropyltoluene	U		0.0583	0.125
2-Butanone (MEK)	U		0.313	0.625
Methyl Cyclohexane	U		0.0258	0.125
Methylene Chloride	U		0.166	0.625
4-Methyl-2-pentanone (MIBK)	U		0.250	0.625
Methyl tert-butyl ether	U		0.00738	0.0250
Naphthalene	U		0.0780	0.313
Propene	U		0.523	1.25
n-Propylbenzene	U		0.0295	0.125
Styrene	U		0.0683	0.313
1,1,1,2-Tetrachloroethane	U		0.0125	0.0625
1,1,2,2-Tetrachloroethane	U		0.00975	0.0625
Tetrachloroethene	U		0.0175	0.0625
Toluene	U		0.0313	0.125
1,1,2-Trichlorotrifluoroethane	U		0.0169	0.0625
1,2,3-Trichlorobenzene	U		0.0156	0.313
1,2,4-Trichlorobenzene	U		0.121	0.313
1,1,1-Trichloroethane	U		0.00688	0.0625
1,1,2-Trichloroethane	U		0.0221	0.0625
Trichloroethene	U		0.0100	0.0250
Trichlorofluoromethane	U		0.0125	0.0625
1,2,3-Trichloropropane	U		0.128	0.313
1,2,3-Trimethylbenzene	U		0.0288	0.125
1,2,4-Trimethylbenzene	U		0.0290	0.125
1,3,5-Trimethylbenzene	U		0.0270	0.125
Vinyl chloride	U		0.0171	0.0625
Xylenes, Total	U		0.120	0.163
(S) Toluene-d8	*102*			*75.0-131*
(S) 4-Bromofluorobenzene	*104*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*95.2*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3504423-1 03/01/20 14:12 • (LCSD) R3504423-2 03/01/20 14:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.625	0.722	0.813	116	130	10.0-160			11.9	31
Acrylonitrile	0.625	0.598	0.617	95.7	98.7	45.0-153			3.13	22
Benzene	0.125	0.128	0.129	102	103	70.0-123			0.778	20
Bromobenzene	0.125	0.117	0.121	93.6	96.8	73.0-121			3.36	20
Bromodichloromethane	0.125	0.106	0.110	84.8	88.0	73.0-121			3.70	20
Bromoform	0.125	0.108	0.112	86.4	89.6	64.0-132			3.64	20
Bromomethane	0.125	0.105	0.106	84.0	84.8	56.0-147			0.948	20
1,3-Butadiene	0.125	0.0803	0.0814	64.2	65.1	32.0-150			1.36	20
n-Butylbenzene	0.125	0.113	0.119	90.4	95.2	68.0-135			5.17	20
sec-Butylbenzene	0.125	0.116	0.124	92.8	99.2	74.0-130			6.67	20
tert-Butylbenzene	0.125	0.117	0.123	93.6	98.4	75.0-127			5.00	20
Carbon disulfide	0.125	0.123	0.124	98.4	99.2	56.0-133			0.810	20
Carbon tetrachloride	0.125	0.116	0.121	92.8	96.8	66.0-128			4.22	20
Chlorobenzene	0.125	0.116	0.120	92.8	96.0	76.0-128			3.39	20
Chlorodibromomethane	0.125	0.108	0.114	86.4	91.2	74.0-127			5.41	20
Chloroethane	0.125	0.123	0.124	98.4	99.2	61.0-134			0.810	20
Chloroform	0.125	0.122	0.125	97.6	100	72.0-123			2.43	20
Chloromethane	0.125	0.134	0.138	107	110	51.0-138			2.94	20
Cyclohexane	0.125	0.116	0.118	92.8	94.4	70.0-130			1.71	20
2-Chlorotoluene	0.125	0.119	0.128	95.2	102	75.0-124			7.29	20
4-Chlorotoluene	0.125	0.129	0.131	103	105	75.0-124			1.54	20
1,2-Dibromo-3-Chloropropane	0.125	0.0856	0.0909	68.5	72.7	59.0-130			6.01	20
1,2-Dibromoethane	0.125	0.105	0.110	84.0	88.0	74.0-128			4.65	20
Dibromomethane	0.125	0.106	0.112	84.8	89.6	75.0-122			5.50	20
1,2-Dichlorobenzene	0.125	0.113	0.118	90.4	94.4	76.0-124			4.33	20
1,3-Dichlorobenzene	0.125	0.123	0.127	98.4	102	76.0-125			3.20	20
1,4-Dichlorobenzene	0.125	0.116	0.120	92.8	96.0	77.0-121			3.39	20
Dichlorodifluoromethane	0.125	0.103	0.107	82.4	85.6	43.0-156			3.81	20
1,1-Dichloroethane	0.125	0.115	0.118	92.0	94.4	70.0-127			2.58	20
1,2-Dichloroethane	0.125	0.115	0.116	92.0	92.8	65.0-131			0.866	20
1,1-Dichloroethene	0.125	0.126	0.128	101	102	65.0-131			1.57	20
cis-1,2-Dichloroethene	0.125	0.118	0.120	94.4	96.0	73.0-125			1.68	20
trans-1,2-Dichloroethene	0.125	0.120	0.120	96.0	96.0	71.0-125			0.000	20
1,2-Dichloropropane	0.125	0.122	0.122	97.6	97.6	74.0-125			0.000	20
1,1-Dichloropropene	0.125	0.129	0.128	103	102	73.0-125			0.778	20
1,3-Dichloropropane	0.125	0.121	0.126	96.8	101	80.0-125			4.05	20
cis-1,3-Dichloropropene	0.125	0.135	0.136	108	109	76.0-127			0.738	20
trans-1,3-Dichloropropene	0.125	0.119	0.123	95.2	98.4	73.0-127			3.31	20
2,2-Dichloropropane	0.125	0.109	0.111	87.2	88.8	59.0-135			1.82	20
Dicyclopentadiene	0.125	0.108	0.114	86.4	91.2	71.0-132			5.41	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3504423-1 03/01/20 14:12 • (LCSD) R3504423-2 03/01/20 14:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Di-isopropyl ether	0.125	0.111	0.113	88.8	90.4	60.0-136			1.79	20
Ethylbenzene	0.125	0.113	0.117	90.4	93.6	74.0-126			3.48	20
4-Ethyltoluene	0.125	0.122	0.130	97.6	104	71.0-129			6.35	20
Hexachloro-1,3-butadiene	0.125	0.110	0.126	88.0	101	57.0-150			13.6	20
n-Hexane	0.125	0.127	0.134	102	107	55.0-137			5.36	20
Isopropylbenzene	0.125	0.112	0.116	89.6	92.8	72.0-127			3.51	20
p-Isopropyltoluene	0.125	0.108	0.114	86.4	91.2	72.0-133			5.41	20
2-Butanone (MEK)	0.625	0.597	0.632	95.5	101	30.0-160			5.70	24
Methyl Cyclohexane	0.125	0.118	0.126	94.4	101	67.0-129			6.56	20
Methylene Chloride	0.125	0.123	0.126	98.4	101	68.0-123			2.41	20
4-Methyl-2-pentanone (MIBK)	0.625	0.511	0.532	81.8	85.1	56.0-143			4.03	20
Methyl tert-butyl ether	0.125	0.123	0.126	98.4	101	66.0-132			2.41	20
Naphthalene	0.125	0.0732	0.0919	58.6	73.5	59.0-130	L2	R7	22.7	20
Propene	0.125	0.0721	0.0764	57.7	61.1	10.0-160			5.79	20
n-Propylbenzene	0.125	0.122	0.126	97.6	101	74.0-126			3.23	20
Styrene	0.125	0.101	0.103	80.8	82.4	72.0-127			1.96	20
1,1,1,2-Tetrachloroethane	0.125	0.103	0.108	82.4	86.4	74.0-129			4.74	20
1,1,2,2-Tetrachloroethane	0.125	0.109	0.112	87.2	89.6	68.0-128			2.71	20
Tetrachloroethene	0.125	0.119	0.124	95.2	99.2	70.0-136			4.12	20
Toluene	0.125	0.117	0.120	93.6	96.0	75.0-121			2.53	20
1,1,2-Trichlorotrifluoroethane	0.125	0.131	0.132	105	106	61.0-139			0.760	20
1,2,3-Trichlorobenzene	0.125	0.0794	0.0980	63.5	78.4	59.0-139		R7	21.0	20
1,2,4-Trichlorobenzene	0.125	0.0970	0.112	77.6	89.6	62.0-137			14.4	20
1,1,1-Trichloroethane	0.125	0.117	0.119	93.6	95.2	69.0-126			1.69	20
1,1,2-Trichloroethane	0.125	0.121	0.128	96.8	102	78.0-123			5.62	20
Trichloroethene	0.125	0.119	0.119	95.2	95.2	76.0-126			0.000	20
Trichlorofluoromethane	0.125	0.111	0.111	88.8	88.8	61.0-142			0.000	20
1,2,3-Trichloropropane	0.125	0.110	0.111	88.0	88.8	67.0-129			0.905	20
1,2,3-Trimethylbenzene	0.125	0.113	0.116	90.4	92.8	74.0-124			2.62	20
1,2,4-Trimethylbenzene	0.125	0.114	0.120	91.2	96.0	70.0-126			5.13	20
1,3,5-Trimethylbenzene	0.125	0.121	0.126	96.8	101	73.0-127			4.05	20
Vinyl chloride	0.125	0.100	0.100	80.0	80.0	63.0-134			0.000	20
Xylenes, Total	0.375	0.327	0.344	87.2	91.7	72.0-127			5.07	20
(S) Toluene-d8				*100*	*101*	*75.0-131*				
(S) 4-Bromofluorobenzene				*104*	*104*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*98.9*	*97.6*	*70.0-130*				

Method Blank (MB)

(MB) R3515340-1 04/03/20 11:05

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
PCB 1016	U		0.0118	0.0340
PCB 1221	U		0.0118	0.0340
PCB 1232	U		0.0118	0.0340
PCB 1242	U		0.0118	0.0340
PCB 1248	U		0.00738	0.0170
PCB 1254	U		0.00738	0.0170
PCB 1260	U		0.00738	0.0170
PCB 1268	U		0.00738	0.0170
(S) Decachlorobiphenyl	*62.6*			*10.0-135*
(S) Tetrachloro-m-xylene	*55.1*			*10.0-139*

Laboratory Control Sample (LCS)

(LCS) R3515340-2 04/03/20 11:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
PCB 1260	0.167	0.0990	59.3	37.0-145	
PCB 1016	0.167	0.0978	58.6	36.0-141	
(S) Decachlorobiphenyl			*88.3*	*10.0-135*	
(S) Tetrachloro-m-xylene			*79.1*	*10.0-139*	

L1204804-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1204804-01 04/03/20 12:07 • (MS) R3515340-3 04/03/20 12:19 • (MSD) R3515340-4 04/03/20 12:32

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
PCB 1260	0.167	U	0.152	0.0617	91.0	36.9	1	10.0-160		R5	84.5	38
PCB 1016	0.167	U	0.199	0.102	119	61.1	1	10.0-160		R5	64.5	37
(S) Decachlorobiphenyl					*117*	*38.9*		*10.0-135*				
(S) Tetrachloro-m-xylene					*111*	*35.9*		*10.0-139*				

Method Blank (MB)

(MB) R3504917-2 03/03/20 11:06

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acenaphthene	U		0.00642	0.0333
Acenaphthylene	U		0.00671	0.0333
Acetophenone	U		0.0752	0.333
Aniline	U		0.0320	0.333
Anthracene	U		0.00632	0.0333
Azobenzene	U		0.00528	0.333
Benzidine	U		0.0637	0.333
Benzo(a)anthracene	U		0.00428	0.0333
Benzo(b)fluoranthene	U		0.00695	0.0333
Benzo(k)fluoranthene	U		0.00582	0.0333
Benzo(g,h,i)perylene	U		0.00721	0.0333
Benzo(a)pyrene	U		0.00548	0.0333
Bis(2-chlorethoxy)methane	U		0.00770	0.333
Bis(2-chloroethyl)ether	U		0.00896	0.333
2,2-oxybis(1-chloropropane)	U		0.00760	0.333
4-Bromophenyl-phenylether	U		0.0114	0.333
4-Chloroaniline	U		0.0352	0.333
2-Chloronaphthalene	U		0.00639	0.0333
4-Chlorophenyl-phenylether	U		0.00627	0.333
Chrysene	U		0.00555	0.0333
Dibenz(a,h)anthracene	U		0.00821	0.0333
Dibenzofuran	U		0.00518	0.333
3,3-Dichlorobenzidine	U		0.0794	0.333
2,4-Dinitrotoluene	U		0.00607	0.333
2,6-Dinitrotoluene	U		0.00737	0.333
Fluoranthene	U		0.00496	0.0333
Fluorene	U		0.00682	0.0333
Hexachlorobenzene	U		0.00856	0.333
Hexachloro-1,3-butadiene	U		0.0100	0.333
Hexachlorocyclopentadiene	U		0.0587	0.333
Hexachloroethane	U		0.0134	0.333
Indeno(1,2,3-cd)pyrene	U		0.00772	0.0333
Isophorone	U		0.00522	0.333
2-Methylnaphthalene	U		0.00861	0.0333
Naphthalene	U		0.00889	0.0333
2-Nitroaniline	U		0.00755	0.333
3-Nitroaniline	U		0.00850	0.333
4-Nitroaniline	U		0.00639	0.333
Nitrobenzene	U		0.00695	0.333
n-Nitrosodimethylamine	U		0.0647	0.333

Method Blank (MB)

(MB) R3504917-2 03/03/20 11:06

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
n-Nitrosodiphenylamine	U		0.0900	0.333
n-Nitrosodi-n-propylamine	U		0.00906	0.333
Phenanthrene	U		0.00528	0.0333
Benzylbutyl phthalate	U		0.0103	0.333
Bis(2-ethylhexyl)phthalate	U		0.0120	0.333
Di-n-butyl phthalate	U		0.0109	0.333
Diethyl phthalate	U		0.00691	0.333
Dimethyl phthalate	U		0.00540	0.333
Di-n-octyl phthalate	U		0.00907	0.333
Pyrene	U		0.0123	0.0333
Pyridine	U		0.0628	0.333
1,2,4-Trichlorobenzene	U		0.00876	0.333
Benzyl Alcohol	U		0.00750	0.333
4-Chloro-3-methylphenol	U		0.00477	0.333
2-Chlorophenol	U		0.00831	0.333
2-Methylphenol	U		0.00986	0.333
3&4-Methyl Phenol	U		0.00783	0.333
2,4-Dichlorophenol	U		0.00746	0.333
2,4-Dimethylphenol	U		0.0471	0.333
4,6-Dinitro-2-methylphenol	U		0.124	0.333
2,4-Dinitrophenol	U		0.0980	0.333
2-Nitrophenol	U		0.0130	0.333
4-Nitrophenol	U		0.0525	0.333
Pentachlorophenol	U		0.0480	0.333
Phenol	U		0.00695	0.333
1,2,4,5-Tetrachlorobenzene	U		0.0762	0.333
2,4,5-Trichlorophenol	U		0.0104	0.333
2,4,6-Trichlorophenol	U		0.00779	0.333
Diphenylamine	U		0.0900	0.333
2,3,4,6-Tetrachlorophenol	U		0.121	0.333
(S) Nitrobenzene-d5	*73.6*			*10.0-122*
(S) 2-Fluorobiphenyl	*80.5*			*15.0-120*
(S) p-Terphenyl-d14	*95.5*			*10.0-120*
(S) Phenol-d5	*75.8*			*10.0-120*
(S) 2-Fluorophenol	*85.0*			*12.0-120*
(S) 2,4,6-Tribromophenol	*91.3*			*10.0-127*

Method Blank (MB)

(MB) R3505319-2 03/04/20 13:33

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
2-Acetylaminofluorene	U		0.0546	0.333
4-Aminobiphenyl	U		0.0489	0.333
Chlorobenzilate	U		0.0570	0.333
Diallate	U		0.0593	0.333
Dinoseb	U		0.0970	0.333
Ethyl methanesulfonate	U		0.0757	0.333
Famphur	U		0.0471	0.333
Hexachloropropene	U		0.110	0.333
Isodrin	U		0.0661	0.333
Isosafrole	U		0.0366	0.333
Kepone	U		0.0491	0.333
Methapyrilene	U		0.333	1.66
3-Methylcholanthrene	U		0.0596	0.333
Methyl methanesulfonate	U		0.0664	0.333
Methyl parathion	U		0.0645	0.333
1,4-Naphthoquinone	U		0.0419	0.333
1-Naphthylamine	U		0.0802	0.333
2-Naphthylamine	U		0.0653	0.333
n-Nitrosodi-n-butylamine	U		0.110	0.333
n-Nitrosodiethylamine	U		0.189	0.333
n-Nitrosomethylethylamine	U		0.111	0.333
n-Nitrosomorpholine	U		0.150	0.333
n-Nitrosopiperidine	U		0.0600	0.333
n-Nitrosopyrrolidine	U		0.201	0.333
5-Nitro-o-toluidine	U		0.0672	0.333
Ethyl Parathion	U		0.0791	0.333
Pentachlorobenzene	U		0.0483	0.333
Pentachloronitrobenzene	U		0.0739	0.333
Phenacetin	U		0.0766	0.333
p-Phenylenediamine	U		0.146	0.333
Phorate	U		0.111	0.333
Pronamide	U		0.0760	0.333
Dimethoate	U		0.0905	0.333
P-(Dimethylamino) Azobenzene	U		0.0636	0.333
Dimethylbenz (A) Anthracene	U		0.0529	0.333
3,3-Dimethylbenzidine	U		0.0724	0.333
1,3-Dinitrobenzene	U		0.0617	0.333
Diphenylamine	U		0.0900	0.333
Disulfoton	U		0.0659	0.333
Safrole	U		0.0633	0.333

Method Blank (MB)

(MB) R3505319-2 03/04/20 13:33

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Thionazin	U		0.0570	0.333
o-Toluidine	U		0.111	0.333
O,O,O-Triethyl phosphorothioate	U		0.0798	0.333
2,6-Dichlorophenol	U		0.0462	0.333
a,a-Dimethylphenethylamine	U		0.473	1.66
4-Nitroquinoline 1-oxide	U		0.0646	0.333
Pentachloroethane	U		0.0707	0.333
2-Picoline	U		0.110	0.333
Sulfotep	U		0.0757	0.333
1,3,5-Trinitrobenzene	U		0.0570	0.333
Hexachlorophene	U		0.110	0.333

Laboratory Control Sample (LCS)

(LCS) R3504917-1 03/03/20 10:46

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.666	0.451	67.7	38.0-120	
Acenaphthylene	0.666	0.485	72.8	40.0-120	
Acetophenone	0.666	0.471	70.7	29.0-120	
Aniline	0.666	0.318	47.7	15.0-120	
Anthracene	0.666	0.514	77.2	42.0-120	
Azobenzene	0.666	0.453	68.0	43.0-120	
Benzidine	1.33	0.154	11.6	10.0-120	
Benzo(a)anthracene	0.666	0.572	85.9	44.0-120	
Benzo(b)fluoranthene	0.666	0.564	84.7	43.0-120	
Benzo(k)fluoranthene	0.666	0.552	82.9	44.0-120	
Benzo(g,h,i)perylene	0.666	0.554	83.2	43.0-120	
Benzo(a)pyrene	0.666	0.593	89.0	45.0-120	
Bis(2-chlorethoxy)methane	0.666	0.336	50.5	20.0-120	
Bis(2-chloroethyl)ether	0.666	0.367	55.1	16.0-120	
2,2-Oxybis(1-Chloropropane)	0.666	0.431	64.7	23.0-120	
4-Bromophenyl-phenylether	0.666	0.541	81.2	40.0-120	
4-Chloroaniline	0.666	0.305	45.8	18.0-120	
2-Chloronaphthalene	0.666	0.458	68.8	35.0-120	
4-Chlorophenyl-phenylether	0.666	0.477	71.6	40.0-120	
Chrysene	0.666	0.534	80.2	43.0-120	
Dibenz(a,h)anthracene	0.666	0.542	81.4	44.0-120	
Dibenzofuran	0.666	0.481	72.2	44.0-120	

Laboratory Control Sample (LCS)

(LCS) R3504917-1 03/03/20 10:46

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
3,3-Dichlorobenzidine	1.33	0.976	73.4	28.0-120	
2,4-Dinitrotoluene	0.666	0.564	84.7	45.0-120	
2,6-Dinitrotoluene	0.666	0.514	77.2	42.0-120	
Fluoranthene	0.666	0.547	82.1	44.0-120	
Fluorene	0.666	0.498	74.8	41.0-120	
Hexachlorobenzene	0.666	0.544	81.7	39.0-120	
Hexachloro-1,3-butadiene	0.666	0.409	61.4	15.0-120	
Hexachlorocyclopentadiene	0.666	0.296	44.4	15.0-120	
Hexachloroethane	0.666	0.375	56.3	17.0-120	
Indeno(1,2,3-cd)pyrene	0.666	0.554	83.2	45.0-120	
Isophorone	0.666	0.339	50.9	23.0-120	
2-Methylnaphthalene	0.666	0.374	56.2	34.0-120	
Naphthalene	0.666	0.358	53.8	18.0-120	
2-Nitroaniline	0.666	0.499	74.9	46.0-120	
3-Nitroaniline	0.666	0.509	76.4	36.0-120	
4-Nitroaniline	0.666	0.547	82.1	36.0-120	
Nitrobenzene	0.666	0.340	51.1	17.0-120	
n-Nitrosodimethylamine	0.666	0.342	51.4	10.0-125	
n-Nitrosodiphenylamine	0.666	0.552	82.9	40.0-120	
n-Nitrosodi-n-propylamine	0.666	0.395	59.3	26.0-120	
Phenanthrene	0.666	0.516	77.5	42.0-120	
Benzylbutyl phthalate	0.666	0.541	81.2	40.0-120	
Bis(2-ethylhexyl)phthalate	0.666	0.524	78.7	41.0-120	
Di-n-butyl phthalate	0.666	0.558	83.8	43.0-120	
Diethyl phthalate	0.666	0.510	76.6	43.0-120	
Dimethyl phthalate	0.666	0.521	78.2	43.0-120	
Di-n-octyl phthalate	0.666	0.510	76.6	40.0-120	
Pyrene	0.666	0.553	83.0	41.0-120	
Pyridine	0.666	0.191	28.7	10.0-120	
1,2,4-Trichlorobenzene	0.666	0.355	53.3	17.0-120	
Benzyl Alcohol	0.666	0.465	69.8	10.0-120	
4-Chloro-3-methylphenol	0.666	0.419	62.9	28.0-120	
2-Chlorophenol	0.666	0.430	64.6	28.0-120	
2-Methylphenol	0.666	0.449	67.4	35.0-120	
3&4-Methyl Phenol	0.666	0.466	70.0	42.0-120	
2,4-Dichlorophenol	0.666	0.434	65.2	25.0-120	
2,4-Dimethylphenol	0.666	0.425	63.8	15.0-120	
4,6-Dinitro-2-methylphenol	0.666	0.458	68.8	16.0-120	
2,4-Dinitrophenol	0.666	0.215	32.3	10.0-120	
2-Nitrophenol	0.666	0.375	56.3	20.0-120	

Laboratory Control Sample (LCS)

(LCS) R3504917-1 03/03/20 10:46

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
4-Nitrophenol	0.666	0.483	72.5	27.0-120	
Pentachlorophenol	0.666	0.632	94.9	29.0-120	
Phenol	0.666	0.443	66.5	28.0-120	
1,2,4,5-Tetrachlorobenzene	0.666	0.511	76.7	30.0-120	
2,4,5-Trichlorophenol	0.666	0.500	75.1	38.0-120	
2,4,6-Trichlorophenol	0.666	0.497	74.6	37.0-120	
Diphenylamine	0.666	0.552	82.9	32.0-120	
2,3,4,6-Tetrachlorophenol	0.666	0.512	76.9	39.0-120	
(S) Nitrobenzene-d5			*50.8*	*10.0-122*	
(S) 2-Fluorobiphenyl			*73.3*	*15.0-120*	
(S) p-Terphenyl-d14			*87.7*	*10.0-120*	
(S) Phenol-d5			*66.2*	*10.0-120*	
(S) 2-Fluorophenol			*72.1*	*12.0-120*	
(S) 2,4,6-Tribromophenol			*91.4*	*10.0-127*	

Laboratory Control Sample (LCS)

(LCS) R3505319-1 03/04/20 13:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
2-Acetylaminofluorene	0.666	0.730	110	26.0-120	
4-Aminobiphenyl	0.666	0.364	54.7	10.0-120	
Chlorobenzilate	0.666	0.682	102	37.0-120	
Diallate	0.666	0.0969	14.5	32.0-120	L2
Dinoseb	0.666	0.618	92.8	26.0-120	
Ethyl methanesulfonate	0.666	0.392	58.9	10.0-120	
Famphur	0.666	0.601	90.2	18.0-120	
Hexachloropropene	0.666	0.218	32.7	11.0-120	
Isodrin	0.666	0.483	72.5	13.0-152	
Isosafrole	0.666	0.407	61.1	35.0-120	
Kepone	0.666	0.468	70.3	50.0-150	
Methapyrilene	0.666	0.00364	0.547	50.0-150	L2
3-Methylcholanthrene	0.666	0.623	93.5	32.0-155	
Methyl methanesulfonate	0.666	0.325	48.8	10.0-120	
Methyl parathion	0.666	0.641	96.2	28.0-121	
1,4-Naphthoquinone	0.666	0.00861	1.29	50.0-150	L2
1-Naphthylamine	0.666	0.324	48.6	10.0-120	
2-Naphthylamine	0.666	0.0940	14.1	10.0-120	
n-Nitrosodi-n-butylamine	0.666	0.336	50.5	23.0-120	

Laboratory Control Sample (LCS)

(LCS) R3505319-1 03/04/20 13:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
n-Nitrosodiethylamine	0.666	0.435	65.3	10.0-120	
n-Nitrosomethylethylamine	0.666	0.414	62.2	10.0-120	
n-Nitrosomorpholine	0.666	0.436	65.5	10.0-143	
n-Nitrosopiperidine	0.666	0.335	50.3	10.0-160	
n-Nitrosopyrrolidine	0.666	0.498	74.8	10.0-143	
5-Nitro-o-toluidine	0.666	0.705	106	24.0-120	
Ethyl Parathion	0.666	0.638	95.8	30.0-135	
Pentachlorobenzene	0.666	0.515	77.3	32.0-120	
Pentachloronitrobenzene	0.666	0.571	85.7	34.0-131	
Phenacetin	0.666	0.583	87.5	34.0-127	
p-Phenylenediamine	0.666	ND	0.000	50.0-150	L2
Phorate	0.666	0.479	71.9	10.0-160	
Pronamide	0.666	0.589	88.4	39.0-122	
Dimethoate	0.666	0.587	88.1	19.0-139	
P-(Dimethylamino) Azobenzene	0.666	0.542	81.4	18.0-120	
Dimethylbenz (A) Anthracene	0.666	0.610	91.6	27.0-124	
3,3-Dimethylbenzidine	0.666	0.0600	9.01	10.0-120	L2
1,3-Dinitrobenzene	0.666	0.565	84.8	29.0-120	
Diphenylamine	0.666	0.563	84.5	32.0-120	
Disulfoton	0.666	0.504	75.7	28.0-120	
Safrole	0.666	0.435	65.3	34.0-120	
Thionazin	0.666	0.485	72.8	34.0-120	
o-Toluidine	0.666	0.359	53.9	10.0-120	
O,O,O-Triethyl phosphorothioate	0.666	0.416	62.5	32.0-120	
2,6-Dichlorophenol	0.666	0.428	64.3	10.0-123	
a,a-Dimethylphenethylamine	0.666	0.0113	1.70	50.0-150	L2
4-Nitroquinoline 1-oxide	0.666	0.395	59.3	10.0-120	
Pentachloroethane	0.666	0.413	62.0	10.0-120	
2-Picoline	0.666	0.246	36.9	10.0-120	
Sulfotep	0.666	0.492	73.9	29.0-120	
1,3,5-Trinitrobenzene	0.666	0.491	73.7	17.0-157	
Hexachlorophene	1.33	0.375	28.2	10.0-120	

L1194025-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1194025-01 03/03/20 17:18 • (MS) R3504917-3 03/03/20 17:38 • (MSD) R3504917-4 03/03/20 17:58

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acenaphthene	0.746	0.0805	0.666	0.681	78.5	80.5	10	18.0-120			2.16	32
Acenaphthylene	0.746	0.405	0.899	0.946	66.2	72.5	10	25.0-120			5.10	32
Acetophenone	0.746	U	ND	ND	0.000	0.000	10	10.0-120	M2	M2	0.000	37
Aniline	0.746	U	0.359	ND	48.2	0.000	10	10.0-120		M2 R5	200	40
Anthracene	0.746	0.350	0.800	0.870	60.4	69.7	10	22.0-120			8.31	29
Azobenzene	0.746	U	0.561	0.577	75.2	77.3	10	18.0-120			2.76	27
Benzidine	1.49	U	ND	ND	0.000	0.000	10	10.0-120	M2	M2	0.000	40
Benzo(a)anthracene	0.746	1.57	1.47	1.49	0.000	0.000	10	25.0-120	M2	M2	1.52	29
Benzo(b)fluoranthene	0.746	2.10	1.76	2.18	0.000	10.5	10	19.0-122	M2	M2	21.6	31
Benzo(k)fluoranthene	0.746	0.636	1.02	1.08	50.9	60.1	10	23.0-120			6.51	30
Benzo(g,h,i)perylene	0.746	2.92	2.10	2.51	0.000	0.000	10	10.0-120	M2	M2	17.5	33
Benzo(a)pyrene	0.746	2.16	1.88	2.15	0.000	0.000	10	24.0-120	M2	M2	13.3	30
Bis(2-chlorethoxy)methane	0.746	U	0.583	0.582	78.2	78.1	10	10.0-120			0.192	34
Bis(2-chloroethyl)ether	0.746	U	0.544	0.611	73.0	82.0	10	10.0-120			11.6	40
2,2-Oxybis(1-Chloropropane)	0.746	U	0.692	0.705	92.8	94.6	10	10.0-120			1.92	40
4-Bromophenyl-phenylether	0.746	U	0.736	0.752	98.6	101	10	27.0-120			2.26	30
4-Chloroaniline	0.746	U	0.568	ND	76.1	0.000	10	10.0-120		M2 R5	200	36
2-Chloronaphthalene	0.746	U	0.658	0.658	88.3	88.3	10	20.0-120			0.000	32
4-Chlorophenyl-phenylether	0.746	U	0.676	0.672	90.7	90.1	10	24.0-120			0.664	29
Chrysene	0.746	1.59	1.58	1.68	0.000	12.0	10	21.0-120	M2	M2	6.19	29
Dibenz(a,h)anthracene	0.746	0.212	0.738	0.778	70.6	76.0	10	10.0-120			5.32	32
Dibenzofuran	0.746	U	0.671	0.692	89.9	92.8	10	24.0-120			3.12	30
3,3-Dichlorobenzidine	1.49	U	ND	ND	0.000	0.000	10	10.0-120	M2	M2	0.000	34
2,4-Dinitrotoluene	0.746	U	0.552	0.608	74.0	81.5	10	30.0-120			9.65	31
2,6-Dinitrotoluene	0.746	U	0.562	0.663	75.4	88.9	10	25.0-120			16.5	31
Fluoranthene	0.746	4.14	2.78	3.44	0.000	0.000	10	18.0-126	M3	M3	21.3	32
Fluorene	0.746	0.122	0.724	0.705	80.8	78.2	10	25.0-120			2.66	30
Hexachlorobenzene	0.746	U	0.662	0.714	88.7	95.8	10	27.0-120			7.65	28
Hexachloro-1,3-butadiene	0.746	U	0.723	0.823	97.0	110	10	10.0-120			12.9	38
Hexachlorocyclopentadiene	0.746	U	ND	ND	0.000	0.000	10	10.0-120	M2	M2	0.000	40
Hexachloroethane	0.746	U	0.625	0.588	83.8	78.8	10	10.0-120			6.09	40
Indeno(1,2,3-cd)pyrene	0.746	2.19	1.75	2.08	0.000	0.000	10	10.0-120	M2	M2	17.5	32
Isophorone	0.746	U	0.569	0.593	76.3	79.6	10	13.0-120			4.24	34
2-Methylnaphthalene	0.746	U	0.681	0.673	91.3	90.2	10	10.0-120			1.16	37
Naphthalene	0.746	0.170	0.884	0.819	95.8	87.1	10	10.0-120			7.62	35
2-Nitroaniline	0.746	U	0.694	0.590	93.1	79.1	10	24.0-120			16.2	30
3-Nitroaniline	0.746	U	0.508	0.524	68.2	70.3	10	11.0-120			3.04	32
4-Nitroaniline	0.746	U	0.565	0.517	75.8	69.4	10	15.0-120			8.89	31
Nitrobenzene	0.746	U	0.611	0.609	82.0	81.7	10	10.0-120			0.367	36

L1194025-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1194025-01 03/03/20 17:18 • (MS) R3504917-3 03/03/20 17:38 • (MSD) R3504917-4 03/03/20 17:58

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
n-Nitrosodimethylamine	0.746	U	ND	ND	0.000	0.000	10	10.0-127	M2	M2	0.000	40
n-Nitrosodiphenylamine	0.746	U	ND	ND	0.000	0.000	10	17.0-120	M2	M2	0.000	29
n-Nitrosodi-n-propylamine	0.746	U	0.583	0.583	78.2	78.2	10	10.0-120			0.000	37
Phenanthrene	0.746	2.65	2.22	2.35	0.000	0.000	10	17.0-120	M2	M2	5.88	31
Benzylbutyl phthalate	0.746	U	0.766	0.790	103	106	10	23.0-120			3.17	30
Bis(2-ethylhexyl)phthalate	0.746	U	0.705	0.712	94.6	95.5	10	17.0-126			0.948	30
Di-n-butyl phthalate	0.746	U	0.693	0.666	92.9	89.3	10	30.0-120			3.95	29
Diethyl phthalate	0.746	U	0.627	0.664	84.1	89.0	10	26.0-120			5.72	28
Dimethyl phthalate	0.746	U	0.685	0.710	91.9	95.2	10	25.0-120			3.53	29
Di-n-octyl phthalate	0.746	U	0.638	0.655	85.6	87.8	10	21.0-123			2.60	29
Pyrene	0.746	5.28	3.58	4.09	0.000	0.000	10	16.0-121	M3	M3	13.1	32
Pyridine	0.746	U	ND	ND	0.000	0.000	10	10.0-120	M2	M2	0.000	40
1,2,4-Trichlorobenzene	0.746	U	0.658	0.625	88.3	83.8	10	12.0-120			5.24	37
Benzyl Alcohol	0.746	U	1.48	1.40	198	188	10	10.0-136	M1	M1	5.45	40
4-Chloro-3-methylphenol	0.746	U	0.738	0.728	98.9	97.6	10	15.0-120			1.38	30
2-Chlorophenol	0.746	U	0.631	0.666	84.7	89.3	10	15.0-120			5.35	37
2-Methylphenol	0.746	U	0.607	0.620	81.4	83.2	10	11.0-120			2.19	40
3&4-Methyl Phenol	0.746	U	0.697	0.662	93.5	88.7	10	12.0-123			5.27	38
2,4-Dichlorophenol	0.746	U	0.701	0.696	94.0	93.4	10	20.0-120			0.641	31
2,4-Dimethylphenol	0.746	U	0.701	0.628	94.0	84.2	10	10.0-120			11.0	33
4,6-Dinitro-2-methylphenol	0.746	U	ND	ND	0.000	0.000	10	10.0-120	M2	M2	0.000	39
2,4-Dinitrophenol	0.746	U	ND	ND	0.000	0.000	10	10.0-121	M2	M2	0.000	40
2-Nitrophenol	0.746	U	0.564	0.564	75.7	75.7	10	12.0-120			0.000	39
4-Nitrophenol	0.746	U	ND	ND	0.000	0.000	10	10.0-137	M2	M2	0.000	32
Pentachlorophenol	0.746	U	0.628	0.695	84.2	93.2	10	10.0-160			10.2	31
Phenol	0.746	U	0.695	0.658	93.2	88.3	10	12.0-120			5.46	38
1,2,4,5-Tetrachlorobenzene	0.746	U	ND	ND	0.000	0.000	10	14.0-120	M2	M2	0.000	36
2,4,5-Trichlorophenol	0.746	U	0.720	0.669	96.5	89.8	10	20.0-120			7.25	30
2,4,6-Trichlorophenol	0.746	U	0.686	0.655	92.0	87.8	10	19.0-120			4.67	32
Diphenylamine	0.746	U	ND	ND	0.000	0.000	10	32.0-120	M2	M2	0.000	30
2,3,4,6-Tetrachlorophenol	0.746	U	ND	ND	0.000	0.000	10	20.0-120	M2	M2	0.000	31
(S) Nitrobenzene-d5					*76.3*	*80.2*		*10.0-122*				
(S) 2-Fluorobiphenyl					*91.9*	*94.0*		*15.0-120*				
(S) p-Terphenyl-d14					*105*	*93.1*		*10.0-120*				
(S) Phenol-d5					*81.4*	*85.7*		*10.0-120*				
(S) 2-Fluorophenol					*92.5*	*92.0*		*12.0-120*				
(S) 2,4,6-Tribromophenol					*120*	*125*		*10.0-127*				

Sample Narrative:

L1194025-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1194025-01 03/03/20 17:18 • (MS) R3504917-3 03/03/20 17:38 • (MSD) R3504917-4 03/03/20 17:58

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %

OS: Dilution due to matrix impact during extraction procedure

L1194025-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1194025-01 03/04/20 14:32 • (MS) R3505319-3 03/04/20 14:52

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
2-Acetylaminofluorene	0.723	U	0.771	107	10	26.0-120	
4-Aminobiphenyl	0.723	U	ND	0.000	10	10.0-120	M2
Chlorobenzilate	0.723	U	0.787	109	10	37.0-120	
Diallate	0.723	U	ND	0.000	10	32.0-120	M2
Dinoseb	0.723	U	ND	0.000	10	26.0-120	M2
Ethyl methanesulfonate	0.723	U	ND	0.000	10	10.0-120	M2
Famphur	0.723	U	0.674	93.2	10	18.0-120	
Hexachloropropene	0.723	U	ND	0.000	10	11.0-120	M2
Isodrin	0.723	U	ND	0.000	10	13.0-152	M2
Isosafrole	0.723	U	0.608	84.1	10	35.0-120	
Kepone	0.723	U	ND	0.000	10	50.0-150	M2
Methapyrilene	0.723	U	ND	0.000	10	60.0-140	M2
3-Methylcholanthrene	0.723	U	ND	0.000	10	32.0-155	M2
Methyl methanesulfonate	0.723	U	ND	0.000	10	10.0-120	M2
Methyl parathion	0.723	U	1.07	148	10	28.0-121	M1
1,4-Naphthoquinone	0.723	U	ND	0.000	10	21.0-129	M2
1-Naphthylamine	0.723	U	ND	0.000	10	10.0-120	M2
2-Naphthylamine	0.723	U	ND	0.000	10	10.0-120	M2
n-Nitrosodi-n-butylamine	0.723	U	ND	0.000	10	23.0-120	M2
n-Nitrosodiethylamine	0.723	U	ND	0.000	10	10.0-120	M2
n-Nitrosomethylethylamine	0.723	U	ND	0.000	10	10.0-120	M2
n-Nitrosomorpholine	0.723	U	ND	0.000	10	10.0-143	M2
n-Nitrosopiperidine	0.723	U	ND	0.000	10	10.0-160	M2
n-Nitrosopyrrolidine	0.723	U	ND	0.000	10	10.0-143	M2
5-Nitro-o-toluidine	0.723	U	ND	0.000	10	24.0-120	M2
Ethyl Parathion	0.723	U	1.33	184	10	30.0-135	M1
Pentachlorobenzene	0.723	U	0.703	97.2	10	32.0-120	
Pentachloronitrobenzene	0.723	U	ND	0.000	10	34.0-131	M2
Phenacetin	0.723	U	ND	0.000	10	34.0-127	M2
p-Phenylenediamine	0.723	U	ND	0.000	10	60.0-140	M2
Phorate	0.723	U	ND	0.000	10	10.0-160	M2

L1194025-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1194025-01 03/04/20 14:32 • (MS) R3505319-3 03/04/20 14:52

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Pronamide	0.723	U	ND	0.000	10	39.0-122	M2
Dimethoate	0.723	U	ND	0.000	10	19.0-139	M2
P-(Dimethylamino) Azobenzene	0.723	U	ND	0.000	10	18.0-120	M2
Dimethylbenz (A) Anthracene	0.723	U	ND	0.000	10	27.0-124	M2
3,3-Dimethylbenzidine	0.723	U	ND	0.000	10	10.0-120	M2
1,3-Dinitrobenzene	0.723	U	0.858	119	10	29.0-120	
Diphenylamine	0.723	U	ND	0.000	10	32.0-120	M2
Disulfoton	0.723	U	ND	0.000	10	28.0-120	M2
Safrole	0.723	U	0.709	0.000	10	34.0-120	M2
Thionazin	0.723	U	0.655	90.6	10	34.0-120	
o-Toluidine	0.723	U	ND	0.000	10	10.0-120	M2
O,O,O-Triethyl phosphorothioate	0.723	U	ND	0.000	10	32.0-120	M2
2,6-Dichlorophenol	0.723	U	0.686	94.9	10	10.0-123	
a,a-Dimethylphenethylamine	0.723	U	ND	0.000	10	60.0-140	M2
4-Nitroquinoline 1-oxide	0.723	U	ND	0.000	10	10.0-120	M2
Pentachloroethane	0.723	U	ND	0.000	10	10.0-120	M2
2-Picoline	0.723	U	ND	0.000	10	10.0-120	M2
Sulfotep	0.723	U	ND	0.000	10	29.0-120	M2
1,3,5-Trinitrobenzene	0.723	U	ND	0.000	10	17.0-157	M2
Hexachlorophene	1.44	U	ND	0.000	10	60.0-140	M2

Sample Narrative:

OS: Dilution due to matrix impact during extract concentration procedure

INTERNAL STANDARD SUMMARY

Instrument: VOCMS26 • File ID: 0301a_02

03/01/20 14:12

Sample ID	File ID	8260-FLUOROBENZENE	8260-CHLOROBENZENE-D5	8260-1,4-DICHLOROBENZENE-D4
		Response	Response	Response
Standard	0301a_02	582793	277706	236824
Upper Limit		1165586	555412	473648
Lower Limit		291397	138853	118412
LCS R3504423-1 WG1436256 1x	0301a_02LCS	582793	277706	236824
LCSD R3504423-2 WG1436256 1x	0301a_03	561247	262333	225474
BLANK R3504423-3 WG1436256 1x	0301A_06A	561899	264322	229867
L1194025-01 WG1436256 1x	0301A_26	608647	281718	252034
L1194025-02 WG1436256 1.06x	0301A_27	606564	286233	256862
L1194025-03 WG1436256 1x	0301A_28	595967	277609	242229

Instrument: SVGC28 • File ID: AVG

Sample ID	File ID	1-BROMO-2-DINITROBENZENE Response
Standard	AVG	1010262643
Upper Limit		1515394000
Lower Limit		505131500
BLANK R3515340-1 WG1454981 1x	0403_33	909028400
LCS R3515340-2 WG1454981 1x	0403_34	955230400
L1194025-01 WG1454981 1x	0403_35	902321900
L1194025-02 WG1454981 1x	0403_36	922938400
L1194025-03 WG1454981 1x	0403_37	920457200
MS R3515340-3 WG1454981 1x	0403_39	912498900
MSD R3515340-4 WG1454981 1x	0403_40	925564500

Instrument: SVGC28 • File ID: AVG

Sample ID	File ID	1-BROMO-2-DINITROBENZENE Response
Standard	AVG	918921833
Upper Limit		1254142000
Lower Limit		418047300
L1194025-03 WG1454981 1x	0403A_12a	917380100

Instrument: BNAMS1 • File ID: 0304A_02-1

03/04/20 11:55

Sample ID	File ID	1,4-DICHLOROBENZENE-D4	NAPHTHALENE-D8	ACENAPHTHENE-D10	PHENANTHRENE-D10	CHRYSENE-D12	PERYLENE-D12
		Response	Response	Response	Response	Response	Response
Standard	0304A_02-1	86415	382109	180918	282836	237240	232958
Upper Limit		172830	764218	361836	565672	474480	465916
Lower Limit		43208	191055	90459	141418	118620	116479
LCS R3505319-1 WG1436421 1x	0304A_06	83777	401627	182133	289126	248417	223041
BLANK R3505319-2 WG1436421 1x	0304A_07	98799	402091	210537	313444	263804	254579
L1194025-03 WG1436421 10x	0304A_08	101986	389716	215579	318906	271654	267150
L1194025-02 WG1436421 10x	0304A_09	97651	374599	201274	299365	266911	248505
L1194025-01 WG1436421 10x	0304A_10	99629	367733	202355	302152	275250	227830
MS R3505319-3 WG1436421 10x	0304A_11	91584	350541	187597	288881	259574	194585

Instrument: BNAMS4 • File ID: 0303_03-1

03/03/20 10:07

Sample ID	File ID	1,4-DICHLOROBENZENE-D4	NAPHTHALENE-D8	ACENAPHTHENE-D10	PHENANTHRENE-D10	CHRYSENE-D12	PERYLENE-D12
		Response	Response	Response	Response	Response	Response
Standard	0303_03-1	15961	65719	40921	74790	75657	79784
Upper Limit		31922	131438	81842	149580	151314	159568
Lower Limit		7981	32860	20461	37395	37829	39892
LCS R3504917-1 WG1436421 1x	0303_05	19594	97103	46701	83048	79853	78581
BLANK R3504917-2 WG1436421 1x	0303_06	18722	75740	44102	78869	73917	77670
L1194025-03 WG1436421 10x	0303_23	20872	83227	47995	81166	81419	85811
L1194025-02 WG1436421 10x	0303_24	20146	82148	49482	84086	79942	83457
L1194025-01 WG1436421 10x	0303_25	20133	83020	49408	82615	79323	85252
MS R3504917-3 WG1436421 10x	0303_26	20562	88325	50940	86795	79960	85390
MSD R3504917-4 WG1436421 10x	0303_27	20519	87114	49269	83517	80354	84536

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 Sc

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
MDL (dry)	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
RDL (dry)	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting level (MRL) but above MDL.
L2	The associated blank spike recovery was below laboratory acceptance limits.
M1	Matrix spike recovery was high, the method control sample recovery was acceptable.
M2	Matrix spike recovery was low, the method control sample recovery was acceptable.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The associated blank spike recovery was acceptable.
R5	MS/MSD RPD exceeded the laboratory acceptance limit. Recovery met acceptance criteria.
R7	LFB/LFBD RPD exceeded the laboratory acceptance limit. Recovery met acceptance criteria.
S10	Surrogate recovery was above laboratory and method acceptance limits.

ACCREDITATIONS & LOCATIONS

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

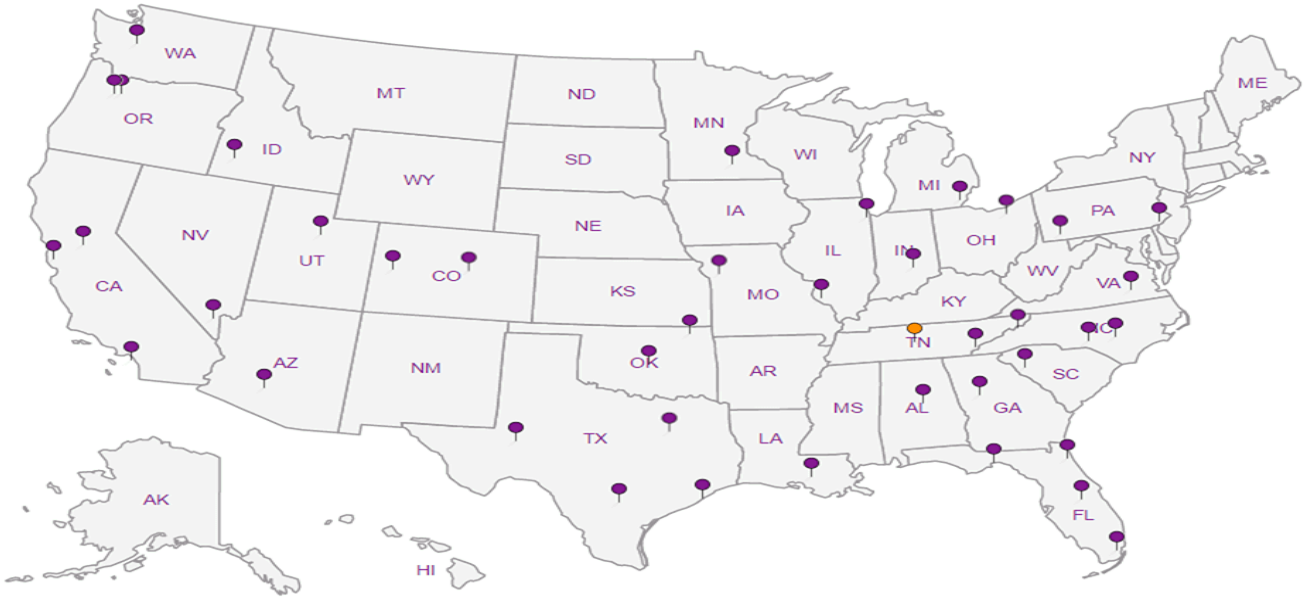
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Hutzel & Associates
1626 E Alicia Drive
Phoenix, AZ 85042

Billing Information: Hutzel + Associates

Pres Chk

Report to: Augustine Anderson

Email To: aanderson@Hutzel.net

Project Description: **APS Prescott City Substation**

City/State Collected: **Prescott, AZ**

Phone: **602-549-6820**
Fax:

Client Project # **20-12557**

Lab Project #

Collected by (print): Augustine Anderson

Site/Facility ID # **APS Prescott City Substation**

P.O. # 700677332

Collected by (signature):

Immediately Packed on Ice N ____ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
X Three Day

Quote #

Date Results Needed: March 4, 2020

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace Analytical®
National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 1194025

G004

Acctnum: **HUTZELTAZ**
Template:
Prelogin:
TSR:
PB:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOCs 8260B/ 40mL amber/ MeOH	Total RCRA8 metals/ 2oz jar	PCBs 8082/ 4oz jar	SVOCs/PAHs 8270AP9/ 4oz jar	PCBs 8082/ 8oz jar	Remarks	Sample # (lab only)
HA-APS-0227-01	Comp	SS	6"-10"	02-27-20	10:00am	4	X	X	X	X			-01
HA-APS-0227-02	Comp	SS	6"-10"	02-27-20	10:15am	4	X	X	X	X			02
HA-APS-0227-03	Comp	SS	6"-10"	02-27-20	10:30am	4	X	X	X	X			03

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: Report on a dry weight basis

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____

Tracking # 1275 8603 8778

Sample Receipt Checklist
COC Seal Present/Intact: __NP ✓Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N
RAD SCREEN: <0.5 mR/hr

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeOH TBR	
	2-27	11:02			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: NPAG °C .6+.4=1.0	Bottles Received: 12
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 2/28/20	Time: 9:00

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Andy Vann

From: Daphne Richards
Sent: Wednesday, April 1, 2020 2:38 PM
To: Matt Shacklock; Project Service
Subject: RE: Add analysis L1194025 HUTZELTAZ

Please also add TCLP Pb to HA-APS-0227-01

Thanks

From: Daphne Richards
Sent: Wednesday, April 1, 2020 1:27 PM
To: Matt Shacklock <MShacklock@pacenational.com>; Project Service <ProjServ@pacenational.com>
Subject: RE: Add analysis L1194025 HUTZELTAZ

Friday
thanks

From: Matt Shacklock <MShacklock@pacenational.com>
Sent: Wednesday, April 1, 2020 1:26 PM
To: Daphne Richards <DRichards@pacenational.com>; Project Service <ProjServ@pacenational.com>
Subject: RE: Add analysis L1194025 HUTZELTAZ

Added. What do you want the due date to be?

From: Daphne Richards <DRichards@pacenational.com>
Sent: Wednesday, April 1, 2020 1:24 PM
To: Project Service <ProjServ@pacenational.com>
Subject: Add analysis L1194025 HUTZELTAZ
Importance: High

Please add SV8082 to L1194025

Daphne Richards
Project Manager II
Pace Analytical - National
12065 Lebanon Road | Mt. Juliet, TN 37122
o.615.773.9662 | pacenational.com

Pace Analytical®

Appendix G
Waste Documentation

Non-Hazardous WAM Approval

Requested Management Facility: Gray Wolf Regional Landfill

Profile Number: 445727AZ

Waste Acceptance Expiration Date: 07/22/2023

Common Name: AZ Regulated Special Waste - MGP Soil Re...

WM Regulatory Volume Limit: ☑ NA

APPROVAL DETAILS

Approval Decision: ☑ Approved ☐ Not Approved

Profile Renewal: ☐ Yes ☑ No

Management Method: Direct Landfill

Generator Name: Arizona Public Service Company

Profile Expiration Date: 07/22/2023

Periodic Testing Due Date: ☑ NA

Other Due Date: ☑ NA (Specify)

Management Facility Precautions, Special Handling Procedures or Limitation on approval:

Generator Conditions

- Shall not contain free liquids.
- Shipment must be scheduled into the disposal facility at least 24 hours in advance. Contact information will be provided by your TSR.
- Waste manifest or applicable shipping document must accompany load.
- The waste profile number must appear on the shipping papers.

- Generator and Transporter must obtain a Special Waste ID Number prior to shipping.
- This waste must be shipped on an Arizona Special Waste Manifest.
- The profile sheet number must be printed on the Arizona Special Waste Manifest.
- WM must review and approve any additional analytical associated with the soil to be managed under this profile PRIOR to shipping the waste.
- WM MUST BE NOTIFIED **IMMEDIATELY** IF PPE LEVEL OF PROTECTION AT THE EXCAVATION SITE CHANGES FROM LEVEL D.

Facility Conditions

- Potential odor nuisance

- AZ Regulated PCS Special Waste: Total VOCs = 49.83 PPM, B=0.11, T=0, E=1.05 X=1.41
- BURY IMMEDIATELY. DO NO USE FOR COVER.

WM Authorization Name: Clay Pfluger

Title: Waste Approval Manager

WM Authorization Signature: Clay Pfluger

Date: 07/22/2020

Agency Authorization (if Required):

Date:

©2018 Waste Management

Customer Summary Report
Criteria: 08/10/2020 12:00 AM to 08/10/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 11 2020, 9:17:12 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Ticket Date	Ticket ID	Cust Code	MAS Unique ID	Customer	Generator	Manifest	Profile	Truck	Material	Material Description	Tons
8/10/2020	612250	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	12.56
8/10/2020	612251	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	08052002	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	14.22
8/10/2020	612273	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	08052003	445727AZ	19028	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	24.37
8/10/2020	612280	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	08052005	445727AZ	746	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.06
8/10/2020	612282	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	08052004	445727AZ	760	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	14.15
8/10/2020	612288	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	08052006	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	11.77
8/10/2020	612289	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	08052007	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	14.14
Material Total	7										110.27
Customer Total	7										110.27
Ticket Totals	7										110.27

Customer Summary Report
Criteria: 08/10/2020 12:00 AM to 08/10/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 11 2020, 9:17:12 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Internal Customer	Loads	Yards	Tons	Total Ticket Amount

Customer Summary Report
Criteria: 08/10/2020 12:00 AM to 08/10/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 11 2020, 9:17:12 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Customer Summary Report
Criteria: 08/11/2020 12:00 AM to 08/11/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 12 2020, 9:22:06 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Ticket Date	Ticket ID	Cust Code	MAS Unique ID	Customer	Generator	Manifest	Profile	Truck	Material	Material Description	Tons
8/11/2020	612314	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	08052008	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.11
8/11/2020	612317	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	08052009	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	12.84
8/11/2020	612322	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520010	445727AZ	746	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.8
8/11/2020	612367	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520011	445727AZ	19028	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.42
Material Total	4										69.17
Customer Total	4										69.17
Ticket Totals	4										69.17

Customer Summary Report
Criteria: 08/11/2020 12:00 AM to 08/11/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 12 2020, 9:22:06 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Internal Customer	Loads	Yards	Tons	Total Ticket Amount

Customer Summary Report
Criteria: 08/11/2020 12:00 AM to 08/11/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 12 2020, 9:22:06 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Customer Summary Report
Criteria: 08/12/2020 12:00 AM to 08/12/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 13 2020, 9:24:26 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Ticket Date	Ticket ID	Cust Code	MAS Unique ID	Customer	Generator	Manifest	Profile	Truck	Material	Material Description	Tons
8/12/2020	612407	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200012	445727AZ	19028	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.16
8/12/2020	612409	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200013	445727AZ	760	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.33
8/12/2020	612414	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200014	445727AZ	746	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.79
8/12/2020	612417	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200015	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.11
8/12/2020	612420	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200016	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.37
8/12/2020	612444	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520017	445727AZ	760	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	13.9
8/12/2020	612451	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520018	445727AZ	19028	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	18.24
8/12/2020	612452	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520019	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.13
8/12/2020	612455	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520020	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.67
8/12/2020	612460	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520021	445727AZ	746	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.5
8/12/2020	612480	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520022	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.39
8/12/2020	612483	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520023	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.65
8/12/2020	612487	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520024	445727AZ	760	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.55
8/12/2020	612492	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520025	445727AZ	19028	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	21.16
8/12/2020	612494	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520026	445727AZ	746	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.76
Material Total	15										264.71
Customer Total	15										264.71
Ticket Totals	15										264.71

Customer Summary Report
Criteria: 08/12/2020 12:00 AM to 08/12/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 13 2020, 9:24:26 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Internal Customer	Loads	Yards	Tons	Total Ticket Amount

Customer Summary Report
Criteria: 08/12/2020 12:00 AM to 08/12/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 13 2020, 9:24:26 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Customer Summary Report
Criteria: 08/13/2020 12:00 AM to 08/13/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 14 2020, 9:18:02 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Ticket Date	Ticket ID	Cust Code	MAS Unique ID	Customer	Generator	Manifest	Profile	Truck	Material	Material Description	Tons
8/13/2020	612526	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520027	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.81
8/13/2020	612527	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520028	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.95
8/13/2020	612534	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520029	445727AZ	746	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	22.29
8/13/2020	612536	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520030	445727AZ	19028	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.99
8/13/2020	612539	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520031	445727AZ	760	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	21.28
8/13/2020	612556	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520032	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.66
8/13/2020	612565	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520033	445727AZ	746	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	22.32
8/13/2020	612567	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520034	445727AZ	19028	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.29
8/13/2020	612568	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520035	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.47
8/13/2020	612574	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520036	445727AZ	760	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	22.92
8/13/2020	612582	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520037	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	18.09
8/13/2020	612594	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520038	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.09
8/13/2020	612605	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520040	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.04
8/13/2020	612606	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520039	445727AZ	19028	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	22.78
8/13/2020	612615	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520041	445727AZ	760	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	22.75
Material Total	15										294.73
Customer Total	15										294.73
Ticket Totals	15										294.73

Customer Summary Report
Criteria: 08/13/2020 12:00 AM to 08/13/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 14 2020, 9:18:02 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Internal Customer	Loads	Yards	Tons	Total Ticket Amount

Customer Summary Report
Criteria: 08/13/2020 12:00 AM to 08/13/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 14 2020, 9:18:02 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Customer Summary Report
Criteria: 08/14/2020 12:00 AM to 08/14/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 17 2020, 9:16:45 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Ticket Date	Ticket ID	Cust Code	MAS Unique ID	Customer	Generator	Manifest	Profile	Truck	Material	Material Description	Tons
8/14/2020	612632	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200042	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.37
8/14/2020	612633	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200043	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	18
8/14/2020	612635	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200044	445727AZ	19028	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.11
8/14/2020	612639	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200045	445727AZ	760	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.26
8/14/2020	612658	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200047	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.86
8/14/2020	612659	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200046	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.2
8/14/2020	612668	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200048	445727AZ	760	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.77
8/14/2020	612673	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200049	445727AZ	19028	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	18.73
8/14/2020	612689	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200050	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.76
8/14/2020	612691	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200051	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.57
8/14/2020	612705	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200052	445727AZ	760	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.96
8/14/2020	612709	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200053	445727AZ	19028	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.3
Material Total	12										223.89
Customer Total	12										223.89
Ticket Totals	12										223.89

Customer Summary Report
Criteria: 08/14/2020 12:00 AM to 08/14/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 17 2020, 9:16:45 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Internal Customer	Loads	Yards	Tons	Total Ticket Amount

Customer Summary Report
Criteria: 08/14/2020 12:00 AM to 08/14/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 17 2020, 9:16:45 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Customer Summary Report
Criteria: 08/17/2020 12:00 AM to 08/17/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 18 2020, 9:28:10 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Ticket Date	Ticket ID	Cust Code	MAS Unique ID	Customer	Generator	Manifest	Profile	Truck	Material	Material Description	Tons
8/17/2020	612815	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200054	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	13.14
8/17/2020	612821	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200055	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	14.09
8/17/2020	612823	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200078	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	18.69
8/17/2020	612825	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200079	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.93
8/17/2020	612827	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200080	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.14
8/17/2020	612828	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200081	445727AZ	301	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	11.81
8/17/2020	612831	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200056	445727AZ	152	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	18.88
8/17/2020	612843	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200058	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	13.92
8/17/2020	612847	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200082	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	18.55
8/17/2020	612848	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200083	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	18.9
8/17/2020	612850	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200057	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.78
8/17/2020	612851	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200084	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.46
8/17/2020	612855	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200085	445727AZ	301	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	9.68
8/17/2020	612858	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805220059	445727AZ	152	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.11
8/17/2020	612868	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200060	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.14
8/17/2020	612872	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200086	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	11.61
8/17/2020	612876	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200087	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.24
Material Total	17										278.07
Customer Total	17										278.07
Ticket Totals	17										278.07

Customer Summary Report
Criteria: 08/17/2020 12:00 AM to 08/17/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 18 2020, 9:28:10 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Internal Customer	Loads	Yards	Tons	Total Ticket Amount

Customer Summary Report
Criteria: 08/17/2020 12:00 AM to 08/17/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 18 2020, 9:28:10 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Customer Summary Report
Criteria: 08/18/2020 12:00 AM to 08/18/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 19 2020, 9:16:47 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Ticket Date	Ticket ID	Cust Code	MAS Unique ID	Customer	Generator	Manifest	Profile	Truck	Material	Material Description	Tons
8/18/2020	612893	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200088	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	8.55
8/18/2020	612899	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200089	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	18.84
8/18/2020	612902	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200090	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.01
8/18/2020	612904	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200061	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	13.57
8/18/2020	612905	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200062	445727AZ	152	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.08
8/18/2020	612914	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200091	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.58
8/18/2020	612917	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200092	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.8
8/18/2020	612920	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200093	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.8
8/18/2020	612923	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200063	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.63
8/18/2020	612927	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200064	445727AZ	152	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.95
8/18/2020	612940	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200094	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.36
8/18/2020	612943	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200095	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	13.9
8/18/2020	612946	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200096	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.26
8/18/2020	612947	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200065	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.77
8/18/2020	612950	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200066	445727AZ	152	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.3
8/18/2020	612962	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200097	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.92
8/18/2020	612963	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200098	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.67
8/18/2020	612965	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200099	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.65
8/18/2020	612966	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200067	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	14.83
Material Total	19										339.47
Customer Total	19										339.47
Ticket Totals	19										339.47

Customer Summary Report
Criteria: 08/18/2020 12:00 AM to 08/18/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 19 2020, 9:16:47 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Internal Customer	Loads	Yards	Tons	Total Ticket Amount

Customer Summary Report
Criteria: 08/18/2020 12:00 AM to 08/18/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 19 2020, 9:16:47 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Customer Summary Report
Criteria: 08/19/2020 12:00 AM to 08/19/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 20 2020, 9:16:26 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Ticket Date	Ticket ID	Cust Code	MAS Unique ID	Customer	Generator	Manifest	Profile	Truck	Material	Material Description	Tons
8/19/2020	612984	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200100	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.05
8/19/2020	612987	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200101	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.52
8/19/2020	612989	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200102	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.11
8/19/2020	612992	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200068	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.14
8/19/2020	612995	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520069	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.12
8/19/2020	612997	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200070	445727AZ	152	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.2
8/19/2020	613008	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200103	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.54
8/19/2020	613011	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200071	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	8.28
8/19/2020	613014	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200104	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	12.63
8/19/2020	613016	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200105	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.23
8/19/2020	613017	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200072	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.35
8/19/2020	613019	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200073	445727AZ	152	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.32
8/19/2020	613031	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200106	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.27
8/19/2020	613033	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200074	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	18.3
8/19/2020	613035	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200107	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.25
8/19/2020	613037	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200108	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.13
8/19/2020	613039	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520075	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	13.42
8/19/2020	613042	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	080520076	445727AZ	152	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.97
8/19/2020	613051	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200109	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.59
8/19/2020	613052	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200077	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.27
Material Total	20										352.69
Customer Total	20										352.69
Ticket Totals	20										352.69

Customer Summary Report
Criteria: 08/19/2020 12:00 AM to 08/19/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 20 2020, 9:16:26 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Internal Customer	Loads	Yards	Tons	Total Ticket Amount

Customer Summary Report
Criteria: 08/19/2020 12:00 AM to 08/19/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 20 2020, 9:16:26 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Customer Summary Report
Criteria: 08/20/2020 12:00 AM to 08/20/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 21 2020, 9:24:24 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Ticket Date	Ticket ID	Cust Code	MAS Unique ID	Customer	Generator	Manifest	Profile	Truck	Material	Material Description	Tons
8/20/2020	613076	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200110	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.45
8/20/2020	613078	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200111	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16
8/20/2020	613080	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200112	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.45
8/20/2020	613081	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200113	445727AZ	152	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.87
8/20/2020	613082	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200114	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.51
8/20/2020	613085	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200115	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	14.91
8/20/2020	613094	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200116	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.8
8/20/2020	613097	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200117	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.1
8/20/2020	613099	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200118	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.1
8/20/2020	613101	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200119	445727AZ	152	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.37
8/20/2020	613103	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200120	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.05
8/20/2020	613104	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200121	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.08
8/20/2020	613114	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200122	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.18
8/20/2020	613116	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200123	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.75
8/20/2020	613117	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200124	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.69
8/20/2020	613119	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200125	445727AZ	152	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.11
8/20/2020	613121	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200126	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.41
8/20/2020	613122	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200127	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	14.58
8/20/2020	613135	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200128	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.85
8/20/2020	613137	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200129	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	18.88
8/20/2020	613139	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200130	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.93
8/20/2020	613141	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200131	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.4
8/20/2020	613144	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200132	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.21
Material Total	23										414.68
Customer Total	23										414.68
Ticket Totals	23										414.68

Customer Summary Report
Criteria: 08/20/2020 12:00 AM to 08/20/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 21 2020, 9:24:24 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Internal Customer	Loads	Yards	Tons	Total Ticket Amount

Customer Summary Report
Criteria: 08/20/2020 12:00 AM to 08/20/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 21 2020, 9:24:24 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Customer Summary Report
Criteria: 08/21/2020 12:00 AM to 08/21/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 24 2020, 9:16:37 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Ticket Date	Ticket ID	Cust Code	MAS Unique ID	Customer	Generator	Manifest	Profile	Truck	Material	Material Description	Tons
8/21/2020	613160	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200133	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.32
8/21/2020	613161	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200134	445727AZ	152	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.75
8/21/2020	613162	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200135	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.42
8/21/2020	613164	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200136	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.4
8/21/2020	613168	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200137	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.9
8/21/2020	613169	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200138	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.28
8/21/2020	613184	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200139	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.58
8/21/2020	613185	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200140	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.25
8/21/2020	613190	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200141	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.14
8/21/2020	613191	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200142	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.28
8/21/2020	613195	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200143	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.79
8/21/2020	613212	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200144	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	11.43
8/21/2020	613214	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200145	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	11.16
8/21/2020	613217	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200146	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.15
8/21/2020	613220	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200147	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.68
8/21/2020	613223	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200148	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.52
Material Total	16										283.05
Customer Total	16										283.05
Ticket Totals	16										283.05

Customer Summary Report
Criteria: 08/21/2020 12:00 AM to 08/21/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 24 2020, 9:16:37 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Internal Customer	Loads	Yards	Tons	Total Ticket Amount

Customer Summary Report
Criteria: 08/21/2020 12:00 AM to 08/21/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 24 2020, 9:16:37 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Customer Summary Report
Criteria: 08/24/2020 12:00 AM to 08/24/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 25 2020, 9:19:24 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Ticket Date	Ticket ID	Cust Code	MAS Unique ID	Customer	Generator	Manifest	Profile	Truck	Material	Material Description	Tons
8/24/2020	613324	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200149	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.02
8/24/2020	613326	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200150	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	18.49
8/24/2020	613329	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200151	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	18.31
8/24/2020	613330	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200152	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.26
8/24/2020	613335	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200153	445727AZ	120	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.49
8/24/2020	613340	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200154	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	13.06
8/24/2020	613344	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200155	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	14.65
8/24/2020	613346	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200156	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	18.94
8/24/2020	613347	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200157	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.98
8/24/2020	613348	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200158	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.04
8/24/2020	613354	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200159	445727AZ	120	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.19
8/24/2020	613360	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200160	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.78
8/24/2020	613368	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200162	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.21
8/24/2020	613371	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200161	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.42
8/24/2020	613385	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200163	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.49
8/24/2020	613387	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200164	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.38
8/24/2020	613388	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200165	445727AZ	120	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.39
Material Total	17										301.1
Customer Total	17										301.1
Ticket Totals	17										301.1

Customer Summary Report
Criteria: 08/24/2020 12:00 AM to 08/24/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 25 2020, 9:19:24 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Internal Customer	Loads	Yards	Tons	Total Ticket Amount

Customer Summary Report
Criteria: 08/24/2020 12:00 AM to 08/24/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 25 2020, 9:19:24 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Customer Summary Report
Criteria: 08/25/2020 12:00 AM to 08/25/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 26 2020, 9:22:32 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Ticket Date	Ticket ID	Cust Code	MAS Unique ID	Customer	Generator	Manifest	Profile	Truck	Material	Material Description	Tons
8/25/2020	613413	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200166	445727AZ	I55	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.13
8/25/2020	613415	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200167	445727AZ	I20	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.41
8/25/2020	613418	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200168	445727AZ	I53	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.67
8/25/2020	613420	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200169	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20
8/25/2020	613422	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	08052001701	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.97
8/25/2020	613424	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200171	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.28
8/25/2020	613437	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200172	445727AZ	I55	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.41
8/25/2020	613440	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200173	445727AZ	I20	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.17
8/25/2020	613442	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200174	445727AZ	I53	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.54
8/25/2020	613444	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200175	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.35
8/25/2020	613446	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200176	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	13.73
8/25/2020	613449	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200177	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	12.71
8/25/2020	613452	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200178	445727AZ	I55	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.74
8/25/2020	613460	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200179	445727AZ	I20	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.55
8/25/2020	613461	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200180	445727AZ	I53	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.55
8/25/2020	613466	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200181	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.31
8/25/2020	613474	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200182	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.8
8/25/2020	613476	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200183	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.92
8/25/2020	613478	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200184	445727AZ	I55	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.68
8/25/2020	613479	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200	445727AZ	I20	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.26
8/25/2020	613480	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200186	445727AZ	I53	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.36
8/25/2020	613485	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200187	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.25
Material Total	22										382.79
Customer Total	22										382.79
Ticket Totals	22										382.79

Customer Summary Report
Criteria: 08/25/2020 12:00 AM to 08/25/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 26 2020, 9:22:32 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Internal Customer	Loads	Yards	Tons	Total Ticket Amount

Customer Summary Report
Criteria: 08/25/2020 12:00 AM to 08/25/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 26 2020, 9:22:32 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Customer Summary Report
Criteria: 08/26/2020 12:00 AM to 08/26/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 27 2020, 9:15:42 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Ticket Date	Ticket ID	Cust Code	MAS Unique ID	Customer	Generator	Manifest	Profile	Truck	Material	Material Description	Tons
8/26/2020	613510	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200188	445727AZ	I20	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.76
8/26/2020	613511	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200189	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.18
8/26/2020	613513	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200190	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.95
8/26/2020	613517	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200191	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.83
8/26/2020	613518	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200192	445727AZ	I55	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.34
8/26/2020	613522	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200193	445727AZ	I53	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	14.78
8/26/2020	613535	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200194	445727AZ	I20	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.78
8/26/2020	613537	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200195	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.72
8/26/2020	613539	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200196	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.92
8/26/2020	613543	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200197	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.39
8/26/2020	613546	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200198	445727AZ	I55	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.79
8/26/2020	613551	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200199	445727AZ	I53	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.55
8/26/2020	613558	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200200	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.66
8/26/2020	613560	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200201	445727AZ	I20	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.7
8/26/2020	613564	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200202	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	10.12
8/26/2020	613569	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200203	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	11.56
8/26/2020	613572	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200204	445727AZ	I55	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.31
8/26/2020	613573	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200205	445727AZ	I53	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.65
8/26/2020	613582	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200206	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.26
8/26/2020	613588	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200207	445727AZ	I20	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.68
8/26/2020	613590	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200208	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.9
8/26/2020	613591	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200209	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.19
8/26/2020	613593	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200210	445727AZ	I55	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.64
8/26/2020	613595	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200211	445727AZ	I53	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.43
Material Total	24										417.09
Customer Total	26										5678.55
Ticket Totals	26										5678.55

Customer Summary Report
Criteria: 08/26/2020 12:00 AM to 08/26/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 27 2020, 9:15:42 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Internal Customer	Loads	Yards	Tons	Total Ticket Amount

Customer Summary Report
Criteria: 08/26/2020 12:00 AM to 08/26/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 27 2020, 9:15:42 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Customer Summary Report
Criteria: 08/27/2020 12:00 AM to 08/27/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 28 2020, 9:18:13 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Ticket Date	Ticket ID	Cust Code	MAS Unique ID	Customer	Generator	Manifest	Profile	Truck	Material	Material Description	Tons
8/27/2020	613617	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200212	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.96
8/27/2020	613619	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200213	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.57
8/27/2020	613622	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200214	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.83
8/27/2020	613625	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200215	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.47
8/27/2020	613627	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805216	445727AZ	120	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.54
8/27/2020	613631	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200217	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.93
8/27/2020	613644	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200218	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.39
8/27/2020	613645	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200219	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.29
8/27/2020	613646	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200220	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.57
8/27/2020	613647	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200221	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.75
8/27/2020	613649	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200222	445727AZ	120	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.44
8/27/2020	613652	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200223	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.01
8/27/2020	613666	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200224	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.83
8/27/2020	613667	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200225	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.83
8/27/2020	613671	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200226	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.39
8/27/2020	613672	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200227	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.03
8/27/2020	613676	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200228	445727AZ	120	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.7
8/27/2020	613678	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200229	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.9
8/27/2020	613690	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200230	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.68
8/27/2020	613692	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200231	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.53
8/27/2020	613696	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200232	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.54
Material Total	21										398.18
Customer Total	21										398.18
Ticket Totals	21										398.18

Customer Summary Report
Criteria: 08/27/2020 12:00 AM to 08/27/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 28 2020, 9:18:13 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Internal Customer	Loads	Yards	Tons	Total Ticket Amount

Customer Summary Report
Criteria: 08/27/2020 12:00 AM to 08/27/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 28 2020, 9:18:13 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Customer Summary Report
Criteria: 08/28/2020 12:00 AM to 08/28/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 31 2020, 9:37:37 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Ticket Date	Ticket ID	Cust Code	MAS Unique ID	Customer	Generator	Manifest	Profile	Truck	Material	Material Description	Tons
8/28/2020	613719	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200233	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.84
8/28/2020	613720	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200234	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.09
8/28/2020	613723	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200235	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.76
8/28/2020	613726	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200236	445727AZ	120	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.84
8/28/2020	613729	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200237	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.24
8/28/2020	613734	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200238	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	21.15
8/28/2020	613746	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200239	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.92
8/28/2020	613749	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200240	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.48
8/28/2020	613750	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200241	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.62
8/28/2020	613752	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200242	445727AZ	120	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.75
8/28/2020	613754	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200243	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.37
8/28/2020	613758	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200244	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.95
8/28/2020	613777	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200245	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.22
8/28/2020	613779	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200246	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.65
8/28/2020	613783	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200247	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.74
Material Total	15										288.62
Customer Total	15										288.62
Ticket Totals	15										288.62

Customer Summary Report
Criteria: 08/28/2020 12:00 AM to 08/28/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 31 2020, 9:37:37 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Internal Customer	Loads	Yards	Tons	Total Ticket Amount

Customer Summary Report
Criteria: 08/28/2020 12:00 AM to 08/28/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Aug 31 2020, 9:37:37 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Customer Summary Report
Criteria: 08/31/2020 12:00 AM to 08/31/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Sep 01 2020, 9:18:27 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Ticket Date	Ticket ID	Cust Code	MAS Unique ID	Customer	Generator	Manifest	Profile	Truck	Material	Material Description	Tons
8/31/2020	613907	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200248	445727AZ	120	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.84
8/31/2020	613912	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200249	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.69
8/31/2020	613914	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200250	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.86
8/31/2020	613918	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200251	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.2
8/31/2020	613920	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200252	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.48
8/31/2020	613921	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200253	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.31
8/31/2020	613943	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200254	445727AZ	120	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.59
8/31/2020	613945	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200255	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.18
8/31/2020	613946	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200256	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.93
8/31/2020	613950	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200257	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.91
8/31/2020	613951	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200258	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.19
8/31/2020	613954	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200259	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	15.83
8/31/2020	613966	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200260	445727AZ	120	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.69
8/31/2020	613968	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200261	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.64
8/31/2020	613969	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200262	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.55
8/31/2020	613971	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200263	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.34
8/31/2020	613974	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200265	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.06
8/31/2020	613976	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200264	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.17
Material Total	18										337.46
Customer Total	18										337.46
Ticket Totals	18										337.46

Customer Summary Report
Criteria: 08/31/2020 12:00 AM to 08/31/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Sep 01 2020, 9:18:27 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Internal Customer	Loads	Yards	Tons	Total Ticket Amount

Customer Summary Report
Criteria: 08/31/2020 12:00 AM to 08/31/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Sep 01 2020, 9:18:27 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Customer Summary Report
Criteria: 09/01/2020 12:00 AM to 09/01/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Sep 02 2020, 9:18:41 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Ticket Date	Ticket ID	Cust Code	MAS Unique ID	Customer	Generator	Manifest	Profile	Truck	Material	Material Description	Tons
9/1/2020	614008	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200266	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.89
9/1/2020	614010	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200267	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	21.31
9/1/2020	614013	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200268	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.92
9/1/2020	614014	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200269	445727AZ	I20	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	18.08
9/1/2020	614017	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200270	445727AZ	I55	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.18
9/1/2020	614020	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	08015200271	445727AZ	I53	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.71
9/1/2020	614028	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200272	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.6
9/1/2020	614031	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200273	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.37
9/1/2020	614038	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200274	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	21.51
9/1/2020	614041	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200275	445727AZ	I20	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.89
9/1/2020	614042	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200276	445727AZ	I55	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.55
9/1/2020	614045	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200277	445727AZ	I53	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.77
9/1/2020	614055	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200278	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	21.68
9/1/2020	614059	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200279	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.68
9/1/2020	614063	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200280	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.71
9/1/2020	614066	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200281	445727AZ	I20	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.24
9/1/2020	614068	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200282	445727AZ	I55	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.8
9/1/2020	614069	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200283	445727AZ	I53	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.07
9/1/2020	614076	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200284	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.23
9/1/2020	614078	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200285	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.64
Material Total	20										387.83
Customer Total	20										387.83
Ticket Totals	20										387.83

Customer Summary Report
Criteria: 09/01/2020 12:00 AM to 09/01/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Sep 02 2020, 9:18:41 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Internal Customer	Loads	Yards	Tons	Total Ticket Amount

Customer Summary Report
Criteria: 09/01/2020 12:00 AM to 09/01/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Sep 02 2020, 9:18:41 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Customer Summary Report
Criteria: 09/02/2020 12:00 AM to 09/02/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Sep 03 2020, 9:16:48 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Ticket Date	Ticket ID	Cust Code	MAS Unique ID	Customer	Generator	Manifest	Profile	Truck	Material	Material Description	Tons
9/2/2020	614098	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200286	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.47
9/2/2020	614100	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200287	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.93
9/2/2020	614108	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200288	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	21.61
9/2/2020	614109	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200289	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	18.12
9/2/2020	614112	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200290	445727AZ	120	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.88
9/2/2020	614113	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200291	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.76
9/2/2020	614128	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200292	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	21.11
9/2/2020	614130	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200293	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.94
9/2/2020	614135	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200294	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.81
9/2/2020	614136	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200295	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.88
9/2/2020	614137	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200296	445727AZ	120	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	18.76
9/2/2020	614140	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200297	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.84
9/2/2020	614149	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200298	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.48
9/2/2020	614153	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200299	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.13
9/2/2020	614157	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200301	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.97
9/2/2020	614158	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200300	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.95
9/2/2020	614164	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200302	445727AZ	120	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.7
9/2/2020	614174	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200303	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.54
9/2/2020	614175	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200304	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	22.38
9/2/2020	614180	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200305	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.88
9/2/2020	614183	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200306	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.64
Material Total	21										404.78
Customer Total	21										404.78
Ticket Totals	21										404.78

Customer Summary Report
Criteria: 09/02/2020 12:00 AM to 09/02/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Sep 03 2020, 9:16:48 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Internal Customer	Loads	Yards	Tons	Total Ticket Amount

Customer Summary Report
Criteria: 09/02/2020 12:00 AM to 09/02/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Sep 03 2020, 9:16:48 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Customer Summary Report
Criteria: 09/03/2020 12:00 AM to 09/03/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Sep 04 2020, 9:21:09 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Ticket Date	Ticket ID	Cust Code	MAS Unique ID	Customer	Generator	Manifest	Profile	Truck	Material	Material Description	Tons
9/3/2020	614202	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200307	445727AZ	120	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	18.26
9/3/2020	614205	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200308	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	21.02
9/3/2020	614206	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200309	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	21.55
9/3/2020	614211	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200310	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.06
9/3/2020	614225	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200311	445727AZ	155	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.92
9/3/2020	614227	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200312	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.78
9/3/2020	614231	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200313	445727AZ	120	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	17.55
9/3/2020	614247	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200314	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.82
9/3/2020	614252	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200315	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.17
9/3/2020	614254	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200316	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.64
9/3/2020	614259	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200317	445727AZ	153	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	16.95
9/3/2020	614265	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200318	445727AZ	I200	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	19.74
9/3/2020	614271	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200319	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	20.29
9/3/2020	614274	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200320	445727AZ	I201	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	8.59
Material Total	14										258.34
Customer Total	14										258.34
Ticket Totals	14										258.34

Customer Summary Report
Criteria: 09/03/2020 12:00 AM to 09/03/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Sep 04 2020, 9:21:09 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Internal Customer	Loads	Yards	Tons	Total Ticket Amount

Customer Summary Report
Criteria: 09/03/2020 12:00 AM to 09/03/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Sep 04 2020, 9:21:09 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Customer Summary Report
Criteria: 09/04/2020 12:00 AM to 09/07/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Sep 08 2020, 9:31:58 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Ticket Date	Ticket ID	Cust Code	MAS Unique ID	Customer	Generator	Manifest	Profile	Truck	Material	Material Description	Tons
9/4/2020	614306	0000924	236766863001	ARIZONA PUBLIC SERVICE COMPANY	160-ARIZONAPUBLICSERVICEPRESCO	0805200321	445727AZ	I202	State Reg Soil-Tons	Contaminated Soil Regulated by state of AZ	5.11
Material Total	1										5.11
Customer Total	1										5.11
Ticket Totals	1										5.11

Customer Summary Report
Criteria: 09/04/2020 12:00 AM to 09/07/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Sep 08 2020, 9:31:58 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

Internal Customer	Loads	Yards	Tons	Total Ticket Amount

Customer Summary Report
Criteria: 09/04/2020 12:00 AM to 09/07/2020 11:59 PM
Business Unit Name: Gray Wolf Regional Landfill - S04832 (USA)
User: kbuckhou
Date: Sep 08 2020, 9:31:58 AM - Central Standard Time
Operation Type: All
Customer Name: All
Ticket Type: All
Customer Type: All
PMT Category: All
Profile: 445727AZ

WASTE MANAGEMENT

Gray Wolf Regional LF
23355 Hwy 169
Dewey, AZ, 86327

Original
Ticket# 615282
Ph: (928) 999-1033

Customer Name	PINNACLEWESTCAPITALCORP441599	Carrier	ERI Rear Dump		
Ticket Date	09/18/2020	Vehicle#	310	Volume	
Payment Type	Credit Account	Container			
Manual Ticket#		Driver			
Route		Check#			
Hauling Ticket#		Billing#	0000875		
Destination		Grid			
PO#	1) 700513424 2) 700513424				

	Time	Scale	Operator	Inbound		
In	09/18/2020 13:23:10	Inbound	tharcey		Gross	20840 lb
Out	09/18/2020 13:40:53	Outbound	tharcey		Tare	20740 lb
					Net	100 lb
					Tons	0.05

Comments

Manifest# 38573

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Asb Non Fri-Tons-Asbesto	100	0.05	Tons				
2	ADE-ADEQ Fee	100	0.05	Tons				

Total Tax
Total Ticket

Driver`s Signature LVS

WASTE MANAGEMENT, INC.

ONE MANIFEST PER LOAD, CALL FACILITY 24 HOURS IN ADVANCE TO SCHEDULE AND CONFIRM.

WM 38573

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY DIVISION - COMPLIANCE SECTION

3033 North Central Avenue • Phoenix, Arizona 85012

615282

ASBESTOS NESHAP WASTE SHIPMENT RECORD

GENERATOR

1a. Work Site Name, Address & County
APS - Prescott S.C.
300 N Granite St.
Prescott AZ 86303

1b. Owner/Generator's Name and Mailing Address
APS
PO Box 53999, MS 9303
Phoenix AZ 85072-3999 (602)810-0059
Owner's Telephone No.

2. Operator's Name & Mailing Address
SSI / ERI
2002 W. Medtronic Way #108
Tempe AZ 85281
Operator's Telephone No. 480.967.2802

3. Waste Disposal Site (WDS) Name, Address and Physical Location
WM Gray Wolf Regional Landfill
23355 East Hwy 169, Mile Post 11
Dewey AZ 86327

4a. Asbestos NESHAP Regulatory Agency Name & Address for Work Site
ADEQ - Asbestos Neshap Program
1110 W. Washington St.
Phx AZ 85007

4b. Asbestos NESHAP Regulatory Agency for WDS: Name & Address
ADEQ - Asbestos NESHAP Program
1110 W. Washington St
Phx AZ 85007

5. Description of Materials	6. Containers: Number	Containers: Type	7. Total Quantity Removed in m³ (yd³)
ASBESTOS WASTE PIPE			
Friable Asbestos Material RQ, ASBESTOS, 9, NA2212, III			
Nonfriable Asbestos Material Cat II	1	BA	0.5

8a Special Transportation, Treatment, Storage or Disposal Information — PROFILE APPROVAL NO. AZ 441599

8b. Bill of Lading information NORTH AMERICAN EMERGENCY RESPONSE GUIDE 171, OR NAERG 171

8c. Alternate Waste Disposal Site information APS P.O. # ~~700739~~ 700739623 dig 25-0133/1459

8d. Emergency Response Telephone No. 800.535.5053

9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.

NOTE: the waste Operator must retain a copy of this form.

Printed/Typed Name & Title: Judith Heywood, APS, Project Mgr.

Signature: Judith Heywood — MO 9 DAY 18 YR 20

TRANSPORTER

10. Transporter 1 (Acknowledgement of Receipt of Materials)
ERI
2002 W. MEDTRONIC WAY #108
Tempe AZ 85281 480.967.2802
Printed/Typed Name & Title, Address & Telephone No.

Signature — MO 09 DAY 18 YR 20

11. Transporter 2 (Acknowledgement of Receipt of Materials)

Printed/Typed Name & Title, Address & Telephone No.

Signature — MO DAY YR

DISPOSAL SITE

12. Discrepancy Indication Space

13. Waste Disposal site Owner or Operator of receipt of Asbestos materials covered by this manifest except as noted in Item 12

Printed/Typed Name & Title

Signature — MO DAY YR

TRANSPORTER 2: RETAIN THIS COPY SHOWING RECEIPT BY WDS

phalt Paving & Supply, Inc
25 N. Glassford Hill Rd
rescott Valley, AZ 86314
8-772-6363

** MANUAL WEIGHT **

Ticket Number 37805
DATE 9/18/2020 TIME 1:27 PM

SOLD TO:
SPHALT PAVING & SUPPLY - JOBS
425 N. GLASSFORD HILL RD
PRESCOTT VALLEY AZ
6314 928-772-6363

CUSTOMER NO.
100001
JOB ORDER NUMBER
22620-22

DELIVERED TO:

TRUCK INFORMATION

NUMBER	LOADS TODAY	MATERIAL TODAY
3220	1	4.03

MATERIAL LOADED

SILO or SPEC	CODE	PRODUCT NAME	MATERIAL SOLD TODAY
0	8160	RECYCLE FILL	

PLANT NO. 02
OPERATOR
PV SCALE

WEIGHT IN: Tons

GROSS	TARE	NET
17.730*	13.700*	4.030
0.000	← TRUCK MAXIMUMS →	0.000

COMMENTS/DIRECTIONS:

CONTRACT #22620-22

CASH SALE

PRICE PER UNIT	$
MATERIAL COST	$
HAUL COST	$
SALES TAX	$
TOTAL	$

JOB INFORMATION

LOAD NO.	MATERIAL TODAY	TOTAL MATERIAL TO DATE	MATERIAL REQD.	LOCATION or JOB NAME
1	4.03	4.03	0.00	

Driver: _____ Rcvd By: _____ Insp: _____

This Memorandum is an acknowledgment that a Bill of Lading has been issued and is not Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

Shipper No. 20-209125c

Carrier No. VANCO 153

Page 1 of 1

VANCO TRUCK #

(Name of carrier) (SCAC)

Date 8-27-20

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec.1.

TO:
Consignee PRESCOTT SOLID WASTE DIVISION
Street 2800 SUNDOG RANCH RD
City PRESCOTT State AZ Zip Code 86301

FROM:
Shipper ARIZONA PUBLIC SERVICES / VIA ERI
Street 300 N. GRANITE ST
City PRESCOTT State AZ Zip Code 86301
24 hr. Emergency Contact Tel. No. 480-967-2802

Route LINCOLN AVE - MILLER - WILLOW - 89 - PRESCOTT LAKES

Vehicle Number 153

No. of Units & Container Type	HM	BASIC DESCRIPTION UN or NA Number, Proper Shipping Name, Hazard Class, Packing Group	TOTAL QUANTITY (Weight, Volume, Gallons, etc.)	WEIGHT (Subject to Correction)	RATE	CHARGES (For Carrier Use Only)
15 CY	N/A	ASPHALT NON IMPACTED	15	CY		
				1.97		

PLACARDS TENDERED: YES ☐ NO ☒

Note — (1) Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property, as follows: "The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____."
(2) Where the applicable tariff provisions specify a limitation of the carrier's liability absent a release or a value declaration by the shipper and the shipper does not release the carrier's liability or declare a value, the carrier's liability shall be limited to the extent provided by such provisions. See NMFC Item 172.
(3) Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation. See Section 2(e) of Item 360, Bills of Lading, Freight Bills and Statements of Charges and Section 1(a) of the Contract Terms and Conditions for a list of such articles.

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Signature

REMIT C.O.D. TO: ADDRESS

COD Amt. $

C.O.D. FEE: PREPAID ☐ COLLECT ☐ $

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

TOTAL CHARGES $

FREIGHT CHARGES
FREIGHT PREPAID except when box at right is checked ☐ Check box if charges are to be collect

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.
Shipper hereby certifies that he is familiar with all the lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER ENVIRONMENTAL RESPONSE INC / APS
PER Robert Z O'Z

CARRIER VANCO
PER ERI / APS
DATE 8-27-20

3

Permanent post-office address of shipper.

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ERI TRUCK LOG

JOB NO. 20-209125 JOB NAME APS PRESCOTT

ADDRESS * CLEAN ASPHALT TO PRESCOTT SOLID WASTE *

START TIME _____ FINISH TIME _____ DATE _____

MANIFEST #	COMPANY	TRUCK #	TIME IN	LOAD	TIME OUT	CYCLE TIME	RETURN	TONS
8/27/20								
9125-C	VANCO	153	1:40	1:41	2:05		NO	13.97

CITY OF PRESCOTT
SUNDOG RANCH ROAD
SOLID WASTE TRANSFER FACILITY
928-777-1116

Ticket: 1151530

Time In : 8/27/2020 3:03:13 PM
Time Out: 8/27/2020 3:16:17 PM

Vehicle: B
Container:
Customer Name: Car
Memo:
Job: ERI

Waste Type: Inert Debris

GROSS: 53160 lbs.

TARE: 0 lbs.
CONTAINER: 0 lbs.

TOTAL TARE: 25220 lbs.

NET WEIGHT: 27940 lbs.
13.97 tons

STRAIGHT BILL OF LADING
ORIGINAL — NOT NEGOTIABLE

Shipper No. 20-209125c

Carrier No. VANCO 153

Page 1 of 1

VANCO TRUCK #
(Name of carrier) (SCAC)

Date 8-27-20

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec.1.

TO:
Consignee PRESCOTT SOLID WASTE DIVISION
Street 2800 SUNDOG RANCH RD
City PRESCOTT State AZ Zip Code 86301

FROM:
Shipper ARIZONA PUBLIC SERVICES / VIA ERI
Street 300 N. GRANITE ST
City PRESCOTT State AZ Zip Code 86301
24 hr. Emergency Contact Tel. No. 480-967-2802

Route LINCOLN AVE - MILLER - WILLOW - 89 - PRESCOTT LAKES
Vehicle Number 153

No. of Units & Container Type	HM	BASIC DESCRIPTION UN or NA Number, Proper Shipping Name, Hazard Class, Packing Group	TOTAL QUANTITY (Weight, Volume, Gallons, etc.)	WEIGHT (Subject to Correction)	RATE	CHARGES (For Carrier Use Only)
15 CY	N/A	ASPHALT NON IMPACTED	15	CY		
				13.97		

PLACARDS TENDERED: YES ☐ NO ☒

Note — (1) Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property, as follows: "The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____."
(2) Where the applicable tariff provisions specify a limitation of the carrier's liability absent a release or a value declaration by the shipper and the shipper does not release the carrier's liability or declare a value, the carrier's liability shall be limited to the extent provided by such provisions. See NMFC Item 172.
(3) Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation. See Section 2(e) of Item 360, Bills of Lading, Freight Bills and Statements of Charges and Section 1(a) of the Contract Terms and Conditions for a list of such articles.

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Signature

REMIT C.O.D. TO: ADDRESS

COD Amt: $

C.O.D. FEE: PREPAID ☐ COLLECT ☐ $

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

TOTAL CHARGES $

FREIGHT CHARGES
FREIGHT PREPAID except when box at right is checked ☐ Check box if charges are to be collect.

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.
Shipper hereby certifies that he is familiar with all the lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER ENVIRONMENTAL RESPOSE INC / APS
PER Robert L O'Z

CARRIER VANCO
PER ERI / APS
DATE 8-27-20

1

Permanent post-office address of shipper.

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This Memorandum ... acknowledgment that a Bill of Lading has been issued and is not Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

Shipper No. 20-209125A

Carrier No. VANCO 155

Page 1 of 1

VANCO TRUCK#

(Name of carrier) (SCAC)

Date 8-27-20

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec.1.

TO:
Consignee PRESCOTT SOLID WASTE DIVISION
Street 2800 SUNDOG RANCH RD
City PRESCOTT State AZ Zip Code 86301

FROM:
Shipper ARIZONA PUBLIC SERVICES / VIA ERI
Street 300 N. GRANITE STREET
City PRESCOTT State AZ Zip Code 86301
24 hr. Emergency Contact Tel. No. 480-967-2802

Route LINCOLN AVE - MILLER - WILLOW - 89 - PRESCOTT LAKES

Vehicle Number 155

No. of Units & Container Type	HM	BASIC DESCRIPTION UN or NA Number, Proper Shipping Name, Hazard Class, Packing Group	TOTAL QUANTITY (Weight, Volume, Gallons, etc.)	WEIGHT (Subject to Correction)	RATE	CHARGES (For Carrier Use Only)
15 cy	NA	NON IMPACTED CONCRETE	15	CY		
				8.32		

PLACARDS TENDERED: YES ☐ NO ☒

Note — (1) Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property, as follows: "The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____."
(2) Where the applicable tariff provisions specify a limitation of the carrier's liability absent a release or a value declaration by the shipper and the shipper does not release the carrier's liability or declare a value, the carrier's liability shall be limited to the extent provided by such provisions. See NMFC Item 172.
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I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

M. Lo Signature

REMIT C.O.D. TO: ADDRESS

COD Amt: $

C.O.D. FEE: PREPAID ☐ COLLECT ☐ $

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

TOTAL CHARGES $

FREIGHT CHARGES
FREIGHT PREPAID except when box at right is checked ☐ Check box if charges are to be collect

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.
Shipper hereby certifies that he is familiar with all the lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER ENVIRONMENTAL RESPONSE INC
PER [signature]
APS

CARRIER VANCO Diego
PER ERI / APS
DATE 8-27-20

3

Permanent post-office address of shipper.

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This Memorandum is an acknowledgment that a Bill of Lading has been issued and is not Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

Shipper No. 20-20912558

Carrier No. VANCO 120

Page 1 of 1

VANCO TRUCK # 120

(Name of carrier) (SCAC)

Date 8-27-20

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec.1.

TO:
Consignee PRESCOTT SOLID WASTE DIVISION
Street 2800 SUNDOGG RANCH RD
City PRESCOTT State AZ Zip Code 86301

FROM:
Shipper ARIZONA PUBLIC SERVICES / VIA ERI
Street 300 N. GRANITE ST
City PRESCOTT State AZ Zip Code 86301
24 hr. Emergency Contact Tel. No. 480-967-2802

Route LINCOLN AVE - MILLER - WILLOW - 89 - PRESCOTT LAKES

Vehicle Number 120

No. of Units & Container Type	HM	BASIC DESCRIPTION UN or NA Number, Proper Shipping Name, Hazard Class, Packing Group	TOTAL QUANTITY (Weight, Volume, Gallons, etc.)	WEIGHT (Subject to Correction)	RATE	CHARGES (For Carrier Use Only)
15 cy	N/A	NON IMPACTED CONCRETE	15	CY		
			9.18 TON	9.18 TON		

PLACARDS TENDERED: YES ☐ NO ☒

Note — (1) Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property, as follows: "The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____."
(2) Where the applicable tariff provisions specify a limitation of the carrier's liability absent a release or a value declaration by the shipper and the shipper does not release the carrier's liability or declare a value, the carrier's liability shall be limited to the extent provided by such provisions. See NMFC Item 172.
(3) Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation. See Section 2(e) of Item 360, Bills of Lading, Freight Bills and Statements of Charges and Section 1(a) of the Contract Terms and Conditions for a list of such articles.

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

MCD Signature

REMIT C.O.D. TO: ADDRESS

COD Amt: $

C.O.D. FEE: PREPAID ☐ COLLECT ☐ $

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

TOTAL CHARGES $

FREIGHT CHARGES
FREIGHT PREPAID except when box at right is checked ☐ Check box if charges are to be collect

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.

Shipper hereby certifies that he is familiar with all the lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER ENVIRONMENTAL RESPONSE INC
PER [signature]
APS

CARRIER VANCO [signature]
PER ERI / APS
DATE 8-27-20

3

Permanent post-office address of shipper.

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THIS MEMORANDUM is an acknowledgement that a bill of lading has been issued and is not the Original Bill of Lading, not a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

Shipper's No. APS 20-209125 E

Carrier VANCO # 120 SCAC N/A Carrier's No. 20-209125

RECEIVED, subject to individually determined rates or contracts that have been agreed upon in writing between the carrier and shipper, if applicable, otherwise to the rates, classifications and rules that have been established by the carrier and are available to the shipper, on request; and all applicable state and federal regulations;

at _____, date 8-28-20 from APS SUBSTATION

the Property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to delivery at said destination, if on its route, or otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said Property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said Property that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on the back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

TO:	FROM:
Consignee PRESCOTT SOLID WASTE DIVISION	Shipper ARIZONA PUBLIC SERVICE
Street 2800 SUNOCO RANCH RD	Street 300 N. GRANITE ST
Destination PRESCOTT AZ Zip 86301	Origin PRESCOTT AZ Zip 86301
Route LINCOLN AVE - MILLER - WILLOW - 89 - PRESCOTT LAKES	

Delivering Carrier VANCO | Vehicle Number 120 | U.S. DOT Hazmat Reg. No.

Number and Type of Packages	HM	I.D. Number	Description of Articles	Hazard Class	Pkg. Grp.	Total Quantity (mass, volume, or activity)	Weight (subject to correction)	Class or Rate
15	N/A	CC	NON IMPACTED CONCRETE	N/A	-	15 YD		
						14.32		

Remit COD to:
Address:
City: State: Zip:

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

NOTE: Liability Limitation for loss or damage in this shipment may be applicable. See 49 U.S.C. 14706(c)(1)(A) and (B).

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

COD AMT: $

TOTAL CHARGES: $

COD FEE: Prepaid ☐ Collect ☐ $

FREIGHT CHARGES: ☐ Prepaid ☐ Collect

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. Per

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ BY SHIPPER ☐ BY CARRIER

DRIVER'S SIGNATURES

SHIPPER: ARIZONA PUBLIC SERVICE
PER: [signature] DATE: 8-28-20

CARRIER: ERI VIA VANCO [signature]
PER: _____ DATE: 8-28-20

EMERGENCY RESPONSE TELEPHONE NUMBER: 480-967-2802

NAME OR CONTRACT NUMBER OR OTHER UNIQUE IDENTIFIER:

969 (Rev. 3/17)

THIS MEMORANDUM is an acknowledgement that a bill of lading has been issued and is not the Original Bill of Lading, not a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

TRUCK #

Shipper's No. APS 20-209125 0

Carrier TRUCKING VANCO SCAC N/A Carrier's No. 20-209125

RECEIVED, subject to individually determined rates or contracts that have been agreed upon in writing between the carrier and shipper, if applicable, otherwise to the rates, classifications and rules that have been established by the carrier and are available to the shipper, on request; and all applicable state and federal regulations;

at _____, date 8-28-20 from APS SUBSTATION

the Property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to delivery at said destination, if on its route, or otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said Property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said Property that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on the back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

TO:

Consignee PRESCOTT SOLID WASTE DIVISION

Street 2800 SUNDOG RANCH RD

Destination PRESCOTT AZ Zip 86301

Route LINCOLN AVE - MILLER - WALCOTT - 89 - PRESCOTT LAKES

FROM:

Shipper ARIZONA PUBLIC SERVICES

Street 300 N. GRANITE ST

Origin PRESCOTT AZ Zip 86301

Delivering Carrier VANCO

Vehicle Number 153

U.S. DOT Hazmat Reg. No.

Number and Type of Packages	HM	I.D. Number	Description of Articles	Hazard Class	Pkg. Grp.	Total Quantity (mass, volume, or activity)	Weight (subject to correction)	Class or Rate
15	N/A	CC	NON IMPACTED CONCRETE	N/A	-	15 yd³		

Remit COD to:
Address:
City: State: Zip:

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

NOTE: Liability Limitation for loss or damage in this shipment may be applicable. See 49 U.S.C. 14706(c)(1)(A) and (B).

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. Per

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

COD AMT: $

TOTAL CHARGES: $

COD FEE: Prepaid ☐ Collect ☐ $

FREIGHT CHARGES: ☐ Prepaid ☐ Collect

PLACARDS REQUIRED N/A

PLACARDS SUPPLIED ☐ BY SHIPPER ☐ BY CARRIER

DRIVER'S SIGNATURE:

SHIPPER: ARIZONA PUBLIC SERVICE

PER: [signature] DATE: 8-28-20

CARRIER: ERI VIA VANCO

PER: [signature] DATE: 8-28-20

EMERGENCY RESPONSE TELEPHONE NUMBER: 480-967-2802

NAME OR CONTRACT NUMBER OR OTHER UNIQUE IDENTIFIER:

969 (Rev. 3/17)

acknowledgement that a bill of lading has been issued and is not the Original Bill of Lading, not a copy duplicate, covering the property named herein, and is intended solely for filing or record.

Shipper's No. APS-20-209125 F

Carrier VANCO # 120 SCAC N/A Carrier's No. 20-209125

RECEIVED, subject to individually determined rates or contracts that have been agreed upon in writing between the carrier and shipper, if applicable, otherwise to the rates, classifications and rules that have been established by the carrier and are available to the shipper, on request; and all applicable state and federal regulations;

at _____, date ~~8~~ 9-1-2020 from APS SUBSTATION

the Property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to delivery at said destination, if on its route, or otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said Property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said Property that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on the back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

TO:

Consignee PRESCOTT SOLID WASTE DIVISION

Street 2800 SUNDOG RANCH RD

Destination PRESCOTT AZ Zip 86301

Route LINCOLN AVE - MILLER - WILLOW - 89 - PRESCOTT LAKES

FROM:

Shipper ARIZONA PUBLIC SERVICE

Street 300 N. GRANITE ST

Origin PRESCOTT AZ Zip 86301

Delivering Carrier VANCO

Vehicle Number 120

U.S. DOT Hazmat Reg. No.

Number and Type of Packages	HM	I.D. Number	Description of Articles	Hazard Class	Pkg. Grp.	Total Quantity (mass, volume, or activity)	Weight (subject to correction)	Class or Rate
15	N/A	CC	NON IMPACTED CONCRETE	N/A	-	15 YD	9.64 T	

Remit COD to:
Address:
City: State: Zip:

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

COD AMT: $

COD FEE: Prepaid ☐ Collect ☐ $

TOTAL CHARGES: $

FREIGHT CHARGES: ☐ Prepaid ☐ Collect

NOTE: Liability Limitation for loss or damage in this shipment may be applicable. See 49 U.S.C. 14706(c)(1)(A) and (B).

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. Per

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ BY SHIPPER ☐ BY CARRIER

DRIVER'S SIGNATURE:

SHIPPER: ARIZONA PUBLIC SERVICE

PER: Robert [illegible] DATE: 8

CARRIER: ERI VIA VANCO

PER: Steve Robles DATE: 8

EMERGENCY RESPONSE TELEPHONE NUMBER: 480-967-2802

NAME OR CONTRACT NUMBER OR OTHER UNIQUE IDENTIFIER:

969 (Rev. 3/17)

THIS MEMORANDUM is an acknowledgement that a bill of lading has been issued and is not the Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

Shipper's No. APS-20-209125 I

Carrier Environmental Response #301 SCAC N/A Carrier's No. 20-209125

RECEIVED, subject to individually determined rates or contracts that have been agreed upon in writing between the carrier and shipper, if applicable, otherwise to the rates, classifications and rules that have been established by the carrier and are available to the shipper, on request; and all applicable state and federal regulations;

at _____, date 9/15/20 from APS Substation

the Property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to delivery at said destination, if on its route, or otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said Property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said Property that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on the back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

TO:	FROM:
Consignee Prescott Solid Waste Division	Shipper Arizona Public Service
Street 2800 Sundog Ranch Rd	Street 300 N. Granite St
Destination Prescott AZ Zip 86301	Origin Prescott AZ Zip 86301
Route Lincoln Ave - Miller - Willow - SR 89 - Prescott Lakes	
Delivering Carrier	Vehicle Number / U.S. DOT Hazmat Reg. No.

Number and Type of Packages	HM	I.D. Number	Description of Articles	Hazard Class	Pkg. Grp.	Total Quantity (mass, volume, or activity)	Weight (subject to correction)	Class or Rate
15	N/A	CC	NON IMPACTED CONCRETE	N/A	-	15 YD	8.63 T	

Remit COD to:
Address:
City: State: Zip:

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

COD AMT: $

TOTAL CHARGES: $

COD FEE: Prepaid ☐ Collect ☐ $

FREIGHT CHARGES: ☐ Prepaid ☐ Collect

NOTE: Liability Limitation for loss or damage in this shipment may be applicable. See 49 U.S.C. 14706(c)(1)(A) and (B).

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. Per

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ BY SHIPPER ☐ BY CARRIER

DRIVER'S SIGNATURE:

SHIPPER: Arizona Public Service

PER: _____ DATE: 9/15/20

CARRIER: ERI

PER: Pojo DATE: 9/15/20

EMERGENCY RESPONSE TELEPHONE NUMBER: 480-967-2802

NAME OR CONTRACT NUMBER OR OTHER UNIQUE IDENTIFIER:

969 (Rev. 3/17)

This Memorandum is an acknowledgment that a Bill of Lading has been issued and is not Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

Shipper No. APS-20195 J

Carrier No. 20-209125

Page 1 of 1

ENVIRONMENTAL RESPONSE #301 (Name of carrier)

N/A (SCAC)

Date 9-15-20

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec.1.

TO:
Consignee PRESCOTT SOLID WASTE DIVISION
Street 2800 SUNDOG RANCH RD
City PRESCOTT State AZ Zip Code 86301

FROM:
Shipper ARIZONA PUBLIC SERVICE
Street 300 N. GRANITE ST.
City PRESCOTT State AZ Zip Code 86301
24 hr. Emergency Contact Tel. No. 480-967-2802

Route LINCOLN AVE - MILLER - WILLOW CREEK - SR 89 - PRESCOTT LAKES

Vehicle Number

No. of Units & Container Type	HM	BASIC DESCRIPTION UN or NA Number, Proper Shipping Name, Hazard Class, Packing Group	TOTAL QUANTITY (Weight, Volume, Gallons, etc.)	WEIGHT (Subject to Correction)	RATE	CHARGES (For Carrier Use Only)
1 OT	N/A	NON IMPACTED CONCRETE	15 cy	17.92 T		

PLACARDS TENDERED: YES ☐ NO ☒

Note — (1) Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property, as follows: "The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____."
(2) Where the applicable tariff provisions specify a limitation of the carrier's liability absent a release or a value declaration by the shipper and the shipper does not release the carrier's liability or declare a value, the carrier's liability shall be limited to the extent provided by such provisions. See NMFC Item 172.
(3) Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation. See Section 2(e) of item 360, Bills of Lading, Freight Bills and Statements of Charges and Section 1(a) of the Contract Terms and Conditions for a list of such articles.

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Signature

REMIT C.O.D. TO: ADDRESS

COD Amt: $

C.O.D. FEE: PREPAID ☐ COLLECT ☐ $

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

TOTAL CHARGES $

FREIGHT CHARGES
FREIGHT PREPAID except when box at right is checked ☐ Check box if charges are to be collect

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.
Shipper hereby certifies that he is familiar with all the lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER ARIZONA PUBLIC SERVICE
PER 9-15-20

CARRIER ENVIRONMENTAL RESPONSE
PER ROJO 9/15/20
DATE 9/15/20

3

Permanent post-office address of shipper.

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3

ATTENTION SHIPPERS! FREIGHT CHARGES ARE PREPAID ON THIS BILL OF LADING UNLESS MARKED COLLECT.

STRAIGHT BILL OF LADING

ORIGINAL — NOT NEGOTIABLE

Shipper No. APS-209125 K

Carrier No. 20-209125

Page 1 of 1

Environmental Response (Name of carrier) N/A (SCAC)

Date 9/18/20

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec.1.

TO:
Consignee Prescott Solid Waste Division
Street 2800 Sundog Ranch Rd
City Prescott State AZ Zip Code 86301

FROM:
Shipper APS
Street 300 N. Granite St
City Prescott State AZ Zip Code 86301
24 hr. Emergency Contact Tel. No. 480-967-2802

Route Lincoln Ave - Miller - Willow Creek - SR-89 - Prescott Lakes

Vehicle Number 603

No. of Units & Container Type	HM	BASIC DESCRIPTION UN or NA Number, Proper Shipping Name, Hazard Class, Packing Group	TOTAL QUANTITY (Weight, Volume, Gallons, etc.)	WEIGHT (Subject to Correction)	RATE	CHARGES (For Carrier Use Only)
1 DT	N/A	NON IMPACTED CONCRETE	15 cy	5.39		

PLACARDS TENDERED: YES ☐ NO ☒

Note — (1) Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property, as follows: "The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____."
(2) Where the applicable tariff provisions specify a limitation of the carrier's liability absent a release or a value declaration by the shipper and the shipper does not release the carrier's liability or declare a value, the carrier's liability shall be limited to the extent provided by such provisions. See NMFC Item 172.
(3) Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation. See Section 2(e) of item 360, Bills of Lading, Freight Bills and Statements of Charges and Section 1(a) of the Contract Terms and Conditions for a list of such articles.

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Signature

REMIT C.O.D. TO: ADDRESS

COD Amt: $

C.O.D. FEE: PREPAID ☐ COLLECT ☐ $

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

TOTAL CHARGES $

FREIGHT CHARGES
FREIGHT PREPAID except when box at right is checked ☐ Check box if charges are to be collect

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.
Shipper hereby certifies that he is familiar with all the lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER Arizona Public Service
PER Robert [illegible] 9/18/20

CARRIER ~~Arrow Head~~ Environmental Response #603
PER [illegible] 9/18/20

1

ERI TRUCK LOG

JOB NO. 20-209125 JOB NAME APS Prescott

ADDRESS * CLEAN CONCRETE TO PRESCOTT SOLID WASTE *

START TIME 8/5/20 FINISH TIME DATE 8/5/20 - 8/28/20

MANIFEST #	COMPANY	TRUCK #	TIME IN	LOAD	TIME OUT	CYCLE TIME	RETURN	TONS	
01	VANCO	153	9:00	9:15	9:28		12:40	11.51	
02		155	9:00	9:28	9:45		12:40	12.37	
03		153	12:40	12:45	12:52		1:55	12.86	
04		155	12:40	1:00	1:37		2:16	14.22	
05		153	1:55	2:00	2:10			12.64	
06		155	2:16	2:25	2:55			13.09	76.69
8/6/20									
07	VANCO	153	7:30	7:45	8:00		9:00	14.25	
08		155	7:30	8:05	8:51		9:00	13.63	
09		153	9:00	9:30	11:37		NO	7.20	
10		155	9:00	10:00	2:44		NO	11.90	
									46.98
8/27/20									
9125-A	VANCO	155	2:06	2:07	2:20		NO	8.32	
9125-B		120	2:25	2:26	2:40		NO	9.18	
8/28/20									17.50
9125-D	VANCO	153	11:15	11:15	11:30		NO	8.02	
9125-E		120	11:40	11:41	11:49		NO	14.32	
									22.34

163.51

01

CITY OF PRESCOTT
SUNDOG RANCH ROAD
SOLID WASTE TRANSFER FACILITY
928-777-1116

Ticket: 1145259

Time In : 8/5/2020 10:55:50 AM
Time Out: 8/5/2020 11:14:51 AM

Vehicle: A
Container:
Customer Name: Car
Memo:
Job: ERI

Waste Type: Inert Debris

GROSS: 48860 lbs.

TARE: 0 lbs.
CONTAINER: 0 lbs.

TOTAL TARE: 25840 lbs.

NET WEIGHT: 23020 lbs.
11.51 tons

STRAIGHT BILL OF LADING – ORIGINAL – NOT NEGOTIABLE

Shipper's No. 20-209125-01

Carrier Vanco Trucking SCAC _____ Carrier's No. _____

RECEIVED, subject to individually determined rates or contracts that have been agreed upon in writing between the carrier and shipper, if applicable, otherwise to the rates, classifications and rules that have been established by the carrier and are available to the shipper, on request; and all applicable state and federal regulations;

at _____, date _____ from _____

the Property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to delivery at said destination, if on its route, or otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said Property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said Property that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on the back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

TO:	FROM:
Consignee: CITY OF PRESCOTT LANDFILL ~~Arrowhead Materials~~	Shipper: APS Prescott Substation
Street: ~~2425 N. Glassford Hill Road~~ 2800 SUNDOG RANCH ROAD	Street: 300 N. Granite St.
Destination: Prescott Valley, AZ Zip: 86314	Origin: Prescott, AZ Zip: 86301
Route: See Map	

Delivering Carrier: Vanco Trucking | Vehicle Number: 153 | U.S. DOT Hazmat Reg. No.: None

Number and Type of Packages	HM	I.D. Number	Description of Articles	Hazard Class	Pkg. Grp.	Total Quantity (mass, volume, or activity)	Weight (subject to correction)	Class or Rate
01 DT			Borken Concrete				15 CY	
							11.51 TONS	

Remit COD to:
Address:
City: State: Zip:

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

COD AMT: $

TOTAL CHARGES: $

COD FEE: Prepaid ☐ Collect ☐ $

FREIGHT CHARGES: ☐ Prepaid ☐ Collect

NOTE: Liability Limitation for loss or damage in this shipment may be applicable. See 49 U.S.C. 14706(c)(1)(A) and (B).

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. Per

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ BY SHIPPER ☐ BY CARRIER

DRIVER'S SIGNATURE:

SHIPPER: APS
PER: Robert L O'r DATE: 8/5/20

CARRIER: Vanco
PER: [signature] DATE: 8-5-2020

EMERGENCY RESPONSE TELEPHONE NUMBER: 800 535 5053

NAME OR CONTRACT NUMBER OR OTHER UNIQUE IDENTIFIER:

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02

CITY OF PRESCOTT
SUNDOG RANCH ROAD
SOLID WASTE TRANSFER FACILITY
928-777-1116

Ticket: 1145261

Time In : 6/5/2020 10:56:07 AM
Time Out: 6/5/2020 11:16:34 AM

Vehicle: C
Container:
Customer Name: Car
Memo:
Job: ERI

Waste Type: Inert Debris

GROSS: 54100 lbs.

TARE: 0 lbs.
CONTAINER: 0 lbs.

TOTAL TARE: 29360 lbs.

NET WEIGHT: 24740 lbs.
12.37 tons

STRAIGHT BILL OF LADING – ORIGINAL – NOT NEGOTIABLE

Shipper's No. 20-209125-02

Carrier Vanco Trucking SCAC _____ Carrier's No. _____

RECEIVED, subject to individually determined rates or contracts that have been agreed upon in writing between the carrier and shipper, if applicable, otherwise to the rates, classifications and rules that have been established by the carrier and are available to the shipper, on request; and all applicable state and federal regulations;

at _____, date _____ from _____

the Property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to delivery at said destination, if on its route, or otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said Property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said Property that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on the back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

TO:	FROM:
Consignee: City of Prescott ~~Arrowhead Materials~~	Shipper: APS Prescott Substation
Street: ~~2425 N. Glassford Hill Road~~ 2800 Sundog Ranch Rd	Street: 300 N. Granite St.
Destination: Prescott Valley, AZ Zip: 86314	Origin: Prescott, AZ Zip: 86301
Route: See Map	

Delivering Carrier: Vanco Trucking | Vehicle Number: 155 | U.S. DOT Hazmat Reg. No.: None

Number and Type of Packages	HM	I.D. Number	Description of Articles	Hazard Class	Pkg. Grp.	Total Quantity (mass, volume, or activity)	Weight (subject to correction)	Class or Rate
01 DT			Borken Concrete				15 CY	
							12-37 TONS	

Remit COD to:
Address:
City: State: Zip:

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

COD AMT: $

TOTAL CHARGES: $

COD FEE: Prepaid ☐ Collect ☐ $

FREIGHT CHARGES: ☐ Prepaid ☐ Collect

NOTE: Liability Limitation for loss or damage in this shipment may be applicable. See 49 U.S.C. 14706(c)(1)(A) and (B).

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. Per

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ BY SHIPPER ☐ BY CARRIER

DRIVER'S SIGNATURE:

SHIPPER: APS
PER: Robert L O'R DATE: 8/5/20

CARRIER: Vanco
PER: Diego DATE: 8-5-2020

EMERGENCY RESPONSE TELEPHONE NUMBER: 800 525 5053

NAME OR CONTRACT NUMBER OR OTHER UNIQUE IDENTIFIER:

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03

CITY OF PRESCOTT
SUNDOG RANCH ROAD
SOLID WASTE TRANSFER FACILITY
928-777-1116

Ticket: 1145373

Time In : 8/5/2020 1:49:21 PM
Time Out: 8/5/2020 2:01:18 PM

Vehicle: A
Container:
Customer Name: Car
Memo:
Job: ERI

Waste Type: Inert Debris

GROSS: 55140 lbs.

TARE: 0 lbs.
CONTAINER: 0 lbs.

TOTAL TARE: 29420 lbs.

NET WEIGHT: 25720 lbs.
12.86 tons

STRAIGHT BILL OF LADING – ORIGINAL – NOT NEGOTIABLE

Shipper's No. 20-209125-03

Carrier Vanco Trucking SCAC _____ Carrier's No. _____

RECEIVED, subject to individually determined rates or contracts that have been agreed upon in writing between the carrier and shipper, if applicable, otherwise to the rates, classifications and rules that have been established by the carrier and are available to the shipper, on request; and all applicable state and federal regulations;

at _____, date _____ from _____

the Property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to delivery at said destination, if on its route, or otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said Property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said Property that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on the back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

TO:	FROM:
Consignee: CITY OF PRESCOTT LANDFILL ~~Arrowhead Materials~~	Shipper: APS Prescott Substation
Street: ~~2800 SUNDOG RANCH RD~~ ~~2425 N. Glassford Hill Road~~	Street: 300 N. Granite St.
Destination: Prescott Valley, AZ Zip: 86301	Origin: Prescott, AZ Zip: 86301
Route: See Map	

Delivering Carrier: Vanco Trucking | Vehicle Number: 153 | U.S. DOT Hazmat Reg. No.: None

Number and Type of Packages	HM	I.D. Number	Description of Articles	Hazard Class	Pkg. Grp.	Total Quantity (mass, volume, or activity)	Weight (subject to correction)	Class or Rate
01 DT			Borken Concrete				15 TY 12.86 TONS	

Remit COD to:
Address:
City: State: Zip:

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

COD AMT: $

TOTAL CHARGES: $

COD FEE: Prepaid ☐ Collect ☐ $

FREIGHT CHARGES: ☐ Prepaid ☐ Collect

NOTE: Liability Limitation for loss or damage in this shipment may be applicable. See 49 U.S.C. 14706(c)(1)(A) and (B).

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. Per

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ BY SHIPPER ☐ BY CARRIER

DRIVER'S SIGNATURE:

SHIPPER: APS
PER: Robert L. DATE: 8/5/20

CARRIER: Vanco
PER: DATE: 8-5-2020

EMERGENCY RESPONSE TELEPHONE NUMBER: 800 535 5053

NAME OR CONTRACT NUMBER OR OTHER UNIQUE IDENTIFIER

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1

04

CITY OF PRESCOTT
SUNDOG RANCH ROAD
SOLID WASTE TRANSFER FACILITY
928-777-1116

Ticket: 1145358

Time In : 8/5/2020 1:28:53 PM
Time Out: 8/5/2020 1:40:47 PM

Vehicle: B
Container:
Customer Name: Car
Memo:
Job: ERI

Waste Type: Inert Debris

GROSS: 54240 lbs.

TARE: 0 lbs.
CONTAINER: 0 lbs.

TOTAL TARE: 25800 lbs.

NET WEIGHT: 28440 lbs.
14.22 tons

STRAIGHT BILL OF LADING – ORIGINAL – NOT NEGOTIABLE

Shipper's No. 20-209125-04

Carrier Vanco Trucking SCAC _____ Carrier's No. _____

RECEIVED, subject to individually determined rates or contracts that have been agreed upon in writing between the carrier and shipper, if applicable, otherwise to the rates, classifications and rules that have been established by the carrier and are available to the shipper, on request; and all applicable state and federal regulations;

at _____, date _____ from _____

the Property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to delivery at said destination, if on its route, or otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said Property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said Property that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on the back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

TO:		FROM:	
Consignee	CITY OF PRESCOTT LANDFILL ~~Arrowhead Materials~~	Shipper	APS Prescott Substation
Street	2800 SUNDOG RANCH RD ~~2425 N. Glassford Hill Road~~	Street	300 N. Granite St.
Destination	Prescott Valley, AZ Zip 86304	Origin	Prescott, AZ Zip 86301
Route	See Map		

Delivering Carrier	Vehicle Number	U.S. DOT Hazmat Reg. No.
Vanco Trucking	155	None

Number and Type of Packages	HM	I.D. Number	Description of Articles	Hazard Class	Pkg. Grp.	Total Quantity (mass, volume, or activity)	Weight (subject to correction)	Class or Rate
01 DT			Borken Concrete				15CY	
							14.22	TONS

Remit COD to:
Address:
City: State: Zip:

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

COD AMT: $

TOTAL CHARGES: $

COD FEE: Prepaid ☐ Collect ☐ $

FREIGHT CHARGES: ☐ Prepaid ☐ Collect

NOTE: Liability Limitation for loss or damage in this shipment may be applicable. See 49 U.S.C. 14706(c)(1)(A) and (B).

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. Per

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ BY SHIPPER ☐ BY CARRIER

DRIVER'S SIGNATURE:

SHIPPER: APS
PER: Robert Lee DATE: 8/5/20

CARRIER: Vanco
PER: Joe Barnes DATE: 8-5-2020

EMERGENCY RESPONSE TELEPHONE NUMBER: 800 525 5053

NAME OR CONTRACT NUMBER OR OTHER UNIQUE IDENTIFIER:

969 (Rev. 3/17)

05

CITY OF PRESCOTT
SUNDOG RANCH ROAD
SOLID WASTE TRANSFER FACILITY
928-777-1116

Ticket: 1145395

Time In : 8/5/2020 2:24:25 PM
Time Out: 8/5/2020 2:38:08 PM

Vehicle: A
Container:
Customer Name: Car
Memo:
Job: ERI

Waste Type: Inert Debris

GROSS: 50880 lbs.

TARE: 0 lbs.
CONTAINER: 0 lbs.

TOTAL TARE: 25600 lbs.

NET WEIGHT: 25280 lbs.
12.64 tons

STRAIGHT BILL OF LADING – ORIGINAL – NOT NEGOTIABLE

Shipper's No. 20-209125-05

Carrier Vanco Trucking SCAC _____ Carrier's No. _____

RECEIVED, subject to individually determined rates or contracts that have been agreed upon in writing between the carrier and shipper, if applicable, otherwise to the rates, classifications and rules that have been established by the carrier and are available to the shipper, on request; and all applicable state and federal regulations;

at _____, date _____ from _____

the Property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to delivery at said destination, if on its route, or otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said Property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said Property that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on the back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

TO:	FROM:
Consignee: CITY OF PRESCOTT LANDFILL ~~Arrowhead Materials~~	Shipper: APS Prescott Substation
Street: 2800 SUNDER RANCH RD ~~2425 N. Glassford Hill Road~~	Street: 300 N. Granite St.
Destination: Prescott Valley, AZ Zip: 86301	Origin: Prescott, AZ Zip: 86301
Route: See Map	

Delivering Carrier	Vehicle Number	U.S. DOT Hazmat Reg. No.
Vanco Trucking	153	None

Number and Type of Packages	HM	I.D. Number	Description of Articles	Hazard Class	Pkg. Grp.	Total Quantity (mass, volume, or activity)	Weight (subject to correction)	Class or Rate
01 DT			Borken Concrete				15TY	
							12.64 TONS	

Remit COD to:
Address:
City: State: Zip:

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

COD AMT: $

TOTAL CHARGES: $

COD FEE: Prepaid ☐ Collect ☐ $

FREIGHT CHARGES: ☐ Prepaid ☐ Collect

NOTE: Liability Limitation for loss or damage in this shipment may be applicable. See 49 U.S.C. 14706(c)(1)(A) and (B).

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. Per

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ BY SHIPPER ☐ BY CARRIER

DRIVER'S SIGNATURE:

SHIPPER: APS
PER: [signature] DATE: 8/5/20

CARRIER: Vanco
PER: [signature] DATE: 8-5-2020

EMERGENCY RESPONSE TELEPHONE NUMBER: 800-525-5053

NAME OR CONTRACT NUMBER OR OTHER UNIQUE IDENTIFIER:

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06

CITY OF PRESCOTT
SUNDOG RANCH ROAD
SOLID WASTE TRANSFER FACILITY
928-777-1116

Ticket: 1145408

Time In : 8/5/2020 2:55:27 PM
Time Out: 8/5/2020 3:04:53 PM

Vehicle: F
Container:
Customer Name: Car
Memo:
Job: ERI

Waste Type: Inert Debris

GROSS: 55540 lbs.

TARE: 0 lbs.
CONTAINER: 0 lbs.

TOTAL TARE: 29360 lbs.

NET WEIGHT: 26180 lbs.
13.09 tons

STRAIGHT BILL OF LADING – ORIGINAL – NOT NEGOTIABLE

Shipper's No. 20-209125-06

Carrier Vanco Trucking SCAC _____ Carrier's No. _____

RECEIVED, subject to individually determined rates or contracts that have been agreed upon in writing between the carrier and shipper, if applicable, otherwise to the rates, classifications and rules that have been established by the carrier and are available to the shipper, on request; and all applicable state and federal regulations;

at _____, date _____ from _____

the Property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to delivery at said destination, if on its route, or otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said Property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said Property that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on the back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

TO:		FROM:	
Consignee	CITY OF PRESCOTT RO ~~Arrowhead Materials~~	Shipper	APS Prescott Substation
Street	~~2800 SUNDOG RANCH RD~~ ~~2425 N. Glassford Hill Road~~	Street	300 N. Granite St.
Destination	Prescott Valley, AZ Zip 86301	Origin	Prescott, AZ Zip 86301
Route	See Map		

Delivering Carrier	Vehicle Number	U.S. DOT Hazmat Reg. No.
Vanco Trucking	155	None

Number and Type of Packages	HM	I.D. Number	Description of Articles	Hazard Class	Pkg. Grp.	Total Quantity (mass, volume, or activity)	Weight (subject to correction)	Class or Rate
01 DT			Borken Concrete				15 CY	
							13.09	TONS

Remit COD to:
Address:
City: State: Zip:

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

COD AMT: $

TOTAL CHARGES: $

COD FEE: Prepaid ☐ Collect ☐ $

FREIGHT CHARGES: ☐ Prepaid ☐ Collect

NOTE: Liability Limitation for loss or damage in this shipment may be applicable. See 49 U.S.C. 14706(c)(1)(A) and (B).

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. Per

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ BY SHIPPER ☐ BY CARRIER

DRIVER'S SIGNATURE:

SHIPPER: APS
PER: [signature] DATE: 8/5/20

CARRIER: Vanco
PER: [signature] DATE: 8-5-2020

EMERGENCY RESPONSE TELEPHONE NUMBER: 800-525-5053

NAME OR CONTRACT NUMBER OR OTHER UNIQUE IDENTIFIER:

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07

CITY OF PRESCOTT
SUNDOG RANCH ROAD
SOLID WASTE TRANSFER FACILITY
928-777-1116

Ticket: 1145458

Time In : 8/6/2020 8:26:41 AM
Time Out: 8/6/2020 8:36:07 AM

Vehicle: E
Container:
Customer Name: Car
Memo:
Job: ERI

Waste Type: Inert Debris

GROSS: 54460 lbs.

TARE: 0 lbs.
CONTAINER: 0 lbs.

TOTAL TARE: 25960 lbs.

NET WEIGHT: 28500 lbs.
14.25 tons

STRAIGHT BILL OF LADING – ORIGINAL – NOT NEGOTIABLE

Shipper's No. 20-209125-07

Carrier Vanco Trucking SCAC _____ Carrier's No. _____

RECEIVED, subject to individually determined rates or contracts that have been agreed upon in writing between the carrier and shipper, if applicable, otherwise to the rates, classifications and rules that have been established by the carrier and are available to the shipper, on request, and all applicable state and federal regulations;

at _____, date _____ from _____

the Property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to delivery at said destination, if on its route, or otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said Property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said Property that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on the back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

TO:	FROM:
Consignee: CITY OF PRESCOTT LANDFILL ~~Arrowhead Materials~~	Shipper: APS Prescott Substation
Street: ~~2800 SUNDOG RANCH RD~~ ~~2425 N. Glassford Hill Road~~	Street: 300 N. Granite St.
Destination: Prescott Valley, AZ Zip: 86304	Origin: Prescott, AZ Zip: 86301
Route: See Map	

Delivering Carrier: Vanco Trucking | Vehicle Number: 153 | U.S. DOT Hazmat Reg. No.: None

Number and Type of Packages	HM	I.D. Number	Description of Articles	Hazard Class	Pkg. Grp.	Total Quantity (mass, volume, or activity)	Weight (subject to correction)	Class or Rate
01 DT			Borken Concrete				15	TY
							14.25	TONS

Remit COD to:
Address:
City: State: Zip:

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

COD AMT: $

TOTAL CHARGES: $

COD FEE: Prepaid ☐ Collect ☐ $

FREIGHT CHARGES: ☐ Prepaid ☐ Collect

NOTE: Liability Limitation for loss or damage in this shipment may be applicable. See 49 U.S.C. 14706(c)(1)(A) and (B).

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. Per

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ BY SHIPPER ☐ BY CARRIER

DRIVER'S SIGNATURE:

SHIPPER: APS
PER: Robert L[illegible] DATE: 8/6/20

CARRIER: Vanco
PER: Andrew Park DATE: 8-6-2020

EMERGENCY RESPONSE TELEPHONE NUMBER: 800 525 5053

NAME OR CONTRACT NUMBER OR OTHER UNIQUE IDENTIFIER:

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Vance 155 - Diego

CITY OF PRESCOTT
SUNDOG RANCH ROAD
SOLID WASTE TRANSFER FACILITY
928-777-1116

Ticket: 1145481

Time In : 8/6/2020 9:06:24 AM
Time Out: 8/6/2020 9:16:11 AM

Vehicle: 8
Container:
Customer Name: Car
Memo:
Job: ERI

Waste Type: Inert Debris

GROSS: 56600 lbs.

TARE: 0 lbs.
CONTAINER: 0 lbs.

TOTAL TARE: 29340 lbs.

NET WEIGHT: 27260 lbs.
13.63 tons

STRAIGHT BILL OF LADING – ORIGINAL – NOT NEGOTIABLE

Shipper's No. 20-209125-08

Carrier Vanco Trucking SCAC _____ Carrier's No. _____

RECEIVED, subject to individually determined rates or contracts that have been agreed upon in writing between the carrier and shipper, if applicable, otherwise to the rates, classifications and rules that have been established by the carrier and are available to the shipper, on request; and all applicable state and federal regulations;

at _____, date _____ from _____

the Property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to delivery at said destination, if on its route, or otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said Property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said Property that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on the back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

TO:	FROM:
Consignee: CITY OF PRESCOTT LANDFILL ~~Arrowhead Materials~~	Shipper: APS Prescott Substation
Street: 2800 SUNDOG RANCH RD ~~2425 N. Glassford Hill Road~~	Street: 300 N. Granite St.
Destination: Prescott Valley, AZ Zip: 86304	Origin: Prescott, AZ Zip: 86301
Route: See Map	
Delivering Carrier: Vanco Trucking	Vehicle Number: 155
U.S. DOT Hazmat Reg. No.: None	

Number and Type of Packages	HM	I.D. Number	Description of Articles	Hazard Class	Pkg. Grp.	Total Quantity (mass, volume, or activity)	Weight (subject to correction)	Class or Rate
01 DT			Borken Concrete				15 CY	
							13.63 TONS	

Remit COD to:
Address:
City: State: Zip:

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

COD AMT: $

TOTAL CHARGES: $

COD FEE: Prepaid ☐ Collect ☐ $

FREIGHT CHARGES: ☐ Prepaid ☐ Collect

NOTE: Liability Limitation for loss or damage in this shipment may be applicable. See 49 U.S.C. 14706(c)(1)(A) and (B).

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. Per

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ BY SHIPPER ☐ BY CARRIER

DRIVER'S SIGNATURE:

SHIPPER: APS
PER: Robert L Ow DATE: 8/6/20

CARRIER: Vanco
PER: Cyo Sam DATE: 8-6-2020

EMERGENCY RESPONSE TELEPHONE NUMBER: 800 525 5053

NAME OR CONTRACT NUMBER OR OTHER UNIQUE IDENTIFIER:

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09

CITY OF PRESCOTT
SUNDOG RANCH ROAD
SOLID WASTE TRANSFER FACILITY
928-777-1116

Ticket: 1145588

Time In : 8/6/2020 11:52:48 AM
Time Out: 8/6/2020 11:59:42 AM

Vehicle: H
Container:
Customer Name: Car
Memo:
Job:

Waste Type: Inert Debris

GROSS: 40100 lbs.

TARE: 0 lbs.
CONTAINER: 0 lbs.

TOTAL TARE: 25700 lbs.

NET WEIGHT: 14400 lbs.
7.20 tons

STRAIGHT BILL OF LADING – ORIGINAL – NOT NEGOTIABLE

Shipper's No. 20-209125-09

Carrier Vanco Trucking SCAC _____ Carrier's No. _____

RECEIVED, subject to individually determined rates or contracts that have been agreed upon in writing between the carrier and shipper, if applicable, otherwise to the rates, classifications and rules that have been established by the carrier and are available to the shipper, on request; and all applicable state and federal regulations;

at _____, date _____ from _____

the Property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to delivery at said destination, if on its route, or otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said Property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said Property that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on the back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

TO:	FROM:
Consignee: CITY OF PRESCOTT LANDFILL ~~Arrowhead Materials~~	Shipper: APS Prescott Substation
Street: 2800 SUNDOG RANCH RD ~~2425 N. Glassford Hill Road~~	Street: 300 N. Granite St.
Destination: Prescott Valley, AZ Zip: 86301	Origin: Prescott, AZ Zip: 86301
Route: See Map	

Delivering Carrier: Vanco Trucking | Vehicle Number: 153 | U.S. DOT Hazmat Reg. No.: None

Number and Type of Packages	HM	I.D. Number	Description of Articles	Hazard Class	Pkg. Grp.	Total Quantity (mass, volume, or activity)	Weight (subject to correction)	Class or Rate
01 DT			Borken Concrete				15 CY 7-20 TONS	

Remit COD to:
Address:
City: State: Zip:

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

COD AMT: $

TOTAL CHARGES: $

COD FEE: Prepaid ☐ Collect ☐ $

FREIGHT CHARGES: ☐ Prepaid ☐ Collect

NOTE: Liability Limitation for loss or damage in this shipment may be applicable. See 49 U.S.C. 14706(c)(1)(A) and (B).

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. Per

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ BY SHIPPER ☐ BY CARRIER

DRIVER'S SIGNATURE:

SHIPPER: APS
PER: [signature] DATE: 8/6/20

CARRIER: Vanco
PER: [signature] DATE: 8-6-2020

EMERGENCY RESPONSE TELEPHONE NUMBER: 800 525 5053

NAME OR CONTRACT NUMBER OR OTHER UNIQUE IDENTIFIER:

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Vance 155

CITY OF PRESCOTT
SUNDOG RANCH ROAD
SOLID WASTE TRANSFER FACILITY
928-777-1116

Ticket: 1145722

Time In : 8/6/2020 3:01:23 PM
Time Out: 8/6/2020 3:09:02 PM

Vehicle: C
Container:
Customer Name: Car
Memo:
Job: ERI

Waste Type: Inert Debris

GROSS: 53100 lbs.

TARE: 0 lbs.
CONTAINER: 0 lbs.

TOTAL TARE: 29300 lbs.

NET WEIGHT: 23800 lbs.
11.90 tons

THIS MEMORANDUM is an acknowledgement that a bill of lading has been issued and is not the Original Bill of Lading, not a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

Shipper's No. 20-209125-10

Carrier Vanco Trucking SCAC _____ Carrier's No. _____

RECEIVED, subject to individually determined rates or contracts that have been agreed upon in writing between the carrier and shipper, if applicable, otherwise to the rates, classifications and rules that have been established by the carrier and are available to the shipper, on request; and all applicable state and federal regulations;

at _____, date _____ from _____

the Property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to delivery at said destination, if on its route, or otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said Property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said Property that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on the back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

TO:	FROM:
Consignee: City of Prescott Landfill ~~Accepted Materials~~	Shipper: APS Prescott Substation
Street: 2800 Service Road 80 ~~2435 N. Glassford Hill Road~~	Street: 300 N. Granite St.
Destination: Prescott Valley, AZ Zip: 86301	Origin: Prescott, AZ Zip: 86301
Route: See Map	

Delivering Carrier: Vanco Trucking | Vehicle Number: 155 | U.S. DOT Hazmat Reg. No.: None

Number and Type of Packages	HM	I.D. Number	Description of Articles	Hazard Class	Pkg. Grp.	Total Quantity (mass, volume, or activity)	Weight (subject to correction)	Class or Rate
01 DT			Borken Concrete				15 CY	
							11.90 TONS	

Remit COD to:
Address:
City: State: Zip:

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

COD AMT: $

TOTAL CHARGES: $

COD FEE: Prepaid ☐ Collect ☐ $

FREIGHT CHARGES: ☐ Prepaid ☐ Collect

NOTE: Liability Limitation for loss or damage in this shipment may be applicable. See 49 U.S.C. 14706(c)(1)(A) and (B).

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. Per

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ BY SHIPPER ☐ BY CARRIER

DRIVER'S SIGNATURE:

SHIPPER: APS PER: [signature] DATE: 8/1/22

CARRIER: Vanco PER: [signature] DATE: 8-6-22

EMERGENCY RESPONSE TELEPHONE NUMBER: 800-535-5053

NAME OR CONTRACT NUMBER OR OTHER UNIQUE IDENTIFIER:

969 (Rev. 3/17)

CITY OF PRESCOTT
SUNDOG RANCH ROAD
SOLID WASTE TRANSFER FACILITY
928-777-1116

Ticket: 1151529

Time In : 8/27/2020 3:02:59 PM
Time Out: 8/27/2020 3:15:19 PM

Vehicle: A
Container:
Customer Name: Car
Memo:
Job: ERI

Waste Type: Inert Debris

GROSS: 45720 lbs.

TARE: 0 lbs.
CONTAINER: 0 lbs.

TOTAL TARE: 29080 lbs.

NET WEIGHT: 16640 lbs.
8.32 tons

STRAIGHT BILL OF LADING
ORIGINAL — NOT NEGOTIABLE

Shipper No. 20-209125A

Carrier No. VANCO 155

Page 1 of 1

VANCO TRUCK#
(Name of carrier) (SCAC)

Date 8-27-20

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec.1.

TO:
Consignee PRESCOTT SOLID WASTE DIVISION
Street 2800 SUNDOG RANCH RD
City PRESCOTT State AZ Zip Code 86301

FROM:
Shipper ARIZONA PUBLIC SERVICES / VIA ERI
Street 300 N. GRANITE STREET
City PRESCOTT State AZ Zip Code 86301
24 hr. Emergency Contact Tel. No. 480-967-2802

Route LINCOLN AVE - MILLER - WILLOW - 89 - PRESCOTT LAKES
Vehicle Number 155

No. of Units & Container Type	HM	BASIC DESCRIPTION UN or NA Number, Proper Shipping Name, Hazard Class, Packing Group	TOTAL QUANTITY (Weight, Volume, Gallons, etc.)	WEIGHT (Subject to Correction)	RATE	CHARGES (For Carrier Use Only)
15 cy	NA	NON IMPACTED CONCRETE	15	CY		
				8,32		

PLACARDS TENDERED: YES ☐ NO ☒

Note — (1) Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property, as follows: "The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____."
(2) Where the applicable tariff provisions specify a limitation of the carrier's liability absent a release or a value declaration by the shipper and the shipper does not release the carrier's liability or declare a value, the carrier's liability shall be limited to the extent provided by such provisions. See NMFC Item 172.
(3) Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation. See Section 2(e) of item 360, Bills of Lading, Freight Bills and Statements of Charges and Section 1(a) of the Contract Terms and Conditions for a list of such articles.

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Signature

REMIT C.O.D. TO: ADDRESS

COD Amt: $

C.O.D. FEE: PREPAID ☐ COLLECT ☐ $

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

TOTAL CHARGES $

FREIGHT CHARGES
FREIGHT PREPAID except when box at right is checked ☐ Check box if charges are to be collect

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.
Shipper hereby certifies that he is familiar with all the lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER ENVIRONMENTAL RESPONSE INC
PER
APS

CARRIER VANCO Diego
PER ERI / APS
DATE 8-27-20

1

Permanent post-office address of shipper.

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CITY OF PRESCOTT
SUNDOG RANCH ROAD
SOLID WASTE TRANSFER FACILITY
928-777-1116

Ticket: 1151531

Time In : 8/27/2020 3:04:21 PM
Time Out: 8/27/2020 3:17:12 PM

Vehicle: D
Container:
Customer Name: Car
Memo:
Job: ERI

Waste Type: Inert Debris

GROSS: 44700 lbs.

TARE: 0 lbs.
CONTAINER: 0 lbs.

TOTAL TARE: 26340 lbs.

NET WEIGHT: 18360 lbs.
9.18 tons

STRAIGHT BILL OF LADING
ORIGINAL — NOT NEGOTIABLE

Shipper No. 20-209125B

Carrier No. VANCO 120

Page 1 of 1

VANCO TRUCK # 120
(Name of carrier) (SCAC)

Date 8-27-20

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec.1.

TO:
Consignee PRESCOTT SOLID WASTE DIVISION
Street 2800 SUNDOG RANCH RD
City PRESCOTT State AZ Zip Code 86301

FROM:
Shipper ARIZONA PUBLIC SERVICES / VIA ERI
Street 300 N. GRANITE ST
City PRESCOTT State AZ Zip Code 86301
24 hr. Emergency Contact Tel. No. 480-967-2802

Route LINCOLN AVE - MILLER - WILLOW - 89 - PRESCOTT LAKES
Vehicle Number 120

No. of Units & Container Type	HM	BASIC DESCRIPTION UN or NA Number, Proper Shipping Name, Hazard Class, Packing Group	TOTAL QUANTITY (Weight, Volume, Gallons, etc.)	WEIGHT (Subject to Correction)	RATE	CHARGES (For Carrier Use Only)
15 cy	N/A	NON IMPACTED CONCRETE	15	CY		
			9.18 TON	9.18 TON		

PLACARDS TENDERED: YES ☐ NO ☒

Note — (1) Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property, as follows: "The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____."
(2) Where the applicable tariff provisions specify a limitation of the carrier's liability absent a release or a value declaration by the shipper and the shipper does not release the carrier's liability or declare a value, the carrier's liability shall be limited to the extent provided by such provisions. See NMFC Item 172.
(3) Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation. See Section 2(e) of Item 360, Bills of Lading, Freight Bills and Statements of Charges and Section 1(a) of the Contract Terms and Conditions for a list of such articles.

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

M. A. CO. Signature

REMIT C.O.D. TO: ADDRESS

COD Amt: $

C.O.D. FEE: PREPAID ☐ COLLECT ☐ $

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

TOTAL CHARGES $

FREIGHT CHARGES
FREIGHT PREPAID except when box at right is checked ☐ Check box if charges are to be collect

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.
Shipper hereby certifies that he is familiar with all the lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER ENVIRONMENTAL RESPONSE INC
PER Robert Lon
APS

CARRIER VANCO Stephen Roberts
PER ERI / APS
DATE 8-27-20

1

Permanent post-office address of shipper.

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CITY OF PRESCOTT
SUNDOG RANCH ROAD
SOLID WASTE TRANSFER FACILITY
928-777-1116

Ticket: 1151739

Time In : 8/28/2020 11:56:35 AM
Time Out: 8/28/2020 12:09:48 PM

Vehicle: I
Container:
Customer Name: Car
Memo:
Job: ERI

Waste Type: Inert Debris

GROSS: 41500 lbs.

TARE: 0 lbs.
CONTAINER: lbs.

TOTAL TARE: 25460 lbs.

NET WEIGHT: 16040 lbs.
8.02 tons

STRAIGHT BILL OF LADING – ORIGINAL – NOT NEGOTIABLE

TRUCK

Shipper's No. APS 20-209125 0

Carrier TRUCKING VANCO SCAC N/A Carrier's No. 20-209125

RECEIVED, subject to individually determined rates or contracts that have been agreed upon in writing between the carrier and shipper, if applicable, otherwise to the rates, classifications and rules that have been established by the carrier and are available to the shipper, on request; and all applicable state and federal regulations;

at _____, date 8-28-20 from APS SUBSTATION

the Property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to delivery at said destination, if on its route, or otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said Property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said Property that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on the back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

TO:	FROM:
Consignee PRESCOTT SOLID WASTE DIVISION	Shipper ARIZONA PUBLIC SERVICES
Street 2800 SUNDOG RANCH RD	Street 300 N. GRANITE ST
Destination PRESCOTT AZ Zip 86301	Origin PRESCOTT AZ Zip 86301
Route LINCOLN AVE - MILLER - LAWLER - 89 - PRESCOTT LAKES	

Delivering Carrier VANCO | Vehicle Number 153 | U.S. DOT Hazmat Reg. No.

Number and Type of Packages	HM	I.D. Number	Description of Articles	Hazard Class	Pkg. Grp.	Total Quantity (mass, volume, or activity)	Weight (subject to correction)	Class or Rate
15	N/A	CC	NON IMPACTED CONCRETE	N/A	–	15 YD 8.02		

Remit COD to:
Address:
City: State: Zip:

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

COD AMT: $

TOTAL CHARGES: $

COD FEE: Prepaid ☐ Collect ☐ $

FREIGHT CHARGES: ☐ Prepaid ☐ Collect

NOTE: Liability Limitation for loss or damage in this shipment may be applicable. See 49 U.S.C. 14706(c)(1)(A) and (B).

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. Per

PLACARDS REQUIRED N/A

PLACARDS SUPPLIED ☐ BY SHIPPER ☐ BY CARRIER

DRIVER'S SIGNATURE:

SHIPPER: ARIZONA PUBLIC SERVICE
PER: [signature] DATE: 8-28-20

CARRIER: ERI VIA VANCO
PER: [signature] DATE: 8-28-20

EMERGENCY RESPONSE TELEPHONE NUMBER: 480-967-2802

NAME OR CONTRACT NUMBER OR OTHER UNIQUE IDENTIFIER:

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CITY OF PRESCOTT
SUNDOG RANCH ROAD
SOLID WASTE TRANSFER FACILITY
928-777-1116

Ticket: 1151755

Time In : 8/28/2020 12:10:10 PM
Time Out: 8/28/2020 12:24:00 PM

Vehicle: N
Container:
Customer Name: Car
Memo:
Job: ERI

Waste Type: Inert Debris

GROSS: 55100 lbs.

TARE: 0 lbs.
CONTAINER: 0 lbs.

TOTAL TARE: 26460 lbs.

NET WEIGHT: 28640 lbs.
14.32 tons

STRAIGHT BILL OF LADING – ORIGINAL – NOT NEGOTIABLE

Shipper's No. APS 20-209125 E

Carrier VANCO # 120 SCAC N/A Carrier's No. 20-209125

RECEIVED, subject to individually determined rates or contracts that have been agreed upon in writing between the carrier and shipper, if applicable, otherwise to the rates, classifications and rules that have been established by the carrier and are available to the shipper, on request; and all applicable state and federal regulations;

at _____, date 8-28-20 from APS SUBSTATION

the Property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to delivery at said destination, if on its route, or otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said Property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said Property that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on the back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

TO:	FROM:
Consignee PRESCOTT SOLID WASTE DIVISION	Shipper ARIZONA PUBLIC SERVICE
Street 2800 SUNDOG RANCH RD	Street 300 N. GRANITE ST
Destination PRESCOTT AZ Zip 86301	Origin PRESCOTT AZ Zip 86301
Route LINCOLN AVE - MILLER - WILLOW - 89 - PRESCOTT LAKES	

Delivering Carrier VANCO | Vehicle Number 120 | U.S. DOT Hazmat Reg. No.

Number and Type of Packages	HM	I.D. Number	Description of Articles	Hazard Class	Pkg. Grp.	Total Quantity (mass, volume, or activity)	Weight (subject to correction)	Class or Rate
15	N/A	CC	NON IMPACTED CONCRETE	N/A	–	15 YD		
						14.32		

Remit COD to:
Address:
City: State: Zip:

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

COD AMT: $

TOTAL CHARGES: $

COD FEE: Prepaid ☐ Collect ☐ $

FREIGHT CHARGES: ☐ Prepaid ☐ Collect

NOTE: Liability Limitation for loss or damage in this shipment may be applicable. See 49 U.S.C. 14706(c)(1)(A) and (B).

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. Per

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ BY SHIPPER ☐ BY CARRIER

DRIVER'S SIGNATURE: Steve Robertson

SHIPPER: ARIZONA PUBLIC SERVICE
PER: [signature] DATE: 8-28-20

CARRIER: ERI VIA VANCO
PER: _____ DATE: 8-28-20

EMERGENCY RESPONSE TELEPHONE NUMBER: 480-967-2802

NAME OR CONTRACT NUMBER OR OTHER UNIQUE IDENTIFIER:

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Ticket # TZXA53

PURCHASE TICKET

SA Recycling LLC
3640 South 35th Ave.
Phoenix, AZ 85009
(602) 447-3000

Truck Cntrl - 72: 72 457228
Date: 09/03/20
Ship Date: 09/03/20

Ticket # TZXA53
Vehicle ID: CK62149

Ref No: TKAZ1T

Purchased From: ARIZ13
ARIZONA PUBLIC SERVICE COMPANY
400 N. 5TH ST.
PHOENIX, AZ 85004

Supplier Shipment # 1T

Itm Shpmnt Material	Pounds Gross	Tare	Net
1. TZXA53 Tin	43700b	29180e	14520
Totals			14520

Gross Wght Date/Time 09/03/20 08:36
Tare Wght Date/Time 09/03/20 09:02

7.26 TONS

Ticket Comment: A20000303032

Deputy Signature _____
(Anthony De La Rosa)

Customer Signature _____

Driver_____|Date_____

(All weights are reported in Pounds unless otherwise indicated)
("m" Represents a weight that was manually entered)

PUBLIC WEIGHMASTER'S CERTIFICATE OF WEIGHT AND MEASURE.
This is to certify that the described merchandise was weighed, counted, or measured by a public or deputy weighmaster, and when properly signed and sealed, is prima facie evidence of the accuracy of the weight, count, or measure shown as prescribed by law.
BILL OF SALE: I warrant that I am the owner (or owner's representative) of the material described hereon and have the right to sell same, that it contains no Hazardous Materials as defined by any federal or state law and that for payment hereby received, I sell and convey title to SA Recycling.

NOT REFUNDABLE MORE THAN 90 DAYS FROM DATE ABOVE

For any issues or concerns please contact our customer service dept.
(800) GOT-SCRAP

Customer Copy

THIS SHIPPING ORDER must be legibly filled in, in ink, in indelible Pencil, or in Carbon, and retained by the Agent.

Shipper's No. 20-209125-090120

Carrier ERI SCAC _____ Carrier's No. ROC 130187

RECEIVED, subject to individually determined rates or contracts that have been agreed upon in writing between the carrier and shipper, if applicable, otherwise to the rates, classifications and rules that have been established by the carrier and are available to the shipper, on request; and all applicable state and federal regulations;

at _____, date 09/01/20 from _____

the Property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to delivery at said destination, if on its route, or otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said Property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said Property that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on the back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

TO:		FROM:	
Consignee	SA RECYCLING	Shipper	APS VIA ERI
Street	3640 S. 35TH AVE	Street	300 N. GRANITE ST
Destination	PHOENIX, AZ Zip 85009	Origin	PRESCOTT, AZ Zip 86301
Route	HWY 69 TO I-17 TO DUEANGO		TO 35TH AVE

Delivering Carrier	Vehicle Number	U.S. DOT Hazmat Reg. No.
ERI	306	A20000303032

Number and Type of Packages	HM	I.D. Number	Description of Articles	Hazard Class	Pkg. Grp.	Total Quantity (mass, volume, or activity)	Weight (subject to correction)	Class or Rate
1 CM			SCRAP METAL			40 CY		

Remit COD to:
Address:
City: State: Zip:

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

COD AMT: $

TOTAL CHARGES: $

COD FEE: Prepaid ☐ Collect ☐ $

FREIGHT CHARGES: ☐ Prepaid ☐ Collect

NOTE: Liability Limitation for loss or damage in this shipment may be applicable. See 49 U.S.C. 14706(c)(1)(A) and (B).

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. Per

PLACARDS REQUIRED N/A

PLACARDS SUPPLIED ☐ BY SHIPPER ☐ BY CARRIER

DRIVER'S SIGNATURE:

SHIPPER: APS
PER: [signature] FOR APS DATE: 9/1/20

CARRIER: ERI
PER: M. Lucastorto DATE: 9/1/20

EMERGENCY RESPONSE TELEPHONE NUMBER: 800 535 5053

NAME OR CONTRACT NUMBER OR OTHER UNIQUE IDENTIFIER: 9/3/20

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Agent must detach and retain this Shipping Order and must sign the Original Bill of Lading.

Appendix H
Backfill Soil Analytical and Geotechnical Testing Results

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

August 20, 2020

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 Sc

Environmental Response, Inc.

Sample Delivery Group:	L1250126
Samples Received:	08/13/2020
Project Number:	20-209175
Description:	APS Prescott Sub Backfill
Report To:	Eric Smith 2202 W. Medtronic Way, Ste 108 Tempe, AZ 85281

Entire Report Reviewed By: Daphne R Richards

Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

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1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 Sc

GLASS SELECT A1 L1250126-01 Solid

Collected by: E. Smith | Collected date/time: 08/12/20 12:20 | Received date/time: 08/13/20 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Mercury by Method 7471B	WG1525843	1	08/14/20 07:18	08/14/20 11:16	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1526674	1	08/16/20 14:16	08/17/20 13:52	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1526526	1.13	08/12/20 12:20	08/15/20 22:11	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015AZR1	WG1527515	1	08/14/20 15:54	08/17/20 14:35	AEG	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151	WG1526120	1	08/14/20 18:32	08/16/20 07:51	LEL	Mt. Juliet, TN
Pesticides (GC) by Method 8081B	WG1526775	1	08/16/20 22:47	08/18/20 12:05	MTJ	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1526775	1	08/16/20 22:47	08/17/20 18:52	MTJ	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1527113	1	08/17/20 08:50	08/17/20 17:11	LEA	Mt. Juliet, TN

GLASS SELECT A2 L1250126-02 Solid

Collected by: E. Smith | Collected date/time: 08/12/20 12:26 | Received date/time: 08/13/20 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Mercury by Method 7471B	WG1525843	1	08/14/20 07:18	08/14/20 11:19	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1526674	1	08/16/20 14:16	08/17/20 14:00	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1526616	1.05	08/12/20 12:26	08/16/20 01:03	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015AZR1	WG1527515	1	08/14/20 15:54	08/17/20 13:54	AEG	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151	WG1526120	1	08/14/20 18:32	08/16/20 08:06	LEL	Mt. Juliet, TN
Pesticides (GC) by Method 8081B	WG1526775	1	08/16/20 22:47	08/18/20 16:53	MTJ	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1526775	1	08/16/20 22:47	08/17/20 19:06	MTJ	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1527414	1	08/17/20 20:48	08/18/20 01:12	AAT	Mt. Juliet, TN

GLASS SELECT A3 L1250126-03 Solid

Collected by: E. Smith | Collected date/time: 08/12/20 12:33 | Received date/time: 08/13/20 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Mercury by Method 7471B	WG1525843	1	08/14/20 07:18	08/14/20 11:26	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1526674	1	08/16/20 14:16	08/17/20 14:03	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1526616	1	08/12/20 12:33	08/16/20 01:25	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015AZR1	WG1527515	1	08/14/20 15:54	08/17/20 14:49	AEG	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151	WG1526120	1	08/14/20 18:32	08/16/20 08:20	LEL	Mt. Juliet, TN
Pesticides (GC) by Method 8081B	WG1526775	1	08/16/20 22:47	08/18/20 17:05	MTJ	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1526775	1	08/16/20 22:47	08/17/20 19:20	MTJ	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1527414	1	08/17/20 20:48	08/18/20 01:33	AAT	Mt. Juliet, TN

GLASS SELECT A4 L1250126-04 Solid

Collected by: E. Smith | Collected date/time: 08/12/20 12:40 | Received date/time: 08/13/20 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Mercury by Method 7471B	WG1525843	1	08/14/20 07:18	08/14/20 11:29	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1526674	1	08/16/20 14:16	08/17/20 14:06	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1526616	1.04	08/12/20 12:40	08/16/20 01:44	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015AZR1	WG1527515	1	08/14/20 15:54	08/17/20 15:03	AEG	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151	WG1526120	1	08/14/20 18:32	08/16/20 08:35	LEL	Mt. Juliet, TN
Pesticides (GC) by Method 8081B	WG1526775	1	08/16/20 22:47	08/18/20 17:18	MTJ	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1526775	1	08/16/20 22:47	08/17/20 19:34	MTJ	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1527414	1	08/17/20 20:48	08/18/20 01:53	AAT	Mt. Juliet, TN

GLASS SELECT A5 L1250126-05 Solid

Collected by	Collected date/time	Received date/time
E. Smith	08/12/20 12:45	08/13/20 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Mercury by Method 7471B	WG1525843	1	08/14/20 07:18	08/14/20 11:32	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1526674	1	08/16/20 14:16	08/17/20 14:08	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1526616	1	08/12/20 12:45	08/16/20 02:03	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015AZR1	WG1527515	1	08/14/20 15:54	08/17/20 15:17	AEG	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151	WG1526120	1	08/14/20 18:32	08/16/20 08:50	LEL	Mt. Juliet, TN
Pesticides (GC) by Method 8081B	WG1526775	1	08/16/20 22:47	08/18/20 17:30	AO	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1526775	1	08/16/20 22:47	08/17/20 19:47	MTJ	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1527414	1	08/17/20 20:48	08/18/20 02:14	AAT	Mt. Juliet, TN

GLASS SELECT A6 L1250126-06 Solid

Collected by	Collected date/time	Received date/time
E. Smith	08/12/20 12:51	08/13/20 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Mercury by Method 7471B	WG1525843	1	08/14/20 07:18	08/14/20 11:34	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1526674	1	08/16/20 14:16	08/17/20 13:34	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1526616	1	08/12/20 12:51	08/16/20 02:22	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015AZR1	WG1527515	1	08/14/20 15:54	08/17/20 15:31	KLM	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151	WG1526120	1	08/14/20 18:32	08/16/20 09:04	LEL	Mt. Juliet, TN
Pesticides (GC) by Method 8081B	WG1526775	1	08/16/20 22:47	08/18/20 17:42	AO	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1526775	1	08/16/20 22:47	08/17/20 20:01	MTJ	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1527414	1	08/17/20 20:48	08/18/20 02:35	AAT	Mt. Juliet, TN

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 Sc

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne R Richards

Daphne Richards
Project Manager

Mercury by Method 7471B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0400	1	08/14/2020 11:16	WG1525843

Metals (ICP) by Method 6010D

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.18		2.00	1	08/17/2020 13:52	WG1526674
Barium	73.2		0.500	1	08/17/2020 13:52	WG1526674
Cadmium	ND		0.500	1	08/17/2020 13:52	WG1526674
Chromium	26.2		1.00	1	08/17/2020 13:52	WG1526674
Lead	7.02		0.500	1	08/17/2020 13:52	WG1526674
Selenium	ND		2.00	1	08/17/2020 13:52	WG1526674
Silver	ND		1.00	1	08/17/2020 13:52	WG1526674

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND	L1	1.41	1.13	08/15/2020 22:11	WG1526526
Acrylonitrile	ND		0.353	1.13	08/15/2020 22:11	WG1526526
Benzene	ND		0.0283	1.13	08/15/2020 22:11	WG1526526
Bromobenzene	ND		0.353	1.13	08/15/2020 22:11	WG1526526
Bromodichloromethane	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
Bromoform	ND		0.706	1.13	08/15/2020 22:11	WG1526526
Bromomethane	ND		0.353	1.13	08/15/2020 22:11	WG1526526
1,3-Butadiene	ND		0.706	1.13	08/15/2020 22:11	WG1526526
n-Butylbenzene	ND		0.353	1.13	08/15/2020 22:11	WG1526526
sec-Butylbenzene	ND		0.353	1.13	08/15/2020 22:11	WG1526526
tert-Butylbenzene	ND		0.141	1.13	08/15/2020 22:11	WG1526526
Carbon disulfide	ND		0.353	1.13	08/15/2020 22:11	WG1526526
Carbon tetrachloride	ND		0.141	1.13	08/15/2020 22:11	WG1526526
Chlorobenzene	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
Chlorodibromomethane	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
Chloroethane	ND		0.141	1.13	08/15/2020 22:11	WG1526526
Chloroform	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
Chloromethane	ND		0.353	1.13	08/15/2020 22:11	WG1526526
2-Chlorotoluene	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
4-Chlorotoluene	ND	L2	0.141	1.13	08/15/2020 22:11	WG1526526
Cyclohexane	ND	R7	0.0706	1.13	08/15/2020 22:11	WG1526526
1,2-Dibromo-3-Chloropropane	ND		0.706	1.13	08/15/2020 22:11	WG1526526
1,2-Dibromoethane	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
Dibromomethane	ND		0.141	1.13	08/15/2020 22:11	WG1526526
1,2-Dichlorobenzene	ND		0.141	1.13	08/15/2020 22:11	WG1526526
1,3-Dichlorobenzene	ND		0.141	1.13	08/15/2020 22:11	WG1526526
1,4-Dichlorobenzene	ND		0.141	1.13	08/15/2020 22:11	WG1526526
Dichlorodifluoromethane	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
1,1-Dichloroethane	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
1,2-Dichloroethane	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
1,1-Dichloroethene	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
cis-1,2-Dichloroethene	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
trans-1,2-Dichloroethene	ND		0.141	1.13	08/15/2020 22:11	WG1526526
1,2-Dichloropropane	ND		0.141	1.13	08/15/2020 22:11	WG1526526
1,1-Dichloropropene	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
1,3-Dichloropropane	ND		0.141	1.13	08/15/2020 22:11	WG1526526
cis-1,3-Dichloropropene	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
trans-1,3-Dichloropropene	ND		0.141	1.13	08/15/2020 22:11	WG1526526
2,2-Dichloropropane	ND		0.0706	1.13	08/15/2020 22:11	WG1526526

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Dicyclopentadiene	ND		0.353	1.13	08/15/2020 22:11	WG1526526
Di-isopropyl ether	ND		0.0283	1.13	08/15/2020 22:11	WG1526526
Ethylbenzene	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
4-Ethyltoluene	ND		0.141	1.13	08/15/2020 22:11	WG1526526
Hexachloro-1,3-butadiene	ND		0.706	1.13	08/15/2020 22:11	WG1526526
n-Hexane	ND		0.141	1.13	08/15/2020 22:11	WG1526526
Isopropylbenzene	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
p-Isopropyltoluene	ND		0.141	1.13	08/15/2020 22:11	WG1526526
2-Butanone (MEK)	ND		2.83	1.13	08/15/2020 22:11	WG1526526
Methylene Chloride	ND		0.706	1.13	08/15/2020 22:11	WG1526526
4-Methyl-2-pentanone (MIBK)	ND		0.706	1.13	08/15/2020 22:11	WG1526526
Methyl tert-butyl ether	ND		0.0283	1.13	08/15/2020 22:11	WG1526526
Methyl Cyclohexane	ND		0.141	1.13	08/15/2020 22:11	WG1526526
Naphthalene	ND		0.353	1.13	08/15/2020 22:11	WG1526526
Propene	ND	R7	1.41	1.13	08/15/2020 22:11	WG1526526
n-Propylbenzene	ND		0.141	1.13	08/15/2020 22:11	WG1526526
Styrene	ND		0.353	1.13	08/15/2020 22:11	WG1526526
1,1,1,2-Tetrachloroethane	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
1,1,2,2-Tetrachloroethane	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
1,1,2-Trichlorotrifluoroethane	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
Tetrachloroethene	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
Toluene	ND		0.141	1.13	08/15/2020 22:11	WG1526526
1,2,3-Trichlorobenzene	ND		0.353	1.13	08/15/2020 22:11	WG1526526
1,2,4-Trichlorobenzene	ND		0.353	1.13	08/15/2020 22:11	WG1526526
1,1,1-Trichloroethane	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
1,1,2-Trichloroethane	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
Trichloroethene	ND		0.0283	1.13	08/15/2020 22:11	WG1526526
Trichlorofluoromethane	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
1,2,3-Trichloropropane	ND		0.353	1.13	08/15/2020 22:11	WG1526526
1,2,4-Trimethylbenzene	ND		0.141	1.13	08/15/2020 22:11	WG1526526
1,2,3-Trimethylbenzene	ND		0.141	1.13	08/15/2020 22:11	WG1526526
1,3,5-Trimethylbenzene	ND		0.141	1.13	08/15/2020 22:11	WG1526526
Vinyl chloride	ND		0.0706	1.13	08/15/2020 22:11	WG1526526
Xylenes, Total	ND		0.184	1.13	08/15/2020 22:11	WG1526526
(S) Toluene-d8	*104*		*75.0-131*		*08/15/2020 22:11*	WG1526526
(S) 4-Bromofluorobenzene	*101*		*67.0-138*		*08/15/2020 22:11*	WG1526526
(S) 1,2-Dichloroethane-d4	*88.3*		*70.0-130*		*08/15/2020 22:11*	WG1526526

Semi-Volatile Organic Compounds (GC) by Method 8015AZR1

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C22 Hydrocarbons	ND		30.0	1	08/17/2020 14:35	WG1527515
C22-C32 Hydrocarbons	ND		50.0	1	08/17/2020 14:35	WG1527515
(S) o-Terphenyl	*87.0*		*70.0-130*		*08/17/2020 14:35*	WG1527515

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
2,4-D	ND		0.0700	1	08/16/2020 07:51	WG1526120
Dalapon	ND		0.0700	1	08/16/2020 07:51	WG1526120
2,4-DB	ND		0.0700	1	08/16/2020 07:51	WG1526120
Dicamba	ND		0.0700	1	08/16/2020 07:51	WG1526120
Dichloroprop	ND		0.0700	1	08/16/2020 07:51	WG1526120
Dinoseb	ND	L2	0.0700	1	08/16/2020 07:51	WG1526120
MCPA	ND	L1	6.50	1	08/16/2020 07:51	WG1526120

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
MCPP	ND		6.50	1	08/16/2020 07:51	WG1526120
2,4,5-T	ND		0.0700	1	08/16/2020 07:51	WG1526120
2,4,5-TP (Silvex)	ND		0.0700	1	08/16/2020 07:51	WG1526120
(S) 2,4-Dichlorophenyl Acetic Acid	*53.8*		*22.0-132*		*08/16/2020 07:51*	WG1526120

Pesticides (GC) by Method 8081B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Aldrin	ND		0.0200	1	08/18/2020 12:05	WG1526775
Alpha BHC	ND		0.0200	1	08/18/2020 12:05	WG1526775
Beta BHC	ND		0.0200	1	08/18/2020 12:05	WG1526775
Delta BHC	ND		0.0200	1	08/18/2020 12:05	WG1526775
Gamma BHC	ND		0.0200	1	08/18/2020 12:05	WG1526775
Chlordane	ND		0.300	1	08/18/2020 12:05	WG1526775
4,4-DDD	ND		0.0200	1	08/18/2020 12:05	WG1526775
4,4-DDE	ND		0.0200	1	08/18/2020 12:05	WG1526775
4,4-DDT	ND		0.0200	1	08/18/2020 12:05	WG1526775
Dieldrin	ND		0.0200	1	08/18/2020 12:05	WG1526775
Endosulfan I	ND		0.0200	1	08/18/2020 12:05	WG1526775
Endosulfan II	ND		0.0200	1	08/18/2020 12:05	WG1526775
Endosulfan sulfate	ND		0.0200	1	08/18/2020 12:05	WG1526775
Endrin	ND		0.0200	1	08/18/2020 12:05	WG1526775
Endrin aldehyde	ND		0.0200	1	08/18/2020 12:05	WG1526775
Endrin ketone	ND		0.0200	1	08/18/2020 12:05	WG1526775
Heptachlor	ND		0.0200	1	08/18/2020 12:05	WG1526775
Heptachlor epoxide	ND		0.0200	1	08/18/2020 12:05	WG1526775
Hexachlorobenzene	ND		0.0200	1	08/18/2020 12:05	WG1526775
Methoxychlor	ND		0.0200	1	08/18/2020 12:05	WG1526775
Toxaphene	ND		0.400	1	08/18/2020 12:05	WG1526775
(S) Decachlorobiphenyl	*80.8*		*10.0-135*		*08/18/2020 12:05*	WG1526775
(S) Tetrachloro-m-xylene	*71.6*		*10.0-139*		*08/18/2020 12:05*	WG1526775

Polychlorinated Biphenyls (GC) by Method 8082 A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
PCB 1016	ND		0.0340	1	08/17/2020 18:52	WG1526775
PCB 1221	ND		0.0340	1	08/17/2020 18:52	WG1526775
PCB 1232	ND		0.0340	1	08/17/2020 18:52	WG1526775
PCB 1242	ND		0.0340	1	08/17/2020 18:52	WG1526775
PCB 1248	ND		0.0170	1	08/17/2020 18:52	WG1526775
PCB 1254	ND		0.0170	1	08/17/2020 18:52	WG1526775
PCB 1260	ND		0.0170	1	08/17/2020 18:52	WG1526775
(S) Decachlorobiphenyl	*75.6*		*10.0-135*		*08/17/2020 18:52*	WG1526775
(S) Tetrachloro-m-xylene	*81.7*		*10.0-139*		*08/17/2020 18:52*	WG1526775

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	08/17/2020 17:11	WG1527113
Acenaphthene	ND		0.00600	1	08/17/2020 17:11	WG1527113
Acenaphthylene	ND		0.00600	1	08/17/2020 17:11	WG1527113
Benzo(a)anthracene	ND		0.00600	1	08/17/2020 17:11	WG1527113
Benzo(a)pyrene	ND		0.00600	1	08/17/2020 17:11	WG1527113
Benzo(b)fluoranthene	ND		0.00600	1	08/17/2020 17:11	WG1527113
Benzo(g,h,i)perylene	ND		0.00600	1	08/17/2020 17:11	WG1527113

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzo(k)fluoranthene	ND		0.00600	1	08/17/2020 17:11	WG1527113
Chrysene	ND		0.00600	1	08/17/2020 17:11	WG1527113
Dibenz(a,h)anthracene	ND		0.00600	1	08/17/2020 17:11	WG1527113
Fluoranthene	ND		0.00600	1	08/17/2020 17:11	WG1527113
Fluorene	ND		0.00600	1	08/17/2020 17:11	WG1527113
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/17/2020 17:11	WG1527113
Naphthalene	ND		0.0200	1	08/17/2020 17:11	WG1527113
Phenanthrene	ND		0.00600	1	08/17/2020 17:11	WG1527113
Pyrene	ND		0.00600	1	08/17/2020 17:11	WG1527113
1-Methylnaphthalene	ND		0.0200	1	08/17/2020 17:11	WG1527113
2-Methylnaphthalene	ND		0.0200	1	08/17/2020 17:11	WG1527113
2-Chloronaphthalene	ND		0.0200	1	08/17/2020 17:11	WG1527113
(S) p-Terphenyl-d14	*100*		*23.0-120*		*08/17/2020 17:11*	WG1527113
(S) Nitrobenzene-d5	*95.8*		*14.0-149*		*08/17/2020 17:11*	WG1527113
(S) 2-Fluorobiphenyl	*95.2*		*34.0-125*		*08/17/2020 17:11*	WG1527113

Mercury by Method 7471B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0400	1	08/14/2020 11:19	WG1525843

Metals (ICP) by Method 6010D

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.64		2.00	1	08/17/2020 14:00	WG1526674
Barium	98.1		0.500	1	08/17/2020 14:00	WG1526674
Cadmium	ND		0.500	1	08/17/2020 14:00	WG1526674
Chromium	27.7		1.00	1	08/17/2020 14:00	WG1526674
Lead	9.62		0.500	1	08/17/2020 14:00	WG1526674
Selenium	ND		2.00	1	08/17/2020 14:00	WG1526674
Silver	ND		1.00	1	08/17/2020 14:00	WG1526674

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND		1.31	1.05	08/16/2020 01:03	WG1526616
Acrylonitrile	ND	R7	0.328	1.05	08/16/2020 01:03	WG1526616
Benzene	ND		0.0263	1.05	08/16/2020 01:03	WG1526616
Bromobenzene	ND		0.328	1.05	08/16/2020 01:03	WG1526616
Bromodichloromethane	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
Bromoform	ND		0.656	1.05	08/16/2020 01:03	WG1526616
Bromomethane	ND		0.328	1.05	08/16/2020 01:03	WG1526616
1,3-Butadiene	ND		0.656	1.05	08/16/2020 01:03	WG1526616
n-Butylbenzene	ND		0.328	1.05	08/16/2020 01:03	WG1526616
sec-Butylbenzene	ND		0.328	1.05	08/16/2020 01:03	WG1526616
tert-Butylbenzene	ND		0.131	1.05	08/16/2020 01:03	WG1526616
Carbon disulfide	ND		0.328	1.05	08/16/2020 01:03	WG1526616
Carbon tetrachloride	ND		0.131	1.05	08/16/2020 01:03	WG1526616
Chlorobenzene	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
Chlorodibromomethane	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
Chloroethane	ND		0.131	1.05	08/16/2020 01:03	WG1526616
Chloroform	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
Chloromethane	ND		0.328	1.05	08/16/2020 01:03	WG1526616
2-Chlorotoluene	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
4-Chlorotoluene	ND		0.131	1.05	08/16/2020 01:03	WG1526616
Cyclohexane	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
1,2-Dibromo-3-Chloropropane	ND		0.656	1.05	08/16/2020 01:03	WG1526616
1,2-Dibromoethane	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
Dibromomethane	ND		0.131	1.05	08/16/2020 01:03	WG1526616
1,2-Dichlorobenzene	ND		0.131	1.05	08/16/2020 01:03	WG1526616
1,3-Dichlorobenzene	ND		0.131	1.05	08/16/2020 01:03	WG1526616
1,4-Dichlorobenzene	ND		0.131	1.05	08/16/2020 01:03	WG1526616
Dichlorodifluoromethane	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
1,1-Dichloroethane	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
1,2-Dichloroethane	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
1,1-Dichloroethene	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
cis-1,2-Dichloroethene	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
trans-1,2-Dichloroethene	ND		0.131	1.05	08/16/2020 01:03	WG1526616
1,2-Dichloropropane	ND		0.131	1.05	08/16/2020 01:03	WG1526616
1,1-Dichloropropene	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
1,3-Dichloropropane	ND		0.131	1.05	08/16/2020 01:03	WG1526616
cis-1,3-Dichloropropene	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
trans-1,3-Dichloropropene	ND		0.131	1.05	08/16/2020 01:03	WG1526616
2,2-Dichloropropane	ND		0.0656	1.05	08/16/2020 01:03	WG1526616

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Dicyclopentadiene	ND		0.328	1.05	08/16/2020 01:03	WG1526616
Di-isopropyl ether	ND		0.0263	1.05	08/16/2020 01:03	WG1526616
Ethylbenzene	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
4-Ethyltoluene	ND		0.131	1.05	08/16/2020 01:03	WG1526616
Hexachloro-1,3-butadiene	ND	R7	0.656	1.05	08/16/2020 01:03	WG1526616
n-Hexane	ND		0.131	1.05	08/16/2020 01:03	WG1526616
Isopropylbenzene	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
p-Isopropyltoluene	ND		0.131	1.05	08/16/2020 01:03	WG1526616
2-Butanone (MEK)	ND	R7	2.63	1.05	08/16/2020 01:03	WG1526616
Methylene Chloride	ND		0.656	1.05	08/16/2020 01:03	WG1526616
4-Methyl-2-pentanone (MIBK)	ND		0.656	1.05	08/16/2020 01:03	WG1526616
Methyl tert-butyl ether	ND		0.0263	1.05	08/16/2020 01:03	WG1526616
Methyl Cyclohexane	ND		0.131	1.05	08/16/2020 01:03	WG1526616
Naphthalene	ND		0.328	1.05	08/16/2020 01:03	WG1526616
Propene	ND		1.31	1.05	08/16/2020 01:03	WG1526616
n-Propylbenzene	ND		0.131	1.05	08/16/2020 01:03	WG1526616
Styrene	ND		0.328	1.05	08/16/2020 01:03	WG1526616
1,1,1,2-Tetrachloroethane	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
1,1,2,2-Tetrachloroethane	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
1,1,2-Trichlorotrifluoroethane	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
Tetrachloroethene	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
Toluene	ND		0.131	1.05	08/16/2020 01:03	WG1526616
1,2,3-Trichlorobenzene	ND		0.328	1.05	08/16/2020 01:03	WG1526616
1,2,4-Trichlorobenzene	ND		0.328	1.05	08/16/2020 01:03	WG1526616
1,1,1-Trichloroethane	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
1,1,2-Trichloroethane	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
Trichloroethene	ND		0.0263	1.05	08/16/2020 01:03	WG1526616
Trichlorofluoromethane	ND	R7	0.0656	1.05	08/16/2020 01:03	WG1526616
1,2,3-Trichloropropane	ND		0.328	1.05	08/16/2020 01:03	WG1526616
1,2,4-Trimethylbenzene	ND		0.131	1.05	08/16/2020 01:03	WG1526616
1,2,3-Trimethylbenzene	ND		0.131	1.05	08/16/2020 01:03	WG1526616
1,3,5-Trimethylbenzene	ND		0.131	1.05	08/16/2020 01:03	WG1526616
Vinyl chloride	ND		0.0656	1.05	08/16/2020 01:03	WG1526616
Xylenes, Total	ND		0.171	1.05	08/16/2020 01:03	WG1526616
(S) Toluene-d8	*104*		*75.0-131*		*08/16/2020 01:03*	WG1526616
(S) 4-Bromofluorobenzene	*97.7*		*67.0-138*		*08/16/2020 01:03*	WG1526616
(S) 1,2-Dichloroethane-d4	*91.0*		*70.0-130*		*08/16/2020 01:03*	WG1526616

Semi-Volatile Organic Compounds (GC) by Method 8015AZR1

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C22 Hydrocarbons	ND		30.0	1	08/17/2020 13:54	WG1527515
C22-C32 Hydrocarbons	ND		50.0	1	08/17/2020 13:54	WG1527515
(S) o-Terphenyl	*91.8*		*70.0-130*		*08/17/2020 13:54*	WG1527515

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
2,4-D	ND		0.0700	1	08/16/2020 08:06	WG1526120
Dalapon	ND		0.0700	1	08/16/2020 08:06	WG1526120
2,4-DB	ND		0.0700	1	08/16/2020 08:06	WG1526120
Dicamba	ND		0.0700	1	08/16/2020 08:06	WG1526120
Dichloroprop	ND		0.0700	1	08/16/2020 08:06	WG1526120
Dinoseb	ND	L2	0.0700	1	08/16/2020 08:06	WG1526120
MCPA	ND	L1	6.50	1	08/16/2020 08:06	WG1526120

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
MCPP	ND		6.50	1	08/16/2020 08:06	WG1526120
2,4,5-T	ND		0.0700	1	08/16/2020 08:06	WG1526120
2,4,5-TP (Silvex)	ND		0.0700	1	08/16/2020 08:06	WG1526120
(S) 2,4-Dichlorophenyl Acetic Acid	*52.5*		*22.0-132*		*08/16/2020 08:06*	WG1526120

Pesticides (GC) by Method 8081B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Aldrin	ND		0.0200	1	08/18/2020 16:53	WG1526775
Alpha BHC	ND		0.0200	1	08/18/2020 16:53	WG1526775
Beta BHC	ND		0.0200	1	08/18/2020 16:53	WG1526775
Delta BHC	ND		0.0200	1	08/18/2020 16:53	WG1526775
Gamma BHC	ND		0.0200	1	08/18/2020 16:53	WG1526775
Chlordane	ND		0.300	1	08/18/2020 16:53	WG1526775
4,4-DDD	ND		0.0200	1	08/18/2020 16:53	WG1526775
4,4-DDE	ND		0.0200	1	08/18/2020 16:53	WG1526775
4,4-DDT	ND		0.0200	1	08/18/2020 16:53	WG1526775
Dieldrin	ND		0.0200	1	08/18/2020 16:53	WG1526775
Endosulfan I	ND		0.0200	1	08/18/2020 16:53	WG1526775
Endosulfan II	ND		0.0200	1	08/18/2020 16:53	WG1526775
Endosulfan sulfate	ND		0.0200	1	08/18/2020 16:53	WG1526775
Endrin	ND		0.0200	1	08/18/2020 16:53	WG1526775
Endrin aldehyde	ND		0.0200	1	08/18/2020 16:53	WG1526775
Endrin ketone	ND		0.0200	1	08/18/2020 16:53	WG1526775
Heptachlor	ND		0.0200	1	08/18/2020 16:53	WG1526775
Heptachlor epoxide	ND		0.0200	1	08/18/2020 16:53	WG1526775
Hexachlorobenzene	ND		0.0200	1	08/18/2020 16:53	WG1526775
Methoxychlor	ND		0.0200	1	08/18/2020 16:53	WG1526775
Toxaphene	ND		0.400	1	08/18/2020 16:53	WG1526775
(S) Decachlorobiphenyl	*84.8*		*10.0-135*		*08/18/2020 16:53*	WG1526775
(S) Tetrachloro-m-xylene	*68.6*		*10.0-139*		*08/18/2020 16:53*	WG1526775

Polychlorinated Biphenyls (GC) by Method 8082 A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
PCB 1016	ND		0.0340	1	08/17/2020 19:06	WG1526775
PCB 1221	ND		0.0340	1	08/17/2020 19:06	WG1526775
PCB 1232	ND		0.0340	1	08/17/2020 19:06	WG1526775
PCB 1242	ND		0.0340	1	08/17/2020 19:06	WG1526775
PCB 1248	ND		0.0170	1	08/17/2020 19:06	WG1526775
PCB 1254	ND		0.0170	1	08/17/2020 19:06	WG1526775
PCB 1260	ND		0.0170	1	08/17/2020 19:06	WG1526775
(S) Decachlorobiphenyl	*85.4*		*10.0-135*		*08/17/2020 19:06*	WG1526775
(S) Tetrachloro-m-xylene	*93.9*		*10.0-139*		*08/17/2020 19:06*	WG1526775

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	08/18/2020 01:12	WG1527414
Acenaphthene	ND		0.00600	1	08/18/2020 01:12	WG1527414
Acenaphthylene	ND		0.00600	1	08/18/2020 01:12	WG1527414
Benzo(a)anthracene	ND		0.00600	1	08/18/2020 01:12	WG1527414
Benzo(a)pyrene	ND		0.00600	1	08/18/2020 01:12	WG1527414
Benzo(b)fluoranthene	ND		0.00600	1	08/18/2020 01:12	WG1527414
Benzo(g,h,i)perylene	ND		0.00600	1	08/18/2020 01:12	WG1527414

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzo(k)fluoranthene	ND		0.00600	1	08/18/2020 01:12	WG1527414
Chrysene	ND		0.00600	1	08/18/2020 01:12	WG1527414
Dibenz(a,h)anthracene	ND		0.00600	1	08/18/2020 01:12	WG1527414
Fluoranthene	ND		0.00600	1	08/18/2020 01:12	WG1527414
Fluorene	ND		0.00600	1	08/18/2020 01:12	WG1527414
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/18/2020 01:12	WG1527414
Naphthalene	ND		0.0200	1	08/18/2020 01:12	WG1527414
Phenanthrene	ND		0.00600	1	08/18/2020 01:12	WG1527414
Pyrene	ND		0.00600	1	08/18/2020 01:12	WG1527414
1-Methylnaphthalene	ND		0.0200	1	08/18/2020 01:12	WG1527414
2-Methylnaphthalene	ND		0.0200	1	08/18/2020 01:12	WG1527414
2-Chloronaphthalene	ND		0.0200	1	08/18/2020 01:12	WG1527414
(S) p-Terphenyl-d14	*101*		*23.0-120*		*08/18/2020 01:12*	WG1527414
(S) Nitrobenzene-d5	*102*		*14.0-149*		*08/18/2020 01:12*	WG1527414
(S) 2-Fluorobiphenyl	*95.5*		*34.0-125*		*08/18/2020 01:12*	WG1527414

Mercury by Method 7471B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0400	1	08/14/2020 11:26	WG1525843

Metals (ICP) by Method 6010D

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.90		2.00	1	08/17/2020 14:03	WG1526674
Barium	71.5		0.500	1	08/17/2020 14:03	WG1526674
Cadmium	ND		0.500	1	08/17/2020 14:03	WG1526674
Chromium	18.4		1.00	1	08/17/2020 14:03	WG1526674
Lead	10.4		0.500	1	08/17/2020 14:03	WG1526674
Selenium	ND		2.00	1	08/17/2020 14:03	WG1526674
Silver	ND		1.00	1	08/17/2020 14:03	WG1526674

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND		1.25	1	08/16/2020 01:25	WG1526616
Acrylonitrile	ND	R7	0.313	1	08/16/2020 01:25	WG1526616
Benzene	ND		0.0250	1	08/16/2020 01:25	WG1526616
Bromobenzene	ND		0.313	1	08/16/2020 01:25	WG1526616
Bromodichloromethane	ND		0.0625	1	08/16/2020 01:25	WG1526616
Bromoform	ND		0.625	1	08/16/2020 01:25	WG1526616
Bromomethane	ND		0.313	1	08/16/2020 01:25	WG1526616
1,3-Butadiene	ND		0.625	1	08/16/2020 01:25	WG1526616
n-Butylbenzene	ND		0.313	1	08/16/2020 01:25	WG1526616
sec-Butylbenzene	ND		0.313	1	08/16/2020 01:25	WG1526616
tert-Butylbenzene	ND		0.125	1	08/16/2020 01:25	WG1526616
Carbon disulfide	ND		0.313	1	08/16/2020 01:25	WG1526616
Carbon tetrachloride	ND		0.125	1	08/16/2020 01:25	WG1526616
Chlorobenzene	ND		0.0625	1	08/16/2020 01:25	WG1526616
Chlorodibromomethane	ND		0.0625	1	08/16/2020 01:25	WG1526616
Chloroethane	ND		0.125	1	08/16/2020 01:25	WG1526616
Chloroform	ND		0.0625	1	08/16/2020 01:25	WG1526616
Chloromethane	ND		0.313	1	08/16/2020 01:25	WG1526616
2-Chlorotoluene	ND		0.0625	1	08/16/2020 01:25	WG1526616
4-Chlorotoluene	ND		0.125	1	08/16/2020 01:25	WG1526616
Cyclohexane	ND		0.0625	1	08/16/2020 01:25	WG1526616
1,2-Dibromo-3-Chloropropane	ND		0.625	1	08/16/2020 01:25	WG1526616
1,2-Dibromoethane	ND		0.0625	1	08/16/2020 01:25	WG1526616
Dibromomethane	ND		0.125	1	08/16/2020 01:25	WG1526616
1,2-Dichlorobenzene	ND		0.125	1	08/16/2020 01:25	WG1526616
1,3-Dichlorobenzene	ND		0.125	1	08/16/2020 01:25	WG1526616
1,4-Dichlorobenzene	ND		0.125	1	08/16/2020 01:25	WG1526616
Dichlorodifluoromethane	ND		0.0625	1	08/16/2020 01:25	WG1526616
1,1-Dichloroethane	ND		0.0625	1	08/16/2020 01:25	WG1526616
1,2-Dichloroethane	ND		0.0625	1	08/16/2020 01:25	WG1526616
1,1-Dichloroethene	ND		0.0625	1	08/16/2020 01:25	WG1526616
cis-1,2-Dichloroethene	ND		0.0625	1	08/16/2020 01:25	WG1526616
trans-1,2-Dichloroethene	ND		0.125	1	08/16/2020 01:25	WG1526616
1,2-Dichloropropane	ND		0.125	1	08/16/2020 01:25	WG1526616
1,1-Dichloropropene	ND		0.0625	1	08/16/2020 01:25	WG1526616
1,3-Dichloropropane	ND		0.125	1	08/16/2020 01:25	WG1526616
cis-1,3-Dichloropropene	ND		0.0625	1	08/16/2020 01:25	WG1526616
trans-1,3-Dichloropropene	ND		0.125	1	08/16/2020 01:25	WG1526616
2,2-Dichloropropane	ND		0.0625	1	08/16/2020 01:25	WG1526616

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Dicyclopentadiene	ND		0.313	1	08/16/2020 01:25	WG1526616
Di-isopropyl ether	ND		0.0250	1	08/16/2020 01:25	WG1526616
Ethylbenzene	ND		0.0625	1	08/16/2020 01:25	WG1526616
4-Ethyltoluene	ND		0.125	1	08/16/2020 01:25	WG1526616
Hexachloro-1,3-butadiene	ND	R7	0.625	1	08/16/2020 01:25	WG1526616
n-Hexane	ND		0.125	1	08/16/2020 01:25	WG1526616
Isopropylbenzene	ND		0.0625	1	08/16/2020 01:25	WG1526616
p-Isopropyltoluene	ND		0.125	1	08/16/2020 01:25	WG1526616
2-Butanone (MEK)	ND	R7	2.50	1	08/16/2020 01:25	WG1526616
Methylene Chloride	ND		0.625	1	08/16/2020 01:25	WG1526616
4-Methyl-2-pentanone (MIBK)	ND		0.625	1	08/16/2020 01:25	WG1526616
Methyl tert-butyl ether	ND		0.0250	1	08/16/2020 01:25	WG1526616
Methyl Cyclohexane	ND		0.125	1	08/16/2020 01:25	WG1526616
Naphthalene	ND		0.313	1	08/16/2020 01:25	WG1526616
Propene	ND		1.25	1	08/16/2020 01:25	WG1526616
n-Propylbenzene	ND		0.125	1	08/16/2020 01:25	WG1526616
Styrene	ND		0.313	1	08/16/2020 01:25	WG1526616
1,1,1,2-Tetrachloroethane	ND		0.0625	1	08/16/2020 01:25	WG1526616
1,1,2,2-Tetrachloroethane	ND		0.0625	1	08/16/2020 01:25	WG1526616
1,1,2-Trichlorotrifluoroethane	ND		0.0625	1	08/16/2020 01:25	WG1526616
Tetrachloroethene	ND		0.0625	1	08/16/2020 01:25	WG1526616
Toluene	ND		0.125	1	08/16/2020 01:25	WG1526616
1,2,3-Trichlorobenzene	ND		0.313	1	08/16/2020 01:25	WG1526616
1,2,4-Trichlorobenzene	ND		0.313	1	08/16/2020 01:25	WG1526616
1,1,1-Trichloroethane	ND		0.0625	1	08/16/2020 01:25	WG1526616
1,1,2-Trichloroethane	ND		0.0625	1	08/16/2020 01:25	WG1526616
Trichloroethene	ND		0.0250	1	08/16/2020 01:25	WG1526616
Trichlorofluoromethane	ND	R7	0.0625	1	08/16/2020 01:25	WG1526616
1,2,3-Trichloropropane	ND		0.313	1	08/16/2020 01:25	WG1526616
1,2,4-Trimethylbenzene	ND		0.125	1	08/16/2020 01:25	WG1526616
1,2,3-Trimethylbenzene	ND		0.125	1	08/16/2020 01:25	WG1526616
1,3,5-Trimethylbenzene	ND		0.125	1	08/16/2020 01:25	WG1526616
Vinyl chloride	ND		0.0625	1	08/16/2020 01:25	WG1526616
Xylenes, Total	ND		0.163	1	08/16/2020 01:25	WG1526616
(S) Toluene-d8	*103*		*75.0-131*		*08/16/2020 01:25*	WG1526616
(S) 4-Bromofluorobenzene	*98.9*		*67.0-138*		*08/16/2020 01:25*	WG1526616
(S) 1,2-Dichloroethane-d4	*91.7*		*70.0-130*		*08/16/2020 01:25*	WG1526616

Semi-Volatile Organic Compounds (GC) by Method 8015AZR1

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C22 Hydrocarbons	ND		30.0	1	08/17/2020 14:49	WG1527515
C22-C32 Hydrocarbons	ND		50.0	1	08/17/2020 14:49	WG1527515
(S) o-Terphenyl	*89.3*		*70.0-130*		*08/17/2020 14:49*	WG1527515

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
2,4-D	ND		0.0700	1	08/16/2020 08:20	WG1526120
Dalapon	ND		0.0700	1	08/16/2020 08:20	WG1526120
2,4-DB	ND		0.0700	1	08/16/2020 08:20	WG1526120
Dicamba	ND		0.0700	1	08/16/2020 08:20	WG1526120
Dichloroprop	ND		0.0700	1	08/16/2020 08:20	WG1526120
Dinoseb	ND	L2	0.0700	1	08/16/2020 08:20	WG1526120
MCPA	ND	L1	6.50	1	08/16/2020 08:20	WG1526120

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
MCPP	ND		6.50	1	08/16/2020 08:20	WG1526120
2,4,5-T	ND		0.0700	1	08/16/2020 08:20	WG1526120
2,4,5-TP (Silvex)	ND		0.0700	1	08/16/2020 08:20	WG1526120
(S) 2,4-Dichlorophenyl Acetic Acid	*53.3*		*22.0-132*		*08/16/2020 08:20*	WG1526120

Pesticides (GC) by Method 8081B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Aldrin	ND		0.0200	1	08/18/2020 17:05	WG1526775
Alpha BHC	ND		0.0200	1	08/18/2020 17:05	WG1526775
Beta BHC	ND		0.0200	1	08/18/2020 17:05	WG1526775
Delta BHC	ND		0.0200	1	08/18/2020 17:05	WG1526775
Gamma BHC	ND		0.0200	1	08/18/2020 17:05	WG1526775
Chlordane	ND		0.300	1	08/18/2020 17:05	WG1526775
4,4-DDD	ND		0.0200	1	08/18/2020 17:05	WG1526775
4,4-DDE	ND		0.0200	1	08/18/2020 17:05	WG1526775
4,4-DDT	ND		0.0200	1	08/18/2020 17:05	WG1526775
Dieldrin	ND		0.0200	1	08/18/2020 17:05	WG1526775
Endosulfan I	ND		0.0200	1	08/18/2020 17:05	WG1526775
Endosulfan II	ND		0.0200	1	08/18/2020 17:05	WG1526775
Endosulfan sulfate	ND		0.0200	1	08/18/2020 17:05	WG1526775
Endrin	ND		0.0200	1	08/18/2020 17:05	WG1526775
Endrin aldehyde	ND		0.0200	1	08/18/2020 17:05	WG1526775
Endrin ketone	ND		0.0200	1	08/18/2020 17:05	WG1526775
Heptachlor	ND		0.0200	1	08/18/2020 17:05	WG1526775
Heptachlor epoxide	ND		0.0200	1	08/18/2020 17:05	WG1526775
Hexachlorobenzene	ND		0.0200	1	08/18/2020 17:05	WG1526775
Methoxychlor	ND		0.0200	1	08/18/2020 17:05	WG1526775
Toxaphene	ND		0.400	1	08/18/2020 17:05	WG1526775
(S) Decachlorobiphenyl	*76.2*		*10.0-135*		*08/18/2020 17:05*	WG1526775
(S) Tetrachloro-m-xylene	*64.8*		*10.0-139*		*08/18/2020 17:05*	WG1526775

Polychlorinated Biphenyls (GC) by Method 8082 A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
PCB 1016	ND		0.0340	1	08/17/2020 19:20	WG1526775
PCB 1221	ND		0.0340	1	08/17/2020 19:20	WG1526775
PCB 1232	ND		0.0340	1	08/17/2020 19:20	WG1526775
PCB 1242	ND		0.0340	1	08/17/2020 19:20	WG1526775
PCB 1248	ND		0.0170	1	08/17/2020 19:20	WG1526775
PCB 1254	ND		0.0170	1	08/17/2020 19:20	WG1526775
PCB 1260	ND		0.0170	1	08/17/2020 19:20	WG1526775
(S) Decachlorobiphenyl	*72.9*		*10.0-135*		*08/17/2020 19:20*	WG1526775
(S) Tetrachloro-m-xylene	*79.9*		*10.0-139*		*08/17/2020 19:20*	WG1526775

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	08/18/2020 01:33	WG1527414
Acenaphthene	ND		0.00600	1	08/18/2020 01:33	WG1527414
Acenaphthylene	ND		0.00600	1	08/18/2020 01:33	WG1527414
Benzo(a)anthracene	ND		0.00600	1	08/18/2020 01:33	WG1527414
Benzo(a)pyrene	ND		0.00600	1	08/18/2020 01:33	WG1527414
Benzo(b)fluoranthene	ND		0.00600	1	08/18/2020 01:33	WG1527414
Benzo(g,h,i)perylene	ND		0.00600	1	08/18/2020 01:33	WG1527414

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzo(k)fluoranthene	ND		0.00600	1	08/18/2020 01:33	WG1527414
Chrysene	ND		0.00600	1	08/18/2020 01:33	WG1527414
Dibenz(a,h)anthracene	ND		0.00600	1	08/18/2020 01:33	WG1527414
Fluoranthene	ND		0.00600	1	08/18/2020 01:33	WG1527414
Fluorene	ND		0.00600	1	08/18/2020 01:33	WG1527414
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/18/2020 01:33	WG1527414
Naphthalene	ND		0.0200	1	08/18/2020 01:33	WG1527414
Phenanthrene	ND		0.00600	1	08/18/2020 01:33	WG1527414
Pyrene	ND		0.00600	1	08/18/2020 01:33	WG1527414
1-Methylnaphthalene	ND		0.0200	1	08/18/2020 01:33	WG1527414
2-Methylnaphthalene	ND		0.0200	1	08/18/2020 01:33	WG1527414
2-Chloronaphthalene	ND		0.0200	1	08/18/2020 01:33	WG1527414
(S) p-Terphenyl-d14	*100*		*23.0-120*		*08/18/2020 01:33*	WG1527414
(S) Nitrobenzene-d5	*100*		*14.0-149*		*08/18/2020 01:33*	WG1527414
(S) 2-Fluorobiphenyl	*97.5*		*34.0-125*		*08/18/2020 01:33*	WG1527414

Mercury by Method 7471B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0400	1	08/14/2020 11:29	WG1525843

Metals (ICP) by Method 6010D

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.07		2.00	1	08/17/2020 14:06	WG1526674
Barium	83.4		0.500	1	08/17/2020 14:06	WG1526674
Cadmium	ND		0.500	1	08/17/2020 14:06	WG1526674
Chromium	26.1		1.00	1	08/17/2020 14:06	WG1526674
Lead	8.43		0.500	1	08/17/2020 14:06	WG1526674
Selenium	ND		2.00	1	08/17/2020 14:06	WG1526674
Silver	ND		1.00	1	08/17/2020 14:06	WG1526674

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND		1.30	1.04	08/16/2020 01:44	WG1526616
Acrylonitrile	ND	R7	0.325	1.04	08/16/2020 01:44	WG1526616
Benzene	ND		0.0260	1.04	08/16/2020 01:44	WG1526616
Bromobenzene	ND		0.325	1.04	08/16/2020 01:44	WG1526616
Bromodichloromethane	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
Bromoform	ND		0.650	1.04	08/16/2020 01:44	WG1526616
Bromomethane	ND		0.325	1.04	08/16/2020 01:44	WG1526616
1,3-Butadiene	ND		0.650	1.04	08/16/2020 01:44	WG1526616
n-Butylbenzene	ND		0.325	1.04	08/16/2020 01:44	WG1526616
sec-Butylbenzene	ND		0.325	1.04	08/16/2020 01:44	WG1526616
tert-Butylbenzene	ND		0.130	1.04	08/16/2020 01:44	WG1526616
Carbon disulfide	ND		0.325	1.04	08/16/2020 01:44	WG1526616
Carbon tetrachloride	ND		0.130	1.04	08/16/2020 01:44	WG1526616
Chlorobenzene	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
Chlorodibromomethane	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
Chloroethane	ND		0.130	1.04	08/16/2020 01:44	WG1526616
Chloroform	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
Chloromethane	ND		0.325	1.04	08/16/2020 01:44	WG1526616
2-Chlorotoluene	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
4-Chlorotoluene	ND		0.130	1.04	08/16/2020 01:44	WG1526616
Cyclohexane	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
1,2-Dibromo-3-Chloropropane	ND		0.650	1.04	08/16/2020 01:44	WG1526616
1,2-Dibromoethane	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
Dibromomethane	ND		0.130	1.04	08/16/2020 01:44	WG1526616
1,2-Dichlorobenzene	ND		0.130	1.04	08/16/2020 01:44	WG1526616
1,3-Dichlorobenzene	ND		0.130	1.04	08/16/2020 01:44	WG1526616
1,4-Dichlorobenzene	ND		0.130	1.04	08/16/2020 01:44	WG1526616
Dichlorodifluoromethane	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
1,1-Dichloroethane	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
1,2-Dichloroethane	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
1,1-Dichloroethene	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
cis-1,2-Dichloroethene	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
trans-1,2-Dichloroethene	ND		0.130	1.04	08/16/2020 01:44	WG1526616
1,2-Dichloropropane	ND		0.130	1.04	08/16/2020 01:44	WG1526616
1,1-Dichloropropene	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
1,3-Dichloropropane	ND		0.130	1.04	08/16/2020 01:44	WG1526616
cis-1,3-Dichloropropene	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
trans-1,3-Dichloropropene	ND		0.130	1.04	08/16/2020 01:44	WG1526616
2,2-Dichloropropane	ND		0.0650	1.04	08/16/2020 01:44	WG1526616

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Dicyclopentadiene	ND		0.325	1.04	08/16/2020 01:44	WG1526616
Di-isopropyl ether	ND		0.0260	1.04	08/16/2020 01:44	WG1526616
Ethylbenzene	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
4-Ethyltoluene	ND		0.130	1.04	08/16/2020 01:44	WG1526616
Hexachloro-1,3-butadiene	ND	R7	0.650	1.04	08/16/2020 01:44	WG1526616
n-Hexane	ND		0.130	1.04	08/16/2020 01:44	WG1526616
Isopropylbenzene	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
p-Isopropyltoluene	ND		0.130	1.04	08/16/2020 01:44	WG1526616
2-Butanone (MEK)	ND	R7	2.60	1.04	08/16/2020 01:44	WG1526616
Methylene Chloride	ND		0.650	1.04	08/16/2020 01:44	WG1526616
4-Methyl-2-pentanone (MIBK)	ND		0.650	1.04	08/16/2020 01:44	WG1526616
Methyl tert-butyl ether	ND		0.0260	1.04	08/16/2020 01:44	WG1526616
Methyl Cyclohexane	ND		0.130	1.04	08/16/2020 01:44	WG1526616
Naphthalene	ND		0.325	1.04	08/16/2020 01:44	WG1526616
Propene	ND		1.30	1.04	08/16/2020 01:44	WG1526616
n-Propylbenzene	ND		0.130	1.04	08/16/2020 01:44	WG1526616
Styrene	ND		0.325	1.04	08/16/2020 01:44	WG1526616
1,1,1,2-Tetrachloroethane	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
1,1,2,2-Tetrachloroethane	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
1,1,2-Trichlorotrifluoroethane	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
Tetrachloroethene	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
Toluene	ND		0.130	1.04	08/16/2020 01:44	WG1526616
1,2,3-Trichlorobenzene	ND		0.325	1.04	08/16/2020 01:44	WG1526616
1,2,4-Trichlorobenzene	ND		0.325	1.04	08/16/2020 01:44	WG1526616
1,1,1-Trichloroethane	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
1,1,2-Trichloroethane	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
Trichloroethene	ND		0.0260	1.04	08/16/2020 01:44	WG1526616
Trichlorofluoromethane	ND	R7	0.0650	1.04	08/16/2020 01:44	WG1526616
1,2,3-Trichloropropane	ND		0.325	1.04	08/16/2020 01:44	WG1526616
1,2,4-Trimethylbenzene	ND		0.130	1.04	08/16/2020 01:44	WG1526616
1,2,3-Trimethylbenzene	ND		0.130	1.04	08/16/2020 01:44	WG1526616
1,3,5-Trimethylbenzene	ND		0.130	1.04	08/16/2020 01:44	WG1526616
Vinyl chloride	ND		0.0650	1.04	08/16/2020 01:44	WG1526616
Xylenes, Total	ND		0.169	1.04	08/16/2020 01:44	WG1526616
(S) Toluene-d8	*101*		*75.0-131*		*08/16/2020 01:44*	WG1526616
(S) 4-Bromofluorobenzene	*101*		*67.0-138*		*08/16/2020 01:44*	WG1526616
(S) 1,2-Dichloroethane-d4	*94.6*		*70.0-130*		*08/16/2020 01:44*	WG1526616

Semi-Volatile Organic Compounds (GC) by Method 8015AZR1

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C22 Hydrocarbons	ND		30.0	1	08/17/2020 15:03	WG1527515
C22-C32 Hydrocarbons	ND		50.0	1	08/17/2020 15:03	WG1527515
(S) o-Terphenyl	*89.0*		*70.0-130*		*08/17/2020 15:03*	WG1527515

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
2,4-D	ND		0.0700	1	08/16/2020 08:35	WG1526120
Dalapon	ND		0.0700	1	08/16/2020 08:35	WG1526120
2,4-DB	ND		0.0700	1	08/16/2020 08:35	WG1526120
Dicamba	ND		0.0700	1	08/16/2020 08:35	WG1526120
Dichloroprop	ND		0.0700	1	08/16/2020 08:35	WG1526120
Dinoseb	ND	L2	0.0700	1	08/16/2020 08:35	WG1526120
MCPA	ND	L1	6.50	1	08/16/2020 08:35	WG1526120

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
MCPP	ND		6.50	1	08/16/2020 08:35	WG1526120
2,4,5-T	ND		0.0700	1	08/16/2020 08:35	WG1526120
2,4,5-TP (Silvex)	ND		0.0700	1	08/16/2020 08:35	WG1526120
(S) 2,4-Dichlorophenyl Acetic Acid	*48.6*		*22.0-132*		*08/16/2020 08:35*	WG1526120

Pesticides (GC) by Method 8081B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Aldrin	ND		0.0200	1	08/18/2020 17:18	WG1526775
Alpha BHC	ND		0.0200	1	08/18/2020 17:18	WG1526775
Beta BHC	ND		0.0200	1	08/18/2020 17:18	WG1526775
Delta BHC	ND		0.0200	1	08/18/2020 17:18	WG1526775
Gamma BHC	ND		0.0200	1	08/18/2020 17:18	WG1526775
Chlordane	ND		0.300	1	08/18/2020 17:18	WG1526775
4,4-DDD	ND		0.0200	1	08/18/2020 17:18	WG1526775
4,4-DDE	ND		0.0200	1	08/18/2020 17:18	WG1526775
4,4-DDT	ND		0.0200	1	08/18/2020 17:18	WG1526775
Dieldrin	ND		0.0200	1	08/18/2020 17:18	WG1526775
Endosulfan I	ND		0.0200	1	08/18/2020 17:18	WG1526775
Endosulfan II	ND		0.0200	1	08/18/2020 17:18	WG1526775
Endosulfan sulfate	ND		0.0200	1	08/18/2020 17:18	WG1526775
Endrin	ND		0.0200	1	08/18/2020 17:18	WG1526775
Endrin aldehyde	ND		0.0200	1	08/18/2020 17:18	WG1526775
Endrin ketone	ND		0.0200	1	08/18/2020 17:18	WG1526775
Heptachlor	ND		0.0200	1	08/18/2020 17:18	WG1526775
Heptachlor epoxide	ND		0.0200	1	08/18/2020 17:18	WG1526775
Hexachlorobenzene	ND		0.0200	1	08/18/2020 17:18	WG1526775
Methoxychlor	ND		0.0200	1	08/18/2020 17:18	WG1526775
Toxaphene	ND		0.400	1	08/18/2020 17:18	WG1526775
(S) Decachlorobiphenyl	*77.6*		*10.0-135*		*08/18/2020 17:18*	WG1526775
(S) Tetrachloro-m-xylene	*71.2*		*10.0-139*		*08/18/2020 17:18*	WG1526775

Polychlorinated Biphenyls (GC) by Method 8082 A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
PCB 1016	ND		0.0340	1	08/17/2020 19:34	WG1526775
PCB 1221	ND		0.0340	1	08/17/2020 19:34	WG1526775
PCB 1232	ND		0.0340	1	08/17/2020 19:34	WG1526775
PCB 1242	ND		0.0340	1	08/17/2020 19:34	WG1526775
PCB 1248	ND		0.0170	1	08/17/2020 19:34	WG1526775
PCB 1254	ND		0.0170	1	08/17/2020 19:34	WG1526775
PCB 1260	ND		0.0170	1	08/17/2020 19:34	WG1526775
(S) Decachlorobiphenyl	*72.8*		*10.0-135*		*08/17/2020 19:34*	WG1526775
(S) Tetrachloro-m-xylene	*79.3*		*10.0-139*		*08/17/2020 19:34*	WG1526775

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	08/18/2020 01:53	WG1527414
Acenaphthene	ND		0.00600	1	08/18/2020 01:53	WG1527414
Acenaphthylene	ND		0.00600	1	08/18/2020 01:53	WG1527414
Benzo(a)anthracene	ND		0.00600	1	08/18/2020 01:53	WG1527414
Benzo(a)pyrene	ND		0.00600	1	08/18/2020 01:53	WG1527414
Benzo(b)fluoranthene	ND		0.00600	1	08/18/2020 01:53	WG1527414
Benzo(g,h,i)perylene	ND		0.00600	1	08/18/2020 01:53	WG1527414

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzo(k)fluoranthene	ND		0.00600	1	08/18/2020 01:53	WG1527414
Chrysene	ND		0.00600	1	08/18/2020 01:53	WG1527414
Dibenz(a,h)anthracene	ND		0.00600	1	08/18/2020 01:53	WG1527414
Fluoranthene	ND		0.00600	1	08/18/2020 01:53	WG1527414
Fluorene	ND		0.00600	1	08/18/2020 01:53	WG1527414
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/18/2020 01:53	WG1527414
Naphthalene	ND		0.0200	1	08/18/2020 01:53	WG1527414
Phenanthrene	ND		0.00600	1	08/18/2020 01:53	WG1527414
Pyrene	ND		0.00600	1	08/18/2020 01:53	WG1527414
1-Methylnaphthalene	ND		0.0200	1	08/18/2020 01:53	WG1527414
2-Methylnaphthalene	ND		0.0200	1	08/18/2020 01:53	WG1527414
2-Chloronaphthalene	ND		0.0200	1	08/18/2020 01:53	WG1527414
(S) p-Terphenyl-d14	*97.9*		*23.0-120*		*08/18/2020 01:53*	WG1527414
(S) Nitrobenzene-d5	*104*		*14.0-149*		*08/18/2020 01:53*	WG1527414
(S) 2-Fluorobiphenyl	*95.7*		*34.0-125*		*08/18/2020 01:53*	WG1527414

Mercury by Method 7471B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0400	1	08/14/2020 11:32	WG1525843

Metals (ICP) by Method 6010D

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.15		2.00	1	08/17/2020 14:08	WG1526674
Barium	79.2		0.500	1	08/17/2020 14:08	WG1526674
Cadmium	ND		0.500	1	08/17/2020 14:08	WG1526674
Chromium	15.1		1.00	1	08/17/2020 14:08	WG1526674
Lead	7.06		0.500	1	08/17/2020 14:08	WG1526674
Selenium	ND		2.00	1	08/17/2020 14:08	WG1526674
Silver	ND		1.00	1	08/17/2020 14:08	WG1526674

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND		1.25	1	08/16/2020 02:03	WG1526616
Acrylonitrile	ND	R7	0.313	1	08/16/2020 02:03	WG1526616
Benzene	ND		0.0250	1	08/16/2020 02:03	WG1526616
Bromobenzene	ND		0.313	1	08/16/2020 02:03	WG1526616
Bromodichloromethane	ND		0.0625	1	08/16/2020 02:03	WG1526616
Bromoform	ND		0.625	1	08/16/2020 02:03	WG1526616
Bromomethane	ND		0.313	1	08/16/2020 02:03	WG1526616
1,3-Butadiene	ND		0.625	1	08/16/2020 02:03	WG1526616
n-Butylbenzene	ND		0.313	1	08/16/2020 02:03	WG1526616
sec-Butylbenzene	ND		0.313	1	08/16/2020 02:03	WG1526616
tert-Butylbenzene	ND		0.125	1	08/16/2020 02:03	WG1526616
Carbon disulfide	ND		0.313	1	08/16/2020 02:03	WG1526616
Carbon tetrachloride	ND		0.125	1	08/16/2020 02:03	WG1526616
Chlorobenzene	ND		0.0625	1	08/16/2020 02:03	WG1526616
Chlorodibromomethane	ND		0.0625	1	08/16/2020 02:03	WG1526616
Chloroethane	ND		0.125	1	08/16/2020 02:03	WG1526616
Chloroform	ND		0.0625	1	08/16/2020 02:03	WG1526616
Chloromethane	ND		0.313	1	08/16/2020 02:03	WG1526616
2-Chlorotoluene	ND		0.0625	1	08/16/2020 02:03	WG1526616
4-Chlorotoluene	ND		0.125	1	08/16/2020 02:03	WG1526616
Cyclohexane	ND		0.0625	1	08/16/2020 02:03	WG1526616
1,2-Dibromo-3-Chloropropane	ND		0.625	1	08/16/2020 02:03	WG1526616
1,2-Dibromoethane	ND		0.0625	1	08/16/2020 02:03	WG1526616
Dibromomethane	ND		0.125	1	08/16/2020 02:03	WG1526616
1,2-Dichlorobenzene	ND		0.125	1	08/16/2020 02:03	WG1526616
1,3-Dichlorobenzene	ND		0.125	1	08/16/2020 02:03	WG1526616
1,4-Dichlorobenzene	ND		0.125	1	08/16/2020 02:03	WG1526616
Dichlorodifluoromethane	ND		0.0625	1	08/16/2020 02:03	WG1526616
1,1-Dichloroethane	ND		0.0625	1	08/16/2020 02:03	WG1526616
1,2-Dichloroethane	ND		0.0625	1	08/16/2020 02:03	WG1526616
1,1-Dichloroethene	ND		0.0625	1	08/16/2020 02:03	WG1526616
cis-1,2-Dichloroethene	ND		0.0625	1	08/16/2020 02:03	WG1526616
trans-1,2-Dichloroethene	ND		0.125	1	08/16/2020 02:03	WG1526616
1,2-Dichloropropane	ND		0.125	1	08/16/2020 02:03	WG1526616
1,1-Dichloropropene	ND		0.0625	1	08/16/2020 02:03	WG1526616
1,3-Dichloropropane	ND		0.125	1	08/16/2020 02:03	WG1526616
cis-1,3-Dichloropropene	ND		0.0625	1	08/16/2020 02:03	WG1526616
trans-1,3-Dichloropropene	ND		0.125	1	08/16/2020 02:03	WG1526616
2,2-Dichloropropane	ND		0.0625	1	08/16/2020 02:03	WG1526616

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Dicyclopentadiene	ND		0.313	1	08/16/2020 02:03	WG1526616
Di-isopropyl ether	ND		0.0250	1	08/16/2020 02:03	WG1526616
Ethylbenzene	ND		0.0625	1	08/16/2020 02:03	WG1526616
4-Ethyltoluene	ND		0.125	1	08/16/2020 02:03	WG1526616
Hexachloro-1,3-butadiene	ND	R7	0.625	1	08/16/2020 02:03	WG1526616
n-Hexane	ND		0.125	1	08/16/2020 02:03	WG1526616
Isopropylbenzene	ND		0.0625	1	08/16/2020 02:03	WG1526616
p-Isopropyltoluene	ND		0.125	1	08/16/2020 02:03	WG1526616
2-Butanone (MEK)	ND	R7	2.50	1	08/16/2020 02:03	WG1526616
Methylene Chloride	ND		0.625	1	08/16/2020 02:03	WG1526616
4-Methyl-2-pentanone (MIBK)	ND		0.625	1	08/16/2020 02:03	WG1526616
Methyl tert-butyl ether	ND		0.0250	1	08/16/2020 02:03	WG1526616
Methyl Cyclohexane	ND		0.125	1	08/16/2020 02:03	WG1526616
Naphthalene	ND		0.313	1	08/16/2020 02:03	WG1526616
Propene	ND		1.25	1	08/16/2020 02:03	WG1526616
n-Propylbenzene	ND		0.125	1	08/16/2020 02:03	WG1526616
Styrene	ND		0.313	1	08/16/2020 02:03	WG1526616
1,1,1,2-Tetrachloroethane	ND		0.0625	1	08/16/2020 02:03	WG1526616
1,1,2,2-Tetrachloroethane	ND		0.0625	1	08/16/2020 02:03	WG1526616
1,1,2-Trichlorotrifluoroethane	ND		0.0625	1	08/16/2020 02:03	WG1526616
Tetrachloroethene	ND		0.0625	1	08/16/2020 02:03	WG1526616
Toluene	ND		0.125	1	08/16/2020 02:03	WG1526616
1,2,3-Trichlorobenzene	ND		0.313	1	08/16/2020 02:03	WG1526616
1,2,4-Trichlorobenzene	ND		0.313	1	08/16/2020 02:03	WG1526616
1,1,1-Trichloroethane	ND		0.0625	1	08/16/2020 02:03	WG1526616
1,1,2-Trichloroethane	ND		0.0625	1	08/16/2020 02:03	WG1526616
Trichloroethene	ND		0.0250	1	08/16/2020 02:03	WG1526616
Trichlorofluoromethane	ND	R7	0.0625	1	08/16/2020 02:03	WG1526616
1,2,3-Trichloropropane	ND		0.313	1	08/16/2020 02:03	WG1526616
1,2,4-Trimethylbenzene	ND		0.125	1	08/16/2020 02:03	WG1526616
1,2,3-Trimethylbenzene	ND		0.125	1	08/16/2020 02:03	WG1526616
1,3,5-Trimethylbenzene	ND		0.125	1	08/16/2020 02:03	WG1526616
Vinyl chloride	ND		0.0625	1	08/16/2020 02:03	WG1526616
Xylenes, Total	ND		0.163	1	08/16/2020 02:03	WG1526616
(S) Toluene-d8	*103*		*75.0-131*		*08/16/2020 02:03*	WG1526616
(S) 4-Bromofluorobenzene	*99.1*		*67.0-138*		*08/16/2020 02:03*	WG1526616
(S) 1,2-Dichloroethane-d4	*90.4*		*70.0-130*		*08/16/2020 02:03*	WG1526616

Semi-Volatile Organic Compounds (GC) by Method 8015AZR1

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C22 Hydrocarbons	ND		30.0	1	08/17/2020 15:17	WG1527515
C22-C32 Hydrocarbons	ND		50.0	1	08/17/2020 15:17	WG1527515
(S) o-Terphenyl	*93.2*		*70.0-130*		*08/17/2020 15:17*	WG1527515

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
2,4-D	ND		0.0700	1	08/16/2020 08:50	WG1526120
Dalapon	ND		0.0700	1	08/16/2020 08:50	WG1526120
2,4-DB	ND		0.0700	1	08/16/2020 08:50	WG1526120
Dicamba	ND		0.0700	1	08/16/2020 08:50	WG1526120
Dichloroprop	ND		0.0700	1	08/16/2020 08:50	WG1526120
Dinoseb	ND	L2	0.0700	1	08/16/2020 08:50	WG1526120
MCPA	ND	L1	6.50	1	08/16/2020 08:50	WG1526120

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
MCPP	ND		6.50	1	08/16/2020 08:50	WG1526120
2,4,5-T	ND		0.0700	1	08/16/2020 08:50	WG1526120
2,4,5-TP (Silvex)	ND		0.0700	1	08/16/2020 08:50	WG1526120
(S) 2,4-Dichlorophenyl Acetic Acid	*55.2*		*22.0-132*		*08/16/2020 08:50*	WG1526120

Pesticides (GC) by Method 8081B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Aldrin	ND		0.0200	1	08/18/2020 17:30	WG1526775
Alpha BHC	ND		0.0200	1	08/18/2020 17:30	WG1526775
Beta BHC	ND		0.0200	1	08/18/2020 17:30	WG1526775
Delta BHC	ND		0.0200	1	08/18/2020 17:30	WG1526775
Gamma BHC	ND		0.0200	1	08/18/2020 17:30	WG1526775
Chlordane	ND		0.300	1	08/18/2020 17:30	WG1526775
4,4-DDD	ND		0.0200	1	08/18/2020 17:30	WG1526775
4,4-DDE	ND		0.0200	1	08/18/2020 17:30	WG1526775
4,4-DDT	ND		0.0200	1	08/18/2020 17:30	WG1526775
Dieldrin	ND		0.0200	1	08/18/2020 17:30	WG1526775
Endosulfan I	ND		0.0200	1	08/18/2020 17:30	WG1526775
Endosulfan II	ND		0.0200	1	08/18/2020 17:30	WG1526775
Endosulfan sulfate	ND		0.0200	1	08/18/2020 17:30	WG1526775
Endrin	ND		0.0200	1	08/18/2020 17:30	WG1526775
Endrin aldehyde	ND		0.0200	1	08/18/2020 17:30	WG1526775
Endrin ketone	ND		0.0200	1	08/18/2020 17:30	WG1526775
Heptachlor	ND		0.0200	1	08/18/2020 17:30	WG1526775
Heptachlor epoxide	ND		0.0200	1	08/18/2020 17:30	WG1526775
Hexachlorobenzene	ND		0.0200	1	08/18/2020 17:30	WG1526775
Methoxychlor	ND		0.0200	1	08/18/2020 17:30	WG1526775
Toxaphene	ND		0.400	1	08/18/2020 17:30	WG1526775
(S) Decachlorobiphenyl	*75.8*		*10.0-135*		*08/18/2020 17:30*	WG1526775
(S) Tetrachloro-m-xylene	*62.7*		*10.0-139*		*08/18/2020 17:30*	WG1526775

Polychlorinated Biphenyls (GC) by Method 8082 A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
PCB 1016	ND		0.0340	1	08/17/2020 19:47	WG1526775
PCB 1221	ND		0.0340	1	08/17/2020 19:47	WG1526775
PCB 1232	ND		0.0340	1	08/17/2020 19:47	WG1526775
PCB 1242	ND		0.0340	1	08/17/2020 19:47	WG1526775
PCB 1248	ND		0.0170	1	08/17/2020 19:47	WG1526775
PCB 1254	ND		0.0170	1	08/17/2020 19:47	WG1526775
PCB 1260	ND		0.0170	1	08/17/2020 19:47	WG1526775
(S) Decachlorobiphenyl	*72.8*		*10.0-135*		*08/17/2020 19:47*	WG1526775
(S) Tetrachloro-m-xylene	*79.4*		*10.0-139*		*08/17/2020 19:47*	WG1526775

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	08/18/2020 02:14	WG1527414
Acenaphthene	ND		0.00600	1	08/18/2020 02:14	WG1527414
Acenaphthylene	ND		0.00600	1	08/18/2020 02:14	WG1527414
Benzo(a)anthracene	ND		0.00600	1	08/18/2020 02:14	WG1527414
Benzo(a)pyrene	ND		0.00600	1	08/18/2020 02:14	WG1527414
Benzo(b)fluoranthene	ND		0.00600	1	08/18/2020 02:14	WG1527414
Benzo(g,h,i)perylene	ND		0.00600	1	08/18/2020 02:14	WG1527414

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzo(k)fluoranthene	ND		0.00600	1	08/18/2020 02:14	WG1527414
Chrysene	ND		0.00600	1	08/18/2020 02:14	WG1527414
Dibenz(a,h)anthracene	ND		0.00600	1	08/18/2020 02:14	WG1527414
Fluoranthene	ND		0.00600	1	08/18/2020 02:14	WG1527414
Fluorene	ND		0.00600	1	08/18/2020 02:14	WG1527414
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/18/2020 02:14	WG1527414
Naphthalene	ND		0.0200	1	08/18/2020 02:14	WG1527414
Phenanthrene	ND		0.00600	1	08/18/2020 02:14	WG1527414
Pyrene	ND		0.00600	1	08/18/2020 02:14	WG1527414
1-Methylnaphthalene	ND		0.0200	1	08/18/2020 02:14	WG1527414
2-Methylnaphthalene	ND		0.0200	1	08/18/2020 02:14	WG1527414
2-Chloronaphthalene	ND		0.0200	1	08/18/2020 02:14	WG1527414
(S) p-Terphenyl-d14	*101*		*23.0-120*		*08/18/2020 02:14*	WG1527414
(S) Nitrobenzene-d5	*105*		*14.0-149*		*08/18/2020 02:14*	WG1527414
(S) 2-Fluorobiphenyl	*98.1*		*34.0-125*		*08/18/2020 02:14*	WG1527414

Mercury by Method 7471B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0400	1	08/14/2020 11:34	WG1525843

Metals (ICP) by Method 6010D

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.09		2.00	1	08/17/2020 13:34	WG1526674
Barium	93.4	M2	0.500	1	08/17/2020 13:34	WG1526674
Cadmium	ND		0.500	1	08/17/2020 13:34	WG1526674
Chromium	29.0		1.00	1	08/17/2020 13:34	WG1526674
Lead	8.85		0.500	1	08/17/2020 13:34	WG1526674
Selenium	ND		2.00	1	08/17/2020 13:34	WG1526674
Silver	ND		1.00	1	08/17/2020 13:34	WG1526674

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND		1.25	1	08/16/2020 02:22	WG1526616
Acrylonitrile	ND	R7	0.313	1	08/16/2020 02:22	WG1526616
Benzene	ND		0.0250	1	08/16/2020 02:22	WG1526616
Bromobenzene	ND		0.313	1	08/16/2020 02:22	WG1526616
Bromodichloromethane	ND		0.0625	1	08/16/2020 02:22	WG1526616
Bromoform	ND		0.625	1	08/16/2020 02:22	WG1526616
Bromomethane	ND		0.313	1	08/16/2020 02:22	WG1526616
1,3-Butadiene	ND		0.625	1	08/16/2020 02:22	WG1526616
n-Butylbenzene	ND		0.313	1	08/16/2020 02:22	WG1526616
sec-Butylbenzene	ND		0.313	1	08/16/2020 02:22	WG1526616
tert-Butylbenzene	ND		0.125	1	08/16/2020 02:22	WG1526616
Carbon disulfide	ND		0.313	1	08/16/2020 02:22	WG1526616
Carbon tetrachloride	ND		0.125	1	08/16/2020 02:22	WG1526616
Chlorobenzene	ND		0.0625	1	08/16/2020 02:22	WG1526616
Chlorodibromomethane	ND		0.0625	1	08/16/2020 02:22	WG1526616
Chloroethane	ND		0.125	1	08/16/2020 02:22	WG1526616
Chloroform	ND		0.0625	1	08/16/2020 02:22	WG1526616
Chloromethane	ND		0.313	1	08/16/2020 02:22	WG1526616
2-Chlorotoluene	ND		0.0625	1	08/16/2020 02:22	WG1526616
4-Chlorotoluene	ND		0.125	1	08/16/2020 02:22	WG1526616
Cyclohexane	ND		0.0625	1	08/16/2020 02:22	WG1526616
1,2-Dibromo-3-Chloropropane	ND		0.625	1	08/16/2020 02:22	WG1526616
1,2-Dibromoethane	ND		0.0625	1	08/16/2020 02:22	WG1526616
Dibromomethane	ND		0.125	1	08/16/2020 02:22	WG1526616
1,2-Dichlorobenzene	ND		0.125	1	08/16/2020 02:22	WG1526616
1,3-Dichlorobenzene	ND		0.125	1	08/16/2020 02:22	WG1526616
1,4-Dichlorobenzene	ND		0.125	1	08/16/2020 02:22	WG1526616
Dichlorodifluoromethane	ND		0.0625	1	08/16/2020 02:22	WG1526616
1,1-Dichloroethane	ND		0.0625	1	08/16/2020 02:22	WG1526616
1,2-Dichloroethane	ND		0.0625	1	08/16/2020 02:22	WG1526616
1,1-Dichloroethene	ND		0.0625	1	08/16/2020 02:22	WG1526616
cis-1,2-Dichloroethene	ND		0.0625	1	08/16/2020 02:22	WG1526616
trans-1,2-Dichloroethene	ND		0.125	1	08/16/2020 02:22	WG1526616
1,2-Dichloropropane	ND		0.125	1	08/16/2020 02:22	WG1526616
1,1-Dichloropropene	ND		0.0625	1	08/16/2020 02:22	WG1526616
1,3-Dichloropropane	ND		0.125	1	08/16/2020 02:22	WG1526616
cis-1,3-Dichloropropene	ND		0.0625	1	08/16/2020 02:22	WG1526616
trans-1,3-Dichloropropene	ND		0.125	1	08/16/2020 02:22	WG1526616
2,2-Dichloropropane	ND		0.0625	1	08/16/2020 02:22	WG1526616

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Dicyclopentadiene	ND		0.313	1	08/16/2020 02:22	WG1526616
Di-isopropyl ether	ND		0.0250	1	08/16/2020 02:22	WG1526616
Ethylbenzene	ND		0.0625	1	08/16/2020 02:22	WG1526616
4-Ethyltoluene	ND		0.125	1	08/16/2020 02:22	WG1526616
Hexachloro-1,3-butadiene	ND	R7	0.625	1	08/16/2020 02:22	WG1526616
n-Hexane	ND		0.125	1	08/16/2020 02:22	WG1526616
Isopropylbenzene	ND		0.0625	1	08/16/2020 02:22	WG1526616
p-Isopropyltoluene	ND		0.125	1	08/16/2020 02:22	WG1526616
2-Butanone (MEK)	ND	R7	2.50	1	08/16/2020 02:22	WG1526616
Methylene Chloride	ND		0.625	1	08/16/2020 02:22	WG1526616
4-Methyl-2-pentanone (MIBK)	ND		0.625	1	08/16/2020 02:22	WG1526616
Methyl tert-butyl ether	ND		0.0250	1	08/16/2020 02:22	WG1526616
Methyl Cyclohexane	ND		0.125	1	08/16/2020 02:22	WG1526616
Naphthalene	ND		0.313	1	08/16/2020 02:22	WG1526616
Propene	ND		1.25	1	08/16/2020 02:22	WG1526616
n-Propylbenzene	ND		0.125	1	08/16/2020 02:22	WG1526616
Styrene	ND		0.313	1	08/16/2020 02:22	WG1526616
1,1,1,2-Tetrachloroethane	ND		0.0625	1	08/16/2020 02:22	WG1526616
1,1,2,2-Tetrachloroethane	ND		0.0625	1	08/16/2020 02:22	WG1526616
1,1,2-Trichlorotrifluoroethane	ND		0.0625	1	08/16/2020 02:22	WG1526616
Tetrachloroethene	ND		0.0625	1	08/16/2020 02:22	WG1526616
Toluene	ND		0.125	1	08/16/2020 02:22	WG1526616
1,2,3-Trichlorobenzene	ND		0.313	1	08/16/2020 02:22	WG1526616
1,2,4-Trichlorobenzene	ND		0.313	1	08/16/2020 02:22	WG1526616
1,1,1-Trichloroethane	ND		0.0625	1	08/16/2020 02:22	WG1526616
1,1,2-Trichloroethane	ND		0.0625	1	08/16/2020 02:22	WG1526616
Trichloroethene	ND		0.0250	1	08/16/2020 02:22	WG1526616
Trichlorofluoromethane	ND	R7	0.0625	1	08/16/2020 02:22	WG1526616
1,2,3-Trichloropropane	ND		0.313	1	08/16/2020 02:22	WG1526616
1,2,4-Trimethylbenzene	ND		0.125	1	08/16/2020 02:22	WG1526616
1,2,3-Trimethylbenzene	ND		0.125	1	08/16/2020 02:22	WG1526616
1,3,5-Trimethylbenzene	ND		0.125	1	08/16/2020 02:22	WG1526616
Vinyl chloride	ND		0.0625	1	08/16/2020 02:22	WG1526616
Xylenes, Total	ND		0.163	1	08/16/2020 02:22	WG1526616
(S) Toluene-d8	*101*		*75.0-131*		*08/16/2020 02:22*	WG1526616
(S) 4-Bromofluorobenzene	*99.6*		*67.0-138*		*08/16/2020 02:22*	WG1526616
(S) 1,2-Dichloroethane-d4	*92.6*		*70.0-130*		*08/16/2020 02:22*	WG1526616

Semi-Volatile Organic Compounds (GC) by Method 8015AZR1

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C22 Hydrocarbons	ND		30.0	1	08/17/2020 15:31	WG1527515
C22-C32 Hydrocarbons	ND		50.0	1	08/17/2020 15:31	WG1527515
(S) o-Terphenyl	*89.9*		*70.0-130*		*08/17/2020 15:31*	WG1527515

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
2,4-D	ND		0.0700	1	08/16/2020 09:04	WG1526120
Dalapon	ND		0.0700	1	08/16/2020 09:04	WG1526120
2,4-DB	ND		0.0700	1	08/16/2020 09:04	WG1526120
Dicamba	ND		0.0700	1	08/16/2020 09:04	WG1526120
Dichloroprop	ND		0.0700	1	08/16/2020 09:04	WG1526120
Dinoseb	ND	L2	0.0700	1	08/16/2020 09:04	WG1526120
MCPA	ND	L1	6.50	1	08/16/2020 09:04	WG1526120

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
MCPP	ND		6.50	1	08/16/2020 09:04	WG1526120
2,4,5-T	ND		0.0700	1	08/16/2020 09:04	WG1526120
2,4,5-TP (Silvex)	ND		0.0700	1	08/16/2020 09:04	WG1526120
(S) 2,4-Dichlorophenyl Acetic Acid	*54.4*		*22.0-132*		*08/16/2020 09:04*	WG1526120

Pesticides (GC) by Method 8081B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Aldrin	ND		0.0200	1	08/18/2020 17:42	WG1526775
Alpha BHC	ND		0.0200	1	08/18/2020 17:42	WG1526775
Beta BHC	ND		0.0200	1	08/18/2020 17:42	WG1526775
Delta BHC	ND		0.0200	1	08/18/2020 17:42	WG1526775
Gamma BHC	ND		0.0200	1	08/18/2020 17:42	WG1526775
Chlordane	ND		0.300	1	08/18/2020 17:42	WG1526775
4,4-DDD	ND		0.0200	1	08/18/2020 17:42	WG1526775
4,4-DDE	ND		0.0200	1	08/18/2020 17:42	WG1526775
4,4-DDT	ND		0.0200	1	08/18/2020 17:42	WG1526775
Dieldrin	ND		0.0200	1	08/18/2020 17:42	WG1526775
Endosulfan I	ND		0.0200	1	08/18/2020 17:42	WG1526775
Endosulfan II	ND		0.0200	1	08/18/2020 17:42	WG1526775
Endosulfan sulfate	ND		0.0200	1	08/18/2020 17:42	WG1526775
Endrin	ND		0.0200	1	08/18/2020 17:42	WG1526775
Endrin aldehyde	ND		0.0200	1	08/18/2020 17:42	WG1526775
Endrin ketone	ND		0.0200	1	08/18/2020 17:42	WG1526775
Heptachlor	ND		0.0200	1	08/18/2020 17:42	WG1526775
Heptachlor epoxide	ND		0.0200	1	08/18/2020 17:42	WG1526775
Hexachlorobenzene	ND		0.0200	1	08/18/2020 17:42	WG1526775
Methoxychlor	ND		0.0200	1	08/18/2020 17:42	WG1526775
Toxaphene	ND		0.400	1	08/18/2020 17:42	WG1526775
(S) Decachlorobiphenyl	*72.7*		*10.0-135*		*08/18/2020 17:42*	WG1526775
(S) Tetrachloro-m-xylene	*59.9*		*10.0-139*		*08/18/2020 17:42*	WG1526775

Polychlorinated Biphenyls (GC) by Method 8082 A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
PCB 1016	ND		0.0340	1	08/17/2020 20:01	WG1526775
PCB 1221	ND		0.0340	1	08/17/2020 20:01	WG1526775
PCB 1232	ND		0.0340	1	08/17/2020 20:01	WG1526775
PCB 1242	ND		0.0340	1	08/17/2020 20:01	WG1526775
PCB 1248	ND		0.0170	1	08/17/2020 20:01	WG1526775
PCB 1254	ND		0.0170	1	08/17/2020 20:01	WG1526775
PCB 1260	ND		0.0170	1	08/17/2020 20:01	WG1526775
(S) Decachlorobiphenyl	*71.1*		*10.0-135*		*08/17/2020 20:01*	WG1526775
(S) Tetrachloro-m-xylene	*78.1*		*10.0-139*		*08/17/2020 20:01*	WG1526775

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	08/18/2020 02:35	WG1527414
Acenaphthene	ND		0.00600	1	08/18/2020 02:35	WG1527414
Acenaphthylene	ND		0.00600	1	08/18/2020 02:35	WG1527414
Benzo(a)anthracene	ND		0.00600	1	08/18/2020 02:35	WG1527414
Benzo(a)pyrene	ND		0.00600	1	08/18/2020 02:35	WG1527414
Benzo(b)fluoranthene	ND		0.00600	1	08/18/2020 02:35	WG1527414
Benzo(g,h,i)perylene	ND		0.00600	1	08/18/2020 02:35	WG1527414

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzo(k)fluoranthene	ND		0.00600	1	08/18/2020 02:35	WG1527414
Chrysene	ND		0.00600	1	08/18/2020 02:35	WG1527414
Dibenz(a,h)anthracene	ND		0.00600	1	08/18/2020 02:35	WG1527414
Fluoranthene	ND		0.00600	1	08/18/2020 02:35	WG1527414
Fluorene	ND		0.00600	1	08/18/2020 02:35	WG1527414
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/18/2020 02:35	WG1527414
Naphthalene	ND		0.0200	1	08/18/2020 02:35	WG1527414
Phenanthrene	ND		0.00600	1	08/18/2020 02:35	WG1527414
Pyrene	ND		0.00600	1	08/18/2020 02:35	WG1527414
1-Methylnaphthalene	ND		0.0200	1	08/18/2020 02:35	WG1527414
2-Methylnaphthalene	ND		0.0200	1	08/18/2020 02:35	WG1527414
2-Chloronaphthalene	ND		0.0200	1	08/18/2020 02:35	WG1527414
(S) p-Terphenyl-d14	*94.9*		*23.0-120*		*08/18/2020 02:35*	WG1527414
(S) Nitrobenzene-d5	*99.4*		*14.0-149*		*08/18/2020 02:35*	WG1527414
(S) 2-Fluorobiphenyl	*93.0*		*34.0-125*		*08/18/2020 02:35*	WG1527414

Method Blank (MB)

(MB) R3559801-1 08/14/20 09:58

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Mercury	U		0.0180	0.0400

Laboratory Control Sample (LCS)

(LCS) R3559801-2 08/14/20 10:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.500	0.476	95.2	80.0-120	

L1250047-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1250047-02 08/14/20 10:31 • (MS) R3559801-3 08/14/20 10:33 • (MSD) R3559801-4 08/14/20 10:36

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.500	ND	0.536	0.575	107	115	1	75.0-125			7.03	20

Method Blank (MB)

(MB) R3560825-1 08/17/20 13:28

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.460	2.00
Barium	U		0.240	0.500
Cadmium	U		0.0810	0.500
Chromium	U		0.250	1.00
Lead	U		0.208	0.500
Selenium	0.794	E4	0.617	2.00
Silver	U		0.228	1.00

Laboratory Control Sample (LCS)

(LCS) R3560825-2 08/17/20 13:31

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	101	101	80.0-120	
Barium	100	109	109	80.0-120	
Cadmium	100	105	105	80.0-120	
Chromium	100	107	107	80.0-120	
Lead	100	108	108	80.0-120	
Selenium	100	106	106	80.0-120	
Silver	20.0	19.3	96.7	80.0-120	

L1250126-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1250126-06 08/17/20 13:34 • (MS) R3560825-5 08/17/20 13:42 • (MSD) R3560825-6 08/17/20 13:44

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	9.09	95.3	90.3	86.2	81.2	1	75.0-125			5.42	20
Barium	100	93.4	166	171	73.0	78.1	1	75.0-125	M2		3.02	20
Cadmium	100	ND	90.1	86.7	90.0	86.5	1	75.0-125			3.91	20
Chromium	100	29.0	117	109	87.9	80.5	1	75.0-125			6.52	20
Lead	100	8.85	101	98.9	92.6	90.0	1	75.0-125			2.59	20
Selenium	100	ND	88.3	86.5	88.3	86.5	1	75.0-125			2.06	20
Silver	20.0	ND	15.9	15.1	79.4	75.7	1	75.0-125			4.83	20

Method Blank (MB)

(MB) R3560227-3 08/15/20 14:19

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acetone	U		0.913	1.25
Acrylonitrile	U		0.0903	0.313
Benzene	U		0.0117	0.0250
Bromobenzene	U		0.0225	0.313
Bromodichloromethane	U		0.0181	0.0625
Bromoform	U		0.0293	0.625
Bromomethane	U		0.0493	0.313
1,3-Butadiene	U		0.128	0.625
n-Butylbenzene	U		0.131	0.313
sec-Butylbenzene	U		0.0720	0.313
tert-Butylbenzene	U		0.0488	0.125
Carbon disulfide	U		0.0175	0.313
Carbon tetrachloride	U		0.0225	0.125
Chlorobenzene	U		0.00525	0.0625
Chlorodibromomethane	U		0.0153	0.0625
Chloroethane	U		0.0425	0.125
Chloroform	U		0.0258	0.0625
Chloromethane	U		0.109	0.313
Cyclohexane	U		0.0278	0.0625
2-Chlorotoluene	U		0.0216	0.0625
4-Chlorotoluene	U		0.0113	0.125
1,2-Dibromo-3-Chloropropane	U		0.0975	0.625
1,2-Dibromoethane	U		0.0162	0.0625
Dibromomethane	U		0.0188	0.125
1,2-Dichlorobenzene	U		0.0106	0.125
1,3-Dichlorobenzene	U		0.0150	0.125
1,4-Dichlorobenzene	U		0.0175	0.125
Dichlorodifluoromethane	U		0.0403	0.0625
1,1-Dichloroethane	U		0.0123	0.0625
1,2-Dichloroethane	U		0.0162	0.0625
1,1-Dichloroethene	U		0.0152	0.0625
cis-1,2-Dichloroethene	U		0.0184	0.0625
trans-1,2-Dichloroethene	U		0.0260	0.125
1,2-Dichloropropane	U		0.0355	0.125
1,1-Dichloropropene	U		0.0202	0.0625
1,3-Dichloropropane	U		0.0125	0.125
cis-1,3-Dichloropropene	U		0.0189	0.0625
trans-1,3-Dichloropropene	U		0.0285	0.125
2,2-Dichloropropane	U		0.0345	0.0625
Dicyclopentadiene	U		0.0413	0.313

Method Blank (MB)

(MB) R3560227-3 08/15/20 14:19

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Di-isopropyl ether	U		0.0103	0.0250
Ethylbenzene	U		0.0184	0.0625
4-Ethyltoluene	U		0.0580	0.125
Hexachloro-1,3-butadiene	U		0.150	0.625
n-Hexane	U		0.0565	0.125
Isopropylbenzene	U		0.0106	0.0625
p-Isopropyltoluene	U		0.0638	0.125
2-Butanone (MEK)	U		1.59	2.50
Methyl Cyclohexane	U		0.0515	0.125
Methylene Chloride	U		0.166	0.625
4-Methyl-2-pentanone (MIBK)	U		0.0570	0.625
Methyl tert-butyl ether	U		0.00875	0.0250
Naphthalene	U		0.122	0.313
Propene	U		0.153	1.25
n-Propylbenzene	U		0.0238	0.125
Styrene	U		0.00573	0.313
1,1,1,2-Tetrachloroethane	U		0.0237	0.0625
1,1,2,2-Tetrachloroethane	U		0.0174	0.0625
Tetrachloroethene	U		0.0224	0.0625
Toluene	U		0.0325	0.125
1,1,2-Trichlorotrifluoroethane	U		0.0189	0.0625
1,2,3-Trichlorobenzene	U		0.183	0.313
1,2,4-Trichlorobenzene	U		0.110	0.313
1,1,1-Trichloroethane	U		0.0231	0.0625
1,1,2-Trichloroethane	U		0.0149	0.0625
Trichloroethene	U		0.0146	0.0250
Trichlorofluoromethane	U		0.0207	0.0625
1,2,3-Trichloropropane	U		0.0405	0.313
1,2,3-Trimethylbenzene	U		0.0395	0.125
1,2,4-Trimethylbenzene	U		0.0395	0.125
1,3,5-Trimethylbenzene	U		0.0500	0.125
Vinyl chloride	U		0.0290	0.0625
Xylenes, Total	U		0.0220	0.163
(S) Toluene-d8	*101*			*75.0-131*
(S) 4-Bromofluorobenzene	*98.2*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*90.5*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3560227-1 08/15/20 11:16 • (LCSD) R3560227-2 08/15/20 13:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.625	1.04	0.991	166	159	10.0-160	L1		4.83	31
Acrylonitrile	0.625	0.709	0.760	113	122	45.0-153			6.94	22
Benzene	0.125	0.108	0.104	86.4	83.2	70.0-123			3.77	20
Bromobenzene	0.125	0.120	0.112	96.0	89.6	73.0-121			6.90	20
Bromodichloromethane	0.125	0.117	0.116	93.6	92.8	73.0-121			0.858	20
Bromoform	0.125	0.136	0.132	109	106	64.0-132			2.99	20
Bromomethane	0.125	0.128	0.129	102	103	56.0-147			0.778	20
1,3-Butadiene	0.125	0.0992	0.0958	79.4	76.6	32.0-150			3.49	20
n-Butylbenzene	0.125	0.109	0.105	87.2	84.0	68.0-135			3.74	20
sec-Butylbenzene	0.125	0.108	0.107	86.4	85.6	74.0-130			0.930	20
tert-Butylbenzene	0.125	0.111	0.104	88.8	83.2	75.0-127			6.51	20
Carbon disulfide	0.125	0.0931	0.0974	74.5	77.9	56.0-133			4.51	20
Carbon tetrachloride	0.125	0.138	0.127	110	102	66.0-128			8.30	20
Chlorobenzene	0.125	0.121	0.114	96.8	91.2	76.0-128			5.96	20
Chlorodibromomethane	0.125	0.138	0.134	110	107	74.0-127			2.94	20
Chloroethane	0.125	0.122	0.124	97.6	99.2	61.0-134			1.63	20
Chloroform	0.125	0.118	0.115	94.4	92.0	72.0-123			2.58	20
Chloromethane	0.125	0.145	0.126	116	101	51.0-138			14.0	20
Cyclohexane	0.125	0.131	0.0983	105	78.6	70.0-130		R7	28.5	20
2-Chlorotoluene	0.125	0.112	0.104	89.6	83.2	75.0-124			7.41	20
4-Chlorotoluene	0.125	0.102	0.0935	81.6	74.8	75.0-124		L2	8.70	20
1,2-Dibromo-3-Chloropropane	0.125	0.116	0.108	92.8	86.4	59.0-130			7.14	20
1,2-Dibromoethane	0.125	0.122	0.115	97.6	92.0	74.0-128			5.91	20
Dibromomethane	0.125	0.127	0.121	102	96.8	75.0-122			4.84	20
1,2-Dichlorobenzene	0.125	0.112	0.104	89.6	83.2	76.0-124			7.41	20
1,3-Dichlorobenzene	0.125	0.119	0.107	95.2	85.6	76.0-125			10.6	20
1,4-Dichlorobenzene	0.125	0.111	0.104	88.8	83.2	77.0-121			6.51	20
Dichlorodifluoromethane	0.125	0.179	0.166	143	133	43.0-156			7.54	20
1,1-Dichloroethane	0.125	0.110	0.111	88.0	88.8	70.0-127			0.905	20
1,2-Dichloroethane	0.125	0.115	0.117	92.0	93.6	65.0-131			1.72	20
1,1-Dichloroethene	0.125	0.108	0.105	86.4	84.0	65.0-131			2.82	20
cis-1,2-Dichloroethene	0.125	0.113	0.115	90.4	92.0	73.0-125			1.75	20
trans-1,2-Dichloroethene	0.125	0.110	0.106	88.0	84.8	71.0-125			3.70	20
1,2-Dichloropropane	0.125	0.118	0.110	94.4	88.0	74.0-125			7.02	20
1,1-Dichloropropene	0.125	0.115	0.110	92.0	88.0	73.0-125			4.44	20
1,3-Dichloropropane	0.125	0.113	0.101	90.4	80.8	80.0-125			11.2	20
cis-1,3-Dichloropropene	0.125	0.121	0.107	96.8	85.6	76.0-127			12.3	20
trans-1,3-Dichloropropene	0.125	0.113	0.106	90.4	84.8	73.0-127			6.39	20
2,2-Dichloropropane	0.125	0.121	0.128	96.8	102	59.0-135			5.62	20
Dicyclopentadiene	0.125	0.0958	0.0913	76.6	73.0	71.0-132			4.81	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3560227-1 08/15/20 11:16 • (LCSD) R3560227-2 08/15/20 13:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Di-isopropyl ether	0.125	0.111	0.111	88.8	88.8	60.0-136			0.000	20
Ethylbenzene	0.125	0.119	0.114	95.2	91.2	74.0-126			4.29	20
4-Ethyltoluene	0.125	0.110	0.101	88.0	80.8	71.0-129			8.53	20
Hexachloro-1,3-butadiene	0.125	0.113	0.101	90.4	80.8	57.0-150			11.2	20
n-Hexane	0.125	0.126	0.112	101	89.6	55.0-137			11.8	20
Isopropylbenzene	0.125	0.124	0.118	99.2	94.4	72.0-127			4.96	20
p-Isopropyltoluene	0.125	0.112	0.107	89.6	85.6	72.0-133			4.57	20
2-Butanone (MEK)	0.625	0.532	0.539	85.1	86.2	30.0-160			1.31	24
Methyl Cyclohexane	0.125	0.112	0.105	89.6	84.0	67.0-129			6.45	20
Methylene Chloride	0.125	0.111	0.115	88.8	92.0	68.0-123			3.54	20
4-Methyl-2-pentanone (MIBK)	0.625	0.591	0.541	94.6	86.6	56.0-143			8.83	20
Methyl tert-butyl ether	0.125	0.120	0.125	96.0	100	66.0-132			4.08	20
Naphthalene	0.125	0.107	0.0960	85.6	76.8	59.0-130			10.8	20
Propene	0.125	0.0455	0.0573	36.4	45.8	10.0-160		R7	23.0	20
n-Propylbenzene	0.125	0.105	0.0957	84.0	76.6	74.0-126			9.27	20
Styrene	0.125	0.117	0.110	93.6	88.0	72.0-127			6.17	20
1,1,1,2-Tetrachloroethane	0.125	0.124	0.125	99.2	100	74.0-129			0.803	20
1,1,2,2-Tetrachloroethane	0.125	0.0966	0.0961	77.3	76.9	68.0-128			0.519	20
Tetrachloroethene	0.125	0.131	0.114	105	91.2	70.0-136			13.9	20
Toluene	0.125	0.107	0.0970	85.6	77.6	75.0-121			9.80	20
1,1,2-Trichlorotrifluoroethane	0.125	0.120	0.117	96.0	93.6	61.0-139			2.53	20
1,2,3-Trichlorobenzene	0.125	0.104	0.0945	83.2	75.6	59.0-139			9.57	20
1,2,4-Trichlorobenzene	0.125	0.114	0.0996	91.2	79.7	62.0-137			13.5	20
1,1,1-Trichloroethane	0.125	0.114	0.127	91.2	102	69.0-126			10.8	20
1,1,2-Trichloroethane	0.125	0.122	0.116	97.6	92.8	78.0-123			5.04	20
Trichloroethene	0.125	0.132	0.121	106	96.8	76.0-126			8.70	20
Trichlorofluoromethane	0.125	0.144	0.139	115	111	61.0-142			3.53	20
1,2,3-Trichloropropane	0.125	0.112	0.106	89.6	84.8	67.0-129			5.50	20
1,2,3-Trimethylbenzene	0.125	0.0979	0.0964	78.3	77.1	74.0-124			1.54	20
1,2,4-Trimethylbenzene	0.125	0.104	0.0956	83.2	76.5	70.0-126			8.42	20
1,3,5-Trimethylbenzene	0.125	0.107	0.0989	85.6	79.1	73.0-127			7.87	20
Vinyl chloride	0.125	0.129	0.128	103	102	63.0-134			0.778	20
Xylenes, Total	0.375	0.360	0.344	96.0	91.7	72.0-127			4.55	20
(S) Toluene-d8				*98.1*	*96.2*	*75.0-131*				
(S) 4-Bromofluorobenzene				*102*	*106*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*103*	*109*	*70.0-130*				

Method Blank (MB)

(MB) R3561477-2 08/16/20 00:44

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acetone	U		0.913	1.25
Acrylonitrile	U		0.0903	0.313
Benzene	U		0.0117	0.0250
Bromobenzene	U		0.0225	0.313
Bromodichloromethane	U		0.0181	0.0625
Bromoform	U		0.0293	0.625
Bromomethane	U		0.0493	0.313
1,3-Butadiene	U		0.128	0.625
n-Butylbenzene	U		0.131	0.313
sec-Butylbenzene	U		0.0720	0.313
tert-Butylbenzene	U		0.0488	0.125
Carbon disulfide	U		0.0175	0.313
Carbon tetrachloride	U		0.0225	0.125
Chlorobenzene	U		0.00525	0.0625
Chlorodibromomethane	U		0.0153	0.0625
Chloroethane	U		0.0425	0.125
Chloroform	U		0.0258	0.0625
Chloromethane	U		0.109	0.313
Cyclohexane	U		0.0278	0.0625
2-Chlorotoluene	U		0.0216	0.0625
4-Chlorotoluene	U		0.0113	0.125
1,2-Dibromo-3-Chloropropane	U		0.0975	0.625
1,2-Dibromoethane	U		0.0162	0.0625
Dibromomethane	U		0.0188	0.125
1,2-Dichlorobenzene	U		0.0106	0.125
1,3-Dichlorobenzene	U		0.0150	0.125
1,4-Dichlorobenzene	U		0.0175	0.125
Dichlorodifluoromethane	U		0.0403	0.0625
1,1-Dichloroethane	U		0.0123	0.0625
1,2-Dichloroethane	U		0.0162	0.0625
1,1-Dichloroethene	U		0.0152	0.0625
cis-1,2-Dichloroethene	U		0.0184	0.0625
trans-1,2-Dichloroethene	U		0.0260	0.125
1,2-Dichloropropane	U		0.0355	0.125
1,1-Dichloropropene	U		0.0202	0.0625
1,3-Dichloropropane	U		0.0125	0.125
cis-1,3-Dichloropropene	U		0.0189	0.0625
trans-1,3-Dichloropropene	U		0.0285	0.125
2,2-Dichloropropane	U		0.0345	0.0625
Dicyclopentadiene	U		0.0413	0.313

Method Blank (MB)

(MB) R3561477-2 08/16/20 00:44

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Di-isopropyl ether	U		0.0103	0.0250
Ethylbenzene	U		0.0184	0.0625
4-Ethyltoluene	U		0.0580	0.125
Hexachloro-1,3-butadiene	U		0.150	0.625
n-Hexane	U		0.0565	0.125
Isopropylbenzene	U		0.0106	0.0625
p-Isopropyltoluene	U		0.0638	0.125
2-Butanone (MEK)	U		1.59	2.50
Methyl Cyclohexane	U		0.0515	0.125
Methylene Chloride	U		0.166	0.625
4-Methyl-2-pentanone (MIBK)	U		0.0570	0.625
Methyl tert-butyl ether	U		0.00875	0.0250
Naphthalene	U		0.122	0.313
Propene	U		0.153	1.25
n-Propylbenzene	U		0.0238	0.125
Styrene	U		0.00573	0.313
1,1,1,2-Tetrachloroethane	U		0.0237	0.0625
1,1,2,2-Tetrachloroethane	U		0.0174	0.0625
Tetrachloroethene	U		0.0224	0.0625
Toluene	U		0.0325	0.125
1,1,2-Trichlorotrifluoroethane	U		0.0189	0.0625
1,2,3-Trichlorobenzene	U		0.183	0.313
1,2,4-Trichlorobenzene	U		0.110	0.313
1,1,1-Trichloroethane	U		0.0231	0.0625
1,1,2-Trichloroethane	U		0.0149	0.0625
Trichloroethene	U		0.0146	0.0250
Trichlorofluoromethane	U		0.0207	0.0625
1,2,3-Trichloropropane	U		0.0405	0.313
1,2,3-Trimethylbenzene	U		0.0395	0.125
1,2,4-Trimethylbenzene	U		0.0395	0.125
1,3,5-Trimethylbenzene	U		0.0500	0.125
Vinyl chloride	U		0.0290	0.0625
Xylenes, Total	U		0.0220	0.163
(S) Toluene-d8	*101*			*75.0-131*
(S) 4-Bromofluorobenzene	*101*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*91.8*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3561477-1 08/15/20 23:47 • (LCSD) R3561477-3 08/16/20 07:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.625	0.605	0.541	96.8	86.6	10.0-160			11.2	31
Acrylonitrile	0.625	0.622	0.481	99.5	77.0	45.0-153		R7	25.6	22
Benzene	0.125	0.112	0.111	89.6	88.8	70.0-123			0.897	20
Bromobenzene	0.125	0.132	0.127	106	102	73.0-121			3.86	20
Bromodichloromethane	0.125	0.122	0.117	97.6	93.6	73.0-121			4.18	20
Bromoform	0.125	0.134	0.132	107	106	64.0-132			1.50	20
Bromomethane	0.125	0.144	0.135	115	108	56.0-147			6.45	20
1,3-Butadiene	0.125	0.0991	0.0984	79.3	78.7	32.0-150			0.709	20
n-Butylbenzene	0.125	0.109	0.100	87.2	80.0	68.0-135			8.61	20
sec-Butylbenzene	0.125	0.122	0.113	97.6	90.4	74.0-130			7.66	20
tert-Butylbenzene	0.125	0.126	0.118	101	94.4	75.0-127			6.56	20
Carbon disulfide	0.125	0.105	0.0931	84.0	74.5	56.0-133			12.0	20
Carbon tetrachloride	0.125	0.147	0.134	118	107	66.0-128			9.25	20
Chlorobenzene	0.125	0.128	0.123	102	98.4	76.0-128			3.98	20
Chlorodibromomethane	0.125	0.141	0.137	113	110	74.0-127			2.88	20
Chloroethane	0.125	0.138	0.126	110	101	61.0-134			9.09	20
Chloroform	0.125	0.119	0.117	95.2	93.6	72.0-123			1.69	20
Chloromethane	0.125	0.142	0.139	114	111	51.0-138			2.14	20
Cyclohexane	0.125	0.140	0.119	112	95.2	70.0-130			16.2	20
2-Chlorotoluene	0.125	0.125	0.116	100	92.8	75.0-124			7.47	20
4-Chlorotoluene	0.125	0.113	0.110	90.4	88.0	75.0-124			2.69	20
1,2-Dibromo-3-Chloropropane	0.125	0.105	0.0980	84.0	78.4	59.0-130			6.90	20
1,2-Dibromoethane	0.125	0.123	0.118	98.4	94.4	74.0-128			4.15	20
Dibromomethane	0.125	0.130	0.121	104	96.8	75.0-122			7.17	20
1,2-Dichlorobenzene	0.125	0.109	0.108	87.2	86.4	76.0-124			0.922	20
1,3-Dichlorobenzene	0.125	0.124	0.117	99.2	93.6	76.0-125			5.81	20
1,4-Dichlorobenzene	0.125	0.116	0.110	92.8	88.0	77.0-121			5.31	20
Dichlorodifluoromethane	0.125	0.191	0.178	153	142	43.0-156			7.05	20
1,1-Dichloroethane	0.125	0.117	0.112	93.6	89.6	70.0-127			4.37	20
1,2-Dichloroethane	0.125	0.113	0.111	90.4	88.8	65.0-131			1.79	20
1,1-Dichloroethene	0.125	0.117	0.111	93.6	88.8	65.0-131			5.26	20
cis-1,2-Dichloroethene	0.125	0.124	0.114	99.2	91.2	73.0-125			8.40	20
trans-1,2-Dichloroethene	0.125	0.112	0.105	89.6	84.0	71.0-125			6.45	20
1,2-Dichloropropane	0.125	0.119	0.117	95.2	93.6	74.0-125			1.69	20
1,1-Dichloropropene	0.125	0.120	0.110	96.0	88.0	73.0-125			8.70	20
1,3-Dichloropropane	0.125	0.118	0.114	94.4	91.2	80.0-125			3.45	20
cis-1,3-Dichloropropene	0.125	0.121	0.114	96.8	91.2	76.0-127			5.96	20
trans-1,3-Dichloropropene	0.125	0.118	0.114	94.4	91.2	73.0-127			3.45	20
2,2-Dichloropropane	0.125	0.130	0.112	104	89.6	59.0-135			14.9	20
Dicyclopentadiene	0.125	0.106	0.100	84.8	80.0	71.0-132			5.83	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3561477-1 08/15/20 23:47 • (LCSD) R3561477-3 08/16/20 07:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Di-isopropyl ether	0.125	0.116	0.110	92.8	88.0	60.0-136			5.31	20
Ethylbenzene	0.125	0.124	0.119	99.2	95.2	74.0-126			4.12	20
4-Ethyltoluene	0.125	0.120	0.115	96.0	92.0	71.0-129			4.26	20
Hexachloro-1,3-butadiene	0.125	0.0979	0.0763	78.3	61.0	57.0-150		R7	24.8	20
n-Hexane	0.125	0.114	0.100	91.2	80.0	55.0-137			13.1	20
Isopropylbenzene	0.125	0.131	0.124	105	99.2	72.0-127			5.49	20
p-Isopropyltoluene	0.125	0.120	0.113	96.0	90.4	72.0-133			6.01	20
2-Butanone (MEK)	0.625	0.566	0.428	90.6	68.5	30.0-160		R7	27.8	24
Methyl Cyclohexane	0.125	0.120	0.106	96.0	84.8	67.0-129			12.4	20
Methylene Chloride	0.125	0.115	0.107	92.0	85.6	68.0-123			7.21	20
4-Methyl-2-pentanone (MIBK)	0.625	0.542	0.545	86.7	87.2	56.0-143			0.552	20
Methyl tert-butyl ether	0.125	0.126	0.126	101	101	66.0-132			0.000	20
Naphthalene	0.125	0.0861	0.0774	68.9	61.9	59.0-130			10.6	20
Propene	0.125	0.0658	0.0658	52.6	52.6	10.0-160			0.000	20
n-Propylbenzene	0.125	0.117	0.110	93.6	88.0	74.0-126			6.17	20
Styrene	0.125	0.119	0.115	95.2	92.0	72.0-127			3.42	20
1,1,1,2-Tetrachloroethane	0.125	0.128	0.130	102	104	74.0-129			1.55	20
1,1,2,2-Tetrachloroethane	0.125	0.107	0.102	85.6	81.6	68.0-128			4.78	20
Tetrachloroethene	0.125	0.138	0.124	110	99.2	70.0-136			10.7	20
Toluene	0.125	0.111	0.112	88.8	89.6	75.0-121			0.897	20
1,1,2-Trichlorotrifluoroethane	0.125	0.136	0.123	109	98.4	61.0-139			10.0	20
1,2,3-Trichlorobenzene	0.125	0.0884	0.0737	70.7	59.0	59.0-139			18.1	20
1,2,4-Trichlorobenzene	0.125	0.0905	0.0795	72.4	63.6	62.0-137			12.9	20
1,1,1-Trichloroethane	0.125	0.144	0.124	115	99.2	69.0-126			14.9	20
1,1,2-Trichloroethane	0.125	0.127	0.120	102	96.0	78.0-123			5.67	20
Trichloroethene	0.125	0.136	0.129	109	103	76.0-126			5.28	20
Trichlorofluoromethane	0.125	0.0805	0.156	64.4	125	61.0-142		R7	63.8	20
1,2,3-Trichloropropane	0.125	0.119	0.115	95.2	92.0	67.0-129			3.42	20
1,2,3-Trimethylbenzene	0.125	0.108	0.102	86.4	81.6	74.0-124			5.71	20
1,2,4-Trimethylbenzene	0.125	0.110	0.106	88.0	84.8	70.0-126			3.70	20
1,3,5-Trimethylbenzene	0.125	0.117	0.113	93.6	90.4	73.0-127			3.48	20
Vinyl chloride	0.125	0.149	0.144	119	115	63.0-134			3.41	20
Xylenes, Total	0.375	0.378	0.365	101	97.3	72.0-127			3.50	20
(S) Toluene-d8				*97.2*	*99.1*	*75.0-131*				
(S) 4-Bromofluorobenzene				*101*	*101*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*99.2*	*97.2*	*70.0-130*				

Method Blank (MB)

(MB) R3560723-1 08/17/20 12:53

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C22 Hydrocarbons	U		1.98	30.0
C22-C32 Hydrocarbons	U		0.766	50.0
(S) o-Terphenyl	*93.2*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3560723-2 08/17/20 13:08

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C22 Hydrocarbons	25.0	22.7	90.8	70.0-130	
C22-C32 Hydrocarbons	25.0	23.1	92.4	70.0-130	
(S) o-Terphenyl			*80.0*	*70.0-130*	

L1250126-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1250126-02 08/17/20 13:54 • (MS) R3560773-1 08/17/20 14:08 • (MSD) R3560773-2 08/17/20 14:22

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C22 Hydrocarbons	24.6	ND	ND	ND	83.7	87.4	1	10.0-160			4.28	34
C22-C32 Hydrocarbons	24.6	ND	ND	ND	81.7	88.6	1	10.0-155			8.11	32
(S) o-Terphenyl					*68.6*	*73.9*		*70.0-130*	S6			

Method Blank (MB)

(MB) R3560867-1 08/16/20 05:54

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
2,4-D	U		0.00702	0.0700
Dalapon	U		0.0113	0.0700
2,4-DB	U		0.0297	0.0700
Dicamba	U		0.0157	0.0700
Dichloroprop	U		0.0245	0.0700
Dinoseb	U		0.00697	0.0700
MCPA	U		0.443	6.50
MCPP	U		0.367	6.50
2,4,5-T	0.0375	E4	0.00852	0.0700
2,4,5-TP (Silvex)	U		0.0107	0.0700
(S) 2,4-Dichlorophenyl Acetic Acid	*56.0*			*22.0-132*

Laboratory Control Sample (LCS)

(LCS) R3560867-2 08/16/20 06:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
2,4-D	0.167	0.119	71.3	40.0-120	
Dalapon	0.167	0.0991	59.3	15.0-120	P
2,4-DB	0.167	0.129	77.2	25.0-143	
Dicamba	0.167	0.119	71.3	43.0-120	
Dichloroprop	0.167	0.131	78.4	32.0-129	
Dinoseb	0.167	0.00561	3.36	10.0-120	L2
MCPA	1.67	2.89	173	31.0-121	L1
MCPP	1.67	1.41	84.4	28.0-133	
2,4,5-T	0.167	0.132	79.0	41.0-120	
2,4,5-TP (Silvex)	0.167	0.120	71.9	42.0-120	
(S) 2,4-Dichlorophenyl Acetic Acid			*61.7*	*22.0-132*	

L1249694-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1249694-02 08/16/20 07:07 • (MS) R3560867-3 08/16/20 07:22 • (MSD) R3560867-4 08/16/20 07:36

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2,4-D	0.167	ND	0.106	0.100	63.5	59.9	1	10.0-160			5.83	24
Dalapon	0.167	ND	0.109	0.101	65.3	60.5	1	10.0-121			7.62	27
2,4-DB	0.167	ND	0.124	0.119	74.3	71.3	1	10.0-160			4.12	22
Dicamba	0.167	ND	0.115	0.109	68.9	65.3	1	10.0-154			5.36	21

L1249694-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1249694-02 08/16/20 07:07 • (MS) R3560867-3 08/16/20 07:22 • (MSD) R3560867-4 08/16/20 07:36

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Dichloroprop	0.167	ND	0.120	0.114	71.9	68.3	1	10.0-158			5.13	20
Dinoseb	0.167	ND	ND	ND	26.3	21.1	1	10.0-120			22.2	40
MCPA	1.67	ND	ND	ND	299	291	1	10.0-160	E1 M1	E1 M1	2.84	40
MCPP	1.67	ND	ND	ND	52.4	80.8	1	10.0-160		R5	42.7	40
2,4,5-T	0.167	ND	0.124	0.115	74.3	68.9	1	10.0-157			7.53	20
2,4,5-TP (Silvex)	0.167	ND	0.111	0.106	66.5	63.5	1	10.0-156			4.61	20
(S) 2,4-Dichlorophenyl Acetic Acid					*53.5*	*51.1*		*22.0-132*				

Method Blank (MB)

(MB) R3561063-1 08/18/20 10:37

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Aldrin	U		0.00376	0.0200
Alpha BHC	U		0.00368	0.0200
Beta BHC	U		0.00379	0.0200
Delta BHC	U		0.00346	0.0200
Gamma BHC	U		0.00344	0.0200
4,4-DDD	U		0.00370	0.0200
4,4-DDE	U		0.00366	0.0200
4,4-DDT	U		0.00627	0.0200
Dieldrin	U		0.00344	0.0200
Endosulfan I	U		0.00363	0.0200
Endosulfan II	U		0.00335	0.0200
Endosulfan sulfate	U		0.00364	0.0200
Endrin	U		0.00350	0.0200
Endrin aldehyde	U		0.00339	0.0200
Endrin ketone	U		0.00711	0.0200
Heptachlor	U		0.00428	0.0200
Heptachlor epoxide	U		0.00339	0.0200
Hexachlorobenzene	U		0.00346	0.0200
Methoxychlor	U		0.00484	0.0200
Chlordane	U		0.103	0.300
Toxaphene	U		0.124	0.400
(S) Decachlorobiphenyl	*55.0*			*10.0-135*
(S) Tetrachloro-m-xylene	*44.4*			*10.0-139*

Laboratory Control Sample (LCS)

(LCS) R3561063-4 08/18/20 14:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aldrin	0.0666	0.0438	65.8	34.0-136	
Alpha BHC	0.0666	0.0400	60.1	34.0-139	
Beta BHC	0.0666	0.0404	60.7	34.0-133	
Delta BHC	0.0666	0.0413	62.0	34.0-135	
Gamma BHC	0.0666	0.0417	62.6	34.0-136	
4,4-DDD	0.0666	0.0443	66.5	33.0-141	
4,4-DDE	0.0666	0.0414	62.2	34.0-134	
4,4-DDT	0.0666	0.0413	62.0	30.0-143	
Dieldrin	0.0666	0.0427	64.1	35.0-137	
Endosulfan I	0.0666	0.0400	60.1	34.0-134	

Laboratory Control Sample (LCS)

(LCS) R3561063-4 08/18/20 14:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Endosulfan II	0.0666	0.0424	63.7	35.0-132	
Endosulfan sulfate	0.0666	0.0400	60.1	35.0-132	
Endrin	0.0666	0.0397	59.6	34.0-137	
Endrin aldehyde	0.0666	0.0399	59.9	23.0-121	
Endrin ketone	0.0666	0.0395	59.3	35.0-144	
Heptachlor	0.0666	0.0426	64.0	36.0-141	
Heptachlor epoxide	0.0666	0.0438	65.8	36.0-134	
Hexachlorobenzene	0.0666	0.0425	63.8	33.0-129	
Methoxychlor	0.0666	0.0439	65.9	28.0-150	
(S) Decachlorobiphenyl			*79.6*	*10.0-135*	
(S) Tetrachloro-m-xylene			*71.8*	*10.0-139*	

L1249786-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1249786-07 08/18/20 11:27 • (MS) R3561063-2 08/18/20 11:40 • (MSD) R3561063-3 08/18/20 11:52

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Aldrin	0.0666	ND	0.0500	0.0479	75.1	71.9	1	20.0-135			4.29	37
Alpha BHC	0.0666	ND	0.0482	0.0462	72.4	69.4	1	27.0-140			4.24	35
Beta BHC	0.0666	ND	0.0449	0.0433	67.4	65.0	1	23.0-141			3.63	37
Delta BHC	0.0666	ND	0.0476	0.0458	71.5	68.8	1	21.0-138			3.85	35
Gamma BHC	0.0666	ND	0.0486	0.0467	73.0	70.1	1	27.0-137			3.99	36
4,4-DDD	0.0666	ND	0.0491	0.0472	73.7	70.9	1	15.0-152			3.95	39
4,4-DDE	0.0666	ND	0.0475	0.0454	71.3	68.2	1	10.0-152			4.52	40
4,4-DDT	0.0666	ND	0.0469	0.0451	70.4	67.7	1	10.0-151			3.91	40
Dieldrin	0.0666	ND	0.0495	0.0475	74.3	71.3	1	17.0-145			4.12	37
Endosulfan I	0.0666	ND	0.0476	0.0456	71.5	68.5	1	20.0-137			4.29	36
Endosulfan II	0.0666	ND	0.0474	0.0456	71.2	68.5	1	15.0-141			3.87	37
Endosulfan sulfate	0.0666	ND	0.0466	0.0450	70.0	67.6	1	15.0-143			3.49	38
Endrin	0.0666	ND	0.0487	0.0466	73.1	70.0	1	19.0-143			4.41	37
Endrin aldehyde	0.0666	ND	0.0448	0.0438	67.3	65.8	1	10.0-139			2.26	40
Endrin ketone	0.0666	ND	0.0472	0.0454	70.9	68.2	1	17.0-149			3.89	38
Heptachlor	0.0666	ND	0.0495	0.0476	74.3	71.5	1	22.0-138			3.91	37
Heptachlor epoxide	0.0666	ND	0.0501	0.0479	75.2	71.9	1	22.0-138			4.49	36
Hexachlorobenzene	0.0666	ND	0.0507	0.0486	76.1	73.0	1	25.0-126			4.23	35
Methoxychlor	0.0666	ND	0.0538	0.0512	80.8	76.9	1	10.0-159			4.95	40
(S) Decachlorobiphenyl					*75.8*	*79.0*		*10.0-135*				
(S) Tetrachloro-m-xylene					*60.8*	*58.9*		*10.0-139*				

Method Blank (MB)

(MB) R3560780-1 08/17/20 17:16

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
PCB 1016	U		0.0118	0.0340
PCB 1221	U		0.0118	0.0340
PCB 1232	U		0.0118	0.0340
PCB 1242	U		0.0118	0.0340
PCB 1248	U		0.00738	0.0170
PCB 1254	U		0.00738	0.0170
PCB 1260	U		0.00738	0.0170
(S) Decachlorobiphenyl	*55.9*			*10.0-135*
(S) Tetrachloro-m-xylene	*56.5*			*10.0-139*

Laboratory Control Sample (LCS)

(LCS) R3560780-2 08/17/20 17:30

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
PCB 1260	0.167	0.133	79.6	37.0-145	
PCB 1016	0.167	0.124	74.3	36.0-141	
(S) Decachlorobiphenyl			*74.2*	*10.0-135*	
(S) Tetrachloro-m-xylene			*79.6*	*10.0-139*	

L1249786-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1249786-07 08/17/20 17:43 • (MS) R3560780-3 08/17/20 17:57 • (MSD) R3560780-4 08/17/20 18:11

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
PCB 1260	0.167	ND	0.131	0.123	78.4	73.7	1	10.0-160			6.30	38
PCB 1016	0.167	ND	0.136	0.125	81.4	74.9	1	10.0-160			8.43	37
(S) Decachlorobiphenyl					*74.0*	*65.0*		*10.0-135*				
(S) Tetrachloro-m-xylene					*80.9*	*71.2*		*10.0-139*				

Method Blank (MB)

(MB) R3560784-2 08/17/20 14:55

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	*89.7*			*14.0-149*
(S) 2-Fluorobiphenyl	*87.3*			*34.0-125*
(S) p-Terphenyl-d14	*84.9*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3560784-1 08/17/20 14:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0734	91.8	50.0-126	
Acenaphthene	0.0800	0.0718	89.8	50.0-120	
Acenaphthylene	0.0800	0.0793	99.1	50.0-120	
Benzo(a)anthracene	0.0800	0.0775	96.9	45.0-120	
Benzo(a)pyrene	0.0800	0.0735	91.9	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0776	97.0	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0752	94.0	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0689	86.1	49.0-125	
Chrysene	0.0800	0.0748	93.5	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0766	95.8	47.0-125	
Fluoranthene	0.0800	0.0723	90.4	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3560784-1 08/17/20 14:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0780	97.5	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0766	95.8	46.0-125	
Naphthalene	0.0800	0.0698	87.3	50.0-120	
Phenanthrene	0.0800	0.0750	93.8	47.0-120	
Pyrene	0.0800	0.0743	92.9	43.0-123	
1-Methylnaphthalene	0.0800	0.0726	90.8	51.0-121	
2-Methylnaphthalene	0.0800	0.0703	87.9	50.0-120	
2-Chloronaphthalene	0.0800	0.0741	92.6	50.0-120	
(S) Nitrobenzene-d5			*98.7*	*14.0-149*	
(S) 2-Fluorobiphenyl			*97.2*	*34.0-125*	
(S) p-Terphenyl-d14			*95.8*	*23.0-120*	

L1250126-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1250126-01 08/17/20 17:11 • (MS) R3560784-3 08/17/20 17:34 • (MSD) R3560784-4 08/17/20 17:57

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0772	ND	0.0731	0.0714	94.7	92.0	1	10.0-145			2.35	30
Acenaphthene	0.0772	ND	0.0695	0.0679	90.0	87.5	1	14.0-127			2.33	27
Acenaphthylene	0.0772	ND	0.0773	0.0749	100	96.5	1	21.0-124			3.15	25
Benzo(a)anthracene	0.0772	ND	0.0839	0.0753	109	97.0	1	10.0-139			10.8	30
Benzo(a)pyrene	0.0772	ND	0.0810	0.0741	105	95.5	1	10.0-141			8.90	31
Benzo(b)fluoranthene	0.0772	ND	0.0851	0.0714	110	92.0	1	10.0-140			17.5	36
Benzo(g,h,i)perylene	0.0772	ND	0.0783	0.0729	101	93.9	1	10.0-140			7.14	33
Benzo(k)fluoranthene	0.0772	ND	0.0677	0.0676	87.7	87.1	1	10.0-137			0.148	31
Chrysene	0.0772	ND	0.0791	0.0735	102	94.7	1	10.0-145			7.34	30
Dibenz(a,h)anthracene	0.0772	ND	0.0773	0.0740	100	95.4	1	10.0-132			4.36	31
Fluoranthene	0.0772	ND	0.0702	0.0670	90.9	86.3	1	10.0-153			4.66	33
Fluorene	0.0772	ND	0.0753	0.0726	97.5	93.6	1	11.0-130			3.65	29
Indeno(1,2,3-cd)pyrene	0.0772	ND	0.0779	0.0730	101	94.1	1	10.0-137			6.49	32
Naphthalene	0.0772	ND	0.0660	0.0658	85.5	84.8	1	10.0-135			0.303	27
Phenanthrene	0.0772	ND	0.0720	0.0704	93.3	90.7	1	10.0-144			2.25	31
Pyrene	0.0772	ND	0.0794	0.0744	103	95.9	1	10.0-148			6.50	35
1-Methylnaphthalene	0.0772	ND	0.0692	0.0686	89.6	88.4	1	10.0-142			0.871	28
2-Methylnaphthalene	0.0772	ND	0.0674	0.0658	87.3	84.8	1	10.0-137			2.40	28
2-Chloronaphthalene	0.0772	ND	0.0714	0.0692	92.5	89.2	1	29.0-120			3.13	24
(S) Nitrobenzene-d5					*92.0*	*94.7*		*14.0-149*				
(S) 2-Fluorobiphenyl					*91.8*	*93.7*		*34.0-125*				
(S) p-Terphenyl-d14					*97.6*	*98.3*		*23.0-120*				

Method Blank (MB)

(MB) R3560860-2 08/18/20 00:51

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	*108*			*14.0-149*
(S) 2-Fluorobiphenyl	*98.0*			*34.0-125*
(S) p-Terphenyl-d14	*98.7*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3560860-1 08/18/20 00:30

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0820	103	50.0-126	
Acenaphthene	0.0800	0.0804	101	50.0-120	
Acenaphthylene	0.0800	0.0826	103	50.0-120	
Benzo(a)anthracene	0.0800	0.0787	98.4	45.0-120	
Benzo(a)pyrene	0.0800	0.0714	89.3	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0706	88.3	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0806	101	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0789	98.6	49.0-125	
Chrysene	0.0800	0.0771	96.4	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0840	105	47.0-125	
Fluoranthene	0.0800	0.0795	99.4	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3560860-1 08/18/20 00:30

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0819	102	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0823	103	46.0-125	
Naphthalene	0.0800	0.0743	92.9	50.0-120	
Phenanthrene	0.0800	0.0845	106	47.0-120	
Pyrene	0.0800	0.0784	98.0	43.0-123	
1-Methylnaphthalene	0.0800	0.0753	94.1	51.0-121	
2-Methylnaphthalene	0.0800	0.0726	90.8	50.0-120	
2-Chloronaphthalene	0.0800	0.0782	97.8	50.0-120	
(S) Nitrobenzene-d5			*114*	*14.0-149*	
(S) 2-Fluorobiphenyl			*102*	*34.0-125*	
(S) p-Terphenyl-d14			*99.3*	*23.0-120*	

L1250422-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1250422-02 08/18/20 07:04 • (MS) R3560860-3 08/18/20 07:25 • (MSD) R3560860-4 08/18/20 07:46

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0797	0.0353	0.161	0.163	157	160	1	10.0-145	M1	M1	1.23	30
Acenaphthene	0.0797	0.0281	0.135	0.137	134	136	1	14.0-127	M1	M1	1.47	27
Acenaphthylene	0.0797	ND	0.0692	0.0742	86.5	92.8	1	21.0-124			6.97	25
Benzo(a)anthracene	0.0797	0.0388	0.140	0.154	127	144	1	10.0-139		M1	9.52	30
Benzo(a)pyrene	0.0797	0.0292	0.109	0.122	99.8	116	1	10.0-141			11.3	31
Benzo(b)fluoranthene	0.0797	0.0363	0.116	0.127	99.6	113	1	10.0-140			9.05	36
Benzo(g,h,i)perylene	0.0797	0.0201	0.101	0.112	101	115	1	10.0-140			10.3	33
Benzo(k)fluoranthene	0.0797	0.0140	0.0865	0.0987	90.6	106	1	10.0-137			13.2	31
Chrysene	0.0797	0.0373	0.134	0.147	121	137	1	10.0-145			9.25	30
Dibenz(a,h)anthracene	0.0797	ND	0.0789	0.0863	91.7	101	1	10.0-132			8.96	31
Fluoranthene	0.0797	0.0968	0.270	0.279	217	228	1	10.0-153	M1	M1	3.28	33
Fluorene	0.0797	0.0690	0.255	0.245	233	220	1	11.0-130	M1	M1	4.00	29
Indeno(1,2,3-cd)pyrene	0.0797	0.0155	0.0915	0.101	95.0	107	1	10.0-137			9.87	32
Naphthalene	0.0797	0.103	0.320	0.314	271	264	1	10.0-135	M1	M1	1.89	27
Phenanthrene	0.0797	0.185	0.543	0.527	448	428	1	10.0-144	M1	M1	2.99	31
Pyrene	0.0797	0.0867	0.260	0.266	217	224	1	10.0-148	M1	M1	2.28	35
1-Methylnaphthalene	0.0797	0.155	0.465	0.435	388	350	1	10.0-142	M1	M1	6.67	28
2-Methylnaphthalene	0.0797	0.159	0.457	0.441	373	353	1	10.0-137	M1	M1	3.56	28
2-Chloronaphthalene	0.0797	ND	0.0644	0.0690	80.5	86.3	1	29.0-120			6.90	24
(S) Nitrobenzene-d5					*177*	*207*		*14.0-149*	S10	S10		
(S) 2-Fluorobiphenyl					*87.6*	*92.7*		*34.0-125*				
(S) p-Terphenyl-d14					*86.7*	*92.6*		*23.0-120*				

Instrument: VOCMS54 • File ID: 0815a_01

08/15/20 11:16

Sample ID	File ID	8260-FLUOROBENZENE	8260-CHLOROBENZENE-D5	8260-1,4-DICHLOROBENZENE-D4
		Response	Response	Response
Standard	0815a_01	552311.80	244135.30	316187
Upper Limit		1104624	488271	632374
Lower Limit		276156	122068	158094
LCS R3560227-1 WG1526526 1x	0815a_01LCS	552311.80	244135.30	316187
LCSD R3560227-2 WG1526526 1x	0815a_03	524469.40	232057.10	319497.60
BLANK R3560227-3 WG1526526 1x	0815a_06	473622.40	207527.50	230558
L1250126-01 WG1526526 1.13x	0815a_27	567165.70	231815.40	264157

Instrument: VOCMS54 • File ID: 0815a_32

08/15/20 23:47

Sample ID	File ID	8260-FLUOROBENZENE	8260-CHLOROBENZENE-D5	8260-1,4-DICHLOROBENZENE-D4
		Response	Response	Response
Standard	0815a_32	518370.70	223522.50	266082.70
Upper Limit		1104624	488271	632374
Lower Limit		276156	122068	158094
LCS R3561477-1 WG1526616 1x	0815a_32LCS	518370.70	223522.50	266082.70
BLANK R3561477-2 WG1526616 1x	0815a_35	484979.60	211164.30	241843.30
L1250126-02 WG1526616 1.05x	0815a_36	507430.80	214035.70	232783.50
L1250126-03 WG1526616 1x	0815a_37	562382.30	233648.60	260950.10
L1250126-04 WG1526616 1.04x	0815a_38	565455.10	233801.70	277048.90
L1250126-05 WG1526616 1x	0815a_39	533617	220178.60	248093.80
L1250126-06 WG1526616 1x	0815a_40	522801.60	220265.70	247214.60
LCSD R3561477-3 WG1526616 1x	0815a_57	511112.30	219198.90	256687.50

INTERNAL STANDARD SUMMARY

Instrument: SVGC30 • File ID: AVG

Sample ID	File ID	1-BROMO-2-DINITROBENZENE Response
Standard	AVG	1034440250
Upper Limit		1551660000
Lower Limit		517220000
BLANK R3561063-1 WG1526775 1x	0818_07	1240066000
MS R3561063-2 WG1526775 1x	0818_12	1218079000
MSD R3561063-3 WG1526775 1x	0818_13	1183334000
L1250126-01 WG1526775 1x	0818_14	1154664000
LCS R3561063-4 WG1526775 1x	0818_26	1203447000
L1250126-02 WG1526775 1x	0818_37	1179737000
L1250126-03 WG1526775 1x	0818_38	1194676000
L1250126-04 WG1526775 1x	0818_39	1180747000
L1250126-05 WG1526775 1x	0818_40	1215147000
L1250126-06 WG1526775 1x	0818_41	1197105000

Instrument: SVGC14 • File ID: AVG

Sample ID	File ID	1-BROMO-2-DINITROBENZENE Response
Standard	AVG	20302657
Upper Limit		65158290
Lower Limit		21719430
BLANK R3560780-1 WG1526775 1x	0817_21	48754030
LCS R3560780-2 WG1526775 1x	0817_22	49844320
MS R3560780-3 WG1526775 1x	0817_24	53468970
MSD R3560780-4 WG1526775 1x	0817_25	55562210
L1250126-01 WG1526775 1x	0817_28	54278000
L1250126-02 WG1526775 1x	0817_29	49820540
L1250126-03 WG1526775 1x	0817_30	53822630
L1250126-04 WG1526775 1x	0817_31	53832970
L1250126-05 WG1526775 1x	0817_32	53644350
L1250126-06 WG1526775 1x	0817_33	50823860

Instrument: BNAMS14 • File ID: 0817B_03

08/17/20 23:48

Sample ID	File ID	NAPHTHALENE-D8	ACENAPHTHENE-D10	PHENANTHRENE-D10	CHRYSENE-D12	PERYLENE-D12
		Response	Response	Response	Response	Response
Standard	0817B_03	150040	95024	182666	218067	248287
Upper Limit		300080	190048	365332	436134	496574
Lower Limit		75020	47512	91333	109034	124144
LCS R3560860-1 WG1527414 1x	0817B_04	137777	85582	163274	188318	217215
BLANK R3560860-2 WG1527414 1x	0817B_05	129467	83006	157723	175596	205582
L1250126-02 WG1527414 1x	0817B_06	123854	79658	148026	164217	184182
L1250126-03 WG1527414 1x	0817B_07	125758	80613	150625	169801	192549
L1250126-04 WG1527414 1x	0817B_08	125736	81282	151109	172259	195888
L1250126-05 WG1527414 1x	0817B_09	118925	76904	144028	159272	181086
L1250126-06 WG1527414 1x	0817B_10	127072	82380	153732	168996	189880
MS R3560860-3 WG1527414 1x	0817B_24	131354	90250	174143	199359	234681
MSD R3560860-4 WG1527414 1x	0817B_25	127311	85189	161259	184819	219955

Instrument: BNAMS25 • File ID: 0817_06

08/17/20 14:09

Sample ID	File ID	NAPHTHALENE-D8	ACENAPHTHENE-D10	PHENANTHRENE-D10	CHRYSENE-D12	PERYLENE-D12
		Response	Response	Response	Response	Response
Standard	0817_06	264822	140371	252892	245508	244223
Upper Limit		529644	280742	505784	491016	488446
Lower Limit		132411	70186	126446	122754	122112
LCS R3560784-1 WG1527113 1x	0817_07	262531	139428	246763	243434	242816
BLANK R3560784-2 WG1527113 1x	0817_08	269143	147231	252880	268968	263817
L1250126-01 WG1527113 1x	0817_14	262237	142869	243397	235268	239282
MS R3560784-3 WG1527113 1x	0817_15	266807	142301	250204	227913	233358
MSD R3560784-4 WG1527113 1x	0817_16	268570	143922	247644	231380	234499

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 Sc

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E1	Concentration estimated. Analyte exceeded calibration range. Reanalysis not possible due to insufficient sample.
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting level (MRL) but above MDL.
L1	The associated blank spike recovery was above laboratory acceptance limits.
L2	The associated blank spike recovery was below laboratory acceptance limits.
M1	Matrix spike recovery was high, the method control sample recovery was acceptable.
M2	Matrix spike recovery was low, the method control sample recovery was acceptable.
P	RPD between the primary and confirmatory analysis exceeded 40%.
R5	MS/MSD RPD exceeded the laboratory acceptance limit. Recovery met acceptance criteria.
R7	LFB/LFBD RPD exceeded the laboratory acceptance limit. Recovery met acceptance criteria.
S6	Surrogate recovery was below laboratory and method acceptance limits. Reextraction and/or reanalysis confirms low recovery caused by matrix effect.
S10	Surrogate recovery was above laboratory and method acceptance limits.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

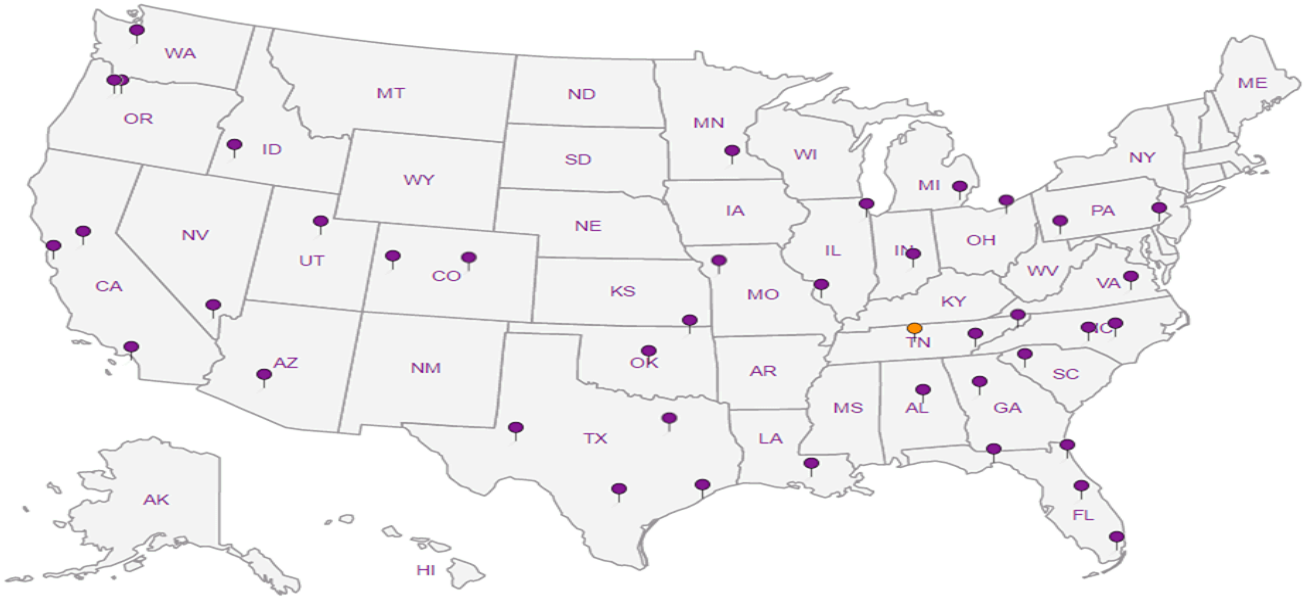
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Environmental Response, INC.
2202 W Medtronic Way Suite 108
Tempe AZ 85281

Billing Information:

Chain of Custody Page 1 of 1

Pace Analytical® National Center for Testing & Innovation
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

Report to: Eric Smith
Email To: esmith@spray-eri.com
Project Description: APS Prescott Sub Backfill
City/State Collected: Prescott, AZ
Phone: 480-967-2802
Fax: 480-967-2735
Client Project #: 20-209175
Lab Project #
L# L1250126
Table: B149
Collected by (print): E. SMITH
Site/Facility ID #
P.O. #
Collected by (signature):
Immediately Packed on Ice N ___ Y ✓
Rush? (Lab MUST Be Notified) ___ Same Day ___ Five Day ___ Next Day ___ 5 Day (Rad Only) ___ Two Day ___ 10 Day (Rad Only) ___ Three Day
Quote #
Date Results Needed: ST TAT
Acctnum: ENVRESTAZ
Template:
Prelogin:
TSR: Daphne Richards
PB:
Shipped Via:

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	PAH 8270SIM / 8oz clear jar / NoPres	PCB 8082	Organochlorine Pesticides 8081	Herbicides 8151	VOC 8260B / 40ml amber / MeOH	TPH 8015AZR1 / 40ml amber / MeOH	Total RCRA8 Metals 6010/7471 / 2oz clr jar	Pres Chk	Remarks	Sample # (lab only)
GLASS SELECT A1	GRAB	SS	—	8/12/20	1220	4	X	X	X	X	X	X	X			-01
GLASS SELECT A2		SS	—		1226	4	X	X	X	X	X	X	X			-02
GLASS SELECT A3		SS	—		1233	4	X	X	X	X	X	X	X			-03
GLASS SELECT A4		SS	—		1240	4	X	X	X	X	X	X	X			-04
GLASS SELECT A5		SS	—		1245	4	X	X	X	X	X	X	X			-05
GLASS SELECT A6		SS	—		1251	4	X	X	X	X	X	X	X			-06

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via: __ UPS __ FedEx __ Courier _____
Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP __Y __N
COC Signed/Accurate: __Y __N
Bottles arrive intact: __Y __N
Correct bottles used: __Y __N
Sufficient volume sent: __Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N
RAD SCREEN: <0.5 mR/hr

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
	8/12/20	1425		
Relinquished by : (Signature)	**Date:**	**Time:**	**Received by: (Signature)**	**Temp °C / Bottles Received:**
	8/12/20	1800	SWA	2.2-1=2.1 / 24
Relinquished by : (Signature)	**Date:**	**Time:**	**Received for lab by: (Signature)**	**Date: / Time:**
				8/13/20 / 83

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

APPROVED
By Greg Laney at 2:38 pm, Sep 14, 2020

APS Prescott Substation Remediation / Submittal 015B Specification 31 23 23
Reviewed, checked and approved for compliance with Contract Documents

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

September 14, 2020

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 Sc

Environmental Response, Inc.

Sample Delivery Group:	L1260089
Samples Received:	09/10/2020
Project Number:	20-209125
Description:	APS Prescott Sub Backfill
Report To:	Eric Smith 2202 W. Medtronic Way, Ste 108 Tempe, AZ 85281

Entire Report Reviewed By: Daphne R Richards

Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

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GLASS SELECT A 07 L1260089-01 Solid

Collected by	Collected date/time	Received date/time
E. Smith	09/09/20 15:20	09/10/20 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Mercury by Method 7471B	WG1541138	1	09/10/20 18:58	09/10/20 22:57	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1541053	1	09/10/20 22:41	09/11/20 09:31	TRB	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO_AZ	WG1542163	25	09/11/20 12:18	09/14/20 03:05	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1541910	1	09/11/20 12:18	09/12/20 12:20	DWR	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151	WG1542440	1	09/13/20 17:18	09/14/20 11:47	RP	Mt. Juliet, TN
Pesticides (GC) by Method 8081B	WG1541237	1	09/11/20 12:49	09/12/20 01:54	RP	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1541237	1	09/11/20 12:49	09/12/20 20:40	RP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1541820	1	09/12/20 08:24	09/13/20 09:06	DMG	Mt. Juliet, TN

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 Sc

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne R Richards

Daphne Richards
Project Manager

Mercury by Method 7471B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0737		0.0400	1	09/10/2020 22:57	WG1541138

Metals (ICP) by Method 6010D

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.30		2.00	1	09/11/2020 09:31	WG1541053
Barium	44.7		0.500	1	09/11/2020 09:31	WG1541053
Cadmium	ND		0.500	1	09/11/2020 09:31	WG1541053
Chromium	7.75		1.00	1	09/11/2020 09:31	WG1541053
Lead	11.3		0.500	1	09/11/2020 09:31	WG1541053
Selenium	ND		2.00	1	09/11/2020 09:31	WG1541053
Silver	ND		1.00	1	09/11/2020 09:31	WG1541053

Volatile Organic Compounds (GC) by Method 8015D/GRO_AZ

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C6-C10 Hydrocarbons	ND		2.50	25	09/14/2020 03:05	WG1542163
(S) a,a,a-Trifluorotoluene(FID)	*104*		*77.0-120*		*09/14/2020 03:05*	WG1542163

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND		1.25	1	09/12/2020 12:20	WG1541910
Acrylonitrile	ND		0.313	1	09/12/2020 12:20	WG1541910
Benzene	ND		0.0250	1	09/12/2020 12:20	WG1541910
Bromobenzene	ND		0.313	1	09/12/2020 12:20	WG1541910
Bromodichloromethane	ND		0.0625	1	09/12/2020 12:20	WG1541910
Bromoform	ND		0.625	1	09/12/2020 12:20	WG1541910
Bromomethane	ND		0.313	1	09/12/2020 12:20	WG1541910
1,3-Butadiene	ND		0.625	1	09/12/2020 12:20	WG1541910
n-Butylbenzene	ND		0.313	1	09/12/2020 12:20	WG1541910
sec-Butylbenzene	ND		0.313	1	09/12/2020 12:20	WG1541910
tert-Butylbenzene	ND		0.125	1	09/12/2020 12:20	WG1541910
Carbon disulfide	ND		0.313	1	09/12/2020 12:20	WG1541910
Carbon tetrachloride	ND		0.125	1	09/12/2020 12:20	WG1541910
Chlorobenzene	ND		0.0625	1	09/12/2020 12:20	WG1541910
Chlorodibromomethane	ND		0.0625	1	09/12/2020 12:20	WG1541910
Chloroethane	ND		0.125	1	09/12/2020 12:20	WG1541910
Chloroform	ND		0.0625	1	09/12/2020 12:20	WG1541910
Chloromethane	ND		0.313	1	09/12/2020 12:20	WG1541910
2-Chlorotoluene	ND		0.0625	1	09/12/2020 12:20	WG1541910
4-Chlorotoluene	ND		0.125	1	09/12/2020 12:20	WG1541910
Cyclohexane	ND		0.0625	1	09/12/2020 12:20	WG1541910
1,2-Dibromo-3-Chloropropane	ND		0.625	1	09/12/2020 12:20	WG1541910
1,2-Dibromoethane	ND		0.0625	1	09/12/2020 12:20	WG1541910
Dibromomethane	ND		0.125	1	09/12/2020 12:20	WG1541910
1,2-Dichlorobenzene	ND		0.125	1	09/12/2020 12:20	WG1541910
1,3-Dichlorobenzene	ND		0.125	1	09/12/2020 12:20	WG1541910
1,4-Dichlorobenzene	ND		0.125	1	09/12/2020 12:20	WG1541910
Dichlorodifluoromethane	ND		0.0625	1	09/12/2020 12:20	WG1541910
1,1-Dichloroethane	ND		0.0625	1	09/12/2020 12:20	WG1541910
1,2-Dichloroethane	ND		0.0625	1	09/12/2020 12:20	WG1541910
1,1-Dichloroethene	ND		0.0625	1	09/12/2020 12:20	WG1541910
cis-1,2-Dichloroethene	ND		0.0625	1	09/12/2020 12:20	WG1541910

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
trans-1,2-Dichloroethene	ND		0.125	1	09/12/2020 12:20	WG1541910
1,2-Dichloropropane	ND		0.125	1	09/12/2020 12:20	WG1541910
1,1-Dichloropropene	ND		0.0625	1	09/12/2020 12:20	WG1541910
1,3-Dichloropropane	ND		0.125	1	09/12/2020 12:20	WG1541910
cis-1,3-Dichloropropene	ND		0.0625	1	09/12/2020 12:20	WG1541910
trans-1,3-Dichloropropene	ND		0.125	1	09/12/2020 12:20	WG1541910
2,2-Dichloropropane	ND		0.0625	1	09/12/2020 12:20	WG1541910
Dicyclopentadiene	ND		0.313	1	09/12/2020 12:20	WG1541910
Di-isopropyl ether	ND		0.0250	1	09/12/2020 12:20	WG1541910
Ethylbenzene	ND		0.0625	1	09/12/2020 12:20	WG1541910
4-Ethyltoluene	ND		0.125	1	09/12/2020 12:20	WG1541910
Hexachloro-1,3-butadiene	ND		0.625	1	09/12/2020 12:20	WG1541910
n-Hexane	ND		0.125	1	09/12/2020 12:20	WG1541910
Isopropylbenzene	ND		0.0625	1	09/12/2020 12:20	WG1541910
p-Isopropyltoluene	ND		0.125	1	09/12/2020 12:20	WG1541910
2-Butanone (MEK)	ND		2.50	1	09/12/2020 12:20	WG1541910
Methylene Chloride	ND		0.625	1	09/12/2020 12:20	WG1541910
4-Methyl-2-pentanone (MIBK)	ND		0.625	1	09/12/2020 12:20	WG1541910
Methyl tert-butyl ether	ND		0.0250	1	09/12/2020 12:20	WG1541910
Methyl Cyclohexane	ND		0.125	1	09/12/2020 12:20	WG1541910
Naphthalene	ND		0.313	1	09/12/2020 12:20	WG1541910
Propene	ND		1.25	1	09/12/2020 12:20	WG1541910
n-Propylbenzene	ND		0.125	1	09/12/2020 12:20	WG1541910
Styrene	ND		0.313	1	09/12/2020 12:20	WG1541910
1,1,1,2-Tetrachloroethane	ND		0.0625	1	09/12/2020 12:20	WG1541910
1,1,2,2-Tetrachloroethane	ND		0.0625	1	09/12/2020 12:20	WG1541910
1,1,2-Trichlorotrifluoroethane	ND		0.0625	1	09/12/2020 12:20	WG1541910
Tetrachloroethene	ND		0.0625	1	09/12/2020 12:20	WG1541910
Toluene	ND		0.125	1	09/12/2020 12:20	WG1541910
1,2,3-Trichlorobenzene	ND		0.313	1	09/12/2020 12:20	WG1541910
1,2,4-Trichlorobenzene	ND	L2	0.313	1	09/12/2020 12:20	WG1541910
1,1,1-Trichloroethane	ND		0.0625	1	09/12/2020 12:20	WG1541910
1,1,2-Trichloroethane	ND		0.0625	1	09/12/2020 12:20	WG1541910
Trichloroethene	ND		0.0250	1	09/12/2020 12:20	WG1541910
Trichlorofluoromethane	ND		0.0625	1	09/12/2020 12:20	WG1541910
1,2,3-Trichloropropane	ND		0.313	1	09/12/2020 12:20	WG1541910
1,2,4-Trimethylbenzene	ND		0.125	1	09/12/2020 12:20	WG1541910
1,2,3-Trimethylbenzene	ND		0.125	1	09/12/2020 12:20	WG1541910
1,3,5-Trimethylbenzene	ND		0.125	1	09/12/2020 12:20	WG1541910
Vinyl chloride	ND		0.0625	1	09/12/2020 12:20	WG1541910
Xylenes, Total	ND		0.163	1	09/12/2020 12:20	WG1541910
(S) Toluene-d8	*101*		*75.0-131*		*09/12/2020 12:20*	WG1541910
(S) 4-Bromofluorobenzene	*93.6*		*67.0-138*		*09/12/2020 12:20*	WG1541910
(S) 1,2-Dichloroethane-d4	*106*		*70.0-130*		*09/12/2020 12:20*	WG1541910

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
2,4-D	ND		0.0700	1	09/14/2020 11:47	WG1542440
Dalapon	ND		0.0700	1	09/14/2020 11:47	WG1542440
2,4-DB	ND		0.0700	1	09/14/2020 11:47	WG1542440
Dicamba	ND		0.0700	1	09/14/2020 11:47	WG1542440
Dichloroprop	ND		0.0700	1	09/14/2020 11:47	WG1542440
Dinoseb	ND	L2	0.0700	1	09/14/2020 11:47	WG1542440
MCPA	ND		6.50	1	09/14/2020 11:47	WG1542440
MCPP	ND		6.50	1	09/14/2020 11:47	WG1542440

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
2,4,5-T	ND		0.0700	1	09/14/2020 11:47	WG1542440
2,4,5-TP (Silvex)	ND		0.0700	1	09/14/2020 11:47	WG1542440
(S) 2,4-Dichlorophenyl Acetic Acid	*39.7*		*22.0-132*		*09/14/2020 11:47*	WG1542440

Pesticides (GC) by Method 8081B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Aldrin	ND		0.0200	1	09/12/2020 01:54	WG1541237
Alpha BHC	ND		0.0200	1	09/12/2020 01:54	WG1541237
Beta BHC	ND		0.0200	1	09/12/2020 01:54	WG1541237
Delta BHC	ND		0.0200	1	09/12/2020 01:54	WG1541237
Gamma BHC	ND		0.0200	1	09/12/2020 01:54	WG1541237
Chlordane	ND		0.300	1	09/12/2020 01:54	WG1541237
4,4-DDD	ND		0.0200	1	09/12/2020 01:54	WG1541237
4,4-DDE	ND		0.0200	1	09/12/2020 01:54	WG1541237
4,4-DDT	ND		0.0200	1	09/12/2020 01:54	WG1541237
Dieldrin	ND		0.0200	1	09/12/2020 01:54	WG1541237
Endosulfan I	ND		0.0200	1	09/12/2020 01:54	WG1541237
Endosulfan II	ND		0.0200	1	09/12/2020 01:54	WG1541237
Endosulfan sulfate	ND		0.0200	1	09/12/2020 01:54	WG1541237
Endrin	ND		0.0200	1	09/12/2020 01:54	WG1541237
Endrin aldehyde	ND		0.0200	1	09/12/2020 01:54	WG1541237
Endrin ketone	ND		0.0200	1	09/12/2020 01:54	WG1541237
Heptachlor	ND		0.0200	1	09/12/2020 01:54	WG1541237
Heptachlor epoxide	ND		0.0200	1	09/12/2020 01:54	WG1541237
Hexachlorobenzene	ND		0.0200	1	09/12/2020 01:54	WG1541237
Methoxychlor	ND		0.0200	1	09/12/2020 01:54	WG1541237
Toxaphene	ND		0.400	1	09/12/2020 01:54	WG1541237
(S) Decachlorobiphenyl	*77.5*		*10.0-135*		*09/12/2020 01:54*	WG1541237
(S) Tetrachloro-m-xylene	*79.7*		*10.0-139*		*09/12/2020 01:54*	WG1541237

Polychlorinated Biphenyls (GC) by Method 8082 A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
PCB 1016	ND		0.0340	1	09/12/2020 20:40	WG1541237
PCB 1221	ND		0.0340	1	09/12/2020 20:40	WG1541237
PCB 1232	ND		0.0340	1	09/12/2020 20:40	WG1541237
PCB 1242	ND		0.0340	1	09/12/2020 20:40	WG1541237
PCB 1248	ND		0.0170	1	09/12/2020 20:40	WG1541237
PCB 1254	ND		0.0170	1	09/12/2020 20:40	WG1541237
PCB 1260	ND		0.0170	1	09/12/2020 20:40	WG1541237
(S) Decachlorobiphenyl	*110*		*10.0-135*		*09/12/2020 20:40*	WG1541237
(S) Tetrachloro-m-xylene	*99.4*		*10.0-139*		*09/12/2020 20:40*	WG1541237

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	09/13/2020 09:06	WG1541820
Acenaphthene	ND		0.00600	1	09/13/2020 09:06	WG1541820
Acenaphthylene	ND		0.00600	1	09/13/2020 09:06	WG1541820
Benzo(a)anthracene	ND		0.00600	1	09/13/2020 09:06	WG1541820
Benzo(a)pyrene	ND		0.00600	1	09/13/2020 09:06	WG1541820
Benzo(b)fluoranthene	ND		0.00600	1	09/13/2020 09:06	WG1541820
Benzo(g,h,i)perylene	ND		0.00600	1	09/13/2020 09:06	WG1541820
Benzo(k)fluoranthene	ND		0.00600	1	09/13/2020 09:06	WG1541820

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chrysene	ND		0.00600	1	09/13/2020 09:06	WG1541820
Dibenz(a,h)anthracene	ND		0.00600	1	09/13/2020 09:06	WG1541820
Fluoranthene	ND		0.00600	1	09/13/2020 09:06	WG1541820
Fluorene	ND		0.00600	1	09/13/2020 09:06	WG1541820
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	09/13/2020 09:06	WG1541820
Naphthalene	ND		0.0200	1	09/13/2020 09:06	WG1541820
Phenanthrene	ND		0.00600	1	09/13/2020 09:06	WG1541820
Pyrene	ND		0.00600	1	09/13/2020 09:06	WG1541820
1-Methylnaphthalene	ND		0.0200	1	09/13/2020 09:06	WG1541820
2-Methylnaphthalene	ND		0.0200	1	09/13/2020 09:06	WG1541820
2-Chloronaphthalene	ND		0.0200	1	09/13/2020 09:06	WG1541820
(S) p-Terphenyl-d14	*102*		*23.0-120*		*09/13/2020 09:06*	WG1541820
(S) Nitrobenzene-d5	*80.2*		*14.0-149*		*09/13/2020 09:06*	WG1541820
(S) 2-Fluorobiphenyl	*96.7*		*34.0-125*		*09/13/2020 09:06*	WG1541820

Method Blank (MB)

(MB) R3569214-1 09/10/20 21:51

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Mercury	U		0.0180	0.0400

Laboratory Control Sample (LCS)

(LCS) R3569214-2 09/10/20 21:54

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.500	0.452	90.3	80.0-120	

Method Blank (MB)

(MB) R3569381-1 09/11/20 08:29

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.460	2.00
Barium	U		0.240	0.500
Cadmium	U		0.0810	0.500
Chromium	U		0.250	1.00
Lead	U		0.208	0.500
Selenium	U		0.617	2.00
Silver	U		0.228	1.00

Laboratory Control Sample (LCS)

(LCS) R3569381-2 09/11/20 08:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	90.3	90.3	80.0-120	
Barium	100	95.6	95.6	80.0-120	
Cadmium	100	91.2	91.2	80.0-120	
Chromium	100	92.6	92.6	80.0-120	
Lead	100	91.4	91.4	80.0-120	
Selenium	100	95.2	95.2	80.0-120	
Silver	20.0	16.7	83.5	80.0-120	

Method Blank (MB)

(MB) R3570226-2 09/14/20 02:03

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0372	E4	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*106*			*77.0-120*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3570226-1 09/14/20 01:00 • (LCSD) R3570226-5 09/14/20 12:34

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.35	4.64	97.3	84.4	72.0-127			14.2	20
(S) a,a,a-Trifluorotoluene(FID)				*101*	*99.9*	*77.0-120*				

L1260182-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1260182-07 09/14/20 03:47 • (MS) R3570226-3 09/14/20 11:32 • (MSD) R3570226-4 09/14/20 11:52

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	103	5.24	93.0	106	85.2	97.8	25	10.0-151			13.1	28
(S) a,a,a-Trifluorotoluene(FID)					*103*	*103*		*77.0-120*				

Method Blank (MB)

(MB) R3569782-3 09/12/20 11:19

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acetone	U		0.913	1.25
Acrylonitrile	U		0.0903	0.313
Benzene	U		0.0117	0.0250
Bromobenzene	U		0.0225	0.313
Bromodichloromethane	U		0.0181	0.0625
Bromoform	U		0.0293	0.625
Bromomethane	U		0.0493	0.313
1,3-Butadiene	U		0.128	0.625
n-Butylbenzene	U		0.131	0.313
sec-Butylbenzene	U		0.0720	0.313
tert-Butylbenzene	U		0.0488	0.125
Carbon disulfide	U		0.0175	0.313
Carbon tetrachloride	U		0.0225	0.125
Chlorobenzene	U		0.00525	0.0625
Chlorodibromomethane	U		0.0153	0.0625
Chloroethane	U		0.0425	0.125
Chloroform	U		0.0258	0.0625
Chloromethane	U		0.109	0.313
Cyclohexane	U		0.0278	0.0625
2-Chlorotoluene	U		0.0216	0.0625
4-Chlorotoluene	U		0.0113	0.125
1,2-Dibromo-3-Chloropropane	U		0.0975	0.625
1,2-Dibromoethane	U		0.0162	0.0625
Dibromomethane	U		0.0188	0.125
1,2-Dichlorobenzene	U		0.0106	0.125
1,3-Dichlorobenzene	U		0.0150	0.125
1,4-Dichlorobenzene	U		0.0175	0.125
Dichlorodifluoromethane	U		0.0403	0.0625
1,1-Dichloroethane	U		0.0123	0.0625
1,2-Dichloroethane	U		0.0162	0.0625
1,1-Dichloroethene	U		0.0152	0.0625
cis-1,2-Dichloroethene	U		0.0184	0.0625
trans-1,2-Dichloroethene	U		0.0260	0.125
1,2-Dichloropropane	U		0.0355	0.125
1,1-Dichloropropene	U		0.0202	0.0625
1,3-Dichloropropane	U		0.0125	0.125
cis-1,3-Dichloropropene	U		0.0189	0.0625
trans-1,3-Dichloropropene	U		0.0285	0.125
2,2-Dichloropropane	U		0.0345	0.0625
Dicyclopentadiene	U		0.0413	0.313

Method Blank (MB)

(MB) R3569782-3 09/12/20 11:19

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Di-isopropyl ether	U		0.0103	0.0250
Ethylbenzene	U		0.0184	0.0625
4-Ethyltoluene	U		0.0580	0.125
Hexachloro-1,3-butadiene	U		0.150	0.625
n-Hexane	U		0.0565	0.125
Isopropylbenzene	U		0.0106	0.0625
p-Isopropyltoluene	U		0.0638	0.125
2-Butanone (MEK)	U		1.59	2.50
Methyl Cyclohexane	U		0.0515	0.125
Methylene Chloride	U		0.166	0.625
4-Methyl-2-pentanone (MIBK)	U		0.0570	0.625
Methyl tert-butyl ether	U		0.00875	0.0250
Naphthalene	U		0.122	0.313
Propene	U		0.153	1.25
n-Propylbenzene	U		0.0238	0.125
Styrene	U		0.00573	0.313
1,1,1,2-Tetrachloroethane	U		0.0237	0.0625
1,1,2,2-Tetrachloroethane	U		0.0174	0.0625
Tetrachloroethene	U		0.0224	0.0625
Toluene	U		0.0325	0.125
1,1,2-Trichlorotrifluoroethane	U		0.0189	0.0625
1,2,3-Trichlorobenzene	U		0.183	0.313
1,2,4-Trichlorobenzene	U		0.110	0.313
1,1,1-Trichloroethane	U		0.0231	0.0625
1,1,2-Trichloroethane	U		0.0149	0.0625
Trichloroethene	U		0.0146	0.0250
Trichlorofluoromethane	U		0.0207	0.0625
1,2,3-Trichloropropane	U		0.0405	0.313
1,2,3-Trimethylbenzene	U		0.0395	0.125
1,2,4-Trimethylbenzene	U		0.0395	0.125
1,3,5-Trimethylbenzene	U		0.0500	0.125
Vinyl chloride	U		0.0290	0.0625
Xylenes, Total	U		0.0220	0.163
(S) Toluene-d8	*101*			*75.0-131*
(S) 4-Bromofluorobenzene	*92.8*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*100*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3569782-1 09/12/20 10:03 • (LCSD) R3569782-2 09/12/20 10:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.625	0.553	0.547	88.5	87.5	10.0-160			1.09	31
Acrylonitrile	0.625	0.572	0.654	91.5	105	45.0-153			13.4	22
Benzene	0.125	0.115	0.114	92.0	91.2	70.0-123			0.873	20
Bromobenzene	0.125	0.130	0.124	104	99.2	73.0-121			4.72	20
Bromodichloromethane	0.125	0.125	0.120	100	96.0	73.0-121			4.08	20
Bromoform	0.125	0.126	0.124	101	99.2	64.0-132			1.60	20
Bromomethane	0.125	0.110	0.0989	88.0	79.1	56.0-147			10.6	20
1,3-Butadiene	0.125	0.107	0.104	85.6	83.2	32.0-150			2.84	20
n-Butylbenzene	0.125	0.104	0.103	83.2	82.4	68.0-135			0.966	20
sec-Butylbenzene	0.125	0.115	0.112	92.0	89.6	74.0-130			2.64	20
tert-Butylbenzene	0.125	0.119	0.116	95.2	92.8	75.0-127			2.55	20
Carbon disulfide	0.125	0.121	0.116	96.8	92.8	56.0-133			4.22	20
Carbon tetrachloride	0.125	0.140	0.136	112	109	66.0-128			2.90	20
Chlorobenzene	0.125	0.122	0.119	97.6	95.2	76.0-128			2.49	20
Chlorodibromomethane	0.125	0.132	0.132	106	106	74.0-127			0.000	20
Chloroethane	0.125	0.116	0.110	92.8	88.0	61.0-134			5.31	20
Chloroform	0.125	0.122	0.120	97.6	96.0	72.0-123			1.65	20
Chloromethane	0.125	0.131	0.134	105	107	51.0-138			2.26	20
Cyclohexane	0.125	0.122	0.116	97.6	92.8	70.0-130			5.04	20
2-Chlorotoluene	0.125	0.116	0.121	92.8	96.8	75.0-124			4.22	20
4-Chlorotoluene	0.125	0.110	0.104	88.0	83.2	75.0-124			5.61	20
1,2-Dibromo-3-Chloropropane	0.125	0.108	0.106	86.4	84.8	59.0-130			1.87	20
1,2-Dibromoethane	0.125	0.118	0.115	94.4	92.0	74.0-128			2.58	20
Dibromomethane	0.125	0.120	0.121	96.0	96.8	75.0-122			0.830	20
1,2-Dichlorobenzene	0.125	0.104	0.102	83.2	81.6	76.0-124			1.94	20
1,3-Dichlorobenzene	0.125	0.116	0.112	92.8	89.6	76.0-125			3.51	20
1,4-Dichlorobenzene	0.125	0.110	0.108	88.0	86.4	77.0-121			1.83	20
Dichlorodifluoromethane	0.125	0.168	0.175	134	140	43.0-156			4.08	20
1,1-Dichloroethane	0.125	0.126	0.122	101	97.6	70.0-127			3.23	20
1,2-Dichloroethane	0.125	0.115	0.114	92.0	91.2	65.0-131			0.873	20
1,1-Dichloroethene	0.125	0.134	0.127	107	102	65.0-131			5.36	20
cis-1,2-Dichloroethene	0.125	0.112	0.101	89.6	80.8	73.0-125			10.3	20
trans-1,2-Dichloroethene	0.125	0.122	0.109	97.6	87.2	71.0-125			11.3	20
1,2-Dichloropropane	0.125	0.122	0.121	97.6	96.8	74.0-125			0.823	20
1,1-Dichloropropene	0.125	0.129	0.125	103	100	73.0-125			3.15	20
1,3-Dichloropropane	0.125	0.111	0.114	88.8	91.2	80.0-125			2.67	20
cis-1,3-Dichloropropene	0.125	0.129	0.125	103	100	76.0-127			3.15	20
trans-1,3-Dichloropropene	0.125	0.125	0.119	100	95.2	73.0-127			4.92	20
2,2-Dichloropropane	0.125	0.152	0.137	122	110	59.0-135			10.4	20
Dicyclopentadiene	0.125	0.114	0.111	91.2	88.8	71.0-132			2.67	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3569782-1 09/12/20 10:03 • (LCSD) R3569782-2 09/12/20 10:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Di-isopropyl ether	0.125	0.128	0.129	102	103	60.0-136			0.778	20
Ethylbenzene	0.125	0.121	0.113	96.8	90.4	74.0-126			6.84	20
4-Ethyltoluene	0.125	0.124	0.115	99.2	92.0	71.0-129			7.53	20
Hexachloro-1,3-butadiene	0.125	0.0855	0.0890	68.4	71.2	57.0-150			4.01	20
n-Hexane	0.125	0.137	0.138	110	110	55.0-137			0.727	20
Isopropylbenzene	0.125	0.120	0.116	96.0	92.8	72.0-127			3.39	20
p-Isopropyltoluene	0.125	0.111	0.110	88.8	88.0	72.0-133			0.905	20
2-Butanone (MEK)	0.625	0.518	0.443	82.9	70.9	30.0-160			15.6	24
Methyl Cyclohexane	0.125	0.140	0.133	112	106	67.0-129			5.13	20
Methylene Chloride	0.125	0.109	0.109	87.2	87.2	68.0-123			0.000	20
4-Methyl-2-pentanone (MIBK)	0.625	0.602	0.589	96.3	94.2	56.0-143			2.18	20
Methyl tert-butyl ether	0.125	0.117	0.119	93.6	95.2	66.0-132			1.69	20
Naphthalene	0.125	0.0804	0.0861	64.3	68.9	59.0-130			6.85	20
Propene	0.125	0.122	0.109	97.6	87.2	10.0-160			11.3	20
n-Propylbenzene	0.125	0.120	0.112	96.0	89.6	74.0-126			6.90	20
Styrene	0.125	0.111	0.111	88.8	88.8	72.0-127			0.000	20
1,1,1,2-Tetrachloroethane	0.125	0.117	0.119	93.6	95.2	74.0-129			1.69	20
1,1,2,2-Tetrachloroethane	0.125	0.105	0.101	84.0	80.8	68.0-128			3.88	20
Tetrachloroethene	0.125	0.131	0.123	105	98.4	70.0-136			6.30	20
Toluene	0.125	0.115	0.109	92.0	87.2	75.0-121			5.36	20
1,1,2-Trichlorotrifluoroethane	0.125	0.140	0.142	112	114	61.0-139			1.42	20
1,2,3-Trichlorobenzene	0.125	0.0757	0.0829	60.6	66.3	59.0-139			9.08	20
1,2,4-Trichlorobenzene	0.125	0.0768	0.0822	61.4	65.8	62.0-137	L2		6.79	20
1,1,1-Trichloroethane	0.125	0.131	0.138	105	110	69.0-126			5.20	20
1,1,2-Trichloroethane	0.125	0.122	0.123	97.6	98.4	78.0-123			0.816	20
Trichloroethene	0.125	0.135	0.131	108	105	76.0-126			3.01	20
Trichlorofluoromethane	0.125	0.149	0.138	119	110	61.0-142			7.67	20
1,2,3-Trichloropropane	0.125	0.119	0.113	95.2	90.4	67.0-129			5.17	20
1,2,3-Trimethylbenzene	0.125	0.104	0.103	83.2	82.4	74.0-124			0.966	20
1,2,4-Trimethylbenzene	0.125	0.109	0.105	87.2	84.0	70.0-126			3.74	20
1,3,5-Trimethylbenzene	0.125	0.116	0.111	92.8	88.8	73.0-127			4.41	20
Vinyl chloride	0.125	0.102	0.114	81.6	91.2	63.0-134			11.1	20
Xylenes, Total	0.375	0.325	0.337	86.7	89.9	72.0-127			3.63	20
(S) Toluene-d8				*99.7*	*97.9*	*75.0-131*				
(S) 4-Bromofluorobenzene				*95.1*	*95.5*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*105*	*104*	*70.0-130*				

L1260405-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1260405-02 09/12/20 13:17 • (MS) R3569782-4 09/12/20 18:41 • (MSD) R3569782-5 09/12/20 19:00

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acetone	4.35	ND	ND	ND	131	101	8	10.0-160			25.2	40
Acrylonitrile	4.35	ND	5.79	3.85	133	88.5	8	10.0-160		R5	40.2	40
Benzene	0.870	ND	0.621	0.741	71.4	85.2	8	10.0-149			17.6	37
Bromobenzene	0.870	ND	ND	ND	79.9	88.2	8	10.0-156			9.85	38
Bromodichloromethane	0.870	ND	0.697	0.777	80.1	89.3	8	10.0-143			10.9	37
Bromoform	0.870	ND	ND	ND	94.8	86.0	8	10.0-146			9.79	36
Bromomethane	0.870	ND	ND	ND	73.3	105	8	10.0-149			35.9	38
n-Butylbenzene	0.870	ND	ND	ND	81.0	86.3	8	10.0-160			6.32	40
sec-Butylbenzene	0.870	ND	ND	ND	75.3	84.5	8	10.0-159			11.5	39
tert-Butylbenzene	0.870	ND	ND	ND	71.0	83.1	8	10.0-156			15.7	39
Carbon tetrachloride	0.870	ND	ND	ND	79.0	107	8	10.0-145			30.3	37
Chlorobenzene	0.870	ND	0.662	0.746	76.1	85.7	8	10.0-152			11.9	39
Chlorodibromomethane	0.870	ND	0.785	0.793	90.2	91.1	8	10.0-146			1.01	37
Chloroethane	0.870	ND	ND	ND	79.7	108	8	10.0-146			30.1	40
Chloroform	0.870	ND	0.664	0.788	76.3	90.6	8	10.0-146			17.1	37
Chloromethane	0.870	ND	ND	ND	73.3	102	8	10.0-159			32.7	37
2-Chlorotoluene	0.870	ND	0.623	0.699	71.6	80.3	8	10.0-159			11.5	38
4-Chlorotoluene	0.870	ND	ND	ND	65.5	76.8	8	10.0-155			15.8	39
1,2-Dibromo-3-Chloropropane	0.870	ND	ND	ND	107	96.6	8	10.0-151			10.2	39
1,2-Dibromoethane	0.870	ND	0.763	0.728	87.7	83.7	8	10.0-148			4.69	34
Dibromomethane	0.870	ND	ND	ND	79.0	90.5	8	10.0-147			13.6	35
1,2-Dichlorobenzene	0.870	ND	ND	ND	76.4	78.2	8	10.0-155			2.23	37
1,3-Dichlorobenzene	0.870	ND	ND	ND	75.9	82.3	8	10.0-153			8.14	38
1,4-Dichlorobenzene	0.870	ND	ND	ND	72.2	76.1	8	10.0-151			5.27	38
Dichlorodifluoromethane	0.870	ND	0.854	1.18	98.2	136	8	10.0-160			32.1	35
1,1-Dichloroethane	0.870	ND	0.690	0.812	79.3	93.3	8	10.0-147			16.2	37
1,2-Dichloroethane	0.870	ND	0.721	0.769	82.9	88.4	8	10.0-148			6.44	35
1,1-Dichloroethene	0.870	ND	0.655	0.865	75.3	99.4	8	10.0-155			27.6	37
cis-1,2-Dichloroethene	0.870	ND	0.637	0.712	73.2	81.8	8	10.0-149			11.1	37
trans-1,2-Dichloroethene	0.870	ND	ND	ND	66.4	78.3	8	10.0-150			16.4	37
1,2-Dichloropropane	0.870	ND	ND	ND	76.9	87.5	8	10.0-148			12.9	37
1,1-Dichloropropene	0.870	ND	0.597	0.814	68.6	93.6	8	10.0-153			30.8	35
1,3-Dichloropropane	0.870	ND	ND	ND	81.5	79.1	8	10.0-154			3.01	35
cis-1,3-Dichloropropene	0.870	ND	0.718	0.773	82.5	88.9	8	10.0-151			7.38	37
trans-1,3-Dichloropropene	0.870	ND	ND	ND	85.2	88.2	8	10.0-148			3.45	37
2,2-Dichloropropane	0.870	ND	0.621	0.845	71.4	97.1	8	10.0-138			30.6	36
Di-isopropyl ether	0.870	ND	0.746	0.845	85.7	97.1	8	10.0-147			12.4	36
Ethylbenzene	0.870	ND	0.635	0.730	73.0	83.9	8	10.0-160			13.9	38
1,3-Butadiene	0.870	ND	ND	ND	61.4	86.4	8	10.0-137			33.9	36
Hexachloro-1,3-butadiene	0.870	ND	ND	ND	94.9	113	8	10.0-160			17.5	40

L1260405-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1260405-02 09/12/20 13:17 • (MS) R3569782-4 09/12/20 18:41 • (MSD) R3569782-5 09/12/20 19:00

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Carbon disulfide	0.870	ND	ND	ND	62.9	82.3	8	10.0-145			26.8	39
Isopropylbenzene	0.870	ND	0.670	0.769	77.0	88.4	8	10.0-155			13.8	38
p-Isopropyltoluene	0.870	ND	ND	ND	98.2	110	8	10.0-160			11.7	40
2-Butanone (MEK)	4.35	ND	ND	ND	92.2	85.7	8	10.0-160			7.24	40
Methylene Chloride	0.870	ND	ND	ND	72.2	72.0	8	10.0-141			0.319	37
4-Methyl-2-pentanone (MIBK)	4.35	ND	ND	ND	101	88.5	8	10.0-160			13.6	35
Methyl tert-butyl ether	0.870	ND	0.833	0.846	95.7	97.2	8	11.0-147			1.55	35
Cyclohexane	0.870	ND	0.550	0.722	63.2	83.0	8	10.0-157			27.0	32
Naphthalene	0.870	ND	ND	ND	97.0	107	8	10.0-160			9.37	36
n-Propylbenzene	0.870	ND	ND	ND	71.4	84.7	8	10.0-158			17.1	38
Styrene	0.870	ND	ND	ND	72.2	77.8	8	10.0-160			7.51	40
1,1,1,2-Tetrachloroethane	0.870	ND	0.705	0.749	81.0	86.1	8	10.0-149			6.05	39
1,1,2,2-Tetrachloroethane	0.870	ND	0.610	0.575	70.1	66.1	8	10.0-160			5.91	35
Tetrachloroethene	0.870	ND	0.641	0.790	73.7	90.8	8	10.0-156			20.8	39
Toluene	0.870	ND	ND	ND	67.8	78.7	8	10.0-156			14.9	38
1,1,2-Trichlorotrifluoroethane	0.870	ND	0.667	0.915	76.7	105	8	10.0-160			31.4	36
1,2,3-Trichlorobenzene	0.870	ND	ND	ND	123	86.7	8	10.0-160			34.6	40
1,2,4-Trichlorobenzene	0.870	ND	ND	ND	79.4	65.4	8	10.0-160			19.4	40
1,1,1-Trichloroethane	0.870	ND	0.660	0.899	75.9	103	8	10.0-144			30.7	35
1,1,2-Trichloroethane	0.870	ND	0.771	0.737	88.6	84.7	8	10.0-160			4.51	35
Trichloroethene	0.870	ND	0.830	1.01	95.4	116	8	10.0-156			19.6	38
Trichlorofluoromethane	0.870	ND	0.614	0.781	70.6	89.8	8	10.0-160			23.9	40
1,2,3-Trichloropropane	0.870	ND	ND	ND	75.5	78.0	8	10.0-156			3.29	35
1,2,3-Trimethylbenzene	0.870	ND	ND	ND	68.3	72.3	8	10.0-160			3.70	36
1,2,4-Trimethylbenzene	0.870	ND	ND	ND	86.0	95.1	8	10.0-160			10.0	36
1,3,5-Trimethylbenzene	0.870	ND	ND	ND	81.0	94.6	8	10.0-160			15.4	38
Dicyclopentadiene	0.870	ND	ND	ND	68.5	79.3	8	12.0-152			14.6	34
Vinyl chloride	0.870	ND	0.567	0.835	65.2	96.0	8	10.0-160		R5	38.2	37
Xylenes, Total	2.61	ND	1.91	2.18	73.2	83.5	8	10.0-160			13.2	38
4-Ethyltoluene	0.870	ND	ND	ND	77.4	89.4	8	10.0-156			14.5	32
n-Hexane	0.870	ND	ND	ND	83.7	97.0	8	10.0-157			14.8	37
Methyl Cyclohexane	0.870	ND	ND	ND	81.5	104	8	10.0-160			24.0	33
Propene	0.870	ND	ND	ND	56.1	94.5	8	10.0-160		R5	51.0	35
(S) Toluene-d8					*96.5*	*94.9*		*75.0-131*				
(S) 4-Bromofluorobenzene					*102*	*99.7*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*103*	*107*		*70.0-130*				

Sample Narrative:

OS: Non-target compounds too high to run at a lower dilution.

Method Blank (MB)

(MB) R3570218-1 09/14/20 11:18

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
2,4-D	U		0.00702	0.0700
Dalapon	U		0.0113	0.0700
2,4-DB	U		0.0297	0.0700
Dicamba	U		0.0157	0.0700
Dichloroprop	U		0.0245	0.0700
Dinoseb	U		0.00697	0.0700
MCPA	U		0.443	6.50
MCPP	U		0.367	6.50
2,4,5-T	U		0.00852	0.0700
2,4,5-TP (Silvex)	U		0.0107	0.0700
(S) 2,4-Dichlorophenyl Acetic Acid	*47.1*			*22.0-132*

Laboratory Control Sample (LCS)

(LCS) R3570218-2 09/14/20 11:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
2,4-D	0.167	0.0905	54.2	40.0-120	
Dalapon	0.167	0.0811	48.6	15.0-120	
2,4-DB	0.167	0.0812	48.6	25.0-143	
Dicamba	0.167	0.0942	56.4	43.0-120	
Dichloroprop	0.167	0.0989	59.2	32.0-129	
Dinoseb	0.167	0.0112	6.71	10.0-120	L2
MCPA	1.67	1.83	110	31.0-121	
MCPP	1.67	1.05	62.9	28.0-133	
2,4,5-T	0.167	0.0895	53.6	41.0-120	
2,4,5-TP (Silvex)	0.167	0.0937	56.1	42.0-120	
(S) 2,4-Dichlorophenyl Acetic Acid			*50.4*	*22.0-132*	

Method Blank (MB)

(MB) R3569594-1 09/11/20 22:35

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Aldrin	U		0.00376	0.0200
Alpha BHC	U		0.00368	0.0200
Beta BHC	U		0.00379	0.0200
Delta BHC	U		0.00346	0.0200
Gamma BHC	U		0.00344	0.0200
4,4-DDD	U		0.00370	0.0200
4,4-DDE	U		0.00366	0.0200
4,4-DDT	U		0.00627	0.0200
Dieldrin	U		0.00344	0.0200
Endosulfan I	U		0.00363	0.0200
Endosulfan II	U		0.00335	0.0200
Endosulfan sulfate	U		0.00364	0.0200
Endrin	U		0.00350	0.0200
Endrin aldehyde	U		0.00339	0.0200
Endrin ketone	U		0.00711	0.0200
Heptachlor	U		0.00428	0.0200
Heptachlor epoxide	U		0.00339	0.0200
Hexachlorobenzene	U		0.00346	0.0200
Methoxychlor	U		0.00484	0.0200
Chlordane	U		0.103	0.300
Toxaphene	U		0.124	0.400
(S) Decachlorobiphenyl	*72.7*			*10.0-135*
(S) Tetrachloro-m-xylene	*72.7*			*10.0-139*

Laboratory Control Sample (LCS)

(LCS) R3569594-2 09/11/20 22:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aldrin	0.0666	0.0471	70.7	34.0-136	
Alpha BHC	0.0666	0.0446	67.0	34.0-139	
Beta BHC	0.0666	0.0439	65.9	34.0-133	
Delta BHC	0.0666	0.0453	68.0	34.0-135	
Gamma BHC	0.0666	0.0462	69.4	34.0-136	
4,4-DDD	0.0666	0.0402	60.4	33.0-141	
4,4-DDE	0.0666	0.0422	63.4	34.0-134	
4,4-DDT	0.0666	0.0413	62.0	30.0-143	
Dieldrin	0.0666	0.0412	61.9	35.0-137	
Endosulfan I	0.0666	0.0439	65.9	34.0-134	

Laboratory Control Sample (LCS)

(LCS) R3569594-2 09/11/20 22:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Endosulfan II	0.0666	0.0418	62.8	35.0-132	
Endosulfan sulfate	0.0666	0.0405	60.8	35.0-132	
Endrin	0.0666	0.0448	67.3	34.0-137	
Endrin aldehyde	0.0666	0.0385	57.8	23.0-121	
Endrin ketone	0.0666	0.0392	58.9	35.0-144	
Heptachlor	0.0666	0.0505	75.8	36.0-141	
Heptachlor epoxide	0.0666	0.0455	68.3	36.0-134	
Hexachlorobenzene	0.0666	0.0493	74.0	33.0-129	
Methoxychlor	0.0666	0.0449	67.4	28.0-150	
(S) Decachlorobiphenyl			*69.7*	*10.0-135*	
(S) Tetrachloro-m-xylene			*70.0*	*10.0-139*	

Method Blank (MB)

(MB) R3569694-1 09/12/20 12:35

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
PCB 1016	U		0.0118	0.0340
PCB 1221	U		0.0118	0.0340
PCB 1232	U		0.0118	0.0340
PCB 1242	U		0.0118	0.0340
PCB 1248	U		0.00738	0.0170
PCB 1254	U		0.00738	0.0170
PCB 1260	U		0.00738	0.0170
(S) Decachlorobiphenyl	*85.4*			*10.0-135*
(S) Tetrachloro-m-xylene	*83.6*			*10.0-139*

Laboratory Control Sample (LCS)

(LCS) R3569694-2 09/12/20 12:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
PCB 1260	0.167	0.126	75.4	37.0-145	
PCB 1016	0.167	0.128	76.6	36.0-141	
(S) Decachlorobiphenyl			*83.6*	*10.0-135*	
(S) Tetrachloro-m-xylene			*80.2*	*10.0-139*	

Method Blank (MB)

(MB) R3569813-2 09/13/20 08:43

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	*69.3*			*14.0-149*
(S) 2-Fluorobiphenyl	*84.4*			*34.0-125*
(S) p-Terphenyl-d14	*89.9*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3569813-1 09/13/20 08:19

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0601	75.1	50.0-126	
Acenaphthene	0.0800	0.0596	74.5	50.0-120	
Acenaphthylene	0.0800	0.0620	77.5	50.0-120	
Benzo(a)anthracene	0.0800	0.0598	74.8	45.0-120	
Benzo(a)pyrene	0.0800	0.0608	76.0	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0574	71.8	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0638	79.8	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0643	80.4	49.0-125	
Chrysene	0.0800	0.0604	75.5	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0658	82.3	47.0-125	
Fluoranthene	0.0800	0.0627	78.4	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3569813-1 09/13/20 08:19

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0630	78.8	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0673	84.1	46.0-125	
Naphthalene	0.0800	0.0614	76.8	50.0-120	
Phenanthrene	0.0800	0.0595	74.4	47.0-120	
Pyrene	0.0800	0.0590	73.8	43.0-123	
1-Methylnaphthalene	0.0800	0.0636	79.5	51.0-121	
2-Methylnaphthalene	0.0800	0.0624	78.0	50.0-120	
2-Chloronaphthalene	0.0800	0.0586	73.3	50.0-120	
(S) Nitrobenzene-d5			*70.5*	*14.0-149*	
(S) 2-Fluorobiphenyl			*84.2*	*34.0-125*	
(S) p-Terphenyl-d14			*90.0*	*23.0-120*	

INTERNAL STANDARD SUMMARY

Instrument: VOCGC5 • File ID: 0913_35-1

09/13/20 23:23

Sample ID	File ID	FLUOROBENZENE (FID) Response	FLUOROBENZENE (PID) Response
Standard	0913_35-1	358201	1140311
Upper Limit		617996	2206906
Lower Limit		154499	551727
LCS R3570226-1 WG1542163 1x	0913_37B	374046	1150153
BLANK R3570226-2 WG1542163 1x	0913_40B	319983	1158910
L1260089-01 WG1542163 25x	0913_43	296377	1043575
MS R3570226-3 WG1542163 25x	0913_59	389097	1220029
MSD R3570226-4 WG1542163 25x	0913_60	348696	1110016
LCSD R3570226-5 WG1542163 1x	0913_62B	365879	1148883

INTERNAL STANDARD SUMMARY

Instrument: VOCMS54 • File ID: 0912_02

09/12/20 10:03

Sample ID	File ID	8260-FLUOROBENZENE Response	8260-CHLOROBENZENE-D5 Response	8260-1,4-DICHLOROBENZENE-D4 Response
Standard	0912_02	526322.60	226947	248396
Upper Limit		1052645	453894	496792
Lower Limit		263161	113474	124198
LCS R3569782-1 WG1541910 1x	0912_02LCS	526322.60	226947	248396
LCSD R3569782-2 WG1541910 1x	0912_03	534088	232048.90	262984.10
BLANK R3569782-3 WG1541910 1x	0912_06	510815.90	221039.90	232427.80
L1260089-01 WG1541910 1x	0912_07	712897.60	296256.60	325113.50
MS R3569782-4 WG1541910 8x	0912_27	573630.70	248030.30	304522.10
MSD R3569782-5 WG1541910 8x	0912_28	544454.60	245203.90	279859.60

INTERNAL STANDARD SUMMARY

Instrument: SVGC30 • File ID: AVG

Sample ID	File ID	1-BROMO-2-DINITROBENZENE Response
Standard	AVG	1002255300
Upper Limit		1503383000
Lower Limit		501127500
BLANK R3569594-1 WG1541237 1x	0911_09	1110280000
LCS R3569594-2 WG1541237 1x	0911_10	1131283000
L1260089-01 WG1541237 1x	0911_25	1115868000

Instrument: SVGC28 • File ID: AVG

Sample ID	File ID	1-BROMO-2-DINITROBENZENE Response
Standard	AVG	1068945714
Upper Limit		1603419000
Lower Limit		534473000
BLANK R3569694-1 WG1541237 1x	0912_16	1063536000
LCS R3569694-2 WG1541237 1x	0912_17	1061284000
L1260089-01 WG1541237 1x	0912_55	1026282000

INTERNAL STANDARD SUMMARY

Instrument: BNAMS18 • File ID: 0913_03

09/13/20 07:52

Sample ID	File ID	NAPHTHALENE-D8 Response	ACENAPHTHENE-D10 Response	PHENANTHRENE-D10 Response	CHRYSENE-D12 Response	PERYLENE-D12 Response
Standard	0913_03	131225	80138	142698	134037	130666
Upper Limit		262450	160276	285396	268074	261332
Lower Limit		65613	40069	71349	67019	65333
LCS R3569813-1 WG1541820 1x	0913_04	127244	77105	136159	129706	124364
BLANK R3569813-2 WG1541820 1x	0913_05	125045	73503	130692	121563	117479
L1260089-01 WG1541820 1x	0913_06	119547	70395	125545	117876	112998

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5 Sr
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7 Is
8 Gl
9 Al
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Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting level (MRL) but above MDL.
L2	The associated blank spike recovery was below laboratory acceptance limits.
R5	MS/MSD RPD exceeded the laboratory acceptance limit. Recovery met acceptance criteria.

ACCREDITATIONS & LOCATIONS

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

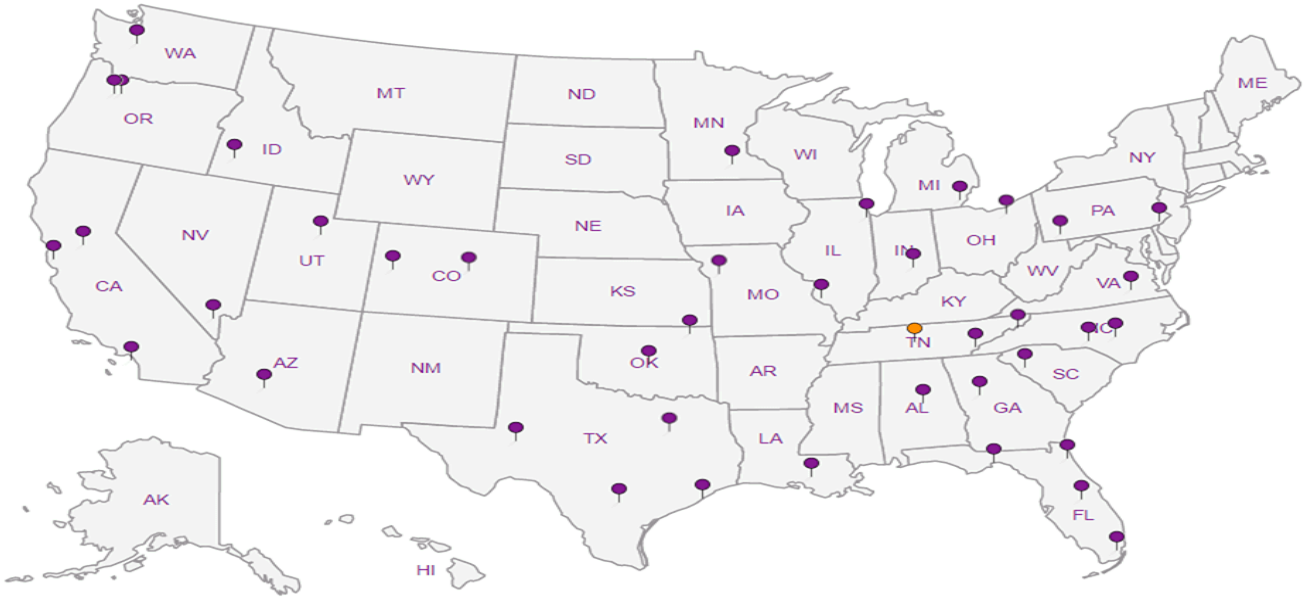
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



ERI
2202 W. MEDTRONIC WAY #108
TEMPE, AZ 85281

Billing Information: SAME

Pres Chk

Report to: ~~APS PRESCOTT SUB BACKFILL~~

Email To: ERIC SMITH

Project Description: APS PRESCOTT SUB BACKFILL

City/State Collected: PRESCOTT AZ

Phone:
Fax:

Client Project # 20209125

Lab Project #

Collected by (print): E. SMITH

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
X Two Day ___ 10 Day (Rad Only)
___ Three Day

Date Results Needed

Quote #

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

Pace Analytical®
National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 1260089

Table F018

Acctnum: ENVRESTAZ

Template:

Prelogin:

TSR:

PB:

Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	RCRA 8 METALS	TPH 8015 GRO	VOC 8260B	PAH 8270 SIM	PCB 8082	PESTICIDE 8081	HERBICIDE 8151			Remarks	Sample # (lab only)
GLASS SEED A07	GRAB	SS	—	09/09/20	1520	2	X	X	X	X	X	X	X				01

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other _____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____

Tracking # 1411 1762 0937

Sample Receipt Checklist
COC Seal Present/Intact: __NP ✓Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeOH TBR
	09/09/20	1657		
Relinquished by : (Signature)	**Date:**	**Time:**	**Received by: (Signature)**	**Temp: °C Bottles Received:**
	9/9/20	1800	FedEx	15.1-4 2
Relinquished by : (Signature)	**Date:**	**Time:**	**Received for lab by: (Signature)**	**Date: Time:**
			Olivia Lucas	9/10/20 930

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

September 14, 2020

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 Sc

Environmental Response, Inc.

Sample Delivery Group:	L1260095
Samples Received:	09/10/2020
Project Number:	20-209125
Description:	APS Prescott Sub Backfill
Report To:	Eric Smith 2202 W. Medtronic Way, Ste 108 Tempe, AZ 85281

Entire Report Reviewed By: Daphne R Richards

Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

APPROVED
By Greg Laney at 7:08 am, Jul 29, 2020

APS Prescott Substation Remediation / Submittal 015 Specification 31 23 23
Reviewed, checked and approved for compliance with Contract Documents

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

July 23, 2020

Revised Report

1 Cp
2 Tc
3 Ss
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5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 Sc

Environmental Response, Inc.

Sample Delivery Group:	L1240613
Samples Received:	07/17/2020
Project Number:	20-209125
Description:	APS Prescott Sub Backfill
Report To:	Eric Smith 2202 W. Medtronic Way, Ste 108 Tempe, AZ 85281

Entire Report Reviewed By: Daphne R Richards

Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

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APS GLASSFORD AB 01 L1240613-01 Solid

Collected by	Collected date/time	Received date/time
E. Smith	07/16/20 11:30	07/17/20 08:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Mercury by Method 7471B	WG1511801	1	07/20/20 09:16	07/20/20 18:47	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1511404	1	07/19/20 17:04	07/21/20 00:03	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1511166	2.98	07/16/20 11:30	07/18/20 06:40	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015AZR1	WG1512803	1	07/20/20 23:12	07/21/20 14:36	AEG	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151	WG1511505	1	07/18/20 22:10	07/20/20 15:40	LEL	Mt. Juliet, TN
Pesticides (GC) by Method 8081B	WG1511157	1	07/21/20 15:04	07/22/20 00:09	MTJ	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1510960	1	07/21/20 14:16	07/21/20 22:38	MTJ	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1512284	1	07/21/20 13:01	07/21/20 20:22	AAT	Mt. Juliet, TN

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All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne R Richards

Daphne Richards
Project Manager

Report Revision History

Level II Report - Version 1: 07/23/20 10:07

Mercury by Method 7471B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0400	1	07/20/2020 18:47	WG1511801

Metals (ICP) by Method 6010D

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.98		2.00	1	07/21/2020 00:03	WG1511404
Barium	77.6		0.500	1	07/21/2020 00:03	WG1511404
Cadmium	ND		0.500	1	07/21/2020 00:03	WG1511404
Chromium	30.9		1.00	1	07/21/2020 00:03	WG1511404
Lead	7.92		0.500	1	07/21/2020 00:03	WG1511404
Selenium	ND		2.00	1	07/21/2020 00:03	WG1511404
Silver	ND		1.00	1	07/21/2020 00:03	WG1511404

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND		3.73	2.98	07/18/2020 06:40	WG1511166
Acrylonitrile	ND		0.931	2.98	07/18/2020 06:40	WG1511166
Benzene	ND		0.0745	2.98	07/18/2020 06:40	WG1511166
Bromobenzene	ND		0.931	2.98	07/18/2020 06:40	WG1511166
Bromodichloromethane	ND		0.186	2.98	07/18/2020 06:40	WG1511166
Bromoform	ND		1.86	2.98	07/18/2020 06:40	WG1511166
Bromomethane	ND		0.931	2.98	07/18/2020 06:40	WG1511166
1,3-Butadiene	ND		1.86	2.98	07/18/2020 06:40	WG1511166
n-Butylbenzene	ND		0.931	2.98	07/18/2020 06:40	WG1511166
sec-Butylbenzene	ND		0.931	2.98	07/18/2020 06:40	WG1511166
tert-Butylbenzene	ND		0.373	2.98	07/18/2020 06:40	WG1511166
Carbon disulfide	ND		0.931	2.98	07/18/2020 06:40	WG1511166
Carbon tetrachloride	ND		0.373	2.98	07/18/2020 06:40	WG1511166
Chlorobenzene	ND		0.186	2.98	07/18/2020 06:40	WG1511166
Chlorodibromomethane	ND		0.186	2.98	07/18/2020 06:40	WG1511166
Chloroethane	ND		0.373	2.98	07/18/2020 06:40	WG1511166
Chloroform	ND		0.186	2.98	07/18/2020 06:40	WG1511166
Chloromethane	ND		0.931	2.98	07/18/2020 06:40	WG1511166
2-Chlorotoluene	ND		0.186	2.98	07/18/2020 06:40	WG1511166
4-Chlorotoluene	ND		0.373	2.98	07/18/2020 06:40	WG1511166
Cyclohexane	ND		0.186	2.98	07/18/2020 06:40	WG1511166
1,2-Dibromo-3-Chloropropane	ND		1.86	2.98	07/18/2020 06:40	WG1511166
1,2-Dibromoethane	ND		0.186	2.98	07/18/2020 06:40	WG1511166
Dibromomethane	ND		0.373	2.98	07/18/2020 06:40	WG1511166
1,2-Dichlorobenzene	ND		0.373	2.98	07/18/2020 06:40	WG1511166
1,3-Dichlorobenzene	ND		0.373	2.98	07/18/2020 06:40	WG1511166
1,4-Dichlorobenzene	ND		0.373	2.98	07/18/2020 06:40	WG1511166
Dichlorodifluoromethane	ND		0.186	2.98	07/18/2020 06:40	WG1511166
1,1-Dichloroethane	ND		0.186	2.98	07/18/2020 06:40	WG1511166
1,2-Dichloroethane	ND		0.186	2.98	07/18/2020 06:40	WG1511166
1,1-Dichloroethene	ND		0.186	2.98	07/18/2020 06:40	WG1511166
cis-1,2-Dichloroethene	ND		0.186	2.98	07/18/2020 06:40	WG1511166
trans-1,2-Dichloroethene	ND		0.373	2.98	07/18/2020 06:40	WG1511166
1,2-Dichloropropane	ND		0.373	2.98	07/18/2020 06:40	WG1511166
1,1-Dichloropropene	ND		0.186	2.98	07/18/2020 06:40	WG1511166
1,3-Dichloropropane	ND		0.373	2.98	07/18/2020 06:40	WG1511166
cis-1,3-Dichloropropene	ND		0.186	2.98	07/18/2020 06:40	WG1511166
trans-1,3-Dichloropropene	ND		0.373	2.98	07/18/2020 06:40	WG1511166
2,2-Dichloropropane	ND		0.186	2.98	07/18/2020 06:40	WG1511166

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Dicyclopentadiene	ND		0.931	2.98	07/18/2020 06:40	WG1511166
Di-isopropyl ether	ND		0.0745	2.98	07/18/2020 06:40	WG1511166
Ethylbenzene	ND		0.186	2.98	07/18/2020 06:40	WG1511166
4-Ethyltoluene	ND		0.373	2.98	07/18/2020 06:40	WG1511166
Hexachloro-1,3-butadiene	ND		1.86	2.98	07/18/2020 06:40	WG1511166
n-Hexane	ND		0.373	2.98	07/18/2020 06:40	WG1511166
Isopropylbenzene	ND		0.186	2.98	07/18/2020 06:40	WG1511166
p-Isopropyltoluene	ND		0.373	2.98	07/18/2020 06:40	WG1511166
2-Butanone (MEK)	ND		7.45	2.98	07/18/2020 06:40	WG1511166
Methylene Chloride	ND		1.86	2.98	07/18/2020 06:40	WG1511166
4-Methyl-2-pentanone (MIBK)	ND		1.86	2.98	07/18/2020 06:40	WG1511166
Methyl tert-butyl ether	ND		0.0745	2.98	07/18/2020 06:40	WG1511166
Methyl Cyclohexane	ND		0.373	2.98	07/18/2020 06:40	WG1511166
Naphthalene	ND		0.931	2.98	07/18/2020 06:40	WG1511166
Propene	ND		3.73	2.98	07/18/2020 06:40	WG1511166
n-Propylbenzene	ND		0.373	2.98	07/18/2020 06:40	WG1511166
Styrene	ND		0.931	2.98	07/18/2020 06:40	WG1511166
1,1,1,2-Tetrachloroethane	ND		0.186	2.98	07/18/2020 06:40	WG1511166
1,1,2,2-Tetrachloroethane	ND		0.186	2.98	07/18/2020 06:40	WG1511166
1,1,2-Trichlorotrifluoroethane	ND		0.186	2.98	07/18/2020 06:40	WG1511166
Tetrachloroethene	ND		0.186	2.98	07/18/2020 06:40	WG1511166
Toluene	ND		0.373	2.98	07/18/2020 06:40	WG1511166
1,2,3-Trichlorobenzene	ND		0.931	2.98	07/18/2020 06:40	WG1511166
1,2,4-Trichlorobenzene	ND		0.931	2.98	07/18/2020 06:40	WG1511166
1,1,1-Trichloroethane	ND		0.186	2.98	07/18/2020 06:40	WG1511166
1,1,2-Trichloroethane	ND		0.186	2.98	07/18/2020 06:40	WG1511166
Trichloroethene	ND		0.0745	2.98	07/18/2020 06:40	WG1511166
Trichlorofluoromethane	ND		0.186	2.98	07/18/2020 06:40	WG1511166
1,2,3-Trichloropropane	ND		0.931	2.98	07/18/2020 06:40	WG1511166
1,2,4-Trimethylbenzene	ND		0.373	2.98	07/18/2020 06:40	WG1511166
1,2,3-Trimethylbenzene	ND		0.373	2.98	07/18/2020 06:40	WG1511166
1,3,5-Trimethylbenzene	ND		0.373	2.98	07/18/2020 06:40	WG1511166
Vinyl chloride	ND		0.186	2.98	07/18/2020 06:40	WG1511166
Xylenes, Total	ND		0.484	2.98	07/18/2020 06:40	WG1511166
(S) Toluene-d8	*98.8*		*75.0-131*		*07/18/2020 06:40*	WG1511166
(S) 4-Bromofluorobenzene	*108*		*67.0-138*		*07/18/2020 06:40*	WG1511166
(S) 1,2-Dichloroethane-d4	*103*		*70.0-130*		*07/18/2020 06:40*	WG1511166

Sample Narrative:

L1240613-01 WG1511166: Dilution due to low sample volume.

Semi-Volatile Organic Compounds (GC) by Method 8015AZR1

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C22 Hydrocarbons	ND		30.0	1	07/21/2020 14:36	WG1512803
C22-C32 Hydrocarbons	ND		50.0	1	07/21/2020 14:36	WG1512803
(S) o-Terphenyl	*98.0*		*70.0-130*		*07/21/2020 14:36*	WG1512803

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
2,4-D	ND		0.0700	1	07/20/2020 15:40	WG1511505
Dalapon	ND		0.0700	1	07/20/2020 15:40	WG1511505
2,4-DB	ND		0.0700	1	07/20/2020 15:40	WG1511505
Dicamba	ND		0.0700	1	07/20/2020 15:40	WG1511505

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Dichloroprop	ND		0.0700	1	07/20/2020 15:40	WG1511505
Dinoseb	ND		0.0700	1	07/20/2020 15:40	WG1511505
MCPA	ND	L1	6.50	1	07/20/2020 15:40	WG1511505
MCPP	ND		6.50	1	07/20/2020 15:40	WG1511505
2,4,5-T	ND		0.0700	1	07/20/2020 15:40	WG1511505
2,4,5-TP (Silvex)	ND		0.0700	1	07/20/2020 15:40	WG1511505
(S) 2,4-Dichlorophenyl Acetic Acid	*45.5*		*22.0-132*		*07/20/2020 15:40*	WG1511505

Pesticides (GC) by Method 8081B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Aldrin	ND		0.0200	1	07/22/2020 00:09	WG1511157
Alpha BHC	ND		0.0200	1	07/22/2020 00:09	WG1511157
Beta BHC	ND		0.0200	1	07/22/2020 00:09	WG1511157
Delta BHC	ND		0.0200	1	07/22/2020 00:09	WG1511157
Gamma BHC	ND		0.0200	1	07/22/2020 00:09	WG1511157
Chlordane	ND		0.300	1	07/22/2020 00:09	WG1511157
4,4-DDD	ND		0.0200	1	07/22/2020 00:09	WG1511157
4,4-DDE	ND		0.0200	1	07/22/2020 00:09	WG1511157
4,4-DDT	ND		0.0200	1	07/22/2020 00:09	WG1511157
Dieldrin	ND		0.0200	1	07/22/2020 00:09	WG1511157
Endosulfan I	ND		0.0200	1	07/22/2020 00:09	WG1511157
Endosulfan II	ND		0.0200	1	07/22/2020 00:09	WG1511157
Endosulfan sulfate	ND		0.0200	1	07/22/2020 00:09	WG1511157
Endrin	ND		0.0200	1	07/22/2020 00:09	WG1511157
Endrin aldehyde	ND		0.0200	1	07/22/2020 00:09	WG1511157
Endrin ketone	ND		0.0200	1	07/22/2020 00:09	WG1511157
Hexachlorobenzene	ND		0.0200	1	07/22/2020 00:09	WG1511157
Heptachlor	ND		0.0200	1	07/22/2020 00:09	WG1511157
Heptachlor epoxide	ND		0.0200	1	07/22/2020 00:09	WG1511157
Methoxychlor	ND		0.0200	1	07/22/2020 00:09	WG1511157
Toxaphene	ND		0.400	1	07/22/2020 00:09	WG1511157
(S) Decachlorobiphenyl	*104*		*10.0-135*		*07/22/2020 00:09*	WG1511157
(S) Tetrachloro-m-xylene	*86.2*		*10.0-139*		*07/22/2020 00:09*	WG1511157

Polychlorinated Biphenyls (GC) by Method 8082 A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
PCB 1016	ND		0.0340	1	07/21/2020 22:38	WG1510960
PCB 1221	ND		0.0340	1	07/21/2020 22:38	WG1510960
PCB 1232	ND		0.0340	1	07/21/2020 22:38	WG1510960
PCB 1242	ND		0.0340	1	07/21/2020 22:38	WG1510960
PCB 1248	ND		0.0170	1	07/21/2020 22:38	WG1510960
PCB 1254	ND		0.0170	1	07/21/2020 22:38	WG1510960
PCB 1260	ND		0.0170	1	07/21/2020 22:38	WG1510960
(S) Decachlorobiphenyl	*87.5*		*10.0-135*		*07/21/2020 22:38*	WG1510960
(S) Tetrachloro-m-xylene	*90.4*		*10.0-139*		*07/21/2020 22:38*	WG1510960

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	07/21/2020 20:22	WG1512284
Acenaphthene	ND		0.00600	1	07/21/2020 20:22	WG1512284
Acenaphthylene	ND		0.00600	1	07/21/2020 20:22	WG1512284
Benzo(a)anthracene	ND		0.00600	1	07/21/2020 20:22	WG1512284

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzo(a)pyrene	ND		0.00600	1	07/21/2020 20:22	WG1512284
Benzo(b)fluoranthene	ND		0.00600	1	07/21/2020 20:22	WG1512284
Benzo(g,h,i)perylene	ND		0.00600	1	07/21/2020 20:22	WG1512284
Benzo(k)fluoranthene	ND		0.00600	1	07/21/2020 20:22	WG1512284
Chrysene	ND		0.00600	1	07/21/2020 20:22	WG1512284
Dibenz(a,h)anthracene	ND		0.00600	1	07/21/2020 20:22	WG1512284
Fluoranthene	ND		0.00600	1	07/21/2020 20:22	WG1512284
Fluorene	ND		0.00600	1	07/21/2020 20:22	WG1512284
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	07/21/2020 20:22	WG1512284
Naphthalene	ND		0.0200	1	07/21/2020 20:22	WG1512284
Phenanthrene	ND		0.00600	1	07/21/2020 20:22	WG1512284
Pyrene	ND		0.00600	1	07/21/2020 20:22	WG1512284
1-Methylnaphthalene	ND		0.0200	1	07/21/2020 20:22	WG1512284
2-Methylnaphthalene	ND		0.0200	1	07/21/2020 20:22	WG1512284
2-Chloronaphthalene	ND		0.0200	1	07/21/2020 20:22	WG1512284
(S) p-Terphenyl-d14	*79.3*		*23.0-120*		*07/21/2020 20:22*	WG1512284
(S) Nitrobenzene-d5	*71.7*		*14.0-149*		*07/21/2020 20:22*	WG1512284
(S) 2-Fluorobiphenyl	*78.6*		*34.0-125*		*07/21/2020 20:22*	WG1512284

Method Blank (MB)

(MB) R3551354-1 07/20/20 18:19

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Mercury	U		0.0180	0.0400

Laboratory Control Sample (LCS)

(LCS) R3551354-2 07/20/20 18:21

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.500	0.460	92.0	80.0-120	

L1239885-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1239885-10 07/20/20 18:24 • (MS) R3551354-3 07/20/20 18:26 • (MSD) R3551354-4 07/20/20 18:28

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.500	0.773	1.51	1.27	148	98.8	1	75.0-125	M1		17.7	20

Method Blank (MB)

(MB) R3551367-1 07/20/20 23:22

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.460	2.00
Barium	U		0.240	0.500
Cadmium	U		0.0810	0.500
Chromium	U		0.250	1.00
Lead	U		0.208	0.500
Selenium	U		0.617	2.00
Silver	U		0.228	1.00

Laboratory Control Sample (LCS)

(LCS) R3551367-2 07/20/20 23:24

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	98.3	98.3	80.0-120	
Barium	100	104	104	80.0-120	
Cadmium	100	99.8	99.8	80.0-120	
Chromium	100	101	101	80.0-120	
Lead	100	99.9	99.9	80.0-120	
Selenium	100	104	104	80.0-120	
Silver	20.0	19.1	95.7	80.0-120	

L1240715-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1240715-07 07/20/20 23:27 • (MS) R3551367-5 07/20/20 23:35 • (MSD) R3551367-6 07/20/20 23:38

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	ND	101	101	101	100	1	75.0-125			0.656	20
Barium	100	47.7	144	145	96.0	97.0	1	75.0-125			0.688	20
Cadmium	100	ND	107	108	107	108	1	75.0-125			1.16	20
Chromium	100	92.8	189	197	96.3	104	1	75.0-125			4.19	20
Lead	100	25.1	132	128	107	103	1	75.0-125			2.75	20
Selenium	100	ND	109	111	109	111	1	75.0-125			1.23	20
Silver	20.0	ND	20.5	20.8	102	104	1	75.0-125			1.39	20

Method Blank (MB)

(MB) R3551603-3 07/18/20 01:22

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acetone	U		0.913	1.25
Acrylonitrile	U		0.0903	0.313
Benzene	U		0.0117	0.0250
Bromobenzene	U		0.0225	0.313
Bromodichloromethane	U		0.0181	0.0625
Bromoform	U		0.0293	0.625
Bromomethane	U		0.0493	0.313
1,3-Butadiene	U		0.128	0.625
n-Butylbenzene	U		0.131	0.313
sec-Butylbenzene	U		0.0720	0.313
tert-Butylbenzene	U		0.0488	0.125
Carbon disulfide	U		0.0175	0.313
Carbon tetrachloride	U		0.0225	0.125
Chlorobenzene	U		0.00525	0.0625
Chlorodibromomethane	U		0.0153	0.0625
Chloroethane	U		0.0425	0.125
Chloroform	U		0.0258	0.0625
Chloromethane	U		0.109	0.313
Cyclohexane	U		0.0278	0.0625
2-Chlorotoluene	U		0.0216	0.0625
4-Chlorotoluene	U		0.0113	0.125
1,2-Dibromo-3-Chloropropane	U		0.0975	0.625
1,2-Dibromoethane	U		0.0162	0.0625
Dibromomethane	U		0.0188	0.125
1,2-Dichlorobenzene	U		0.0106	0.125
1,3-Dichlorobenzene	U		0.0150	0.125
1,4-Dichlorobenzene	U		0.0175	0.125
Dichlorodifluoromethane	U		0.0403	0.0625
1,1-Dichloroethane	U		0.0123	0.0625
1,2-Dichloroethane	U		0.0162	0.0625
1,1-Dichloroethene	U		0.0152	0.0625
cis-1,2-Dichloroethene	U		0.0184	0.0625
trans-1,2-Dichloroethene	U		0.0260	0.125
1,2-Dichloropropane	U		0.0355	0.125
1,1-Dichloropropene	U		0.0202	0.0625
1,3-Dichloropropane	U		0.0125	0.125
cis-1,3-Dichloropropene	U		0.0189	0.0625
trans-1,3-Dichloropropene	U		0.0285	0.125
2,2-Dichloropropane	U		0.0345	0.0625
Dicyclopentadiene	U		0.0413	0.313

Method Blank (MB)

(MB) R3551603-3 07/18/20 01:22

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Di-isopropyl ether	U		0.0103	0.0250
Ethylbenzene	U		0.0184	0.0625
4-Ethyltoluene	U		0.0580	0.125
Hexachloro-1,3-butadiene	U		0.150	0.625
n-Hexane	U		0.0565	0.125
Isopropylbenzene	U		0.0106	0.0625
p-Isopropyltoluene	U		0.0638	0.125
2-Butanone (MEK)	U		1.59	2.50
Methyl Cyclohexane	U		0.0515	0.125
Methylene Chloride	U		0.166	0.625
4-Methyl-2-pentanone (MIBK)	U		0.0570	0.625
Methyl tert-butyl ether	U		0.00875	0.0250
Naphthalene	U		0.122	0.313
Propene	U		0.153	1.25
n-Propylbenzene	U		0.0238	0.125
Styrene	U		0.00573	0.313
1,1,1,2-Tetrachloroethane	U		0.0237	0.0625
1,1,2,2-Tetrachloroethane	U		0.0174	0.0625
Tetrachloroethene	U		0.0224	0.0625
Toluene	U		0.0325	0.125
1,1,2-Trichlorotrifluoroethane	U		0.0189	0.0625
1,2,3-Trichlorobenzene	U		0.183	0.313
1,2,4-Trichlorobenzene	U		0.110	0.313
1,1,1-Trichloroethane	U		0.0231	0.0625
1,1,2-Trichloroethane	U		0.0149	0.0625
Trichloroethene	U		0.0146	0.0250
Trichlorofluoromethane	U		0.0207	0.0625
1,2,3-Trichloropropane	U		0.0405	0.313
1,2,3-Trimethylbenzene	U		0.0395	0.125
1,2,4-Trimethylbenzene	U		0.0395	0.125
1,3,5-Trimethylbenzene	U		0.0500	0.125
Vinyl chloride	U		0.0290	0.0625
Xylenes, Total	U		0.0220	0.163
(S) Toluene-d8	*101*			*75.0-131*
(S) 4-Bromofluorobenzene	*106*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*102*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3551603-1 07/18/20 00:07 • (LCSD) R3551603-2 07/18/20 00:26

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.625	0.627	0.620	100	99.2	10.0-160			1.12	31
Acrylonitrile	0.625	0.661	0.618	106	98.9	45.0-153			6.72	22
Benzene	0.125	0.121	0.121	96.8	96.8	70.0-123			0.000	20
Bromobenzene	0.125	0.109	0.107	87.2	85.6	73.0-121			1.85	20
Bromodichloromethane	0.125	0.125	0.124	100	99.2	73.0-121			0.803	20
Bromoform	0.125	0.127	0.122	102	97.6	64.0-132			4.02	20
Bromomethane	0.125	0.112	0.113	89.6	90.4	56.0-147			0.889	20
1,3-Butadiene	0.125	0.127	0.127	102	102	32.0-150			0.000	20
n-Butylbenzene	0.125	0.134	0.135	107	108	68.0-135			0.743	20
sec-Butylbenzene	0.125	0.114	0.114	91.2	91.2	74.0-130			0.000	20
tert-Butylbenzene	0.125	0.115	0.116	92.0	92.8	75.0-127			0.866	20
Carbon disulfide	0.125	0.115	0.116	92.0	92.8	56.0-133			0.866	20
Carbon tetrachloride	0.125	0.119	0.120	95.2	96.0	66.0-128			0.837	20
Chlorobenzene	0.125	0.120	0.124	96.0	99.2	76.0-128			3.28	20
Chlorodibromomethane	0.125	0.112	0.119	89.6	95.2	74.0-127			6.06	20
Chloroethane	0.125	0.104	0.105	83.2	84.0	61.0-134			0.957	20
Chloroform	0.125	0.120	0.122	96.0	97.6	72.0-123			1.65	20
Chloromethane	0.125	0.128	0.133	102	106	51.0-138			3.83	20
Cyclohexane	0.125	0.126	0.127	101	102	70.0-130			0.791	20
2-Chlorotoluene	0.125	0.116	0.116	92.8	92.8	75.0-124			0.000	20
4-Chlorotoluene	0.125	0.117	0.116	93.6	92.8	75.0-124			0.858	20
1,2-Dibromo-3-Chloropropane	0.125	0.128	0.120	102	96.0	59.0-130			6.45	20
1,2-Dibromoethane	0.125	0.116	0.111	92.8	88.8	74.0-128			4.41	20
Dibromomethane	0.125	0.104	0.108	83.2	86.4	75.0-122			3.77	20
1,2-Dichlorobenzene	0.125	0.114	0.112	91.2	89.6	76.0-124			1.77	20
1,3-Dichlorobenzene	0.125	0.123	0.124	98.4	99.2	76.0-125			0.810	20
1,4-Dichlorobenzene	0.125	0.113	0.112	90.4	89.6	77.0-121			0.889	20
Dichlorodifluoromethane	0.125	0.110	0.107	88.0	85.6	43.0-156			2.76	20
1,1-Dichloroethane	0.125	0.130	0.133	104	106	70.0-127			2.28	20
1,2-Dichloroethane	0.125	0.116	0.117	92.8	93.6	65.0-131			0.858	20
1,1-Dichloroethene	0.125	0.122	0.125	97.6	100	65.0-131			2.43	20
cis-1,2-Dichloroethene	0.125	0.113	0.111	90.4	88.8	73.0-125			1.79	20
trans-1,2-Dichloroethene	0.125	0.115	0.117	92.0	93.6	71.0-125			1.72	20
1,2-Dichloropropane	0.125	0.122	0.120	97.6	96.0	74.0-125			1.65	20
1,1-Dichloropropene	0.125	0.109	0.110	87.2	88.0	73.0-125			0.913	20
1,3-Dichloropropane	0.125	0.115	0.119	92.0	95.2	80.0-125			3.42	20
cis-1,3-Dichloropropene	0.125	0.124	0.123	99.2	98.4	76.0-127			0.810	20
trans-1,3-Dichloropropene	0.125	0.111	0.110	88.8	88.0	73.0-127			0.905	20
2,2-Dichloropropane	0.125	0.123	0.126	98.4	101	59.0-135			2.41	20
Dicyclopentadiene	0.125	0.127	0.127	102	102	71.0-132			0.000	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3551603-1 07/18/20 00:07 • (LCSD) R3551603-2 07/18/20 00:26

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Di-isopropyl ether	0.125	0.128	0.127	102	102	60.0-136			0.784	20
Ethylbenzene	0.125	0.119	0.122	95.2	97.6	74.0-126			2.49	20
4-Ethyltoluene	0.125	0.112	0.111	89.6	88.8	71.0-129			0.897	20
Hexachloro-1,3-butadiene	0.125	0.114	0.106	91.2	84.8	57.0-150			7.27	20
n-Hexane	0.125	0.136	0.128	109	102	55.0-137			6.06	20
Isopropylbenzene	0.125	0.120	0.123	96.0	98.4	72.0-127			2.47	20
p-Isopropyltoluene	0.125	0.117	0.117	93.6	93.6	72.0-133			0.000	20
2-Butanone (MEK)	0.625	0.777	0.732	124	117	30.0-160			5.96	24
Methyl Cyclohexane	0.125	0.139	0.140	111	112	67.0-129			0.717	20
Methylene Chloride	0.125	0.128	0.126	102	101	68.0-123			1.57	20
4-Methyl-2-pentanone (MIBK)	0.625	0.675	0.647	108	104	56.0-143			4.24	20
Methyl tert-butyl ether	0.125	0.127	0.118	102	94.4	66.0-132			7.35	20
Naphthalene	0.125	0.124	0.122	99.2	97.6	59.0-130			1.63	20
Propene	0.125	0.173	0.187	138	150	10.0-160			7.78	20
n-Propylbenzene	0.125	0.121	0.122	96.8	97.6	74.0-126			0.823	20
Styrene	0.125	0.132	0.133	106	106	72.0-127			0.755	20
1,1,1,2-Tetrachloroethane	0.125	0.116	0.116	92.8	92.8	74.0-129			0.000	20
1,1,2,2-Tetrachloroethane	0.125	0.117	0.115	93.6	92.0	68.0-128			1.72	20
Tetrachloroethene	0.125	0.109	0.115	87.2	92.0	70.0-136			5.36	20
Toluene	0.125	0.114	0.117	91.2	93.6	75.0-121			2.60	20
1,1,2-Trichlorotrifluoroethane	0.125	0.111	0.111	88.8	88.8	61.0-139			0.000	20
1,2,3-Trichlorobenzene	0.125	0.117	0.117	93.6	93.6	59.0-139			0.000	20
1,2,4-Trichlorobenzene	0.125	0.110	0.111	88.0	88.8	62.0-137			0.905	20
1,1,1-Trichloroethane	0.125	0.116	0.115	92.8	92.0	69.0-126			0.866	20
1,1,2-Trichloroethane	0.125	0.117	0.111	93.6	88.8	78.0-123			5.26	20
Trichloroethene	0.125	0.127	0.129	102	103	76.0-126			1.56	20
Trichlorofluoromethane	0.125	0.116	0.114	92.8	91.2	61.0-142			1.74	20
1,2,3-Trichloropropane	0.125	0.118	0.117	94.4	93.6	67.0-129			0.851	20
1,2,3-Trimethylbenzene	0.125	0.112	0.108	89.6	86.4	74.0-124			3.64	20
1,2,4-Trimethylbenzene	0.125	0.122	0.124	97.6	99.2	70.0-126			1.63	20
1,3,5-Trimethylbenzene	0.125	0.122	0.123	97.6	98.4	73.0-127			0.816	20
Vinyl chloride	0.125	0.113	0.116	90.4	92.8	63.0-134			2.62	20
Xylenes, Total	0.375	0.394	0.391	105	104	72.0-127			0.764	20
(S) Toluene-d8				*96.6*	*101*	*75.0-131*				
(S) 4-Bromofluorobenzene				*105*	*105*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*96.1*	*96.9*	*70.0-130*				

Method Blank (MB)

(MB) R3551658-1 07/21/20 14:05

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C22 Hydrocarbons	U		1.98	30.0
C22-C32 Hydrocarbons	0.932	E4	0.766	50.0
(S) o-Terphenyl	*92.0*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3551658-2 07/21/20 17:29

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C22 Hydrocarbons	25.0	18.0	72.0	70.0-130	
C22-C32 Hydrocarbons	25.0	19.5	78.0	70.0-130	
(S) o-Terphenyl			*71.6*	*70.0-130*	

Method Blank (MB)

(MB) R3551408-1 07/20/20 11:28

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
2,4-D	U		0.00702	0.0700
Dalapon	U		0.0113	0.0700
2,4-DB	U		0.0297	0.0700
Dicamba	U		0.0157	0.0700
Dichloroprop	U		0.0245	0.0700
Dinoseb	U		0.00697	0.0700
MCPA	U		0.443	6.50
MCPP	U		0.367	6.50
2,4,5-T	U		0.00852	0.0700
2,4,5-TP (Silvex)	U		0.0107	0.0700
(S) 2,4-Dichlorophenyl Acetic Acid	*61.7*			*22.0-132*

Laboratory Control Sample (LCS)

(LCS) R3551408-2 07/20/20 11:43

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
2,4-D	0.167	0.108	64.7	40.0-120	
Dalapon	0.167	0.0910	54.5	15.0-120	P
2,4-DB	0.167	0.111	66.5	25.0-143	
Dicamba	0.167	0.105	62.9	43.0-120	
Dichloroprop	0.167	0.116	69.5	32.0-129	
Dinoseb	0.167	0.0221	13.2	10.0-120	
MCPA	1.67	2.31	138	31.0-121	L1
MCPP	1.67	0.778	46.6	28.0-133	
2,4,5-T	0.167	0.124	74.3	41.0-120	
2,4,5-TP (Silvex)	0.167	0.113	67.7	42.0-120	
(S) 2,4-Dichlorophenyl Acetic Acid			*61.7*	*22.0-132*	

L1240409-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1240409-02 07/20/20 13:12 • (MS) R3551408-3 07/20/20 13:27 • (MSD) R3551408-4 07/20/20 13:42

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2,4-D	0.167	ND	0.0918	0.0863	55.0	51.7	1	10.0-160			6.18	24
Dalapon	0.167	ND	0.0732	0.0731	43.8	43.8	1	10.0-121	P	P	0.137	27
2,4-DB	0.167	ND	0.0895	0.0815	53.6	48.8	1	10.0-160			9.36	22
Dicamba	0.167	ND	0.0902	0.0861	54.0	51.6	1	10.0-154			4.65	21

L1240409-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1240409-02 07/20/20 13:12 • (MS) R3551408-3 07/20/20 13:27 • (MSD) R3551408-4 07/20/20 13:42

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Dichloroprop	0.167	ND	0.0993	0.0937	59.5	56.1	1	10.0-158			5.80	20
Dinoseb	0.167	ND	ND	ND	25.8	27.2	1	10.0-120			5.42	40
MCPA	1.67	ND	ND	ND	113	111	1	10.0-160			1.07	40
MCPP	1.67	ND	ND	ND	43.1	42.1	1	10.0-160			2.39	40
2,4,5-T	0.167	ND	0.102	0.0944	61.1	56.5	1	10.0-157			7.74	20
2,4,5-TP (Silvex)	0.167	ND	0.0936	0.0865	56.0	51.8	1	10.0-156			7.88	20
(S) 2,4-Dichlorophenyl Acetic Acid					*51.7*	*50.1*		*22.0-132*				

Method Blank (MB)

(MB) R3552021-1 07/21/20 19:25

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Aldrin	U		0.00376	0.0200
Alpha BHC	U		0.00368	0.0200
Beta BHC	U		0.00379	0.0200
Delta BHC	U		0.00346	0.0200
Gamma BHC	U		0.00344	0.0200
4,4-DDD	U		0.00370	0.0200
4,4-DDE	U		0.00366	0.0200
4,4-DDT	U		0.00627	0.0200
Dieldrin	U		0.00344	0.0200
Endosulfan I	U		0.00363	0.0200
Endosulfan II	U		0.00335	0.0200
Endosulfan sulfate	U		0.00364	0.0200
Endrin	U		0.00350	0.0200
Endrin aldehyde	U		0.00339	0.0200
Endrin ketone	U		0.00711	0.0200
Heptachlor	U		0.00428	0.0200
Heptachlor epoxide	U		0.00339	0.0200
Hexachlorobenzene	U		0.00346	0.0200
Methoxychlor	U		0.00484	0.0200
Chlordane	U		0.103	0.300
Toxaphene	U		0.124	0.400
(S) Decachlorobiphenyl	*77.3*			*10.0-135*
(S) Tetrachloro-m-xylene	*68.8*			*10.0-139*

Laboratory Control Sample (LCS)

(LCS) R3552021-2 07/21/20 19:37

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Toxaphene	0.0666	U	0.000	70.0-130	
Aldrin	0.0666	0.0637	95.6	34.0-136	
Alpha BHC	0.0666	0.0665	99.8	34.0-139	
Beta BHC	0.0666	0.0608	91.3	34.0-133	
Delta BHC	0.0666	0.0670	101	34.0-135	
Gamma BHC	0.0666	0.0657	98.6	34.0-136	
4,4-DDD	0.0666	0.0690	104	33.0-141	
4,4-DDE	0.0666	0.0662	99.4	34.0-134	
4,4-DDT	0.0666	0.0750	113	30.0-143	
Dieldrin	0.0666	0.0694	104	35.0-137	

Laboratory Control Sample (LCS)

(LCS) R3552021-2 07/21/20 19:37

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Endosulfan I	0.0666	0.0666	100	34.0-134	
Endosulfan II	0.0666	0.0666	100	35.0-132	
Endosulfan sulfate	0.0666	0.0669	100	35.0-132	
Endrin	0.0666	0.0693	104	34.0-137	
Endrin aldehyde	0.0666	0.0589	88.4	23.0-121	
Endrin ketone	0.0666	0.0512	76.9	35.0-144	
Heptachlor	0.0666	0.0686	103	36.0-141	
Heptachlor epoxide	0.0666	0.0635	95.3	36.0-134	
Hexachlorobenzene	0.0666	0.0694	104	33.0-129	
Methoxychlor	0.0666	0.0617	92.6	28.0-150	
(S) Decachlorobiphenyl			*98.8*	*10.0-135*	
(S) Tetrachloro-m-xylene			*88.6*	*10.0-139*	

L1241589-12 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1241589-12 07/21/20 19:50 • (MS) R3552021-3 07/21/20 20:02 • (MSD) R3552021-4 07/21/20 20:14

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Toxaphene	0.0666	ND	ND	ND	0.000	0.000	1	70.0-130			0.000	30
Aldrin	0.0666	ND	0.0648	0.0611	97.3	91.7	1	20.0-135			5.88	37
Alpha BHC	0.0666	ND	0.0675	0.0636	101	95.5	1	27.0-140			5.95	35
Beta BHC	0.0666	ND	0.0614	0.0580	92.2	87.1	1	23.0-141			5.70	37
Delta BHC	0.0666	ND	0.0674	0.0636	101	95.5	1	21.0-138			5.80	35
Gamma BHC	0.0666	ND	0.0668	0.0631	100	94.7	1	27.0-137			5.70	36
4,4-DDD	0.0666	ND	0.0702	0.0661	105	99.2	1	15.0-152			6.02	39
4,4-DDE	0.0666	ND	0.0677	0.0636	102	95.5	1	10.0-152			6.25	40
4,4-DDT	0.0666	ND	0.0759	0.0710	114	107	1	10.0-151			6.67	40
Dieldrin	0.0666	ND	0.0698	0.0662	105	99.4	1	17.0-145			5.29	37
Endosulfan I	0.0666	ND	0.0677	0.0638	102	95.8	1	20.0-137			5.93	36
Endosulfan II	0.0666	ND	0.0660	0.0620	99.1	93.1	1	15.0-141			6.25	37
Endosulfan sulfate	0.0666	ND	0.0646	0.0608	97.0	91.3	1	15.0-143			6.06	38
Endrin	0.0666	ND	0.0703	0.0662	106	99.4	1	19.0-143			6.01	37
Endrin aldehyde	0.0666	ND	0.0605	0.0568	90.8	85.3	1	10.0-139			6.31	40
Endrin ketone	0.0666	ND	0.0496	0.0462	74.5	69.4	1	17.0-149			7.10	38
Heptachlor	0.0666	ND	0.0702	0.0665	105	99.8	1	22.0-138			5.41	37
Heptachlor epoxide	0.0666	ND	0.0642	0.0606	96.4	91.0	1	22.0-138			5.77	36
Hexachlorobenzene	0.0666	ND	0.0706	0.0666	106	100	1	25.0-126			5.83	35
Methoxychlor	0.0666	ND	0.0626	0.0580	94.0	87.1	1	10.0-159			7.63	40
(S) Decachlorobiphenyl					*100*	*94.3*		*10.0-135*				

L1241589-12 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1241589-12 07/21/20 19:50 • (MS) R3552021-3 07/21/20 20:02 • (MSD) R3552021-4 07/21/20 20:14

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
(S) Tetrachloro-m-xylene					*87.2*	*81.8*		*10.0-139*				

Method Blank (MB)

(MB) R3551880-1 07/21/20 18:16

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
PCB 1016	U		0.0118	0.0340
PCB 1221	U		0.0118	0.0340
PCB 1232	U		0.0118	0.0340
PCB 1242	U		0.0118	0.0340
PCB 1248	U		0.00738	0.0170
PCB 1254	U		0.00738	0.0170
PCB 1260	U		0.00738	0.0170
(S) Decachlorobiphenyl	*95.6*			*10.0-135*
(S) Tetrachloro-m-xylene	*89.6*			*10.0-139*

Laboratory Control Sample (LCS)

(LCS) R3551880-2 07/21/20 18:28

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
PCB 1260	0.167	0.154	92.2	37.0-145	
PCB 1016	0.167	0.150	89.8	36.0-141	
(S) Decachlorobiphenyl			*98.9*	*10.0-135*	
(S) Tetrachloro-m-xylene			*92.5*	*10.0-139*	

L1240883-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1240883-01 07/21/20 23:52 • (MS) R3551880-3 07/22/20 00:05 • (MSD) R3551880-4 07/22/20 00:17

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
PCB 1260	0.167	ND	0.130	0.129	77.8	77.2	1	10.0-160			0.772	38
PCB 1016	0.167	ND	0.136	0.113	81.4	67.7	1	10.0-160			18.5	37
(S) Decachlorobiphenyl					*91.1*	*86.8*		*10.0-135*				
(S) Tetrachloro-m-xylene					*89.8*	*86.0*		*10.0-139*				

Method Blank (MB)

(MB) R3551737-2 07/21/20 20:00

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	*73.1*			*14.0-149*
(S) 2-Fluorobiphenyl	*79.5*			*34.0-125*
(S) p-Terphenyl-d14	*78.8*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3551737-1 07/21/20 19:38

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0703	87.9	50.0-126	
Acenaphthene	0.0800	0.0637	79.6	50.0-120	
Acenaphthylene	0.0800	0.0639	79.9	50.0-120	
Benzo(a)anthracene	0.0800	0.0678	84.8	45.0-120	
Benzo(a)pyrene	0.0800	0.0610	76.3	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0582	72.8	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0636	79.5	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0640	80.0	49.0-125	
Chrysene	0.0800	0.0650	81.3	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0655	81.9	47.0-125	
Fluoranthene	0.0800	0.0723	90.4	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3551737-1 07/21/20 19:38

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0668	83.5	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0646	80.7	46.0-125	
Naphthalene	0.0800	0.0583	72.9	50.0-120	
Phenanthrene	0.0800	0.0651	81.4	47.0-120	
Pyrene	0.0800	0.0547	68.4	43.0-123	
1-Methylnaphthalene	0.0800	0.0619	77.4	51.0-121	
2-Methylnaphthalene	0.0800	0.0591	73.9	50.0-120	
2-Chloronaphthalene	0.0800	0.0645	80.6	50.0-120	
(S) Nitrobenzene-d5			*72.4*	*14.0-149*	
(S) 2-Fluorobiphenyl			*79.1*	*34.0-125*	
(S) p-Terphenyl-d14			*77.3*	*23.0-120*	

INTERNAL STANDARD SUMMARY

Instrument: VOCMS40 • File ID: 0717A_02

07/18/20 00:07

Sample ID	File ID	8260-FLUOROBENZENE	8260-CHLOROBENZENE-D5	8260-1,4-DICHLOROBENZENE-D4
		Response	Response	Response
Standard	0717A_02	1276185	539387.10	393501.80
Upper Limit		2552370	1078774	787004
Lower Limit		638093	269694	196751
LCS R3551603-1 WG1511166 1x	0717A_02LCS	1276185	539387.10	393501.80
LCSD R3551603-2 WG1511166 1x	0717A_03	1273615	524869.10	394772.30
BLANK R3551603-3 WG1511166 1x	0717A_06	1304584	525498.30	391199.70
L1240613-01 WG1511166 2.98x	0717A_23	1358321	552726.30	412347.10

INTERNAL STANDARD SUMMARY

Instrument: SVGC29 • File ID: AVG

Sample ID	File ID	1-BROMO-2-DINITROBENZENE Response
Standard	AVG	772538750
Upper Limit		1304795000
Lower Limit		434931700
BLANK R3552021-1 WG1511157 1x	0721A_07	856581200
LCS R3552021-2 WG1511157 1x	0721A_08	838325200
MS R3552021-3 WG1511157 1x	0721A_10	803534800
MSD R3552021-4 WG1511157 1x	0721A_11	832754500
L1240613-01 WG1511157 1x	0721A_30	848920400

Instrument: SVGC28 • File ID: AVG

Sample ID	File ID	1-BROMO-2-DINITROBENZENE Response
Standard	AVG	994411143
Upper Limit		1402989000
Lower Limit		467663000
BLANK R3551880-1 WG1510960 1x	0721_06	846151000
LCS R3551880-2 WG1510960 1x	0721_07	871554900
L1240613-01 WG1510960 1x	0721_27	894374900
MS R3551880-3 WG1510960 1x	0721_34	866249500
MSD R3551880-4 WG1510960 1x	0721_35	887415100

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 Sc

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting level (MRL) but above MDL.
L1	The associated blank spike recovery was above laboratory acceptance limits.
M1	Matrix spike recovery was high, the method control sample recovery was acceptable.
P	RPD between the primary and confirmatory analysis exceeded 40%.

ACCREDITATIONS & LOCATIONS

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

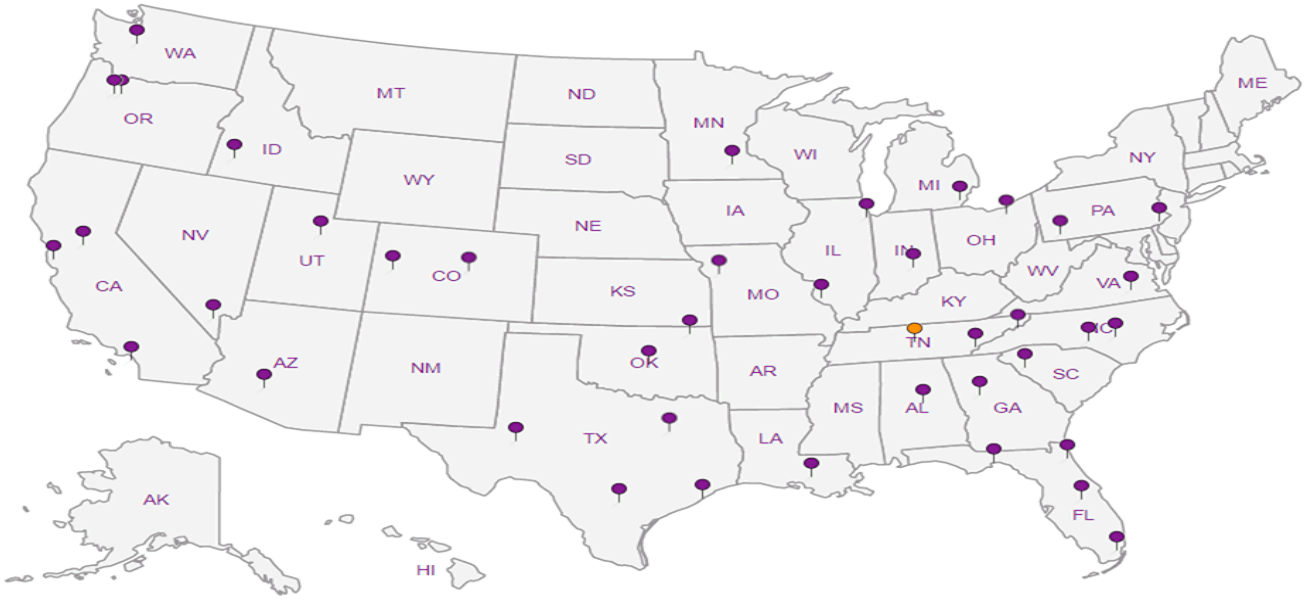
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Environmental Response, Inc.
2202 W. Medtronic Way, Suite 108
Tempe, AZ 85281

Billing Information: Same

Report to: Eric Smith

Email To: esmith@spray-eri.com

Project Description: APS PRESCOTT SUB BACKFILL

City/State Collected: PRESCOTT, AZ

Phone: 480-967-2802
Fax: 480-967-2735

Client Project #: 20-209125

Lab Project #

Collected by (print): E. SMITH

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed: ST TAT

Pres Chk

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	8270 SIM PAH	8082 PCB	8081A PESTICIDES	8151A HERBICIDES	8260B VOC	8015AZRI TPH	6010B TOTAL METALS				Remarks	Sample # (lab only)
APS GLASSFORD AB 01	GRAB	SS	–	7/16/20	1130	3	X	X	X	X	X	X	X					-01

Chain of Custody Page 1 of 1

Pace Analytical®
National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L # L440613

Table # B195

Acctnum: ENVRESTAZ

Template:

Prelogin:

TSR:

PB:

Shipped Via:

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via: __ UPS __ FedEx __ Courier SW

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP ✓Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N

RAD SCREEN: <0.5 mR/hr

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
	07/16/20	1413			
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: 1.4-.3=1.1 °C Bottles Received: 3	If preservation required by Login: Date/Time
	7/16/20	1900			
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 7/17/20 Time: 815	Hold: / Conditions: NCF / OK

PND# 7

APPROVED
By Greg Laney at 1:11 pm, Aug 24, 2020

APS Prescott Substation Remediation / Submittal 015A Specification 31 23 23
Reviewed, checked and approved for compliance with Contract Documents

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

August 12, 2020

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 Sc

Environmental Response, Inc.

Sample Delivery Group:	L1246978
Samples Received:	08/05/2020
Project Number:	20-209175
Description:	APS Prescott Sub Backfill
Report To:	Eric Smith 2202 W. Medtronic Way, Ste 108 Tempe, AZ 85281

Entire Report Reviewed By: Daphne R Richards

Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

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GLASSFORD AB 02 L1246978-01 Solid

Collected by	Collected date/time	Received date/time
E Smith	08/03/20 08:30	08/05/20 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Mercury by Method 7471B	WG1521438	1	08/06/20 14:20	08/06/20 19:51	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1521605	1	08/06/20 14:22	08/07/20 21:11	TRB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1522695	1	08/03/20 08:30	08/08/20 16:27	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015AZR1	WG1522295	1	08/07/20 01:15	08/08/20 16:29	JN	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151	WG1521532	1	08/07/20 07:11	08/12/20 00:59	MTJ	Mt. Juliet, TN
Pesticides (GC) by Method 8081B	WG1522016	1	08/07/20 21:09	08/10/20 11:38	SSH	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1522016	1	08/07/20 21:09	08/10/20 12:48	MTJ	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1523424	1	08/10/20 15:23	08/11/20 00:13	AAT	Mt. Juliet, TN

GLASSFORD AB 03 L1246978-02 Solid

Collected by	Collected date/time	Received date/time
E Smith	08/03/20 08:35	08/05/20 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Mercury by Method 7471B	WG1521438	1	08/06/20 14:20	08/06/20 19:54	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1521605	1	08/06/20 14:22	08/07/20 21:14	TRB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1522695	1	08/03/20 08:35	08/08/20 16:46	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015AZR1	WG1522295	1	08/07/20 01:15	08/07/20 14:38	JDG	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151	WG1521532	1	08/07/20 07:11	08/12/20 01:14	MTJ	Mt. Juliet, TN
Pesticides (GC) by Method 8081B	WG1522016	1	08/07/20 21:09	08/10/20 11:53	SSH	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1522016	1	08/07/20 21:09	08/10/20 13:43	MTJ	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1523424	1	08/10/20 15:23	08/11/20 00:33	AAT	Mt. Juliet, TN

GLASSFORD AB 04 L1246978-03 Solid

Collected by	Collected date/time	Received date/time
E Smith	08/03/20 08:43	08/05/20 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Mercury by Method 7471B	WG1521438	1	08/06/20 14:20	08/06/20 19:57	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1521605	1	08/06/20 14:22	08/07/20 21:16	TRB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1522695	1	08/03/20 08:43	08/08/20 17:05	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015AZR1	WG1522295	1	08/07/20 01:15	08/07/20 15:22	JDG	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151	WG1521532	1	08/07/20 07:11	08/12/20 01:28	MTJ	Mt. Juliet, TN
Pesticides (GC) by Method 8081B	WG1522016	1	08/07/20 21:09	08/10/20 12:08	SSH	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1522016	1	08/07/20 21:09	08/10/20 13:57	MTJ	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1523424	1	08/10/20 15:23	08/11/20 00:54	AAT	Mt. Juliet, TN

GLASSFORD AB 05 L1246978-04 Solid

Collected by	Collected date/time	Received date/time
E Smith	08/03/20 08:51	08/05/20 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Mercury by Method 7471B	WG1521438	1	08/06/20 14:20	08/06/20 19:59	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1521605	1	08/06/20 14:22	08/07/20 21:19	TRB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1522695	1	08/03/20 08:51	08/08/20 17:23	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015AZR1	WG1522295	1	08/07/20 01:15	08/07/20 14:53	JDG	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151	WG1521532	1	08/07/20 07:11	08/12/20 01:43	MTJ	Mt. Juliet, TN
Pesticides (GC) by Method 8081B	WG1522016	1	08/07/20 21:09	08/10/20 12:22	SSH	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1522016	1	08/07/20 21:09	08/10/20 14:11	MTJ	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1523424	1	08/10/20 15:23	08/11/20 01:15	AAT	Mt. Juliet, TN

GLASSFORD AB 06 L1246978-05 Solid

Collected by	Collected date/time	Received date/time
E Smith	08/03/20 09:00	08/05/20 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Mercury by Method 7471B	WG1521438	1	08/06/20 14:20	08/06/20 20:02	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1521605	1	08/06/20 14:22	08/07/20 21:22	TRB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1522773	1	08/03/20 09:00	08/08/20 22:23	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015AZR1	WG1522295	1	08/07/20 01:15	08/07/20 15:07	JDG	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151	WG1521532	1	08/07/20 07:11	08/12/20 01:58	MTJ	Mt. Juliet, TN
Pesticides (GC) by Method 8081B	WG1522016	1	08/07/20 21:09	08/10/20 12:37	SSH	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1522016	1	08/07/20 21:09	08/10/20 14:25	MTJ	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1523424	1	08/10/20 15:23	08/11/20 01:35	AAT	Mt. Juliet, TN

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 Sc

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne R Richards

Daphne Richards
Project Manager

Mercury by Method 7471B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0400	1	08/06/2020 19:51	WG1521438

Metals (ICP) by Method 6010D

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	6.44		2.00	1	08/07/2020 21:11	WG1521605
Barium	74.7		0.500	1	08/07/2020 21:11	WG1521605
Cadmium	ND		0.500	1	08/07/2020 21:11	WG1521605
Chromium	26.1		1.00	1	08/07/2020 21:11	WG1521605
Lead	10.4		0.500	1	08/07/2020 21:11	WG1521605
Selenium	ND		2.00	1	08/07/2020 21:11	WG1521605
Silver	ND		1.00	1	08/07/2020 21:11	WG1521605

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND		1.25	1	08/08/2020 16:27	WG1522695
Acrylonitrile	ND		0.313	1	08/08/2020 16:27	WG1522695
Benzene	ND		0.0250	1	08/08/2020 16:27	WG1522695
Bromobenzene	ND		0.313	1	08/08/2020 16:27	WG1522695
Bromodichloromethane	ND		0.0625	1	08/08/2020 16:27	WG1522695
Bromoform	ND		0.625	1	08/08/2020 16:27	WG1522695
Bromomethane	ND		0.313	1	08/08/2020 16:27	WG1522695
1,3-Butadiene	ND		0.625	1	08/08/2020 16:27	WG1522695
n-Butylbenzene	ND		0.313	1	08/08/2020 16:27	WG1522695
sec-Butylbenzene	ND		0.313	1	08/08/2020 16:27	WG1522695
tert-Butylbenzene	ND		0.125	1	08/08/2020 16:27	WG1522695
Carbon disulfide	ND		0.313	1	08/08/2020 16:27	WG1522695
Carbon tetrachloride	ND		0.125	1	08/08/2020 16:27	WG1522695
Chlorobenzene	ND		0.0625	1	08/08/2020 16:27	WG1522695
Chlorodibromomethane	ND		0.0625	1	08/08/2020 16:27	WG1522695
Chloroethane	ND		0.125	1	08/08/2020 16:27	WG1522695
Chloroform	ND		0.0625	1	08/08/2020 16:27	WG1522695
Chloromethane	ND		0.313	1	08/08/2020 16:27	WG1522695
2-Chlorotoluene	ND		0.0625	1	08/08/2020 16:27	WG1522695
4-Chlorotoluene	ND		0.125	1	08/08/2020 16:27	WG1522695
Cyclohexane	ND		0.0625	1	08/08/2020 16:27	WG1522695
1,2-Dibromo-3-Chloropropane	ND		0.625	1	08/08/2020 16:27	WG1522695
1,2-Dibromoethane	ND		0.0625	1	08/08/2020 16:27	WG1522695
Dibromomethane	ND		0.125	1	08/08/2020 16:27	WG1522695
1,2-Dichlorobenzene	ND		0.125	1	08/08/2020 16:27	WG1522695
1,3-Dichlorobenzene	ND		0.125	1	08/08/2020 16:27	WG1522695
1,4-Dichlorobenzene	ND		0.125	1	08/08/2020 16:27	WG1522695
Dichlorodifluoromethane	ND		0.0625	1	08/08/2020 16:27	WG1522695
1,1-Dichloroethane	ND		0.0625	1	08/08/2020 16:27	WG1522695
1,2-Dichloroethane	ND		0.0625	1	08/08/2020 16:27	WG1522695
1,1-Dichloroethene	ND		0.0625	1	08/08/2020 16:27	WG1522695
cis-1,2-Dichloroethene	ND		0.0625	1	08/08/2020 16:27	WG1522695
trans-1,2-Dichloroethene	ND		0.125	1	08/08/2020 16:27	WG1522695
1,2-Dichloropropane	ND		0.125	1	08/08/2020 16:27	WG1522695
1,1-Dichloropropene	ND		0.0625	1	08/08/2020 16:27	WG1522695
1,3-Dichloropropane	ND		0.125	1	08/08/2020 16:27	WG1522695
cis-1,3-Dichloropropene	ND		0.0625	1	08/08/2020 16:27	WG1522695
trans-1,3-Dichloropropene	ND		0.125	1	08/08/2020 16:27	WG1522695
2,2-Dichloropropane	ND		0.0625	1	08/08/2020 16:27	WG1522695

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Dicyclopentadiene	ND		0.313	1	08/08/2020 16:27	WG1522695
Di-isopropyl ether	ND		0.0250	1	08/08/2020 16:27	WG1522695
Ethylbenzene	ND		0.0625	1	08/08/2020 16:27	WG1522695
4-Ethyltoluene	ND		0.125	1	08/08/2020 16:27	WG1522695
Hexachloro-1,3-butadiene	ND		0.625	1	08/08/2020 16:27	WG1522695
n-Hexane	ND		0.125	1	08/08/2020 16:27	WG1522695
Isopropylbenzene	ND		0.0625	1	08/08/2020 16:27	WG1522695
p-Isopropyltoluene	ND		0.125	1	08/08/2020 16:27	WG1522695
2-Butanone (MEK)	ND		2.50	1	08/08/2020 16:27	WG1522695
Methylene Chloride	ND		0.625	1	08/08/2020 16:27	WG1522695
4-Methyl-2-pentanone (MIBK)	ND		0.625	1	08/08/2020 16:27	WG1522695
Methyl tert-butyl ether	ND		0.0250	1	08/08/2020 16:27	WG1522695
Methyl Cyclohexane	ND		0.125	1	08/08/2020 16:27	WG1522695
Naphthalene	ND		0.313	1	08/08/2020 16:27	WG1522695
Propene	ND		1.25	1	08/08/2020 16:27	WG1522695
n-Propylbenzene	ND		0.125	1	08/08/2020 16:27	WG1522695
Styrene	ND		0.313	1	08/08/2020 16:27	WG1522695
1,1,1,2-Tetrachloroethane	ND		0.0625	1	08/08/2020 16:27	WG1522695
1,1,2,2-Tetrachloroethane	ND		0.0625	1	08/08/2020 16:27	WG1522695
1,1,2-Trichlorotrifluoroethane	ND		0.0625	1	08/08/2020 16:27	WG1522695
Tetrachloroethene	ND		0.0625	1	08/08/2020 16:27	WG1522695
Toluene	ND		0.125	1	08/08/2020 16:27	WG1522695
1,2,3-Trichlorobenzene	ND		0.313	1	08/08/2020 16:27	WG1522695
1,2,4-Trichlorobenzene	ND		0.313	1	08/08/2020 16:27	WG1522695
1,1,1-Trichloroethane	ND		0.0625	1	08/08/2020 16:27	WG1522695
1,1,2-Trichloroethane	ND		0.0625	1	08/08/2020 16:27	WG1522695
Trichloroethene	ND		0.0250	1	08/08/2020 16:27	WG1522695
Trichlorofluoromethane	ND		0.0625	1	08/08/2020 16:27	WG1522695
1,2,3-Trichloropropane	ND		0.313	1	08/08/2020 16:27	WG1522695
1,2,4-Trimethylbenzene	ND		0.125	1	08/08/2020 16:27	WG1522695
1,2,3-Trimethylbenzene	ND		0.125	1	08/08/2020 16:27	WG1522695
1,3,5-Trimethylbenzene	ND		0.125	1	08/08/2020 16:27	WG1522695
Vinyl chloride	ND		0.0625	1	08/08/2020 16:27	WG1522695
Xylenes, Total	ND		0.163	1	08/08/2020 16:27	WG1522695
(S) Toluene-d8	*96.6*		*75.0-131*		*08/08/2020 16:27*	WG1522695
(S) 4-Bromofluorobenzene	*108*		*67.0-138*		*08/08/2020 16:27*	WG1522695
(S) 1,2-Dichloroethane-d4	*106*		*70.0-130*		*08/08/2020 16:27*	WG1522695

Semi-Volatile Organic Compounds (GC) by Method 8015AZR1

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C22 Hydrocarbons	ND		30.0	1	08/08/2020 16:29	WG1522295
C22-C32 Hydrocarbons	ND		50.0	1	08/08/2020 16:29	WG1522295
(S) o-Terphenyl	*79.0*		*70.0-130*		*08/08/2020 16:29*	WG1522295

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
2,4-D	ND		0.0700	1	08/12/2020 00:59	WG1521532
Dalapon	ND		0.0700	1	08/12/2020 00:59	WG1521532
2,4-DB	ND		0.0700	1	08/12/2020 00:59	WG1521532
Dicamba	ND		0.0700	1	08/12/2020 00:59	WG1521532
Dichloroprop	ND		0.0700	1	08/12/2020 00:59	WG1521532
Dinoseb	ND		0.0700	1	08/12/2020 00:59	WG1521532
MCPA	ND	L1	6.50	1	08/12/2020 00:59	WG1521532

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
MCPP	ND		6.50	1	08/12/2020 00:59	WG1521532
2,4,5-T	ND		0.0700	1	08/12/2020 00:59	WG1521532
2,4,5-TP (Silvex)	ND		0.0700	1	08/12/2020 00:59	WG1521532
(S) 2,4-Dichlorophenyl Acetic Acid	*65.0*		*22.0-132*		*08/12/2020 00:59*	WG1521532

Pesticides (GC) by Method 8081B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Aldrin	ND		0.0200	1	08/10/2020 11:38	WG1522016
Alpha BHC	ND		0.0200	1	08/10/2020 11:38	WG1522016
Beta BHC	ND		0.0200	1	08/10/2020 11:38	WG1522016
Delta BHC	ND		0.0200	1	08/10/2020 11:38	WG1522016
Gamma BHC	ND		0.0200	1	08/10/2020 11:38	WG1522016
Chlordane	ND		0.300	1	08/10/2020 11:38	WG1522016
4,4-DDD	ND		0.0200	1	08/10/2020 11:38	WG1522016
4,4-DDE	ND		0.0200	1	08/10/2020 11:38	WG1522016
4,4-DDT	ND		0.0200	1	08/10/2020 11:38	WG1522016
Dieldrin	ND		0.0200	1	08/10/2020 11:38	WG1522016
Endosulfan I	ND		0.0200	1	08/10/2020 11:38	WG1522016
Endosulfan II	ND		0.0200	1	08/10/2020 11:38	WG1522016
Endosulfan sulfate	ND		0.0200	1	08/10/2020 11:38	WG1522016
Endrin	ND		0.0200	1	08/10/2020 11:38	WG1522016
Endrin aldehyde	ND		0.0200	1	08/10/2020 11:38	WG1522016
Endrin ketone	ND		0.0200	1	08/10/2020 11:38	WG1522016
Heptachlor	ND		0.0200	1	08/10/2020 11:38	WG1522016
Heptachlor epoxide	ND		0.0200	1	08/10/2020 11:38	WG1522016
Hexachlorobenzene	ND		0.0200	1	08/10/2020 11:38	WG1522016
Methoxychlor	ND		0.0200	1	08/10/2020 11:38	WG1522016
Toxaphene	ND		0.400	1	08/10/2020 11:38	WG1522016
(S) Decachlorobiphenyl	*67.2*		*10.0-135*		*08/10/2020 11:38*	WG1522016
(S) Tetrachloro-m-xylene	*83.8*		*10.0-139*		*08/10/2020 11:38*	WG1522016

Polychlorinated Biphenyls (GC) by Method 8082 A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
PCB 1016	ND		0.0340	1	08/10/2020 12:48	WG1522016
PCB 1221	ND		0.0340	1	08/10/2020 12:48	WG1522016
PCB 1232	ND		0.0340	1	08/10/2020 12:48	WG1522016
PCB 1242	ND		0.0340	1	08/10/2020 12:48	WG1522016
PCB 1248	ND		0.0170	1	08/10/2020 12:48	WG1522016
PCB 1254	ND		0.0170	1	08/10/2020 12:48	WG1522016
PCB 1260	ND		0.0170	1	08/10/2020 12:48	WG1522016
(S) Decachlorobiphenyl	*74.4*		*10.0-135*		*08/10/2020 12:48*	WG1522016
(S) Tetrachloro-m-xylene	*85.5*		*10.0-139*		*08/10/2020 12:48*	WG1522016

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	08/11/2020 00:13	WG1523424
Acenaphthene	ND		0.00600	1	08/11/2020 00:13	WG1523424
Acenaphthylene	ND		0.00600	1	08/11/2020 00:13	WG1523424
Benzo(a)anthracene	ND		0.00600	1	08/11/2020 00:13	WG1523424
Benzo(a)pyrene	ND		0.00600	1	08/11/2020 00:13	WG1523424
Benzo(b)fluoranthene	ND		0.00600	1	08/11/2020 00:13	WG1523424
Benzo(g,h,i)perylene	ND		0.00600	1	08/11/2020 00:13	WG1523424

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzo(k)fluoranthene	ND		0.00600	1	08/11/2020 00:13	WG1523424
Chrysene	ND		0.00600	1	08/11/2020 00:13	WG1523424
Dibenz(a,h)anthracene	ND		0.00600	1	08/11/2020 00:13	WG1523424
Fluoranthene	ND		0.00600	1	08/11/2020 00:13	WG1523424
Fluorene	ND		0.00600	1	08/11/2020 00:13	WG1523424
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/11/2020 00:13	WG1523424
Naphthalene	ND		0.0200	1	08/11/2020 00:13	WG1523424
Phenanthrene	ND		0.00600	1	08/11/2020 00:13	WG1523424
Pyrene	ND		0.00600	1	08/11/2020 00:13	WG1523424
1-Methylnaphthalene	ND		0.0200	1	08/11/2020 00:13	WG1523424
2-Methylnaphthalene	ND		0.0200	1	08/11/2020 00:13	WG1523424
2-Chloronaphthalene	ND		0.0200	1	08/11/2020 00:13	WG1523424
(S) p-Terphenyl-d14	*99.6*		*23.0-120*		*08/11/2020 00:13*	WG1523424
(S) Nitrobenzene-d5	*75.8*		*14.0-149*		*08/11/2020 00:13*	WG1523424
(S) 2-Fluorobiphenyl	*99.0*		*34.0-125*		*08/11/2020 00:13*	WG1523424

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 Sc

Mercury by Method 7471B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0400	1	08/06/2020 19:54	WG1521438

Metals (ICP) by Method 6010D

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.28		2.00	1	08/07/2020 21:14	WG1521605
Barium	85.5		0.500	1	08/07/2020 21:14	WG1521605
Cadmium	ND		0.500	1	08/07/2020 21:14	WG1521605
Chromium	24.8		1.00	1	08/07/2020 21:14	WG1521605
Lead	16.4		0.500	1	08/07/2020 21:14	WG1521605
Selenium	ND		2.00	1	08/07/2020 21:14	WG1521605
Silver	ND		1.00	1	08/07/2020 21:14	WG1521605

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND		1.25	1	08/08/2020 16:46	WG1522695
Acrylonitrile	ND		0.313	1	08/08/2020 16:46	WG1522695
Benzene	ND		0.0250	1	08/08/2020 16:46	WG1522695
Bromobenzene	ND		0.313	1	08/08/2020 16:46	WG1522695
Bromodichloromethane	ND		0.0625	1	08/08/2020 16:46	WG1522695
Bromoform	ND		0.625	1	08/08/2020 16:46	WG1522695
Bromomethane	ND		0.313	1	08/08/2020 16:46	WG1522695
1,3-Butadiene	ND		0.625	1	08/08/2020 16:46	WG1522695
n-Butylbenzene	ND		0.313	1	08/08/2020 16:46	WG1522695
sec-Butylbenzene	ND		0.313	1	08/08/2020 16:46	WG1522695
tert-Butylbenzene	ND		0.125	1	08/08/2020 16:46	WG1522695
Carbon disulfide	ND		0.313	1	08/08/2020 16:46	WG1522695
Carbon tetrachloride	ND		0.125	1	08/08/2020 16:46	WG1522695
Chlorobenzene	ND		0.0625	1	08/08/2020 16:46	WG1522695
Chlorodibromomethane	ND		0.0625	1	08/08/2020 16:46	WG1522695
Chloroethane	ND		0.125	1	08/08/2020 16:46	WG1522695
Chloroform	ND		0.0625	1	08/08/2020 16:46	WG1522695
Chloromethane	ND		0.313	1	08/08/2020 16:46	WG1522695
2-Chlorotoluene	ND		0.0625	1	08/08/2020 16:46	WG1522695
4-Chlorotoluene	ND		0.125	1	08/08/2020 16:46	WG1522695
Cyclohexane	ND		0.0625	1	08/08/2020 16:46	WG1522695
1,2-Dibromo-3-Chloropropane	ND		0.625	1	08/08/2020 16:46	WG1522695
1,2-Dibromoethane	ND		0.0625	1	08/08/2020 16:46	WG1522695
Dibromomethane	ND		0.125	1	08/08/2020 16:46	WG1522695
1,2-Dichlorobenzene	ND		0.125	1	08/08/2020 16:46	WG1522695
1,3-Dichlorobenzene	ND		0.125	1	08/08/2020 16:46	WG1522695
1,4-Dichlorobenzene	ND		0.125	1	08/08/2020 16:46	WG1522695
Dichlorodifluoromethane	ND		0.0625	1	08/08/2020 16:46	WG1522695
1,1-Dichloroethane	ND		0.0625	1	08/08/2020 16:46	WG1522695
1,2-Dichloroethane	ND		0.0625	1	08/08/2020 16:46	WG1522695
1,1-Dichloroethene	ND		0.0625	1	08/08/2020 16:46	WG1522695
cis-1,2-Dichloroethene	ND		0.0625	1	08/08/2020 16:46	WG1522695
trans-1,2-Dichloroethene	ND		0.125	1	08/08/2020 16:46	WG1522695
1,2-Dichloropropane	ND		0.125	1	08/08/2020 16:46	WG1522695
1,1-Dichloropropene	ND		0.0625	1	08/08/2020 16:46	WG1522695
1,3-Dichloropropane	ND		0.125	1	08/08/2020 16:46	WG1522695
cis-1,3-Dichloropropene	ND		0.0625	1	08/08/2020 16:46	WG1522695
trans-1,3-Dichloropropene	ND		0.125	1	08/08/2020 16:46	WG1522695
2,2-Dichloropropane	ND		0.0625	1	08/08/2020 16:46	WG1522695

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Dicyclopentadiene	ND		0.313	1	08/08/2020 16:46	WG1522695
Di-isopropyl ether	ND		0.0250	1	08/08/2020 16:46	WG1522695
Ethylbenzene	ND		0.0625	1	08/08/2020 16:46	WG1522695
4-Ethyltoluene	ND		0.125	1	08/08/2020 16:46	WG1522695
Hexachloro-1,3-butadiene	ND		0.625	1	08/08/2020 16:46	WG1522695
n-Hexane	ND		0.125	1	08/08/2020 16:46	WG1522695
Isopropylbenzene	ND		0.0625	1	08/08/2020 16:46	WG1522695
p-Isopropyltoluene	ND		0.125	1	08/08/2020 16:46	WG1522695
2-Butanone (MEK)	ND		2.50	1	08/08/2020 16:46	WG1522695
Methylene Chloride	ND		0.625	1	08/08/2020 16:46	WG1522695
4-Methyl-2-pentanone (MIBK)	ND		0.625	1	08/08/2020 16:46	WG1522695
Methyl tert-butyl ether	ND		0.0250	1	08/08/2020 16:46	WG1522695
Methyl Cyclohexane	ND		0.125	1	08/08/2020 16:46	WG1522695
Naphthalene	ND		0.313	1	08/08/2020 16:46	WG1522695
Propene	ND		1.25	1	08/08/2020 16:46	WG1522695
n-Propylbenzene	ND		0.125	1	08/08/2020 16:46	WG1522695
Styrene	ND		0.313	1	08/08/2020 16:46	WG1522695
1,1,1,2-Tetrachloroethane	ND		0.0625	1	08/08/2020 16:46	WG1522695
1,1,2,2-Tetrachloroethane	ND		0.0625	1	08/08/2020 16:46	WG1522695
1,1,2-Trichlorotrifluoroethane	ND		0.0625	1	08/08/2020 16:46	WG1522695
Tetrachloroethene	ND		0.0625	1	08/08/2020 16:46	WG1522695
Toluene	ND		0.125	1	08/08/2020 16:46	WG1522695
1,2,3-Trichlorobenzene	ND		0.313	1	08/08/2020 16:46	WG1522695
1,2,4-Trichlorobenzene	ND		0.313	1	08/08/2020 16:46	WG1522695
1,1,1-Trichloroethane	ND		0.0625	1	08/08/2020 16:46	WG1522695
1,1,2-Trichloroethane	ND		0.0625	1	08/08/2020 16:46	WG1522695
Trichloroethene	ND		0.0250	1	08/08/2020 16:46	WG1522695
Trichlorofluoromethane	ND		0.0625	1	08/08/2020 16:46	WG1522695
1,2,3-Trichloropropane	ND		0.313	1	08/08/2020 16:46	WG1522695
1,2,4-Trimethylbenzene	ND		0.125	1	08/08/2020 16:46	WG1522695
1,2,3-Trimethylbenzene	ND		0.125	1	08/08/2020 16:46	WG1522695
1,3,5-Trimethylbenzene	ND		0.125	1	08/08/2020 16:46	WG1522695
Vinyl chloride	ND		0.0625	1	08/08/2020 16:46	WG1522695
Xylenes, Total	ND		0.163	1	08/08/2020 16:46	WG1522695
(S) Toluene-d8	*97.0*		*75.0-131*		*08/08/2020 16:46*	WG1522695
(S) 4-Bromofluorobenzene	*108*		*67.0-138*		*08/08/2020 16:46*	WG1522695
(S) 1,2-Dichloroethane-d4	*103*		*70.0-130*		*08/08/2020 16:46*	WG1522695

Semi-Volatile Organic Compounds (GC) by Method 8015AZR1

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C22 Hydrocarbons	ND		30.0	1	08/07/2020 14:38	WG1522295
C22-C32 Hydrocarbons	ND		50.0	1	08/07/2020 14:38	WG1522295
(S) o-Terphenyl	*83.4*		*70.0-130*		*08/07/2020 14:38*	WG1522295

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
2,4-D	ND		0.0700	1	08/12/2020 01:14	WG1521532
Dalapon	ND		0.0700	1	08/12/2020 01:14	WG1521532
2,4-DB	ND		0.0700	1	08/12/2020 01:14	WG1521532
Dicamba	ND		0.0700	1	08/12/2020 01:14	WG1521532
Dichloroprop	ND		0.0700	1	08/12/2020 01:14	WG1521532
Dinoseb	ND		0.0700	1	08/12/2020 01:14	WG1521532
MCPA	ND	L1	6.50	1	08/12/2020 01:14	WG1521532

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
MCPP	ND		6.50	1	08/12/2020 01:14	WG1521532
2,4,5-T	ND		0.0700	1	08/12/2020 01:14	WG1521532
2,4,5-TP (Silvex)	ND		0.0700	1	08/12/2020 01:14	WG1521532
(S) 2,4-Dichlorophenyl Acetic Acid	*69.7*		*22.0-132*		*08/12/2020 01:14*	WG1521532

Pesticides (GC) by Method 8081B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Aldrin	ND		0.0200	1	08/10/2020 11:53	WG1522016
Alpha BHC	ND		0.0200	1	08/10/2020 11:53	WG1522016
Beta BHC	ND		0.0200	1	08/10/2020 11:53	WG1522016
Delta BHC	ND		0.0200	1	08/10/2020 11:53	WG1522016
Gamma BHC	ND		0.0200	1	08/10/2020 11:53	WG1522016
Chlordane	ND		0.300	1	08/10/2020 11:53	WG1522016
4,4-DDD	ND		0.0200	1	08/10/2020 11:53	WG1522016
4,4-DDE	ND		0.0200	1	08/10/2020 11:53	WG1522016
4,4-DDT	ND		0.0200	1	08/10/2020 11:53	WG1522016
Dieldrin	ND		0.0200	1	08/10/2020 11:53	WG1522016
Endosulfan I	ND		0.0200	1	08/10/2020 11:53	WG1522016
Endosulfan II	ND		0.0200	1	08/10/2020 11:53	WG1522016
Endosulfan sulfate	ND		0.0200	1	08/10/2020 11:53	WG1522016
Endrin	ND		0.0200	1	08/10/2020 11:53	WG1522016
Endrin aldehyde	ND		0.0200	1	08/10/2020 11:53	WG1522016
Endrin ketone	ND		0.0200	1	08/10/2020 11:53	WG1522016
Heptachlor	ND		0.0200	1	08/10/2020 11:53	WG1522016
Heptachlor epoxide	ND		0.0200	1	08/10/2020 11:53	WG1522016
Hexachlorobenzene	ND		0.0200	1	08/10/2020 11:53	WG1522016
Methoxychlor	ND		0.0200	1	08/10/2020 11:53	WG1522016
Toxaphene	ND		0.400	1	08/10/2020 11:53	WG1522016
(S) Decachlorobiphenyl	*66.9*		*10.0-135*		*08/10/2020 11:53*	WG1522016
(S) Tetrachloro-m-xylene	*77.4*		*10.0-139*		*08/10/2020 11:53*	WG1522016

Polychlorinated Biphenyls (GC) by Method 8082 A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
PCB 1016	ND		0.0340	1	08/10/2020 13:43	WG1522016
PCB 1221	ND		0.0340	1	08/10/2020 13:43	WG1522016
PCB 1232	ND		0.0340	1	08/10/2020 13:43	WG1522016
PCB 1242	ND		0.0340	1	08/10/2020 13:43	WG1522016
PCB 1248	ND		0.0170	1	08/10/2020 13:43	WG1522016
PCB 1254	ND		0.0170	1	08/10/2020 13:43	WG1522016
PCB 1260	ND		0.0170	1	08/10/2020 13:43	WG1522016
(S) Decachlorobiphenyl	*67.8*		*10.0-135*		*08/10/2020 13:43*	WG1522016
(S) Tetrachloro-m-xylene	*84.4*		*10.0-139*		*08/10/2020 13:43*	WG1522016

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	08/11/2020 00:33	WG1523424
Acenaphthene	ND		0.00600	1	08/11/2020 00:33	WG1523424
Acenaphthylene	ND		0.00600	1	08/11/2020 00:33	WG1523424
Benzo(a)anthracene	ND		0.00600	1	08/11/2020 00:33	WG1523424
Benzo(a)pyrene	ND		0.00600	1	08/11/2020 00:33	WG1523424
Benzo(b)fluoranthene	ND		0.00600	1	08/11/2020 00:33	WG1523424
Benzo(g,h,i)perylene	ND		0.00600	1	08/11/2020 00:33	WG1523424

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzo(k)fluoranthene	ND		0.00600	1	08/11/2020 00:33	WG1523424
Chrysene	ND		0.00600	1	08/11/2020 00:33	WG1523424
Dibenz(a,h)anthracene	ND		0.00600	1	08/11/2020 00:33	WG1523424
Fluoranthene	ND		0.00600	1	08/11/2020 00:33	WG1523424
Fluorene	ND		0.00600	1	08/11/2020 00:33	WG1523424
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/11/2020 00:33	WG1523424
Naphthalene	ND		0.0200	1	08/11/2020 00:33	WG1523424
Phenanthrene	ND		0.00600	1	08/11/2020 00:33	WG1523424
Pyrene	ND		0.00600	1	08/11/2020 00:33	WG1523424
1-Methylnaphthalene	ND		0.0200	1	08/11/2020 00:33	WG1523424
2-Methylnaphthalene	ND		0.0200	1	08/11/2020 00:33	WG1523424
2-Chloronaphthalene	ND		0.0200	1	08/11/2020 00:33	WG1523424
(S) p-Terphenyl-d14	*74.3*		*23.0-120*		*08/11/2020 00:33*	WG1523424
(S) Nitrobenzene-d5	*56.3*		*14.0-149*		*08/11/2020 00:33*	WG1523424
(S) 2-Fluorobiphenyl	*74.7*		*34.0-125*		*08/11/2020 00:33*	WG1523424

Mercury by Method 7471B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0400	1	08/06/2020 19:57	WG1521438

Metals (ICP) by Method 6010D

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.61		2.00	1	08/07/2020 21:16	WG1521605
Barium	92.4		0.500	1	08/07/2020 21:16	WG1521605
Cadmium	ND		0.500	1	08/07/2020 21:16	WG1521605
Chromium	28.3		1.00	1	08/07/2020 21:16	WG1521605
Lead	9.98		0.500	1	08/07/2020 21:16	WG1521605
Selenium	ND		2.00	1	08/07/2020 21:16	WG1521605
Silver	ND		1.00	1	08/07/2020 21:16	WG1521605

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND		1.25	1	08/08/2020 17:05	WG1522695
Acrylonitrile	ND		0.313	1	08/08/2020 17:05	WG1522695
Benzene	ND		0.0250	1	08/08/2020 17:05	WG1522695
Bromobenzene	ND		0.313	1	08/08/2020 17:05	WG1522695
Bromodichloromethane	ND		0.0625	1	08/08/2020 17:05	WG1522695
Bromoform	ND		0.625	1	08/08/2020 17:05	WG1522695
Bromomethane	ND		0.313	1	08/08/2020 17:05	WG1522695
1,3-Butadiene	ND		0.625	1	08/08/2020 17:05	WG1522695
n-Butylbenzene	ND		0.313	1	08/08/2020 17:05	WG1522695
sec-Butylbenzene	ND		0.313	1	08/08/2020 17:05	WG1522695
tert-Butylbenzene	ND		0.125	1	08/08/2020 17:05	WG1522695
Carbon disulfide	ND		0.313	1	08/08/2020 17:05	WG1522695
Carbon tetrachloride	ND		0.125	1	08/08/2020 17:05	WG1522695
Chlorobenzene	ND		0.0625	1	08/08/2020 17:05	WG1522695
Chlorodibromomethane	ND		0.0625	1	08/08/2020 17:05	WG1522695
Chloroethane	ND		0.125	1	08/08/2020 17:05	WG1522695
Chloroform	ND		0.0625	1	08/08/2020 17:05	WG1522695
Chloromethane	ND		0.313	1	08/08/2020 17:05	WG1522695
2-Chlorotoluene	ND		0.0625	1	08/08/2020 17:05	WG1522695
4-Chlorotoluene	ND		0.125	1	08/08/2020 17:05	WG1522695
Cyclohexane	ND		0.0625	1	08/08/2020 17:05	WG1522695
1,2-Dibromo-3-Chloropropane	ND		0.625	1	08/08/2020 17:05	WG1522695
1,2-Dibromoethane	ND		0.0625	1	08/08/2020 17:05	WG1522695
Dibromomethane	ND		0.125	1	08/08/2020 17:05	WG1522695
1,2-Dichlorobenzene	ND		0.125	1	08/08/2020 17:05	WG1522695
1,3-Dichlorobenzene	ND		0.125	1	08/08/2020 17:05	WG1522695
1,4-Dichlorobenzene	ND		0.125	1	08/08/2020 17:05	WG1522695
Dichlorodifluoromethane	ND		0.0625	1	08/08/2020 17:05	WG1522695
1,1-Dichloroethane	ND		0.0625	1	08/08/2020 17:05	WG1522695
1,2-Dichloroethane	ND		0.0625	1	08/08/2020 17:05	WG1522695
1,1-Dichloroethene	ND		0.0625	1	08/08/2020 17:05	WG1522695
cis-1,2-Dichloroethene	ND		0.0625	1	08/08/2020 17:05	WG1522695
trans-1,2-Dichloroethene	ND		0.125	1	08/08/2020 17:05	WG1522695
1,2-Dichloropropane	ND		0.125	1	08/08/2020 17:05	WG1522695
1,1-Dichloropropene	ND		0.0625	1	08/08/2020 17:05	WG1522695
1,3-Dichloropropane	ND		0.125	1	08/08/2020 17:05	WG1522695
cis-1,3-Dichloropropene	ND		0.0625	1	08/08/2020 17:05	WG1522695
trans-1,3-Dichloropropene	ND		0.125	1	08/08/2020 17:05	WG1522695
2,2-Dichloropropane	ND		0.0625	1	08/08/2020 17:05	WG1522695

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Dicyclopentadiene	ND		0.313	1	08/08/2020 17:05	WG1522695
Di-isopropyl ether	ND		0.0250	1	08/08/2020 17:05	WG1522695
Ethylbenzene	ND		0.0625	1	08/08/2020 17:05	WG1522695
4-Ethyltoluene	ND		0.125	1	08/08/2020 17:05	WG1522695
Hexachloro-1,3-butadiene	ND		0.625	1	08/08/2020 17:05	WG1522695
n-Hexane	ND		0.125	1	08/08/2020 17:05	WG1522695
Isopropylbenzene	ND		0.0625	1	08/08/2020 17:05	WG1522695
p-Isopropyltoluene	ND		0.125	1	08/08/2020 17:05	WG1522695
2-Butanone (MEK)	ND		2.50	1	08/08/2020 17:05	WG1522695
Methylene Chloride	ND		0.625	1	08/08/2020 17:05	WG1522695
4-Methyl-2-pentanone (MIBK)	ND		0.625	1	08/08/2020 17:05	WG1522695
Methyl tert-butyl ether	ND		0.0250	1	08/08/2020 17:05	WG1522695
Methyl Cyclohexane	ND		0.125	1	08/08/2020 17:05	WG1522695
Naphthalene	ND		0.313	1	08/08/2020 17:05	WG1522695
Propene	ND		1.25	1	08/08/2020 17:05	WG1522695
n-Propylbenzene	ND		0.125	1	08/08/2020 17:05	WG1522695
Styrene	ND		0.313	1	08/08/2020 17:05	WG1522695
1,1,1,2-Tetrachloroethane	ND		0.0625	1	08/08/2020 17:05	WG1522695
1,1,2,2-Tetrachloroethane	ND		0.0625	1	08/08/2020 17:05	WG1522695
1,1,2-Trichlorotrifluoroethane	ND		0.0625	1	08/08/2020 17:05	WG1522695
Tetrachloroethene	ND		0.0625	1	08/08/2020 17:05	WG1522695
Toluene	ND		0.125	1	08/08/2020 17:05	WG1522695
1,2,3-Trichlorobenzene	ND		0.313	1	08/08/2020 17:05	WG1522695
1,2,4-Trichlorobenzene	ND		0.313	1	08/08/2020 17:05	WG1522695
1,1,1-Trichloroethane	ND		0.0625	1	08/08/2020 17:05	WG1522695
1,1,2-Trichloroethane	ND		0.0625	1	08/08/2020 17:05	WG1522695
Trichloroethene	ND		0.0250	1	08/08/2020 17:05	WG1522695
Trichlorofluoromethane	ND		0.0625	1	08/08/2020 17:05	WG1522695
1,2,3-Trichloropropane	ND		0.313	1	08/08/2020 17:05	WG1522695
1,2,4-Trimethylbenzene	ND		0.125	1	08/08/2020 17:05	WG1522695
1,2,3-Trimethylbenzene	ND		0.125	1	08/08/2020 17:05	WG1522695
1,3,5-Trimethylbenzene	ND		0.125	1	08/08/2020 17:05	WG1522695
Vinyl chloride	ND		0.0625	1	08/08/2020 17:05	WG1522695
Xylenes, Total	ND		0.163	1	08/08/2020 17:05	WG1522695
(S) Toluene-d8	*96.1*		*75.0-131*		*08/08/2020 17:05*	WG1522695
(S) 4-Bromofluorobenzene	*107*		*67.0-138*		*08/08/2020 17:05*	WG1522695
(S) 1,2-Dichloroethane-d4	*105*		*70.0-130*		*08/08/2020 17:05*	WG1522695

Semi-Volatile Organic Compounds (GC) by Method 8015AZR1

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C22 Hydrocarbons	ND		30.0	1	08/07/2020 15:22	WG1522295
C22-C32 Hydrocarbons	ND		50.0	1	08/07/2020 15:22	WG1522295
(S) o-Terphenyl	*80.9*		*70.0-130*		*08/07/2020 15:22*	WG1522295

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
2,4-D	ND		0.0700	1	08/12/2020 01:28	WG1521532
Dalapon	ND		0.0700	1	08/12/2020 01:28	WG1521532
2,4-DB	ND		0.0700	1	08/12/2020 01:28	WG1521532
Dicamba	ND		0.0700	1	08/12/2020 01:28	WG1521532
Dichloroprop	ND		0.0700	1	08/12/2020 01:28	WG1521532
Dinoseb	ND		0.0700	1	08/12/2020 01:28	WG1521532
MCPA	ND	L1	6.50	1	08/12/2020 01:28	WG1521532

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
MCPP	ND		6.50	1	08/12/2020 01:28	WG1521532
2,4,5-T	ND		0.0700	1	08/12/2020 01:28	WG1521532
2,4,5-TP (Silvex)	ND		0.0700	1	08/12/2020 01:28	WG1521532
(S) 2,4-Dichlorophenyl Acetic Acid	*66.5*		*22.0-132*		*08/12/2020 01:28*	WG1521532

Pesticides (GC) by Method 8081B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Aldrin	ND		0.0200	1	08/10/2020 12:08	WG1522016
Alpha BHC	ND		0.0200	1	08/10/2020 12:08	WG1522016
Beta BHC	ND		0.0200	1	08/10/2020 12:08	WG1522016
Delta BHC	ND		0.0200	1	08/10/2020 12:08	WG1522016
Gamma BHC	ND		0.0200	1	08/10/2020 12:08	WG1522016
Chlordane	ND		0.300	1	08/10/2020 12:08	WG1522016
4,4-DDD	ND		0.0200	1	08/10/2020 12:08	WG1522016
4,4-DDE	ND		0.0200	1	08/10/2020 12:08	WG1522016
4,4-DDT	ND		0.0200	1	08/10/2020 12:08	WG1522016
Dieldrin	ND		0.0200	1	08/10/2020 12:08	WG1522016
Endosulfan I	ND		0.0200	1	08/10/2020 12:08	WG1522016
Endosulfan II	ND		0.0200	1	08/10/2020 12:08	WG1522016
Endosulfan sulfate	ND		0.0200	1	08/10/2020 12:08	WG1522016
Endrin	ND		0.0200	1	08/10/2020 12:08	WG1522016
Endrin aldehyde	ND		0.0200	1	08/10/2020 12:08	WG1522016
Endrin ketone	ND		0.0200	1	08/10/2020 12:08	WG1522016
Heptachlor	ND		0.0200	1	08/10/2020 12:08	WG1522016
Heptachlor epoxide	ND		0.0200	1	08/10/2020 12:08	WG1522016
Hexachlorobenzene	ND		0.0200	1	08/10/2020 12:08	WG1522016
Methoxychlor	ND		0.0200	1	08/10/2020 12:08	WG1522016
Toxaphene	ND		0.400	1	08/10/2020 12:08	WG1522016
(S) Decachlorobiphenyl	*66.9*		*10.0-135*		*08/10/2020 12:08*	WG1522016
(S) Tetrachloro-m-xylene	*76.4*		*10.0-139*		*08/10/2020 12:08*	WG1522016

Polychlorinated Biphenyls (GC) by Method 8082 A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
PCB 1016	ND		0.0340	1	08/10/2020 13:57	WG1522016
PCB 1221	ND		0.0340	1	08/10/2020 13:57	WG1522016
PCB 1232	ND		0.0340	1	08/10/2020 13:57	WG1522016
PCB 1242	ND		0.0340	1	08/10/2020 13:57	WG1522016
PCB 1248	ND		0.0170	1	08/10/2020 13:57	WG1522016
PCB 1254	ND		0.0170	1	08/10/2020 13:57	WG1522016
PCB 1260	ND		0.0170	1	08/10/2020 13:57	WG1522016
(S) Decachlorobiphenyl	*71.5*		*10.0-135*		*08/10/2020 13:57*	WG1522016
(S) Tetrachloro-m-xylene	*83.5*		*10.0-139*		*08/10/2020 13:57*	WG1522016

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	08/11/2020 00:54	WG1523424
Acenaphthene	ND		0.00600	1	08/11/2020 00:54	WG1523424
Acenaphthylene	ND		0.00600	1	08/11/2020 00:54	WG1523424
Benzo(a)anthracene	ND		0.00600	1	08/11/2020 00:54	WG1523424
Benzo(a)pyrene	ND		0.00600	1	08/11/2020 00:54	WG1523424
Benzo(b)fluoranthene	ND		0.00600	1	08/11/2020 00:54	WG1523424
Benzo(g,h,i)perylene	ND		0.00600	1	08/11/2020 00:54	WG1523424

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzo(k)fluoranthene	ND		0.00600	1	08/11/2020 00:54	WG1523424
Chrysene	ND		0.00600	1	08/11/2020 00:54	WG1523424
Dibenz(a,h)anthracene	ND		0.00600	1	08/11/2020 00:54	WG1523424
Fluoranthene	ND		0.00600	1	08/11/2020 00:54	WG1523424
Fluorene	ND		0.00600	1	08/11/2020 00:54	WG1523424
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/11/2020 00:54	WG1523424
Naphthalene	ND		0.0200	1	08/11/2020 00:54	WG1523424
Phenanthrene	ND		0.00600	1	08/11/2020 00:54	WG1523424
Pyrene	ND		0.00600	1	08/11/2020 00:54	WG1523424
1-Methylnaphthalene	ND		0.0200	1	08/11/2020 00:54	WG1523424
2-Methylnaphthalene	ND		0.0200	1	08/11/2020 00:54	WG1523424
2-Chloronaphthalene	ND		0.0200	1	08/11/2020 00:54	WG1523424
(S) p-Terphenyl-d14	*86.3*		*23.0-120*		*08/11/2020 00:54*	WG1523424
(S) Nitrobenzene-d5	*70.5*		*14.0-149*		*08/11/2020 00:54*	WG1523424
(S) 2-Fluorobiphenyl	*90.9*		*34.0-125*		*08/11/2020 00:54*	WG1523424

Mercury by Method 7471B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0400	1	08/06/2020 19:59	WG1521438

Metals (ICP) by Method 6010D

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	15.0		2.00	1	08/07/2020 21:19	WG1521605
Barium	93.6		0.500	1	08/07/2020 21:19	WG1521605
Cadmium	ND		0.500	1	08/07/2020 21:19	WG1521605
Chromium	31.1		1.00	1	08/07/2020 21:19	WG1521605
Lead	10.1		0.500	1	08/07/2020 21:19	WG1521605
Selenium	ND		2.00	1	08/07/2020 21:19	WG1521605
Silver	ND		1.00	1	08/07/2020 21:19	WG1521605

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND	M1 R5	1.25	1	08/08/2020 17:23	WG1522695
Acrylonitrile	ND	M1	0.313	1	08/08/2020 17:23	WG1522695
Benzene	ND		0.0250	1	08/08/2020 17:23	WG1522695
Bromobenzene	ND		0.313	1	08/08/2020 17:23	WG1522695
Bromodichloromethane	ND		0.0625	1	08/08/2020 17:23	WG1522695
Bromoform	ND		0.625	1	08/08/2020 17:23	WG1522695
Bromomethane	ND		0.313	1	08/08/2020 17:23	WG1522695
1,3-Butadiene	ND		0.625	1	08/08/2020 17:23	WG1522695
n-Butylbenzene	ND		0.313	1	08/08/2020 17:23	WG1522695
sec-Butylbenzene	ND		0.313	1	08/08/2020 17:23	WG1522695
tert-Butylbenzene	ND		0.125	1	08/08/2020 17:23	WG1522695
Carbon disulfide	ND		0.313	1	08/08/2020 17:23	WG1522695
Carbon tetrachloride	ND		0.125	1	08/08/2020 17:23	WG1522695
Chlorobenzene	ND		0.0625	1	08/08/2020 17:23	WG1522695
Chlorodibromomethane	ND		0.0625	1	08/08/2020 17:23	WG1522695
Chloroethane	ND		0.125	1	08/08/2020 17:23	WG1522695
Chloroform	ND		0.0625	1	08/08/2020 17:23	WG1522695
Chloromethane	ND		0.313	1	08/08/2020 17:23	WG1522695
2-Chlorotoluene	ND		0.0625	1	08/08/2020 17:23	WG1522695
4-Chlorotoluene	ND		0.125	1	08/08/2020 17:23	WG1522695
Cyclohexane	ND		0.0625	1	08/08/2020 17:23	WG1522695
1,2-Dibromo-3-Chloropropane	ND		0.625	1	08/08/2020 17:23	WG1522695
1,2-Dibromoethane	ND		0.0625	1	08/08/2020 17:23	WG1522695
Dibromomethane	ND		0.125	1	08/08/2020 17:23	WG1522695
1,2-Dichlorobenzene	ND		0.125	1	08/08/2020 17:23	WG1522695
1,3-Dichlorobenzene	ND		0.125	1	08/08/2020 17:23	WG1522695
1,4-Dichlorobenzene	ND		0.125	1	08/08/2020 17:23	WG1522695
Dichlorodifluoromethane	ND		0.0625	1	08/08/2020 17:23	WG1522695
1,1-Dichloroethane	ND		0.0625	1	08/08/2020 17:23	WG1522695
1,2-Dichloroethane	ND		0.0625	1	08/08/2020 17:23	WG1522695
1,1-Dichloroethene	ND		0.0625	1	08/08/2020 17:23	WG1522695
cis-1,2-Dichloroethene	ND		0.0625	1	08/08/2020 17:23	WG1522695
trans-1,2-Dichloroethene	ND		0.125	1	08/08/2020 17:23	WG1522695
1,2-Dichloropropane	ND		0.125	1	08/08/2020 17:23	WG1522695
1,1-Dichloropropene	ND		0.0625	1	08/08/2020 17:23	WG1522695
1,3-Dichloropropane	ND		0.125	1	08/08/2020 17:23	WG1522695
cis-1,3-Dichloropropene	ND		0.0625	1	08/08/2020 17:23	WG1522695
trans-1,3-Dichloropropene	ND		0.125	1	08/08/2020 17:23	WG1522695
2,2-Dichloropropane	ND		0.0625	1	08/08/2020 17:23	WG1522695

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Dicyclopentadiene	ND		0.313	1	08/08/2020 17:23	WG1522695
Di-isopropyl ether	ND		0.0250	1	08/08/2020 17:23	WG1522695
Ethylbenzene	ND		0.0625	1	08/08/2020 17:23	WG1522695
4-Ethyltoluene	ND		0.125	1	08/08/2020 17:23	WG1522695
Hexachloro-1,3-butadiene	ND		0.625	1	08/08/2020 17:23	WG1522695
n-Hexane	ND		0.125	1	08/08/2020 17:23	WG1522695
Isopropylbenzene	ND		0.0625	1	08/08/2020 17:23	WG1522695
p-Isopropyltoluene	ND		0.125	1	08/08/2020 17:23	WG1522695
2-Butanone (MEK)	ND	M1 R5	2.50	1	08/08/2020 17:23	WG1522695
Methylene Chloride	ND		0.625	1	08/08/2020 17:23	WG1522695
4-Methyl-2-pentanone (MIBK)	ND		0.625	1	08/08/2020 17:23	WG1522695
Methyl tert-butyl ether	ND		0.0250	1	08/08/2020 17:23	WG1522695
Methyl Cyclohexane	ND		0.125	1	08/08/2020 17:23	WG1522695
Naphthalene	ND		0.313	1	08/08/2020 17:23	WG1522695
Propene	ND		1.25	1	08/08/2020 17:23	WG1522695
n-Propylbenzene	ND		0.125	1	08/08/2020 17:23	WG1522695
Styrene	ND		0.313	1	08/08/2020 17:23	WG1522695
1,1,1,2-Tetrachloroethane	ND		0.0625	1	08/08/2020 17:23	WG1522695
1,1,2,2-Tetrachloroethane	ND		0.0625	1	08/08/2020 17:23	WG1522695
1,1,2-Trichlorotrifluoroethane	ND		0.0625	1	08/08/2020 17:23	WG1522695
Tetrachloroethene	ND		0.0625	1	08/08/2020 17:23	WG1522695
Toluene	ND		0.125	1	08/08/2020 17:23	WG1522695
1,2,3-Trichlorobenzene	ND		0.313	1	08/08/2020 17:23	WG1522695
1,2,4-Trichlorobenzene	ND		0.313	1	08/08/2020 17:23	WG1522695
1,1,1-Trichloroethane	ND		0.0625	1	08/08/2020 17:23	WG1522695
1,1,2-Trichloroethane	ND		0.0625	1	08/08/2020 17:23	WG1522695
Trichloroethene	ND		0.0250	1	08/08/2020 17:23	WG1522695
Trichlorofluoromethane	ND		0.0625	1	08/08/2020 17:23	WG1522695
1,2,3-Trichloropropane	ND		0.313	1	08/08/2020 17:23	WG1522695
1,2,4-Trimethylbenzene	ND		0.125	1	08/08/2020 17:23	WG1522695
1,2,3-Trimethylbenzene	ND		0.125	1	08/08/2020 17:23	WG1522695
1,3,5-Trimethylbenzene	ND		0.125	1	08/08/2020 17:23	WG1522695
Vinyl chloride	ND		0.0625	1	08/08/2020 17:23	WG1522695
Xylenes, Total	ND		0.163	1	08/08/2020 17:23	WG1522695
(S) Toluene-d8	*97.1*		*75.0-131*		*08/08/2020 17:23*	WG1522695
(S) 4-Bromofluorobenzene	*108*		*67.0-138*		*08/08/2020 17:23*	WG1522695
(S) 1,2-Dichloroethane-d4	*104*		*70.0-130*		*08/08/2020 17:23*	WG1522695

Semi-Volatile Organic Compounds (GC) by Method 8015AZR1

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C22 Hydrocarbons	ND		30.0	1	08/07/2020 14:53	WG1522295
C22-C32 Hydrocarbons	ND		50.0	1	08/07/2020 14:53	WG1522295
(S) o-Terphenyl	*77.3*		*70.0-130*		*08/07/2020 14:53*	WG1522295

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
2,4-D	ND		0.0700	1	08/12/2020 01:43	WG1521532
Dalapon	ND		0.0700	1	08/12/2020 01:43	WG1521532
2,4-DB	ND		0.0700	1	08/12/2020 01:43	WG1521532
Dicamba	ND		0.0700	1	08/12/2020 01:43	WG1521532
Dichloroprop	ND		0.0700	1	08/12/2020 01:43	WG1521532
Dinoseb	ND		0.0700	1	08/12/2020 01:43	WG1521532
MCPA	ND	L1	6.50	1	08/12/2020 01:43	WG1521532

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
MCPP	ND		6.50	1	08/12/2020 01:43	WG1521532
2,4,5-T	ND		0.0700	1	08/12/2020 01:43	WG1521532
2,4,5-TP (Silvex)	ND		0.0700	1	08/12/2020 01:43	WG1521532
(S) 2,4-Dichlorophenyl Acetic Acid	*66.3*		*22.0-132*		*08/12/2020 01:43*	WG1521532

Pesticides (GC) by Method 8081B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Aldrin	ND		0.0200	1	08/10/2020 12:22	WG1522016
Alpha BHC	ND		0.0200	1	08/10/2020 12:22	WG1522016
Beta BHC	ND		0.0200	1	08/10/2020 12:22	WG1522016
Delta BHC	ND		0.0200	1	08/10/2020 12:22	WG1522016
Gamma BHC	ND		0.0200	1	08/10/2020 12:22	WG1522016
Chlordane	ND		0.300	1	08/10/2020 12:22	WG1522016
4,4-DDD	ND		0.0200	1	08/10/2020 12:22	WG1522016
4,4-DDE	ND		0.0200	1	08/10/2020 12:22	WG1522016
4,4-DDT	ND		0.0200	1	08/10/2020 12:22	WG1522016
Dieldrin	ND		0.0200	1	08/10/2020 12:22	WG1522016
Endosulfan I	ND		0.0200	1	08/10/2020 12:22	WG1522016
Endosulfan II	ND		0.0200	1	08/10/2020 12:22	WG1522016
Endosulfan sulfate	ND		0.0200	1	08/10/2020 12:22	WG1522016
Endrin	ND		0.0200	1	08/10/2020 12:22	WG1522016
Endrin aldehyde	ND		0.0200	1	08/10/2020 12:22	WG1522016
Endrin ketone	ND		0.0200	1	08/10/2020 12:22	WG1522016
Heptachlor	ND		0.0200	1	08/10/2020 12:22	WG1522016
Heptachlor epoxide	ND		0.0200	1	08/10/2020 12:22	WG1522016
Hexachlorobenzene	ND		0.0200	1	08/10/2020 12:22	WG1522016
Methoxychlor	ND		0.0200	1	08/10/2020 12:22	WG1522016
Toxaphene	ND		0.400	1	08/10/2020 12:22	WG1522016
(S) Decachlorobiphenyl	*73.3*		*10.0-135*		*08/10/2020 12:22*	WG1522016
(S) Tetrachloro-m-xylene	*83.1*		*10.0-139*		*08/10/2020 12:22*	WG1522016

Polychlorinated Biphenyls (GC) by Method 8082 A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
PCB 1016	ND		0.0340	1	08/10/2020 14:11	WG1522016
PCB 1221	ND		0.0340	1	08/10/2020 14:11	WG1522016
PCB 1232	ND		0.0340	1	08/10/2020 14:11	WG1522016
PCB 1242	ND		0.0340	1	08/10/2020 14:11	WG1522016
PCB 1248	ND		0.0170	1	08/10/2020 14:11	WG1522016
PCB 1254	ND		0.0170	1	08/10/2020 14:11	WG1522016
PCB 1260	ND		0.0170	1	08/10/2020 14:11	WG1522016
(S) Decachlorobiphenyl	*75.1*		*10.0-135*		*08/10/2020 14:11*	WG1522016
(S) Tetrachloro-m-xylene	*86.7*		*10.0-139*		*08/10/2020 14:11*	WG1522016

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	08/11/2020 01:15	WG1523424
Acenaphthene	ND		0.00600	1	08/11/2020 01:15	WG1523424
Acenaphthylene	ND		0.00600	1	08/11/2020 01:15	WG1523424
Benzo(a)anthracene	ND		0.00600	1	08/11/2020 01:15	WG1523424
Benzo(a)pyrene	ND		0.00600	1	08/11/2020 01:15	WG1523424
Benzo(b)fluoranthene	ND		0.00600	1	08/11/2020 01:15	WG1523424
Benzo(g,h,i)perylene	ND		0.00600	1	08/11/2020 01:15	WG1523424

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzo(k)fluoranthene	ND		0.00600	1	08/11/2020 01:15	WG1523424
Chrysene	ND		0.00600	1	08/11/2020 01:15	WG1523424
Dibenz(a,h)anthracene	ND		0.00600	1	08/11/2020 01:15	WG1523424
Fluoranthene	ND		0.00600	1	08/11/2020 01:15	WG1523424
Fluorene	ND		0.00600	1	08/11/2020 01:15	WG1523424
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/11/2020 01:15	WG1523424
Naphthalene	ND		0.0200	1	08/11/2020 01:15	WG1523424
Phenanthrene	ND		0.00600	1	08/11/2020 01:15	WG1523424
Pyrene	ND		0.00600	1	08/11/2020 01:15	WG1523424
1-Methylnaphthalene	ND		0.0200	1	08/11/2020 01:15	WG1523424
2-Methylnaphthalene	ND		0.0200	1	08/11/2020 01:15	WG1523424
2-Chloronaphthalene	ND		0.0200	1	08/11/2020 01:15	WG1523424
(S) p-Terphenyl-d14	*93.2*		*23.0-120*		*08/11/2020 01:15*	WG1523424
(S) Nitrobenzene-d5	*73.1*		*14.0-149*		*08/11/2020 01:15*	WG1523424
(S) 2-Fluorobiphenyl	*91.8*		*34.0-125*		*08/11/2020 01:15*	WG1523424

Mercury by Method 7471B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0400	1	08/06/2020 20:02	WG1521438

Metals (ICP) by Method 6010D

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.56		2.00	1	08/07/2020 21:22	WG1521605
Barium	71.1		0.500	1	08/07/2020 21:22	WG1521605
Cadmium	ND		0.500	1	08/07/2020 21:22	WG1521605
Chromium	21.6		1.00	1	08/07/2020 21:22	WG1521605
Lead	8.24		0.500	1	08/07/2020 21:22	WG1521605
Selenium	ND		2.00	1	08/07/2020 21:22	WG1521605
Silver	ND		1.00	1	08/07/2020 21:22	WG1521605

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND	L1	1.25	1	08/08/2020 22:23	WG1522773
Acrylonitrile	ND		0.313	1	08/08/2020 22:23	WG1522773
Benzene	ND		0.0250	1	08/08/2020 22:23	WG1522773
Bromobenzene	ND		0.313	1	08/08/2020 22:23	WG1522773
Bromodichloromethane	ND		0.0625	1	08/08/2020 22:23	WG1522773
Bromoform	ND		0.625	1	08/08/2020 22:23	WG1522773
Bromomethane	ND		0.313	1	08/08/2020 22:23	WG1522773
1,3-Butadiene	ND		0.625	1	08/08/2020 22:23	WG1522773
n-Butylbenzene	ND		0.313	1	08/08/2020 22:23	WG1522773
sec-Butylbenzene	ND		0.313	1	08/08/2020 22:23	WG1522773
tert-Butylbenzene	ND		0.125	1	08/08/2020 22:23	WG1522773
Carbon disulfide	ND		0.313	1	08/08/2020 22:23	WG1522773
Carbon tetrachloride	ND		0.125	1	08/08/2020 22:23	WG1522773
Chlorobenzene	ND		0.0625	1	08/08/2020 22:23	WG1522773
Chlorodibromomethane	ND		0.0625	1	08/08/2020 22:23	WG1522773
Chloroethane	ND		0.125	1	08/08/2020 22:23	WG1522773
Chloroform	ND		0.0625	1	08/08/2020 22:23	WG1522773
Chloromethane	ND		0.313	1	08/08/2020 22:23	WG1522773
2-Chlorotoluene	ND		0.0625	1	08/08/2020 22:23	WG1522773
4-Chlorotoluene	ND		0.125	1	08/08/2020 22:23	WG1522773
Cyclohexane	ND		0.0625	1	08/08/2020 22:23	WG1522773
1,2-Dibromo-3-Chloropropane	ND		0.625	1	08/08/2020 22:23	WG1522773
1,2-Dibromoethane	ND		0.0625	1	08/08/2020 22:23	WG1522773
Dibromomethane	ND		0.125	1	08/08/2020 22:23	WG1522773
1,2-Dichlorobenzene	ND		0.125	1	08/08/2020 22:23	WG1522773
1,3-Dichlorobenzene	ND		0.125	1	08/08/2020 22:23	WG1522773
1,4-Dichlorobenzene	ND		0.125	1	08/08/2020 22:23	WG1522773
Dichlorodifluoromethane	ND		0.0625	1	08/08/2020 22:23	WG1522773
1,1-Dichloroethane	ND		0.0625	1	08/08/2020 22:23	WG1522773
1,2-Dichloroethane	ND		0.0625	1	08/08/2020 22:23	WG1522773
1,1-Dichloroethene	ND		0.0625	1	08/08/2020 22:23	WG1522773
cis-1,2-Dichloroethene	ND		0.0625	1	08/08/2020 22:23	WG1522773
trans-1,2-Dichloroethene	ND		0.125	1	08/08/2020 22:23	WG1522773
1,2-Dichloropropane	ND		0.125	1	08/08/2020 22:23	WG1522773
1,1-Dichloropropene	ND		0.0625	1	08/08/2020 22:23	WG1522773
1,3-Dichloropropane	ND		0.125	1	08/08/2020 22:23	WG1522773
cis-1,3-Dichloropropene	ND		0.0625	1	08/08/2020 22:23	WG1522773
trans-1,3-Dichloropropene	ND		0.125	1	08/08/2020 22:23	WG1522773
2,2-Dichloropropane	ND		0.0625	1	08/08/2020 22:23	WG1522773

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Dicyclopentadiene	ND		0.313	1	08/08/2020 22:23	WG1522773
Di-isopropyl ether	ND		0.0250	1	08/08/2020 22:23	WG1522773
Ethylbenzene	ND		0.0625	1	08/08/2020 22:23	WG1522773
4-Ethyltoluene	ND		0.125	1	08/08/2020 22:23	WG1522773
Hexachloro-1,3-butadiene	ND		0.625	1	08/08/2020 22:23	WG1522773
n-Hexane	ND		0.125	1	08/08/2020 22:23	WG1522773
Isopropylbenzene	ND		0.0625	1	08/08/2020 22:23	WG1522773
p-Isopropyltoluene	ND		0.125	1	08/08/2020 22:23	WG1522773
2-Butanone (MEK)	ND	L1	2.50	1	08/08/2020 22:23	WG1522773
Methylene Chloride	ND		0.625	1	08/08/2020 22:23	WG1522773
4-Methyl-2-pentanone (MIBK)	ND		0.625	1	08/08/2020 22:23	WG1522773
Methyl tert-butyl ether	ND		0.0250	1	08/08/2020 22:23	WG1522773
Methyl Cyclohexane	ND		0.125	1	08/08/2020 22:23	WG1522773
Naphthalene	ND		0.313	1	08/08/2020 22:23	WG1522773
Propene	ND		1.25	1	08/08/2020 22:23	WG1522773
n-Propylbenzene	ND		0.125	1	08/08/2020 22:23	WG1522773
Styrene	ND		0.313	1	08/08/2020 22:23	WG1522773
1,1,1,2-Tetrachloroethane	ND		0.0625	1	08/08/2020 22:23	WG1522773
1,1,2,2-Tetrachloroethane	ND		0.0625	1	08/08/2020 22:23	WG1522773
1,1,2-Trichlorotrifluoroethane	ND		0.0625	1	08/08/2020 22:23	WG1522773
Tetrachloroethene	ND		0.0625	1	08/08/2020 22:23	WG1522773
Toluene	ND		0.125	1	08/08/2020 22:23	WG1522773
1,2,3-Trichlorobenzene	ND		0.313	1	08/08/2020 22:23	WG1522773
1,2,4-Trichlorobenzene	ND		0.313	1	08/08/2020 22:23	WG1522773
1,1,1-Trichloroethane	ND		0.0625	1	08/08/2020 22:23	WG1522773
1,1,2-Trichloroethane	ND		0.0625	1	08/08/2020 22:23	WG1522773
Trichloroethene	ND		0.0250	1	08/08/2020 22:23	WG1522773
Trichlorofluoromethane	ND		0.0625	1	08/08/2020 22:23	WG1522773
1,2,3-Trichloropropane	ND		0.313	1	08/08/2020 22:23	WG1522773
1,2,4-Trimethylbenzene	ND		0.125	1	08/08/2020 22:23	WG1522773
1,2,3-Trimethylbenzene	ND		0.125	1	08/08/2020 22:23	WG1522773
1,3,5-Trimethylbenzene	ND		0.125	1	08/08/2020 22:23	WG1522773
Vinyl chloride	ND		0.0625	1	08/08/2020 22:23	WG1522773
Xylenes, Total	ND		0.163	1	08/08/2020 22:23	WG1522773
(S) Toluene-d8	*96.2*		*75.0-131*		*08/08/2020 22:23*	WG1522773
(S) 4-Bromofluorobenzene	*107*		*67.0-138*		*08/08/2020 22:23*	WG1522773
(S) 1,2-Dichloroethane-d4	*104*		*70.0-130*		*08/08/2020 22:23*	WG1522773

Semi-Volatile Organic Compounds (GC) by Method 8015AZR1

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C22 Hydrocarbons	ND		30.0	1	08/07/2020 15:07	WG1522295
C22-C32 Hydrocarbons	ND		50.0	1	08/07/2020 15:07	WG1522295
(S) o-Terphenyl	*83.3*		*70.0-130*		*08/07/2020 15:07*	WG1522295

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
2,4-D	ND		0.0700	1	08/12/2020 01:58	WG1521532
Dalapon	ND		0.0700	1	08/12/2020 01:58	WG1521532
2,4-DB	ND		0.0700	1	08/12/2020 01:58	WG1521532
Dicamba	ND		0.0700	1	08/12/2020 01:58	WG1521532
Dichloroprop	ND		0.0700	1	08/12/2020 01:58	WG1521532
Dinoseb	ND		0.0700	1	08/12/2020 01:58	WG1521532
MCPA	ND	L1	6.50	1	08/12/2020 01:58	WG1521532

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
MCPP	ND		6.50	1	08/12/2020 01:58	WG1521532
2,4,5-T	ND		0.0700	1	08/12/2020 01:58	WG1521532
2,4,5-TP (Silvex)	ND		0.0700	1	08/12/2020 01:58	WG1521532
(S) 2,4-Dichlorophenyl Acetic Acid	*65.3*		*22.0-132*		*08/12/2020 01:58*	WG1521532

Pesticides (GC) by Method 8081B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Aldrin	ND		0.0200	1	08/10/2020 12:37	WG1522016
Alpha BHC	ND		0.0200	1	08/10/2020 12:37	WG1522016
Beta BHC	ND		0.0200	1	08/10/2020 12:37	WG1522016
Delta BHC	ND		0.0200	1	08/10/2020 12:37	WG1522016
Gamma BHC	ND		0.0200	1	08/10/2020 12:37	WG1522016
Chlordane	ND		0.300	1	08/10/2020 12:37	WG1522016
4,4-DDD	ND		0.0200	1	08/10/2020 12:37	WG1522016
4,4-DDE	ND		0.0200	1	08/10/2020 12:37	WG1522016
4,4-DDT	ND		0.0200	1	08/10/2020 12:37	WG1522016
Dieldrin	ND		0.0200	1	08/10/2020 12:37	WG1522016
Endosulfan I	ND		0.0200	1	08/10/2020 12:37	WG1522016
Endosulfan II	ND		0.0200	1	08/10/2020 12:37	WG1522016
Endosulfan sulfate	ND		0.0200	1	08/10/2020 12:37	WG1522016
Endrin	ND		0.0200	1	08/10/2020 12:37	WG1522016
Endrin aldehyde	ND		0.0200	1	08/10/2020 12:37	WG1522016
Endrin ketone	ND		0.0200	1	08/10/2020 12:37	WG1522016
Heptachlor	ND		0.0200	1	08/10/2020 12:37	WG1522016
Heptachlor epoxide	ND		0.0200	1	08/10/2020 12:37	WG1522016
Hexachlorobenzene	ND		0.0200	1	08/10/2020 12:37	WG1522016
Methoxychlor	ND		0.0200	1	08/10/2020 12:37	WG1522016
Toxaphene	ND		0.400	1	08/10/2020 12:37	WG1522016
(S) Decachlorobiphenyl	*76.7*		*10.0-135*		*08/10/2020 12:37*	WG1522016
(S) Tetrachloro-m-xylene	*86.5*		*10.0-139*		*08/10/2020 12:37*	WG1522016

Polychlorinated Biphenyls (GC) by Method 8082 A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
PCB 1016	ND		0.0340	1	08/10/2020 14:25	WG1522016
PCB 1221	ND		0.0340	1	08/10/2020 14:25	WG1522016
PCB 1232	ND		0.0340	1	08/10/2020 14:25	WG1522016
PCB 1242	ND		0.0340	1	08/10/2020 14:25	WG1522016
PCB 1248	ND		0.0170	1	08/10/2020 14:25	WG1522016
PCB 1254	ND		0.0170	1	08/10/2020 14:25	WG1522016
PCB 1260	ND		0.0170	1	08/10/2020 14:25	WG1522016
(S) Decachlorobiphenyl	*59.6*		*10.0-135*		*08/10/2020 14:25*	WG1522016
(S) Tetrachloro-m-xylene	*70.1*		*10.0-139*		*08/10/2020 14:25*	WG1522016

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	08/11/2020 01:35	WG1523424
Acenaphthene	ND		0.00600	1	08/11/2020 01:35	WG1523424
Acenaphthylene	ND		0.00600	1	08/11/2020 01:35	WG1523424
Benzo(a)anthracene	ND		0.00600	1	08/11/2020 01:35	WG1523424
Benzo(a)pyrene	ND		0.00600	1	08/11/2020 01:35	WG1523424
Benzo(b)fluoranthene	ND		0.00600	1	08/11/2020 01:35	WG1523424
Benzo(g,h,i)perylene	ND		0.00600	1	08/11/2020 01:35	WG1523424

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzo(k)fluoranthene	ND		0.00600	1	08/11/2020 01:35	WG1523424
Chrysene	ND		0.00600	1	08/11/2020 01:35	WG1523424
Dibenz(a,h)anthracene	ND		0.00600	1	08/11/2020 01:35	WG1523424
Fluoranthene	ND		0.00600	1	08/11/2020 01:35	WG1523424
Fluorene	ND		0.00600	1	08/11/2020 01:35	WG1523424
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	08/11/2020 01:35	WG1523424
Naphthalene	ND		0.0200	1	08/11/2020 01:35	WG1523424
Phenanthrene	ND		0.00600	1	08/11/2020 01:35	WG1523424
Pyrene	ND		0.00600	1	08/11/2020 01:35	WG1523424
1-Methylnaphthalene	ND		0.0200	1	08/11/2020 01:35	WG1523424
2-Methylnaphthalene	ND		0.0200	1	08/11/2020 01:35	WG1523424
2-Chloronaphthalene	ND		0.0200	1	08/11/2020 01:35	WG1523424
(S) p-Terphenyl-d14	*114*		*23.0-120*		*08/11/2020 01:35*	WG1523424
(S) Nitrobenzene-d5	*82.1*		*14.0-149*		*08/11/2020 01:35*	WG1523424
(S) 2-Fluorobiphenyl	*110*		*34.0-125*		*08/11/2020 01:35*	WG1523424

Method Blank (MB)

(MB) R3557216-1 08/06/20 18:53

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Mercury	U		0.0180	0.0400

Laboratory Control Sample (LCS)

(LCS) R3557216-2 08/06/20 18:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.500	0.454	90.9	80.0-120	

L1246546-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1246546-03 08/06/20 18:58 • (MS) R3557216-3 08/06/20 19:00 • (MSD) R3557216-4 08/06/20 19:03

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.500	ND	0.431	0.442	86.2	88.3	1	75.0-125			2.39	20

Method Blank (MB)

(MB) R3557692-1 08/07/20 20:03

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.460	2.00
Barium	U		0.240	0.500
Cadmium	U		0.0810	0.500
Chromium	U		0.250	1.00
Lead	U		0.208	0.500
Selenium	U		0.617	2.00
Silver	U		0.228	1.00

Laboratory Control Sample (LCS)

(LCS) R3557692-2 08/07/20 20:06

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	93.9	93.9	80.0-120	
Barium	100	99.7	99.7	80.0-120	
Cadmium	100	93.7	93.7	80.0-120	
Chromium	100	95.5	95.5	80.0-120	
Lead	100	95.3	95.3	80.0-120	
Selenium	100	92.6	92.6	80.0-120	
Silver	20.0	17.4	87.1	80.0-120	

L1246977-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1246977-03 08/07/20 20:08 • (MS) R3557692-5 08/07/20 20:16 • (MSD) R3557692-6 08/07/20 20:18

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	2.44	88.7	90.4	86.2	87.9	1	75.0-125			1.94	20
Barium	100	119	201	203	82.3	84.5	1	75.0-125			1.10	20
Cadmium	100	ND	87.2	89.0	87.1	88.9	1	75.0-125			2.06	20
Chromium	100	17.2	102	104	84.9	86.5	1	75.0-125			1.48	20
Lead	100	11.9	105	105	93.0	93.2	1	75.0-125			0.241	20
Selenium	100	ND	84.4	86.5	84.4	86.5	1	75.0-125			2.50	20
Silver	20.0	ND	16.3	16.7	81.4	83.4	1	75.0-125			2.49	20

Method Blank (MB)

(MB) R3557886-3 08/08/20 10:57

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acetone	U		0.913	1.25
Acrylonitrile	U		0.0903	0.313
Benzene	U		0.0117	0.0250
Bromobenzene	U		0.0225	0.313
Bromodichloromethane	U		0.0181	0.0625
Bromoform	U		0.0293	0.625
Bromomethane	U		0.0493	0.313
1,3-Butadiene	U		0.128	0.625
n-Butylbenzene	U		0.131	0.313
sec-Butylbenzene	U		0.0720	0.313
tert-Butylbenzene	U		0.0488	0.125
Carbon disulfide	U		0.0175	0.313
Carbon tetrachloride	U		0.0225	0.125
Chlorobenzene	U		0.00525	0.0625
Chlorodibromomethane	U		0.0153	0.0625
Chloroethane	U		0.0425	0.125
Chloroform	U		0.0258	0.0625
Chloromethane	U		0.109	0.313
Cyclohexane	U		0.0278	0.0625
2-Chlorotoluene	U		0.0216	0.0625
4-Chlorotoluene	U		0.0113	0.125
1,2-Dibromo-3-Chloropropane	U		0.0975	0.625
1,2-Dibromoethane	U		0.0162	0.0625
Dibromomethane	U		0.0188	0.125
1,2-Dichlorobenzene	U		0.0106	0.125
1,3-Dichlorobenzene	U		0.0150	0.125
1,4-Dichlorobenzene	U		0.0175	0.125
Dichlorodifluoromethane	U		0.0403	0.0625
1,1-Dichloroethane	U		0.0123	0.0625
1,2-Dichloroethane	U		0.0162	0.0625
1,1-Dichloroethene	U		0.0152	0.0625
cis-1,2-Dichloroethene	U		0.0184	0.0625
trans-1,2-Dichloroethene	U		0.0260	0.125
1,2-Dichloropropane	U		0.0355	0.125
1,1-Dichloropropene	U		0.0202	0.0625
1,3-Dichloropropane	U		0.0125	0.125
cis-1,3-Dichloropropene	U		0.0189	0.0625
trans-1,3-Dichloropropene	U		0.0285	0.125
2,2-Dichloropropane	U		0.0345	0.0625
Dicyclopentadiene	U		0.0413	0.313

Method Blank (MB)

(MB) R3557886-3 08/08/20 10:57

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Di-isopropyl ether	U		0.0103	0.0250
Ethylbenzene	U		0.0184	0.0625
4-Ethyltoluene	U		0.0580	0.125
Hexachloro-1,3-butadiene	U		0.150	0.625
n-Hexane	U		0.0565	0.125
Isopropylbenzene	U		0.0106	0.0625
p-Isopropyltoluene	U		0.0638	0.125
2-Butanone (MEK)	U		1.59	2.50
Methyl Cyclohexane	U		0.0515	0.125
Methylene Chloride	U		0.166	0.625
4-Methyl-2-pentanone (MIBK)	U		0.0570	0.625
Methyl tert-butyl ether	U		0.00875	0.0250
Naphthalene	U		0.122	0.313
Propene	U		0.153	1.25
n-Propylbenzene	U		0.0238	0.125
Styrene	U		0.00573	0.313
1,1,1,2-Tetrachloroethane	U		0.0237	0.0625
1,1,2,2-Tetrachloroethane	U		0.0174	0.0625
Tetrachloroethene	U		0.0224	0.0625
Toluene	U		0.0325	0.125
1,1,2-Trichlorotrifluoroethane	U		0.0189	0.0625
1,2,3-Trichlorobenzene	U		0.183	0.313
1,2,4-Trichlorobenzene	U		0.110	0.313
1,1,1-Trichloroethane	U		0.0231	0.0625
1,1,2-Trichloroethane	U		0.0149	0.0625
Trichloroethene	U		0.0146	0.0250
Trichlorofluoromethane	U		0.0207	0.0625
1,2,3-Trichloropropane	U		0.0405	0.313
1,2,3-Trimethylbenzene	U		0.0395	0.125
1,2,4-Trimethylbenzene	U		0.0395	0.125
1,3,5-Trimethylbenzene	U		0.0500	0.125
Vinyl chloride	U		0.0290	0.0625
Xylenes, Total	U		0.0220	0.163
(S) Toluene-d8	*96.3*			*75.0-131*
(S) 4-Bromofluorobenzene	*107*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*107*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3557886-1 08/08/20 09:42 • (LCSD) R3557886-2 08/08/20 10:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.625	0.907	0.855	145	137	10.0-160			5.90	31
Acrylonitrile	0.625	0.843	0.879	135	141	45.0-153			4.18	22
Benzene	0.125	0.124	0.119	99.2	95.2	70.0-123			4.12	20
Bromobenzene	0.125	0.109	0.105	87.2	84.0	73.0-121			3.74	20
Bromodichloromethane	0.125	0.133	0.129	106	103	73.0-121			3.05	20
Bromoform	0.125	0.124	0.119	99.2	95.2	64.0-132			4.12	20
Bromomethane	0.125	0.120	0.118	96.0	94.4	56.0-147			1.68	20
1,3-Butadiene	0.125	0.126	0.118	101	94.4	32.0-150			6.56	20
n-Butylbenzene	0.125	0.133	0.134	106	107	68.0-135			0.749	20
sec-Butylbenzene	0.125	0.113	0.110	90.4	88.0	74.0-130			2.69	20
tert-Butylbenzene	0.125	0.115	0.115	92.0	92.0	75.0-127			0.000	20
Carbon disulfide	0.125	0.110	0.104	88.0	83.2	56.0-133			5.61	20
Carbon tetrachloride	0.125	0.123	0.112	98.4	89.6	66.0-128			9.36	20
Chlorobenzene	0.125	0.115	0.112	92.0	89.6	76.0-128			2.64	20
Chlorodibromomethane	0.125	0.115	0.111	92.0	88.8	74.0-127			3.54	20
Chloroethane	0.125	0.107	0.103	85.6	82.4	61.0-134			3.81	20
Chloroform	0.125	0.126	0.119	101	95.2	72.0-123			5.71	20
Chloromethane	0.125	0.140	0.135	112	108	51.0-138			3.64	20
Cyclohexane	0.125	0.119	0.118	95.2	94.4	70.0-130			0.844	20
2-Chlorotoluene	0.125	0.111	0.110	88.8	88.0	75.0-124			0.905	20
4-Chlorotoluene	0.125	0.115	0.111	92.0	88.8	75.0-124			3.54	20
1,2-Dibromo-3-Chloropropane	0.125	0.127	0.124	102	99.2	59.0-130			2.39	20
1,2-Dibromoethane	0.125	0.113	0.110	90.4	88.0	74.0-128			2.69	20
Dibromomethane	0.125	0.116	0.116	92.8	92.8	75.0-122			0.000	20
1,2-Dichlorobenzene	0.125	0.114	0.109	91.2	87.2	76.0-124			4.48	20
1,3-Dichlorobenzene	0.125	0.121	0.119	96.8	95.2	76.0-125			1.67	20
1,4-Dichlorobenzene	0.125	0.107	0.108	85.6	86.4	77.0-121			0.930	20
Dichlorodifluoromethane	0.125	0.118	0.115	94.4	92.0	43.0-156			2.58	20
1,1-Dichloroethane	0.125	0.142	0.135	114	108	70.0-127			5.05	20
1,2-Dichloroethane	0.125	0.132	0.131	106	105	65.0-131			0.760	20
1,1-Dichloroethene	0.125	0.124	0.118	99.2	94.4	65.0-131			4.96	20
cis-1,2-Dichloroethene	0.125	0.120	0.117	96.0	93.6	73.0-125			2.53	20
trans-1,2-Dichloroethene	0.125	0.120	0.108	96.0	86.4	71.0-125			10.5	20
1,2-Dichloropropane	0.125	0.129	0.124	103	99.2	74.0-125			3.95	20
1,1-Dichloropropene	0.125	0.111	0.106	88.8	84.8	73.0-125			4.61	20
1,3-Dichloropropane	0.125	0.115	0.115	92.0	92.0	80.0-125			0.000	20
cis-1,3-Dichloropropene	0.125	0.126	0.125	101	100	76.0-127			0.797	20
trans-1,3-Dichloropropene	0.125	0.115	0.110	92.0	88.0	73.0-127			4.44	20
2,2-Dichloropropane	0.125	0.148	0.130	118	104	59.0-135			12.9	20
Dicyclopentadiene	0.125	0.130	0.127	104	102	71.0-132			2.33	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3557886-1 08/08/20 09:42 • (LCSD) R3557886-2 08/08/20 10:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Di-isopropyl ether	0.125	0.139	0.133	111	106	60.0-136			4.41	20
Ethylbenzene	0.125	0.113	0.110	90.4	88.0	74.0-126			2.69	20
4-Ethyltoluene	0.125	0.107	0.107	85.6	85.6	71.0-129			0.000	20
Hexachloro-1,3-butadiene	0.125	0.112	0.108	89.6	86.4	57.0-150			3.64	20
n-Hexane	0.125	0.116	0.117	92.8	93.6	55.0-137			0.858	20
Isopropylbenzene	0.125	0.116	0.111	92.8	88.8	72.0-127			4.41	20
p-Isopropyltoluene	0.125	0.114	0.110	91.2	88.0	72.0-133			3.57	20
2-Butanone (MEK)	0.625	1.00	0.965	160	154	30.0-160			3.56	24
Methyl Cyclohexane	0.125	0.141	0.134	113	107	67.0-129			5.09	20
Methylene Chloride	0.125	0.138	0.127	110	102	68.0-123			8.30	20
4-Methyl-2-pentanone (MIBK)	0.625	0.782	0.750	125	120	56.0-143			4.18	20
Methyl tert-butyl ether	0.125	0.138	0.122	110	97.6	66.0-132			12.3	20
Naphthalene	0.125	0.118	0.119	94.4	95.2	59.0-130			0.844	20
Propene	0.125	0.131	0.130	105	104	10.0-160			0.766	20
n-Propylbenzene	0.125	0.115	0.114	92.0	91.2	74.0-126			0.873	20
Styrene	0.125	0.129	0.123	103	98.4	72.0-127			4.76	20
1,1,1,2-Tetrachloroethane	0.125	0.114	0.110	91.2	88.0	74.0-129			3.57	20
1,1,2,2-Tetrachloroethane	0.125	0.124	0.122	99.2	97.6	68.0-128			1.63	20
Tetrachloroethene	0.125	0.0959	0.0939	76.7	75.1	70.0-136			2.11	20
Toluene	0.125	0.110	0.103	88.0	82.4	75.0-121			6.57	20
1,1,2-Trichlorotrifluoroethane	0.125	0.105	0.103	84.0	82.4	61.0-139			1.92	20
1,2,3-Trichlorobenzene	0.125	0.109	0.112	87.2	89.6	59.0-139			2.71	20
1,2,4-Trichlorobenzene	0.125	0.103	0.101	82.4	80.8	62.0-137			1.96	20
1,1,1-Trichloroethane	0.125	0.121	0.112	96.8	89.6	69.0-126			7.73	20
1,1,2-Trichloroethane	0.125	0.113	0.114	90.4	91.2	78.0-123			0.881	20
Trichloroethene	0.125	0.130	0.125	104	100	76.0-126			3.92	20
Trichlorofluoromethane	0.125	0.120	0.113	96.0	90.4	61.0-142			6.01	20
1,2,3-Trichloropropane	0.125	0.130	0.120	104	96.0	67.0-129			8.00	20
1,2,3-Trimethylbenzene	0.125	0.107	0.103	85.6	82.4	74.0-124			3.81	20
1,2,4-Trimethylbenzene	0.125	0.120	0.119	96.0	95.2	70.0-126			0.837	20
1,3,5-Trimethylbenzene	0.125	0.121	0.119	96.8	95.2	73.0-127			1.67	20
Vinyl chloride	0.125	0.125	0.121	100	96.8	63.0-134			3.25	20
Xylenes, Total	0.375	0.372	0.355	99.2	94.7	72.0-127			4.68	20
(S) Toluene-d8				*94.7*	*93.9*	*75.0-131*				
(S) 4-Bromofluorobenzene				*107*	*107*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*107*	*103*	*70.0-130*				

L1246978-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1246978-04 08/08/20 17:23 • (MS) R3557886-4 08/08/20 17:42 • (MSD) R3557886-5 08/08/20 18:39

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acetone	0.550	ND	ND	ND	89.3	202	1	10.0-160		M1 R5	77.3	40
Acrylonitrile	0.550	ND	0.759	0.958	138	174	1	10.0-160		M1	23.2	40
Benzene	0.110	ND	0.118	0.107	107	97.3	1	10.0-149			9.78	37
Bromobenzene	0.110	ND	ND	ND	88.5	78.8	1	10.0-156			11.6	38
Bromodichloromethane	0.110	ND	0.117	0.114	106	104	1	10.0-143			2.60	37
Bromoform	0.110	ND	ND	ND	94.5	96.4	1	10.0-146			1.90	36
Bromomethane	0.110	ND	ND	ND	126	113	1	10.0-149			11.4	38
1,3-Butadiene	0.110	ND	ND	ND	108	87.6	1	10.0-137			21.0	36
n-Butylbenzene	0.110	ND	ND	ND	120	105	1	10.0-160			12.9	40
sec-Butylbenzene	0.110	ND	ND	ND	99.1	83.5	1	10.0-159			17.0	39
tert-Butylbenzene	0.110	ND	ND	ND	101	85.0	1	10.0-156			17.1	39
Carbon disulfide	0.110	ND	ND	ND	90.9	76.2	1	10.0-145			17.6	39
Carbon tetrachloride	0.110	ND	ND	ND	106	89.8	1	10.0-145			16.9	37
Chlorobenzene	0.110	ND	0.110	0.0997	100	90.6	1	10.0-152			9.82	39
Chlorodibromomethane	0.110	ND	0.101	0.101	91.8	91.8	1	10.0-146			0.000	37
Chloroethane	0.110	ND	0.143	ND	130	111	1	10.0-146			15.8	40
Chloroform	0.110	ND	0.116	0.108	105	98.2	1	10.0-146			7.14	37
Chloromethane	0.110	ND	ND	ND	116	94.5	1	10.0-159			18.7	37
Cyclohexane	0.110	ND	0.118	0.0990	107	90.0	1	10.0-157			17.5	32
2-Chlorotoluene	0.110	ND	0.102	0.0847	92.7	77.0	1	10.0-159			18.5	38
4-Chlorotoluene	0.110	ND	ND	ND	99.1	85.6	1	10.0-155			14.6	39
1,2-Dibromo-3-Chloropropane	0.110	ND	ND	ND	98.2	98.2	1	10.0-151			0.000	39
1,2-Dibromoethane	0.110	ND	0.0995	0.0952	90.5	86.5	1	10.0-148			4.42	34
Dibromomethane	0.110	ND	ND	ND	96.4	98.2	1	10.0-147			1.87	35
1,2-Dichlorobenzene	0.110	ND	ND	ND	93.6	89.9	1	10.0-155			4.06	37
1,3-Dichlorobenzene	0.110	ND	ND	ND	106	96.4	1	10.0-153			9.87	38
1,4-Dichlorobenzene	0.110	ND	ND	ND	94.5	84.7	1	10.0-151			11.0	38
Dichlorodifluoromethane	0.110	ND	0.109	0.0941	99.1	85.5	1	10.0-160			14.7	35
1,1-Dichloroethane	0.110	ND	0.131	0.121	119	110	1	10.0-147			7.94	37
1,2-Dichloroethane	0.110	ND	0.118	0.123	107	112	1	10.0-148			4.15	35
1,1-Dichloroethene	0.110	ND	0.120	0.101	109	91.8	1	10.0-155			17.2	37
cis-1,2-Dichloroethene	0.110	ND	0.108	0.103	98.2	93.6	1	10.0-149			4.74	37
trans-1,2-Dichloroethene	0.110	ND	ND	ND	103	86.4	1	10.0-150			17.3	37
1,2-Dichloropropane	0.110	ND	ND	ND	112	105	1	10.0-148			5.86	37
1,1-Dichloropropene	0.110	ND	0.110	0.0934	100	84.9	1	10.0-153			16.3	35
1,3-Dichloropropane	0.110	ND	ND	ND	99.1	90.9	1	10.0-154			8.61	35
cis-1,3-Dichloropropene	0.110	ND	0.123	0.115	112	105	1	10.0-151			6.72	37
trans-1,3-Dichloropropene	0.110	ND	ND	ND	96.4	88.4	1	10.0-148			8.66	37
2,2-Dichloropropane	0.110	ND	0.116	0.0941	105	85.5	1	10.0-138			20.8	36
Dicyclopentadiene	0.110	ND	ND	ND	110	97.3	1	12.0-152			12.3	34

L1246978-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1246978-04 08/08/20 17:23 • (MS) R3557886-4 08/08/20 17:42 • (MSD) R3557886-5 08/08/20 18:39

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Di-isopropyl ether	0.110	ND	0.126	0.123	115	112	1	10.0-147			2.41	36
Ethylbenzene	0.110	ND	0.111	0.101	101	91.8	1	10.0-160			9.43	38
4-Ethyltoluene	0.110	ND	ND	ND	94.5	79.5	1	10.0-156			17.2	32
Hexachloro-1,3-butadiene	0.110	ND	ND	ND	101	87.3	1	10.0-160			14.5	40
n-Hexane	0.110	ND	0.129	ND	117	100	1	10.0-157			15.9	37
Isopropylbenzene	0.110	ND	0.113	0.103	103	93.6	1	10.0-155			9.26	38
p-Isopropyltoluene	0.110	ND	ND	ND	102	83.9	1	10.0-160			19.3	40
2-Butanone (MEK)	0.550	ND	ND	ND	112	180	1	10.0-160		M1 R5	46.9	40
Methyl Cyclohexane	0.110	ND	0.144	ND	131	111	1	10.0-160			16.5	33
Methylene Chloride	0.110	ND	ND	ND	121	110	1	10.0-141			9.45	37
4-Methyl-2-pentanone (MIBK)	0.550	ND	ND	0.649	110	118	1	10.0-160			6.69	35
Methyl tert-butyl ether	0.110	ND	0.106	0.103	96.4	93.6	1	11.0-147			2.87	35
Naphthalene	0.110	ND	ND	ND	114	100	1	10.0-160			12.8	36
Propene	0.110	ND	ND	ND	118	86.8	1	10.0-160			30.6	35
n-Propylbenzene	0.110	ND	ND	ND	101	85.4	1	10.0-158			16.7	38
Styrene	0.110	ND	ND	ND	113	104	1	10.0-160			8.40	40
1,1,1,2-Tetrachloroethane	0.110	ND	0.106	0.100	96.4	90.9	1	10.0-149			5.83	39
1,1,2,2-Tetrachloroethane	0.110	ND	0.111	0.102	101	92.7	1	10.0-160			8.45	35
Tetrachloroethene	0.110	ND	0.0971	0.0817	88.3	74.3	1	10.0-156			17.2	39
Toluene	0.110	ND	ND	ND	97.3	84.8	1	10.0-156			13.7	38
1,1,2-Trichlorotrifluoroethane	0.110	ND	0.109	0.0877	99.1	79.7	1	10.0-160			21.7	36
1,2,3-Trichlorobenzene	0.110	ND	ND	ND	105	81.2	1	10.0-160			25.2	40
1,2,4-Trichlorobenzene	0.110	ND	ND	ND	96.4	87.4	1	10.0-160			9.80	40
1,1,1-Trichloroethane	0.110	ND	0.112	0.0986	102	89.6	1	10.0-144			12.7	35
1,1,2-Trichloroethane	0.110	ND	0.105	0.0981	95.5	89.2	1	10.0-160			6.79	35
Trichloroethene	0.110	ND	0.122	0.107	111	97.3	1	10.0-156			13.1	38
Trichlorofluoromethane	0.110	ND	0.146	0.125	133	114	1	10.0-160			15.5	40
1,2,3-Trichloropropane	0.110	ND	ND	ND	90.0	88.9	1	10.0-156			1.22	35
1,2,3-Trimethylbenzene	0.110	ND	ND	ND	88.2	80.6	1	10.0-160			8.94	36
1,2,4-Trimethylbenzene	0.110	ND	ND	ND	101	90.0	1	10.0-160			11.4	36
1,3,5-Trimethylbenzene	0.110	ND	ND	ND	103	88.3	1	10.0-160			15.1	38
Vinyl chloride	0.110	ND	0.115	0.0972	105	88.4	1	10.0-160			16.8	37
Xylenes, Total	0.330	ND	0.362	0.326	110	98.8	1	10.0-160			10.5	38
(S) Toluene-d8					*94.2*	*92.1*		*75.0-131*				
(S) 4-Bromofluorobenzene					*109*	*112*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*106*	*115*		*70.0-130*				

Method Blank (MB)

(MB) R3557887-3 08/08/20 20:31

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acetone	U		0.913	1.25
Acrylonitrile	U		0.0903	0.313
Benzene	U		0.0117	0.0250
Bromobenzene	U		0.0225	0.313
Bromodichloromethane	U		0.0181	0.0625
Bromoform	U		0.0293	0.625
Bromomethane	U		0.0493	0.313
1,3-Butadiene	U		0.128	0.625
n-Butylbenzene	U		0.131	0.313
sec-Butylbenzene	U		0.0720	0.313
tert-Butylbenzene	U		0.0488	0.125
Carbon disulfide	U		0.0175	0.313
Carbon tetrachloride	U		0.0225	0.125
Chlorobenzene	U		0.00525	0.0625
Chlorodibromomethane	U		0.0153	0.0625
Chloroethane	U		0.0425	0.125
Chloroform	U		0.0258	0.0625
Chloromethane	U		0.109	0.313
Cyclohexane	U		0.0278	0.0625
2-Chlorotoluene	U		0.0216	0.0625
4-Chlorotoluene	U		0.0113	0.125
1,2-Dibromo-3-Chloropropane	U		0.0975	0.625
1,2-Dibromoethane	U		0.0162	0.0625
Dibromomethane	U		0.0188	0.125
1,2-Dichlorobenzene	U		0.0106	0.125
1,3-Dichlorobenzene	U		0.0150	0.125
1,4-Dichlorobenzene	U		0.0175	0.125
Dichlorodifluoromethane	U		0.0403	0.0625
1,1-Dichloroethane	U		0.0123	0.0625
1,2-Dichloroethane	U		0.0162	0.0625
1,1-Dichloroethene	U		0.0152	0.0625
cis-1,2-Dichloroethene	U		0.0184	0.0625
trans-1,2-Dichloroethene	U		0.0260	0.125
1,2-Dichloropropane	U		0.0355	0.125
1,1-Dichloropropene	U		0.0202	0.0625
1,3-Dichloropropane	U		0.0125	0.125
cis-1,3-Dichloropropene	U		0.0189	0.0625
trans-1,3-Dichloropropene	U		0.0285	0.125
2,2-Dichloropropane	U		0.0345	0.0625
Dicyclopentadiene	U		0.0413	0.313

Method Blank (MB)

(MB) R3557887-3 08/08/20 20:31

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Di-isopropyl ether	U		0.0103	0.0250
Ethylbenzene	U		0.0184	0.0625
4-Ethyltoluene	U		0.0580	0.125
Hexachloro-1,3-butadiene	U		0.150	0.625
n-Hexane	U		0.0565	0.125
Isopropylbenzene	U		0.0106	0.0625
p-Isopropyltoluene	U		0.0638	0.125
2-Butanone (MEK)	U		1.59	2.50
Methyl Cyclohexane	U		0.0515	0.125
Methylene Chloride	U		0.166	0.625
4-Methyl-2-pentanone (MIBK)	U		0.0570	0.625
Methyl tert-butyl ether	U		0.00875	0.0250
Naphthalene	U		0.122	0.313
Propene	U		0.153	1.25
n-Propylbenzene	U		0.0238	0.125
Styrene	U		0.00573	0.313
1,1,1,2-Tetrachloroethane	U		0.0237	0.0625
1,1,2,2-Tetrachloroethane	U		0.0174	0.0625
Tetrachloroethene	U		0.0224	0.0625
Toluene	U		0.0325	0.125
1,1,2-Trichlorotrifluoroethane	U		0.0189	0.0625
1,2,3-Trichlorobenzene	U		0.183	0.313
1,2,4-Trichlorobenzene	U		0.110	0.313
1,1,1-Trichloroethane	U		0.0231	0.0625
1,1,2-Trichloroethane	U		0.0149	0.0625
Trichloroethene	U		0.0146	0.0250
Trichlorofluoromethane	U		0.0207	0.0625
1,2,3-Trichloropropane	U		0.0405	0.313
1,2,3-Trimethylbenzene	U		0.0395	0.125
1,2,4-Trimethylbenzene	U		0.0395	0.125
1,3,5-Trimethylbenzene	U		0.0500	0.125
Vinyl chloride	U		0.0290	0.0625
Xylenes, Total	U		0.0220	0.163
(S) Toluene-d8	*98.4*			*75.0-131*
(S) 4-Bromofluorobenzene	*107*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*110*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3557887-1 08/08/20 19:17 • (LCSD) R3557887-2 08/08/20 19:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.625	1.05	1.14	168	182	10.0-160	L1	L1	8.22	31
Acrylonitrile	0.625	0.946	0.928	151	148	45.0-153			1.92	22
Benzene	0.125	0.124	0.125	99.2	100	70.0-123			0.803	20
Bromobenzene	0.125	0.104	0.107	83.2	85.6	73.0-121			2.84	20
Bromodichloromethane	0.125	0.132	0.132	106	106	73.0-121			0.000	20
Bromoform	0.125	0.117	0.118	93.6	94.4	64.0-132			0.851	20
Bromomethane	0.125	0.116	0.114	92.8	91.2	56.0-147			1.74	20
1,3-Butadiene	0.125	0.123	0.125	98.4	100	32.0-150			1.61	20
n-Butylbenzene	0.125	0.124	0.129	99.2	103	68.0-135			3.95	20
sec-Butylbenzene	0.125	0.107	0.111	85.6	88.8	74.0-130			3.67	20
tert-Butylbenzene	0.125	0.110	0.115	88.0	92.0	75.0-127			4.44	20
Carbon disulfide	0.125	0.112	0.114	89.6	91.2	56.0-133			1.77	20
Carbon tetrachloride	0.125	0.120	0.117	96.0	93.6	66.0-128			2.53	20
Chlorobenzene	0.125	0.112	0.112	89.6	89.6	76.0-128			0.000	20
Chlorodibromomethane	0.125	0.111	0.115	88.8	92.0	74.0-127			3.54	20
Chloroethane	0.125	0.109	0.115	87.2	92.0	61.0-134			5.36	20
Chloroform	0.125	0.126	0.128	101	102	72.0-123			1.57	20
Chloromethane	0.125	0.147	0.143	118	114	51.0-138			2.76	20
Cyclohexane	0.125	0.104	0.113	83.2	90.4	70.0-130			8.29	20
2-Chlorotoluene	0.125	0.108	0.116	86.4	92.8	75.0-124			7.14	20
4-Chlorotoluene	0.125	0.105	0.112	84.0	89.6	75.0-124			6.45	20
1,2-Dibromo-3-Chloropropane	0.125	0.120	0.123	96.0	98.4	59.0-130			2.47	20
1,2-Dibromoethane	0.125	0.110	0.110	88.0	88.0	74.0-128			0.000	20
Dibromomethane	0.125	0.121	0.122	96.8	97.6	75.0-122			0.823	20
1,2-Dichlorobenzene	0.125	0.106	0.107	84.8	85.6	76.0-124			0.939	20
1,3-Dichlorobenzene	0.125	0.116	0.121	92.8	96.8	76.0-125			4.22	20
1,4-Dichlorobenzene	0.125	0.106	0.109	84.8	87.2	77.0-121			2.79	20
Dichlorodifluoromethane	0.125	0.103	0.108	82.4	86.4	43.0-156			4.74	20
1,1-Dichloroethane	0.125	0.140	0.143	112	114	70.0-127			2.12	20
1,2-Dichloroethane	0.125	0.139	0.140	111	112	65.0-131			0.717	20
1,1-Dichloroethene	0.125	0.121	0.121	96.8	96.8	65.0-131			0.000	20
cis-1,2-Dichloroethene	0.125	0.120	0.120	96.0	96.0	73.0-125			0.000	20
trans-1,2-Dichloroethene	0.125	0.114	0.118	91.2	94.4	71.0-125			3.45	20
1,2-Dichloropropane	0.125	0.126	0.129	101	103	74.0-125			2.35	20
1,1-Dichloropropene	0.125	0.109	0.111	87.2	88.8	73.0-125			1.82	20
1,3-Dichloropropane	0.125	0.115	0.119	92.0	95.2	80.0-125			3.42	20
cis-1,3-Dichloropropene	0.125	0.127	0.131	102	105	76.0-127			3.10	20
trans-1,3-Dichloropropene	0.125	0.108	0.111	86.4	88.8	73.0-127			2.74	20
2,2-Dichloropropane	0.125	0.134	0.134	107	107	59.0-135			0.000	20
Dicyclopentadiene	0.125	0.129	0.130	103	104	71.0-132			0.772	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3557887-1 08/08/20 19:17 • (LCSD) R3557887-2 08/08/20 19:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Di-isopropyl ether	0.125	0.143	0.141	114	113	60.0-136			1.41	20
Ethylbenzene	0.125	0.109	0.113	87.2	90.4	74.0-126			3.60	20
4-Ethyltoluene	0.125	0.104	0.107	83.2	85.6	71.0-129			2.84	20
Hexachloro-1,3-butadiene	0.125	0.0978	0.104	78.2	83.2	57.0-150			6.14	20
n-Hexane	0.125	0.117	0.119	93.6	95.2	55.0-137			1.69	20
Isopropylbenzene	0.125	0.111	0.111	88.8	88.8	72.0-127			0.000	20
p-Isopropyltoluene	0.125	0.109	0.112	87.2	89.6	72.0-133			2.71	20
2-Butanone (MEK)	0.625	0.988	1.03	158	165	30.0-160		L1	4.16	24
Methyl Cyclohexane	0.125	0.133	0.134	106	107	67.0-129			0.749	20
Methylene Chloride	0.125	0.146	0.151	117	121	68.0-123			3.37	20
4-Methyl-2-pentanone (MIBK)	0.625	0.767	0.788	123	126	56.0-143			2.70	20
Methyl tert-butyl ether	0.125	0.143	0.143	114	114	66.0-132			0.000	20
Naphthalene	0.125	0.117	0.117	93.6	93.6	59.0-130			0.000	20
Propene	0.125	0.126	0.121	101	96.8	10.0-160			4.05	20
n-Propylbenzene	0.125	0.114	0.119	91.2	95.2	74.0-126			4.29	20
Styrene	0.125	0.124	0.125	99.2	100	72.0-127			0.803	20
1,1,1,2-Tetrachloroethane	0.125	0.111	0.114	88.8	91.2	74.0-129			2.67	20
1,1,2,2-Tetrachloroethane	0.125	0.131	0.135	105	108	68.0-128			3.01	20
Tetrachloroethene	0.125	0.0928	0.0977	74.2	78.2	70.0-136			5.14	20
Toluene	0.125	0.106	0.109	84.8	87.2	75.0-121			2.79	20
1,1,2-Trichlorotrifluoroethane	0.125	0.0936	0.0909	74.9	72.7	61.0-139			2.93	20
1,2,3-Trichlorobenzene	0.125	0.104	0.107	83.2	85.6	59.0-139			2.84	20
1,2,4-Trichlorobenzene	0.125	0.0987	0.100	79.0	80.0	62.0-137			1.31	20
1,1,1-Trichloroethane	0.125	0.116	0.116	92.8	92.8	69.0-126			0.000	20
1,1,2-Trichloroethane	0.125	0.112	0.118	89.6	94.4	78.0-123			5.22	20
Trichloroethene	0.125	0.122	0.125	97.6	100	76.0-126			2.43	20
Trichlorofluoromethane	0.125	0.110	0.112	88.0	89.6	61.0-142			1.80	20
1,2,3-Trichloropropane	0.125	0.126	0.127	101	102	67.0-129			0.791	20
1,2,3-Trimethylbenzene	0.125	0.104	0.107	83.2	85.6	74.0-124			2.84	20
1,2,4-Trimethylbenzene	0.125	0.118	0.120	94.4	96.0	70.0-126			1.68	20
1,3,5-Trimethylbenzene	0.125	0.118	0.120	94.4	96.0	73.0-127			1.68	20
Vinyl chloride	0.125	0.124	0.127	99.2	102	63.0-134			2.39	20
Xylenes, Total	0.375	0.359	0.372	95.7	99.2	72.0-127			3.56	20
(S) Toluene-d8				*92.6*	*93.1*	*75.0-131*				
(S) 4-Bromofluorobenzene				*107*	*104*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*112*	*112*	*70.0-130*				

L1246379-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1246379-01 08/08/20 20:50 • (MS) R3557887-4 08/09/20 03:03 • (MSD) R3557887-5 08/09/20 03:48

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acetone	0.625	ND	ND	ND	85.0	125	1	10.0-160			38.5	40
Acrylonitrile	0.625	ND	0.727	0.706	116	113	1	10.0-160			2.93	40
Benzene	0.125	ND	0.0769	0.0703	58.6	53.4	1	10.0-149			8.97	37
Bromobenzene	0.125	ND	ND	ND	58.0	54.2	1	10.0-156			6.70	38
Bromodichloromethane	0.125	ND	0.0875	0.0840	70.0	67.2	1	10.0-143			4.08	37
Bromoform	0.125	ND	ND	ND	80.8	77.5	1	10.0-146			4.14	36
Bromomethane	0.125	ND	ND	ND	55.3	53.8	1	10.0-149			2.79	38
n-Butylbenzene	0.125	ND	ND	ND	87.2	75.8	1	10.0-160			14.0	40
sec-Butylbenzene	0.125	ND	ND	ND	62.7	56.1	1	10.0-159		M2 R5	11.2	39
tert-Butylbenzene	0.125	ND	ND	ND	58.1	47.4	1	10.0-156			20.2	39
Carbon tetrachloride	0.125	ND	ND	ND	52.2	47.9	1	10.0-145			8.63	37
Chlorobenzene	0.125	ND	0.0747	0.0679	59.8	54.3	1	10.0-152			9.54	39
Chlorodibromomethane	0.125	ND	0.0862	0.0813	69.0	65.0	1	10.0-146			5.85	37
Chloroethane	0.125	ND	ND	ND	63.3	56.0	1	10.0-146			12.2	40
Chloroform	0.125	ND	0.0730	0.0720	58.4	57.6	1	10.0-146			1.38	37
Chloromethane	0.125	ND	ND	ND	55.0	49.2	1	10.0-159	M2	M2	11.2	37
2-Chlorotoluene	0.125	ND	0.0728	ND	58.2	48.8	1	10.0-159			17.6	38
4-Chlorotoluene	0.125	ND	ND	ND	59.8	55.0	1	10.0-155			8.37	39
1,2-Dibromo-3-Chloropropane	0.125	ND	ND	ND	84.0	88.8	1	10.0-151			5.56	39
1,2-Dibromoethane	0.125	ND	0.0899	0.0843	71.9	67.4	1	10.0-148			6.43	34
Dibromomethane	0.125	ND	ND	ND	68.0	71.1	1	10.0-147			4.49	35
1,2-Dichlorobenzene	0.125	ND	ND	ND	70.3	61.4	1	10.0-155			13.6	37
1,3-Dichlorobenzene	0.125	ND	ND	ND	66.7	62.5	1	10.0-153			6.56	38
1,4-Dichlorobenzene	0.125	ND	ND	ND	63.4	58.3	1	10.0-151			8.28	38
Dichlorodifluoromethane	0.125	ND	0.0643	ND	51.4	44.7	1	10.0-160			14.0	35
1,1-Dichloroethane	0.125	ND	0.0811	0.0776	64.9	62.1	1	10.0-147			4.41	37
1,2-Dichloroethane	0.125	ND	0.0939	0.0952	75.1	76.2	1	10.0-148			1.37	35
1,1-Dichloroethene	0.125	ND	0.0704	ND	56.3	47.6	1	10.0-155			16.8	37
cis-1,2-Dichloroethene	0.125	ND	0.0728	0.0707	58.2	56.6	1	10.0-149			2.93	37
trans-1,2-Dichloroethene	0.125	ND	ND	ND	49.9	48.2	1	10.0-150			3.59	37
1,2-Dichloropropane	0.125	ND	ND	ND	68.6	64.3	1	10.0-148			6.50	37
1,1-Dichloropropene	0.125	ND	ND	ND	45.1	44.9	1	10.0-153			0.533	35
1,3-Dichloropropane	0.125	ND	ND	ND	74.9	71.4	1	10.0-154			4.70	35
cis-1,3-Dichloropropene	0.125	ND	0.0868	0.0801	69.4	64.1	1	10.0-151			8.03	37
trans-1,3-Dichloropropene	0.125	ND	ND	ND	68.3	61.5	1	10.0-148			10.5	37
2,2-Dichloropropane	0.125	ND	0.0713	0.0702	57.0	56.2	1	10.0-138			1.55	36
Di-isopropyl ether	0.125	ND	0.0962	0.0929	77.0	74.3	1	10.0-147			3.49	36
Ethylbenzene	0.125	ND	0.0706	0.0649	56.5	51.9	1	10.0-160			8.41	38
1,3-Butadiene	0.125	ND	ND	ND	0.000	0.000	1	10.0-137	M2	M2	0.000	36
Hexachloro-1,3-butadiene	0.125	ND	ND	ND	125	108	1	10.0-160			14.4	40

L1246379-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1246379-01 08/08/20 20:50 • (MS) R3557887-4 08/09/20 03:03 • (MSD) R3557887-5 08/09/20 03:48

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Carbon disulfide	0.125	ND	ND	ND	43.6	40.1	1	10.0-145			8.41	39
Isopropylbenzene	0.125	ND	0.0727	0.0650	58.2	52.0	1	10.0-155			11.2	38
p-Isopropyltoluene	0.125	ND	ND	ND	64.3	57.6	1	10.0-160			11.0	40
2-Butanone (MEK)	0.625	ND	ND	ND	107	119	1	10.0-160			8.93	40
Methylene Chloride	0.125	ND	ND	ND	75.4	76.2	1	10.0-141			1.05	37
4-Methyl-2-pentanone (MIBK)	0.625	ND	1.24	1.27	104	108	1	10.0-160			2.39	35
Methyl tert-butyl ether	0.125	ND	0.0968	0.104	77.4	83.2	1	11.0-147			7.17	35
Cyclohexane	0.125	ND	0.0651	ND	52.1	49.0	1	10.0-157			6.18	32
Naphthalene	0.125	ND	ND	ND	114	99.2	1	10.0-160			13.5	36
n-Propylbenzene	0.125	ND	ND	ND	56.5	50.8	1	10.0-158			10.6	38
Styrene	0.125	ND	ND	ND	69.6	62.5	1	10.0-160			10.8	40
1,1,1,2-Tetrachloroethane	0.125	ND	0.0726	0.0711	58.1	56.9	1	10.0-149			2.09	39
1,1,2,2-Tetrachloroethane	0.125	ND	0.104	0.106	83.2	84.8	1	10.0-160			1.90	35
Tetrachloroethene	0.125	ND	ND	ND	45.9	42.4	1	10.0-156			7.97	39
Toluene	0.125	ND	ND	ND	56.3	49.6	1	10.0-156			12.7	38
1,1,2-Trichlorotrifluoroethane	0.125	ND	ND	ND	49.4	40.2	1	10.0-160			20.6	36
1,2,3-Trichlorobenzene	0.125	ND	ND	ND	102	99.2	1	10.0-160			2.39	40
1,2,4-Trichlorobenzene	0.125	ND	ND	ND	102	88.0	1	10.0-160			14.3	40
1,1,1-Trichloroethane	0.125	ND	0.0647	ND	51.8	48.2	1	10.0-144			7.21	35
1,1,2-Trichloroethane	0.125	ND	0.0934	0.0852	74.7	68.2	1	10.0-160			9.18	35
Trichloroethene	0.125	ND	0.0709	0.0630	56.7	50.4	1	10.0-156			11.8	38
Trichlorofluoromethane	0.125	ND	0.0848	0.0669	67.8	53.5	1	10.0-160			23.6	40
1,2,3-Trichloropropane	0.125	ND	ND	ND	77.2	77.2	1	10.0-156			0.000	35
1,2,3-Trimethylbenzene	0.125	ND	ND	ND	62.7	56.3	1	10.0-160			10.8	36
1,2,4-Trimethylbenzene	0.125	ND	ND	ND	64.2	58.0	1	10.0-160			10.2	36
1,3,5-Trimethylbenzene	0.125	ND	ND	ND	59.4	55.0	1	10.0-160			7.69	38
Dicyclopentadiene	0.125	ND	ND	ND	66.6	59.7	1	12.0-152			11.0	34
Vinyl chloride	0.125	ND	ND	ND	47.5	43.6	1	10.0-160			8.60	37
Xylenes, Total	0.375	ND	0.230	0.212	61.3	56.5	1	10.0-160			8.14	38
4-Ethyltoluene	0.125	ND	ND	ND	53.1	49.0	1	10.0-156			7.99	32
n-Hexane	0.125	ND	ND	ND	50.0	56.7	1	10.0-157			12.6	37
Methyl Cyclohexane	0.125	ND	ND	ND	64.5	67.0	1	10.0-160			3.77	33
Propene	0.125	ND	ND	ND	55.3	51.5	1	10.0-160			7.04	35
(S) Toluene-d8					*94.7*	*93.7*		*75.0-131*				
(S) 4-Bromofluorobenzene					*110*	*109*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*103*	*112*		*70.0-130*				

Method Blank (MB)

(MB) R3557639-1 08/07/20 13:55

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C22 Hydrocarbons	U		1.98	30.0
C22-C32 Hydrocarbons	U		0.766	50.0
(S) o-Terphenyl	*82.9*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3557639-2 08/07/20 14:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C22 Hydrocarbons	25.0	18.5	74.0	70.0-130	
C22-C32 Hydrocarbons	25.0	18.4	73.6	70.0-130	
(S) o-Terphenyl			*78.8*	*70.0-130*	

Method Blank (MB)

(MB) R3558902-1 08/11/20 23:16

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
2,4-D	U		0.00702	0.0700
Dalapon	U		0.0113	0.0700
2,4-DB	U		0.0297	0.0700
Dicamba	U		0.0157	0.0700
Dichloroprop	U		0.0245	0.0700
Dinoseb	U		0.00697	0.0700
MCPA	U		0.443	6.50
MCPP	U		0.367	6.50
2,4,5-T	U		0.00852	0.0700
2,4,5-TP (Silvex)	U		0.0107	0.0700
(S) 2,4-Dichlorophenyl Acetic Acid	*63.5*			*22.0-132*

Laboratory Control Sample (LCS)

(LCS) R3558902-2 08/11/20 23:30

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
2,4-D	0.167	0.137	82.0	40.0-120	
Dalapon	0.167	0.117	70.1	15.0-120	
2,4-DB	0.167	0.140	83.8	25.0-143	
Dicamba	0.167	0.127	76.0	43.0-120	
Dichloroprop	0.167	0.146	87.4	32.0-129	
Dinoseb	0.167	0.0371	22.2	10.0-120	
MCPA	1.67	4.39	263	31.0-121	E1 L1
MCPP	1.67	1.56	93.4	28.0-133	
2,4,5-T	0.167	0.151	90.4	41.0-120	
2,4,5-TP (Silvex)	0.167	0.137	82.0	42.0-120	
(S) 2,4-Dichlorophenyl Acetic Acid			*76.0*	*22.0-132*	

L1246443-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1246443-01 08/11/20 23:45 • (MS) R3558902-3 08/12/20 00:00 • (MSD) R3558902-4 08/12/20 00:15

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2,4-D	0.166	ND	0.112	0.107	67.5	64.1	1	10.0-160		P	4.57	24
Dalapon	0.166	ND	0.105	0.107	63.3	64.1	1	10.0-121			1.89	27
2,4-DB	0.166	0.0977	0.170	0.306	43.6	125	1	10.0-160		R5	57.1	22
Dicamba	0.166	ND	0.113	0.118	68.1	70.7	1	10.0-154			4.33	21

L1246443-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1246443-01 08/11/20 23:45 • (MS) R3558902-3 08/12/20 00:00 • (MSD) R3558902-4 08/12/20 00:15

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Dichloroprop	0.166	ND	0.123	0.139	74.1	83.2	1	10.0-158			12.2	20
Dinoseb	0.166	ND	ND	ND	26.3	41.2	1	10.0-120		R5	44.8	40
MCPA	1.66	ND	ND	ND	164	334	1	10.0-160	M1	E1 M1 R5	68.6	40
MCPP	1.66	ND	ND	ND	62.0	18.4	1	10.0-160		R5	108	40
2,4,5-T	0.166	ND	0.128	0.137	77.1	82.0	1	10.0-157			6.79	20
2,4,5-TP (Silvex)	0.166	ND	0.115	0.125	69.3	74.9	1	10.0-156			8.33	20
(S) 2,4-Dichlorophenyl Acetic Acid					*68.1*	*74.3*		*22.0-132*				

Pace Analytical®
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ANALYTICAL REPORT

September 14, 2020

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 Sc

Environmental Response, Inc.

Sample Delivery Group:	L1260095
Samples Received:	09/10/2020
Project Number:	20-209125
Description:	APS Prescott Sub Backfill
Report To:	Eric Smith 2202 W. Medtronic Way, Ste 108 Tempe, AZ 85281

Entire Report Reviewed By: Daphne R Richards

Daphne Richards
Project Manager

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GLASSFORD AB 07 L1260095-01 Solid

Collected by	Collected date/time	Received date/time
E. Smith	09/09/20 15:15	09/10/20 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Mercury by Method 7471B	WG1541138	1	09/10/20 18:58	09/10/20 23:04	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1541053	1	09/10/20 22:41	09/11/20 09:34	TRB	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO_AZ	WG1541650	25	09/11/20 12:22	09/12/20 03:10	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1541910	1	09/11/20 12:22	09/12/20 12:39	DWR	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151	WG1542440	1	09/13/20 17:18	09/14/20 12:02	RP	Mt. Juliet, TN
Pesticides (GC) by Method 8081B	WG1541237	1	09/11/20 12:49	09/12/20 02:07	RP	Mt. Juliet, TN
Polychlorinated Biphenyls (GC) by Method 8082 A	WG1541237	1	09/11/20 12:49	09/12/20 20:52	RP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1541820	1	09/12/20 08:24	09/13/20 09:30	DMG	Mt. Juliet, TN

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 Sc

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne R Richards

Daphne Richards
Project Manager

Mercury by Method 7471B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.121		0.0400	1	09/10/2020 23:04	WG1541138

Metals (ICP) by Method 6010D

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.44		2.00	1	09/11/2020 09:34	WG1541053
Barium	44.1		0.500	1	09/11/2020 09:34	WG1541053
Cadmium	ND		0.500	1	09/11/2020 09:34	WG1541053
Chromium	8.98		1.00	1	09/11/2020 09:34	WG1541053
Lead	7.01		0.500	1	09/11/2020 09:34	WG1541053
Selenium	ND		2.00	1	09/11/2020 09:34	WG1541053
Silver	ND		1.00	1	09/11/2020 09:34	WG1541053

Volatile Organic Compounds (GC) by Method 8015D/GRO_AZ

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C6-C10 Hydrocarbons	ND		2.50	25	09/12/2020 03:10	WG1541650
(S) a,a,a-Trifluorotoluene(FID)	*95.5*		*77.0-120*		*09/12/2020 03:10*	WG1541650

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND		1.25	1	09/12/2020 12:39	WG1541910
Acrylonitrile	ND		0.313	1	09/12/2020 12:39	WG1541910
Benzene	ND		0.0250	1	09/12/2020 12:39	WG1541910
Bromobenzene	ND		0.313	1	09/12/2020 12:39	WG1541910
Bromodichloromethane	ND		0.0625	1	09/12/2020 12:39	WG1541910
Bromoform	ND		0.625	1	09/12/2020 12:39	WG1541910
Bromomethane	ND		0.313	1	09/12/2020 12:39	WG1541910
1,3-Butadiene	ND		0.625	1	09/12/2020 12:39	WG1541910
n-Butylbenzene	ND		0.313	1	09/12/2020 12:39	WG1541910
sec-Butylbenzene	ND		0.313	1	09/12/2020 12:39	WG1541910
tert-Butylbenzene	ND		0.125	1	09/12/2020 12:39	WG1541910
Carbon disulfide	ND		0.313	1	09/12/2020 12:39	WG1541910
Carbon tetrachloride	ND		0.125	1	09/12/2020 12:39	WG1541910
Chlorobenzene	ND		0.0625	1	09/12/2020 12:39	WG1541910
Chlorodibromomethane	ND		0.0625	1	09/12/2020 12:39	WG1541910
Chloroethane	ND		0.125	1	09/12/2020 12:39	WG1541910
Chloroform	ND		0.0625	1	09/12/2020 12:39	WG1541910
Chloromethane	ND		0.313	1	09/12/2020 12:39	WG1541910
2-Chlorotoluene	ND		0.0625	1	09/12/2020 12:39	WG1541910
4-Chlorotoluene	ND		0.125	1	09/12/2020 12:39	WG1541910
Cyclohexane	ND		0.0625	1	09/12/2020 12:39	WG1541910
1,2-Dibromo-3-Chloropropane	ND		0.625	1	09/12/2020 12:39	WG1541910
1,2-Dibromoethane	ND		0.0625	1	09/12/2020 12:39	WG1541910
Dibromomethane	ND		0.125	1	09/12/2020 12:39	WG1541910
1,2-Dichlorobenzene	ND		0.125	1	09/12/2020 12:39	WG1541910
1,3-Dichlorobenzene	ND		0.125	1	09/12/2020 12:39	WG1541910
1,4-Dichlorobenzene	ND		0.125	1	09/12/2020 12:39	WG1541910
Dichlorodifluoromethane	ND		0.0625	1	09/12/2020 12:39	WG1541910
1,1-Dichloroethane	ND		0.0625	1	09/12/2020 12:39	WG1541910
1,2-Dichloroethane	ND		0.0625	1	09/12/2020 12:39	WG1541910
1,1-Dichloroethene	ND		0.0625	1	09/12/2020 12:39	WG1541910
cis-1,2-Dichloroethene	ND		0.0625	1	09/12/2020 12:39	WG1541910

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
trans-1,2-Dichloroethene	ND		0.125	1	09/12/2020 12:39	WG1541910
1,2-Dichloropropane	ND		0.125	1	09/12/2020 12:39	WG1541910
1,1-Dichloropropene	ND		0.0625	1	09/12/2020 12:39	WG1541910
1,3-Dichloropropane	ND		0.125	1	09/12/2020 12:39	WG1541910
cis-1,3-Dichloropropene	ND		0.0625	1	09/12/2020 12:39	WG1541910
trans-1,3-Dichloropropene	ND		0.125	1	09/12/2020 12:39	WG1541910
2,2-Dichloropropane	ND		0.0625	1	09/12/2020 12:39	WG1541910
Dicyclopentadiene	ND		0.313	1	09/12/2020 12:39	WG1541910
Di-isopropyl ether	ND		0.0250	1	09/12/2020 12:39	WG1541910
Ethylbenzene	ND		0.0625	1	09/12/2020 12:39	WG1541910
4-Ethyltoluene	ND		0.125	1	09/12/2020 12:39	WG1541910
Hexachloro-1,3-butadiene	ND		0.625	1	09/12/2020 12:39	WG1541910
n-Hexane	ND		0.125	1	09/12/2020 12:39	WG1541910
Isopropylbenzene	ND		0.0625	1	09/12/2020 12:39	WG1541910
p-Isopropyltoluene	ND		0.125	1	09/12/2020 12:39	WG1541910
2-Butanone (MEK)	ND		2.50	1	09/12/2020 12:39	WG1541910
Methylene Chloride	ND		0.625	1	09/12/2020 12:39	WG1541910
4-Methyl-2-pentanone (MIBK)	ND		0.625	1	09/12/2020 12:39	WG1541910
Methyl tert-butyl ether	ND		0.0250	1	09/12/2020 12:39	WG1541910
Methyl Cyclohexane	ND		0.125	1	09/12/2020 12:39	WG1541910
Naphthalene	ND		0.313	1	09/12/2020 12:39	WG1541910
Propene	ND		1.25	1	09/12/2020 12:39	WG1541910
n-Propylbenzene	ND		0.125	1	09/12/2020 12:39	WG1541910
Styrene	ND		0.313	1	09/12/2020 12:39	WG1541910
1,1,1,2-Tetrachloroethane	ND		0.0625	1	09/12/2020 12:39	WG1541910
1,1,2,2-Tetrachloroethane	ND		0.0625	1	09/12/2020 12:39	WG1541910
1,1,2-Trichlorotrifluoroethane	ND		0.0625	1	09/12/2020 12:39	WG1541910
Tetrachloroethene	ND		0.0625	1	09/12/2020 12:39	WG1541910
Toluene	ND		0.125	1	09/12/2020 12:39	WG1541910
1,2,3-Trichlorobenzene	ND		0.313	1	09/12/2020 12:39	WG1541910
1,2,4-Trichlorobenzene	ND	L2	0.313	1	09/12/2020 12:39	WG1541910
1,1,1-Trichloroethane	ND		0.0625	1	09/12/2020 12:39	WG1541910
1,1,2-Trichloroethane	ND		0.0625	1	09/12/2020 12:39	WG1541910
Trichloroethene	ND		0.0250	1	09/12/2020 12:39	WG1541910
Trichlorofluoromethane	ND		0.0625	1	09/12/2020 12:39	WG1541910
1,2,3-Trichloropropane	ND		0.313	1	09/12/2020 12:39	WG1541910
1,2,4-Trimethylbenzene	ND		0.125	1	09/12/2020 12:39	WG1541910
1,2,3-Trimethylbenzene	ND		0.125	1	09/12/2020 12:39	WG1541910
1,3,5-Trimethylbenzene	ND		0.125	1	09/12/2020 12:39	WG1541910
Vinyl chloride	ND		0.0625	1	09/12/2020 12:39	WG1541910
Xylenes, Total	ND		0.163	1	09/12/2020 12:39	WG1541910
(S) Toluene-d8	*104*		*75.0-131*		*09/12/2020 12:39*	WG1541910
(S) 4-Bromofluorobenzene	*93.4*		*67.0-138*		*09/12/2020 12:39*	WG1541910
(S) 1,2-Dichloroethane-d4	*101*		*70.0-130*		*09/12/2020 12:39*	WG1541910

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
2,4-D	ND		0.0700	1	09/14/2020 12:02	WG1542440
Dalapon	ND		0.0700	1	09/14/2020 12:02	WG1542440
2,4-DB	ND		0.0700	1	09/14/2020 12:02	WG1542440
Dicamba	ND		0.0700	1	09/14/2020 12:02	WG1542440
Dichloroprop	ND		0.0700	1	09/14/2020 12:02	WG1542440
Dinoseb	ND	L2	0.0700	1	09/14/2020 12:02	WG1542440
MCPA	ND		6.50	1	09/14/2020 12:02	WG1542440
MCPP	ND		6.50	1	09/14/2020 12:02	WG1542440

Chlorinated Acid Herbicides (GC) by Method 8151

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
2,4,5-T	ND		0.0700	1	09/14/2020 12:02	WG1542440
2,4,5-TP (Silvex)	ND		0.0700	1	09/14/2020 12:02	WG1542440
(S) 2,4-Dichlorophenyl Acetic Acid	*43.6*		*22.0-132*		*09/14/2020 12:02*	WG1542440

Pesticides (GC) by Method 8081B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Aldrin	ND		0.0200	1	09/12/2020 02:07	WG1541237
Alpha BHC	ND		0.0200	1	09/12/2020 02:07	WG1541237
Beta BHC	ND		0.0200	1	09/12/2020 02:07	WG1541237
Delta BHC	ND		0.0200	1	09/12/2020 02:07	WG1541237
Gamma BHC	ND		0.0200	1	09/12/2020 02:07	WG1541237
Chlordane	ND		0.300	1	09/12/2020 02:07	WG1541237
4,4-DDD	ND		0.0200	1	09/12/2020 02:07	WG1541237
4,4-DDE	ND		0.0200	1	09/12/2020 02:07	WG1541237
4,4-DDT	ND		0.0200	1	09/12/2020 02:07	WG1541237
Dieldrin	ND		0.0200	1	09/12/2020 02:07	WG1541237
Endosulfan I	ND		0.0200	1	09/12/2020 02:07	WG1541237
Endosulfan II	ND		0.0200	1	09/12/2020 02:07	WG1541237
Endosulfan sulfate	ND		0.0200	1	09/12/2020 02:07	WG1541237
Endrin	ND		0.0200	1	09/12/2020 02:07	WG1541237
Endrin aldehyde	ND		0.0200	1	09/12/2020 02:07	WG1541237
Endrin ketone	ND		0.0200	1	09/12/2020 02:07	WG1541237
Heptachlor	ND		0.0200	1	09/12/2020 02:07	WG1541237
Heptachlor epoxide	ND		0.0200	1	09/12/2020 02:07	WG1541237
Hexachlorobenzene	ND		0.0200	1	09/12/2020 02:07	WG1541237
Methoxychlor	ND		0.0200	1	09/12/2020 02:07	WG1541237
Toxaphene	ND		0.400	1	09/12/2020 02:07	WG1541237
(S) Decachlorobiphenyl	*77.9*		*10.0-135*		*09/12/2020 02:07*	WG1541237
(S) Tetrachloro-m-xylene	*79.1*		*10.0-139*		*09/12/2020 02:07*	WG1541237

Polychlorinated Biphenyls (GC) by Method 8082 A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
PCB 1016	ND		0.0340	1	09/12/2020 20:52	WG1541237
PCB 1221	ND		0.0340	1	09/12/2020 20:52	WG1541237
PCB 1232	ND		0.0340	1	09/12/2020 20:52	WG1541237
PCB 1242	ND		0.0340	1	09/12/2020 20:52	WG1541237
PCB 1248	ND		0.0170	1	09/12/2020 20:52	WG1541237
PCB 1254	ND		0.0170	1	09/12/2020 20:52	WG1541237
PCB 1260	ND		0.0170	1	09/12/2020 20:52	WG1541237
(S) Decachlorobiphenyl	*109*		*10.0-135*		*09/12/2020 20:52*	WG1541237
(S) Tetrachloro-m-xylene	*97.6*		*10.0-139*		*09/12/2020 20:52*	WG1541237

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	09/13/2020 09:30	WG1541820
Acenaphthene	ND		0.00600	1	09/13/2020 09:30	WG1541820
Acenaphthylene	ND		0.00600	1	09/13/2020 09:30	WG1541820
Benzo(a)anthracene	ND		0.00600	1	09/13/2020 09:30	WG1541820
Benzo(a)pyrene	ND		0.00600	1	09/13/2020 09:30	WG1541820
Benzo(b)fluoranthene	ND		0.00600	1	09/13/2020 09:30	WG1541820
Benzo(g,h,i)perylene	ND		0.00600	1	09/13/2020 09:30	WG1541820
Benzo(k)fluoranthene	ND		0.00600	1	09/13/2020 09:30	WG1541820

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chrysene	ND		0.00600	1	09/13/2020 09:30	WG1541820
Dibenz(a,h)anthracene	ND		0.00600	1	09/13/2020 09:30	WG1541820
Fluoranthene	ND		0.00600	1	09/13/2020 09:30	WG1541820
Fluorene	ND		0.00600	1	09/13/2020 09:30	WG1541820
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	09/13/2020 09:30	WG1541820
Naphthalene	ND		0.0200	1	09/13/2020 09:30	WG1541820
Phenanthrene	ND		0.00600	1	09/13/2020 09:30	WG1541820
Pyrene	ND		0.00600	1	09/13/2020 09:30	WG1541820
1-Methylnaphthalene	ND		0.0200	1	09/13/2020 09:30	WG1541820
2-Methylnaphthalene	ND		0.0200	1	09/13/2020 09:30	WG1541820
2-Chloronaphthalene	ND		0.0200	1	09/13/2020 09:30	WG1541820
(S) p-Terphenyl-d14	*99.6*		*23.0-120*		*09/13/2020 09:30*	WG1541820
(S) Nitrobenzene-d5	*73.7*		*14.0-149*		*09/13/2020 09:30*	WG1541820
(S) 2-Fluorobiphenyl	*94.2*		*34.0-125*		*09/13/2020 09:30*	WG1541820

Method Blank (MB)

(MB) R3569214-1 09/10/20 21:51

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Mercury	U		0.0180	0.0400

Laboratory Control Sample (LCS)

(LCS) R3569214-2 09/10/20 21:54

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.500	0.452	90.3	80.0-120	

L1259538-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1259538-05 09/10/20 21:56 • (MS) R3569214-3 09/10/20 22:03 • (MSD) R3569214-4 09/10/20 22:06

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.500	0.280	0.547	0.555	53.5	54.9	1	75.0-125	M2	M2	1.33	20

Method Blank (MB)

(MB) R3569381-1 09/11/20 08:29

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.460	2.00
Barium	U		0.240	0.500
Cadmium	U		0.0810	0.500
Chromium	U		0.250	1.00
Lead	U		0.208	0.500
Selenium	U		0.617	2.00
Silver	U		0.228	1.00

Laboratory Control Sample (LCS)

(LCS) R3569381-2 09/11/20 08:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	90.3	90.3	80.0-120	
Barium	100	95.6	95.6	80.0-120	
Cadmium	100	91.2	91.2	80.0-120	
Chromium	100	92.6	92.6	80.0-120	
Lead	100	91.4	91.4	80.0-120	
Selenium	100	95.2	95.2	80.0-120	
Silver	20.0	16.7	83.5	80.0-120	

L1259209-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1259209-03 09/11/20 08:34 • (MS) R3569381-5 09/11/20 08:42 • (MSD) R3569381-6 09/11/20 08:44

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	ND	84.9	84.1	83.9	83.2	1	75.0-125			0.837	20
Barium	100	52.9	143	155	90.2	102	1	75.0-125			7.82	20
Cadmium	100	ND	85.9	84.9	85.6	84.6	1	75.0-125			1.15	20
Chromium	100	26.5	96.6	94.0	70.0	67.5	1	75.0-125	M2	M2	2.64	20
Lead	100	145	187	182	41.9	36.6	1	75.0-125	M2	M2	2.85	20
Selenium	100	ND	85.8	87.6	85.8	87.6	1	75.0-125			2.08	20
Silver	20.0	ND	15.7	15.4	78.5	77.2	1	75.0-125			1.71	20

Method Blank (MB)

(MB) R3569748-3 09/12/20 01:47

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.240		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*96.5*			*77.0-120*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3569748-1 09/12/20 00:38 • (LCSD) R3569748-2 09/12/20 01:01

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	6.07	6.31	110	115	72.0-127			3.88	20
(S) a,a,a-Trifluorotoluene(FID)				*105*	*106*	*77.0-120*				

Method Blank (MB)

(MB) R3569782-3 09/12/20 11:19

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acetone	U		0.913	1.25
Acrylonitrile	U		0.0903	0.313
Benzene	U		0.0117	0.0250
Bromobenzene	U		0.0225	0.313
Bromodichloromethane	U		0.0181	0.0625
Bromoform	U		0.0293	0.625
Bromomethane	U		0.0493	0.313
1,3-Butadiene	U		0.128	0.625
n-Butylbenzene	U		0.131	0.313
sec-Butylbenzene	U		0.0720	0.313
tert-Butylbenzene	U		0.0488	0.125
Carbon disulfide	U		0.0175	0.313
Carbon tetrachloride	U		0.0225	0.125
Chlorobenzene	U		0.00525	0.0625
Chlorodibromomethane	U		0.0153	0.0625
Chloroethane	U		0.0425	0.125
Chloroform	U		0.0258	0.0625
Chloromethane	U		0.109	0.313
Cyclohexane	U		0.0278	0.0625
2-Chlorotoluene	U		0.0216	0.0625
4-Chlorotoluene	U		0.0113	0.125
1,2-Dibromo-3-Chloropropane	U		0.0975	0.625
1,2-Dibromoethane	U		0.0162	0.0625
Dibromomethane	U		0.0188	0.125
1,2-Dichlorobenzene	U		0.0106	0.125
1,3-Dichlorobenzene	U		0.0150	0.125
1,4-Dichlorobenzene	U		0.0175	0.125
Dichlorodifluoromethane	U		0.0403	0.0625
1,1-Dichloroethane	U		0.0123	0.0625
1,2-Dichloroethane	U		0.0162	0.0625
1,1-Dichloroethene	U		0.0152	0.0625
cis-1,2-Dichloroethene	U		0.0184	0.0625
trans-1,2-Dichloroethene	U		0.0260	0.125
1,2-Dichloropropane	U		0.0355	0.125
1,1-Dichloropropene	U		0.0202	0.0625
1,3-Dichloropropane	U		0.0125	0.125
cis-1,3-Dichloropropene	U		0.0189	0.0625
trans-1,3-Dichloropropene	U		0.0285	0.125
2,2-Dichloropropane	U		0.0345	0.0625
Dicyclopentadiene	U		0.0413	0.313

Method Blank (MB)

(MB) R3569782-3 09/12/20 11:19

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Di-isopropyl ether	U		0.0103	0.0250
Ethylbenzene	U		0.0184	0.0625
4-Ethyltoluene	U		0.0580	0.125
Hexachloro-1,3-butadiene	U		0.150	0.625
n-Hexane	U		0.0565	0.125
Isopropylbenzene	U		0.0106	0.0625
p-Isopropyltoluene	U		0.0638	0.125
2-Butanone (MEK)	U		1.59	2.50
Methyl Cyclohexane	U		0.0515	0.125
Methylene Chloride	U		0.166	0.625
4-Methyl-2-pentanone (MIBK)	U		0.0570	0.625
Methyl tert-butyl ether	U		0.00875	0.0250
Naphthalene	U		0.122	0.313
Propene	U		0.153	1.25
n-Propylbenzene	U		0.0238	0.125
Styrene	U		0.00573	0.313
1,1,1,2-Tetrachloroethane	U		0.0237	0.0625
1,1,2,2-Tetrachloroethane	U		0.0174	0.0625
Tetrachloroethene	U		0.0224	0.0625
Toluene	U		0.0325	0.125
1,1,2-Trichlorotrifluoroethane	U		0.0189	0.0625
1,2,3-Trichlorobenzene	U		0.183	0.313
1,2,4-Trichlorobenzene	U		0.110	0.313
1,1,1-Trichloroethane	U		0.0231	0.0625
1,1,2-Trichloroethane	U		0.0149	0.0625
Trichloroethene	U		0.0146	0.0250
Trichlorofluoromethane	U		0.0207	0.0625
1,2,3-Trichloropropane	U		0.0405	0.313
1,2,3-Trimethylbenzene	U		0.0395	0.125
1,2,4-Trimethylbenzene	U		0.0395	0.125
1,3,5-Trimethylbenzene	U		0.0500	0.125
Vinyl chloride	U		0.0290	0.0625
Xylenes, Total	U		0.0220	0.163
(S) Toluene-d8	*101*			*75.0-131*
(S) 4-Bromofluorobenzene	*92.8*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*100*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3569782-1 09/12/20 10:03 • (LCSD) R3569782-2 09/12/20 10:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.625	0.553	0.547	88.5	87.5	10.0-160			1.09	31
Acrylonitrile	0.625	0.572	0.654	91.5	105	45.0-153			13.4	22
Benzene	0.125	0.115	0.114	92.0	91.2	70.0-123			0.873	20
Bromobenzene	0.125	0.130	0.124	104	99.2	73.0-121			4.72	20
Bromodichloromethane	0.125	0.125	0.120	100	96.0	73.0-121			4.08	20
Bromoform	0.125	0.126	0.124	101	99.2	64.0-132			1.60	20
Bromomethane	0.125	0.110	0.0989	88.0	79.1	56.0-147			10.6	20
1,3-Butadiene	0.125	0.107	0.104	85.6	83.2	32.0-150			2.84	20
n-Butylbenzene	0.125	0.104	0.103	83.2	82.4	68.0-135			0.966	20
sec-Butylbenzene	0.125	0.115	0.112	92.0	89.6	74.0-130			2.64	20
tert-Butylbenzene	0.125	0.119	0.116	95.2	92.8	75.0-127			2.55	20
Carbon disulfide	0.125	0.121	0.116	96.8	92.8	56.0-133			4.22	20
Carbon tetrachloride	0.125	0.140	0.136	112	109	66.0-128			2.90	20
Chlorobenzene	0.125	0.122	0.119	97.6	95.2	76.0-128			2.49	20
Chlorodibromomethane	0.125	0.132	0.132	106	106	74.0-127			0.000	20
Chloroethane	0.125	0.116	0.110	92.8	88.0	61.0-134			5.31	20
Chloroform	0.125	0.122	0.120	97.6	96.0	72.0-123			1.65	20
Chloromethane	0.125	0.131	0.134	105	107	51.0-138			2.26	20
Cyclohexane	0.125	0.122	0.116	97.6	92.8	70.0-130			5.04	20
2-Chlorotoluene	0.125	0.116	0.121	92.8	96.8	75.0-124			4.22	20
4-Chlorotoluene	0.125	0.110	0.104	88.0	83.2	75.0-124			5.61	20
1,2-Dibromo-3-Chloropropane	0.125	0.108	0.106	86.4	84.8	59.0-130			1.87	20
1,2-Dibromoethane	0.125	0.118	0.115	94.4	92.0	74.0-128			2.58	20
Dibromomethane	0.125	0.120	0.121	96.0	96.8	75.0-122			0.830	20
1,2-Dichlorobenzene	0.125	0.104	0.102	83.2	81.6	76.0-124			1.94	20
1,3-Dichlorobenzene	0.125	0.116	0.112	92.8	89.6	76.0-125			3.51	20
1,4-Dichlorobenzene	0.125	0.110	0.108	88.0	86.4	77.0-121			1.83	20
Dichlorodifluoromethane	0.125	0.168	0.175	134	140	43.0-156			4.08	20
1,1-Dichloroethane	0.125	0.126	0.122	101	97.6	70.0-127			3.23	20
1,2-Dichloroethane	0.125	0.115	0.114	92.0	91.2	65.0-131			0.873	20
1,1-Dichloroethene	0.125	0.134	0.127	107	102	65.0-131			5.36	20
cis-1,2-Dichloroethene	0.125	0.112	0.101	89.6	80.8	73.0-125			10.3	20
trans-1,2-Dichloroethene	0.125	0.122	0.109	97.6	87.2	71.0-125			11.3	20
1,2-Dichloropropane	0.125	0.122	0.121	97.6	96.8	74.0-125			0.823	20
1,1-Dichloropropene	0.125	0.129	0.125	103	100	73.0-125			3.15	20
1,3-Dichloropropane	0.125	0.111	0.114	88.8	91.2	80.0-125			2.67	20
cis-1,3-Dichloropropene	0.125	0.129	0.125	103	100	76.0-127			3.15	20
trans-1,3-Dichloropropene	0.125	0.125	0.119	100	95.2	73.0-127			4.92	20
2,2-Dichloropropane	0.125	0.152	0.137	122	110	59.0-135			10.4	20
Dicyclopentadiene	0.125	0.114	0.111	91.2	88.8	71.0-132			2.67	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3569782-1 09/12/20 10:03 • (LCSD) R3569782-2 09/12/20 10:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Di-isopropyl ether	0.125	0.128	0.129	102	103	60.0-136			0.778	20
Ethylbenzene	0.125	0.121	0.113	96.8	90.4	74.0-126			6.84	20
4-Ethyltoluene	0.125	0.124	0.115	99.2	92.0	71.0-129			7.53	20
Hexachloro-1,3-butadiene	0.125	0.0855	0.0890	68.4	71.2	57.0-150			4.01	20
n-Hexane	0.125	0.137	0.138	110	110	55.0-137			0.727	20
Isopropylbenzene	0.125	0.120	0.116	96.0	92.8	72.0-127			3.39	20
p-Isopropyltoluene	0.125	0.111	0.110	88.8	88.0	72.0-133			0.905	20
2-Butanone (MEK)	0.625	0.518	0.443	82.9	70.9	30.0-160			15.6	24
Methyl Cyclohexane	0.125	0.140	0.133	112	106	67.0-129			5.13	20
Methylene Chloride	0.125	0.109	0.109	87.2	87.2	68.0-123			0.000	20
4-Methyl-2-pentanone (MIBK)	0.625	0.602	0.589	96.3	94.2	56.0-143			2.18	20
Methyl tert-butyl ether	0.125	0.117	0.119	93.6	95.2	66.0-132			1.69	20
Naphthalene	0.125	0.0804	0.0861	64.3	68.9	59.0-130			6.85	20
Propene	0.125	0.122	0.109	97.6	87.2	10.0-160			11.3	20
n-Propylbenzene	0.125	0.120	0.112	96.0	89.6	74.0-126			6.90	20
Styrene	0.125	0.111	0.111	88.8	88.8	72.0-127			0.000	20
1,1,1,2-Tetrachloroethane	0.125	0.117	0.119	93.6	95.2	74.0-129			1.69	20
1,1,2,2-Tetrachloroethane	0.125	0.105	0.101	84.0	80.8	68.0-128			3.88	20
Tetrachloroethene	0.125	0.131	0.123	105	98.4	70.0-136			6.30	20
Toluene	0.125	0.115	0.109	92.0	87.2	75.0-121			5.36	20
1,1,2-Trichlorotrifluoroethane	0.125	0.140	0.142	112	114	61.0-139			1.42	20
1,2,3-Trichlorobenzene	0.125	0.0757	0.0829	60.6	66.3	59.0-139			9.08	20
1,2,4-Trichlorobenzene	0.125	0.0768	0.0822	61.4	65.8	62.0-137	L2		6.79	20
1,1,1-Trichloroethane	0.125	0.131	0.138	105	110	69.0-126			5.20	20
1,1,2-Trichloroethane	0.125	0.122	0.123	97.6	98.4	78.0-123			0.816	20
Trichloroethene	0.125	0.135	0.131	108	105	76.0-126			3.01	20
Trichlorofluoromethane	0.125	0.149	0.138	119	110	61.0-142			7.67	20
1,2,3-Trichloropropane	0.125	0.119	0.113	95.2	90.4	67.0-129			5.17	20
1,2,3-Trimethylbenzene	0.125	0.104	0.103	83.2	82.4	74.0-124			0.966	20
1,2,4-Trimethylbenzene	0.125	0.109	0.105	87.2	84.0	70.0-126			3.74	20
1,3,5-Trimethylbenzene	0.125	0.116	0.111	92.8	88.8	73.0-127			4.41	20
Vinyl chloride	0.125	0.102	0.114	81.6	91.2	63.0-134			11.1	20
Xylenes, Total	0.375	0.325	0.337	86.7	89.9	72.0-127			3.63	20
(S) Toluene-d8				*99.7*	*97.9*	*75.0-131*				
(S) 4-Bromofluorobenzene				*95.1*	*95.5*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*105*	*104*	*70.0-130*				

L1260405-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1260405-02 09/12/20 13:17 • (MS) R3569782-4 09/12/20 18:41 • (MSD) R3569782-5 09/12/20 19:00

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acetone	4.35	ND	ND	ND	131	101	8	10.0-160			25.2	40
Acrylonitrile	4.35	ND	5.79	3.85	133	88.5	8	10.0-160		R5	40.2	40
Benzene	0.870	ND	0.621	0.741	71.4	85.2	8	10.0-149			17.6	37
Bromobenzene	0.870	ND	ND	ND	79.9	88.2	8	10.0-156			9.85	38
Bromodichloromethane	0.870	ND	0.697	0.777	80.1	89.3	8	10.0-143			10.9	37
Bromoform	0.870	ND	ND	ND	94.8	86.0	8	10.0-146			9.79	36
Bromomethane	0.870	ND	ND	ND	73.3	105	8	10.0-149			35.9	38
n-Butylbenzene	0.870	ND	ND	ND	81.0	86.3	8	10.0-160			6.32	40
sec-Butylbenzene	0.870	ND	ND	ND	75.3	84.5	8	10.0-159			11.5	39
tert-Butylbenzene	0.870	ND	ND	ND	71.0	83.1	8	10.0-156			15.7	39
Carbon tetrachloride	0.870	ND	ND	ND	79.0	107	8	10.0-145			30.3	37
Chlorobenzene	0.870	ND	0.662	0.746	76.1	85.7	8	10.0-152			11.9	39
Chlorodibromomethane	0.870	ND	0.785	0.793	90.2	91.1	8	10.0-146			1.01	37
Chloroethane	0.870	ND	ND	ND	79.7	108	8	10.0-146			30.1	40
Chloroform	0.870	ND	0.664	0.788	76.3	90.6	8	10.0-146			17.1	37
Chloromethane	0.870	ND	ND	ND	73.3	102	8	10.0-159			32.7	37
2-Chlorotoluene	0.870	ND	0.623	0.699	71.6	80.3	8	10.0-159			11.5	38
4-Chlorotoluene	0.870	ND	ND	ND	65.5	76.8	8	10.0-155			15.8	39
1,2-Dibromo-3-Chloropropane	0.870	ND	ND	ND	107	96.6	8	10.0-151			10.2	39
1,2-Dibromoethane	0.870	ND	0.763	0.728	87.7	83.7	8	10.0-148			4.69	34
Dibromomethane	0.870	ND	ND	ND	79.0	90.5	8	10.0-147			13.6	35
1,2-Dichlorobenzene	0.870	ND	ND	ND	76.4	78.2	8	10.0-155			2.23	37
1,3-Dichlorobenzene	0.870	ND	ND	ND	75.9	82.3	8	10.0-153			8.14	38
1,4-Dichlorobenzene	0.870	ND	ND	ND	72.2	76.1	8	10.0-151			5.27	38
Dichlorodifluoromethane	0.870	ND	0.854	1.18	98.2	136	8	10.0-160			32.1	35
1,1-Dichloroethane	0.870	ND	0.690	0.812	79.3	93.3	8	10.0-147			16.2	37
1,2-Dichloroethane	0.870	ND	0.721	0.769	82.9	88.4	8	10.0-148			6.44	35
1,1-Dichloroethene	0.870	ND	0.655	0.865	75.3	99.4	8	10.0-155			27.6	37
cis-1,2-Dichloroethene	0.870	ND	0.637	0.712	73.2	81.8	8	10.0-149			11.1	37
trans-1,2-Dichloroethene	0.870	ND	ND	ND	66.4	78.3	8	10.0-150			16.4	37
1,2-Dichloropropane	0.870	ND	ND	ND	76.9	87.5	8	10.0-148			12.9	37
1,1-Dichloropropene	0.870	ND	0.597	0.814	68.6	93.6	8	10.0-153			30.8	35
1,3-Dichloropropane	0.870	ND	ND	ND	81.5	79.1	8	10.0-154			3.01	35
cis-1,3-Dichloropropene	0.870	ND	0.718	0.773	82.5	88.9	8	10.0-151			7.38	37
trans-1,3-Dichloropropene	0.870	ND	ND	ND	85.2	88.2	8	10.0-148			3.45	37
2,2-Dichloropropane	0.870	ND	0.621	0.845	71.4	97.1	8	10.0-138			30.6	36
Di-isopropyl ether	0.870	ND	0.746	0.845	85.7	97.1	8	10.0-147			12.4	36
Ethylbenzene	0.870	ND	0.635	0.730	73.0	83.9	8	10.0-160			13.9	38
1,3-Butadiene	0.870	ND	ND	ND	61.4	86.4	8	10.0-137			33.9	36
Hexachloro-1,3-butadiene	0.870	ND	ND	ND	94.9	113	8	10.0-160			17.5	40

L1260405-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1260405-02 09/12/20 13:17 • (MS) R3569782-4 09/12/20 18:41 • (MSD) R3569782-5 09/12/20 19:00

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Carbon disulfide	0.870	ND	ND	ND	62.9	82.3	8	10.0-145			26.8	39
Isopropylbenzene	0.870	ND	0.670	0.769	77.0	88.4	8	10.0-155			13.8	38
p-Isopropyltoluene	0.870	ND	ND	ND	98.2	110	8	10.0-160			11.7	40
2-Butanone (MEK)	4.35	ND	ND	ND	92.2	85.7	8	10.0-160			7.24	40
Methylene Chloride	0.870	ND	ND	ND	72.2	72.0	8	10.0-141			0.319	37
4-Methyl-2-pentanone (MIBK)	4.35	ND	ND	ND	101	88.5	8	10.0-160			13.6	35
Methyl tert-butyl ether	0.870	ND	0.833	0.846	95.7	97.2	8	11.0-147			1.55	35
Cyclohexane	0.870	ND	0.550	0.722	63.2	83.0	8	10.0-157			27.0	32
Naphthalene	0.870	ND	ND	ND	97.0	107	8	10.0-160			9.37	36
n-Propylbenzene	0.870	ND	ND	ND	71.4	84.7	8	10.0-158			17.1	38
Styrene	0.870	ND	ND	ND	72.2	77.8	8	10.0-160			7.51	40
1,1,1,2-Tetrachloroethane	0.870	ND	0.705	0.749	81.0	86.1	8	10.0-149			6.05	39
1,1,2,2-Tetrachloroethane	0.870	ND	0.610	0.575	70.1	66.1	8	10.0-160			5.91	35
Tetrachloroethene	0.870	ND	0.641	0.790	73.7	90.8	8	10.0-156			20.8	39
Toluene	0.870	ND	ND	ND	67.8	78.7	8	10.0-156			14.9	38
1,1,2-Trichlorotrifluoroethane	0.870	ND	0.667	0.915	76.7	105	8	10.0-160			31.4	36
1,2,3-Trichlorobenzene	0.870	ND	ND	ND	123	86.7	8	10.0-160			34.6	40
1,2,4-Trichlorobenzene	0.870	ND	ND	ND	79.4	65.4	8	10.0-160			19.4	40
1,1,1-Trichloroethane	0.870	ND	0.660	0.899	75.9	103	8	10.0-144			30.7	35
1,1,2-Trichloroethane	0.870	ND	0.771	0.737	88.6	84.7	8	10.0-160			4.51	35
Trichloroethene	0.870	ND	0.830	1.01	95.4	116	8	10.0-156			19.6	38
Trichlorofluoromethane	0.870	ND	0.614	0.781	70.6	89.8	8	10.0-160			23.9	40
1,2,3-Trichloropropane	0.870	ND	ND	ND	75.5	78.0	8	10.0-156			3.29	35
1,2,3-Trimethylbenzene	0.870	ND	ND	ND	68.3	72.3	8	10.0-160			3.70	36
1,2,4-Trimethylbenzene	0.870	ND	ND	ND	86.0	95.1	8	10.0-160			10.0	36
1,3,5-Trimethylbenzene	0.870	ND	ND	ND	81.0	94.6	8	10.0-160			15.4	38
Dicyclopentadiene	0.870	ND	ND	ND	68.5	79.3	8	12.0-152			14.6	34
Vinyl chloride	0.870	ND	0.567	0.835	65.2	96.0	8	10.0-160		R5	38.2	37
Xylenes, Total	2.61	ND	1.91	2.18	73.2	83.5	8	10.0-160			13.2	38
4-Ethyltoluene	0.870	ND	ND	ND	77.4	89.4	8	10.0-156			14.5	32
n-Hexane	0.870	ND	ND	ND	83.7	97.0	8	10.0-157			14.8	37
Methyl Cyclohexane	0.870	ND	ND	ND	81.5	104	8	10.0-160			24.0	33
Propene	0.870	ND	ND	ND	56.1	94.5	8	10.0-160		R5	51.0	35
(S) Toluene-d8					*96.5*	*94.9*		*75.0-131*				
(S) 4-Bromofluorobenzene					*102*	*99.7*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*103*	*107*		*70.0-130*				

Sample Narrative:

OS: Non-target compounds too high to run at a lower dilution.

Method Blank (MB)

(MB) R3570218-1 09/14/20 11:18

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
2,4-D	U		0.00702	0.0700
Dalapon	U		0.0113	0.0700
2,4-DB	U		0.0297	0.0700
Dicamba	U		0.0157	0.0700
Dichloroprop	U		0.0245	0.0700
Dinoseb	U		0.00697	0.0700
MCPA	U		0.443	6.50
MCPP	U		0.367	6.50
2,4,5-T	U		0.00852	0.0700
2,4,5-TP (Silvex)	U		0.0107	0.0700
(S) 2,4-Dichlorophenyl Acetic Acid	*47.1*			*22.0-132*

Laboratory Control Sample (LCS)

(LCS) R3570218-2 09/14/20 11:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
2,4-D	0.167	0.0905	54.2	40.0-120	
Dalapon	0.167	0.0811	48.6	15.0-120	
2,4-DB	0.167	0.0812	48.6	25.0-143	
Dicamba	0.167	0.0942	56.4	43.0-120	
Dichloroprop	0.167	0.0989	59.2	32.0-129	
Dinoseb	0.167	0.0112	6.71	10.0-120	L2
MCPA	1.67	1.83	110	31.0-121	
MCPP	1.67	1.05	62.9	28.0-133	
2,4,5-T	0.167	0.0895	53.6	41.0-120	
2,4,5-TP (Silvex)	0.167	0.0937	56.1	42.0-120	
(S) 2,4-Dichlorophenyl Acetic Acid			*50.4*	*22.0-132*	

Method Blank (MB)

(MB) R3569594-1 09/11/20 22:35

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Aldrin	U		0.00376	0.0200
Alpha BHC	U		0.00368	0.0200
Beta BHC	U		0.00379	0.0200
Delta BHC	U		0.00346	0.0200
Gamma BHC	U		0.00344	0.0200
4,4-DDD	U		0.00370	0.0200
4,4-DDE	U		0.00366	0.0200
4,4-DDT	U		0.00627	0.0200
Dieldrin	U		0.00344	0.0200
Endosulfan I	U		0.00363	0.0200
Endosulfan II	U		0.00335	0.0200
Endosulfan sulfate	U		0.00364	0.0200
Endrin	U		0.00350	0.0200
Endrin aldehyde	U		0.00339	0.0200
Endrin ketone	U		0.00711	0.0200
Heptachlor	U		0.00428	0.0200
Heptachlor epoxide	U		0.00339	0.0200
Hexachlorobenzene	U		0.00346	0.0200
Methoxychlor	U		0.00484	0.0200
Chlordane	U		0.103	0.300
Toxaphene	U		0.124	0.400
(S) Decachlorobiphenyl	*72.7*			*10.0-135*
(S) Tetrachloro-m-xylene	*72.7*			*10.0-139*

Laboratory Control Sample (LCS)

(LCS) R3569594-2 09/11/20 22:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aldrin	0.0666	0.0471	70.7	34.0-136	
Alpha BHC	0.0666	0.0446	67.0	34.0-139	
Beta BHC	0.0666	0.0439	65.9	34.0-133	
Delta BHC	0.0666	0.0453	68.0	34.0-135	
Gamma BHC	0.0666	0.0462	69.4	34.0-136	
4,4-DDD	0.0666	0.0402	60.4	33.0-141	
4,4-DDE	0.0666	0.0422	63.4	34.0-134	
4,4-DDT	0.0666	0.0413	62.0	30.0-143	
Dieldrin	0.0666	0.0412	61.9	35.0-137	
Endosulfan I	0.0666	0.0439	65.9	34.0-134	

Laboratory Control Sample (LCS)

(LCS) R3569594-2 09/11/20 22:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Endosulfan II	0.0666	0.0418	62.8	35.0-132	
Endosulfan sulfate	0.0666	0.0405	60.8	35.0-132	
Endrin	0.0666	0.0448	67.3	34.0-137	
Endrin aldehyde	0.0666	0.0385	57.8	23.0-121	
Endrin ketone	0.0666	0.0392	58.9	35.0-144	
Heptachlor	0.0666	0.0505	75.8	36.0-141	
Heptachlor epoxide	0.0666	0.0455	68.3	36.0-134	
Hexachlorobenzene	0.0666	0.0493	74.0	33.0-129	
Methoxychlor	0.0666	0.0449	67.4	28.0-150	
(S) Decachlorobiphenyl			*69.7*	*10.0-135*	
(S) Tetrachloro-m-xylene			*70.0*	*10.0-139*	

L1258072-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1258072-01 09/12/20 00:14 • (MS) R3569594-3 09/12/20 00:27 • (MSD) R3569594-4 09/12/20 00:39

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Aldrin	0.0666	ND	0.0418	0.0390	62.8	58.6	1	20.0-135			6.93	37
Alpha BHC	0.0666	ND	0.0478	0.0418	71.8	62.8	1	27.0-140			13.4	35
Beta BHC	0.0666	ND	0.0458	0.0402	68.8	60.4	1	23.0-141			13.0	37
Delta BHC	0.0666	ND	0.0479	0.0419	71.9	62.9	1	21.0-138			13.4	35
Gamma BHC	0.0666	ND	0.0497	0.0422	74.6	63.4	1	27.0-137			16.3	36
4,4-DDD	0.0666	ND	0.0373	0.0347	56.0	52.1	1	15.0-152			7.22	39
4,4-DDE	0.0666	ND	0.0372	0.0347	55.9	52.1	1	10.0-152			6.95	40
4,4-DDT	0.0666	ND	0.0340	0.0314	51.1	47.1	1	10.0-151			7.95	40
Dieldrin	0.0666	ND	0.0381	0.0357	57.2	53.6	1	17.0-145			6.50	37
Endosulfan I	0.0666	ND	0.0418	0.0378	62.8	56.8	1	20.0-137			10.1	36
Endosulfan II	0.0666	ND	0.0407	0.0368	61.1	55.3	1	15.0-141			10.1	37
Endosulfan sulfate	0.0666	ND	0.0398	0.0358	59.8	53.8	1	15.0-143			10.6	38
Endrin	0.0666	ND	0.0431	0.0393	64.7	59.0	1	19.0-143			9.22	37
Endrin aldehyde	0.0666	ND	0.0384	0.0344	57.7	51.7	1	10.0-139			11.0	40
Endrin ketone	0.0666	ND	0.0377	0.0342	56.6	51.4	1	17.0-149			9.74	38
Heptachlor	0.0666	ND	0.0473	0.0435	71.0	65.3	1	22.0-138			8.37	37
Heptachlor epoxide	0.0666	ND	0.0441	0.0391	66.2	58.7	1	22.0-138			12.0	36
Hexachlorobenzene	0.0666	ND	0.0492	0.0450	73.9	67.6	1	25.0-126			8.92	35
Methoxychlor	0.0666	ND	0.0411	0.0371	61.7	55.7	1	10.0-159			10.2	40
(S) Decachlorobiphenyl					*69.1*	*66.1*		*10.0-135*				
(S) Tetrachloro-m-xylene					*75.1*	*70.3*		*10.0-139*				

Method Blank (MB)

(MB) R3569694-1 09/12/20 12:35

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
PCB 1016	U		0.0118	0.0340
PCB 1221	U		0.0118	0.0340
PCB 1232	U		0.0118	0.0340
PCB 1242	U		0.0118	0.0340
PCB 1248	U		0.00738	0.0170
PCB 1254	U		0.00738	0.0170
PCB 1260	U		0.00738	0.0170
(S) Decachlorobiphenyl	*85.4*			*10.0-135*
(S) Tetrachloro-m-xylene	*83.6*			*10.0-139*

Laboratory Control Sample (LCS)

(LCS) R3569694-2 09/12/20 12:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
PCB 1260	0.167	0.126	75.4	37.0-145	
PCB 1016	0.167	0.128	76.6	36.0-141	
(S) Decachlorobiphenyl			*83.6*	*10.0-135*	
(S) Tetrachloro-m-xylene			*80.2*	*10.0-139*	

L1258588-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1258588-01 09/12/20 19:50 • (MS) R3569694-3 09/12/20 20:02 • (MSD) R3569694-4 09/12/20 20:15

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
PCB 1260	0.167	ND	0.159	0.173	95.2	104	1	10.0-160	P	P	8.43	38
PCB 1016	0.167	ND	3.55	3.27	2130	1960	1	10.0-160	M1 P	M1 P	8.21	37
(S) Decachlorobiphenyl					*98.6*	*103*		*10.0-135*				
(S) Tetrachloro-m-xylene					*92.9*	*93.2*		*10.0-139*				

Method Blank (MB)

(MB) R3569813-2 09/13/20 08:43

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	*69.3*			*14.0-149*
(S) 2-Fluorobiphenyl	*84.4*			*34.0-125*
(S) p-Terphenyl-d14	*89.9*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3569813-1 09/13/20 08:19

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0601	75.1	50.0-126	
Acenaphthene	0.0800	0.0596	74.5	50.0-120	
Acenaphthylene	0.0800	0.0620	77.5	50.0-120	
Benzo(a)anthracene	0.0800	0.0598	74.8	45.0-120	
Benzo(a)pyrene	0.0800	0.0608	76.0	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0574	71.8	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0638	79.8	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0643	80.4	49.0-125	
Chrysene	0.0800	0.0604	75.5	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0658	82.3	47.0-125	
Fluoranthene	0.0800	0.0627	78.4	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3569813-1 09/13/20 08:19

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0630	78.8	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0673	84.1	46.0-125	
Naphthalene	0.0800	0.0614	76.8	50.0-120	
Phenanthrene	0.0800	0.0595	74.4	47.0-120	
Pyrene	0.0800	0.0590	73.8	43.0-123	
1-Methylnaphthalene	0.0800	0.0636	79.5	51.0-121	
2-Methylnaphthalene	0.0800	0.0624	78.0	50.0-120	
2-Chloronaphthalene	0.0800	0.0586	73.3	50.0-120	
(S) Nitrobenzene-d5			*70.5*	*14.0-149*	
(S) 2-Fluorobiphenyl			*84.2*	*34.0-125*	
(S) p-Terphenyl-d14			*90.0*	*23.0-120*	

L1258764-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1258764-06 09/13/20 13:24 • (MS) R3569813-3 09/13/20 13:48 • (MSD) R3569813-4 09/13/20 14:11

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0800	ND	0.0649	0.0631	81.1	78.9	1	10.0-145			2.81	30
Acenaphthene	0.0800	ND	0.0649	0.0630	81.1	78.8	1	14.0-127			2.97	27
Acenaphthylene	0.0800	ND	0.0692	0.0674	86.5	84.3	1	21.0-124			2.64	25
Benzo(a)anthracene	0.0800	ND	0.0605	0.0583	75.6	72.9	1	10.0-139			3.70	30
Benzo(a)pyrene	0.0800	ND	0.0613	0.0603	76.6	75.4	1	10.0-141			1.64	31
Benzo(b)fluoranthene	0.0800	ND	0.0537	0.0559	67.1	69.9	1	10.0-140			4.01	36
Benzo(g,h,i)perylene	0.0800	ND	0.0600	0.0563	75.0	70.4	1	10.0-140			6.36	33
Benzo(k)fluoranthene	0.0800	ND	0.0684	0.0618	85.5	77.3	1	10.0-137			10.1	31
Chrysene	0.0800	ND	0.0646	0.0644	80.7	80.5	1	10.0-145			0.310	30
Dibenz(a,h)anthracene	0.0800	ND	0.0673	0.0649	84.1	81.1	1	10.0-132			3.63	31
Fluoranthene	0.0800	ND	0.0633	0.0614	79.1	76.8	1	10.0-153			3.05	33
Fluorene	0.0800	ND	0.0674	0.0652	84.3	81.5	1	11.0-130			3.32	29
Indeno(1,2,3-cd)pyrene	0.0800	ND	0.0655	0.0625	81.9	78.1	1	10.0-137			4.69	32
Naphthalene	0.0800	ND	0.0720	0.0703	90.0	87.9	1	10.0-135			2.39	27
Phenanthrene	0.0800	ND	0.0627	0.0602	78.4	75.3	1	10.0-144			4.07	31
Pyrene	0.0800	ND	0.0598	0.0581	74.8	72.6	1	10.0-148			2.88	35
1-Methylnaphthalene	0.0800	ND	0.0717	0.0686	89.6	85.8	1	10.0-142			4.42	28
2-Methylnaphthalene	0.0800	ND	0.0700	0.0678	87.5	84.8	1	10.0-137			3.19	28
2-Chloronaphthalene	0.0800	ND	0.0642	0.0626	80.3	78.3	1	29.0-120			2.52	24
(S) Nitrobenzene-d5					*84.2*	*86.2*		*14.0-149*				
(S) 2-Fluorobiphenyl					*99.0*	*101*		*34.0-125*				
(S) p-Terphenyl-d14					*103*	*105*		*23.0-120*				

INTERNAL STANDARD SUMMARY

Instrument: VOCGC4 • File ID: 0911_34-1

09/12/20 00:02

Sample ID	File ID	FLUOROBENZENE (FID) Response	FLUOROBENZENE (PID) Response
Standard	0911_34-1	7442773	0
Upper Limit		14885550	0
Lower Limit		3721387	0
LCS R3569748-1 WG1541650 1x	0911_35	7718134	0
LCSD R3569748-2 WG1541650 1x	0911_36	7319808	0
BLANK R3569748-3 WG1541650 1x	0911_38	7011691	0
L1260095-01 WG1541650 25x	0911_41	7351961	0

INTERNAL STANDARD SUMMARY

Instrument: VOCMS54 • File ID: 0912_02

09/12/20 10:03

Sample ID	File ID	8260-FLUOROBENZENE Response	8260-CHLOROBENZENE-D5 Response	8260-1,4-DICHLOROBENZENE-D4 Response
Standard	0912_02	526322.60	226947	248396
Upper Limit		1052645	453894	496792
Lower Limit		263161	113474	124198
LCS R3569782-1 WG1541910 1x	0912_02LCS	526322.60	226947	248396
LCSD R3569782-2 WG1541910 1x	0912_03	534088	232048.90	262984.10
BLANK R3569782-3 WG1541910 1x	0912_06	510815.90	221039.90	232427.80
L1260095-01 WG1541910 1x	0912_08	531388.30	223102.20	238668.10
MS R3569782-4 WG1541910 8x	0912_27	573630.70	248030.30	304522.10
MSD R3569782-5 WG1541910 8x	0912_28	544454.60	245203.90	279859.60

INTERNAL STANDARD SUMMARY

Instrument: SVGC30 • File ID: AVG

Sample ID	File ID	1-BROMO-2-DINITROBENZENE Response
Standard	AVG	1002255300
Upper Limit		1503383000
Lower Limit		501127500
BLANK R3569594-1 WG1541237 1x	0911_09	1110280000
LCS R3569594-2 WG1541237 1x	0911_10	1131283000
MS R3569594-3 WG1541237 1x	0911_18	1129406000
MSD R3569594-4 WG1541237 1x	0911_19	1126885000
L1260095-01 WG1541237 1x	0911_26	1123328000

Instrument: SVGC28 • File ID: AVG

Sample ID	File ID	1-BROMO-2-DINITROBENZENE Response
Standard	AVG	1068945714
Upper Limit		1603419000
Lower Limit		534473000
BLANK R3569694-1 WG1541237 1x	0912_16	1063536000
LCS R3569694-2 WG1541237 1x	0912_17	1061284000
MS R3569694-3 WG1541237 1x	0912_52	1085743000
MSD R3569694-4 WG1541237 1x	0912_53	1085694000
L1260095-01 WG1541237 1x	0912_56	1029893000

INTERNAL STANDARD SUMMARY

Instrument: BNAMS18 • File ID: 0913_03

09/13/20 07:52

Sample ID	File ID	NAPHTHALENE-D8 Response	ACENAPHTHENE-D10 Response	PHENANTHRENE-D10 Response	CHRYSENE-D12 Response	PERYLENE-D12 Response
Standard	0913_03	131225	80138	142698	134037	130666
Upper Limit		262450	160276	285396	268074	261332
Lower Limit		65613	40069	71349	67019	65333
LCS R3569813-1 WG1541820 1x	0913_04	127244	77105	136159	129706	124364
BLANK R3569813-2 WG1541820 1x	0913_05	125045	73503	130692	121563	117479
L1260095-01 WG1541820 1x	0913_07	118314	69392	123722	116651	112407
MS R3569813-3 WG1541820 1x	0913_18	112817	68895	118222	113671	112426
MSD R3569813-4 WG1541820 1x	0913_19	112302	68153	117965	110983	109038

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 Sc

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
L2	The associated blank spike recovery was below laboratory acceptance limits.
M1	Matrix spike recovery was high, the method control sample recovery was acceptable.
M2	Matrix spike recovery was low, the method control sample recovery was acceptable.
P	RPD between the primary and confirmatory analysis exceeded 40%.
R5	MS/MSD RPD exceeded the laboratory acceptance limit. Recovery met acceptance criteria.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

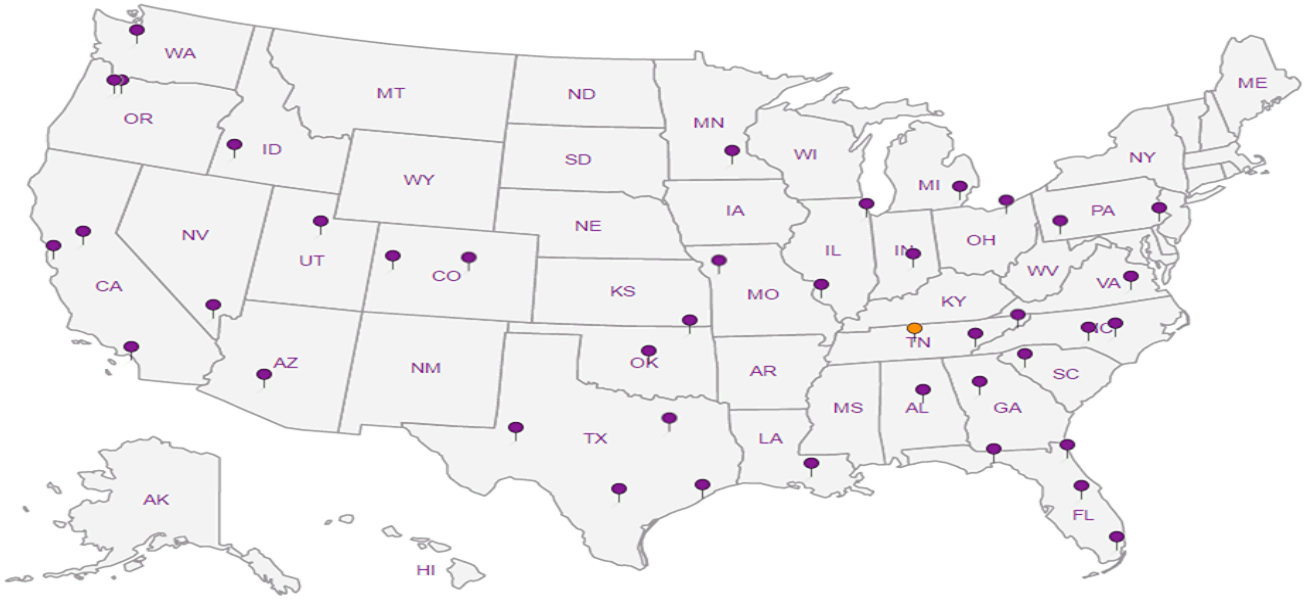
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Environmental Response, Inc.
2202 W. Medtronic Way, Suite 108
Tempe, AZ 85281

Billing Information: Same

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

Pace Analytical®
National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

Report to: Eric Smith

Email To: esmith@spray-eri.com

Project Description: ARS PRESCOTT SUB BACKFILL

City/State Collected: PRESCOTT, AZ

Phone: 480-967-2802
Fax: 480-967-2735

Client Project # 20-209125

Lab Project #

L# 1266095

Table F019

Collected by (print): E. SMITH

Site/Facility ID #

P.O. #

Acctnum: ENVRESTAZ

Template:

Prelogin:

TSR:

PB:

Shipped Via:

Collected by (signature):

Immediately Packed on Ice N ____ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
✓ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Date Results Needed

Quote #

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	RCRA 8 METALS	TPH 8015 GRO	VOC 8260B	PAH 8270SIM	PCB 8082	PESTICIDE 8081	HERBICIDE 8151				Remarks	Sample # (lab only)
GLASSFORD AB 07	GRAB	SS	–	09/09/20	1515	2	X	X	X	X	X	X	X					01

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other _____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____

Tracking # 1411 1762 0937

Sample Receipt Checklist
COC Seal Present/Intact: __NP __Y __N
COC Signed/Accurate: __Y __N
Bottles arrive intact: __Y __N
Correct bottles used: __Y __N
Sufficient volume sent: __Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	If preservation required by Login: Date/Time
[signature]	9/9/20	1657	[signature]		
Relinquished by : (Signature) [signature]	Date: 9/9/20	Time: 1800	Received by: (Signature) FedEx	Temp: 4.7 °C Bottles Received: 2	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) Olivia Tucer	Date: 9/10/20 Time: 930	Hold: Condition: NCF / OK

PNPAZ

APPROVED
By Greg Laney at 1:31 pm, Oct 06, 2020

APS Prescott Substation Remediation / Submittal 019 Specification 31 23 23
Reviewed, checked and approved for compliance with Contract Documents

Western Technologies Inc.
The Quality People
Since 1955

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Flagstaff, Arizona 86004-8934
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Soil / Aggregate Field Unit Weight Tests
– Field Density –

Client **ENVIRONMENTAL RESPONSE INC**
2202 WEST MEDTRONIC WAY SUITE 108
TEMPE, AZ 85281

Date of Report **09-11-20** Page **1** of **1**
Job No. **2540JP330**
Event No. **3**
Authorized By **ERIC SMITH** Date **09-09-20**
Tested By **WT/ROY KEITH** Date **09-09-20**

Client **ENVIRONMENTAL RESPONSE INC**
Project **APS PRESCOTT MGP REMEDIATION**
Location **300 N GRANITE ST - PRESCOTT, AZ**
Test Locations Designated By **WT/ROY KEITH**
In-Place Unit Weight **ASTM D6938** Moisture Content **ASTM D6938** Rock Correction **ASTM D4718**
Gauge **TROXLER** Model **3430** Serial No. **31152** Date Last Calibrated Standard Count: Unit Weight **2119** H_2O **623**
Apparatus Id. Calibrated Volume of Sand Cone Apparatus cu. ft. Bulk Unit Weight of Sand lbf per cu. ft.

Test No.	In-Place Characteristics				Laboratory Characteristics					Compaction	Requirements		
	Hole Volume, cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight, lbf per cu. ft.	Oversize %	ID.	Maximum Dry Unit Weight, lbf per cu. ft.		Optimum Moisture %		% of Maximum Dry Unit Weight	Moisture %	Compaction %	Conformance Indicated
						TESTED	CORRECTED	TESTED	CORRECTED				
1		9.8	132.9	0	1	130.5	--	10.3	--	100+		95	YES
2		9.1	128.3	0	1	130.5	--	10.3	--	98		95	YES
3		8.5	132.5	0	1	130.5	--	10.3	--	100+		95	YES
4		9.6	126.3	0	1	130.5	--	10.3	--	97		95	YES
5		8.9	136.0	0	1	130.5	--	10.3	--	100+		95	YES

Test No.	Test Location, Horizontal	Test Location, Vertical		Material Tested
		Approximate Fill Depth, ft.	*Elevation	
1	FROM NORTHEAST CORNER 10' SOUTH AND 10' WEST	1.0	87.0	Subbase Fill
2	FROM NORTHEAST CORNER 10' SOUTH AND 10' WEST	2.0	88.0	Subbase Fill
3	FROM SOUTHEAST CORNER 20' WEST AND 25' NORTH	1.0	90.0	Subbase Fill
4	FROM NORTHEAST CORNER 60' WEST AND 8' SOUTH	1.0	91.0	Subbase Fill
5	FROM NORTHWEST CORNER 12' SOUTHEAST	1.0	91.0	Subbase Fill

Laboratory Data & Compaction Characteristics

Lab ID.	Event No.	Description of Materials	Material Source	Sample Location	Optimum Moisture, %	Maximum Dry Unit Weight, lbf per cu. ft.	Test Method
1	1-	Silty Sand with Gravel			10.3	130.5	D698 C

Comments: * DATUM: 100 = TOP OF GRADE

Testing was performed per local industry practices that may include slight deviations from the standards. Tests reported herein are indicative of conditions found at the exact location and time of testing only. The above services and report were performed pursuant to the terms and conditions of the contract between Western Technologies Inc. (WT) and Client. WT warrants that this was performed under the standard of reasonable care applicable to such testing generally. No other warranty, guaranty, or representation, expressed or implied, is included or intended. This report shall not be reproduced, except in full, without the prior written approval of WT.

Reviewed By ROY KEITH , PROJECT MANAGER

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Flagstaff, Arizona 86004-8934
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Soil / Aggregate Field Unit Weight Tests
– Field Density –

Client **ENVIRONMENTAL RESPONSE INC**
2202 WEST MEDTRONIC WAY SUITE 108
TEMPE, AZ 85281

Date of Report **09-14-20** Page **1 of 1**
Job No. **2540JP330**
Event No. **4**
Authorized By **ERIC SMITH** Date **09-10-20**
Tested By **WT/GARRETT GREEN** Date **09-10-20**

Client **ENVIRONMENTAL RESPONSE INC**
Project **APS PRESCOTT MGP REMEDIATION**
Location **300 N GRANITE ST - PRESCOTT, AZ**
Test Locations Designated By **WT/GARRETT GREEN**
In-Place Unit Weight **ASTM D6938** Moisture Content **ASTM D6938** Rock Correction **ASTM D4718**
Gauge **TROXLER** Model **3430** Serial No. **31152** Date Last Calibrated Standard Count: Unit Weight **2119** H_2O **623**
Apparatus Id. Calibrated Volume of Sand Cone Apparatus cu. ft. Bulk Unit Weight of Sand lbf per cu. ft.

Test No.	In-Place Characteristics				Laboratory Characteristics					Compaction	Requirements		
	Hole Volume, cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight, lbf per cu. ft.	Oversize %	ID.	Maximum Dry Unit Weight, lbf per cu. ft.		Optimum Moisture %		% of Maximum Dry Unit Weight	Moisture %	Compaction %	Conformance Indicated
						TESTED	CORRECTED	TESTED	CORRECTED				
6		8.4	134.6	0	1	130.5	--	10.3	--	100+		95	YES
7		7.8	136.5	0	1	130.5	--	10.3	--	100+		95	YES
8		7.3	125.3	0	1	130.5	--	10.3	--	96		95	YES
9		8.2	129.5	0	1	130.5	--	10.3	--	99		95	YES
10		8.3	133.2	0	1	130.5	--	10.3	--	100+		95	YES
11		9.4	130.6	0	1	130.5	--	10.3	--	100		95	YES
12		9.5	126.9	0	1	130.5	--	10.3	--	97		95	YES
13		8.9	131.8	0	1	130.5	--	10.3	--	100+		95	YES
14		8.1	130.9	0	1	130.5	--	10.3	--	100		95	YES
15		9.3	126.0	0	1	130.5	--	10.3	--	97		95	YES

Test No.	Test Location, Horizontal	Test Location, Vertical		Material Tested
		Approximate Fill Depth, ft.	*Elevation	
6	15' EAST AND 35' NORTH IN SOUTHWEST CORNER	1.0	92.0	Subbase Fill
7	15' SOUTH AND 23' EAST IN NORTHWEST CORNER	1.0	92.0	Subbase Fill
8	15' SOUTH OF NORTH CENTER	1.0	92.0	Subbase Fill
9	15' SOUTH ANS 23' WEST OF NORTHEAST CORNER	1.0	92.0	Subbase Fill
10	15' WEST AND 50' NORTH, SOUTHEAST CORNER	1.0	92.0	Subbase Fill
11	45' NORTH ANS 22' EAST, SOUTHWEST CORNER	2.0	93.0	Subbase Fill
12	15' NORTH AND 25' EAST NORTHWEST CORNER	2.0	93.0	Subbase Fill
13	18' SOUTH AND 58' EAST, CENTER NORTH END	2.0	93.0	Subbase Fill
14	30' WEST AND 20' SOUTH, NORTHEAST CORNER	2.0	93.0	Subbase Fill
15	15' WEST AND 46' SOUTH, SOUTHEAST CORNER	2.0	93.0	Subbase Fill

Laboratory Data & Compaction Characteristics

Lab ID.	Event No.	Description of Materials	Material Source	Sample Location	Optimum Moisture, %	Maximum Dry Unit Weight, lbf per cu. ft.	Test Method
1	1-	Silty Sand with Gravel			10.3	130.5	D698 C

Comments: * DATUM: 100 = TOP OF GRADE

Testing was performed per local industry practices that may include slight deviations from the standards. Tests reported herein are indicative of conditions found at the exact location and time of testing only. The above services and report were performed pursuant to the terms and conditions of the contract between Western Technologies Inc. (WT) and Client. WT warrants that this was performed under the standard of reasonable care applicable to such testing generally. No other warranty, guaranty, or representation, expressed or implied, is included or intended. This report shall not be reproduced, except in full, without the prior written approval of WT.

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Soil / Aggregate Field Unit Weight Tests
– Field Density –

Client **ENVIRONMENTAL RESPONSE INC**
2202 WEST MEDTRONIC WAY SUITE 108
TEMPE, AZ 85281

Date of Report **09-15-20** Page **1** of **1**
Job No. **2540JP330**
Event No. **6**
Authorized By **ERIC SMITH** Date **09-11-20**
Tested By **WT/GARRETT GREET** Date **09-11-20**

Client **ENVIRONMENTAL RESPONSE INC**
Project **APS PRESCOTT MGP REMEDIATION**
Location **300 N GRANITE ST - PRESCOTT, AZ**
Test Locations Designated By **WT/GATTETT GREEN**
In-Place Unit Weight **ASTM D6938** Moisture Content **ASTM D6938** Rock Correction **ASTM D4718**
Gauge **TROXLER** Model **3430** Serial No. **31152** Date Last Calibrated Standard Count: Unit Weight **2099** H_2O **624**
Apparatus Id. Calibrated Volume of Sand Cone Apparatus cu. ft. Bulk Unit Weight of Sand lbf per cu. ft.

Test No.	In-Place Characteristics				Laboratory Characteristics					Compaction	Requirements		
	Hole Volume, cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight, lbf per cu. ft.	Oversize %	ID.	Maximum Dry Unit Weight, lbf per cu. ft.		Optimum Moisture %		% of Maximum Dry Unit Weight	Moisture %	Compaction %	Conformance Indicated
						TESTED	CORRECTED	TESTED	CORRECTED				
16		8.9	135.7	0	1	130.5	--	10.3	--	100+		95	YES
17		8.1	131.5	0	1	130.5	--	10.3	--	100+		95	YES
18		7.9	127.3	0	1	130.5	--	10.3	--	98		95	YES
19		10.4	128.9	0	1	130.5	--	10.3	--	99		95	YES
20		9.4	129.3	0	1	130.5	--	10.3	--	99		95	YES
21		9.0	129.6	0	1	130.5	--	10.3	--	99		95	YES
22		7.1	127.7	0	1	130.5	--	10.3	--	98		95	YES
23		8.5	131.4	0	1	130.5	--	10.3	--	100+		95	YES
24		10.3	129.6	0	1	130.5	--	10.3	--	99		95	YES

Test No.	Test Location, Horizontal	Test Location, Vertical		Material Tested
		Approximate Fill Depth, ft.	*Elevation	
16	45' NORTH AND 20' EAST ON SOUTHWEST CORNER	3.0	93.0	Subbase Fill
17	22' SOUTH AND 25' EAST ON NORTHWEST CORNER	3.0	93.0	Subbase Fill
18	26' SOUTH AND 63' EAST ON NORTH CORNER	3.0	93.0	Subbase Fill
19	26' WEST AND 25' SOUTH ON NORTHEAST CORNER	3.0	93.0	Subbase Fill
20	15' WEST AND 48' NORTH ON SOUTHEAST CORNER	3.0	93.0	Subbase Fill
21	20' WEST AND 30' SOUTH ON NORTH EAST CORNER	4.0	94.0	Subbase Fill
22	50' SOUTH AND 20' EAST ON CENTER OF WEST SIDE	4.0	94.0	Subbase Fill
23	25' SOUTH OF CENTER	4.0	94.0	Subbase Fill
24	53' SOUTH AND 30' WEST ON SOUTHEAST CORNER	1.0	94.0	Subbase Fill

Laboratory Data & Compaction Characteristics

Lab ID.	Event No.	Description of Materials	Material Source	Sample Location	Optimum Moisture, %	Maximum Dry Unit Weight, lbf per cu. ft.	Test Method
1	1-	Silty Sand with Gravel			10.3	130.5	D698 C

Comments: * DATUM: 100 = TOP OF GRADE

Testing was performed per local industry practices that may include slight deviations from the standards. Tests reported herein are indicative of conditions found at the exact location and time of testing only. The above services and report were performed pursuant to the terms and conditions of the contract between Western Technologies Inc. (WT) and Client. WT warrants that this was performed under the standard of reasonable care applicable to such testing generally. No other warranty, guaranty, or representation, expressed or implied, is included or intended. This report shall not be reproduced, except in full, without the prior written approval of WT.

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Soil / Aggregate Field Unit Weight Tests – Field Density –

Client **ENVIRONMENTAL RESPONSE INC**
2202 WEST MEDTRONIC WAY SUITE 108
TEMPE, AZ 85281

Date of Report **09-15-20** Page **1 of 1**
Job No. **2540JP330**
Event No. **8-**
Authorized By **ERIC SMITH** Date **09-14-20**
Tested By **WT/J. STOUT** Date **09-14-20**

Client **ENVIRONMENTAL RESPONSE INC**
Project **APS PRESCOTT MGP REMEDIATION**
Location **300 N GRANITE ST - PRESCOTT, AZ**
Test Locations Designated By **WT/J. STOUT**
In-Place Unit Weight **ASTM D6938** Moisture Content **ASTM D6938** Rock Correction **ASTM D4718**
Gauge **TROXLER** Model **3430** Serial No. **72472** Date Last Calibrated Standard Count: Unit Weight **2654** H_2O **678**
Apparatus Id. Calibrated Volume of Sand Cone Apparatus cu. ft. Bulk Unit Weight of Sand lbf per cu. ft.

Test No.	In-Place Characteristics				Laboratory Characteristics					Compaction	Requirements		
	Hole Volume, cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight, lbf per cu. ft.	Oversize %	ID.	Maximum Dry Unit Weight, lbf per cu. ft.		Optimum Moisture %		% of Maximum Dry Unit Weight	Moisture %	Compaction %	Conformance Indicated
						TESTED	CORRECTED	TESTED	CORRECTED				
26		9.4	132.4	0	1	130.5	--	10.3	--	100+		95	YES
27		9.0	127.2	0	1	130.5	--	10.3	--	98		95	YES
28		10.3	120.0	0	1	130.5	--	10.3	--	92		95	NO
29		9.1	131.5	0	1	130.5	--	10.3	--	100+		95	YES
30		10.1	125.9	0	1	130.5	--	10.3	--	97		95	YES
31		8.7	129.8	0	1	130.5	--	10.3	--	100		95	YES
32		8.2	130.8	0	1	130.5	--	10.3	--	100		95	YES
33		9.4	131.4	0	1	130.5	--	10.3	--	100+		95	YES
34		8.9	129.7	0	1	130.5	--	10.3	--	99		95	YES
35		8.8	131.7	0	1	130.5	--	10.3	--	100+		95	YES
36		10.5	124.7	0	1	130.5	--	10.3	--	96		95	YES
37		8.6	127.4	0	1	130.5	--	10.3	--	98		95	YES

Test No.	Test Location, Horizontal	Test Location, Vertical		Material Tested
		Approximate Fill Depth, ft.	*Elevation	
26	PARKING LOT 20' NORTH X 10' EAST OF SOUTHWEST CORNER	1.0	98.0	Subbase Fill
27	PARKING LOT 10' SOUTH X 15' EAST OF NORTHWEST CORNER	1.0	98.0	Subbase Fill
28	PARKING LOT 15' SOUTH X 12' WEST OF NORTHEAST CORNER	1.0	97.0	Subbase Fill
29	RETEST #28	1.0	97.0	Subbase Fill
30	PARKING LOT 24' NORTH X 10' WEST OF SOUTHEAST CORNER	1.0	98.0	Subbase Fill
31	PARKING LOT 17' NORTH X 13' EAST OF SOUTHWEST CORNER	2.0	99.0	Subbase Fill
32	PARKING LOT 19' SOUTH X 12' EAST OF NORTHWEST CORNER	2.0	99.0	Subbase Fill
33	PARKING LOT 40' EAST X 15' SOUTH OF NORTHWEST CORNER	2.0	99.0	Subbase Fill
34	PARKING LOT 23' SOUTH X 7' WEST OF NORTHEAST CORNER	2.0	99.0	Subbase Fill
35	PARKING LOT 13' NORTH X 10' WEST OF SOUTHEAST CORNER	2.0	99.0	Subbase Fill
36	PARKING LOT 30' EAST X 15' SOUTH OF NORTHWEST CORNER	1.0	98.0	Subbase Fill
37	PARKING LOT 10' SOUTH X 8' WEST OF NORTHEAST CORNER	1.0	98.0	Subbase Fill

Laboratory Data & Compaction Characteristics

Lab ID.	Event No.	Description of Materials	Material Source	Sample Location	Optimum Moisture, %	Maximum Dry Unit Weight, lbf per cu. ft.	Test Method
1	1-	Silty Sand with Gravel			10.3	130.5	D698 C

Comments: * DATUM: TOP OF GRADE = 100
#19 - PERSON NOTIFIED OF RESULTS - BOBBY

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Soil / Aggregate Field Unit Weight Tests
– Field Density –

Client **ENVIRONMENTAL RESPONSE INC**
2202 WEST MEDTRONIC WAY SUITE 108
TEMPE, AZ 85281

Date of Report **09-16-20** Page **1 of 1**
Job No. **2540JP330**
Event No. **10-**
Authorized By **ERIC SMITH** Date **09-15-20**
Tested By **WT/GARRETT GREEN** Date **09-15-20**

Client **ENVIRONMENTAL RESPONSE INC**
Project **APS PRESCOTT MGP REMEDIATION**
Location **300 N GRANITE ST - PRESCOTT, AZ**
Test Locations Designated By **WT/GARRETT GREEN**
In-Place Unit Weight **ASTM D6938** Moisture Content **ASTM D6938** Rock Correction **ASTM D4718**
Gauge **TROXLER** Model **3440** Serial No. **72473** Date Last Calibrated **09-15-20** Standard Count: Unit Weight **2641** H_2O **664**
Apparatus Id. Calibrated Volume of Sand Cone Apparatus cu. ft. Bulk Unit Weight of Sand lbf per cu. ft.

Test No.	In-Place Characteristics				Laboratory Characteristics					Compaction	Requirements		
	Hole Volume, cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight, lbf per cu. ft.	Oversize %	ID.	Maximum Dry Unit Weight, lbf per cu. ft.		Optimum Moisture %		% of Maximum Dry Unit Weight	Moisture %	Compaction %	Conformance Indicated
						TESTED	CORRECTED	TESTED	CORRECTED				
38		10.7	125.8	0	1	130.5	--	10.3	--	96		95	YES
39		8.4	130.5	0	1	130.5	--	10.3	--	100		95	YES
40		10.2	125.1	0	1	130.5	--	10.3	--	96		95	YES
41		8.5	127.3	0	1	130.5	--	10.3	--	98		95	YES
42		8.7	129.4	0	1	130.5	--	10.3	--	99		95	YES
43		9.6	128.3	0	1	130.5	--	10.3	--	98		95	YES
44		9.8	127.6	0	1	130.5	--	10.3	--	98		95	YES
45		10.3	125.8	0	1	130.5	--	10.3	--	96		95	YES
46		9.7	131.9	0	1	130.5	--	10.3	--	100+		95	YES
47		9.8	125.1	0	1	130.5	--	10.3	--	96		95	YES
48		8.1	132.8	0	1	130.5	--	10.3	--	100+		95	YES

Test No.	Test Location, Horizontal	Test Location, Vertical		Material Tested
		Approximate Fill Depth, ft.	*Elevation	
38	SOUTHWEST CORNER OF PAD	1.0	97.0	Subbase Fill
39	NORTHWEST CORNER OF PAD	1.0	97.0	Subbase Fill
40	NORTH END CENTER OF PAD	1.0	97.0	Subbase Fill
41	NORTHEAST CORNER OF PAD	1.0	97.0	Subbase Fill
42	SOUTHEAST END OF PAD	1.0	97.0	Subbase Fill
43	SOUTHWEST CORNER OF PAD	2.0	98.0	Subbase Fill
44	NORTHWEST CORNER OF PAD	2.0	98.0	Subbase Fill
45	NORTH CENTER OF PAD	2.0	98.0	Subbase Fill
46	NORTHEAST OF PAD	2.0	98.0	Subbase Fill
47	SOUTHEAST OF PAD	2.0	98.0	Subbase Fill
48	SOUTH CENTER OF PAD	2.0	98.0	Subbase Fill

Laboratory Data & Compaction Characteristics

Lab ID.	Event No.	Description of Materials	Material Source	Sample Location	Optimum Moisture, %	Maximum Dry Unit Weight, lbf per cu. ft.	Test Method
1	1-	Silty Sand with Gravel			10.3	130.5	D698 C

Comments: * DATUM: TOP OF GRADE = 100
18 - ASTMD 698C

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Soil / Aggregate Field Unit Weight Tests – Field Density –

Client **ENVIRONMENTAL RESPONSE INC**
2202 WEST MEDTRONIC WAY SUITE 108
TEMPE, AZ 85281

Date of Report **09-17-20** Page **1 of 1**
Job No. **2540JP330**
Event No. **12-**
Authorized By **ERIC SMITH** Date **09-16-20**
Tested By **WT/GARRETT GREEN** Date **09-16-20**

Client **ENVIRONMENTAL RESPONSE INC**
Project **APS PRESCOTT MGP REMEDIATION**
Location **300 N GRANITE ST - PRESCOTT, AZ**
Test Locations Designated By **WT/GARRETT GREEN**
In-Place Unit Weight **ASTM D6938** Moisture Content **ASTM D6938** Rock Correction **ASTM D4718**
Gauge **TROXLER** Model **3430** Serial No. **72473** Date Last Calibrated **09-16-20** Standard Count: Unit Weight **2636** H_2O **661**
Apparatus Id. Calibrated Volume of Sand Cone Apparatus cu. ft. Bulk Unit Weight of Sand lbf per cu. ft.

Test No.	In-Place Characteristics				Laboratory Characteristics					Compaction	Requirements		
	Hole Volume, cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight, lbf per cu. ft.	Oversize %	ID.	Maximum Dry Unit Weight, lbf per cu. ft.		Optimum Moisture %		% of Maximum Dry Unit Weight	Moisture %	Compaction %	Conformance Indicated
						TESTED	CORRECTED	TESTED	CORRECTED				
49		9.4	127.4	0	1	130.5	--	10.3	--	98		95	YES
50		8.4	125.0	0	1	130.5	--	10.3	--	96		95	YES

Test No.	Test Location, Horizontal	Test Location, Vertical		Material Tested
		Approximate Fill Depth, ft.	*Elevation	
49	NORTHEAST CORNER OF PAD	1.0	99.5	Subbase Fill
50	SOUTHEAST CORNER OF PAD	1.0	99.5	Subbase Fill

Laboratory Data & Compaction Characteristics

Lab ID.	Event No.	Description of Materials	Material Source	Sample Location	Optimum Moisture, %	Maximum Dry Unit Weight, lbf per cu. ft.	Test Method
1	1-	Silty Sand with Gravel			10.3	130.5	D698 C

Comments: * DATUM: TOP OF GRADE = 100
18 - ASTM D698 C

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Soil / Aggregate Field Unit Weight Tests – Field Density –

Client **ENVIRONMENTAL RESPONSE INC**
2202 WEST MEDTRONIC WAY SUITE 108
TEMPE, AZ 85281

Date of Report **09-18-20** Page **1 of 1**
Job No. **2540JP330**
Event No. **14-**
Authorized By **ERIC SMITH** Date **09-17-20**
Tested By **WT/GARRETT GREEN** Date **09-17-20**

Client **ENVIRONMENTAL RESPONSE INC**
Project **APS PRESCOTT MGP REMEDIATION**
Location **300 N GRANITE ST - PRESCOTT, AZ**
Test Locations Designated By **WT/GARRETT GREEN**
In-Place Unit Weight **ASTM D6938** Moisture Content **ASTM D6938** Rock Correction **ASTM D4718**
Gauge **TROXLER** Model **3430** Serial No. **72473** Date Last Calibrated **09-17-20** Standard Count: Unit Weight **2636** H_2O **661**
Apparatus Id. Calibrated Volume of Sand Cone Apparatus cu. ft. Bulk Unit Weight of Sand lbf per cu. ft.

Test No.	In-Place Characteristics				Laboratory Characteristics					Compaction	Requirements		
	Hole Volume, cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight, lbf per cu. ft.	Oversize %	ID.	Maximum Dry Unit Weight, lbf per cu. ft.		Optimum Moisture %		% of Maximum Dry Unit Weight	Moisture %	Compaction %	Conformance Indicated
						TESTED	CORRECTED	TESTED	CORRECTED				
51		8.4	134.9	0	3	133.3	--	8.9	--	100+		100	YES
52		9.0	132.7	0	3	133.3	--	8.9	--	100		100	YES
53		8.7	132.7	0	3	133.3	--	8.9	--	100		100	YES
54		8.4	132.8	0	3	133.3	--	8.9	--	100		100	YES
55		7.9	134.1	0	3	133.3	--	8.9	--	100+		100	YES
56		8.2	134.0	0	3	133.3	--	8.9	--	100+		100	YES

Test No.	Test Location, Horizontal	Test Location, Vertical		Material Tested
		Approximate Fill Depth, ft.	*Elevation	
51	SOUTHWEST CORNER OF PAD	0.5	100.0	Base Course
52	NORTHWEST CORNER OF PAD	0.5	100.0	Base Course
53	NORTH CENTER OF PAD	0.5	100.0	Base Course
54	SOUTH CENTER OF PAD	0.5	100.0	Base Course
55	SOUTHEAST CORNER OF PAD	0.5	100.0	Base Course
56	NORTHEAST CORNER OF PAD	0.5	100.0	Base Course

Laboratory Data & Compaction Characteristics

Lab ID.	Event No.	Description of Materials	Material Source	Sample Location	Optimum Moisture, %	Maximum Dry Unit Weight, lbf per cu. ft.	Test Method
3	2-		ARROWHEAD		8.9	133.3	D698 C

Comments: * DATUM: TOP OF GRADE = 100

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Soil / Aggregate Test Report

Client **ENVIRONMENTAL RESPONSE INC**
2202 WEST MEDTRONIC WAY SUITE 108
TEMPE, AZ 85281

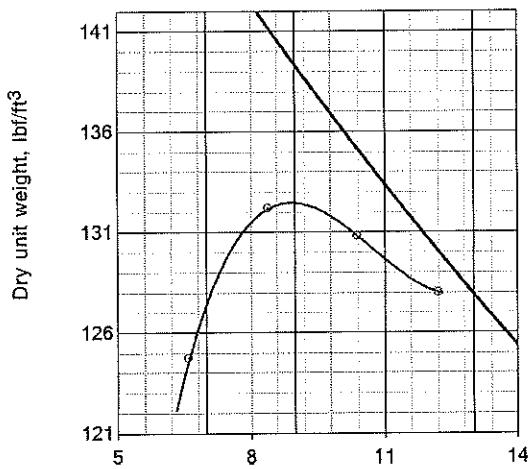
Date of Report **08/24/20** Page **1** of **1**
Job No. **2540JP330**
Event No. **1-** Lab No. **1214**
Authorized By **ERIC SMITH** Date **08/18/20**
Sample Location Designated By **CLIENT** Date **08/18/20**
Sampled By **CLIENT** Date **08/18/20**
Submitted By **CLIENT** Date **08/18/20**

Project **APS PRESCOTT MGP REMEDIATION**
Project Address **300 N GRANITE ST, PRESCOTT, AZ**
Material Description **SILTY GRAVEL W/SAND**
Material Use
Material Source
Sample Location
Special Instructions

Sieve analysis **ASTM C136**
Finer Than No. 200 **ASTM C117, Procedure A**

Sieve	Accumulative % passing	Specification
6 in.		
4 in.		
3 in.		
2 in.		
1-1/2 in.	100	
1 in.	97	
3/4 in.	91	
1/2 in.	73	
3/8 in.	63	
1/4 in.	52	
No. 4	47	
No. 8	40	
No. 10	38	
No. 16	35	
No. 30	30	
No. 40	28	
No. 50	25	
No. 100	21	
No. 200	18	

Laboratory compaction characteristics **ASTM D698** Method **C**



Sample Preparation **Moist**
Rammer Used **Manual**

Proctor curve Id. No. **2**
Maximum dry unit weight **132.5 lbf/ft³**
Optimum water content **8.9 %**

Oversize Aggregate
Assumed bulk specific gravity **2.60**
Assumed absorption, % **1.0**
Oversize in laboratory sample **0 %**

Oversize Correction: ASTM D4718
Corrected maximum density, lbf/ft³ **132.5**
Corrected optimum moisture, % **8.9**

	Result	Specs.
Liquid Limit, Plastic Limit & Plasticity Index		
Preparation method **Oven-dried**		
Processing method **ASTM D4318, Dry Preparation**		
Liquid Limit **ASTM D4318, Method A** LL	NV	
Plastic Limit **ASTM D4318** PL		
Plasticity Index **ASTM D4318** PI	NP	
Water Content **ASTM D2216, Method A** % dry weight	1.2	
Swell Test Surcharge psf Expansion, %		
Compacted to approximately of ASTM Method		
Initial water content % Dry unit weight lbf/ft³		
Organic Matter %		
Unified Soil Classification **ASTM D2487**		
Group Symbol: **GM** Name: **Silty Gravel with Sand**		

	Result	Specs.
Los Angeles (LA) Abrasion Grading rev., % loss		
Grading rev., % loss		
Fractured Faces By Weight One or more, %		
Two or more, %		
Total Salts (Solubility) %		
Sulfates %		
Chlorides		
pH Determination pH		
Minimum Resistivity ohm-cm		
Expansion Index of Soil EI		
Initial dry unit weight, lbf/ft³		
Initial degree of saturation		
Initial water content, % Final water content, %		

Comments:

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Soil / Aggregate Test Report

Client **ENVIRONMENTAL RESPONSE INC**
2202 WEST MEDTRONIC WAY SUITE 108
TEMPE, AZ 85281

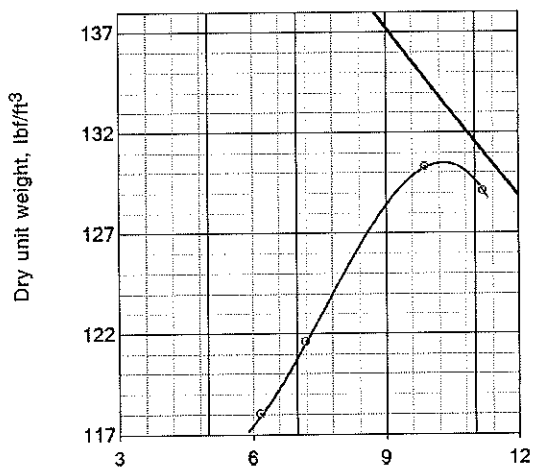
Date of Report **08/24/20** Page **1** of **1**
Job No. **2540JP330**
Event No. **1-** Lab No. **1215**
Authorized By **ERIC SMITH** Date **08/18/20**
Sample Location Designated By **CLIENT** Date **08/18/20**
Sampled By **CLIENT** Date **08/18/20**
Submitted By **CLIENT** Date **08/18/20**

Project **APS PRESCOTT MGP REMEDIATION**
Project Address **300 N GRANITE ST - PRESCOTT, AZ**
Material Description **SILTY SAND W/GRAVEL**
Material Use **FILL**
Material Source
Sample Location
Special Instructions

Sieve analysis **ASTM C136**
Finer Than No. 200 **ASTM C117, Procedure A**

Sieve	Accumulative % passing	Specification
6 in.		
4 in.		
3 in.		
2 in.		
1-1/2 in.		
1 in.	100	
3/4 in.	96	
1/2 in.	86	
3/8 in.	80	
1/4 in.	70	
No. 4	65	
No. 8	53	
No. 10	50	
No. 16	43	
No. 30	35	
No. 40	31	
No. 50	27	
No. 100	22	
No. 200	19	

Laboratory compaction characteristics **ASTM D698** Method **C**



Sample Preparation **Moist**
Rammer Used **Manual**

Proctor curve Id. No. **1**
Maximum dry unit weight **130.5 lbf/ft³**
Optimum water content **10.3 %**

Oversize Aggregate
Assumed bulk specific gravity **2.60**
Assumed absorption, % **1.0**
Oversize in laboratory sample **0 %**

Oversize Correction: ASTM D4718
Corrected maximum density, lbf/ft³ **130.5**
Corrected optimum moisture, % **10.3**

	Result	Specs.
Liquid Limit, Plastic Limit & Plasticity Index		
Preparation method **Oven-dried**		
Processing method **ASTM D4318, Dry Preparation**		
Liquid Limit **ASTM D4318, Method A** LL	NV	
Plastic Limit **ASTM D4318** PL		
Plasticity Index **ASTM D4318** PI	NP	
Water Content **ASTM D2216, Method A** % dry weight	0.7	
Swell Test Surcharge psf Expansion, %		
Compacted to approximately of ASTM Method		
Initial water content % Dry unit weight lbf/ft³		
Organic Matter %		
Unified Soil Classification **ASTM D2487**		
Group Symbol: **SM** Name: **Silty Sand with Gravel**		

	Result	Specs.
Los Angeles (LA) Abrasion Grading rev., % loss		
Grading rev., % loss		
Fractured Faces By Weight One or more, %		
Two or more, %		
Total Salts (Solubility) %		
Sulfates %		
Chlorides		
pH Determination pH		
Minimum Resistivity ohm-cm		
Expansion Index of Soil EI		
Initial dry unit weight, lbf/ft³		
Initial degree of saturation		
Initial water content, % Final water content, %		

Comments:

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Soil / Aggregate Test Report

Client **ENVIRONMENTAL RESPONSE INC**
2202 WEST MEDTRONIC WAY SUITE 108
TEMPE, AZ 85281

Date of Report **09/03/20** Page **1** of **1**
Job No. **2540JP330**
Event No. **2-** Lab No. **1232**
Authorized By **ERIC SMITH** Date **09/01/20**
Sample Location Designated By **ERIC SMITH** Date **09/01/20**
Sampled By **ERIC SMITH** Date **09/01/20**
Submitted By **ERIC SMITH** Date **09/01/20**

Project **APS PRESCOTT MGP REMEDIATION**
Project Address **300 N GRANITE ST, PRESCOTT, AZ**
Material Description **WELL GRADED GRAVEL W/SILT AND SAND**
Material Use **BASE COURSE**
Material Source **ARROWHEAD**
Sample Location **PIT**
Special Instructions

Sieve analysis **ASTM C136**
Finer Than No. 200 **ASTM C117, Procedure A**

Sieve	Accumulative % passing	Specification
6 in.		
4 in.		
3 in.		
2 in.		
1-1/2 in.		
1 in.	100	90-100
3/4 in.	94	
1/2 in.	72	
3/8 in.	60	
1/4 in.	46	
No. 4	42	38-65
No. 8	35	25-60
No. 10	33	
No. 16	28	
No. 30	21	10-40
No. 40	18	
No. 50	14	
No. 100	10	
No. 200	7.3	3.0-12.0

Laboratory compaction characteristics — Method

Sample Preparation
Rammer Used
Proctor curve Id. No.
Maximum dry unit weight lbf/ft^3
Optimum water content %
Oversize Aggregate
Bulk specific gravity
Absorption, %
Oversize in laboratory sample %

Dry unit weight, lbf/ft^3

Water content, %

		Result	Specs.
Liquid Limit, Plastic Limit & Plasticity Index			
Preparation method	**Oven-dried**		
Processing method	**ASTM D4318, Dry Preparation**		
Liquid Limit	**ASTM D4318, Method A** LL	**NV**	
Plastic Limit	**ASTM D4318** PL		
Plasticity Index	**ASTM D4318** PI	**NP**	
Water Content	**ASTM D2216, Method A** % dry weight	**4.4**	
Swell Test	Surcharge psf Expansion, %		
Compacted to approximately of ASTM	Method		
Initial water content %	Dry unit weight lbf/ft^3		
Organic Matter	%		
Unified Soil Classification	**ASTM D2487**		
Group Symbol: **GW-GM**	Name: **Well-graded Gravel with Silt and Sand**		

		Result	Specs.
Los Angeles (LA) Abrasion	Grading rev., % loss		
	Grading rev., % loss		
Fractured Faces By Weight	One or more, %		
	Two or more, %		
Total Salts (Solubility)	%		
Sulfates	%		
Chlorides			
pH Determination	pH		
Minimum Resistivity	ohm-cm		
Expansion Index of Soil	EI		
	Initial dry unit weight, lbf/ft^3		
	Initial degree of saturation		
Initial water content, %	Final water content, %		

Comments:

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Soil / Aggregate Test Report

Client **ENVIRONMENTAL RESPONSE INC**
2202 WEST MEDTRONIC WAY SUITE 108
TEMPE, AZ 85281

Date of Report **09/16/20** Page **1** of **1**
Job No. **2540JP330**
Event No. **5-** Lab No. **1250**
Authorized By **ERIC SMITH** Date **09/10/20**
Sample Location Designated By **WT/GARRETT GREEN** Date **09/10/20**
Sampled By **WT/GARRETT GREEN** Date **09/10/20**
Submitted By **WT/GARRETT GREEN** Date **09/10/20**

Project **APS PRESCOTT MGP REMEDIATION**
Project Address **300 N GRANITE ST, PRESCOTT, AZ**
Material Description **SILTY SAND WITH GRAVEL**
Material Use **SUBBASE FILL**
Material Source **ARROWHEAD**
Sample Location **ON SITE STOCK PILE**
Special Instructions

Sieve analysis **ASTM C136**
Finer Than No. 200 **ASTM C117, Procedure A**

Sieve	Accumulative % passing	Specification
6 in.		
4 in.		
3 in.		
2 in.		
1-1/2 in.		
1 in.	100	
3/4 in.	98	
1/2 in.	88	
3/8 in.	83	
1/4 in.	76	
No. 4	72	
No. 8	62	
No. 10	59	
No. 16	51	
No. 30	41	
No. 40	36	
No. 50	31	
No. 100	24	
No. 200	20	

Laboratory compaction characteristics — Method

Dry unit weight, lbf/ft^3

Sample Preparation
Rammer Used
Proctor curve Id. No.
Maximum dry unit weight lbf/ft^3
Optimum water content %
Oversize Aggregate
Bulk specific gravity
Absorption, %
Oversize in laboratory sample %

Water content, %

		Result	Specs.
Liquid Limit, Plastic Limit & Plasticity Index			
Preparation method	**Oven-dried**		
Processing method	**ASTM D4318, Dry Preparation**		
Liquid Limit	**ASTM D4318, Method A** LL	**NV**	
Plastic Limit	**ASTM D4318** PL		
Plasticity Index	**ASTM D4318** PI	**NP**	
Water Content	**ASTM D2216, Method A** % dry weight	**7.4**	
Swell Test	Surcharge psf Expansion, %		
Compacted to approximately of ASTM	Method		
Initial water content %	Dry unit weight lbf/ft^3		
Organic Matter	%		
Unified Soil Classification **ASTM D2487**			
Group Symbol: **SM**	Name: **Silty Sand with Gravel**		

		Result	Specs.
Los Angeles (LA) Abrasion	Grading rev., % loss		
	Grading rev., % loss		
Fractured Faces By Weight	One or more, %		
	Two or more, %		
Total Salts (Solubility)	%		
Sulfates	%		
Chlorides			
pH Determination	pH		
Minimum Resistivity	ohm-cm		
Expansion Index of Soil	EI		
	Initial dry unit weight, lbf/ft^3		
	Initial degree of saturation		
Initial water content, %	Final water content, %		

Comments:

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Soil / Aggregate Test Report

Client **ENVIRONMENTAL RESPONSE INC**
2202 WEST MEDTRONIC WAY SUITE 108
TEMPE, AZ 85281

Date of Report **09/16/20** Page **1** of **1**
Job No. **2540JP330**
Event No. **7-** Lab No. **1251**
Authorized By **ERIC SMITH** Date **09/11/20**
Sample Location Designated By **WT/GARRETT GREEN** Date **09/11/20**
Sampled By **WT/GARRETT GREEN** Date **09/11/20**
Submitted By **WT/GARRETT GREEN** Date **09/11/20**

Project **APS PRESCOTT MGP REMEDIATION**
Project Address **300 N GRANITE ST, PRESCOTT, AZ**
Material Description **SILTY SAND WITH GRAVEL**
Material Use **SUBBASE FILL**
Material Source **ARROWHEAD**
Sample Location **ON SITE STOCK PILE**
Special Instructions

Sieve analysis **ASTM C136**
Finer Than No. 200 **ASTM C117, Procedure A**

Sieve	Accumulative % passing	Specification
6 in.		
4 in.		
3 in.		
2 in.		
1-1/2 in.		
1 in.	100	
3/4 in.	97	
1/2 in.	91	
3/8 in.	86	
1/4 in.	80	
No. 4	76	
No. 8	66	
No. 10	62	
No. 16	54	
No. 30	43	
No. 40	37	
No. 50	32	
No. 100	25	
No. 200	20	

Laboratory compaction characteristics — Method

Dry unit weight, lbf/ft^3

Sample Preparation
Rammer Used
Proctor curve Id. No.
Maximum dry unit weight lbf/ft^3
Optimum water content %
Oversize Aggregate
Bulk specific gravity
Absorption, %
Oversize in laboratory sample %

Water content, %

		Result	Specs.
Liquid Limit, Plastic Limit & Plasticity Index			
Preparation method	**Oven-dried**		
Processing method	**ASTM D4318, Dry Preparation**		
Liquid Limit	**ASTM D4318, Method B** LL	**NV**	
Plastic Limit	**ASTM D4318** PL		
Plasticity Index	**ASTM D4318** PI	**NP**	
Water Content	**ASTM D2216, Method A** % dry weight	**6.7**	
Swell Test	Surcharge psf Expansion, %		
Compacted to approximately of ASTM	Method		
Initial water content %	Dry unit weight lbf/ft^3		
Organic Matter	%		
Unified Soil Classification **ASTM D2487**			
Group Symbol: **SM**	Name: **Silty Sand with Gravel**		

		Result	Specs.
Los Angeles (LA) Abrasion	Grading rev., % loss		
	Grading rev., % loss		
Fractured Faces By Weight	One or more, %		
	Two or more, %		
Total Salts (Solubility)	%		
Sulfates	%		
Chlorides			
pH Determination	pH		
Minimum Resistivity	ohm-cm		
Expansion Index of Soil	EI		
	Initial dry unit weight, lbf/ft^3		
	Initial degree of saturation		
Initial water content, %	Final water content, %		

Comments:

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Soil / Aggregate Test Report

Client **ENVIRONMENTAL RESPONSE INC**
2202 WEST MEDTRONIC WAY SUITE 108
TEMPE, AZ 85281

Date of Report **09/16/20** Page **1** of **1**
Job No. **2540JP330**
Event No. **7-** Lab No. **1252**
Authorized By **ERIC SMITH** Date **09/11/20**
Sample Location Designated By **WT/GARRETT GREEN** Date **09/11/20**
Sampled By **WT/GARRETT GREEN** Date **09/11/20**
Submitted By **WT/GARRETT GREEN** Date **09/11/20**

Project **APS PRESCOTT MGP REMEDIATION**
Project Address **300 N GRANITE ST, PRESCOTT, AZ**
Material Description **SILTY SAND WITH GRAVEL**
Material Use **SUBBASE FILL**
Material Source **ARROWHEAD**
Sample Location **ON SITE STOCKPILE**
Special Instructions

Sieve analysis **ASTM C136**
Finer Than No. 200 **ASTM C117, Procedure A**

Sieve	Accumulative % passing	Specification
6 in.		
4 in.		
3 in.		
2 in.		
1-1/2 in.		
1 in.	100	
3/4 in.	99	
1/2 in.	90	
3/8 in.	85	
1/4 in.	78	
No. 4	74	
No. 8	64	
No. 10	61	
No. 16	53	
No. 30	43	
No. 40	38	
No. 50	33	
No. 100	26	
No. 200	22	

Laboratory compaction characteristics — Method

Sample Preparation
Rammer Used
Proctor curve Id. No.
Maximum dry unit weight lbf/ft^3
Optimum water content %
Oversize Aggregate
Bulk specific gravity
Absorption, %
Oversize in laboratory sample %

Dry unit weight, lbf/ft^3

Water content, %

		Result	Specs.
Liquid Limit, Plastic Limit & Plasticity Index			
Preparation method	**Oven-dried**		
Processing method	**ASTM D4318, Dry Preparation**		
Liquid Limit	**ASTM D4318, Method A** LL	**NV**	
Plastic Limit	**ASTM D4318** PL		
Plasticity Index	**ASTM D4318** PI	**NP**	
Water Content	**ASTM D2216, Method A** % dry weight	**6.9**	
Swell Test	Surcharge psf Expansion, %		
Compacted to approximately of ASTM	Method		
Initial water content %	Dry unit weight lbf/ft^3		
Organic Matter	%		
Unified Soil Classification **ASTM D2487**			
Group Symbol: **SM**	Name: **Silty Sand with Gravel**		

		Result	Specs.
Los Angeles (LA) Abrasion	Grading rev., % loss		
	Grading rev., % loss		
Fractured Faces By Weight	One or more, %		
	Two or more, %		
Total Salts (Solubility)	%		
Sulfates	%		
Chlorides			
pH Determination	pH		
Minimum Resistivity	ohm-cm		
Expansion Index of Soil	EI		
	Initial dry unit weight, lbf/ft^3		
	Initial degree of saturation		
Initial water content, %	Final water content, %		

Comments:

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Soil / Aggregate Test Report

Client **ENVIRONMENTAL RESPONSE INC**
2202 WEST MEDTRONIC WAY SUITE 108
TEMPE, AZ 85281

Date of Report **09/18/20** Page **1** of **1**
Job No. **2540JP330**
Event No. **9-** Lab No. **1253**
Authorized By **ERIC SMITH** Date **09/14/20**
Sample Location Designated By **WT/GARRETT GREEN** Date **09/14/20**
Sampled By **WT/GARRETT GREEN** Date **09/14/20**
Submitted By **WT/GARRETT GREEN** Date **09/14/20**

Project **APS PRESCOTT MGP REMEDIATION**
Project Address **300 N GRANITE ST - PRESCOTT, AZ**
Material Description **SILTY SAND WITH GRAVEL**
Material Use **SUBBASE FILL**
Material Source **ARROWHEAD**
Sample Location **ON SITE STOCKPILE**
Special Instructions

Sieve analysis **ASTM C136**
Finer Than No. 200 **ASTM C117, Procedure A**

Sieve	Accumulative % passing	Specification
6 in.		
4 in.		
3 in.		
2 in.		
1-1/2 in.		
1 in.	100	
3/4 in.	98	
1/2 in.	89	
3/8 in.	84	
1/4 in.	78	
No. 4	74	
No. 8	65	
No. 10	61	
No. 16	54	
No. 30	45	
No. 40	40	
No. 50	36	
No. 100	29	
No. 200	25	

Laboratory compaction characteristics — Method

Dry unit weight, lbf/ft³

Sample Preparation
Rammer Used
Proctor curve Id. No.
Maximum dry unit weight lbf/ft³
Optimum water content %
Oversize Aggregate
Bulk specific gravity
Absorption, %
Oversize in laboratory sample %

Water content, %

			Result	Specs.
Liquid Limit, Plastic Limit & Plasticity Index				
Preparation method	**Oven-dried**			
Processing method	**ASTM D4318, Dry Preparation**			
Liquid Limit	**ASTM D4318, Method A**	LL	**NV**	
Plastic Limit	**ASTM D4318**	PL		
Plasticity Index	**ASTM D4318**	PI	**NP**	
Water Content	**ASTM D2216, Method A**	% dry weight	**5.6**	
Swell Test	Surcharge psf	Expansion, %		
Compacted to approximately of ASTM	Method			
Initial water content %	Dry unit weight	lbf/ft³		
Organic Matter		%		
Unified Soil Classification **ASTM D2487**				
Group Symbol: **SM**	Name: **Silty Sand with Gravel**			

			Result	Specs.
Los Angeles (LA) Abrasion	Grading	rev., % loss		
	Grading	rev., % loss		
Fractured Faces By Weight		One or more, %		
		Two or more, %		
Total Salts (Solubility)		%		
Sulfates		%		
Chlorides				
pH Determination		pH		
Minimum Resistivity		ohm-cm		
Expansion Index of Soil		EI		
		Initial dry unit weight, lbf/ft³		
		Initial degree of saturation		
Initial water content, %		Final water content, %		

Comments:

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Soil / Aggregate Test Report

Client **ENVIRONMENTAL RESPONSE INC**
2202 WEST MEDTRONIC WAY SUITE 108
TEMPE, AZ 85281

Date of Report **09/17/20** Page **1** of **1**
Job No. **2540JP330**
Event No. **9-** Lab No. **1254**
Authorized By **ERIC SMITH** Date **09/14/20**
Sample Location Designated By **WT/GARRETT GREEN** Date **09/14/20**
Sampled By **WT/GARRETT GREEN** Date **09/14/20**
Submitted By **WT/GARRETT GREEN** Date **09/14/20**

Project **APS PRESCOTT MGP REMEDIATION**
Project Address **300 N GRANITE ST - PRESCOTT, AZ**
Material Description **SILTY SAND WITH GRAVEL**
Material Use **SUBBASE FILL**
Material Source **ARROWHEAD**
Sample Location **ON SITE STOCKPILE**
Special Instructions

Sieve analysis **ASTM C136**
Finer Than No. 200 **ASTM C117, Procedure A**

Sieve	Accumulative % passing	Specification
6 in.		
4 in.		
3 in.		
2 in.		
1-1/2 in.		
1 in.	100	
3/4 in.	98	
1/2 in.	87	
3/8 in.	82	
1/4 in.	75	
No. 4	71	
No. 8	63	
No. 10	59	
No. 16	52	
No. 30	43	
No. 40	38	
No. 50	34	
No. 100	28	
No. 200	24	

Laboratory compaction characteristics — Method

Sample Preparation
Rammer Used
Proctor curve Id. No.
Maximum dry unit weight lbf/ft^3
Optimum water content %
Oversize Aggregate
Bulk specific gravity
Absorption, %
Oversize in laboratory sample %

Dry unit weight, lbf/ft^3

Water content, %

			Result	Specs.
Liquid Limit, Plastic Limit & Plasticity Index				
Preparation method	**Oven-dried**			
Processing method	**ASTM D4318, Dry Preparation**			
Liquid Limit	**ASTM D4318, Method A**	LL	**NV**	
Plastic Limit	**ASTM D4318**	PL		
Plasticity Index	**ASTM D4318**	PI	**NP**	
Water Content	**ASTM D2216, Method A**	% dry weight	**8.1**	
Swell Test	Surcharge psf	Expansion, %		
Compacted to approximately of ASTM	Method			
Initial water content %	Dry unit weight	lbf/ft^3		
Organic Matter		%		
Unified Soil Classification	**ASTM D2487**			
Group Symbol: **SM**	Name: **Silty Sand with Gravel**			

			Result	Specs.
Los Angeles (LA) Abrasion	Grading	rev., % loss		
	Grading	rev., % loss		
Fractured Faces By Weight		One or more, %		
		Two or more, %		
Total Salts (Solubility)		%		
Sulfates		%		
Chlorides				
pH Determination		pH		
Minimum Resistivity		ohm-cm		
Expansion Index of Soil		EI		
		Initial dry unit weight, lbf/ft^3		
		Initial degree of saturation		
Initial water content, %		Final water content, %		

Comments:

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Soil / Aggregate Test Report

Client **ENVIRONMENTAL RESPONSE INC**
2202 WEST MEDTRONIC WAY SUITE 108
TEMPE, AZ 85281

Date of Report **09/17/20** Page **1** of **1**
Job No. **2540JP330**
Event No. **11-** Lab No. **1258**
Authorized By **ERIC SMITH** Date **09/15/20**
Sample Location Designated By **WT/GARRETT GREEN** Date **09/15/20**
Sampled By **WT/GARRETT GREEN** Date **09/15/20**
Submitted By **WT/GARRETT GREEN** Date **09/15/20**

Project **APS PRESCOTT MGP REMEDIATION**
Project Address **300 N GRANITE ST, PRESCOTT, AZ**
Material Description **SILTY SAND WITH GRAVEL**
Material Use **SUBBASE FILL**
Material Source **ARROWHEAD**
Sample Location **ON SITE STOCKPILE**
Special Instructions

Sieve analysis **ASTM C136**
Finer Than No. 200 **ASTM C117, Procedure A**

Sieve	Accumulative % passing	Specification
6 in.		
4 in.		
3 in.		
2 in.		
1-1/2 in.		
1 in.	100	
3/4 in.	98	
1/2 in.	88	
3/8 in.	84	
1/4 in.	76	
No. 4	72	
No. 8	62	
No. 10	58	
No. 16	51	
No. 30	42	
No. 40	38	
No. 50	34	
No. 100	28	
No. 200	23	

Laboratory compaction characteristics — Method

Dry unit weight, lbf/ft³

Sample Preparation
Rammer Used
Proctor curve Id. No.
Maximum dry unit weight lbf/ft³
Optimum water content %
Oversize Aggregate
Bulk specific gravity
Absorption, %
Oversize in laboratory sample %

Water content, %

			Result	Specs.
Liquid Limit, Plastic Limit & Plasticity Index				
Preparation method	**Oven-dried**			
Processing method	**ASTM D4318, Dry Preparation**			
Liquid Limit	**ASTM D4318, Method A**	LL	**NV**	
Plastic Limit	**ASTM D4318**	PL		
Plasticity Index	**ASTM D4318**	PI	**NP**	
Water Content	**ASTM D2216, Method A**	% dry weight	**6.9**	
Swell Test	Surcharge psf	Expansion, %		
Compacted to approximately of ASTM	Method			
Initial water content %	Dry unit weight	lbf/ft³		
Organic Matter		%		
Unified Soil Classification **ASTM D2487**				
Group Symbol: **SM**	Name: **Silty Sand with Gravel**			

			Result	Specs.
Los Angeles (LA) Abrasion	Grading	rev., % loss		
	Grading	rev., % loss		
Fractured Faces By Weight		One or more, %		
		Two or more, %		
Total Salts (Solubility)		%		
Sulfates		%		
Chlorides				
pH Determination		pH		
Minimum Resistivity		ohm-cm		
Expansion Index of Soil		EI		
		Initial dry unit weight, lbf/ft³		
		Initial degree of saturation		
Initial water content, %		Final water content, %		

Comments:

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Soil / Aggregate Test Report

Client **ENVIRONMENTAL RESPONSE INC**
2202 WEST MEDTRONIC WAY SUITE 108
TEMPE, AZ 85281

Date of Report **09/17/20** Page **1** of 1
Job No. **2540JP330**
Event No. **11-** Lab No. **1259**
Authorized By **ERIC SMITH** Date **08/15/20**
Sample Location Designated By **WT/GARRETT GREEN** Date **09/15/20**
Sampled By **WT/GARRETT GREEN** Date **09/15/20**
Submitted By **WT/GARRETT GREEN** Date **09/15/20**

Project **APS PRESCOTT MGP REMEDIATION**
Project Address **300 N GRANITE ST, PRESCOTT, AZ**
Material Description **SILTY SAND WITH GRAVEL**
Material Use **SUBBASE FILL**
Material Source **ARROWHEAD**
Sample Location **ON SITE STOCKPILE**
Special Instructions

Sieve analysis **ASTM C136**
Finer Than No. 200 **ASTM C117, Procedure A**

Sieve	Accumulative % passing	Specification
6 in.		
4 in.		
3 in.		
2 in.		
1-1/2 in.		
1 in.	100	
3/4 in.	99	
1/2 in.	93	
3/8 in.	87	
1/4 in.	80	
No. 4	75	
No. 8	66	
No. 10	62	
No. 16	55	
No. 30	45	
No. 40	40	
No. 50	36	
No. 100	29	
No. 200	25	

Laboratory compaction characteristics — Method

Dry unit weight, lbf/ft³

Sample Preparation
Rammer Used
Proctor curve id. No.
Maximum dry unit weight lbf/ft³
Optimum water content %
Oversize Aggregate
Bulk specific gravity
Absorption, %
Oversize in laboratory sample %

Water content, %

	Result	Specs.
Liquid Limit, Plastic Limit & Plasticity Index		
Preparation method **Oven-dried**		
Processing method **ASTM D4318, Dry Preparation**		
Liquid Limit **ASTM D4318, Method A** LL	NV	
Plastic Limit **ASTM D4318** PL		
Plasticity Index **ASTM D4318** PI	NP	
Water Content **ASTM D2216, Method A** % dry weight	7.7	
Swell Test Surcharge psf Expansion, %		
Compacted to approximately of ASTM Method		
Initial water content % Dry unit weight lbf/ft³		
Organic Matter %		
Unified Soil Classification **ASTM D2487**		
Group Symbol: **SM** Name: **Silty Sand with Gravel**		

	Result	Specs.
Los Angeles (LA) Abrasion — Grading rev., % loss		
Grading rev., % loss		
Fractured Faces By Weight — One or more, %		
Two or more, %		
Total Salts (Solubility) %		
Sulfates %		
Chlorides		
pH Determination pH		
Minimum Resistivity ohm-cm		
Expansion Index of Soil EI		
Initial dry unit weight, lbf/ft³		
Initial degree of saturation		
Initial water content, % Final water content, %		

Comments:

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Soil / Aggregate Test Report

Client **ENVIRONMENTAL RESPONSE INC**
2202 WEST MEDTRONIC WAY SUITE 108
TEMPE, AZ 85281

Date of Report **09/18/20** Page **1** of **1**
Job No. **2540JP330**
Event No. **13-** Lab No. **1262**
Authorized By **ERIC SMITH** Date **09/16/20**
Sample Location Designated By **WT/GARRETT GREEN** Date **09/16/20**
Sampled By **WT/GARRETT GREEN** Date **09/16/20**
Submitted By **WT/GARRETT GREEN** Date **09/16/20**

Project **APS PRESCOTT MGP REMEDIATION**
Project Address **300 N GRANITE ST, PRESCOTT, AZ**
Material Description **SILTY SAND WITH GRAVEL**
Material Use **SUBBASE FILL**
Material Source **ARROWHEAD**
Sample Location **ON SITE STOCKPILE**
Special Instructions

Sieve analysis **ASTM C136**
Finer Than No. 200 **ASTM C117, Procedure A**

Sieve	Accumulative % passing	Specification
6 in.		
4 in.		
3 in.		
2 in.		
1-1/2 in.		
1 in.	100	
3/4 in.	98	
1/2 in.	90	
3/8 in.	85	
1/4 in.	78	
No. 4	73	
No. 8	64	
No. 10	61	
No. 16	53	
No. 30	44	
No. 40	39	
No. 50	35	
No. 100	29	
No. 200	25	

Laboratory compaction characteristics — Method

Sample Preparation
Rammer Used
Proctor curve Id. No.
Maximum dry unit weight lbf/ft^3
Optimum water content %
Oversize Aggregate
Bulk specific gravity
Absorption, %
Oversize in laboratory sample %

Dry unit weight, lbf/ft^3

Water content, %

		Result	Specs.
Liquid Limit, Plastic Limit & Plasticity Index			
Preparation method	**Oven-dried**		
Processing method	**ASTM D4318, Dry Preparation**		
Liquid Limit	**ASTM D4318, Method A** LL	**NV**	
Plastic Limit	**ASTM D4318** PL		
Plasticity Index	**ASTM D4318** PI	**NP**	
Water Content	**ASTM D2216, Method A** % dry weight	**7.2**	
Swell Test	Surcharge psf Expansion, %		
Compacted to approximately of ASTM Method			
Initial water content %	Dry unit weight lbf/ft^3		
Organic Matter	%		
Unified Soil Classification **ASTM D2487**			
Group Symbol: **SM**	Name: **Silty Sand with Gravel**		

		Result	Specs.
Los Angeles (LA) Abrasion	Grading rev., % loss		
	Grading rev., % loss		
Fractured Faces By Weight	One or more, %		
	Two or more, %		
Total Salts (Solubility)	%		
Sulfates	%		
Chlorides			
pH Determination	pH		
Minimum Resistivity	ohm-cm		
Expansion Index of Soil	EI		
	Initial dry unit weight, lbf/ft^3		
	Initial degree of saturation		
Initial water content, %	Final water content, %		

Comments:

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Reviewed By **ROY KEITH , PROJECT MANAGER**

Western Technologies Inc.
The Quality People
Since 1955

2400 East Huntington Drive
Flagstaff, Arizona 86004-8934
(928) 774-8700 • *wt-us.com*

Soil / Aggregate Test Report

Client **ENVIRONMENTAL RESPONSE INC**
2202 WEST MEDTRONIC WAY SUITE 108
TEMPE, AZ 85281

Date of Report **09/18/20** Page **1** of **1**
Job No. **2540JP330**
Event No. **13-** Lab No. **1263**
Authorized By **ERIC SMITH** Date **09/16/20**
Sample Location Designated By **WT/GARRETT GREEN** Date **09/16/20**
Sampled By **WT/GARRETT GREEN** Date **09/16/20**
Submitted By **WT/GARRETT GREEN** Date **09/16/20**

Project **APS PRESCOTT MGP REMEDIATION**
Project Address **300 N GRANITE ST, PRESCOTT, AZ**
Material Description **SILTY SAND WITH GRAVEL**
Material Use **SUBBASE FILL**
Material Source **ARROWHEAD**
Sample Location **ON SITE STOCKPILE**
Special Instructions

Sieve analysis **ASTM C136**
Finer Than No. 200 **ASTM C117, Procedure A**

Sieve	Accumulative % passing	Specification
6 in.		
4 in.		
3 in.		
2 in.		
1-1/2 in.		
1 in.	100	
3/4 in.	98	
1/2 in.	90	
3/8 in.	86	
1/4 in.	79	
No. 4	75	
No. 8	65	
No. 10	61	
No. 16	54	
No. 30	45	
No. 40	40	
No. 50	36	
No. 100	30	
No. 200	26	

Laboratory compaction characteristics — Method

Dry unit weight, lbf/ft^3

Sample Preparation
Rammer Used
Proctor curve Id. No.
Maximum dry unit weight lbf/ft^3
Optimum water content %
Oversize Aggregate
Bulk specific gravity
Absorption, %
Oversize in laboratory sample %

Water content, %

			Result	Specs.
Liquid Limit, Plastic Limit & Plasticity Index				
Preparation method	**Oven-dried**			
Processing method	**ASTM D4318, Dry Preparation**			
Liquid Limit	**ASTM D4318, Method A**	LL	**NV**	
Plastic Limit	**ASTM D4318**	PL		
Plasticity Index	**ASTM D4318**	PI	**NP**	
Water Content	**ASTM D2216, Method A**	% dry weight	**7.0**	
Swell Test	Surcharge psf	Expansion, %		
Compacted to approximately of ASTM	Method			
Initial water content %	Dry unit weight	lbf/ft^3		
Organic Matter		%		
Unified Soil Classification	**ASTM D2487**			
Group Symbol: **SM**	Name: **Silty Sand with Gravel**			

			Result	Specs.
Los Angeles (LA) Abrasion	Grading	rev., % loss		
	Grading	rev., % loss		
Fractured Faces By Weight		One or more, %		
		Two or more, %		
Total Salts (Solubility)		%		
Sulfates		%		
Chlorides				
pH Determination		pH		
Minimum Resistivity		ohm-cm		
Expansion Index of Soil		EI		
		Initial dry unit weight, lbf/ft^3		
		Initial degree of saturation		
Initial water content, %		Final water content, %		

Comments:

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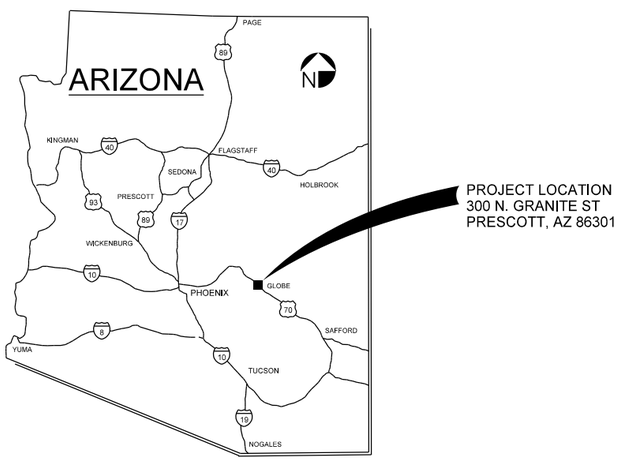
Reviewed By **ROY KEITH , PROJECT MANAGER**

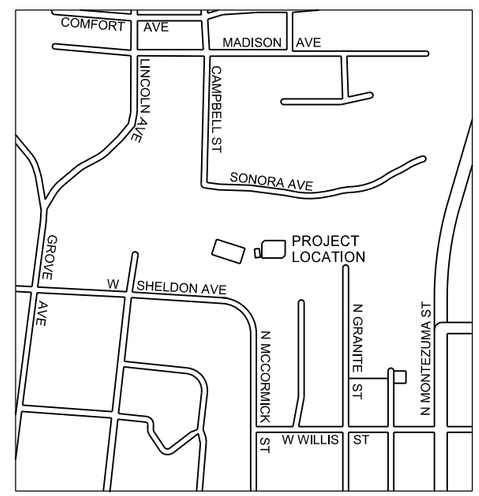
Appendix I
Record Drawings

APS FORMER MANUFACTURED GAS PLANT SITE
PRESCOTT, ARIZONA
SUBSTATION REMEDIATION PLANS

JULY 2020
RECORD DRAWINGS



VICINITY MAP
NTS



LOCATION MAP
NTS

INDEX OF DRAWINGS

SHEET NUMBER	DRAWING NUMBER	DESCRIPTION
1	G-1	COVER SHEET, SITE LOCATION AND VICINITY MAP, DRAWING INDEX
2	G-2	GENERAL NOTES, LEGEND AND ABBREVIATIONS
3	G-3	HAUL ROUTE PLAN
4	C-1	EXISTING SITE PLAN
5	C-2	SITE CONSTRUCTION AND DEMOLITION PLAN
6	C-3	EXCAVATION PLAN
7	C-4	GRADING AND SITE RESTORATION PLAN
8	C-5	STORM WATER DETAILS
9	C-6	SECTIONS

RECORD DRAWINGS

Revisions Drawn By S METCALF Date 10/19/20

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FEMA FIRM PARCEL

04025C2061H
EFF. 3/6/2018

BENCHMARK

NAME: MV-01 DESCRIPTION: CARRIAGE BOLT WITH 2" WASHER ON TOP OF CURB ON NORTHEAST CURB RETURN AT SOUTHEAST CORNER OF GROVE AVENUE AND SHELDON STREET (PREVIOUSLY LISTED AT 5344.77 ON NGVD 29 DATUM) NGVD 29: 5344.584, NAVD 88: 5347.635.

CUT AND FILL QUANTITIES (APPROX)

ONSITE CUT:	3,200 CUBIC YARDS
ONSITE FILL:	4,200 CUBIC YARDS
NET (DISTURBED AREAS):	0.35 ACRES
PARCEL:	113-14-58C

"AS-BUILT CERTIFICATION"

I HEREBY CERTIFY THAT THE "RECORD DRAWING" MEASUREMENTS AS SHOWN HEREON WERE MADE UNDER MY SUPERVISION OR AS NOTED AND ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF

REGISTERED ENGINEER / LAND SURVEYOR — DATE

REGISTRATION NUMBER

OWNER

ARIZONA PUBLIC SERVICE
400 NORTH 5TH STREET, MAIL STATION 9303
PHOENIX, AZ 85004
CONTACT: JUDITH HEYWOOD
602-250-3850

ENGINEER

JACOBS
1501 W. FOUNTAINHEAD PARKWAY
SUITE 401
TEMPE, AZ 85282
CONTACT: DAVID ALLARD
480-295-3913

CITY ENGINEER — DATE

UTILITY MANAGER — DATE

Registered Professional Engineer (Civil) CERTIFICATE NO. 26169 DAVID J. ALLARD Date Signed 07/07/20 ARIZONA, U.S.A.

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NO.	DATE	DSGN	DR	CHK	APVD	REVISION	BY	APVD
1	7/07/20	D ALLARD	D ALLARD	S METCALF	M BRANCHE	REVISED PERMIT PLANS	SM	DA

D ALLARD

APS PRESCOTT
SUBSTATION REMEDIATION
300 N. GRANITE ST
PRESCOTT, AZ 86301

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JACOBS

GENERAL
COVER, LOCATION MAP AND INDEX OF DRAWINGS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	JULY 2020
PROJ	704643
DWG	G-1
SHEET	1 of 9

GENERAL SITE NOTES:

1. SOURCE OF TOPOGRAPHY SHOWN ON THE CIVIL PLANS ARE BASE MAPS OR SURVEY PROVIDED BY CVL CONSULTANTS. EXISTING CONDITIONS MAY VARY FROM THOSE SHOWN ON THESE PLANS. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND ADJUST WORK PLAN ACCORDINGLY PRIOR TO BEGINNING CONSTRUCTION.
2. EXCEPT FOR DRAWING C-1 EXISTING TOPOGRAPHY, STRUCTURES, AND SITE FEATURES ARE SHOWN SCREENED AND/OR LIGHT-LINED. NEW FINISH GRADE, STRUCTURES, AND SITE FEATURES ARE SHOWN HEAVY-LINED.
3. HORIZONTAL DATUM: NGVD 29
4. VERTICAL DATUM: NAVD 88
5. MAINTAIN, RELOCATE, OR REPLACE EXISTING SURVEY MONUMENTS, CONTROL POINTS, AND STAKES WHICH ARE DISTURBED OR DESTROYED BY CONSTRUCTION ACTIVITIES. PERFORM THE WORK TO PRODUCE THE SAME LEVEL OF ACCURACY AS THE ORIGINAL MONUMENT(S) IN A TIMELY MANNER, AND AT THE CONTRACTOR'S EXPENSE.
6. FOR LOCATION OF CONTROL POINTS SEE DRAWING C-1.
7. COORDINATES AND DIMENSIONS SHOWN FOR ROADWAY IMPROVEMENTS ARE TO FACE OF CURB OR EDGE OF PAVEMENT.
8. STAGING AREA SHALL BE FOR CONTRACTOR'S EMPLOYEE PARKING, CONTRACTOR'S TRAILERS AND ON-SITE STORAGE OF MATERIALS.
9. PROVIDE TEMPORARY FENCING ON SITE AS NECESSARY TO MAINTAIN SECURITY AT ALL TIMES.
10. ELEVATIONS GIVEN ARE TO FINISH GRADE UNLESS OTHERWISE SHOWN.
11. SLOPE UNIFORMLY BETWEEN CONTOURS AND SPOT ELEVATIONS SHOWN.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING EROSION CONTROL DEVICES DURING CONSTRUCTION. EROSION CONTROL DEVICES SHOWN ON STORM WATER MANAGEMENT PLANS ARE THE MINIMUM REQUIRED. CONTRACTOR SHALL TAKE ALL OTHER MEASURES TO POSITIVELY PRECLUDE EROSION MATERIALS FROM LEAVING THE SITE. CONTRACTOR TO SUBMIT EROSION CONTROL PLAN, FOR REVIEW PRIOR TO ANY EARTH WORK ACTIVITIES ON-SITE.

GENERAL YARD PIPING AND UTILITIES NOTES:

1. EXISTING UNDERGROUND UTILITIES OBTAINED FROM AS-BUILTS AND FROM FIELD SURVEY. CONTRACTOR SHALL FIELD VERIFY DEPTH AND LOCATION PRIOR TO EXCAVATION. PROTECT ALL EXISTING UTILITIES DURING CONSTRUCTION UNLESS IDENTIFIED FOR REMOVAL.
2. EXISTING PIPING AND EQUIPMENT ARE SHOWN SCREENED AND/OR LIGHT-LINED. NEW PIPING AND EQUIPMENT ARE SHOWN HEAVY-LINED.
3. CONTRACTOR SHALL COORDINATE WITH APS REGARDING ALL BURIED AND OVERHEAD POWER LINES.

BENCHMARK

NAME: MV-01 DESCRIPTION: CARRIAGE BOLT WITH 2" WASHER ON TOP OF CURB ON NORTHEAST CURB RETURN AT SOUTHEAST CORNER OF GROVE AVENUE AND SHELDON STREET (PREVIOUSLY LISTED AT 5344.77 ON NGVD 29 DATUM) NGVD 29: 5344.584, NAVD 88: 5347.635.

CIVIL LEGEND

- COUNTY PROPERTY BOUNDARY
- ROAD CENTERLINE
- ACCESS GATE
- FLOW LINE
- HAUL ROUTE
- CP — CONTROL POINT
- FH — FIRE HYDRANT
- LIGHT POLE
- MANHOLE
- CONCRETE SLAB
- TREE
- PALM TREE
- VALVE
- GATE
- SPOT ELEVATION
- G — GAS LINE
- OP — OVERHEAD POWER
- FO — FIBER OPTIC LINE
- W — WATER LINE
- SD — STORM SEWER LINE
- E-OVH — OVERHEAD ELECTRIC LINE
- E-BUR — BURIED ELECTRIC LINE
- SS — SEWER
- FO — FIBER OPTIC
- HG — HIGH PRESSURE GAS
- OR — STRUCTURE, BUILDING OR FACILITY
- ASPHALT CONCRETE PAVEMENT
- GRAVEL SURFACING
- CONCRETE PAVEMENT
- CURB
- CURB AND GUTTER
- SINGLE SWING GATE
- TEMPORARY SECURITY FENCE
- ARCHITECTURAL FENCE
- CHAIN LINK FENCE
- REMOVE AND DISPOSE
- REMOVE AND DISPOSE CONCRETE SLAB
- CONSTRUCTION ENTRANCE
- OUTLET PROTECTION / RIPRAP

ABBREVIATIONS

ABC	AGGREGATE BASE COURSE
ACP	ASPHALT PAVING
ADA	AMERICANS WITH DISIBILITY ACT
ADWR	ARIZONA DEPARTMENT OF WATER RESOURCES
APS	ARIZONA PUBLIC SERVICE
APVD	APPROVED
CL	CENTERLINE
CLSM	CONTROLLED LOW-STRENGTH MATERIAL
CONC	CONCRETE
COP	CITY OF PHOENIX
DET	DETAIL
DIA	DIAMETER
DWG	DRAWING
E	EAST, EASTING
EA	EACH
EXIST	EXISTING
FG	FINISH GRADE
FL	FLOW LINE
FT	FOOT, FEET
GAL	GALLON
HPG	HIGH PRESSURE GAS
HWY	HIGHWAY
IE	INVERT ELEVATION
IN	INCH, INCHES
MAG	MARICOPA ASSOCIATION OF GOVERMENTS
MIN	MINIMUM
MON	MONUMENT
N	NORTH, NORTHING
NTS	NOTE TO SCALE
OVH	OVERHEAD
R	RADIUS
RR	RAILROAD, RAILWAY
R/W	RIGHT-OF-WAY
STD	STANDARD
S.W GAS	SOUTHWEST GAS
TEMP	TRMPORARY
TOC	TOP OF CONCRETE, TOP OF CURB
TSPEL	ELEVATION OF TOP OF SOLDIER PILE REMAINING IN PLACE
TYP	TYPICAL
V	VOLT

RECORD DRAWINGS

Revisions Drawn By S METCALF Date 10/19/20

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Registered Professional Engineer (Civil) CERTIFICATE NO. 26169 DAVID J. ALLARD Date Signed 10/20/20 ARIZONA, U.S.A.

NO.	DATE	REVISION	BY	APVD

DSGN D ALLARD | DR D ALLARD | CHK S METCALF | APVD M BRANCHE | D ALLARD

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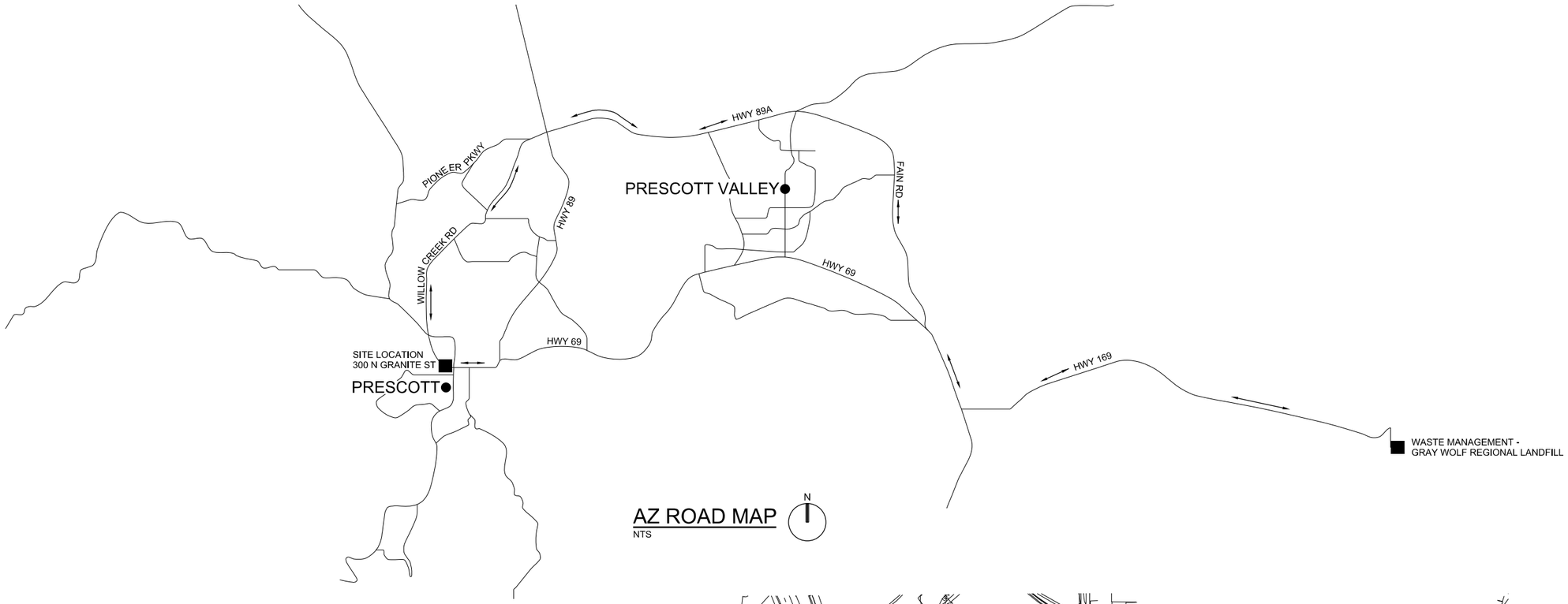
APS PRESCOTT
SUBSTATION REMEDIATION
300 N. GRANITE ST.
PRESCOTT, AZ 86301

JACOBS

GENERAL
GENERAL NOTES, LEGEND AND ABBREVIATIONS

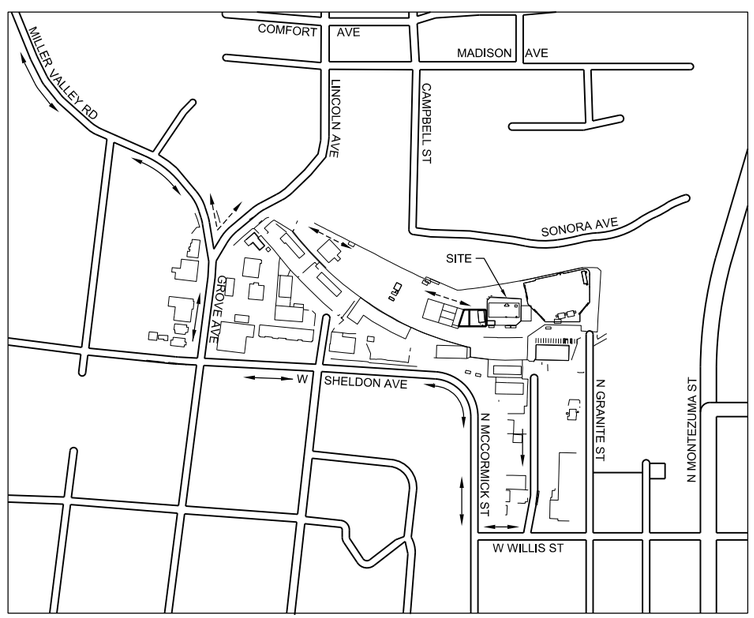
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	JULY 2020
PROJ	704643
DWG	G-2
SHEET	2 of 9



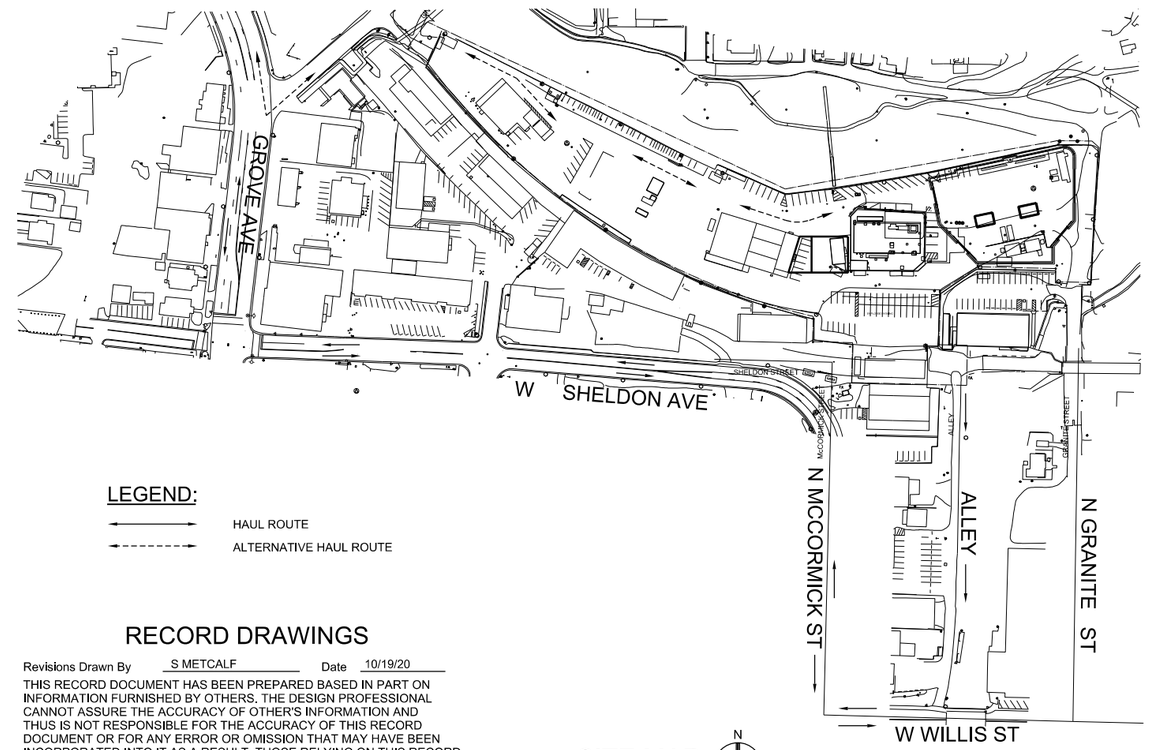
AZ ROAD MAP

NTS



LOCATION MAP

NTS



SITE MAP

NTS

LEGEND:

HAUL ROUTE

ALTERNATIVE HAUL ROUTE

RECORD DRAWINGS

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NO.	DATE	REVISION	BY	APVD

DSGN	DR	CHK	APVD
D ALLARD	D ALLARD	S METCALF	M BRANCHE

D ALLARD

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JACOBS

GENERAL

HAUL ROUTE PLAN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	JULY 2020
PROJ	704643
DWG	G-3
SHEET	3 of 9

PLAN

1"=20'-0"

GENERAL

1. POWER POLE REMOVED BY APS PRIOR TO REMEDIATION.
2. POWER POLE TO REMAIN.
3. CONTROL BUIDING REMOVED BY APS PRIOR TO REMEDIATION.
4. SUBSTATION ELECTRICAL EQUIPMENT REMOVED BY APS PRIOR TO REMEDIATION.
5. TRANSFORMER TO BE REMOVED BY APS PRIOR REMEDIATION.
6. GATE TO REMAIN CLOSED WHEN NOT IN USE TO PREVENT PUBLIC TRESPASS.

LEGEND

- SS — SANITARY SEWER
- OP — OVERHEAD POWER
- X — SECURITY FENCE
- POWER POLE
- LIGHT POLE
- LARGE POWER POLE

FEMA FIRM PARCEL

0425C2061H
EFF. 3/6/2018

RECORD DRAWINGS

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N

0 20 40 60
Scale In Feet

Registered Professional Engineer (Civil) CERTIFICATE NO. 26169 DAVID J. ALLARD Date Signed 07/07/20 ARIZONA, U.S.A.

NO.	DATE	DR	CHK	APVD	BY	APVD
1	7/07/20				SM	DA
		REVISION				
		REVISED PERMIT PLANS				

DSGN D ALLARD | DR D ALLARD | CHK S METCALF | APVD M BRANCHE | APVD D ALLARD

APS PRESCOTT
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JACOBS

CIVIL
EXISTING SITE PLAN

VERIFY SCALE
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0 1"

DATE	JULY 2020
PROJ	704643
DWG	C-1
SHEET	4 of 9

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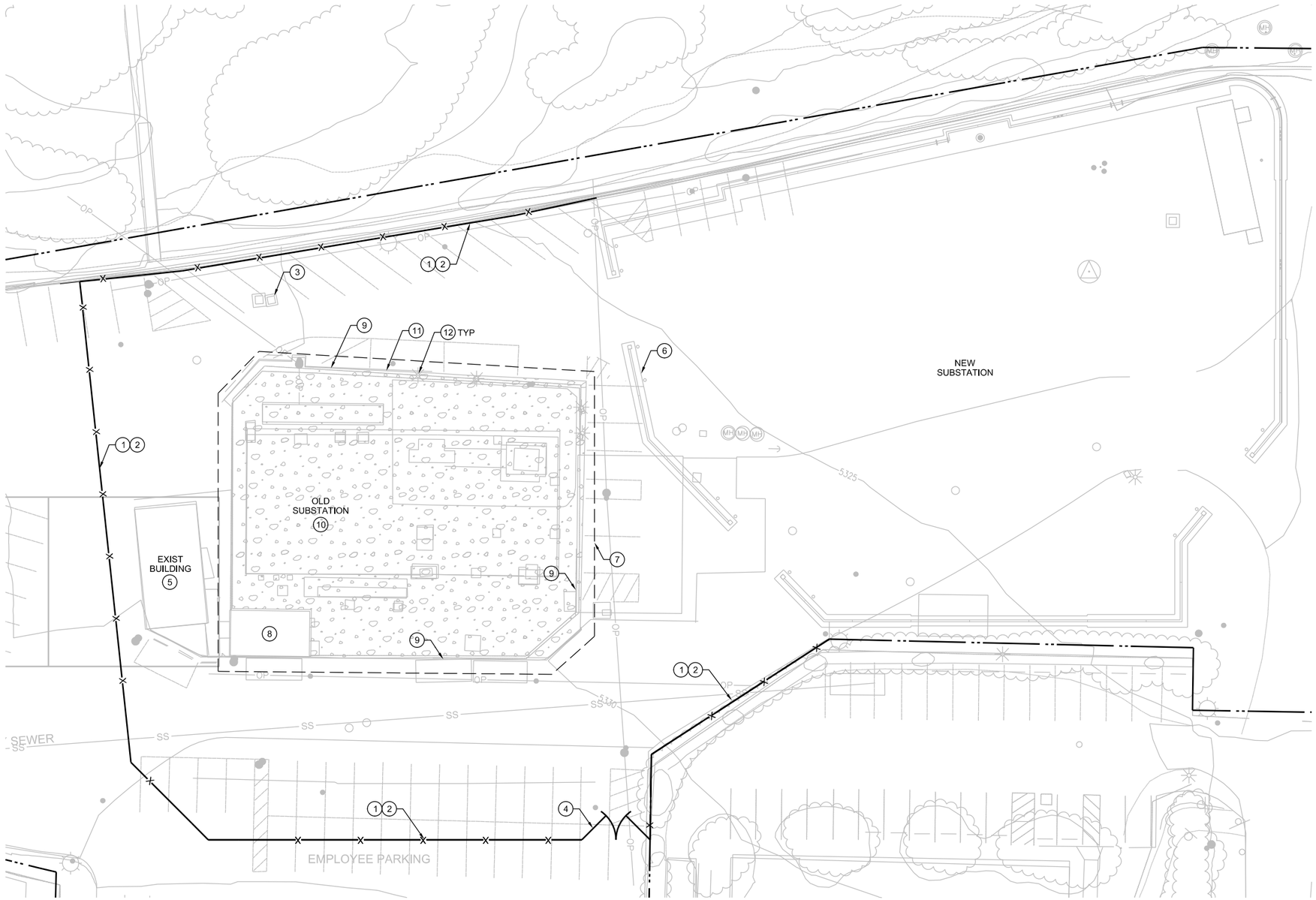

PLAN

1"=20'-0"

EROSION CONTROL NOTES:

1. CONTRACTOR SHALL COMPLY WITH ALL PROVISIONS AND BEST MANAGEMENT PRACTICES INCLUDED IN THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) FOR THE SITE.
2. BEST MANAGEMENT PRACTICE (BMP) REFERENCE NUMBERS REFER TO THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY DRAINAGE DESIGN MANUAL - EROSION CONTROL, DATED DECEMBER, 2018
3. ALL EROSION CONTROL SHALL BE INSTALLED PRIOR TO THE BEGINNING OF WORK AND BE MAINTAINED THROUGHOUT CONSTRUCTION IN ACCORDANCE WITH THE SWPPP.

PRE-CONSTRUCTION CONTROLS INCLUDE:

A. SAND BAG BARRIER (SPC-2), GRAVEL FILTER BERM (SPC-3) OR SILT FENCES (SPC-5) SHALL BE INSTALLED AT SITE PERIMETER.

B. STABILIZED CONSTRUCTION ENTRANCE (EC-5) OR CORRUGATED STEEL PLATES SHALL BE INSTALLED AND USED BY ALL VEHICLES LEAVING PAVEMENT, SEE (1 / C-5).

C. STORM DRAIN INLET PROTECTION (SPC-7) SHALL BE INSTALLED AT ALL DROP INLETS, CATCH BASINS AND MANHOLES.

4. A STANDBY CREW FOR EMERGENCY WORK SHALL BE ON CALL AT ALL TIMES. NECESSARY MATERIALS SHALL BE AVAILABLE ON SITE AND STOCKPILED AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY DEVICES OR TO REPAIR ANY DAMAGED EROSION CONTROL MEASURES, ESPECIALLY WHEN RAIN IS IMMINENT.
5. DEVICES SHALL NOT BE MOVED OR MODIFIED WITHOUT THE APPROVAL OF THE ENGINEER.
6. AFTER A RAINSTORM, ALL SILT AND DEBRIS SHALL BE REMOVED FROM CHECK BERMS. ANY GRADED SLOPE SURFACE PROTECTION MEASURE DAMAGED DURING A RAINSTORM SHALL BE IMMEDIATELY REPAIRED.
7. AVOID PAVING DURING WET WEATHER.
8. STORE MATERIALS AWAY FROM DRAINAGE COURSES TO PREVENT CONTACT WITH STORM WATER.
9. PLACE DRIP PANS OR ABSORBENT MATERIALS UNDER CONSTRUCTION EQUIPMENT WHEN NOT IN USE.
10. CLEAN UP SPILLS WITH ABSORBENT MATERIALS AND DISPOSE OF PROPERLY.
11. OLD CONCRETE MUST BE DISPOSED OF PROPERLY. COLLECT AND REMOVE ALL BROKEN CONCRETE FROM THE SITE.
12. KEEP WORK SITE CLEAN AND ORDERLY DAILY.
13. PROPERLY STORE PAINTS AND SOLVENTS.
14. ALLOW MATERIAL DELIVERY AND STORAGE ONLY IN DESIGNATED AREAS AND AVOID TRANSPORT NEAR DRAINAGE PATHS AND WATERWAYS.
15. MINIMIZE THE USE OF HAZARDOUS MATERIALS ON SITE.
16. COLLECT SITE TRASH AS NEEDED, ESPECIALLY DURING RAINY OR WINDY CONDITIONS.
17. ARRANGE FOR REGULAR WASTE COLLECTION BEFORE CONTAINERS OVERFLOW.
18. TEMPORARY SANITARY FACILITIES SHALL BE MAINTAINED IN GOOD WORKING ORDER BY A LICENSED SERVICE.
19. CONTRACTOR SHALL BE RESPONSIBLE FOR UPDATING THIS STORM WATER MANAGEMENT PLAN THROUGHOUT CONSTRUCTION AND INDICATE ANY AND ALL REVISIONS/ UPDATES ON THIS PLAN.
20. CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN SUCH A MANNER THAT STORM WATER WILL BE CONTAINED WITHIN THE PROJECT OR CHANNELED INTO THE DRAIN CHANNEL PROVIDED THAT IT IS FREE FROM POLLUTANTS AND DEBRIS.
21. CONTRACTOR SHALL IMMEDIATELY RESTORE ANY DAMAGED EROSION CONTROL MEASURE WITHIN THE PROJECT BOUNDARY.
22. THE CONTRACTOR SHALL BE RESPONSIBLE, AND TAKE NECESSARY PRECAUTIONS, TO PREVENT PUBLIC TRESPASS ONTO AREAS WHERE IMPOUNDED WATER CREATES A HAZARDOUS CONDITION.

NOTES

1. PROVIDE AND INSTALL FENCE LINE MISTING SYSTEM FOR DUST AND ODOR CONTROL ON ALL FENCING. COVER ENTIRE HEIGHT OF FENCE WITH FABRIC TO PREVENT BLOWING DUST DURING CONSTRUCTION.
2. PROVIDE SAND BAG SILT PROTECTION, SEE (6 / C-5).
3. PROVIDE INLET BARRIER, SEE (7 / C-5) AND (8 / C-5).
4. STABILIZED CONSTRUCTION ENTRANCE OR CORRUGATED STEEL PLATES, SEE (1 / C-5).
5. EXISTING HISTORIC BUILDING PROTECT DURING CONSTRUCTION.
6. NEW SUBSTATION MASONRY WALL AND GATES, PROTECT DURING CONSTRUCTION.
7. SAW CUT, REMOVE AND DISPOSE OF ASPHALT PAVING AS REQUIRED TO ACCOMPLISH REQUIRED EXCAVATION. SWEEP OR VACUUM DUST GENERATED BY SAW CUTTING TO PREVENT DISCHARGE TO MILLER CREEK.
8. REMOVE AND DISPOSE OF CONCRETE BUILDING FOUNDATION.
9. REMOVE AND DISPOSE OF CONCRETE AND BLOCK RETAINING WALLS.
10. REMOVE AND DISPOSE OF CONCRETE SUBSTATION FOUNDATIONS AND CURBS (ALL FOUNDATIONS NOT SHOWN).
11. REMOVE AND DISPOSE OF EXISTING SUBSTATION CHAIN LINK FENCING.
12. REMOVE AND DISPOSE OF ALL SUBSTATION LIGHT POLES (ALL NOT SHOWN).

N

0 20 40 60
Scale In Feet

RECORD DRAWINGS

Revisions Drawn By S METCALF Date 10/19/20

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NO.	DATE	REVISION	DR	CHK	APVD	BY	DA
1	7/07/20	REVISED PERMIT PLANS	D ALLARD	S METCALF	M BRANCHE	SM	D ALLARD

DSGN D ALLARD

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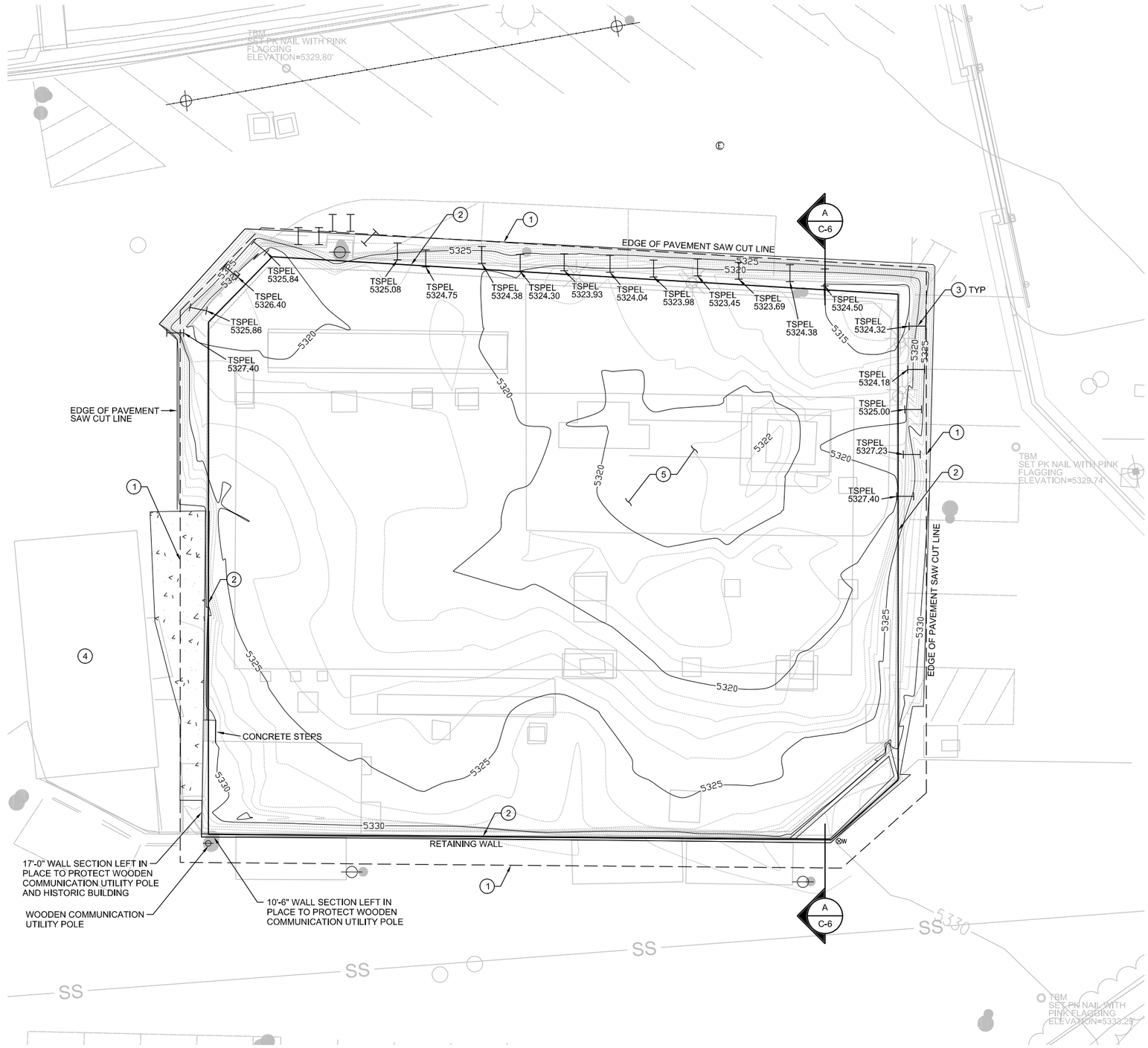
CIVIL
SITE CONSTRUCTION AND DEMOLITION PLAN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	JULY 2020
PROJ	704643
DWG	C-2
SHEET	5 of 9



PLAN

1"=10'-0"

GENERAL NOTES:

1. ALL STRUCTURES AND UTILITIES ARE TO BE SUPPORTED AND PROTECTED IN PLACE DURING REMEDIATION ACTIVITIES UNLESS OTHERWISE INDICATED.
2. MAINTAIN EXISTING SECURITY FENCING WITH FABRIC SCREENING FOR THE DURATION OF THE PROJECT. WHERE FENCE INTERFERES WITH WORK PROVIDE TEMPORARY FENCING WITH FABRIC SCREENING TO MAINTAIN SITE SECURITY.
3. PROVIDE, INSTALL, AND MAINTAIN FENCE LINE MISTING SYSTEMS FOR DUST AND ODOR CONTROL. SYSTEM MUST BE IN OPERATION AT ALL TIMES DURING DEMOLITION, EXCAVATING AND BACKFILLING ACTIVITIES.
4. INSTALL AND MAINTAIN ALL EROSION CONTROL AND STORMWATER MANAGEMENT FACILITIES PRIOR TO BEGINNING EXCAVATION WORK. MAINTAIN DURING DURATION OF WORK. SEE DWG C-2.
5. REMOVE CONCRETE SLABS AND ASPHALT PAVEMENT IN SECTIONS JUST PRIOR TO EXCAVATION IN THE AREA LEAVING THE REMAINING IN PLACE TO CONTROL ODOR AND EROSION.
6. UTILITY LOCATIONS BASED ON HISTORICAL INFORMATION, UTILITY OWNER LOCATION, AND PRIVATE LOCATOR DESIGNATION. CONTRACTOR SHALL VERIFY LOCATION OF UTILITIES PRIOR TO EXCAVATION. OTHER ABANDONED OR ACTIVE UTILITIES MAY BE LOCATED ON SITE.
7. APPROXIMATE EXCAVATION LIMITS ARE SHOWN FOR THE PROPOSED BOTTOM OF EXCAVATION AT THE INDICATED ESTIMATED DEPTH. CONTRACTOR SHALL SLOPE OR SHORE AS REQUIRED FOR SAFETY, STABILITY, AND PROTECTION OF UTILITIES OR STRUCTURES.
8. EXCAVATIONS SHALL USE "SOFT-DIG"UNTIL ALL UTILITIES ARE LOCATED. COORDINATE EXCAVATIONS ADJACENT TO UTILITIES WITH UTILITY OWNERS. IN ACCORDANCE WITH ARIZONA REVISED STATUTES 45-841 AND 45-844 SHOULD HUMAN REMAINS, FUNERARY OBJECTS, OR HISTORIC OR PREHISTORIC ARTIFACTS BE UNCOVERED WITHIN THE PROJECT AREA, ALL WORK MUST BE STOPPED IN THE AREA OF THE DISCOVERY AND THE DIRECTOR OF THE ARIZONA STATE MUSEUM SHOULD BE IMMEDIATELY NOTIFIED. ACTION MUST THEN BE TAKEN TO PREVENT FURTHER DISTURBANCE ON SUCH REMAINS. THE ARIZONA STATE MUSEUM OFFICE WILL BE GIVEN ADEQUATE TIME TO ASSESS THE REMAINS AND WILL RESPOND TO ANY REQUEST TO PROCEED WITH GROUND-DISTURBING ACTIVITIES IN THE AREA OF THE DISCOVERY.

EXCAVATION NOTES:

1. SAW CUT AND REMOVE ASPHALT AS REQUIRED FOR EXCAVATION.
2. REMOVE AND DISPOSE OF RETAINING WALL.
3. EXISTING SOLDIER PILE AND LOGGING EXCAVATION SUPPORT PREVIOUSLY CUT OFF 3 TO 5 FEET BELOW GRADE.
4. PROTECT HISTORIC BUILDING DURING CONSTRUCTION ACTIVITIES.
5. BOTTOM OF EXCAVATION TOPO IS BEDROCK.

RECORD DRAWINGS

Revisions Drawn By S METCALF Date 10/19/20

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N

0 10 20 30
Scale In Feet

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NO.	DATE	REVISION	BY	APVD
1	7/07/20	REVISED PERMIT PLANS	SM	DA

DSGN D ALLARD | DR D ALLARD | CHK S METCALF | APVD M BRANCHE | APVD D ALLARD

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CIVIL

EXCAVATION PLAN

VERIFY SCALE
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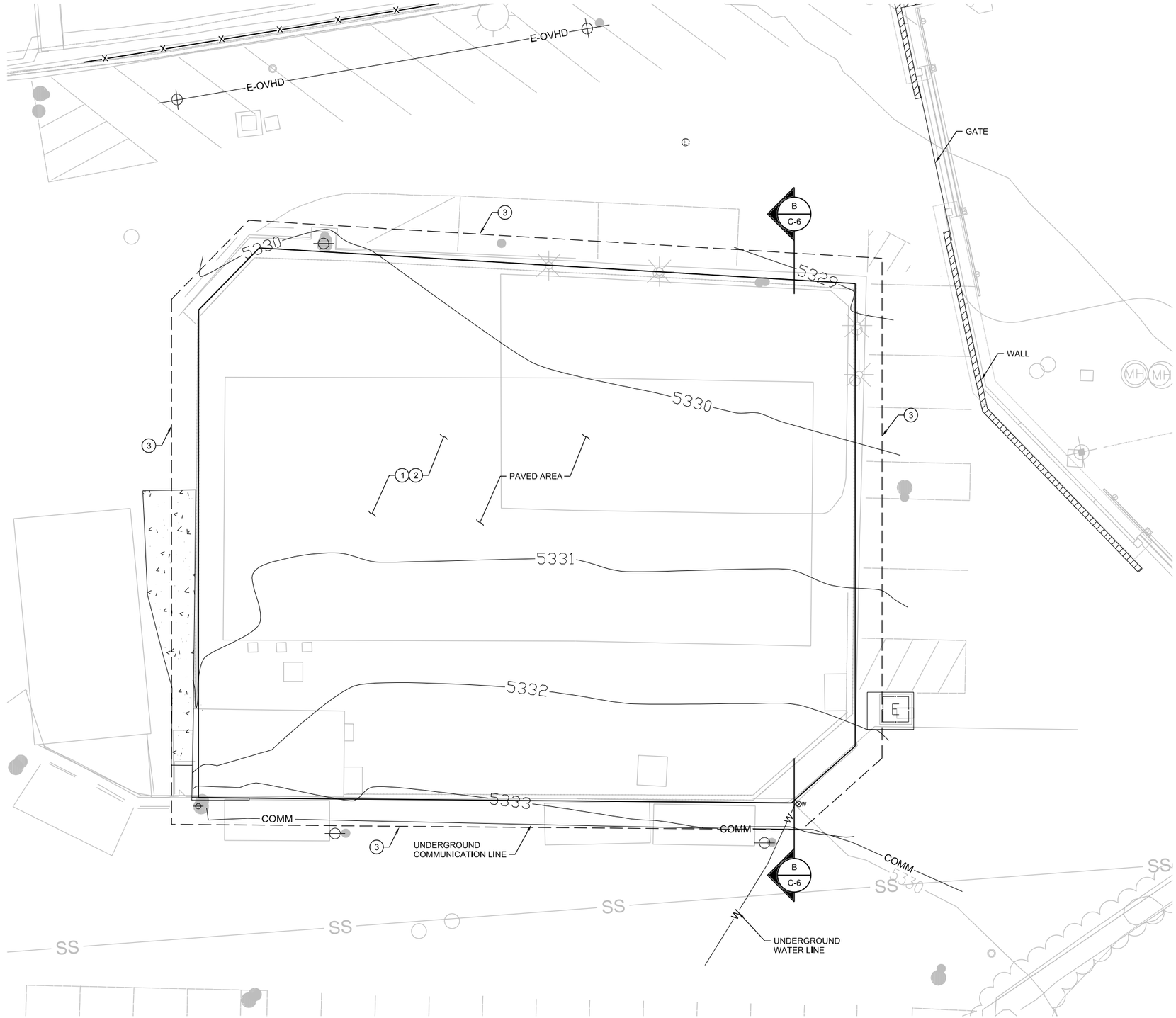
0 1"

DATE	JULY 2020
PROJ	704643
DWG	C-3
SHEET	6 of 9



PLAN

1"=10'-0"

GENERAL NOTES:

1. REMOVE ALL TEMPORARY FENCING, SCREENING, STORMWATER PROTECTION, AND OTHER TEMPORARY FACILITIES AT THE COMPLETION OF WORK.
2. BACKFILL ALL EXCAVATIONS TO GRADES SHOWN. ELEVATION GIVEN ARE FINISHED GRADE UNLESS OTHERWISE SHOWN.
3. SLOPE UNIFORMLY BETWEEN CONTOURS AND SPOT ELEVATIONS SHOWN.

BACKFILL NOTES:

(1) BACKFILL SITE WITH COMPACTED EMBANKMENT BACKFILL.

(2) COMPLETE SITE RESTORATION WITH 12-INCH AGGREGATE BASE AND 4-INCHES OF ASPHALT PAVEMENT.

(3) MATCH EXISTING GRADE EDGES. SLOPE UNIFORMLY BETWEEN EXISTING GRADES.

LEGEND

——5330—— APPROXIMATE FINISH GRADE

RECORD DRAWINGS

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N

0 10 20 30
Scale In Feet

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NO.	DATE	REVISION	BY	APVD

DSGN D ALLARD DR D ALLARD CHK S METCALF APVD M BRANCHE D ALLARD

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CIVIL
GRADING AND SITE RESTORATION PLAN

VERIFY SCALE
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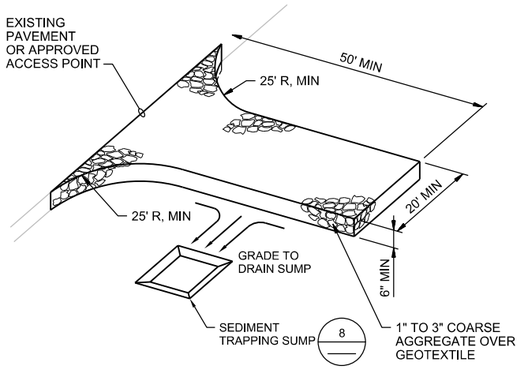
0 1"

DATE	JULY 2020
PROJ	704643
DWG	C-4
SHEET	7 of 9



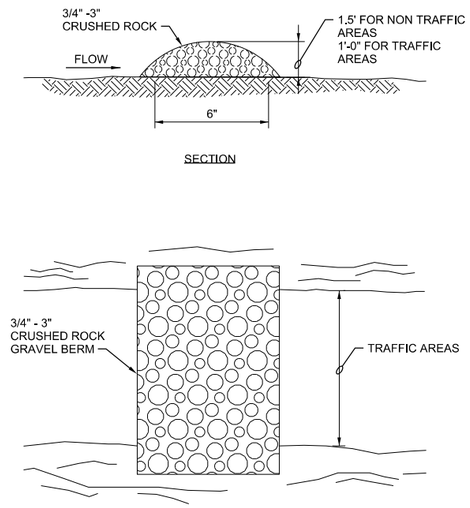
NOTES:

1. ADDITIONAL GRAVEL MAY HAVE TO BE ADDED PERIODICALLY TO MAINTAIN PROPER FUNCTION OF THE PAD.
2. REMOVE GRAVEL ENTRANCE AND REPLACE WITH NEW BASE COURSE PRIOR TO COMPLETION OF ACCESS ROAD.
3. CORRUGATED STEEL PLATES MAY BE USED IN PLACE OF AGGREGATE ON PAVED SURFACES.

1 EC-5 - STABILIZED CONSTRUCTION ENTRANCE

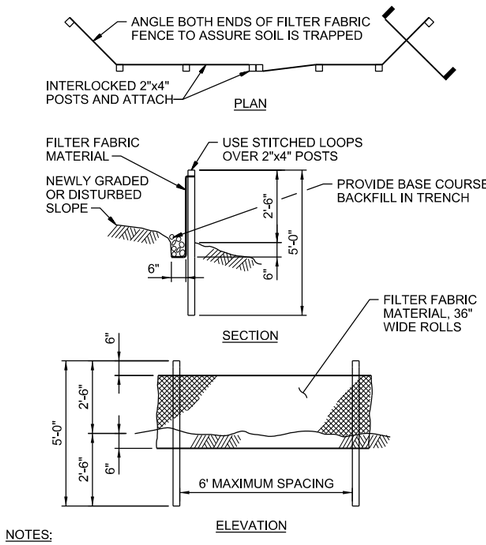
C-1

NTS



2 SPC-3 - GRAVEL FILTER BERM

NTS



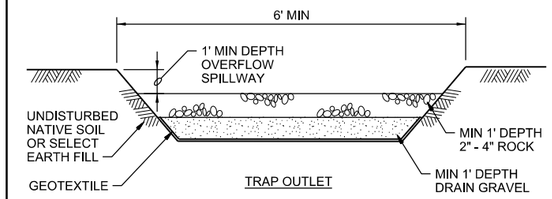
NOTES:

1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. 2"x4" DOUGLAS FIR OR STEEL FENCE POSTS.
3. STITCHED LOOPS TO BE INSTALLED DOWNHILL SIDE OF SLOPE.
4. COMPACT ALL AREAS OF FILTER FABRIC TRENCH.

3 SPC-5 - SILT FENCE

C-2, C-3

NTS



MAINTENANCE STANDARDS:

1. SEDIMENT SHALL BE REMOVED FROM THE TRAP WHEN IT REACHES 1 FOOT IN DEPTH.
2. ANY DAMAGE TO THE TRAP EMBANKMENTS OR SLOPES SHALL BE REPAIRED.

4 SPC-9 - SEDIMENT TRAP

C-2

NTS

RECORD DRAWINGS

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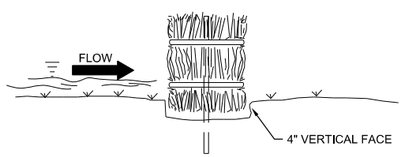
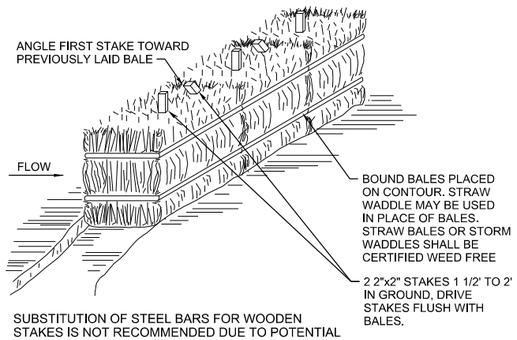


* PROMOTES ON SITE SEDIMENTATION BY CREATING A TEMPORARY POND.

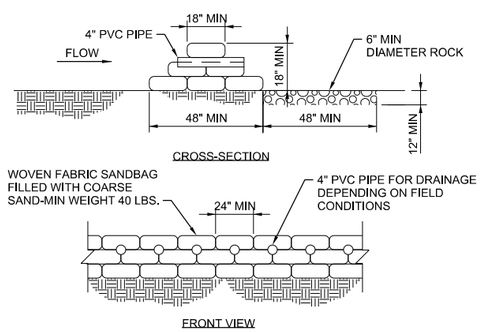
BEDDING DETAIL



ANCHORING DETAIL

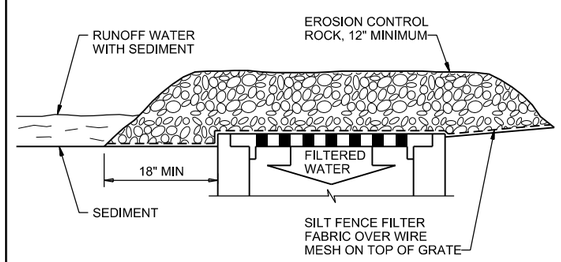
5 SPC-1 - ORGANIC FILTER BARRIER

NTS (MAY BE USED IN PLACE OF SILT FENCE) 5



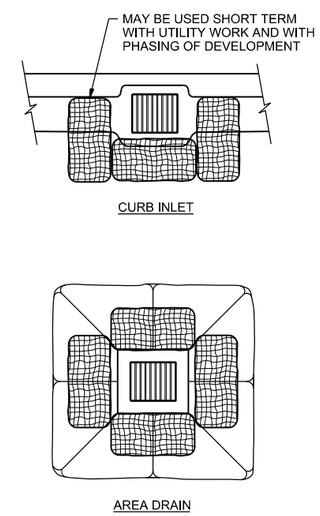
6 SPC-2 - SAND BAG BARRIER

NTS



7 SPC-7 - GRAVEL AND WIRE MESH INLET BARRIER

NTS (MAY BE USED IN PLACE OF 8)



8 SPC-7 - BIOFILTER BAG INLET BARRIER

NTS

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
1	7/07/20	D ALLARD	S METCALF	M BRANCHE	D ALLARD	SM	DA

REVISION: REVISED PERMIT PLANS

REGISTERED PROFESSIONAL ENGINEER (CIVIL) 26169 DAVID J. ALLARD Date Signed 07/07/20 ARIZONA, U.S.A.

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STORM WATER DETAILS

VERIFY SCALE
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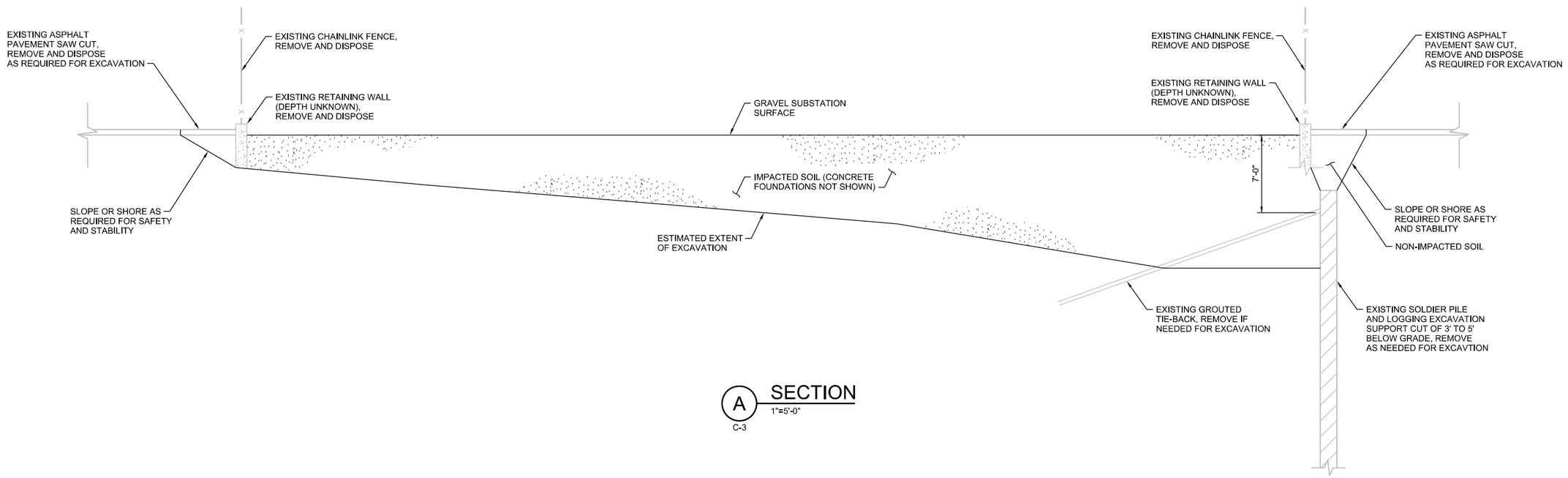
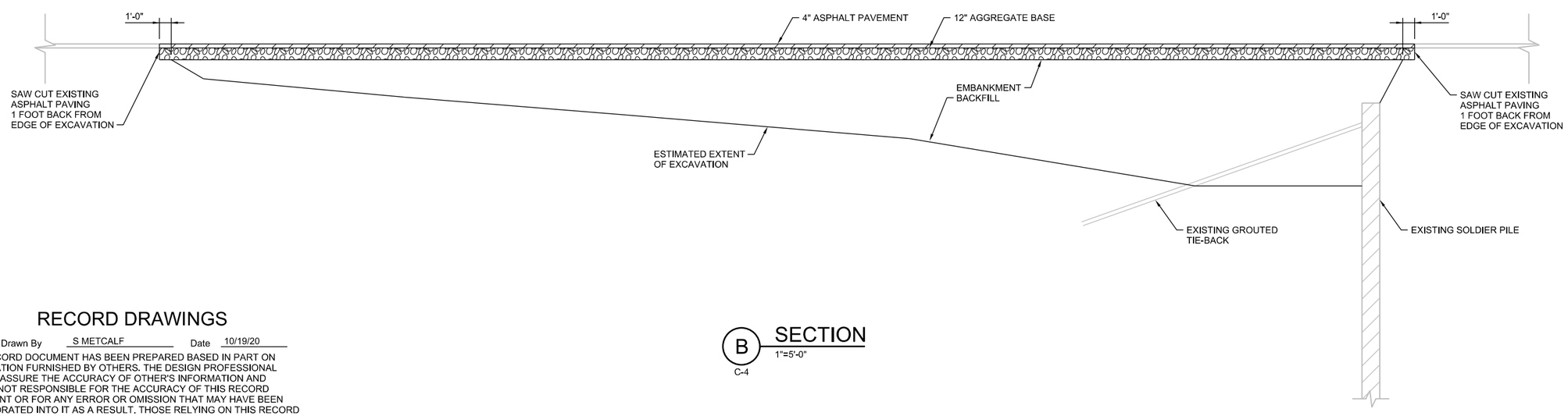
0 1"

DATE	JULY 2020
PROJ	704643
DWG	C-5
SHEET	8 of 9



A SECTION
1"=5'-0"
C-3



B SECTION
1"=5'-0"
C-4

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NO.	DATE	REVISION	BY	APVD

DSGN D ALLARD | DR D ALLARD | CHK S METCALF | APVD M BRANCHE | APVD D ALLARD

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CIVIL
SECTIONS

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0 1"

DATE	JULY 2020
PROJ	704643
DWG	C-6
SHEET	9 of 9

Appendix J
Statistical Analysis of Confirmation Samples

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.112/9/2020 12:10:45 PM
From File	ProUCL_Input_DU1B.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

PCB

General Statistics

Total Number of Observations	11	Number of Distinct Observations	2
Number of Detects	2	Number of Non-Detects	9
Number of Distinct Detects	2	Number of Distinct Non-Detects	1
Minimum Detect	0.031	Minimum Non-Detect	0.031
Maximum Detect	0.075	Maximum Non-Detect	0.031
Variance Detects	9.6800E-4	Percent Non-Detects	81.82%
Mean Detects	0.053	SD Detects	0.0311
Median Detects	0.053	CV Detects	0.587
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	-3.032	SD of Logged Detects	0.625

Warning: Data set has only 2 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.035	KM Standard Error of Mean	0.00539
KM SD	0.0126	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.0448	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.0439	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.0512	95% KM Chebyshev UCL	0.0585
97.5% KM Chebyshev UCL	0.0687	99% KM Chebyshev UCL	0.0887

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	5.449	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.00973	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	21.8	nu star (bias corrected)	N/A
Mean (detects)	0.053		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.035	SD (KM)	0.0126
Variance (KM)	1.6000E-4	SE of Mean (KM)	0.00539
k hat (KM)	7.656	k star (KM)	5.629
nu hat (KM)	168.4	nu star (KM)	123.8
theta hat (KM)	0.00457	theta star (KM)	0.00622
80% gamma percentile (KM)	0.0464	90% gamma percentile (KM)	0.0547

95% gamma percentile (KM)	0.0623	99% gamma percentile (KM)	0.0781

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.0278
Approximate Chi Square Value (123.83, α)	99.13	Adjusted Chi Square Value (123.83, β)	95.53
95% Gamma Approximate KM-UCL (use when n>=50)	0.0437	95% Gamma Adjusted KM-UCL (use when n<50)	0.0454

Lognormal GOF Test on Detected Observations Only

Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0116	Mean in Log Scale	-6.15
SD in Original Scale	0.0229	SD in Log Scale	2.073
95% t UCL (assumes normality of ROS data)	0.0241	95% Percentile Bootstrap UCL	0.0228
95% BCA Bootstrap UCL	0.0313	95% Bootstrap t UCL	0.0928
95% H-UCL (Log ROS)	0.6		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-3.393	KM Geo Mean	0.0336
KM SD (logged)	0.254	95% Critical H Value (KM-Log)	1.906
KM Standard Error of Mean (logged)	0.108	95% H-UCL (KM -Log)	0.0404
KM SD (logged)	0.254	95% Critical H Value (KM-Log)	1.906
KM Standard Error of Mean (logged)	0.108		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0223	Mean in Log Scale	-3.961
SD in Original Scale	0.0181	SD in Log Scale	0.5
95% t UCL (Assumes normality)	0.0322	95% H-Stat UCL	0.0304

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	0.0585

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Benzene

General Statistics

Total Number of Observations	11	Number of Distinct Observations	2
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	2

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Benzene was not processed!

Benzo(a)anthracene

General Statistics

Total Number of Observations	11	Number of Distinct Observations	11
Number of Detects	10	Number of Non-Detects	1
Number of Distinct Detects	10	Number of Distinct Non-Detects	1
Minimum Detect	0.0023	Minimum Non-Detect	0.001
Maximum Detect	0.32	Maximum Non-Detect	0.001
Variance Detects	0.0131	Percent Non-Detects	9.091%
Mean Detects	0.0852	SD Detects	0.114
Median Detects	0.0285	CV Detects	1.343
Skewness Detects	1.412	Kurtosis Detects	0.735
Mean of Logged Detects	-3.575	SD of Logged Detects	1.75

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.758	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.287	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.0775	KM Standard Error of Mean	0.0338
KM SD	0.106	95% KM (BCA) UCL	0.142
95% KM (t) UCL	0.139	95% KM (Percentile Bootstrap) UCL	0.134
95% KM (z) UCL	0.133	95% KM Bootstrap t UCL	0.204
90% KM Chebyshev UCL	0.179	95% KM Chebyshev UCL	0.225
97.5% KM Chebyshev UCL	0.288	99% KM Chebyshev UCL	0.413

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.368	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.772	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.174	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.28	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.561	k star (bias corrected MLE)	0.46
Theta hat (MLE)	0.152	Theta star (bias corrected MLE)	0.185
nu hat (MLE)	11.23	nu star (bias corrected)	9.192
Mean (detects)	0.0852		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.0023	Mean	0.0783
Maximum	0.32	Median	0.018
SD	0.111	CV	1.415
k hat (MLE)	0.557	k star (bias corrected MLE)	0.466

Theta hat (MLE)	0.141	Theta star (bias corrected MLE)	0.168
nu hat (MLE)	12.25	nu star (bias corrected)	10.25
Adjusted Level of Significance (β)	0.0278		
Approximate Chi Square Value (10.25, α)	4.096	Adjusted Chi Square Value (10.25, β)	3.485
95% Gamma Approximate UCL (use when n>=50)	0.196	95% Gamma Adjusted UCL (use when n<50)	0.23

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.0775	SD (KM)	0.106
Variance (KM)	0.0113	SE of Mean (KM)	0.0338
k hat (KM)	0.532	k star (KM)	0.448
nu hat (KM)	11.71	nu star (KM)	9.852
theta hat (KM)	0.146	theta star (KM)	0.173
80% gamma percentile (KM)	0.126	90% gamma percentile (KM)	0.214
95% gamma percentile (KM)	0.31	99% gamma percentile (KM)	0.546

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (9.85, α)	3.849	Adjusted Chi Square Value (9.85, β)	3.261
95% Gamma Approximate KM-UCL (use when n>=50)	0.198	95% Gamma Adjusted KM-UCL (use when n<50)	0.234

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.944	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.143	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0774	Mean in Log Scale	-3.968
SD in Original Scale	0.111	SD in Log Scale	2.111
95% t UCL (assumes normality of ROS data)	0.138	95% Percentile Bootstrap UCL	0.136
95% BCA Bootstrap UCL	0.153	95% Bootstrap t UCL	0.196
95% H-UCL (Log ROS)	6.498		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-3.878	KM Geo Mean	0.0207
KM SD (logged)	1.851	95% Critical H Value (KM-Log)	4.814
KM Standard Error of Mean (logged)	0.588	95% H-UCL (KM -Log)	1.918
KM SD (logged)	1.851	95% Critical H Value (KM-Log)	4.814
KM Standard Error of Mean (logged)	0.588		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0775	Mean in Log Scale	-3.941
SD in Original Scale	0.111	SD in Log Scale	2.057
95% t UCL (Assumes normality)	0.138	95% H-Stat UCL	5.01

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Bootstrap t UCL	0.204	Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1)	0.234

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Benzo(a)pyrene

General Statistics

Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	0.0023	Mean	0.129
Maximum	0.52	Median	0.021
SD	0.186	Std. Error of Mean	0.056
Coefficient of Variation	1.444	Skewness	1.491

Normal GOF Test

Shapiro Wilk Test Statistic	0.719	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.85	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.299	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.251	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.23	95% Adjusted-CLT UCL (Chen-1995)	0.248
		95% Modified-t UCL (Johnson-1978)	0.234

Gamma GOF Test

A-D Test Statistic	0.619	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.781	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.231	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.269	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.498	k star (bias corrected MLE)	0.423
Theta hat (MLE)	0.258	Theta star (bias corrected MLE)	0.304
nu hat (MLE)	10.95	nu star (bias corrected)	9.3
MLE Mean (bias corrected)	0.129	MLE Sd (bias corrected)	0.198
		Approximate Chi Square Value (0.05)	3.509
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	2.953

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	0.341	95% Adjusted Gamma UCL (use when n<50)	0.405

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.923	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.85	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.195	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.251	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-6.075	Mean of logged Data	-3.327

Maximum of Logged Data	-0.654	SD of logged Data	1.831

Assuming Lognormal Distribution

95% H-UCL	3.038	90% Chebyshev (MVUE) UCL	0.392
95% Chebyshev (MVUE) UCL	0.505	97.5% Chebyshev (MVUE) UCL	0.663
99% Chebyshev (MVUE) UCL	0.972		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.221	95% Jackknife UCL	0.23
95% Standard Bootstrap UCL	0.216	95% Bootstrap-t UCL	0.319
95% Hall's Bootstrap UCL	0.253	95% Percentile Bootstrap UCL	0.225
95% BCA Bootstrap UCL	0.234		
90% Chebyshev(Mean, Sd) UCL	0.297	95% Chebyshev(Mean, Sd) UCL	0.373
97.5% Chebyshev(Mean, Sd) UCL	0.479	99% Chebyshev(Mean, Sd) UCL	0.686

Suggested UCL to Use

95% Adjusted Gamma UCL	0.405

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Benzo(b)fluoranthene

General Statistics

Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	0.003	Mean	0.133
Maximum	0.58	Median	0.026
SD	0.192	Std. Error of Mean	0.058
Coefficient of Variation	1.451	Skewness	1.65

Normal GOF Test

Shapiro Wilk Test Statistic	0.724	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.85	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.294	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.251	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.238	95% Adjusted-CLT UCL (Chen-1995)	0.259
		95% Modified-t UCL (Johnson-1978)	0.242

Gamma GOF Test

A-D Test Statistic	0.56	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.778	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.221	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.268	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.537	k star (bias corrected MLE)	0.451
Theta hat (MLE)	0.247	Theta star (bias corrected MLE)	0.294
nu hat (MLE)	11.82	nu star (bias corrected)	9.931
MLE Mean (bias corrected)	0.133	MLE Sd (bias corrected)	0.197
		Approximate Chi Square Value (0.05)	3.899
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	3.306

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	0.338	95% Adjusted Gamma UCL (use when n<50)	0.398

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.943	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.85	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.151	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.251	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-5.809	Mean of logged Data	-3.19
Maximum of Logged Data	-0.545	SD of logged Data	1.717

Assuming Lognormal Distribution

95% H-UCL	2.08	90% Chebyshev (MVUE) UCL	0.371
95% Chebyshev (MVUE) UCL	0.476	97.5% Chebyshev (MVUE) UCL	0.622
99% Chebyshev (MVUE) UCL	0.909		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.228	95% Jackknife UCL	0.238
95% Standard Bootstrap UCL	0.224	95% Bootstrap-t UCL	0.346
95% Hall's Bootstrap UCL	0.257	95% Percentile Bootstrap UCL	0.23
95% BCA Bootstrap UCL	0.258		
90% Chebyshev(Mean, Sd) UCL	0.307	95% Chebyshev(Mean, Sd) UCL	0.385
97.5% Chebyshev(Mean, Sd) UCL	0.495	99% Chebyshev(Mean, Sd) UCL	0.71

Suggested UCL to Use

95% Adjusted Gamma UCL	0.398

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Benzo(k)fluoranthene

General Statistics

Total Number of Observations	11	Number of Distinct Observations	9
Number of Detects	9	Number of Non-Detects	2
Number of Distinct Detects	8	Number of Distinct Non-Detects	1

Minimum Detect	0.0012	Minimum Non-Detect	0.0011
Maximum Detect	0.19	Maximum Non-Detect	0.0011
Variance Detects	0.00477	Percent Non-Detects	18.18%
Mean Detects	0.0533	SD Detects	0.069
Median Detects	0.02	CV Detects	1.296
Skewness Detects	1.317	Kurtosis Detects	0.527
Mean of Logged Detects	-4.065	SD of Logged Detects	1.829

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.787	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.271	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Detected Data appear Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.0438	KM Standard Error of Mean	0.0199
KM SD	0.0622	95% KM (BCA) UCL	0.076
95% KM (t) UCL	0.0798	95% KM (Percentile Bootstrap) UCL	0.0749
95% KM (z) UCL	0.0765	95% KM Bootstrap t UCL	0.124
90% KM Chebyshev UCL	0.103	95% KM Chebyshev UCL	0.13
97.5% KM Chebyshev UCL	0.168	99% KM Chebyshev UCL	0.242

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.325	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.767	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.17	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.293	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.552	k star (bias corrected MLE)	0.442
Theta hat (MLE)	0.0964	Theta star (bias corrected MLE)	0.12
nu hat (MLE)	9.94	nu star (bias corrected)	7.96
Mean (detects)	0.0533		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.0012	Mean	0.0454
Maximum	0.19	Median	0.01
SD	0.0642	CV	1.414
k hat (MLE)	0.58	k star (bias corrected MLE)	0.482
Theta hat (MLE)	0.0783	Theta star (bias corrected MLE)	0.0941
nu hat (MLE)	12.76	nu star (bias corrected)	10.61
Adjusted Level of Significance (β)	0.0278		
Approximate Chi Square Value (10.61, α)	4.326	Adjusted Chi Square Value (10.61, β)	3.695
95% Gamma Approximate UCL (use when n>=50)	0.111	95% Gamma Adjusted UCL (use when n<50)	0.13

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.0438	SD (KM)	0.0622

Variance (KM)	0.00387	SE of Mean (KM)	0.0199
k hat (KM)	0.495	k star (KM)	0.421
nu hat (KM)	10.89	nu star (KM)	9.254
theta hat (KM)	0.0884	theta star (KM)	0.104
80% gamma percentile (KM)	0.071	90% gamma percentile (KM)	0.123
95% gamma percentile (KM)	0.179	99% gamma percentile (KM)	0.319

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (9.25, α)	3.481	Adjusted Chi Square Value (9.25, β)	2.928
95% Gamma Approximate KM-UCL (use when n>=50)	0.116	95% Gamma Adjusted KM-UCL (use when n<50)	0.138

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.939	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.163	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0436	Mean in Log Scale	-4.876
SD in Original Scale	0.0654	SD in Log Scale	2.445
95% t UCL (assumes normality of ROS data)	0.0793	95% Percentile Bootstrap UCL	0.0797
95% BCA Bootstrap UCL	0.0836	95% Bootstrap t UCL	0.123
95% H-UCL (Log ROS)	18.12		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-4.565	KM Geo Mean	0.0104
KM SD (logged)	1.886	95% Critical H Value (KM-Log)	4.894
KM Standard Error of Mean (logged)	0.603	95% H-UCL (KM -Log)	1.141
KM SD (logged)	1.886	95% Critical H Value (KM-Log)	4.894
KM Standard Error of Mean (logged)	0.603		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.0437	Mean in Log Scale	-4.691
SD in Original Scale	0.0653	SD in Log Scale	2.148
95% t UCL (Assumes normality)	0.0794	95% H-Stat UCL	3.848

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.0798

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Chrysene

General Statistics

Total Number of Observations	11	Number of Distinct Observations	11
Number of Detects	10	Number of Non-Detects	1
Number of Distinct Detects	10	Number of Distinct Non-Detects	1
Minimum Detect	0.0059	Minimum Non-Detect	0.0013
Maximum Detect	0.41	Maximum Non-Detect	0.0013
Variance Detects	0.0203	Percent Non-Detects	9.091%
Mean Detects	0.112	SD Detects	0.142
Median Detects	0.0545	CV Detects	1.27
Skewness Detects	1.428	Kurtosis Detects	0.905
Mean of Logged Detects	-3.108	SD of Logged Detects	1.564

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.772	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.308	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.102	KM Standard Error of Mean	0.0422
KM SD	0.133	95% KM (BCA) UCL	0.178
95% KM (t) UCL	0.179	95% KM (Percentile Bootstrap) UCL	0.175
95% KM (z) UCL	0.171	95% KM Bootstrap t UCL	0.26
90% KM Chebyshev UCL	0.229	95% KM Chebyshev UCL	0.286
97.5% KM Chebyshev UCL	0.366	99% KM Chebyshev UCL	0.522

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.375	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.764	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.161	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.278	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.662	k star (bias corrected MLE)	0.53
Theta hat (MLE)	0.169	Theta star (bias corrected MLE)	0.212
nu hat (MLE)	13.24	nu star (bias corrected)	10.6
Mean (detects)	0.112		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.0059	Mean	0.103
Maximum	0.41	Median	0.049
SD	0.139	CV	1.347
k hat (MLE)	0.632	k star (bias corrected MLE)	0.52
Theta hat (MLE)	0.163	Theta star (bias corrected MLE)	0.198
nu hat (MLE)	13.91	nu star (bias corrected)	11.45
Adjusted Level of Significance (β)	0.0278		

Approximate Chi Square Value (11.45, α)	4.867	Adjusted Chi Square Value (11.45, β)	4.189
95% Gamma Approximate UCL (use when n>=50)	0.242	95% Gamma Adjusted UCL (use when n<50)	0.281

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.102	SD (KM)	0.133
Variance (KM)	0.0176	SE of Mean (KM)	0.0422
k hat (KM)	0.592	k star (KM)	0.491
nu hat (KM)	13.02	nu star (KM)	10.8
theta hat (KM)	0.173	theta star (KM)	0.208
80% gamma percentile (KM)	0.168	90% gamma percentile (KM)	0.277
95% gamma percentile (KM)	0.395	99% gamma percentile (KM)	0.684

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (10.80, α)	4.449	Adjusted Chi Square Value (10.80, β)	3.807
95% Gamma Approximate KM-UCL (use when n>=50)	0.248	95% Gamma Adjusted KM-UCL (use when n<50)	0.29

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.927	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.141	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.102	Mean in Log Scale	-3.457
SD in Original Scale	0.139	SD in Log Scale	1.883
95% t UCL (assumes normality of ROS data)	0.178	95% Percentile Bootstrap UCL	0.168
95% BCA Bootstrap UCL	0.186	95% Bootstrap t UCL	0.269
95% H-UCL (Log ROS)	3.404		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-3.429	KM Geo Mean	0.0324
KM SD (logged)	1.742	95% Critical H Value (KM-Log)	4.57
KM Standard Error of Mean (logged)	0.554	95% H-UCL (KM -Log)	1.834
KM SD (logged)	1.742	95% Critical H Value (KM-Log)	4.57
KM Standard Error of Mean (logged)	0.554		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.102	Mean in Log Scale	-3.492
SD in Original Scale	0.139	SD in Log Scale	1.957
95% t UCL (Assumes normality)	0.178	95% H-Stat UCL	4.711

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Bootstrap t UCL	0.26	ı Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1)	0.29

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Dibenz(a,h)Anthracene

General Statistics

Total Number of Observations	11	Number of Distinct Observations	11
Number of Detects	8	Number of Non-Detects	3
Number of Distinct Detects	8	Number of Distinct Non-Detects	3
Minimum Detect	9.7000E-4	Minimum Non-Detect	6.9000E-4
Maximum Detect	0.038	Maximum Non-Detect	0.007
Variance Detects	1.9531E-4	Percent Non-Detects	27.27%
Mean Detects	0.0131	SD Detects	0.014
Median Detects	0.00715	CV Detects	1.065
Skewness Detects	0.879	Kurtosis Detects	-0.578
Mean of Logged Detects	-5.077	SD of Logged Detects	1.446

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.85	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.259	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.00981	KM Standard Error of Mean	0.004
KM SD	0.0124	95% KM (BCA) UCL	0.0158
95% KM (t) UCL	0.0171	95% KM (Percentile Bootstrap) UCL	0.0163
95% KM (z) UCL	0.0164	95% KM Bootstrap t UCL	0.0203
90% KM Chebyshev UCL	0.0218	95% KM Chebyshev UCL	0.0272
97.5% KM Chebyshev UCL	0.0348	99% KM Chebyshev UCL	0.0496

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.407	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.743	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.227	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.304	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.799	k star (bias corrected MLE)	0.582
Theta hat (MLE)	0.0164	Theta star (bias corrected MLE)	0.0225
nu hat (MLE)	12.78	nu star (bias corrected)	9.319
Mean (detects)	0.0131		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	9.7000E-4	Mean	0.0123
Maximum	0.038	Median	0.01
SD	0.0118	CV	0.96
k hat (MLE)	1.048	k star (bias corrected MLE)	0.823
Theta hat (MLE)	0.0117	Theta star (bias corrected MLE)	0.0149

nu hat (MLE)	23.06	nu star (bias corrected)	18.11
Adjusted Level of Significance (β)	0.0278		
Approximate Chi Square Value (18.11, α)	9.467	Adjusted Chi Square Value (18.11, β)	8.466
95% Gamma Approximate UCL (use when n>=50)	0.0235	95% Gamma Adjusted UCL (use when n<50)	0.0262

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.00981	SD (KM)	0.0124
Variance (KM)	1.5367E-4	SE of Mean (KM)	0.004
k hat (KM)	0.626	k star (KM)	0.516
nu hat (KM)	13.78	nu star (KM)	11.35
theta hat (KM)	0.0157	theta star (KM)	0.019
80% gamma percentile (KM)	0.0161	90% gamma percentile (KM)	0.0264
95% gamma percentile (KM)	0.0373	99% gamma percentile (KM)	0.064

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (11.35, α)	4.804	Adjusted Chi Square Value (11.35, β)	4.132
95% Gamma Approximate KM-UCL (use when n>=50)	0.0232	95% Gamma Adjusted KM-UCL (use when n<50)	0.027

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.905	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.183	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.00968	Mean in Log Scale	-5.842
SD in Original Scale	0.0131	SD in Log Scale	1.83
95% t UCL (assumes normality of ROS data)	0.0168	95% Percentile Bootstrap UCL	0.0161
95% BCA Bootstrap UCL	0.0169	95% Bootstrap t UCL	0.0208
95% H-UCL (Log ROS)	0.245		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-5.621	KM Geo Mean	0.00362
KM SD (logged)	1.475	95% Critical H Value (KM-Log)	3.978
KM Standard Error of Mean (logged)	0.48	95% H-UCL (KM -Log)	0.0688
KM SD (logged)	1.475	95% Critical H Value (KM-Log)	3.978
KM Standard Error of Mean (logged)	0.48		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00992	Mean in Log Scale	-5.655
SD in Original Scale	0.0129	SD in Log Scale	1.673
95% t UCL (Assumes normality)	0.017	95% H-Stat UCL	0.146

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.0171

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Fluoranthene

General Statistics

Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	0.005	Mean	0.268
Maximum	1.2	Median	0.047
SD	0.405	Std. Error of Mean	0.122
Coefficient of Variation	1.513	Skewness	1.738

Normal GOF Test

Shapiro Wilk Test Statistic	0.705	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.85	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.288	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.251	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.489	95% Adjusted-CLT UCL (Chen-1995)	0.537
		95% Modified-t UCL (Johnson-1978)	0.5

Gamma GOF Test

A-D Test Statistic	0.462	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.783	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.215	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.269	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.488	k star (bias corrected MLE)	0.415
Theta hat (MLE)	0.549	Theta star (bias corrected MLE)	0.645
nu hat (MLE)	10.73	nu star (bias corrected)	9.14
MLE Mean (bias corrected)	0.268	MLE Sd (bias corrected)	0.416
		Approximate Chi Square Value (0.05)	3.412
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	2.866

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	0.718	95% Adjusted Gamma UCL (use when n<50)	0.855

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.952	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.85	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.138	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.251	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-5.298	Mean of logged Data	-2.624
Maximum of Logged Data	0.182	SD of logged Data	1.856

Assuming Lognormal Distribution

95% H-UCL	6.898	90% Chebyshev (MVUE) UCL	0.826
95% Chebyshev (MVUE) UCL	1.066	97.5% Chebyshev (MVUE) UCL	1.399
99% Chebyshev (MVUE) UCL	2.053		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.469	95% Jackknife UCL	0.489
95% Standard Bootstrap UCL	0.461	95% Bootstrap-t UCL	0.894
95% Hall's Bootstrap UCL	1.358	95% Percentile Bootstrap UCL	0.467
95% BCA Bootstrap UCL	0.535		
90% Chebyshev(Mean, Sd) UCL	0.635	95% Chebyshev(Mean, Sd) UCL	0.801
97.5% Chebyshev(Mean, Sd) UCL	1.031	99% Chebyshev(Mean, Sd) UCL	1.484

Suggested UCL to Use

95% Adjusted Gamma UCL	0.855

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Indeno(1,2,3-c,d)Pyrene

General Statistics

Total Number of Observations	11	Number of Distinct Observations	11
Number of Detects	10	Number of Non-Detects	1
Number of Distinct Detects	10	Number of Distinct Non-Detects	1
Minimum Detect	0.0015	Minimum Non-Detect	0.0013
Maximum Detect	0.41	Maximum Non-Detect	0.0013
Variance Detects	0.0221	Percent Non-Detects	9.091%
Mean Detects	0.115	SD Detects	0.148
Median Detects	0.0375	CV Detects	1.294
Skewness Detects	1.21	Kurtosis Detects	0.0923
Mean of Logged Detects	-3.393	SD of Logged Detects	1.939

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.784	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.261	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Detected Data appear Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.104	KM Standard Error of Mean	0.0439
KM SD	0.138	95% KM (BCA) UCL	0.181
95% KM (t) UCL	0.184	95% KM (Percentile Bootstrap) UCL	0.177
95% KM (z) UCL	0.177	95% KM Bootstrap t UCL	0.238
90% KM Chebyshev UCL	0.236	95% KM Chebyshev UCL	0.296
97.5% KM Chebyshev UCL	0.379	99% KM Chebyshev UCL	0.542

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.34	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.776	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.175	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.281	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.515	k star (bias corrected MLE)	0.427
Theta hat (MLE)	0.223	Theta star (bias corrected MLE)	0.269
nu hat (MLE)	10.3	nu star (bias corrected)	8.54
Mean (detects)	0.115		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.0015	Mean	0.105
Maximum	0.41	Median	0.022
SD	0.144	CV	1.372
k hat (MLE)	0.506	k star (bias corrected MLE)	0.429
Theta hat (MLE)	0.208	Theta star (bias corrected MLE)	0.245
nu hat (MLE)	11.14	nu star (bias corrected)	9.435
Adjusted Level of Significance (β)	0.0278		
Approximate Chi Square Value (9.44, α)	3.592	Adjusted Chi Square Value (9.44, β)	3.028
95% Gamma Approximate UCL (use when n>=50)	0.276	95% Gamma Adjusted UCL (use when n<50)	0.328

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.104	SD (KM)	0.138
Variance (KM)	0.0191	SE of Mean (KM)	0.0439
k hat (KM)	0.571	k star (KM)	0.476
nu hat (KM)	12.57	nu star (KM)	10.47
theta hat (KM)	0.183	theta star (KM)	0.219
80% gamma percentile (KM)	0.171	90% gamma percentile (KM)	0.285
95% gamma percentile (KM)	0.408	99% gamma percentile (KM)	0.712

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (10.47, α)	4.239	Adjusted Chi Square Value (10.47, β)	3.615
95% Gamma Approximate KM-UCL (use when n>=50)	0.258	95% Gamma Adjusted KM-UCL (use when n<50)	0.303

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.947	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.139	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.104	Mean in Log Scale	-3.826
SD in Original Scale	0.145	SD in Log Scale	2.333
95% t UCL (assumes normality of ROS data)	0.184	95% Percentile Bootstrap UCL	0.178
95% BCA Bootstrap UCL	0.192	95% Bootstrap t UCL	0.229

95% H-UCL (Log ROS)	26.16

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-3.689	KM Geo Mean	0.025
KM SD (logged)	1.987	95% Critical H Value (KM-Log)	5.125
KM Standard Error of Mean (logged)	0.632	95% H-UCL (KM -Log)	4.51
KM SD (logged)	1.987	95% Critical H Value (KM-Log)	5.125
KM Standard Error of Mean (logged)	0.632		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.104	Mean in Log Scale	-3.752
SD in Original Scale	0.145	SD in Log Scale	2.19
95% t UCL (Assumes normality)	0.184	95% H-Stat UCL	12.42

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.184

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Naphthalene

General Statistics

Total Number of Observations	11	Number of Distinct Observations	11
Number of Detects	9	Number of Non-Detects	2
Number of Distinct Detects	9	Number of Distinct Non-Detects	2
Minimum Detect	0.0018	Minimum Non-Detect	0.0016
Maximum Detect	0.89	Maximum Non-Detect	0.016
Variance Detects	0.0842	Percent Non-Detects	18.18%
Mean Detects	0.152	SD Detects	0.29
Median Detects	0.018	CV Detects	1.911
Skewness Detects	2.552	Kurtosis Detects	6.733
Mean of Logged Detects	-3.432	SD of Logged Detects	1.932

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.592	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.327	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.125	KM Standard Error of Mean	0.0812
KM SD	0.254	95% KM (BCA) UCL	0.259

95% KM (t) UCL	0.272	95% KM (Percentile Bootstrap) UCL	0.259
95% KM (z) UCL	0.258	95% KM Bootstrap t UCL	0.922
90% KM Chebyshev UCL	0.369	95% KM Chebyshev UCL	0.479
97.5% KM Chebyshev UCL	0.632	99% KM Chebyshev UCL	0.933

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.584	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.785	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.271	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.297	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.422	k star (bias corrected MLE)	0.355
Theta hat (MLE)	0.36	Theta star (bias corrected MLE)	0.427
nu hat (MLE)	7.592	nu star (bias corrected)	6.395
Mean (detects)	0.152		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.0018	Mean	0.126
Maximum	0.89	Median	0.017
SD	0.266	CV	2.109
k hat (MLE)	0.415	k star (bias corrected MLE)	0.363
Theta hat (MLE)	0.303	Theta star (bias corrected MLE)	0.348
nu hat (MLE)	9.141	nu star (bias corrected)	7.981
Adjusted Level of Significance (β)	0.0278		
Approximate Chi Square Value (7.98, α)	2.724	Adjusted Chi Square Value (7.98, β)	2.249
95% Gamma Approximate UCL (use when n>=50)	0.369	95% Gamma Adjusted UCL (use when n<50)	0.447

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.125	SD (KM)	0.254
Variance (KM)	0.0645	SE of Mean (KM)	0.0812
k hat (KM)	0.242	k star (KM)	0.236
nu hat (KM)	5.317	nu star (KM)	5.2
theta hat (KM)	0.517	theta star (KM)	0.528
80% gamma percentile (KM)	0.178	90% gamma percentile (KM)	0.376
95% gamma percentile (KM)	0.614	99% gamma percentile (KM)	1.254

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (5.20, α)	1.246	Adjusted Chi Square Value (5.20, β)	0.962
95% Gamma Approximate KM-UCL (use when n>=50)	0.521	95% Gamma Adjusted KM-UCL (use when n<50)	0.675

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.967	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.175	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.125	Mean in Log Scale	-4.08
SD in Original Scale	0.267	SD in Log Scale	2.299
95% t UCL (assumes normality of ROS data)	0.27	95% Percentile Bootstrap UCL	0.272
95% BCA Bootstrap UCL	0.357	95% Bootstrap t UCL	0.928
95% H-UCL (Log ROS)	16.62		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-3.899	KM Geo Mean	0.0203
KM SD (logged)	1.948	95% Critical H Value (KM-Log)	5.034
KM Standard Error of Mean (logged)	0.629	95% H-UCL (KM -Log)	3.001
KM SD (logged)	1.948	95% Critical H Value (KM-Log)	5.034
KM Standard Error of Mean (logged)	0.629		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.125	Mean in Log Scale	-3.895
SD in Original Scale	0.266	SD in Log Scale	2.077
95% t UCL (Assumes normality)	0.271	95% H-Stat UCL	5.825

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Bootstrap t UCL	0.922	ı Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1)	0.675

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Pyrene

General Statistics

Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	0.012	Mean	0.37
Maximum	1.6	Median	0.066
SD	0.545	Std. Error of Mean	0.164
Coefficient of Variation	1.473	Skewness	1.665

Normal GOF Test

Shapiro Wilk Test Statistic	0.714	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.85	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.293	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.251	Data Not Normal at 5% Significance Level	

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.668	95% Adjusted-CLT UCL (Chen-1995)	0.728
		95% Modified-t UCL (Johnson-1978)	0.681

Gamma GOF Test

A-D Test Statistic	0.527	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.78	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.227	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.269	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.518	k star (bias corrected MLE)	0.437
Theta hat (MLE)	0.714	Theta star (bias corrected MLE)	0.846
nu hat (MLE)	11.39	nu star (bias corrected)	9.615
MLE Mean (bias corrected)	0.37	MLE Sd (bias corrected)	0.559
		Approximate Chi Square Value (0.05)	3.703
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	3.128

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	0.96	95% Adjusted Gamma UCL (use when n<50)	1.137

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.927	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.85	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.158	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.251	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-4.423	Mean of logged Data	-2.215
Maximum of Logged Data	0.47	SD of logged Data	1.763

Assuming Lognormal Distribution

95% H-UCL	6.775	90% Chebyshev (MVUE) UCL	1.063
95% Chebyshev (MVUE) UCL	1.367	97.5% Chebyshev (MVUE) UCL	1.788
99% Chebyshev (MVUE) UCL	2.616		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.64	95% Jackknife UCL	0.668
95% Standard Bootstrap UCL	0.635	95% Bootstrap-t UCL	1.141
95% Hall's Bootstrap UCL	1.687	95% Percentile Bootstrap UCL	0.643
95% BCA Bootstrap UCL	0.739		
90% Chebyshev(Mean, Sd) UCL	0.863	95% Chebyshev(Mean, Sd) UCL	1.086
97.5% Chebyshev(Mean, Sd) UCL	1.396	99% Chebyshev(Mean, Sd) UCL	2.004

Suggested UCL to Use

95% Adjusted Gamma UCL	1.137

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

General Statistics on Uncensored Data

Date/Time of Computation ProUCL 5.112/9/2020 12:10:22 PM

User Selected Options

From File ProUCL_Input_DU1B.xls

Full Precision OFF

From File: ProUCL_Input_DU1B.xls

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
PCB	11	0	2	9	81.82%	0.031	0.031	0.035	1.6000E-4	0.0126	0.361
Benzene	11	0	0	11	100.00%	0.011	0.012	N/A	N/A	N/A	N/A
Benzo(a)anthracene	11	0	10	1	9.09%	0.001	0.001	0.0775	0.0113	0.106	1.37
Benzo(a)pyrene	11	0	11	0	0.00%	N/A	N/A	0.129	0.0345	0.186	1.444
Benzo(b)fluoranthene	11	0	11	0	0.00%	N/A	N/A	0.133	0.037	0.192	1.451
Benzo(k)fluoranthene	11	0	9	2	18.18%	0.0011	0.0011	0.0438	0.00387	0.0622	1.421
Chrysene	11	0	10	1	9.09%	0.0013	0.0013	0.102	0.0176	0.133	1.3
Dibenz(a,h)Anthracene	11	0	8	3	27.27%	6.9000E-4	0.007	0.00981	1.5367E-4	0.0124	1.264
Fluoranthene	11	0	11	0	0.00%	N/A	N/A	0.268	0.164	0.405	1.513
Indeno(1,2,3-c,d)Pyrene	11	0	10	1	9.09%	0.0013	0.0013	0.104	0.0191	0.138	1.323
Naphthalene	11	0	9	2	18.18%	0.0016	0.016	0.125	0.0645	0.254	2.034
Pyrene	11	0	11	0	0.00%	N/A	N/A	0.37	0.297	0.545	1.473

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
PCB	2	0	0.031	0.075	0.053	0.053	9.6800E-4	0.0311	0.0326	N/A	0.587
Benzene	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzo(a)anthracene	10	0	0.0023	0.32	0.0852	0.0285	0.0131	0.114	0.0373	1.412	1.343
Benzo(a)pyrene	11	0	0.0023	0.52	0.129	0.021	0.0345	0.186	0.0277	1.491	1.444
Benzo(b)fluoranthene	11	0	0.003	0.58	0.133	0.026	0.037	0.192	0.0341	1.65	1.451
Benzo(k)fluoranthene	9	0	0.0012	0.19	0.0533	0.02	0.00477	0.069	0.0252	1.317	1.296
Chrysene	10	0	0.0059	0.41	0.112	0.0545	0.0203	0.142	0.069	1.428	1.27
Dibenz(a,h)Anthracene	8	0	9.7000E-4	0.038	0.0131	0.00715	1.9531E-4	0.014	0.00899	0.879	1.065
Fluoranthene	11	0	0.005	1.2	0.268	0.047	0.164	0.405	0.0623	1.738	1.513
Indeno(1,2,3-c,d)Pyrene	10	0	0.0015	0.41	0.115	0.0375	0.0221	0.148	0.0516	1.21	1.294
Naphthalene	9	0	0.0018	0.89	0.152	0.018	0.0842	0.29	0.0208	2.552	1.911
Pyrene	11	0	0.012	1.6	0.37	0.066	0.297	0.545	0.0801	1.665	1.473

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
PCB	11	0	0.031	0.031	0.031	0.031	0.031	0.031	0.031	0.053	0.0706
Benzene	11	0	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.0115	0.0119
Benzo(a)anthracene	11	0	0.0023	0.0044	0.0046	0.018	0.1	0.14	0.25	0.285	0.313
Benzo(a)pyrene	11	0	0.0079	0.0089	0.00925	0.021	0.168	0.24	0.43	0.475	0.511
Benzo(b)fluoranthene	11	0	0.0099	0.01	0.0115	0.026	0.18	0.26	0.38	0.48	0.56
Benzo(k)fluoranthene	11	0	0.0011	0.0012	0.0021	0.0081	0.057	0.079	0.14	0.165	0.185
Chrysene	11	0	0.0059	0.0065	0.00795	0.049	0.127	0.18	0.31	0.36	0.4
Dibenz(a,h)Anthracene	11	0	7.0000E-4	9.7000E-4	0.00109	0.0033	0.0165	0.022	0.026	0.032	0.0368
Fluoranthene	11	0	0.0091	0.013	0.022	0.047	0.31	0.38	0.88	1.04	1.168
Indeno(1,2,3-c,d)Pyrene	11	0	0.0015	0.0039	0.00665	0.022	0.164	0.23	0.31	0.36	0.4
Naphthalene	11	0	0.0018	0.0069	0.00895	0.017	0.076	0.12	0.27	0.58	0.828
Pyrene	11	0	0.013	0.019	0.0325	0.066	0.455	0.57	1.2	1.4	1.56

Appendix K
Data Quality Evaluation Report

Arizona Public Service
Former Manufactured Gas Plant, Prescott Site
Soil Sampling 2020
Data Quality Evaluation Report

Introduction

The objective of this data quality evaluation (DQE) report is to assess the data quality of analytical results for soil samples collected at the Arizona Public Service Former Manufactured Gas Plant, Prescott Site as part of remedial actions. Individual method requirements and guidelines from the Arizona Public Service Quality Assurance Project Plan (QAPP) (Jacobs, 2019) were used in this assessment.

This report is intended as a general data quality assessment designed to summarize data issues.

Analytical Data

This DQE report covers 11 normal samples, 2 field duplicates (FD), and 3 trip blanks (TB). Samples were collected between July 7 and August 21, 2020. A list of sample identifications and collection dates is included in Attachment A at the end of this report.

The analyses were performed by Eurofins TestAmerica in Phoenix, Arizona. Samples were collected and delivered by courier to the laboratory for analysis. The sample results were reported in four sample delivery groups (SDGs) listed in Table 1.

Table 1. Sample Delivery Groups

550-144691-1
550-144779-1
550-147752-1
550-147752-2

Selected samples were analyzed for one or more of the following analytes and methods presented in Table 2.

Table 2. Analytical Parameters

Method	Parameter
SW8260B	Volatile organic compounds
SW8082	Polychlorinated biphenyls
SW8270-SIM	Polynuclear aromatic hydrocarbons

The assessment of data includes a review of: (1) the chain-of-custody (CoC) documentation; (2) holding-time compliance; (3) the required field and laboratory quality control (QC) samples; (4) method blanks; (5) laboratory control samples and laboratory control sample duplicates (LCS/LCSDs); (6) surrogate spike recoveries; and, (7) matrix spikes and matrix spike duplicate samples (MS/MSDs).

Field samples were also reviewed to ascertain field compliance and data quality issues. This included a review of FDs and TBs.

Data flags are assigned according to the QAPP. These flags, as well as the reason for each flag, are entered into an electronic database. Multiple flags are routinely applied to specific sample method, matrix, and analyte combinations, but there will be only one final flag. A final flag is applied to the data and is the most conservative of the applied validation flags. The final flag also includes blank sample impacts.

The data flags are defined as follows:

- J = Analyte was present, but the reported value may not be accurate or precise (estimated). The result was estimated due to either being less than the referenced reporting limit but greater than the method detection limit or due to a QC exceedance.
- R = The result was unusable due to deficiencies in the ability to analyze the sample and meet QC criteria.
- U = Analyte was not detected at the specified detection limit.
- UJ = Analyte was not detected, and the specified detection limit may not be accurate or precise (estimated).

Findings

The overall summaries of the data validation findings are contained in the following sections and summarized in Attachment B at the end of this DQE report.

Holding Times

All holding-time criteria were met.

Calibration

Initial and continuing calibration data were not supplied in the data packages and were not part of the routine validation performed. The laboratory did not report any criteria exceedances in the case narratives.

Method Blanks

Method blanks were analyzed at the required frequency and were free of contamination that would affect the sample results.

Field Blanks

Three TBs were collected at the required frequency and were free of contamination that would affect the sample results with the following exceptions:

Toluene was detected greater than the reporting limit (RL) in one TB, and less than the RL in a separate TB. Twelve associated sample results were detected less than five times the blank concentrations. It was also noted that the methanol used to preserve the samples and the TBs was possibly contaminated with toluene. The results were qualified as estimated and flagged “J”.

Matrix Spike Samples

The results of MS/MSD analyses provide information about the possible influence of the matrix on either accuracy or precision of the measurements. MS/MSD recoveries and the associated relative percent differences (RPD) met criteria with the following exceptions:

- The recoveries of 1-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-c,d)pyrene, naphthalene, phenanthrene and pyrene were greater than the upper control limit in the MS and/or MSD of sample P-DU1B-11 for Method SW8270-SIM, indicating the associated parent sample results are possibly biased high. Additionally, the RPDs of 1-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-c,d)pyrene, naphthalene, phenanthrene and pyrene were greater than the upper control limit. Seventeen associated detected results were qualified as estimated and flagged "J".

Field Duplicates

Two FD sets were collected and analyzed with this event. A list of the FD and associated parent sample identifications (IDs) is included in Table 3.

Table 3. List of Field Duplicates

Associated Parent Sample ID	Field Duplicate Sample ID
P-DU1B-6	FD01-070720
P-DU1B-11	FD-01-082020

All precision criteria were met with the following exceptions:

- The RPDs of acenaphthylene, anthracene, benzo(a)anthracene, benzo[a]pyrene, benzo(b)fluoranthene, benzo[g,h,i]perylene, benzo(k)fluoranthene, chrysene, fluoranthene, naphthalene, phenanthrene and pyrene were greater than the acceptance criterion in FD set P-DU1B-6/FD01-070720 for Method SW8270-SIM. Twenty-one detected results were qualified as estimated and flagged "J"; three nondetected results were qualified as estimated and flagged "UJ".
- The RPDs of 1-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, fluorene, indeno(1,2,3-c,d)pyrene, naphthalene, phenanthrene and pyrene were greater than the acceptance criterion in FD set P-DU1B-11/FD-01-082020 for Method SW8270-SIM. Thirty-two detected results were qualified as estimated and flagged "J".

Surrogates

Surrogate spikes were analyzed in each sample as required. All acceptance criteria were met with the following exception:

- Surrogate recovery was greater than the upper control limit in sample s FD-01-082020, P-DU1B-11, P-DU1B-7 and P-DU1B-8 for Method SW8270-SIM, indicating associated sample results are possibly biased high. Sixty-five associated detected results were qualified as estimated and flagged "J".
- Surrogate recovery was less than the lower control limit in samples P-DU1B 01 and P-DU1B-3 for Method SW8270-SIM, indicating associated sample results are possibly biased low. Sixteen associated detected results were qualified as estimated and flagged "J"; eight associated nondetected results were qualified as estimated and flagged "UJ".

Internal Standards

Internal standard data were not supplied in the data packages and were not part of the routine validation performed. The laboratory did not report any criteria exceedances in the case narratives.

Laboratory Control Samples

LCS/LCSDs were analyzed for all methods as required and all accuracy and precision criteria were met.

Chain of Custody and Sample Receipt

Each sample was documented in a completed CoC form. All samples were received at the laboratory within temperature criteria and properly preserved.

Miscellaneous

The methanol used to preserve the soil samples and TBs showed possible toluene contamination. All associated detected results are possibly biased high. The detected results were qualified as estimated and flagged "J".

Overall Assessment

The final activity in the DQE is an assessment of whether the data meet the data quality objectives (DQOs). The goal of this assessment is to demonstrate that a sufficient number of representative samples was collected and the resulting analytical data can be used to support the decision-making process. The following summary highlights the data evaluation findings for the events defined herein:

1. The precision and accuracy of the data, as measured by laboratory QC indicators, suggest that the QAPP goals have been met.
2. No data were rejected. Completeness was 100 percent for all method/matrix/analyte combinations; 100 percent of data are usable for decision making taking into account any potential biases discussed in this DQE.
3. No data were qualified due to associated laboratory blank contamination.
4. Toluene was detected in two TBs; 12 associated results were qualified as estimated.
5. The methanol used to preserve the samples and TBs showed possible toluene contamination; 12 associated results were qualified as estimated.
6. FD RPD exceedances were observed for Method SW8270-SIM; 56 results were qualified as estimated.
7. Surrogate recovery exceedances were observed for Method SW8270-SIM; 89 results were qualified as estimated.
8. MS/MSD recovery and RPD exceedances were observed for Method SW8270-SIM; 17 results were qualified as estimated.
9. The field crews and laboratory followed QAPP and project documents, thereby assuring representativeness and comparability with previous studies.

ATTACHMENT A

Samples Associated with Data Quality Evaluation

Location	Sample ID	Sample Date	Sample Purpose
P-DU1B	FD01-070720	7/7/2020	FD
P-DU1B	FD-01-082020	8/20/2020	FD
P-DU1B	P-DU1B 01	7/8/2020	N
P-DU1B	P-DU1B-04	8/21/2020	N
P-DU1B	P-DU1B-10	7/7/2020	N
P-DU1B	P-DU1B-11	8/20/2020	N
P-DU1B	P-DU1B-9	7/7/2020	N
P-DU1B	P-DU1B-2	7/8/2020	N
P-DU1B	P-DU1B-3	7/8/2020	N
P-DU1B	P-DU1B-5	7/7/2020	N
P-DU1B	P-DU1B-6	7/7/2020	N
P-DU1B	P-DU1B-7	7/7/2020	N
P-DU1B	P-DU1B-8	7/7/2020	N
FieldQC	TB01-070820	7/8/2020	TB
FieldQC	TB-02-070820	7/8/2020	TB
FieldQC	TB01-082020	8/20/2020	TB

Notes:

FD = field duplicate

ID = identification

N = regular sample

TB = trip blank

ATTACHMENT B

Validation Findings

Sample ID	Method	Analyte	Final Result	Units	Validation Flag	Validation Reason
FD01-070720	SW8260B	Toluene	0.041	mg/Kg	J	TB<RL
FD01-070720	SW8260B	Toluene	0.041	mg/Kg	J	Misc
FD01-070720	SW8270SIM	Acenaphthylene	0.012	mg/Kg	J	FD>RPD
FD01-070720	SW8270SIM	Anthracene	0.0082	mg/Kg	J	FD>RPD
FD01-070720	SW8270SIM	Benzo[a]anthracene	0.021	mg/Kg	J	FD>RPD
FD01-070720	SW8270SIM	Benzo[a]pyrene	0.03	mg/Kg	J	FD>RPD
FD01-070720	SW8270SIM	Benzo[b]fluoranthene	0.034	mg/Kg	J	FD>RPD
FD01-070720	SW8270SIM	Benzo[g,h,i]perylene	0.029	mg/Kg	J	FD>RPD
FD01-070720	SW8270SIM	Benzo[k]fluoranthene	0.011	mg/Kg	J	FD>RPD
FD01-070720	SW8270SIM	Chrysene	0.028	mg/Kg	J	FD>RPD
FD01-070720	SW8270SIM	Fluoranthene	0.074	mg/Kg	J	FD>RPD
FD01-070720	SW8270SIM	Naphthalene	0.008	mg/Kg	J	FD>RPD
FD01-070720	SW8270SIM	Phenanthrene	0.067	mg/Kg	J	FD>RPD
FD01-070720	SW8270SIM	Pyrene	0.1	mg/Kg	J	FD>RPD
FD-01-082020	SW8260B	Toluene	0.078	mg/Kg	J	TB>RL
FD-01-082020	SW8260B	Toluene	0.078	mg/Kg	J	Misc
FD-01-082020	SW8270SIM	1-Methylnaphthalene	0.054	mg/Kg	J	FD>RPD
FD-01-082020	SW8270SIM	1-Methylnaphthalene	0.054	mg/Kg	J	Sur>UCL
FD-01-082020	SW8270SIM	2-Methylnaphthalene	0.0062	mg/Kg	J	Sur>UCL
FD-01-082020	SW8270SIM	Acenaphthene	0.64	mg/Kg	J	FD>RPD
FD-01-082020	SW8270SIM	Acenaphthene	0.64	mg/Kg	J	Sur>UCL
FD-01-082020	SW8270SIM	Acenaphthylene	0.055	mg/Kg	J	FD>RPD
FD-01-082020	SW8270SIM	Acenaphthylene	0.055	mg/Kg	J	Sur>UCL
FD-01-082020	SW8270SIM	Anthracene	0.25	mg/Kg	J	FD>RPD
FD-01-082020	SW8270SIM	Anthracene	0.25	mg/Kg	J	Sur>UCL
FD-01-082020	SW8270SIM	Benzo[a]anthracene	0.16	mg/Kg	J	Sur>UCL
FD-01-082020	SW8270SIM	Benzo[a]anthracene	0.16	mg/Kg	J	FD>RPD
FD-01-082020	SW8270SIM	Benzo[a]pyrene	0.18	mg/Kg	J	Sur>UCL
FD-01-082020	SW8270SIM	Benzo[a]pyrene	0.18	mg/Kg	J	FD>RPD

Sample ID	Method	Analyte	Final Result	Units	Validation Flag	Validation Reason
FD-01-082020	SW8270SIM	Benzo[b]fluoranthene	0.14	mg/Kg	J	FD>RPD
FD-01-082020	SW8270SIM	Benzo[b]fluoranthene	0.14	mg/Kg	J	Sur>UCL
FD-01-082020	SW8270SIM	Benzo[g,h,i]perylene	0.12	mg/Kg	J	FD>RPD
FD-01-082020	SW8270SIM	Benzo[g,h,i]perylene	0.12	mg/Kg	J	Sur>UCL
FD-01-082020	SW8270SIM	Benzo[k]fluoranthene	0.052	mg/Kg	J	FD>RPD
FD-01-082020	SW8270SIM	Benzo[k]fluoranthene	0.052	mg/Kg	J	Sur>UCL
FD-01-082020	SW8270SIM	Chrysene	0.19	mg/Kg	J	FD>RPD
FD-01-082020	SW8270SIM	Chrysene	0.19	mg/Kg	J	Sur>UCL
FD-01-082020	SW8270SIM	Dibenz(a,h)anthracene	0.017	mg/Kg	J	Sur>UCL
FD-01-082020	SW8270SIM	Fluoranthene	0.61	mg/Kg	J	Sur>UCL
FD-01-082020	SW8270SIM	Fluoranthene	0.61	mg/Kg	J	FD>RPD
FD-01-082020	SW8270SIM	Fluorene	0.33	mg/Kg	J	FD>RPD
FD-01-082020	SW8270SIM	Fluorene	0.33	mg/Kg	J	Sur>UCL
FD-01-082020	SW8270SIM	Indeno[1,2,3-cd]pyrene	0.11	mg/Kg	J	FD>RPD
FD-01-082020	SW8270SIM	Indeno[1,2,3-cd]pyrene	0.11	mg/Kg	J	Sur>UCL
FD-01-082020	SW8270SIM	Naphthalene	0.021	mg/Kg	J	FD>RPD
FD-01-082020	SW8270SIM	Naphthalene	0.021	mg/Kg	J	Sur>UCL
FD-01-082020	SW8270SIM	Phenanthrene	0.12	mg/Kg	J	FD>RPD
FD-01-082020	SW8270SIM	Phenanthrene	0.12	mg/Kg	J	Sur>UCL
FD-01-082020	SW8270SIM	Pyrene	0.79	mg/Kg	J	FD>RPD
FD-01-082020	SW8270SIM	Pyrene	0.79	mg/Kg	J	Sur>UCL
P-DU1B 01	SW8260B	Toluene	0.055	mg/Kg	J	Misc
P-DU1B 01	SW8270SIM	1-Methylnaphthalene	0.011	mg/Kg	UJ	Sur<LCL
P-DU1B 01	SW8270SIM	2-Methylnaphthalene	0.017	mg/Kg	UJ	Sur<LCL
P-DU1B 01	SW8270SIM	Acenaphthene	0.0065	mg/Kg	UJ	Sur<LCL
P-DU1B 01	SW8270SIM	Acenaphthylene	0.018	mg/Kg	J	Sur<LCL
P-DU1B 01	SW8270SIM	Anthracene	0.011	mg/Kg	J	Sur<LCL
P-DU1B 01	SW8270SIM	Benzo[a]anthracene	0.039	mg/Kg	J	Sur<LCL
P-DU1B 01	SW8270SIM	Chrysene	0.06	mg/Kg	J	Sur<LCL
P-DU1B 01	SW8270SIM	Fluorene	0.0081	mg/Kg	UJ	Sur<LCL
P-DU1B 01	SW8270SIM	Naphthalene	0.016	mg/Kg	UJ	Sur<LCL
P-DU1B-04	SW8260B	Toluene	0.032	mg/Kg	J	Misc

Sample ID	Method	Analyte	Final Result	Units	Validation Flag	Validation Reason
P-DU1B-04	SW8260B	Toluene	0.032	mg/Kg	J	TB>RL
P-DU1B-10	SW8260B	Toluene	0.053	mg/Kg	J	Misc
P-DU1B-10	SW8260B	Toluene	0.053	mg/Kg	J	TB<RL
P-DU1B-11	SW8260B	Toluene	0.08	mg/Kg	J	Misc
P-DU1B-11	SW8260B	Toluene	0.08	mg/Kg	J	TB>RL
P-DU1B-11	SW8270SIM	1-Methylnaphthalene	0.023	mg/Kg	J	MS>UCL
P-DU1B-11	SW8270SIM	1-Methylnaphthalene	0.023	mg/Kg	J	MSRPD
P-DU1B-11	SW8270SIM	1-Methylnaphthalene	0.023	mg/Kg	J	FD>RPD
P-DU1B-11	SW8270SIM	1-Methylnaphthalene	0.023	mg/Kg	J	Sur>UCL
P-DU1B-11	SW8270SIM	2-Methylnaphthalene	0.0047	mg/Kg	J	Sur>UCL
P-DU1B-11	SW8270SIM	Acenaphthene	0.24	mg/Kg	J	FD>RPD
P-DU1B-11	SW8270SIM	Acenaphthene	0.24	mg/Kg	J	MS>UCL
P-DU1B-11	SW8270SIM	Acenaphthene	0.24	mg/Kg	J	MSRPD
P-DU1B-11	SW8270SIM	Acenaphthene	0.24	mg/Kg	J	SD>UCL
P-DU1B-11	SW8270SIM	Acenaphthene	0.24	mg/Kg	J	Sur>UCL
P-DU1B-11	SW8270SIM	Acenaphthylene	0.021	mg/Kg	J	Sur>UCL
P-DU1B-11	SW8270SIM	Acenaphthylene	0.021	mg/Kg	J	FD>RPD
P-DU1B-11	SW8270SIM	Acenaphthylene	0.021	mg/Kg	J	MS>UCL
P-DU1B-11	SW8270SIM	Acenaphthylene	0.021	mg/Kg	J	MSRPD
P-DU1B-11	SW8270SIM	Acenaphthylene	0.021	mg/Kg	J	SD>UCL
P-DU1B-11	SW8270SIM	Anthracene	0.087	mg/Kg	J	Sur>UCL
P-DU1B-11	SW8270SIM	Anthracene	0.087	mg/Kg	J	SD>UCL
P-DU1B-11	SW8270SIM	Anthracene	0.087	mg/Kg	J	FD>RPD
P-DU1B-11	SW8270SIM	Anthracene	0.087	mg/Kg	J	MS>UCL
P-DU1B-11	SW8270SIM	Anthracene	0.087	mg/Kg	J	MSRPD
P-DU1B-11	SW8270SIM	Benzo[a]anthracene	0.06	mg/Kg	J	FD>RPD
P-DU1B-11	SW8270SIM	Benzo[a]anthracene	0.06	mg/Kg	J	MS>UCL
P-DU1B-11	SW8270SIM	Benzo[a]anthracene	0.06	mg/Kg	J	MSRPD
P-DU1B-11	SW8270SIM	Benzo[a]anthracene	0.06	mg/Kg	J	SD>UCL
P-DU1B-11	SW8270SIM	Benzo[a]anthracene	0.06	mg/Kg	J	Sur>UCL
P-DU1B-11	SW8270SIM	Benzo[a]pyrene	0.07	mg/Kg	J	SD>UCL
P-DU1B-11	SW8270SIM	Benzo[a]pyrene	0.07	mg/Kg	J	Sur>UCL

Sample ID	Method	Analyte	Final Result	Units	Validation Flag	Validation Reason
P-DU1B-11	SW8270SIM	Benzo[a]pyrene	0.07	mg/Kg	J	MSRPD
P-DU1B-11	SW8270SIM	Benzo[a]pyrene	0.07	mg/Kg	J	MS>UCL
P-DU1B-11	SW8270SIM	Benzo[a]pyrene	0.07	mg/Kg	J	FD>RPD
P-DU1B-11	SW8270SIM	Benzo[b]fluoranthene	0.059	mg/Kg	J	MS>UCL
P-DU1B-11	SW8270SIM	Benzo[b]fluoranthene	0.059	mg/Kg	J	MSRPD
P-DU1B-11	SW8270SIM	Benzo[b]fluoranthene	0.059	mg/Kg	J	SD>UCL
P-DU1B-11	SW8270SIM	Benzo[b]fluoranthene	0.059	mg/Kg	J	Sur>UCL
P-DU1B-11	SW8270SIM	Benzo[b]fluoranthene	0.059	mg/Kg	J	FD>RPD
P-DU1B-11	SW8270SIM	Benzo[g,h,i]perylene	0.058	mg/Kg	J	FD>RPD
P-DU1B-11	SW8270SIM	Benzo[g,h,i]perylene	0.058	mg/Kg	J	MS>UCL
P-DU1B-11	SW8270SIM	Benzo[g,h,i]perylene	0.058	mg/Kg	J	MSRPD
P-DU1B-11	SW8270SIM	Benzo[g,h,i]perylene	0.058	mg/Kg	J	SD>UCL
P-DU1B-11	SW8270SIM	Benzo[g,h,i]perylene	0.058	mg/Kg	J	Sur>UCL
P-DU1B-11	SW8270SIM	Benzo[k]fluoranthene	0.02	mg/Kg	J	SD>UCL
P-DU1B-11	SW8270SIM	Benzo[k]fluoranthene	0.02	mg/Kg	J	FD>RPD
P-DU1B-11	SW8270SIM	Benzo[k]fluoranthene	0.02	mg/Kg	J	MS>UCL
P-DU1B-11	SW8270SIM	Benzo[k]fluoranthene	0.02	mg/Kg	J	Sur>UCL
P-DU1B-11	SW8270SIM	Benzo[k]fluoranthene	0.02	mg/Kg	J	MSRPD
P-DU1B-11	SW8270SIM	Chrysene	0.073	mg/Kg	J	FD>RPD
P-DU1B-11	SW8270SIM	Chrysene	0.073	mg/Kg	J	MS>UCL
P-DU1B-11	SW8270SIM	Chrysene	0.073	mg/Kg	J	MSRPD
P-DU1B-11	SW8270SIM	Chrysene	0.073	mg/Kg	J	SD>UCL
P-DU1B-11	SW8270SIM	Chrysene	0.073	mg/Kg	J	Sur>UCL
P-DU1B-11	SW8270SIM	Dibenz(a,h)anthracene	0.011	mg/Kg	J	MS>UCL
P-DU1B-11	SW8270SIM	Dibenz(a,h)anthracene	0.011	mg/Kg	J	MSRPD
P-DU1B-11	SW8270SIM	Dibenz(a,h)anthracene	0.011	mg/Kg	J	Sur>UCL
P-DU1B-11	SW8270SIM	Fluoranthene	0.24	mg/Kg	J	MSRPD
P-DU1B-11	SW8270SIM	Fluoranthene	0.24	mg/Kg	J	SD>UCL
P-DU1B-11	SW8270SIM	Fluoranthene	0.24	mg/Kg	J	MS>UCL
P-DU1B-11	SW8270SIM	Fluoranthene	0.24	mg/Kg	J	FD>RPD
P-DU1B-11	SW8270SIM	Fluoranthene	0.24	mg/Kg	J	Sur>UCL

Sample ID	Method	Analyte	Final Result	Units	Validation Flag	Validation Reason
P-DU1B-11	SW8270SIM	Fluorene	0.11	mg/Kg	J	FD>RPD
P-DU1B-11	SW8270SIM	Fluorene	0.11	mg/Kg	J	MS>UCL
P-DU1B-11	SW8270SIM	Fluorene	0.11	mg/Kg	J	MSRPD
P-DU1B-11	SW8270SIM	Fluorene	0.11	mg/Kg	J	SD>UCL
P-DU1B-11	SW8270SIM	Fluorene	0.11	mg/Kg	J	Sur>UCL
P-DU1B-11	SW8270SIM	Indeno[1,2,3-cd]pyrene	0.053	mg/Kg	J	FD>RPD
P-DU1B-11	SW8270SIM	Indeno[1,2,3-cd]pyrene	0.053	mg/Kg	J	MS>UCL
P-DU1B-11	SW8270SIM	Indeno[1,2,3-cd]pyrene	0.053	mg/Kg	J	MSRPD
P-DU1B-11	SW8270SIM	Indeno[1,2,3-cd]pyrene	0.053	mg/Kg	J	SD>UCL
P-DU1B-11	SW8270SIM	Indeno[1,2,3-cd]pyrene	0.053	mg/Kg	J	Sur>UCL
P-DU1B-11	SW8270SIM	Naphthalene	0.011	mg/Kg	J	FD>RPD
P-DU1B-11	SW8270SIM	Naphthalene	0.011	mg/Kg	J	Sur>UCL
P-DU1B-11	SW8270SIM	Naphthalene	0.011	mg/Kg	J	MSRPD
P-DU1B-11	SW8270SIM	Naphthalene	0.011	mg/Kg	J	MS>UCL
P-DU1B-11	SW8270SIM	Phenanthrene	0.045	mg/Kg	J	FD>RPD
P-DU1B-11	SW8270SIM	Phenanthrene	0.045	mg/Kg	J	MS>UCL
P-DU1B-11	SW8270SIM	Phenanthrene	0.045	mg/Kg	J	MSRPD
P-DU1B-11	SW8270SIM	Phenanthrene	0.045	mg/Kg	J	SD>UCL
P-DU1B-11	SW8270SIM	Phenanthrene	0.045	mg/Kg	J	Sur>UCL
P-DU1B-11	SW8270SIM	Pyrene	0.34	mg/Kg	J	FD>RPD
P-DU1B-11	SW8270SIM	Pyrene	0.34	mg/Kg	J	MS>UCL
P-DU1B-11	SW8270SIM	Pyrene	0.34	mg/Kg	J	MSRPD
P-DU1B-11	SW8270SIM	Pyrene	0.34	mg/Kg	J	SD>UCL
P-DU1B-11	SW8270SIM	Pyrene	0.34	mg/Kg	J	Sur>UCL
P-DU1B-2	SW8260B	Toluene	0.04	mg/Kg	J	Misc
P-DU1B-2	SW8260B	Toluene	0.04	mg/Kg	J	TB<RL
P-DU1B-3	SW8260B	Toluene	0.051	mg/Kg	J	TB<RL
P-DU1B-3	SW8260B	Toluene	0.051	mg/Kg	J	Misc
P-DU1B-3	SW8270SIM	1-Methylnaphthalene	0.011	mg/Kg	UJ	Sur<LCL
P-DU1B-3	SW8270SIM	2-Methylnaphthalene	0.017	mg/Kg	UJ	Sur<LCL
P-DU1B-3	SW8270SIM	Acenaphthene	0.0066	mg/Kg	UJ	Sur<LCL

Sample ID	Method	Analyte	Final Result	Units	Validation Flag	Validation Reason
P-DU1B-3	SW8270SIM	Acenaphthylene	0.096	mg/Kg	J	Sur<LCL
P-DU1B-3	SW8270SIM	Anthracene	0.098	mg/Kg	J	Sur<LCL
P-DU1B-3	SW8270SIM	Benzo[a]anthracene	0.32	mg/Kg	J	Sur<LCL
P-DU1B-3	SW8270SIM	Benzo[a]pyrene	0.52	mg/Kg	J	Sur<LCL
P-DU1B-3	SW8270SIM	Benzo[b]fluoranthene	0.58	mg/Kg	J	Sur<LCL
P-DU1B-3	SW8270SIM	Benzo[g,h,i]perylene	0.35	mg/Kg	J	Sur<LCL
P-DU1B-3	SW8270SIM	Benzo[k]fluoranthene	0.19	mg/Kg	J	Sur<LCL
P-DU1B-3	SW8270SIM	Chrysene	0.41	mg/Kg	J	Sur<LCL
P-DU1B-3	SW8270SIM	Dibenz(a,h)anthracene	0.026	mg/Kg	J	Sur<LCL
P-DU1B-3	SW8270SIM	Fluorene	0.024	mg/Kg	J	Sur<LCL
P-DU1B-3	SW8270SIM	Indeno[1,2,3-cd]pyrene	0.31	mg/Kg	J	Sur<LCL
P-DU1B-3	SW8270SIM	Naphthalene	0.032	mg/Kg	J	Sur<LCL
P-DU1B-5	SW8260B	Toluene	0.053	mg/Kg	J	Misc
P-DU1B-5	SW8260B	Toluene	0.053	mg/Kg	J	TB<RL
P-DU1B-6	SW8260B	Toluene	0.09	mg/Kg	J	Misc
P-DU1B-6	SW8260B	Toluene	0.09	mg/Kg	J	TB<RL
P-DU1B-6	SW8270SIM	Acenaphthylene	0.00099	mg/Kg	J	FD>RPD
P-DU1B-6	SW8270SIM	Anthracene	0.00054	mg/Kg	UJ	FD>RPD
P-DU1B-6	SW8270SIM	Benzo[a]anthracene	0.0023	mg/Kg	J	FD>RPD
P-DU1B-6	SW8270SIM	Benzo[a]pyrene	0.0023	mg/Kg	J	FD>RPD
P-DU1B-6	SW8270SIM	Benzo[b]fluoranthene	0.003	mg/Kg	J	FD>RPD
P-DU1B-6	SW8270SIM	Benzo[g,h,i]perylene	0.0031	mg/Kg	J	FD>RPD
P-DU1B-6	SW8270SIM	Benzo[k]fluoranthene	0.0011	mg/Kg	UJ	FD>RPD
P-DU1B-6	SW8270SIM	Chrysene	0.0094	mg/Kg	J	FD>RPD
P-DU1B-6	SW8270SIM	Fluoranthene	0.005	mg/Kg	J	FD>RPD
P-DU1B-6	SW8270SIM	Naphthalene	0.0016	mg/Kg	UJ	FD>RPD
P-DU1B-6	SW8270SIM	Phenanthrene	0.002	mg/Kg	J	FD>RPD
P-DU1B-6	SW8270SIM	Pyrene	0.012	mg/Kg	J	FD>RPD
P-DU1B-7	SW8260B	Toluene	0.075	mg/Kg	J	Misc
P-DU1B-7	SW8260B	Toluene	0.075	mg/Kg	J	TB<RL
P-DU1B-7	SW8270SIM	1-Methylnaphthalene	0.27	mg/Kg	J	Sur>UCL

Sample ID	Method	Analyte	Final Result	Units	Validation Flag	Validation Reason
P-DU1B-7	SW8270SIM	2-Methylnaphthalene	0.19	mg/Kg	J	Sur>UCL
P-DU1B-7	SW8270SIM	Acenaphthene	0.053	mg/Kg	J	Sur>UCL
P-DU1B-7	SW8270SIM	Acenaphthylene	0.0089	mg/Kg	J	Sur>UCL
P-DU1B-7	SW8270SIM	Anthracene	0.023	mg/Kg	J	Sur>UCL
P-DU1B-7	SW8270SIM	Benzo[a]anthracene	0.018	mg/Kg	J	Sur>UCL
P-DU1B-7	SW8270SIM	Benzo[a]pyrene	0.011	mg/Kg	J	Sur>UCL
P-DU1B-7	SW8270SIM	Benzo[b]fluoranthene	0.017	mg/Kg	J	Sur>UCL
P-DU1B-7	SW8270SIM	Benzo[g,h,i]perylene	0.0099	mg/Kg	J	Sur>UCL
P-DU1B-7	SW8270SIM	Benzo[k]fluoranthene	0.0012	mg/Kg	J	Sur>UCL
P-DU1B-7	SW8270SIM	Chrysene	0.049	mg/Kg	J	Sur>UCL
P-DU1B-7	SW8270SIM	Dibenz(a,h)anthracene	0.0033	mg/Kg	J	Sur>UCL
P-DU1B-7	SW8270SIM	Fluoranthene	0.047	mg/Kg	J	Sur>UCL
P-DU1B-7	SW8270SIM	Fluorene	0.075	mg/Kg	J	Sur>UCL
P-DU1B-7	SW8270SIM	Indeno[1,2,3-cd]pyrene	0.0039	mg/Kg	J	Sur>UCL
P-DU1B-7	SW8270SIM	Phenanthrene	0.071	mg/Kg	J	Sur>UCL
P-DU1B-7	SW8270SIM	Pyrene	0.066	mg/Kg	J	Sur>UCL
P-DU1B-8	SW8260B	Toluene	0.026	mg/Kg	J	TB<RL
P-DU1B-8	SW8270SIM	1-Methylnaphthalene	0.06	mg/Kg	J	Sur>UCL
P-DU1B-8	SW8270SIM	2-Methylnaphthalene	0.054	mg/Kg	J	Sur>UCL
P-DU1B-8	SW8270SIM	Acenaphthene	0.03	mg/Kg	J	Sur>UCL
P-DU1B-8	SW8270SIM	Acenaphthylene	0.0072	mg/Kg	J	Sur>UCL
P-DU1B-8	SW8270SIM	Benzo[a]pyrene	0.0096	mg/Kg	J	Sur>UCL
P-DU1B-8	SW8270SIM	Benzo[b]fluoranthene	0.013	mg/Kg	J	Sur>UCL
P-DU1B-8	SW8270SIM	Benzo[g,h,i]perylene	0.0082	mg/Kg	J	Sur>UCL
P-DU1B-8	SW8270SIM	Fluoranthene	0.031	mg/Kg	J	Sur>UCL
P-DU1B-8	SW8270SIM	Fluorene	0.065	mg/Kg	J	Sur>UCL
P-DU1B-8	SW8270SIM	Naphthalene	0.12	mg/Kg	J	Sur>UCL
P-DU1B-8	SW8270SIM	Phenanthrene	0.025	mg/Kg	J	Sur>UCL
P-DU1B-8	SW8270SIM	Pyrene	0.052	mg/Kg	J	Sur>UCL
P-DU1B-9	SW8260B	Toluene	0.044	mg/Kg	J	TB<RL
P-DU1B-9	SW8260B	Toluene	0.044	mg/Kg	J	Misc

Notes:

FD>RPD = Field duplicate relative percent difference criterion exceeded

MISC = Possible methanol contamination

MS>UCL = Matrix spike recovery greater than the upper control limit

MSRPD = Matrix spike duplicate relative percent difference criterion exceeded

SD>UCL = Matrix spike duplicate recovery greater than the upper control limit

Sur>UCL = Surrogate recovery greater than the upper control limit

Sur<LCL = Surrogate recovery less than the lower control limit

TB>RL = Analyte detected greater than the reporting limit in the trip blank

TB>RL = Analyte detected less than the reporting limit in the trip blank

Appendix L
Construction Photographs