Amax Arizona Inc.

REMEDIAL WORK PLAN

Amax Parcel 30

June 2022

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Contents

Tables

Figures

Appendices

Acronyms and Abbreviations

AAC	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
Amax	Amax Arizona, Inc.
Anaconda	Anaconda Arizona, Inc.
ADWR	Arizona Department of Water Resources
AGPL	alternative groundwater protection levels
AWQS	Aquifer Water Quality Standard
BC	Brown and Caldwell
bgs	below ground surface
BP	British Petroleum
DEUR	Declaration of Environmental Use Restriction
EA	Exposure Area
ELCR	excess lifetime cancer risk ftfeet
GPL	groundwater protection levels
HHRA	Human Health Risk Assessment
HI	hazard index
IEUBK	Integrated Exposure Uptake Biokinetic
mg/kg	micrograms per kilogram
NE	northeast
NFA	No Further Action
NOI	Notice of Intent
nrSRLs	non-residential soil remediation levels
RWP	Remedial Work Plan
RCRA	Resource Conservation and Recovery Act
rSRLs	residential soil remediation levels
SPLP	synthetic precipitation leaching procedure
SSCLs	site-specific cleanup levels
TRICO	TRICO Electric Cooperative
UPRR	Union Pacific Railroad

USEPA	United States Environmental Protection Agency
VRP	Voluntary Remediation Program
XRF	X-ray Fluorescence Spectrometer

1 Introduction

On behalf of Amax Arizona, Inc. (Amax), Brown and Caldwell (BC) developed this Remedial Work Plan (RWP) to present proposed reclamation activities for the former Eagle Picher Mill site under the Arizona Department of Environmental Quality's (ADEQ's) Voluntary Remediation Program (VRP). Revisions to the RWP have been prepared by Arcadis in response to Arizona Department of Environmental Quality (ADEQ) comments provided in letters dated April 27, 2022 and June 9, 2022. The site is jointly owned by Amax, an indirect subsidiary of Freeport Minerals Corporation, and Anaconda Arizona, Inc. (Anaconda), an indirect subsidiary of British Petroleum (BP). The site, now known as "Parcel 30," is located in Sahuarita, Arizona (see Figure 1 – Parcel 30 Location Map) and consists of a historical mill site and tailings deposition area. The site was historically used for processing lead- zinc ores. This site was reclaimed in the late 1960s and, specifically, the historic tailings impoundment (currently Area 1) was capped with 2 feet of borrow material. Over the years, the cap eroded in several places and, therefore, Amax further investigated the site. The remediation activities described in this RWP are based upon the results of the site characterization activities that have been conducted and have been developed to optimize cap and cover placement with regard to public health and safety and maintain positive site drainage.

1.1 Site Description and Background

Parcel 30 consists of approximately 230 acres on four contiguous Pima County Assessor parcels: 303-33-012C, 303-33-012D, 303-36-009A, and 303-36-009B. These parcels are located in Sections 13 and 14 of Township 17 South, Range 13 East in Pima County, Arizona. The area presented in this RWP is located towards the north end of the Parcel 30 property. It is the former location of the mill and tailings deposition area for the Eagle Picher Mill facility, which processed lead-zinc ores between 1943 and 1959. Reclamation of the site in the late 1960's included removal of buildings and capping of the tailings area with a vegetated soil cover. This early reclamation was reportedly conducted by Anaconda. Table 1 – Parcel 30 Chronology provided in this Plan (Clear Creek, 2014, Work Plan for Soil and Groundwater Characterization, Parcel 30, Sahuarita, Arizona – see Appendix A of this RWP) provides a general timeline of site ownership changes and activities conducted on Parcel 30. A more detailed discussion of historical site operations and background can be found in the Clear Creek Associates November 20, 2015 report entitled, "Soil and Groundwater Characterization, Former Eagle Picher Mill Site on Parcel 30, Sahuarita, Arizona" provided as Appendix B to this Plan.

The site is broken up into five key areas based on historic operations. These areas are shown on Figure 2 and described below. Additional detail is included in the Clear Creek 2014 report (Appendix A to this RWP).

- Area 1 - Tailings denotes the area of the tailings deposition. Area 1 - Tailings includes non- economic mineralized materials and tailings that were milled for processing lead-zinc ores. The blue-dashed line on Figure 2 depicts the estimated extent of tailings (Golder, 2009).
- Area 2 - Mill Site encompasses the old mill site area. Area 2 includes a portion of the abandoned rail spur and associated berm, and is located west of Area 1. Ore processing occurred in this area.
- Area 3 - Pole Area is directly south of the old mill area. Area 3 includes a portion of the abandoned rail spur and associated berm and is located west of Area 1.

- Area 4 - North lies to the north of the Area 1 - Tailings and Area 2 - Mill Site and includes an ephemeral wash that traverses the site generally from west to east. The dark green dashed lines shown on Figure 2 delineate historical cover soil borrow locations.
- Area 5-South is the area south of the Union Pacific Railroad (UPRR) right-of-way and is not considered to have been impacted by the historical mill operations that were conducted to the north.
- The portion of the site south of the UPRR right-of-way is primarily undeveloped land with no evidence of historical land use for milling or ore processing. Historic sampling of this area did not identify any exceedances of remediation criteria.

Based on several environmental site investigations and site characterization efforts, soil is the only affected medium at the site. To evaluate the site for future recreational use, a probabilistic human health risk assessment (HHRA) was developed to evaluate the potential cancer risk and non-cancer hazards from exposure to soils following the completion of the reclamation described herein (Arcadis 2022, Probabilistic Risk Assessment, Former Eagle Picher Mill Site on Parcel 30, Sahuarita, Arizona). Site-specific cleanup levels (SSCLs) for arsenic, cadmium, manganese, zinc, and lead were developed in the HHRA, which is provided under separate cover and described in Section 2.7. No detected concentrations of arsenic, manganese, and zinc exceed these SSCL values in Areas 2, 3, and 4. The maximum cadmium and lead concentrations exceed their respective SSCLs; however, no action is required since the site wide 95% upper confidence limit is well below the SSCL.

Primary migration pathways for the impacted soils at the site are transportation by surface water runoff, resulting in erosion. While the HHRA demonstrates the site does not pose a risk to adult or child recreators who may visit or walk the site, the cap on Area 1 needs repair. Therefore, the Arizona soil remediation levels for residential exposure scenarios (rSRLs) are conservatively used to design the remedy. Historical sampling locations including locations where sample data exceeded the rSRL are shown on Figure 2. The portion of the site being proposed for remediation lies between railroad tracks north of Twin Buttes Road and the northern property boundary. This includes the former mill site where the ore processing was conducted (Area 2 - Mill Site) and the tailings deposition area (Area 1 - Tailings), as well as the Northeast Exceedance Area (in the northeast portion of Area 4 - North). The proposed extent of remediation is shown on Figure 3. The site is currently surrounded by a fence, with posted signage to help limit the potential for human exposure and discourage trespassing.

Site-specific, alternate groundwater protection levels (AGPLs) were also developed for the site using measured concentrations of arsenic and lead in soil samples in addition to the synthetic precipitation leaching procedure (SPLP) results as inputs into ADEQ's GPL Model (https://azdeq.gov/groundwater-protection). As further described in Section 2.7, the AGPLs are higher than the SSCLs for arsenic and lead and demonstrate that arsenic and lead are bound tightly to soil and will not leach to groundwater.

There are currently three groundwater monitoring wells on site, which are shown on Figure 2 – Historical Sample Locations Map. Two of the wells are at the north end of the property, AXABCO-01 and AXABCO-02, and the third monitoring well is just south of the UPRR right-of-way. Data from groundwater samples collected from these three wells between 1992 and 2003 show no evidence of any impact to groundwater related to the historical operation of the mill. Two of the monitoring wells (AXABC0-01 and AXABCO-02) are located downgradient of the tailings impoundment, with the third monitoring well (AXABC0-03) situated upgradient of the tailings impoundment. All three of the wells have periodically exceeded the Arizona Aquifer Water Quality Standard (AWQS) (AAC, Title 18, Chapter 11, Article 4) for nitrates. In the

previous reports, the nitrate exceedances have been attributed to ongoing/historical agricultural land uses of nearby areas.

A production well is located on the site, in the Area 3 - Pole Area, which is no longer in service. The former production well and the three monitoring wells are proposed to be abandoned in accordance with Arizona Department of Water Resources (ADWR) requirements for well closure as a part of the site remediation and closure activities.

Other site features that will be removed as part of the site remediation activities include a power line stub that provided power to the production well (now out of service), an abandoned rail spur and associated berm, and the rail dump pocket.

1.2 RWP Objectives

This RWP presents a proposal that will protect public health and safety by remediation of impacted soils at Parcel 30. This will be achieved by consolidating remaining exposed, impacted materials into a smaller footprint more centrally located on the site and providing cover material and improved stormwater drainage management features for the resulting footprints of impacted material on the site. The cover material and stormwater drainage are designed to prevent erosion of the cover material and reduce the long-term maintenance requirements at the site. Specifically, under this proposed Plan, exposed, visually-impacted materials, and tailings will be consolidated within Area 1 - Tailings and a 2 foot soil cover will be placed over the areas of the site where impacted materials are present, areas where excavation is required to consolidate impacted materials will be backfilled with cover material. The southern bank of the dry wash near the northern portion of the site will be fortified by the placement of armoring materials (i.e., riprap) in certain sections to reduce the erosion potential of the southern bank. Armoring of the southern bank will also prevent erosion advancement into the tailings materials contained in the Area 1 - Tailings.

Following successful completion of the work proposed in this RWP, Amax and Anaconda will request a letter of completion from ADEQ and a determination of No Further Action (NFA) for the property. In addition to the requests for a letter of completion and the NFA determination, Amax and Anaconda will also request an institutional control of a Declaration of Environmental Use Restriction (DEUR) for the portion of the site north of the UPRR right-of-way corridor. The DEUR may include all or parts of Areas 1 through 4. Once remedial action is complete, a legal description and survey will be prepared to accompany the DEUR. The ultimate objective is to perform final closure of the site for long-term protection of human and environmental health.

The Town of Sahuarita has expressed an interest in utilizing the site, once remediated, for low-impact recreational use that will include hiking trails, periodic benches, and pollinator gardens. This use would be governed by restrictions included in the DEUR and would require long-term maintenance of the cover system.

2 Site Characterization

Site characterization activities have historically been conducted at the site to develop an understanding of the extent and locations of impacted soils. These activities are summarized below. Additional investigation activities have been completed by BC in 2018 and 2021 to provide additional detail around certain areas of

the site, including the Rail Berm adjacent to Areas 2 and 3, and the Northeast Exceedance Area in Area 4. These investigations are summarized below, and data summary reports are presented in the Appendices attached to this document.

2.1 Hydrometrics Investigation

In 1999, Hydrometrics evaluated a series of 52 shallow (0-6-inches and 6-12-inches deep) surface soil grab samples from across the entire Parcel 30 property, including areas south of the of the RWP boundaries. These samples were analyzed for arsenic, cadmium, lead, and zinc. A map of the sample locations is included in the Hydrometrics data in Appendix A (Clear Creek, 2014); however, while the sample locations shown on that map are approximate due to the scale irregularities of the map, the conclusions remain valid. Table 2 – Soil Analyses by Hydrometrics (Clear Creek, 2014) provides the analytical results of the Hydrometrics work in 1999.

2.2 Golder Associates Investigation

In 2009, Golder Associates conducted an investigation of the site, focusing on the tailings impoundment, including materials contained in the tailings impoundment, spatial extent, approximate volume, metal concentrations of the tailings cap, tailings materials, and the soil underlying the tailings. Determinations of these extents and material properties were accomplished by drilling 20 boreholes through the remaining cap, tailings, and the underlying soil material.

Additionally, 10 test pits were excavated using a backhoe to expose and delineate the lateral extent of the tailings materials to facilitate an estimate of the volume/quantity of this material within the tailings impoundment area. Table 3 – Total Metals Analytical Results for Soil Samples in Area 1 (Golder 2009) (Clear Creek, 2014) shows the analytical results for the work performed by Golder in 2009 that was focused on the tailings area. For additional data from the Golder 2009 investigation, see Appendix A (Clear Creek, 2014).

2.3 Clear Creek Associates Investigation

In 2014, Clear Creek Associates prepared its Work Plan for Soil and Groundwater Characterization and, in 2015, it conducted the soil and groundwater characterization activities and prepared the associated Soil and Groundwater Characterization Report. These are provided in Appendices A and B, respectively, of this RWP. Table 4 – Parcel 30 Well Information (ADWR Well Registry), Table 5 – Groundwater Elevations for Parcel 30 Monitoring Wells (Clear Creek, 2014), and Table 6 – Groundwater Quality Data (Clear Creek, 2014) are all referenced tables from the 2014 Clear Creek Work Plan in Appendix A. These tables provide important information for the Parcel 30 wells, the groundwater elevations, which are important for better understanding the groundwater gradient between the wells, and the groundwater quality data from the years of monitoring that have been conducted at the site. Table 7 – Soil Analytical Results (Clear Creek, 2015) displays the results of the soil characterization sampling and analysis conducted by Clear Creek in Area 4 - North, Area 2 - Mill Site and Area 3 - Pole Area.

2.4 Brown and Caldwell Rail Berm Sampling

In 2018, Brown and Caldwell (BC) personnel sampled the abandoned rail spur berm material from the berm surface to approximately the surrounding grade elevations at the base of the rail berm using direct-push sampling techniques. The intent was to determine whether the rail berm material was impacted or whether it was suitable for use as a portion of the cover material that will be needed for the execution of the proposed RWP clean cover placement. A total of 59 soil samples were collected and submitted to TestAmerica Laboratories, Inc. for analysis for arsenic, barium, cadmium, chromium, lead, manganese, selenium, silver, and mercury. Table 8 – Metal Analytical Results from Soil Samples Collected at the Rail Berm provides the results of the analyses by depth and location. Sample locations are shown on Figure 2 – Historical Sample Locations Map. Only two of the samples from the rail berm sampling had exceedances of an rSRL (one for lead and another for arsenic and lead), both just to the south of the rail dump pocket area, which is where the material was dumped from the train cars into a feed hopper system. The complete analytical report is included in Appendix C.

2.5 Brown and Caldwell Northeast Area Basin Sampling

In 2021, BC sampled the locations in Area 4 - North in the vicinity of a proposed infiltration basin. The sampling methodology and results are included in Appendix D and summarized below. The sampling was conducted to delineate areas that were previously identified as exceeding rSRL, and to provide information to support the stormwater drainage design as a component of the remedy. The sampling approach was defined to collect samples from depth intervals corresponding to the first 2 feet below the proposed base elevation of the infiltration basin. For example, if the proposed basin bottom elevation is 8 feet below ground surface (bgs) at a sample location, then soil samples were collected from intervals of 8 to 9 feet bgs and 9 to 10 feet bgs.

A total of 42 soil boring locations were identified: 28 sample locations were distributed within the proposed base area of the infiltration basin and another 14 were distributed around its perimeter in the proposed embankment area. Samples were collected on an approximate 30 foot grid spacing with adjustments made in the field to accommodate for topography and vegetation that would restrict drill rig access. Sample locations are shown on Figure 2 – Historic Sample Locations Map.

The 94 samples collected from these 42 locations were analyzed for Site constituents Lead, Arsenic, and Manganese. In addition, soil samples were collected from 0 to 1 foot bgs at ten sample locations to facilitate determination of AGPLs.

Soil concentrations of arsenic, lead, and manganese are below applicable remediation levels at the depth of the planned infiltration basin in the northeast area of the Site throughout most of the basin footprint. At five locations (G1, G7, P1, P2, and P13), exceedances of remediation levels (rSRL or GPL) were observed at the planned basin depth. The five locations in question are all located in the southwest corner of the proposed infiltration basin area (Figure 2), which is the portion of the area closest to the historically impacted Area 1 - Tailings. The analytical data are summarized on Table 9, and the complete analytical report is included in Appendix D.

2.6 Human Health Risk Assessment Summary

Potential cancer risks and non-cancer hazards to future recreators that could result from exposure to soil containing arsenic, cadmium, manganese, and zinc at the Exposure Area (EA) were assessed using probabilistic methods (Arcadis 2022). Exposure estimates based on a combination of parameter distributions and point estimates were then combined with toxicity values to provide distributions of risk and hazard estimates that take into account both variability and uncertainty. The resulting 95th percentile excess lifetime cancer risk (ELCR) estimate of 4×10-7 was below both the ADEQ and the USEPA acceptable risk range of 1×10-6 to 1×10-4. The resulting 95th percentile (95%) hazard index (HI) estimate of 0.17 was also below the target HI of 1.

For comparison, SSCLs resulting in an ELCR of 1×10-5, which has been accepted by ADEQ as the target risk level for cleanup level development at other VRP sites, and an HI of 1 were also identified. An SSRL for arsenic based on the target risk level of 1×10-5 is 150 milligrams per kilogram (mg/kg). SSCLs based on an HI of 1 are 73.6 mg/kg for cadmium, 18,500 mg/kg for manganese, and 236,000 mg/kg for zinc. No detected concentrations of arsenic, manganese, and zinc exceed these SSCL values in Areas 2, 3, and 4. The maximum cadmium concentration of 75 mg/kg in Area 2 marginally exceeds the SSCL of 73.6 mg/kg; however, no action is required since the site wide 95% UCL for cadmium (i.e., 21.2 mg/kg) is well below the SSCL.

The USEPA's Integrated Exposure Uptake Biokinetic (IEUBK) v2.0 model was used to evaluate the potential for adverse health effects from exposure to lead. Based on the results of the IEUBK model, exposure to lead in soil at the EA is not likely to result in adverse health effects in future child recreators and, by extension, in future adult recreators. The IEUBK model was also used to derive an SSCL for lead. Based on a goal of no more than 5 percent of the child resident population having a blood lead concentration greater than 10 µg/dL, and accounting for time spent at the EA and time away from the EA (e.g., at home) in accordance with USEPA guidance, the lead SSCL is 2,100 mg/kg. The average lead concentrations in surface soil (i.e., EA-wide average; EA-wide area-weighted average) do not exceed the lead SSCL.

The results of the Probabilistic Risk Assessment indicated that adverse effects to human health from exposure to constituents of concern (arsenic, cadmium, lead, manganese, and zinc) in soil are not expected if Areas 2, 3, and 4 are developed for recreational use.

2.7 Site Specific Cleanup Levels

Based on site investigations and characterization efforts, soil is the only affected medium at the site. The Town of Sahuarita has expressed an interest in utilizing the site, once remediated, for recreational use. SSCLs were calculated as part of preparation of a HHRA, as described in Section 2.6. The SSCLs are 150 mg/kg, 73.6 mg/kg, 18,500 mg/kg, 236,000 mg/kg, and 2,100 mg/kg for arsenic, cadmium, manganese, zinc, and lead, respectively. Based upon the expected recreator use, the 95 percent upper confidence limit (UCL) on the mean concentrations for arsenic, cadmium, manganese, and zinc are less than their respective SSCLs, and the average sitewide concentration of lead is less than its respective SSCL. That said, as described in Section 1.2, remedial action is required to consolidate eroded material and any visible tailings. The published rSRLs for arsenic, lead, and manganese were used to design the planned consolidation, as shown on Figure 3.

Site-specific AGPLs were also developed using measured concentrations of arsenic and lead in soil samples and SPLP leachate results as inputs into ADEQ's GPL Model (https://azdeq.gov/groundwater-

protection, Appendix D). For arsenic and lead, the most conservative calculated AGPLs of 10,551 and 45,436 mg/kg, respectively, are higher than their respective rSRL and indicate the metals are tightly bound to soil and will not leach to groundwater. That said, the remedy was designed based on the rSRL.

3 Remedial Work Plan

3.1 Site Components to be Addressed

The RWP has been designed to address public health and safety by remediating impacted soils and establishing site surface water conveyance to manage drainage to provide long-term protectiveness of the remedy. The site components will be addressed through removal, consolidation, remediation in-place, and construction of a cover system. The site components that are to be addressed in this RWP include:

- Area 1 – Tailings impoundment materials
- Area 2 – Mill site area impacted soils and concrete pads, foundations, and pedestals
- Area 3 – Pole area impacted soils and concrete pads
- Area 4 – North impacted soils (at northeast end of the site)

Other historic features of the site will also be addressed during remedial activities through abandonment / closure in place or removal, including:

- Power-line stub, including seven poles and associated power lines
- Three monitoring wells
- One production well (no longer in service)
- Abandoned rail spur berm and dump pocket
- General surface water management features
- Ephemeral wash south bank armoring, north of the tailings impoundment

3.2 Alternatives Assessment

Several basic alternatives were evaluated for this RWP. These alternatives included:

- Covering impacted soils and tailings materials in place
- Consolidation followed by backfill and placement of clean cover
- Off-site haulage of impacted materials
- Leaving the site in its existing condition

The alternative selected was consolidation followed by backfill and placement of cover materials. This alternative was selected because it relocates and consolidates impacted materials in outlying areas to a more central location further from the property boundaries and allows for more efficient long-term monitoring of the remedy to confirm long-term protectiveness. The impacted materials, including those mineralized materials in the current down-drain riprap, will be excavated and relocated/consolidated and be replaced with clean backfill material (and riprap in the case of the reconstruction of the down-drains), followed by the final grading, which will tie all the slopes together with the other consolidated and covered areas with gently sloping out-slopes to help manage the drainage of stormwater runoff and aid in minimizing erosion potential. This will help keep the cover material more sustainably in place, promoting

the longevity of the “barrier from contact” criteria that the cover material is intended to provide. The selected alternative will provide superior protection for those who may ultimately utilize the site, while being more economical than simply covering the existing larger footprint of the unconsolidated impact areas. It will also provide a safer, larger buffer- zone distance from the property boundaries if stormwater transport of materials were to occur.

3.3 Remediation Plan

The proposed Plan for remediation of each of the site areas identified above is presented in this section. Overall, the goal of the remediation is to protect human health by preventing contact with impacted materials on-site while installing a maintainable cover that will prevent erosion and potential for impacted materials to become exposed. To achieve the maintainable and protective cover system, a comprehensive site grading plan has been prepared that will control stormwater and other surface water runoff (Appendix G, Drawing C-101).

Visually-impacted material will be excavated from Area 2 – Mill Site and Area 4 – North Impacted Soils and consolidated on Area 1 – Tailings Material. Excavations will be performed to meet design grades and to allow for placement of a 2 foot clean cover system in excavated areas. Soils in Area 1 will also be covered with 2 feet of clean cap material. Backfill material and clean cap material will be obtained from areas on-Site where no impacts have been observed (such as along the railroad berm) and a local borrow source. The site will be graded to control and manage stormwater drainage. Site restoration will consist of establishment of native plantings for site stabilization and to provide a potential recreational use for the Town of Sahuarita. Following implementation of the remediation, a DUER application will be submitted to establish institutional controls at the site.

For purposes of the site remediation, and to comply with the Resource Conservation and Recovery Act (RCRA) during the implementation of the remedy described herein, an Area of Contamination (AOC) has been established that encompasses Areas 1, 2, 3, and 4 (Figure 3) (EPA, 1996). Impacted soils from Areas 1, 2, 3, and 4 will not be removed, either temporarily or permanently, from the AOC boundary.

Remedial activities are described below within the context of each Area on-Site.

3.3.1 Area 1 – Tailings Materials

The tailings materials will remain where they are currently located. Additional materials will be consolidated on top of the tailings impoundment materials to be more centrally located on the site. Material will be deposited to aid in the grading of the site to create a ridge so that precipitation falling on the north side of the ridge will drain to the north and precipitation falling to the south of the ridge will drain to the south. This will help to separate the stormwater runoff, making it easier to manage during construction. The area will then be graded to form a gently sloping surface to promote drainage in a less-erosive, predominantly sheet-flow pattern. Following consolidation and grading activities, 2 feet of clean cover materials will be placed over Area 1.

3.3.2 Area 2 – Mill Area Impacted Soils and Concrete Pads, Foundations, and Pedestals

Although the main buildings and structures of the mill area were removed by the initial reclamation efforts of the late 1960’s, the concrete pads and the concrete pedestals on which some of the primary

processing equipment of the mill process were mounted were left in place. Most of these are in the Mill Site Area, and several also remain in the Pole Area.

Figure 3 – Proposed Remediation System Layout shows the proposed excavation and backfill area at the mill site. This area will initially be cleared by grubbing, with the accumulated biomass being hauled offsite for disposal.

The Southwest Exceedance Area shown in pink on Figure 3, just east of the north end of the rail berm in the Mill Site Area, will be excavated to the meet the design base grade, and will meet depths of impact shown under the sample location identifier where existing impacted materials are located. The excavated material will be relocated to the consolidation area in Area 2, identified on Figure 3 – Proposed Remediation System Layout as the "SW Excavation Material & Cover Area" and shaded green. The excavated area will then be backfilled with clean fill material prior to the placement of clean cover, and then graded to tie into the rest of the consolidation area cover materials to promote a less-erosive drainage of stormwater runoff.

Depending on how the concrete pedestals and pads break up during demolition, these materials will either be added to the consolidation area prior to placement of clean cover material or be hauled offsite for disposal. The presence and quantity of rebar in the pedestals and pads may limit the breakdown potential of these concrete structures and preclude the ability to add these materials to the consolidation area, especially if they are likely to protrude through 2 feet of cover. Accordingly, the size of the rubblized concrete will be limited to 6-inches or smaller to mitigate the potential for protrusion through the cap. Concrete larger than 6-inches will be hauled offsite for disposal. Once the entire site grading and clean cover placement is complete, the entire area will be revegetated with native plant species to stabilize the soil cover and minimize erosion potential.

3.3.3 Area 3 – Pole Area Impacted Soils and Concrete Pads

The Pole Area impacted soils will be graded to meet the design base grade in this area and covered with 2 feet of clean cover materials. Any excess soils will be consolidated in Area 1 under the 2 foot clean cover. The resulting surface will be graded to tie in with gentle slopes to the rest of the consolidation areas and their subsequent cover materials. Any pads and other concrete debris will either be broken in place prior to placement of the clean cover or hauled offsite if they cannot be covered with the 2 foot clean cover thickness based on material size once broken.

3.3.4 Area 4 – North Impacted Soils (at Northeast End of Site)

The area to be excavated and backfilled from the northeast end of the site is shown on Figure 3 – Proposed Remediation System Layout as the "Northeast (NE) Exceedance Area." Clearing and grubbing of the biomass in this area will be conducted before excavation. The biomass accumulated from the clearing and grubbing will be hauled offsite for disposal. The excavated impacted soil materials will be hauled to the consolidation area: Area 1, identified on Figure 3 – Proposed Remediation System Layout as the "Area for NE Pile Material & Cover" and shaded green. Area 1 is a more centrally located area adjacent to the south side of an existing dirt road on the site. The excavated area will be backfilled with clean fill to meet the design grades of the infiltration basin.

3.3.5 Cover Materials

A cover system consisting of 2 feet of clean cover materials will be placed over the entirety of Area 1, and in other areas where impacted materials have been removed to achieve design grades. Soil samples were collected from the K-Dump at Twin Buttes Mine, the borrow source located approximately 2-miles southwest of the Site. The K-Dump is unimpacted, non-mineralized overburden material designated by the facility operator as clean cover material that was stockpiled for future use on projects such as Parcel 30. A broad investigation was completed by Amax in 2011 indicating the material was appropriate for use as backfill (Appendix E).

Approximately 110,000 cubic yards of soil will be borrowed from the K-Dump for the Area 1 cap. The portion of the K-Dump to be excavated for borrow is approximately 14 acres (or 67,760 square yards) in size. To obtain the necessary material for the Area 1 cap, approximately 5 feet (1.6 yards) of material will be removed from the 14-acre footprint on the K-Dump. Prior to using the K-Dump borrow source, a grid will be established across the 14-acre area and 10, 5-point composite samples will be collected at depth intervals of 0-1 feet, 1-2 feet, 2-3 feet, 3-4 feet, and 4-5 feet below ground surface. The samples will be analyzed for Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Manganese, Molybdenum, Nickel, Selenium, Thallium, Vanadium, Zinc, and Mercury using EPA Method 6010D and for Arsenic, Cadmium, Lead, Manganese, and Zinc using EPA Method 1312 for SPLP. The analytical results will be provided to ADEQ via email in advance of using the borrow source and included in the project completion report.

3.4 Remedial Implementation

A remedial design package has been completed including remediation design drawings at a 100% level of completion, and specifications directing a contractor to implement the remedy. The design drawings are included in Appendix G.

Prior to and during remedial implementation, former utilities, site features, and monitoring wells will be addressed as described below.

3.4.1 Power-Line Stub, Including Seven Poles and Associated Lines

The TRICO Electric Cooperative (TRICO) power line stub crosses the site from South La Villita Road west to a power drop pole on the Mill Site Area that provided electricity for the production well, which is no longer in use. Removal of the inactive power line and power poles from the site is also planned to be accomplished under this RWP. TRICO will be engaged to deactivate and remove the power line and poles.

3.4.2 Three Monitoring Wells

The three groundwater monitoring wells were installed on the site, two in August 1991 (the downgradient wells) and the third in March 1993 (the upgradient well), to monitor for contaminants that may have leached from the tailings impoundment or impacted mill site soils. According to the groundwater monitoring data provided in Table 6 – Groundwater Quality Data, only nitrates have been detected at levels in excess of their AWQS since the wells were installed. The nitrates have been suggested to be

associated with nearby agricultural activities and not related to the Parcel 30 site or its historical operations. The ADWR website indicates that nitrate concentrations exceeding the maximum contaminant level have been documented up- and cross-gradient of Parcel 30, including wells in Township 17S, Range 14E, Sections 4 and 21 and Township 18S, Range 13E, Sections 12, 13, and 2 (Clear Creek, 2015). Based on this information, this RWP proposes that these three monitoring wells be closed in accordance with ADWR requirements for well abandonment as part of the final reclamation.

3.4.3 One Production Well (No Longer in Service)

This RWP proposes that the production well, which is no longer in service, be closed in accordance with ADWR requirements for well abandonment. As part of this, the debris surrounding the well, including tankage and piping, will be removed and disposed offsite in a suitable landfill.

3.4.4 Rail Berm and Rail Dump Pocket

It is anticipated that some structural members, concrete and, potentially, other debris will be encountered during the regrading of the rail berm and rail dump pocket area. The bulk of the rail berm materials is to be used as clean cover materials based on the analyses performed on these materials during the process of developing this RWP. Only a few samples indicated rSRL exceedances and those areas were immediately proximal to the south end of the rail berm dump pocket; this was anticipated based on historical activities in this area. These materials will be excavated and consolidated under the 2 foot clean cover within Area 1.

The rail dump pocket area will be the first area of the rail berm to be excavated/regraded. Depending on the type and quantity of structural members and other materials found during this excavation, appropriate disposition will be determined at that time. Concrete materials that can be sufficiently broken down to be easily covered with the 2 foot clean cover layer will be added to one of the consolidation areas. Steel and other debris will be hauled to an off-site landfill or recycled as practicable. Approximately 1 to 1.5 feet of rail berm elevation will be left in place to maintain the current stormwater runoff and flow pattern on the west and east sides of the rail berm. After grading to smooth rough areas, the area will be revegetated.

3.5 Site Restoration

3.5.1 General Surface Water Management

Prior to placement of clean cover materials, the site will be graded to promote gentle sloping and smooth transitions between the various excavated and backfilled areas and consolidated areas. Once the initial grading has been achieved, the 2 feet of clean cover material will be placed, and some minor grading of the final cover may be required to achieve the final grading design. The clean cover material will be compatible with developing a self-sustaining ecosystem with native plants. The general surface water conveyance features, provided by the grading of the site and the final cover materials, will direct water to the various surface water management features that are proposed to be replaced and rebuilt as a part of this RWP.

3.5.2 Replacement of Down-Drains

Site reconnaissance has determined that the existing down-drain conveyances installed as part of the reclamation effort in the late 1960's likely used mineralized rock as the riprap material for the erosion

protection. These materials will be removed by excavation, transported to the consolidation areas, and graded prior to placement of the 2 feet of clean cover. Figure 4 – Water Conveyance Features shows the locations of the existing down-drain conveyances. New, non-mineralized materials will be imported to the site for the reconstruction of the down-drain conveyances that will convey stormwater runoff to the lower lying areas or to the wash near the north end of the site.

The Final Grading Plan (Appendix G, C-101) provides detailed drainage channel information to manage the estimated flow quantities generated during a 100-year, 24-hour event. These design criteria will provide a robust drainage system that will help limit required maintenance.

3.5.3 Dry Wash South Bank Armoring, North of the Tailings Impoundment

There are three sections of the south bank of the wash that run predominantly west to east across the north end of the site that have been determined to require additional bank fortification through placement of armoring materials. Figure 3 – Proposed Remediation System Layout shows sections of the wash that are proposed for armoring. The Wash Armor Section designs are provided in Appendix G – Remedial Design Drawings, including typical sections for the planned armoring and the materials proposed for construction of the armored sections.

3.6 Remedy Evaluation

The HHRA provides site-specific cleanup levels based on ADEQ 49-152 (Soil Remediation Standards). The SSCLs are 150 mg/kg, 73.6 mg/kg, 18,500 mg/kg, 236,000 mg/kg, and 2,100 mg/kg for arsenic, cadmium, manganese, zinc, and lead, respectively. Based upon the expected recreator use, the average sitewide concentrations of these metals are less than their respective SSCLs. That said, as described in Section 1.2, the selected remedial action is to consolidate eroded material and any visible tailings. Tailings material located in Areas 2, 3, and 4 will be consolidated in Area 1 with a final cover of 2 feet of clean soil placed over Area 1. Clean backfill will replace excavated materials in Areas 2, 3, and 4. The published rSRLs for arsenic, lead, and manganese, were used to design the planned consolidation area, as shown in Figure 3, and the GPL and AGPL for lead was used to evaluate the remedy in the infiltration basin area (as described further in Section 3.6.1).

Visual screening will be used in the field to identify tailings material. If tailings are visually identified, the excavation limits will be advanced beyond the planned footprint of the excavation. Post removal sampling is described below and in Appendix F.

Based on existing site data, some locations in the Northeast exceedance area (Area 4) will require post-removal sampling to document that site soils have been removed to meet the remediation criteria.

3.6.1 Post-Excavation Sampling

Historical site sampling activities have resulted in delineation horizontally and vertically (to maximum depths of 4 feet in the southwest exceedance area and 9 feet in the northeast exceedance area) in most areas of the site and the HHRA concluded that there is no risk to a current or future recreator.

A sampling and analysis plan for the northeast exceedance area was developed and implemented by BC that included a 30x30 ft sampling grid (Appendix D). Based on the results of this sampling effort, one

location has not been delineated to depth located in the northeast exceedance area where the infiltration basin will be constructed. At five locations (G1, G7, P1, P2, and P13, refer to Appendix D), exceedances of the GPL for lead were observed at the planned basin depth. These locations did not exceed the calculated AGPL as described in Appendix D. However, it is anticipated that additional excavation may be performed to remove additional impacted material, followed by backfilling required to meet the design criteria of the basin. Accordingly, post-excavation sampling will be utilized during excavation activities at the five locations with exceedances to measure vertical delineation and removal of impacted material and that the remaining soils beneath the infiltration basin are protective of groundwater. Approximately 4 to 9 feet of material (based on existing site topography) will be removed from the northeast exceedance area, equating to approximately 9,000 cubic yards. An additional 2-feet of material is expected to be removed around sample locations G1, G7, P1, P2, and P13 once these locations are vertically delineated. The sampling methodology is described in Appendix F. A post-excavation risk assessment will provide summary information, including a 95% UCL calculation for key constituents based on the post- removal dataset.

The southwest area will require removal of potentially impacted materials to reach design grades and to permit placement of the 2-foot clean cover. Approximately 4 feet of material will be removed across this area, equating to approximately 27,400 cubic yards. After these materials have been removed, sampling will be performed on a 100x100 ft grid to document the post-removal conditions prior to backfill.

Samples will be analyzed using X-Ray Fluorescence in the field as described in Appendix F and in accordance with the sampling programs described above.

3.6.2 Cover Thickness

Cover thickness depth will be tested on a regular grid throughout the clean cover placement areas during construction activities to ensure that the 2 foot cover thickness has been met. Upon completion of cover and final grading, final cover thickness verification will be conducted by comparing an intermediate-grade survey (i.e., following removal and consolidation of impacted materials and establishment of grading contours) with the final construction survey to confirm that the 2 foot cover has been achieved prior to revegetation. To confirm the thickness of the final cover material, the survey shall be performed at intersection points of a 100x100 ft grid.

3.7 Institutional Controls

Following implementation of the remediation, a DUER application will be submitted to establish institutional controls at the site. The DUER will include restrictions on future use to prevent disturbance of the cover system as well as long-term monitoring and maintenance requirements. The Town of Sahuarita has expressed an interest in utilizing the site, once remediated, for low-impact recreational use. Future use would be governed by restrictions included in the DEUR and would require long-term maintenance of the cover system.

4 Schedule

4.1 RWP Submittal and Approval

It is assumed that after submittal to the ADEQ VRP it will require approximately six weeks for review and response to any questions to achieve approval of this RWP. Contractor procurement has been completed and the draft schedule assumes that mobilization to the site will commence immediately following approval; however, the schedule will depend on a number of factors such as contractor availability and the timing of budgetary approvals by Freeport Minerals and BP. Quarterly progress reports will be submitted to ADEQ.

4.2 Community Involvement

Upon receipt of approval of the RWP from ADEQ, the community involvement and notification process will begin based upon the approved Plan. Community involvement will be conducted in accordance with the community involvement requirements set out in Arizona Revised Statutes §49-176. The community involvement process will include notification of the general public of the request for “no further action” that is sought and how the Plan will be executed. Signage will be placed in several locations around the perimeter of the site where the public has adjacent access. This signage will include contact information for a person who may be contacted for information regarding the fieldwork. Direct mailing, door hangings, or a similar form of notice that is distributed in a manner sufficient to reach those who may be impacted will be utilized to get the information disseminated.

4.3 Permits

Permits will be obtained by the contractor prior to mobilization. These will include:

- ADWR Notice of Intent (NOI) for well abandonments,
- NESHAP for concrete demolition,
- A surface water pollution prevention plan (general construction NOI), and
- Fugitive dust air permit from the Pima Department of Environmental Quality Air Quality Permit Section.

4.4 Mobilization

It is anticipated that the selected contractor would be able to mobilize to the site within 1 month of approval of this RWP.

4.5 Execution

Due to the quantities of clean cover and riprap materials that will be needed to complete this remediation work, the schedule will be dependent upon the contractor’s haulage fleet size and the determination of the source or supplier of the required materials. It is estimated that the construction activities at the site will take approximately six months.

5 Conclusion

This RWP has been developed to manage the site holistically by providing a final surface configuration that effectively isolates tailings material, supports sustainable stormwater runoff management, and provides a self-sustaining ecosystem with native vegetation requiring limited maintenance.

6 References

Arizona Department of Environmental Quality. 1996. A Screening Method to Determine Soil Concentrations Protective of Groundwater Quality. Prepared by the Leachability Working Group of the Cleanup Standards Policy Task Force. September.

ARCADIS. 2022. Probabilistic Risk Assessment, Former Eagle Picher Mill Site on Parcel 30, Sahuarita, Arizona (HHRA)

Clear Creek, 2014. Work Plan for Soil and Groundwater Characterization, Parcel 30, Sahuarita, Arizona, Clear Creek Associates.

Clear Creek, 2015. Soil and Groundwater Characterization, Former Eagle Picher Mill Site on Parcel 30, Sahuarita, Arizona, Clear Creek Associates, November 20, 2015

EPA, 1996. Memorandum from Michael Shapiro, et al., EPA, to EPA RCRA Branch Chiefs and CERCLA Regional Managers, Use of the Area of Contamination (AOC) Concept During RCRA Cleanups. March 13, 1996.

Golder Associates, 2009. Technical Memorandum to Dalva Moellenberg, Gallagher & Kennedy, Re: Parcel 30 Volumetric Estimate and Geochemical Characterization. January 29, 2009.

Hydrometrics, Inc. 1999. Soil Sampling Summary Report Eagle Picher Mill Site, Sahuarita, Arizona. June 18, 1999.

Tables

DATE	ACTION
1943 - 1959	Eagle Picher floatation mill operated by various owners for milling of lead-zinc limestone replacement ores. Ownership from 1943 to 1957 included Eagle Picher Mining and Smelting, Eagle Picher Company, and Eagle Picher Industries, Inc.
1952 - 1955	Operations ceased.
1955	Mill reopened by McFarland and Hullinger of Toole, UT under lease to Eagle Picher.
1957	McFarland and Hullinger purchased the mill operation.
1959	Mill permanently closed
Mid-1960s	The Anaconda Company purchased former mill site for groundwater rights.
Late 1960s	The Anaconda Company reclaimed mill site by removing buildings, capping the tailing pond with alluvium, planting native vegetation.
1973	Amax Copper Mines, Inc. and The Anaconda Company formed Anamax Mining Company.
1988	Anamax Mining Company dissolved. Amax Arizona, Inc. and Anaconda Arizona, Inc. retain undivided 50% interest in Parcel 30.
1989	Amax Arizona, Inc. and Anaconda Arizona, Inc. conducted cap maintenance including additions soil cover and installation of geotextile and riprap downdrains in gullies to control stormwater erosion from tailing. A fence was constructed around the entire site.
1989 - 1990	Amax Arizona, Inc. and Anaconda Arizona, Inc. review mill site conditions with ADEQ and Pima County Health Department
1991	Amax Arizona, Inc. and Anaconda Arizona, Inc. propose remedial plan to ADEQ. ADEQ announces February 8 to March 8, 1991 public review period and comment period for a Remedial Action Plan for the Each Picher Mill Site. ADEQ holds public meeting on February 28, 1991 to review the proposed Remedial Action Plan.
1993	Amax, Inc. and Cyprus Minerals Company merge to form Cyprus Amax Minerals Company
May 17, 1996	Cyprus Sierrita Corporation requests ADEQ termination of Eagle Picher Mill Site Remedial Action Plan.
1999	Phelps Dodge Corporation purchases Cyprus Amax Minerals Company
April 30, 2001	Phelps Dodge Sierrita, Inc. submits groundwater data for 1994 through 1997 to ADEQ along with copy of 1996 request to terminate Remedial Action Plan.
March 30, 2006	Phelps Dodge Corporation discusses site closure and DEUR with ADEQ.
2006	Freeport-McMoRan Copper & Gold purchases Phelps Dodge Corporation.

Key References:

1. Amax Arizona, Inc. and Anaconda Arizona, Inc. (1990)
2. ADEQ (1991)

Table 1. Parcel 30 Chronology (Clear Creek, 2014)

Area	Sample ID	Depth Below Surface (inches)	As (mg/Kg)	Cd (mg/Kg)	Pb (mg/Kg)	Zn (mg/Kg)
rSRL			10	39	400	23,000
nrSRL			10	510	800	310,000
Area 1 (Impoundment Area)	T-1A	0-6	<5.0	1.3	88	150
	T-1B	6-12	5.8	4.2	500	740
	T-2A	0-6	<5.0	2.0	150	290
	T-2B	6-10	14	22	3,400	4,800
	T-3A	0-6	5.2	1.1	26	58
	T-3B	6-10	14	8.7	2,100	2,200
	T-4A	0-6	<5.0	2.6	200	450
	T-4B	6-12	8.0	5.5	570	1,100
	T-5A	0-6	<5.0	1.8	55	110
	T-5B	6-18	<5.0	2.6	100	330
Area 2 (Mill Site Area)	M-1A	0-6	<5.0	1.9	68	150
	M-1B	6-12	27	75	14,000	14,000
	M-2A	0-6	<5.0	1.3	28	83
	M-2B	6-12	12	23	3,300	5,500
	M-3A	0-6	<5.0	1.7	17	66
	M-3B	6-12	<5.0	1.6	19	55
	M-4A	0-6	<5.0	1.3	17	44
	M-4B	6-12	9.9	34	5,600	8,200
	M-5A	0-6	<5.0	2.7	220	390
	M-5B	6-12	20	11	7,200	2,500
Area 3 (Pole Area)	P-1A	0-6	5.8	6.6	760	1,100
	P-1B	6-12	10	7.1	470	2,200
	P-2A	0-6	<5.0	2.9	270	560
	P-2B	6-12	<5.0	3.3	360	660
	P-3A	0-6	<5.0	2.7	290	490
	P-3B	6-12	<5.0	2.4	170	350
Area 4 (North Area)	D-1A	0-6	<5.0	0.80	13	29
	D-1B	6-12	<5.0	1.7	120	230
	D-2A	0-6	<5.0	0.69	23	22
	D-2B	6-12	<5.0	1.7	110	260
	D-3A	0-6	9.8	18	3,100	3,700
	D-3B	6-12	6.0	14	2,600	3,000
	B-1A	0-6	<5.0	2.7	220	360
	B-1B	6-12	<5.0	1.3	28	63
	B-2A	0-6	<5.0	3.2	240	470
	B-2B	6-12	<5.0	1.5	41	91
Area 5 (South Area)	R-1A	0-6	<5.0	1.4	36	75
	R-1B	6-12	<5.0	1.1	13	31
	R-2A	0-6	<5.0	1.9	120	210
	R-2B	6-12	<5.0	1.2	26	62
	R-3A	0-6	<5.0	1.5	18	50
	R-3B	6-12	<5.0	0.96	7.8	24
	S-1A	0-6	<5.0	1.3	20	52
	S-2A	0-6	<5.0	1.4	16	40
	S-3A	0-6	<5.0	1.5	9.1	32
	S-4A	0-6	<5.0	1.7	15	49
	S-5A	0-6	5.1	1.8	17	53
Number Analyses			47	47	47	47
Maximum Concentration			27	75	14,000	14,000
Number Analyses >rSRL			7	1	12	0
Number Analyses > nrSRL			7	0	8	0

Notes:
indicates concentration exceeds rSRL
mg/Kg = milligrams per Kilogram
rSRL = residential Soil Remediation Level
nrSRL = non-residential Soil Remediation Level

Table 2. Soil Analyses by Hydrometrics (1999)

Sample ID	Paste pH (standard units)	Specific Conductance (mmhos/cm)	Aluminum (mg/kg)	Antimony (mg/kg)	Arsenic (mg/kg)	Barium (mg/kg)	Beryllium (mg/kg)	Boron (mg/kg)	Cadmium (mg/kg)	Chromium[1] (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Fluoride (mg/kg)	Lead (mg/kg)	Manganese (mg/kg)	Mercury (mg/kg)	Molybdenum (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Strontium (mg/kg)	Thallium (mg/kg)	Tin (mg/kg)	Vanadium (mg/kg)	Zinc (mg/kg)
Arizona Residential SRL (mg/kg)			76,000	31	10	15,000	150	16,000	39	30	900	3,100	3,700	400	5,500	23	390	1,600	390	390	47,000	5.2	47,000	78	23,000
Arizona Non-Residential SRL (mg/kg)			920,000	410	10	170,000	1,900	200,000	510	65	13,000	41,000	37,000	800	32,000	310	5,100	20,000	5,100	5,100	610,000	67	610,000	1,000	310,000
0-5'																									
P30-BH-001	7.35	2.80	4,170	<0.36	17.0	28.5	0.630	8.70	15.3	16.2	13.2	1,060	2.88	4,860	8,030	0.028	31.4	8.50	<1.1	10.2	70.5	1.50	<0.9	12.8	5,540
P30-BH-002	7.46	2.60	4,160	<0.36	20.5	33.7	0.700	27.0	26.5	13.5	18.4	991	2.27	5,260	6,420	0.055	37.4	9.00	<1.1	13.1	61.5	1.50	<0.9	13.6	8,500
P30-BH-003	7.48	2.70	4,970	0.940	19.7	22.0	0.660	7.10	13.9	17.8	13.7	808	2.73	4,890	9,040	0.035	34.8	11.1	<1.1	9.20	63.7	1.70	<0.9	16.4	5,250
P30-BH-004	5.83	5.60	3,870	<0.36	30.2	12.5	0.590	3.80	46.9	9.60	23.5	2,130	23.0	7,080	10,700	0.170	31.7	7.80	<1.1	18.6	34.1	2.80	<0.9	17.9	17,700
P30-BH-005	7.36	2.70	5,660	<0.36	14.5	23.6	0.810	5.90	19.5	14.1	16.3	921	3.76	4,610	15,000	0.073	26.5	7.50	<1.1	10.1	51.8	2.10	<0.9	23.0	6,620
P30-BH-006	7.47	2.40	3,970	0.580	17.7	29.9	0.640	8.40	34.2	12.8	15.6	1,560	2.68	5,110	8,560	0.070	43.3	7.50	<1.1	15.9	65.5	1.50	<0.9	12.9	15,200
P30-BH-007	7.41	2.60	5,090	<0.36	21.0	28.8	0.650	41.4	35.6	15.3	14.2	1,330	2.25	5,630	6,890	0.060	38.9	10.7	<1.1	13.8	62.5	1.00[J]	<0.9	14.9	13,500
P30-BH-008	7.38	2.70	3,500	<0.36	20.0	45.5	0.600	22.8	33.5	9.90	19.2	1,460	3.43	5,040	7,320	0.100	31.0	5.50	<1.1	12.4	49.2	1.50	<0.9	10.5	8,880
P30-BH-009	7.16	2.50	3,250	<0.36	16.5	20.8	0.600	6.90	39.9	8.20	18.8	1,760	3.11	4,130	9,010	0.087	25.1	5.00	<1.1	12.6	46.0	2.40	<0.9	9.50	14,400
P30-BH-010	7.42	1.90	3,720	<0.36	23.0	15.8	0.600	10.5	10.6	8.80	9.80	654	1.65	3,520	9,390	0.047	24.5	2.10	<1.1	7.60	66.5	1.50	<0.9	10.0	5,750
P30-BH-011	7.45	2.60	4,250	<0.36	23.9	33.9	0.750	29.0	34.6	13.4	19.3	1,360	1.00	5,590	8,030	0.072	43.1	9.50	<1.1	13.1	62.5	2.00	<0.9	14.5	13,400
P30-BH-012	7.47	2.70	3,250	<0.36	17.5	8.60	0.700	6.50	11.7	10.1	14.1	1,050	4.07	4,830	13,400	0.037	48.0	4.70	<1.1	7.50	72.2	1.50	1.300	11.5	4,520
P30-BH-013	7.41	2.60	3,330	<0.36	28.8	25.1	0.360	9.70	35.7	10.8	14.8	1,130	4.52	5,040	7,470	0.052	59.6	6.90	<1.1	10.6	65.2	1.10	<0.9	17.4	9,540
P30-BH-014	7.33	2.10	4,180	<0.36	19.0	58.1	0.650	17.8	18.6	14.4	13.6	843	1.74	4,490	7,400	0.063	40.1	7.60	<1.1	8.50	63.8	1.30	<0.9	17.9	6,670
P30-BH-015	7.48	3.00	4,320	0.470	17.2	27.6	0.670	20.7	20.1	13.6	12.5	709	2.81	3,570	6,860	0.060	50.0	5.60	<1.1	7.50	56.5	2.00	<0.9	12.1	5,560
P30-BH-016	7.38	2.50	5,810	0.590	16.0	44.5	0.790	13.2	23.4	13.4	14.1	1,050	4.82	5,230	7,860	0.055	36.3	7.70	<1.1	10.1	56.3	1.20	<0.9	17.0	9,010
P30-BH-017	7.41	2.60	3,670	<0.36	15.0	26.5	0.610	10.8	25.8	9.50	15.1	1,040	2.31	4,740	6,980	0.120	50.2	2.40	<1.1	10.5	49.2	1.70	<0.9	10.7	6,580
P30-BH-018	7.40	3.10	3,260	<0.36	16.4	21.4	0.620	9.10	25.8	8.50	14.7	964	3.35	3,910	7,690	0.065	34.3	2.80	<1.1	10.6	50.8	1.80	<0.9	9.60	6,670
P30-BH-019	7.40	2.60	3,270	<0.36	42.4	11.9	0.790	7.80	19.4	7.90	11.7	852	4.57	6,450	10,000	0.053	23.7	1.60	<1.1	7.50	46.9	1.80	<0.9	9.60	7,020
P30-BH-020	7.36	2.90	3,700	<0.36	14.6	20.5	0.650	14.9	18.5	9.00	11.7	756	2.68	4,150	8,140	0.047	27.4	2.40	<1.1	7.80	53.0	1.80	<0.9	9.90	6,200
5-10'																									
P30-BH-005	7.41	2.09	5,240	0.870	19.0	67.9	0.740	7.70	9.00	11.4	10.5	553	5.26	2,440	3,830	0.010	17.6	2.00	<1.1	5.10	49.8	2.20	<0.9	19.0	2,500
P30-BH-006	7.49	2.47	3,810	<0.36	20.7	26.5	0.660	8.40	36.9	11.1	18.3	1,320	1.46	5,730	8,410	0.160	26.1	<0.19	<1.1	15.8	47.8	5.30	<0.9	14.4	12,200
5-15'																									
P30-BH-001	7.44	1.95	6,670	0.700	13.2	58.2	0.800	6.00	12.5	16.4	10.5	838	4.32	3,290	3,680	0.260	21.8	6.60	<1.1	7.90	54.0	1.50	2.20	20.8	3,540
P30-BH-002	7.56	2.18	3,860	<0.36	17.5	31.2	0.630	18.9	27.0	12.8	16.1	827	1.01	4,660	7,000	0.077	39.6	<0.19	<1.1	10.3	67.5	3.20	<0.9	11.9	6,530
P30-BH-004	7.61	3.46	5,380	0.69[J]	33.3	36.2	0.670	3.30	29.6	9.60	8.40	875	2.71	5,850	13,700	0.100	8.2	<0.19	<1.1	9.50	38.4	5.20	<0.9	24.0	8,930
P30-BH-005	7.48	1.03	7,170	0.720	3.80	90.0	0.780	2.30	0.86	6.40	5.60	525	4.39	45	594	0.022	1.7	3.70	<1.1	<0.095	26.3	0.36	<0.9	29.2	262
P30-BH-007	7.37	2.47	3,340	<0.36	38.9	13.6	0.630	23.3	33.9	10.0	20.5	1,190	1.12	4,770	8,140	0.023	26.0	<0.19	<1.1	9.20	44.2	3.90	<0.9	13.4	11,100
P30-BH-008	6.90	3.12	3,410	<0.36	41.2	97.9	0.950	13.5	49.2	8.00	17.3	2,620	39.3	7,530	8,340	0.340	20.6	<0.19	<1.1	19.1	41.1	4.20	<0.9	11.1	14,500
P30-BH-009	7.44	2.38	3,690	0.800	80.3	22.2	0.770	7.40	30.0	7.20	17.6	1,430	2.11	4,550	6,540	0.130	16.7	<0.19	<1.1	10.7	39.6	3.60	<0.9	13.4	10,600
P30-BH-010	7.38	2.85	3,950	<0.36	14.9	105	0.750	9.40	12.4	8.30	11.3	640	2.32	4,920	8,800	0.180	34.3	<0.19	<1.1	9.70	58.1	4.80	<0.9	9.10	6,460
P30-BH-011	7.45	2.50	3,220	<0.36	14.7	23.6	0.620	7.80	28.4	6.80	14.9	757	1.15	4,850	6,990	0.040	28.3	<0.19	<1.1	8.50	45.1	3.90	<0.9	8.90	6,890
P30-BH-012	7.11	2.27	5,470	0.610	32.9	36.7	0.790	5.30	56.1	8.30	17.6	1,710	7.93	5,230	9,070	0.200	15.3	<0.19	<1.1	20.9	28.9	6.00	<0.9	23.9	15,600
P30-BH-013	7.33	2.80	3,660	0.530	47.1	17.5	0.910	7.70	20.0	7.80	11.7	1,760	3.88	3,950	6,460	0.052	15.6	<0.19	<1.1	7.20	42.5	3.70	<0.9	12.1	5,080
P30-BH-014	7.39	2.70	3,420	<0.36	16.5	17.6	0.660	14.0	30.3	9.10	15.1	1,010	1.52	4,310	7,870	0.078	29.9	<0.19	<1.1	7.80	50.5	4.10	<0.9	9.00	8,110
P30-BH-015	7.24	2.50	3,680	0.790	28.0	10.9	0.540	8.90	20.1	7.70	10.2	621	1.92	3,920	7,770	0.075	21.2	<0.19	<1.1	5.80	47.4	4.10	<0.9	9.80	5,190
P30-BH-016	7.31	3.50	4,150	<0.36	21.5	21.7	0.660	7.70	20.3	8.10	12.4	610	1.62	3,640	8,290	0.073	27.1	<0.19	<1.1	6.40	47.9	4.40	<0.9	9.30	4,770
P30-BH-017	7.31	2.80	3,590	<0.36	15.8	51.9	0.680	18.7	30.0	7.50	16.4	1,540	2.20	4,990	7,010	0.065	26.6	<0.19	<1.1	8.40	38.5	4.10	<0.9	10.1	6,710
P30-BH-018	7.31	3.40	3,760	<0.36	15.9	7.50	0.590	19.0	20.2	8.50	12.0	624	1.50	3,660	9,270	0.037	23.6	<0.19	<1.1	6.30	56.4	4.40	<0.9	8.20	4,930
P30-BH-019	7.49	3.50	3,130	0.410	14.4	65.9	0.670	7.00	21.2	8.70	10.2	1,020	1.90	4,780	9,470	0.047	22.5	<0.19	<1.1	7.70	59.5	4.40	<0.9	8.50	4,760
P30-BH-020	7.11	3.00	3,320	0.950	13.8	13.6	0.590	6.80	13.8	7.80	8.00	408	2.04	3,670	9,210	0.057	22.2	<0.19	<1.1	4.80	63.7	4.70	<0.9	8.10	3,490
10-15'																									
P30-BH-003	7.47	<1	8,440	1.20	3.8	106	0.880	2.30	<0.053	6.80	6.20	55.2	2.59	19.1	529	0.032	2.30	6.60	<1.1	<0.095	43.1	<0.28	<0.9	26.0	62.1
P30-BH-006	7.53	<1	5,620	0.590	3.6	66.2	0.590	1.30	<0.053	5.60	4.30	95.0	4.20	33.1	405	0.027	1.90	4.50	<1.1	0.120	15.4	<0.28	<0.9	25.0	114
15-20'																									
P30-BH-004	7.52	<1	8,670	0.980	4.80	117	0.860	1.90	<0.053	6.70	6.30	57.3	1.29	67.4	842	0.033	1.80	6.60	<1.1	<0.095	62.7	<0.28	<0.9	28.9	175
P30-BH-005	7.57	<1	8,410	0.780	4.20	112	0.810	1.80	<0.053	6.90	6.30	63.9	1.73	16.6	539	0.027	1.80	6.40	<1.1	<0.095	54.4	<0.28	<0.9	27.4	66.1
P30-BH-007	7.49	<1	5,960	0.530	3.60	79.5	0.630	1.60	0.520	5.80	4.80	241	5.72	98.0	562	0.025	1.50	5.20	<1.1	<0.095	20.4	<0.28	<0.9	24.6	316
P30-BH-008	7.47	<1	6,930	1.10	4.10	94.7	0.710	3.50	0.200	6.50	5.50	147	3.76	103	536	0.023	1.60	3.60	<1.1	<0.095	37.1	0.380	<0.9	26.0	219
P30-BH-009	7.41	<1	8,580	0.960	5.40	88.4	0.800	2.90	<0.053	6.70	5.70	165	6.83	47.5	782	0.025	1.50	5.80	<1.1	<0.095	35.7	<0.28	<0.9	24.7	393
P30-BH-010	7.32	2.89	5,620	0.700	23.2	50.8	0.900	12.4	31.1	10.4	10.6	696	1.76[J]	2,280	9,440	0.130	26.8	<0.19	<1.1	8.10	70.3	5.9[J]	<0.9	13.2	11,300[J]
P30-BH-011	7.50	<1	7,050	0.700	3.40	91.7	0.680	2.60	<0.053	6.00	5.00	64.8	2.39	16.7	475	0.033	1.30	5.40	<1.1	<0.095	37.2	<0.28	<0.9	24.6	56.2
P30-BH-012	7.55	<1	8,240	0.730	4.10	126	0.820	2.30	<0.053	6.30	6.00	76.9	3.86	18.9	587	0.027	1.50	6.10	<1.1	<0.095	36.6	<0.28	<0.9	25.2	61.7
P30-BH-013	7.61	<1	8,160	0.690	3.90	98.2	0.830	2.60	<0.053	6.40	5.80	46.9	3.35	18.1	541	0.025	1.30	5.80	<1.1	<0.095	39.1	0.290	<0.9	25.2	64.6
P30-BH-015	7.67	<1	6,510	0.730	3.30	89.3	0.650	1.90	<0.053	6.00	4.60	30.1	1.68	25.2	405	0.018	1.40	5.00	<1.1	<0.095	32.7	0.470	<0.9	24.9	64.2
P30-BH-016	7.68	<1	7,130	0.600	3.50	79.1	0.690	1.90	<0.053	6.10	4.90	56.9	2.16	52.4	476	0.023	1.60	5.00	<1.1	<0.095	34.2	<0.28	<0.9	24.2	102
P30-BH-017	7.54	<1	7,800	0.560	3.90	102	0.820	3.70	0.520	6.70	6.50	114	2.21	139	600	0.018	1.80	6.20	<1.1	<0.095	36.0	0.300	<0.9	25.8	242
P30-BH-018	7.32	3.42	4,730	<0.36	19.5	79.8	0.880	5.80	17.4	7.40	9.70	471	5.89	2,440	5,930	0.083	18.0	0.930	<1.1	4.90	47.6	5.00	<0.9	14.4	5,890
P30-BH-019	7.42	<1	8,360	0.530	3.60	110[J]	0.790	3.10	<0.053	6.80	6.20	68.1	4.15	22.9	541	0.027	1.80	6.20	<1.1	0.570	39.8	0.350	<0.9	26.0	75
P30-BH-020	7.41	1.28	3,980	1.20	14.1	33.5	0.520	2.20	6.40	6.20	5.50	196	2.67	1,550	4,890	0.048	12.7	<0.19	<1.1	2.90	40.4	1.90	<0.9	14.6	1,770
15-25'																									
P30-BH-004	7.56	1.20	7,630	0.940	4.60	80.4	0.730	3.60	0.970	8.60	6.30	111	3.50	524	1,030	0.050	4.40	5.60	<1.1	0.940	46.2	0.420	<0.9	26.9	441
P30-BH-002	7.56	<1	7,950	0.990	4.40	89.6	0.790	3.90	<0.053	6.40	6.00	91.0	1.77	68.9	559	0.030	1.60	5.50	<1.1	<0.095	51.3	<0.54	0.980	25.0	150
P30-BH-014	7.24	2.35	3,160	2.80	33.8	16.3	0.500	7.70	26.0	6.50	10.3	1,130	1.84	5,030	6,660	0.028[J]	17.6	<0.19	5.80	8.00	48.4	3.50	<0.9	10.6	6,630
20-25'																									
P30-BH-008	7.53	<1	7,950	1.00	3.60	106	0.820	2.90	<0.053	6.40	6.10	70.5	2.64	17.6	522	0.023	1.60	5.60	<1.1	<0.095	43.4	<0.28	<0.9	25.6	58.9
P30-BH-010	7.54	<1	9,480	1.20	4.10	126	0.880	2.40	<0.053	7.40	6.30	59.6	1.97	51.0	595	0.027	1.90	6.60	<1.1	<0.095	40.6	0.290	<0.9	29.4	106
P30-BH-018	7.50	<1	7,840	0.450	3.70	102	0.760	4.20	<0.053	6.50	6.10	41.8	1.01	40.1	563	0.022	1.50	6.70	<1.1	<0.095	47.4	<0.28	1.40	27.1	88.3
P30-BH-020	7.51	<1	7,320	<0.36	4.50	85.4	0.730	2.80	<0.053	6.60	5.60	40.2	1.16	53.3	561	0.028	1.80	6.10	<1.1	<0.095	35.3	1.20	<0.9	26.4	105
25-30'																									
P30-BH-001	7.60	<1	7,100	0.980	2.80	83.4	0.720	2.20	<0.053	6.30	6.00	35.0	4.42	16.0	502	0.017	1.60	5.90	<1.1	<0.095	43.2	<0.28	<0.9	24.9	53.5
P30-BH-014	7.55	<1	8,610	0.650	4.30	106	0.850	3.20	<0.053	6.60	6.30	40.4	2.33	18.1	663	0.050	1.70	6.80	<1.1	<0.095	57.7	<0.28	<0.9	25.8	58.9
Minimum			3,130	<0.36	2.80	7.50	0.500	1.30	<0.053	5.60	4.30	30.1	1.00	16.0	405	0.010	1.00	<0.19	<1.1	<0.095	15.4	<0.28	<0.9	8.10	53.5
Maximum			9,480	2.80	107	126	0.900	41.4	46.9	19.8	23.5	2,620	39.3	8,130	13,700	0.340	48.0	11.1	5.80	20.9	72.2	6.00	2.20	29.4	17,700
Number of Samples			66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66
Number of Samples > Residential SRL			0	0	43	0	0	0	4	0	0	0	0	44	43	0	0	0	0	0	0	4	0	0	0
Number of Samples > Non-Residential SRL			0	0	43	0	0	0	0	0	0	0	0	43	0	0	0	0	0	0	0	0	0	0	0

Notes:
Paste pH and specific conductance have no SRL
SRL = Soil Remediation Level
mg/kg = milligrams per kilogram
< = concentration is less than the practical quantitation limit
J = denotes an estimated quantity
1 = value for hexavalent chromium

= >Arizona Residential SRL
= > Arizona Residential SRL and Arizona Non-Residential SRL

Table 3. Total Metals Analytical Results for Soil Samples in Area 1 (Golder, 2009)

WELL	ADWR 55 REGISTRY	INSTALLATION	WELL DEPTH (ft bls)	CASING DEPTH (ft bls)	WELL CASING DIAMETER (inches)	WELL CASING MATERIAL	DEPTH OF TOP OF SCREEN (ft bls)	DEPTH OF BOTTOM OF SCREEN (ft bls)	UTM X (meters)	UTM Y (meters)	MEASURING POINT ELEVATION (ft amsl)	OWNER NAME
AXABCO-1	532627	23-Aug-91	260.00	258.00	4.50	Sch 80 PVC	Built Info	Info	502760.60	3535265.00	2734.37	CYPRUS AMAX MINERALS,
AXABCO-2	532628	25-Aug-91	230.00	225.00	4.50	Sch 80 PVC	Built Info	Info	502364.20	3535266.00	2759.22	CYPRUS AMAX MINERALS,
AXABCO-3	537958	18-Mar-93	207.00	205.00	5.00	Sch 80 PVC	100.00	160.00	502562.90	3535064.00	2743.22	CYPRUS AMAX MINERALS,
EP-1	608604	NAV	217.00	0.00	10.00	Steel	Built Info	Info	502164.20	3534865.00	NAV	ANAMAX MINING CO,
EP-2	634340	NAV	NAV	NAV	NAV	NAV	Built Info	Info	502164.80	3535066.00	NAV	ANAMAX MINING CO,
TOWN OF SAHUARITA	911397	NAV	NAV	NAV	NAV	NAV	NAV	NAV	502861.00	3534960.00	NAV	TOWN OF SAHUARITA, ATTN: JOEL HARRIS
F.I.C.O.	913105	NAV	NAV	NAV	NAV	NAV	NAV	NAV	502861.00	3534960.00	NAV	F.I.C.O.

NAV = Not Available
ft bls = feet below land surface
UTM = Universal Transverse Mercator

Table 4. Parcel 30 Well Information (ADWR Well Registry)

Date	Data Source	AXABCO-1		AXABCO-2		AXABCO-3	
		TOC Elevation	2734.37	TOC Elevation	2759.22	TOC Elevation	2743.22
		Depth To Water (feet)	Elevation (feet amsl)	Depth To Water (feet)	Elevation (feet amsl)	Depth To Water (feet)	Elevation (feet amsl)
Aug-91	1	175.00	2559.37	213	2546.22	NA	
Nov-91	1	172.88	2561.49	201.12	2558.1	NA	
Jan-92	1	171.33	2563.04	200.8	2558.42	NA	
Mar-92	1	169.77	2564.60	199.79	2559.43	NA	
May-92	1	171.83	2562.54	200.72	2558.5	NA	
Jul-92	1	172.86	2561.51	201.41	2557.81	NA	
Nov-92	1	172.68	2561.69	201.71	2557.51	NA	
Jan-93	1	170.64	2563.73	201.19	2558.03	NA	
Mar-93	1	152.00	2582.37	194.96	2564.26	158.90	2584.32
May-93	1	154.16	2580.21	194.02	2565.2	159.32	2583.9
Jul-93	1	158.79	2575.58	194.91	2564.31	162.47	2580.75
Sep-93	1	160.82	2573.55	195.68	2563.54	164.56	2578.66
Oct-93	1	161.53	2572.84	195.59	2563.63	164.92	2578.3
Apr-94	1	159.74	2574.63	194.51	2564.71	164.19	2579.03
Oct-99	2					183.3	2559.92
Jan-07	2	177.22	2557.15	205.85	2553.37	181.6	2561.62
Aug-07	2			204.8	2554.42	180.3	2562.92
Nov-08	2	174.40	2559.97	201.88	2557.34	178.95	2564.27

TOC = Top of casing
feet amsl = feet above mean sea level
NA = Not Sampled
1 - Adrian Brown (1994)
2 - FM database

Table 5. Groundwater Elevations for Parcel 30 Monitoring Wells (Clear Creek, 2014)

Well	Sampling Date	Split Duplicate	Field		General Chemistry											Metals																
			Field pH (SU)	Field Conductivity (µmhos/cm)	Alkalinity Hydroxide as $CaCO_3$	Alkalinity Bicarbonate as $CaCO_3$	Alkalinity Carbonate as $CaCO_3$	Alkalinity Total as $CaCO_3$	Cyanide	Chloride	Fluoride	Nitrate as N	Nitrite as N	Nitrate + Nitrite as N	Sulfate	TDS (measured/ calculated)	Antimony, Dissolved	Arsenic, Dissolved	Arsenic, Total	Barium, Dissolved	Barium, Total	Beryllium, Dissolved	Cadmium, Dissolved	Cadmium, Total	Calcium, Dissolved	Calcium, Total	Chromium, Dissolved	Chromium Total	Cobalt, Dissolved	Copper, Dissolved	Copper, Total	Iron, Dissolved	Iron, Total	Lead, Dissolved
AWQS (mg/L)									0.2		4	10	1	10			0.006	0.05		2		0.004	0.005				0.1						0.05
AXABCO-1	8/1/91		7.1	1100		255	<1	209	<0.02	56	0.04	8.2	<0.01		211	701		<0.05		0.09			<0.005		129		<0.01			<0.03		0.04		<0.05
AXABCO-1	3/1/92		7.1	1300		245	<4	204	<0.007	77.8	0.44	15.1	<0.2		370	997		<0.005		0.093			<0.0007		175		0.004			<0.003		0.018		<0.02
AXABCO-1	3/1/93	S				251	<1	206	<0.02	76	0.3	15	<0.01		378	968		<0.05		0.12			<0.005		181		<0.01			<0.03		<0.03		<0.05
AXABCO-1	11/1/92		7.6	1200		238	<4	193	<0.007	79.1	0.44	11.5	<0.2		353	734		0.005		0.105			<0.0007		164		<0.003			0.007		0.011		<0.02
AXABCO-1	11/1/92	D				238	<4	194	<0.007	79.3	0.43	11.6	<0.2		339	912		0.005		0.105			<0.0007		152		<0.003			0.005		0.008		<0.02
AXABCO-1	3/1/93		7.2	1300		240	<2.6	204	<0.007	75.6	0.39	13.7	<0.2		346	887		0.006	0.008	0.08	0.081		<0.0007	<0.0007	183	184	<0.003	<0.003		0.004	0.013	0.025	0.029	<0.02
AXABCO-1	3/1/93	D				259	<2.6	212	<0.007	74.8	0.28	13.5	<0.2		346	925		0.006	0.006	0.077	0.085		<0.0007	<0.0007	169	179	<0.003	<0.003		0.006	0.009	0.02	0.032	<0.02
AXABCO-1	10/26/93		7.3	1200		197	<1	200	<0.007	76.1	0.35	10.7	<0.2		NA	900		<0.005		0.122			<0.007		164		<0.03			<0.04		<0.02		<0.05
AXABCO-1	4/12/94		7.0	1100		214	<1	200	<0.01	40	0.3	6.62	<0.02		310	765		0.01		0.053			<0.003		115		0.031			0.327		0.049		<0.03
AXABCO-1	4/11/95								<0.01	39.94	0.31	8.39	<0.01		215			<0.005	<0.005	<0.01	<0.01		<0.001	<0.001			<0.002	<0.002						<0.001
AXABCO-1	5/22/96								<0.01	51.3	0.38	10.5	<0.02		212			<0.005		<0.1			<0.001				<0.01							<0.001
AXABCO-1	7/3/97				<2				<0.01	82	0.5B	12.6	<0.01		330			0.005	0.005B	0.09	0.094		<0.0005*	<0.0006			<0.01	0.01B				<0.01		<0.001
AXABCO-1	12/31/97				<2							13.4	<0.05	13.4	340			0.005					<0.0005				<0.01							<0.001
AXABCO-1	6/26/98				<2									11.7	300		<0.0004	0.007				<0.0002	<0.0004			<0.01		<0.01					<0.0004
AXABCO-1	3/25/99														68			0.005					<0.003		<2**		<0.01			<0.03				<0.04
AXABCO-1	10/13/99				<2									7	220			0.007				<0.0002	<0.0002			<0.01		<0.01					<0.0002
AXABCO-1	3/27/03		7.6		<2	185	<2			72	0.4B			12.1	306	840/750	<0.0002	0.0052		0.057		<0.0001	<0.0001		150		<0.01			<0.01		<0.01		0.0002B
AXABCO-1	8/14/03		7.91		<2	188	<2			73	0.4B			10.9	340	870/787	0.0003B	0.00365		0.044		<0.0001	<0.0001		156		<0.01			<0.01		<0.02		<0.0001
AXABCO-2	8/1/91		7.4	1200		183	<1		<0.02	77	0.6	10.5	<0.01		222	353		<0.05		0.08			<0.005		117		<0.01			<0.03		<0.03		<0.05
AXABCO-2	3/1/92		7.9	900		182	<4		<0.007	63.4	0.63	9.18	<0.2		194	621		0.005		0.051			<0.0007		94.9		<0.003			<0.004		0.055		<0.02
AXABCO-2	11/1/92		7.8	800		172	<4		<0.007	53.6	0.72	6.36	<0.2		167	544		0.007		0.057			<0.0007		86.7		<0.003			0.006		0.013		<0.02
AXABCO-2	3/1/93		7.3	1100		186	<2.6		<0.007	63.4	0.46	12.2	<0.2		267	754		0.006	0.009	0.071	0.072		<0.0007	<0.0007	116	119	<0.003	<0.003	<0.01	0.008	0.013	0.059	0.136	<0.02
AXABCO-2	4/12/94		7.4	1300		162	<1	152	<0.01	84	0.46	9.83	<0.2		516	855		0.007	0.009	0.054	0.095		<0.001	<0.001	131	138	<0.006	0.008		0.005	0.005	0.031	0.538	<0.03
AXABCO-2	4/12/94	D				156	<1	140	<0.01	84	0.49	14.9	<0.2		325	860		0.007	0.008	0.065	0.099		<0.001	<0.001	121	143	<0.006	0.008		0.013	0.031	0.348	0.458	<0.03
AXABCO-2	4-42-94	S				210	<5		<0.01	87	0.5				270	790		0.0049	0.0068	0.078	0.086		<0.0001	<0.0001	126	126	<0.001	0.0086		0.0018	0.0052	<0.026	0.59	<0.001
AXABCO-2	4/12/95								<0.01	73.6	0.43	12.59	<0.01		280			<0.005	<0.005	<0.01	<0.01		<0.001	<0.001			<0.002	<0.002						<0.001
AXABCO-2	5/22/96								<0.01	54.8	0.48	9.7	<0.02		230			<0.005		<0.1			<0.001				<0.01							<0.001
AXABCO-2	7/2/97				<2				<0.01	46	0.7	5.9	<0.01		180			0.008	0.008E	0.06	0.57		<0.0005*	<0.0006			0.01B	<0.01		<0.01		<0.01		<0.001
AXABCO-2	7/2/97	D																0.008																0.001
AXABCO-2	12/30/97				<2							4.6	<0.05	4.6	130			0.009					<0.0005				<0.01			<0.03		<0.01		<0.001
AXABCO-2	12/30/97	D																0.007																<0.001
AXABCO-2	6/26/98				<2									3.86	120		<0.0004	0.008				<0.0002	<0.0004			<0.01		<0.01					<0.0004
AXABCO-2	3/25/1999																	0.008					<0.003		<2**		<0.01			<0.03				<0.04
AXABCO-2	10/13/1999				<2									10.2	110		<0.0004	0.01				<0.0002	<0.0002			<0.01		<0.01					<0.0002
AXABCO-2	3/27/03		7.6		<2	138	<2			22	0.7			2.53	70	330/288	0.0002B	0.0089		0.036		<0.0001	<0.0001		48.3		<0.01			<0.01		<0.01		<0.0001
AXABCO-2	8/14/03		8.01		<2	141	<2			23	0.8			3.09	100		<0.0002	0.00923		0.032		<0.0001	<0.0001		52.1		<0.01			<0.01		<0.02		<0.0001
AXABCO-3	3/1/93		7.5	1000		176	<2.6	147	<0.007	70.4	0.51	10.07	<0.2		NA	653		0.008	0.009	0.048	0.053		<0.0007	<0.0007	109	114	<0.003	<0.003		0.004	0.006	0.002	0.063	<0.02
AXABCO-3	10/26/93		7.2	400		128	<1	125	<0.007	16	0.72	1.53	<0.2		240			0.011		0.015			<0.0007		31.4		<0.03			<0.04		0.067		<0.05
AXABCO-3	10/26/93	D				128	<1	125	<0.007	15.8	0.73	1.48	<0.2		210			0.012	0.012	<0.03	<0.03		<0.007	0.007	31.6	34	<0.003	<0.003		<0.04	<0.04	<0.02	0.055	<0.05
AXABCO-3	10/26/93	S				130	<5	130	<0.01	13	0.5				53	280		0.012		0.025				0.0002	37		0.024	0.006			0.0005		0.057	<0.03
AXABCO-3	4/12/94		7.5	500		137	<1	126	<0.007	13.5	0.74	1.63	<0.02		51.5	280		0.017		0.016			0.004		34.7		0.024			0.062		0.037		<0.03
AXABCO-3	4/12/95								<0.01	<0.04	0.66	<0.04	<0.01		1.13			<0.005	<0.005	<0.01	<0.01		<0.001	<0.001			<0.002	<0.002						<0.001
AXABCO-3	5/22/96								<0.01	22.1	0.77	2.23	<0.02		55.5			<0.005		<0.1			<0.001				<0.01							<0.001
AXABCO-3	7/2/97				<2				<0.01	42	0.8	3.63	<0.01		80			0.01	0.009E	0.033	0.028		<0.0005*	<0.0006			<0.01	<0.01		<0.01		<0.01		<0.001
AXABCO-3	7/2/97	D																0.009																<0.001
AXABCO-3	12/30/97				<2							5	<0.05		110			0.01					<0.0005				<0.01			<0.03		<0.01		<0.001
AXABCO-3	12/30/97	D																0.012																<0.001
AXABCO-3	6/29/98				<2									4.46	120		<0.0004	0.01				<0.0002	<0.0004			<0.01		<0.01					<0.0004
AXABCO-3	3/30/1999																	0.004					<0.003		<2**		<0.01			<0.03				<0.04
AXABCO-3	10/14/99														250			0.005											<0.01					<0.0002
AXABCO-3	3/27/03		7.8		<2	125	<2			27	0.7	3.47			80	320/293	0.0002B	0.0095		0.033		<0.0001	<0.0001		45.1		<0.01			<0.01		0.05B		0.0018
AXABCO-3	8/14/03		8.01		<2	126	<2			26	0.8			3.37	100	300/314	0.0002B	0.00979		0.022		<0.0001	<0.0001		45.3		<0.01			<0.01		0.90		<0.0001
EP-1	3/1/92					233	<4	195	<0.007	41.6	0.55	6.2	<0.2		252	673		0.006		0.055			<0.0007		116		0.004			<0.004		0.018		<0.02
EP-1	11/1/92					223	<4	176	<0.007	39.6	0.57	4.5	<0.2		236	626		0.008		0.67			<0.0007		102		<0.003			0.008		0.027		<0.02

All results are reported in milligrams per liter (mg/L) unless otherwise noted.
* = result was <0.0006 in the FMI database
** = reported in FM database. Not confirmed with laboratory report.
[redacted] = concentration exceeds AWQS
AWQS = Arizona numeric Aquifer Water Quality Standard
µmhos/cm = micromhos per centimeter
SU = standard units

Sources of groundwater data:
FM database—7/3/97-11/14/2008
Adrian Brown Consultants (1994)–Aug 91-April 94
Two lab reports for Phelps Dodge Sierrita –sampling dates 3-27-03 and 8/17/03

Table 6. Groundwater Quality Data (Clear Creek, 2014)

			Metals																						Radionuclides					
Well	Sampling Date	Split/Duplicate	Lead, Total	Magnesium, Total	Magnesium, Dissolved	Manganese, Dissolved	Manganese, Total	Mercury, Dissolved	Mercury, Total	Molybdenum, Dissolved	Nickel, Dissolved	Nickel, Total	Potassium, Dissolved	Potassium, Total	Selenium, Dissolved	Selenium, Total	Silver, Dissolved	Silver, Total	Sodium, Dissolved	Sodium, Total	Thallium, Dissolved	Uranium, Total	Zinc, Dissolved	Zinc, Total	Adjusted Gross Alpha (pCi/L)	Gross Alpha (pCi/L)	Gross Beta (pCi/L)	Uranium 234 (pCi/L)	Uranium 235 (pCi/L)	Uranium 238 (pCi/L)
AWQS (mg/L)								0.002			0.1				0.05						0.002				15					
AXABCO-1	8/1/91				15.2	0.01			<0.0002				4.5		<0.1		<0.01		76				<0.01								
AXABCO-1	3/1/92				17.2	<0.001			<0.0003				5.59		<0.005		<0.001		81.3				0.047								
AXABCO-1	3/1/92	S			19	<0.01			<0.0002				5.7		<0.1		<0.01		91				<0.01								
AXABCO-1	11/1/92				18.8	<0.001			<0.0002				5.61		<0.005		<0.001		84				<0.005								
AXABCO-1	11/1/92	D			16.3	<0.001			<0.0002				5.63		<0.005		<0.001		88.1				<0.005								
AXABCO-1	3/1/93		<0.02	20	19.6	<0.001	<0.001	<0.0002	<0.0002		<0.004	<0.004	5.58	5.58	<0.005	<0.005	<0.001	<0.001	88.6	88.5			0.026	0.013							
AXABCO-1	3/1/93	D	<0.02	19.4	18.8	<0.001	0.001	<0.0002	<0.0002		<0.004	<0.004	5.48	5.57	<0.005	<0.005	<0.001	<0.001	82.6	87.3			0.013	0.03							
AXABCO-1	10/26/93				18.4	<0.01		<0.0002			0.088		5.9		<0.005		<0.012		109				0.054								
AXABCO-1	4/12/94				12.6	<0.005		<0.0001			0.07		5.6		<0.002		<0.01		72.9				0.187								
AXABCO-1	4/11/95		<0.001					<0.0002	<0.0002		<0.05	<0.05			0.006	0.007															
AXABCO-1	5/22/96							<0.0002	<0.0002						<0.05																
AXABCO-1	7/3/97		<0.001			<0.005		<0.0002	<0.0002						<0.001	<0.001	<0.006														
AXABCO-1	12/31/97					<0.005		<0.0002									<0.006														
AXABCO-1	6/26/98					<0.005		<0.0002		<0.01	<0.01				<0.001						<0.0002										
AXABCO-1	3/25/99					<0.005		<0.0002									<0.006														
AXABCO-1	10/13/99							<0.0002		<0.01	<0.01										<0.0001	0.01									
AXABCO-1	3/27/03			nt	16.8	<0.005	nt	<0.0002		<0.01	<0.01		5.6		0.002B				95.1		<5E-05	0.0185			-11.4	15.7	16.4	18.6	<1.1	8.5
AXABCO-1	8/14/03				16.2	0.016		<0.0002		<0.01	<0.01		4.3		0.002B				84.2		<5E-05	0.0173			-5.01	20.9	0.83	17.4	<1.0	8.51
AXABCO-2	8/1/91				11.8	<0.01							4.3		<0.1		<0.01		8.4				<0.01								
AXABCO-2	3/1/92				9.48	0.001			<0.0002				4.2		<0.005		<0.001		66.3				<0.005								
AXABCO-2	11/1/92				8.16	<0.01			<0.0002				4.34		<0.005		<0.001		66.3				0.013								
AXABCO-2	3/1/93		<0.02	12.1	11.8	0.002	0.009	0.0013	0.0019		<0.004	<0.004	4.61	4.69	<0.005	<0.005	<0.001	<0.001	82.1	83.8			0.074	1.84							
AXABCO-2	4/12/94		<0.03	13.1	12.7	<0.005	0.016	<0.0001	<0.0001		<0.02	<0.02	5.49	5.64	<0.002	<0.002	<0.01	<0.01	84.4	86.2			<0.01	<0.01							
AXABCO-2	4/12/94	D	<0.03	13.8	11.9	0.011	0.014	<0.0001	0.00012		<0.02	0.021	5.47	5.59	<0.002	<0.002	<0.01	<0.01	83.8	84.3			0.015	0.026							
AXABCO-2	4-42-94	S	0.0021	11	11	<0.010	0.026	<0.0002	<0.0002		<0.02	<0.02	3.9	4.1	0.0033	0.0025	<0.0001	<0.0001	70	70			<0.010	<0.010							
AXABCO-2	4/12/95		<0.001					<0.0002	<0.0002		<0.05	<0.05			<0.005	0.006															
AXABCO-2	5/22/96							<0.0002	<0.0002						<0.005																
AXABCO-2	7/2/97		0.001B			<0.005		<0.0002	<0.0002						0.002B	0.002B	<0.006														
AXABCO-2	7/2/97	D																													
AXABCO-2	12/30/97							<0.0002									<0.006														
AXABCO-2	12/30/97	D																													
AXABCO-2	6/26/98					<0.005		<0.0002		<0.01	<0.01										<0.0002										
AXABCO-2	3/25/1999							<0.0002									<0.005														
AXABCO-2	10/13/1999					<0.005		<0.0002		<0.01	<0.01				<0.001						<0.0001	0.01									
AXABCO-2	3/27/03				5.0	<0.005		<0.0002		<0.01	<0.01		3.3		<0.001				56.2	56.2	<5E-05	0.00624			-1.8	10.5	8.48	8.62	<1.1	3.68
AXABCO-2	8/14/03				5.0	<0.005		<0.0002		<0.01	<0.01		2.7		<0.001				51.1		<5E-05	0.00597			-2.94	5.44	3	4.58	<0.98	3.8
AXABCO-3	3/1/93		<0.02	12	11.5	0.009	0.014	<0.0002	<0.0002		<0.004	<0.004	4.91	4.99	<0.005	<0.005	<0.001	<0.001	77.6	77.7			0.012	0.023							
AXABCO-3	10/26/93				4.75	<0.01		<0.0002			0.085		3		<0.007		<0.012		45				0.057								
AXABCO-3	10/26/93	D	<0.05	5.15	4.72	<0.01	<0.01	<0.0002	<0.0002		0.083	0.084	3.1	3.1	<0.007	<0.007	<0.007	<0.007	49	48			<0.05	<0.04							
AXABCO-3	10/26/93	S		4.1			<0.01	<0.0002			<0.02		3.3		<0.002		<0.0001		50				<0.010								
AXABCO-3	4/12/94				4.15	<0.005		<0.0001			<0.02		2.93		<0.002		<0.002		44				0.0884								
AXABCO-3	4/12/95		<0.001					<0.0002	<0.0002		<0.05	<0.05			<0.005	<0.005															
AXABCO-3	5/22/96							<0.0002	<0.0002						<0.005																
AXABCO-3	7/2/97		<0.001			<0.005		<0.0002	<0.0002						0.001B	<0.001	<0.006														
AXABCO-3	7/2/97	D																													
AXABCO-3	12/30/97					<0.005		<0.0002							<0.001		<0.006							<0.01							
AXABCO-3	12/30/97	D																													
AXABCO-3	6/29/98					<0.005		<0.0002		<0.01	<0.01										<0.0002										
AXABCO-3	3/30/1999							<0.0002									<0.005														
AXABCO-3	10/14/99																														
AXABCO-3	3/27/03				5.1	.007B		<0.0002		<0.01	<0.01		3.4		<0.001				56.8		<5E-05	0.00441			-3.15	8.81	10.7	8.4	<1.1	3.56
AXABCO-3	8/14/03				5.1	<0.005		<0.0002		<0.01	<0.01		3.3		<0.001				57		<5E-05	0.00426			0.78	9.25	1.3	5.44	<1.1	3.03
EP-1	3/1/92				10.2	<0.001		<0.0002					4.76		<0.005		<0.001		70.3				0.047								
EP-1	11/1/92				9.99	0.003		<0.0002					4.64		<0.005		<0.001		68				0.254								

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** = reported in FM database. Not confirmed with laboratory report.
= concentration exceeds AWQS
AWQS = Arizona numeric Aquifer Water Quality Standard
µmhos/cm = micromhos per centimeter
SU = standard units

Sources of groundwater data:
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Adrian Brown Consultants (1994)--Aug 91-April 94
Two lab reports for Phelps Dodge Sierrita –sampling dates 3-27-03 and 8/17/03

Table 6. Groundwater Quality Data (Clear Creek, 2014)

Sample ID Area Boring	Depth (feet)	XRF As		XRF Pb		XRF Mn		Lab As (mg/Kg)	Lab Pb (mg/Kg)	Lab Mn (mg/Kg)
		mg/Kg	±	mg/Kg	±	mg/Kg	±			
rSRL		10		400		3300		10	400	3300
nrSRL		10		800		32000		10	800	32000
Area 1										
A1-37	0-1	15	4	164	5	2884	130	4	144	442
A1-37	1-2	<57		3705	37	12351	268	11.2	3380	1590
A1-37	2-3	<9		72	4	2628	127	4.3	49.5	463
A1-37	3-4	No Recovery								
A1-37	4-5	<7		31	3	2629	126	3.7	15.5	373
Area 2										
A2-31	0-1	35	11	1356	16	2727	133	5.7	1790	446
A2-31	1-2	<7		29	3	2106	116	3.3	12.6	387
A2-31	2-3	<7		24	3	1725	110	2.9	8.8	300
A2-32	0-1	<77		6527	61	10850	256	14.6	4460	811
A2-32	1-2	<7		43	3	1418	102	2	26.3	242
A2-32	2-3	<7		36	3	1632	103	1.9	13.8	218
A2-33	0-1	46	14	1955	22	5145	179	6.8	2130	775
A2-33	1-2	<61		2268	34	21560	535	16.5	2930	2320
A2-33	2-3	23	5	231	6	2238	116	3	200	283
A2-33	3-4	No Recovery								
A2-33	4-5	<8		50	3	1716	107	3	26.8	209
A2-33	5-6	<7		33	3	2006	114	2.6	12.4	264
A2-34	0-1	82	17	3019	30	7553	203	8.4	3980	895
A2-34	1-2	<7		33	3	1505	106	1.6	37.8	175
A2-34	2-3	<7		31	3	1703	109	2.2	17.2	205
A2-35	0-1	<42		1558	22	10611	304	10	1620	1220
A2-35	1-2	<77		4063	52	43187	736	17.1	4800	3570
A2-35	2-3	<54		2326	31	61277	865	7.5	3060	5600
A2-35	3-4	No Recovery								
A2-35	4-5	<7		29	3	6310	172	2.3	16	894
A2-35	5-6	<7		14	3	4015	144	1.7	5.7	449
A2-35	6-7	<7		21	3	6751	177	3.1	9.2	1090
A2-35b	0-1	<79		4766	56	14995	393	15	4820	1050
A2-35b	1-2	<73		3682	47	46560	764	13.4	5820	3910
A2-35b	2-3	<60		2760	35	45466	700	7.5	3360	3260
A2-35b	3-4	<15		258	6	9791	220	2.6	149	884
A2-35b	4-5	<7		20	3	6437	180	2.7	12	986
A2-35b	5-6	8	2	9	3	3953	145	2	7	611
A2-35b	6-7	<6	6	18	3	2600	121	4.1	8.6	332
A2-35b	7-8	<7		22	3	2382	123	3.4	9.6	299

Table 7. Soil Analytical Results (Clear Creek, 2015)

Sample ID Area Boring	Depth (feet)	XRF As		XRF Pb		XRF Mn		Lab As (mg/Kg)	Lab Pb (mg/Kg)	Lab Mn (mg/Kg)
		mg/Kg	±	mg/Kg	±	mg/Kg	±			
rSRL		**10**		**400**		**3300**		**10**	**400**	**3300**
nrSRL		**10**		**800**		**32000**		**10**	**800**	**32000**
A2-36	0-1	540	38	11016	107	14062	321	91.1	18500	1740
A2-36	1-2	30	6	386	7	2772	126	3.7	436	430
A2-36	2-3	<7		31	3	2041	119	2.9	18.8	401
A2-36	3-4	No Recovery								
A2-36	4-5	<7		20	3	1613	106	2.2	8.2	208
A2-45	0-1	<6		21	2	777	83	2.4	22.5	186
A2-45	1-2	<8		62	3	1477	104	4	50.3	278
A2-46	0-1	<10		111	4	1754	106	2.2	83.8	213
A2-46	1-2	<8		59	3	1548	106	2.1	39.1	149
A2-47	0-1	<9		75	4	1968	109	2.3	72.2	213
A2-47	1-2	<9		65	3	1788	107	2.2	57.4	212
Area 3										
A3-38	0-1	<48		2290	27	27412	447	7.1	2350	2310
A3-38	1-2	<78		4357	55	44971	745	13.3	6260	4680
A3-38	2-3	<78		4202	54	53284	847	14.2	6360	5230
A3-38	3-4	No Recovery								
A3-38	4-5	<6		18	2	1229	93	2.2	20.8	205
A3-38	5-6	<7		26	3	2097	118	3.4	16.5	373
A3-39	0-1	14	3	33	3	2177	117	3.9	20.9	316
A3-39	1-2	<7		33	3	1933	112	4.2	21	338
A3-39	2-3	<7		26	3	1707	110	3.1	11.3	304
A3-40	0-1	<7		30	3	1653	107	2.7	17.5	238
A3-40	1-2	<6		18	3	1621	105	1.9	6.5	177
A3-41	0-1	<46		1906	24	33208	527	7.4	1740	2640
A3-41	1-2	<53		2303	30	57196	813	12	2840	5340
A3-41	2-3	<9		77	4	2905	130	3.1	65.7	359
A3-41	3-4	No Recovery								
A3-41	4-5	<8		48	3	3041	134	4.6	23.7	692
A3-42	0-1	<7		33	3	2041	112	1.8	14.2	187
A3-42	1-2	<7		22	3	1777	112	4.4	12.9	372
A3-43	0-1	<55		2893	33	36326	543	5.8	2590	2850
A3-43	1-2	<92		6085	72	82944	1144	12.9	8060	9100
A3-43	2-3	<37		1497	19	24056	394	6	1250	2420
A3-43	3-4	No Recovery								
A3-43	4-5	<7		38	3	1870	111	2.7	20.8	237
A3-43	5-6	7	2	19	2	1821	105	2.5	11.2	202
A3-44	0-1	<7		26	3	1708	109	2.6	8.9	196
A3-44	1-2	<7		23	3	1547	106	2.7	7.5	222

Table 7. Soil Analytical Results (Clear Creek, 2015)

Sample ID Area Boring	Depth (feet)	XRF As		XRF Pb		XRF Mn		Lab As (mg/Kg)	Lab Pb (mg/Kg)	Lab Mn (mg/Kg)
		mg/Kg	±	mg/Kg	±	mg/Kg	±			
rSRL		**10**		**400**		**3300**		**10**	**400**	**3300**
nrSRL		**10**		**800**		**32000**		**10**	**800**	**32000**
A3-48	0-1	<12		161	5	3756	146	8.8	189	997
A3-48	1-2	<12		159	5	2757	137	6.8	99.1	705
A3-48	2-3	<7		28	3	2294	121	3.2	9.5	307
A3-49	0-1	<10		76	4	2648	130	7	83.7	708
A3-49	1-2	<9		59	3	2169	120	5.5	43.1	470
A3-50	0-1	<9		80	4	2047	114	4.1	67.3	315
A3-50	1-2	<7		36	3	1649	106	3.3	23.2	303
A3-51	0-1	<7		33	3	1405	100	2.3	23.9	255
A3-51	1-2	<9		66	4	2160	120	6	65.3	601
Area 4										
A4-01	0-1	<7		31	3	1463	98	1.6	27.7	137
A4-01	1-2	<8		44	3	1639	105	1.7	67.8	187
A4-02	0-1	<10		103	4	2244	114	2.1	75.6	215
A4-02	1-2	<9		79	4	1579	103	1.8	82.4	808
A4-03	0-1	<6		20	3	872	87	1.9	23.8	159
A4-03	1-2	9	2	33	3	1504	102	2.9	15.3	238
A4-04	0-1	<28		868	13	15446	293	2.9	15.3	238
A4-04	1-2	<8		52	3	2845	132	4.7	26.4	347
A4-04	2-3	<7		29	3	2500	125	3.7	12.2	326
A4-05	0-1	<16		279	6	6425	185	4.8	206	629
A4-05	1-2	8	2	19	3	1987	116	2.8	10.5	264
A4-05	2-3	<6		22	3	2084	114	2.6	9.1	1040
A4-06	0-2	<20		510	9	6377	178	4.1	664	967
A4-06	2-4	49	8	689	11	6397	179	4.7	1690	1230
A4-06	4-5	<19		430	8	4713	154	3.8	600	685
A4-06	5-6	30	8	701	10	6208	171	4.4	1010	954
A4-06	6-7	<8		54	3	1554	105	2	86.4	288
A4-06	7-8	<7		24	3	2572	136	2.9	12.5	300
A4-07	0-1	<58		3091	36	42856	620	15	3940	4920
A4-07	1-2	<24		747	11	9712	215	5.1	1100	1160
A4-07	2-3	7	2	30	3	2332	118	3.8	15	334
A4-07	3-4	No Recovery								
A4-07	4-5	<7		26	3	2119	116	4.1	13.7	368
A4-08	0-1	<7		31	3	2727	127	5.6	26.4	639
A4-08	1-2	8	2	25	3	2140	118	4.3	12.6	412
A4-09	0-1	<23		613	10	13048	261	7.2	610	1430
A4-09	1-2	<7		31	3	1780	109	2.2	10.5	218
A4-09	2-3	7	2	28	3	2286	121	4.9	15.3	515

Table 7. Soil Analytical Results (Clear Creek, 2015)

Sample ID Area Boring	Depth (feet)	XRF As		XRF Pb		XRF Mn		Lab As (mg/Kg)	Lab Pb (mg/Kg)	Lab Mn (mg/Kg)
		mg/Kg	±	mg/Kg	±	mg/Kg	±			
rSRL		**10**		**400**		**3300**		**10**	**400**	**3300**
nrSRL		**10**		**800**		**32000**		**10**	**800**	**32000**
A4-10	0-1	<8		49	3	2762	130	4.1	21.8	450
A4-10	1-2	9	2	21	3	2100	115	3.1	10	313
A4-11	0-1	<8		51	3	2283	119	4.1	59.1	381
A4-11	1-2	<7		22	3	1977	113	3.1	8.6	266
A4-12	0-1	<13		193	5	3787	143	5.3	235	563
A4-12	1-2	8	2	17	2	1735	108	2.8	8.4	272
A4-12	2-3	<7		26	3	2176	119	3.6	10.4	348
A4-13	0-1	<10		112	4	2712	126	4.2	107	400
A4-13	1-2	<7		30	3	1572	105	2.9	9.5	253
A4-14	0-1	<8		42	3	1848	113	2.9	25.7	298
A4-14	1-2	<7		23	3	2297	123	3.8	12.8	358
A4-15	0-1	<8		62	3	2117	117	4	65	403
A4-15	1-2	<7		23	3	2577	129	5.3	15.4	484
A4-16	0-1	9	2	23	3	1972	114	5	13.5	382
A4-16	1-2	<7		27	3	2145	120	4.2	10.2	313
A4-17	0-1	7	2	16	3	2441	125	5.2	13.9	477
A4-17	1-2	<7		21	3	2596	127	5.7	14.6	570
A4-18	0-1	<13		188	5	4100	146	4	164	480
A4-18	1-2	<7		22	3	1780	111	2.8	7.7	224
A4-18	2-4	No Recovery								
A4-18	4-5	<6		18	2	1432	100	3.3	7.1	196
A4-18b	0-1	36	8	682	11	12099	254	6.8	399	872
A4-18b	1-2	<9		61	3	2713	126	3.4	64.9	372
A4-18b	2-3	10	2	21	3	2134	119	3.2	11.9	293
A4-19	0-1	13	3	68	4	2542	126	4.6	82.4	367
A4-19	1-2	<7		28	3	2045	117	3.4	11	342
A4-19	2-3	<7		23	3	2364	121	2.4	7.8	271
A4-20	0-1	<9		59	3	2570	125	5.3	70.6	351
A4-20	1-2	7	2	17	3	2001	115	2.9	8.5	258
A4-21	0-1	<7		37	3	1913	113	3.4	18.6	278
A4-21	1-2	<6		21	3	1541	107	2.4	7.7	228
A4-22	0-1	<12		173	5	2445	124	3.8	131	326
A4-22	1-2	<11		114	4	2102	117	2.8	65.1	240
A4-23	0-1	<8		39	3	1960	115	3	22.2	258
A4-23	1-2	<7		22	3	2075	115	3.2	9.4	278
A4-24	0-1	<7		22	3	1798	112	2	6.9	124
A4-24	1-2	<7		24	3	1856	115	2.8	9	221
A4-25	0-1	<7		22	3	2336	118	3.7	10.2	350
A4-25	1-2	7	2	29	3	2902	131	5.3	15.5	634

Table 7. Soil Analytical Results (Clear Creek, 2015)

Sample ID Area Boring	Depth (feet)	XRF As		XRF Pb		XRF Mn		Lab As (mg/Kg)	Lab Pb (mg/Kg)	Lab Mn (mg/Kg)
		mg/Kg	±	mg/Kg	±	mg/Kg	±			
rSRL		**10**		**400**		**3300**		**10**	**400**	**3300**
nrSRL		**10**		**800**		**32000**		**10**	**800**	**32000**
A4-26	0-1	10	2	23	3	2445	124	3.8	11.4	354
A4-26	1-2	<7		27	3	2667	129	5.4	13.2	460
A4-27	0-1	<11		139	5	1932	114	5.1	110	252
A4-27	1-2	8	2	22	3	1545	104	2.8	8.5	213
A4-28	0-1	<7		25	3	2713	128	6.2	16.2	559
A4-28	1-2	11	3	30	3	2603	129	7.4	19.6	538
A4-28	2-3	<8		31	3	2716	133	6.6	18.8	576
A4-28	4-5	8	2	17	3	1863	109	3.6	10.6	327
A4-29	0-1	<6		17	2	816	85	1.7	12.6	140
A4-29	1-2	<7		41	3	1504	99	1.9	28.5	181
A4-30	0-1	<7		38	3	1330	94	2.2	18.2	194
A4-30	1-2	<33		60	13	1199	381	2.4	27	216

Notes:
mg/Kg = milligrams per Kilogram
rSRL = residential Soil Remediation Level
nrSRL = non-residential Soil Remediation Level
Values in red indicate an exceedance of the nrSRL and rSRL
Values highlighted yellow indicate an exceedance of the rSRL

Table 7. Soil Analytical Results (Clear Creek, 2015)

			Method 6010C								Method 7471B
Sample ID	Sample Depth Interval (feet bgs)	Date	Arsenic	Barium	Cadmium	Chromium	Lead	Manganese	Selenium	Silver	Mercury
		Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BH1-1	0-1	5/8/2018	4.3	43	<0.49	4.3	34 M2	270 M3, M4	<4.9 M2	<2.5	<0.059
BH1-2	1-2	5/8/2018	4.3	56	<0.50	5.5	13	380	<5.0	<2.5	<0.060
BH1-3	2-3	5/8/2018	4.6	36	<0.50	4.8	11	300	<5.0	<2.5	<0.058
BH1-4	3-4	5/8/2018	3.5	38	<0.49	4.4	12	240	<4.9	<2.5	<0.059
BH1-5	4-5	5/8/2018	3.7	44	<0.49	4.5	9.4	260	<4.9	<2.5	<0.059
BH1-6	5-6	5/8/2018	3.6	49	<0.50	5.3	9.7	270	<5.0	<2.5	<0.059
BH2-0-4	0-4	5/8/2018	4.2	48	<0.50	5.0	13	300	<5.0	<2.5	<0.059
BH2-5	4-5	5/8/2018	5.2	43	<0.49	4.4	10	260	<4.9	<2.5	<0.057
BH2-6	5-6	5/8/2018	4.5	43	<0.49	4.7	21	250	<4.9	<2.5	<0.057
BH3-1	0-1	5/8/2018	4.0	38	<0.50	4.4	47.0	250	<5.0	<2.5	<0.059
BH3-2	1-2	5/8/2018	3.5	41	<0.49	4.2	14	250	<4.9	<2.5	<0.059
BH3-3	2-3	5/8/2018	4.2	44	<0.50	4.9	8.8	270	<5.0	<2.5	<0.058
BH3-4	3-4	5/8/2018	3.1	38	<0.49	4.3	15	230	<4.9	<2.5	<0.059
BH3-5	4-5	5/8/2018	3.2	34.0	<0.49	4.2	14	240	<4.9	<2.5	<0.060
BH3-6	5-6	5/8/2018	4.0	45	<0.49	4.9	12	260	<4.9	<2.4	<0.057
BH4-1	0-1	5/8/2018	3.7	42	12	4.6	46	260	<5.0	<2.5	<0.058
BH4-2	1-2	5/8/2018	3.8	40	16	4.5	88	440	<0.50	<2.5	<0.058
BH4-2-4	2-4	5/8/2018	5.1	36	27	5.6	**3,100**	690	<5.0	5.2	<0.059
BH4-4-6	4-6	5/8/2018	3.9	45	<0.50	5.1	15	280	<5.0	<2.5	<0.058
BH4-6-8	6-8	5/8/2018	4.0	46	<0.49	5.7	16	290	<4.9	<2.5	<0.060
BH5-1	0-1	5/8/2018	4.4	47	2.1	4.9	34 M2	300 M3	<4.9 M2	<2.4	<0.058
BH5-2	1-2	5/8/2018	4.7	47	<0.50	4.9	10	290	<5.0	<2.5	<0.058
BH5-3	2-3	5/8/2018	4.3	51	<0.50	5.0	11	280	<5.0	<2.5	<0.057
BH5-4	3-4	5/8/2018	3.8	38	<0.49	3.8	7.9	220	<4.9	<2.5	<0.059
BH5-5	4-5	5/8/2018	6.1	65	<0.50	5.6	13	370	<5.0	<2.5	<0.059
BH5-6	5-6	5/8/2018	4.6	47	<0.50	4.9	11	290	<5.0	<2.5	<0.059
BH5-7	6-7	5/8/2018	4.9	50	<0.50	4.9	11	300	<5.0	<2.5	<0.057
BH5-8	7-8	5/8/2018	4.2	53	<0.50	4.6	12	280	<5.0	<2.5	<0.060
BH5-9	8-9	5/8/2018	5.5	55	<0.49	5.6	12	320	<4.9	<2.5	<0.059
BH5-10	9-10	5/8/2018	3.8	45	<0.49	4.9	10	250	<4.9	<2.5	<0.058
BH6-1	0-1	5/8/2018	5.9	56	<0.50	5.5	15	340	<5.0	<2.5	<0.059
BH6-2	1-2	5/8/2018	4.2	50	<0.50	6.7	11	300	<5.0	<2.5	<0.059
BH6-3	2-3	5/8/2018	4.1	46	<0.49	4.8	34	260	<4.9	<2.4	<0.060
BH6-4	3-4	5/8/2018	<3.0	25	<0.49	2.4	6.4	150	<4.9	<2.5	<0.058
BH6-5	4-5	5/8/2018	4.4	46	<0.49	4.6	9.2	280	<4.9	<2.5	<0.060
BH6-6	5-6	5/8/2018	4.8	53	<0.49	5.3	11	320	<4.9	<2.5	<0.059
BH7-1	0-1	5/8/2018	3.3	39	<0.50	4.4	12	240	<5.0	<2.5	<0.060
BH7-2	1-2	5/8/2018	5.0	43	<0.49	5.2	12	280	<4.9	<2.4	<0.057
BH7-3	2-3	5/8/2018	5.9	46	<0.49	4.9	9.5	280	<4.9	<2.5	<0.059
BH7-4-5	3-5	5/8/2018	4.5	32	<0.49	3.4	6.5	200	<4.9	<2.5	<0.059
BH8-1	0-1	5/8/2018	4.1	43	<0.50	4.6	46	280	<5.0	<2.5	<0.058
BH8-2	1-2	5/8/2018	3.4	35	<0.50	3.7	15	230	<5.0	<2.5	<0.058
BH8-3	2-3	5/8/2018	3.4	37	<0.49	3.9	12	290	<4.9	<2.4	<0.059
BH9-1	0-1	5/8/2018	**68**	46	**43**	5.9	**2,900**	700	<5.0	7.20	<0.057
BH9-2	1-2	5/8/2018	**23** M1	50	35	5.3	**1,400** M3, R4	800 M3	<4.9	4.0 M1, R13	<0.069
BH9-3	2-3	5/8/2018	4.8 U	46	12 U	5.0	32 U	320 U	<4.9	<2.5	<0.058
BH9-4	3-4	5/8/2018	4.6	44	9.1	4.5	120	300	<4.9	<2.5	0.37
BH9-5	4-5	5/8/2018	4.1	47	<0.50	5.2	14	280	<5.0	<2.5	<0.057
BH9-6	5-6	5/8/2018	4.2	45	<0.50	5.0	10	270	<5.0	<2.5	<0.059
BH9-7	6-7	5/8/2018	4.2	51	<0.49	4.9	11	260	<4.9	<2.5	<0.058
BH9-8	7-8	5/8/2018	5.3	41	<0.50	5.9	18	350	<5.0	<2.5	<0.060
BH9-9	8-9	5/8/2018	4.1	46	<0.50	5.9	16	330	<5.0	<2.5	<0.060
BH9-10	9-10	5/8/2018	4.8	49	<0.49	5.9	17	310	<4.9	<2.4	<0.060
Dup-1	1-2	5/8/2018	<3.0	37	<0.50	3.7	9.0	220	<5.0	<2.5	<0.059
Dup-2	4-5	5/8/2018	4.2	56	<0.50	4.6	11	300	<5.0	<2.5	<0.059
Dup-3	2-3	5/8/2018	**21** U	50	**74** U	6.0	**980** U	**4,200** D2 U	<4.9	3.2	<0.060
ADEQ Residential Soil Remediation Level			**10***	**15,000**	**39**	**NE**	**400**	**3,300**	**390**	**390**	**23**

Notes:

Bold values indicate result exceeds the SRL for residential non-carcinogen soil

bgs = below ground surface

mg/Kg = milligrams per kilogram

NE = Not established. Total chromium does not have a SRL. The SRL for Cr(III) is 120,000 mg/kg and Cr(VI) is 30 mg/Kg ($ca^{+r^{+}}$)

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 was acceptable.

M4 = MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria

D2 = Sample required dilution due to high concentration of analyte.

R4 = MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria.

R13 = MS/MSD RPD exceeded the method acceptance limit. Matrix spike recovery was outside acceptance criteria. Batch precision and accuracy were demonstrated.

U = Data did not meet internal quality criteria (RPD > 50% between Duplicate and Original sample). Result qualified as unusable for specific analyte.

Table 8. Metal Analytical Results from Soil Samples Collected at the Rail Berm

Table 10. Site Specific Clean-up Levels					
Constituent	rSRL[a] (mg/kg)	nrSRL[a] (mg/kg)	Minimum GPL[a] (mg/kg)	AGPL[B] (mg/kg)	SSCL[C] (mg/kg)
Arsenic	10	10	290	10,551 - 30,089	150
Cadmium	39	510	NA	NA	73.6
Lead	400	800	290	45,436 – 633,454	22,100
Manganese	3,300	32,000	NA	NA	18,500
Zinc	23,000	310,000	NA	NA	236,000

Notes:

[a]*Source: Arizona Administrative Code, Title 18, Ch. 7 (https://apps.azsos.gov/public_services/Title_18/18-07.pdf)*

[b]*The calculation of alternative GPLs is discussed in Section 5.1 of the NE Area DSR, BC, 2022.*

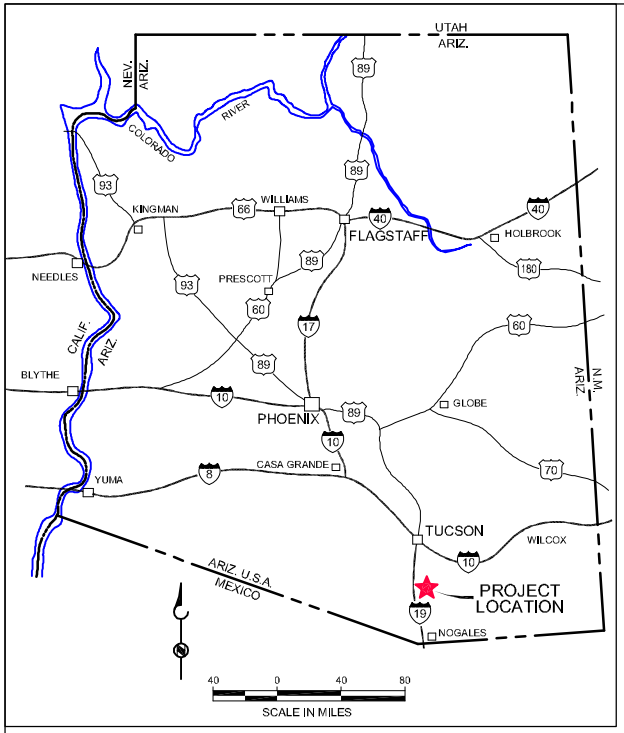
[b]*The calculation of SSCLs is discussed in Probabilistic Risk Assessment, Former Eagle Picher Mill Site on Parcel 30, Sahuarita, Arizona (HHRA), Arcadis 2022.*

Abbreviations:

mg/kg = milligram per kilogram

NA = not applicable

Figures



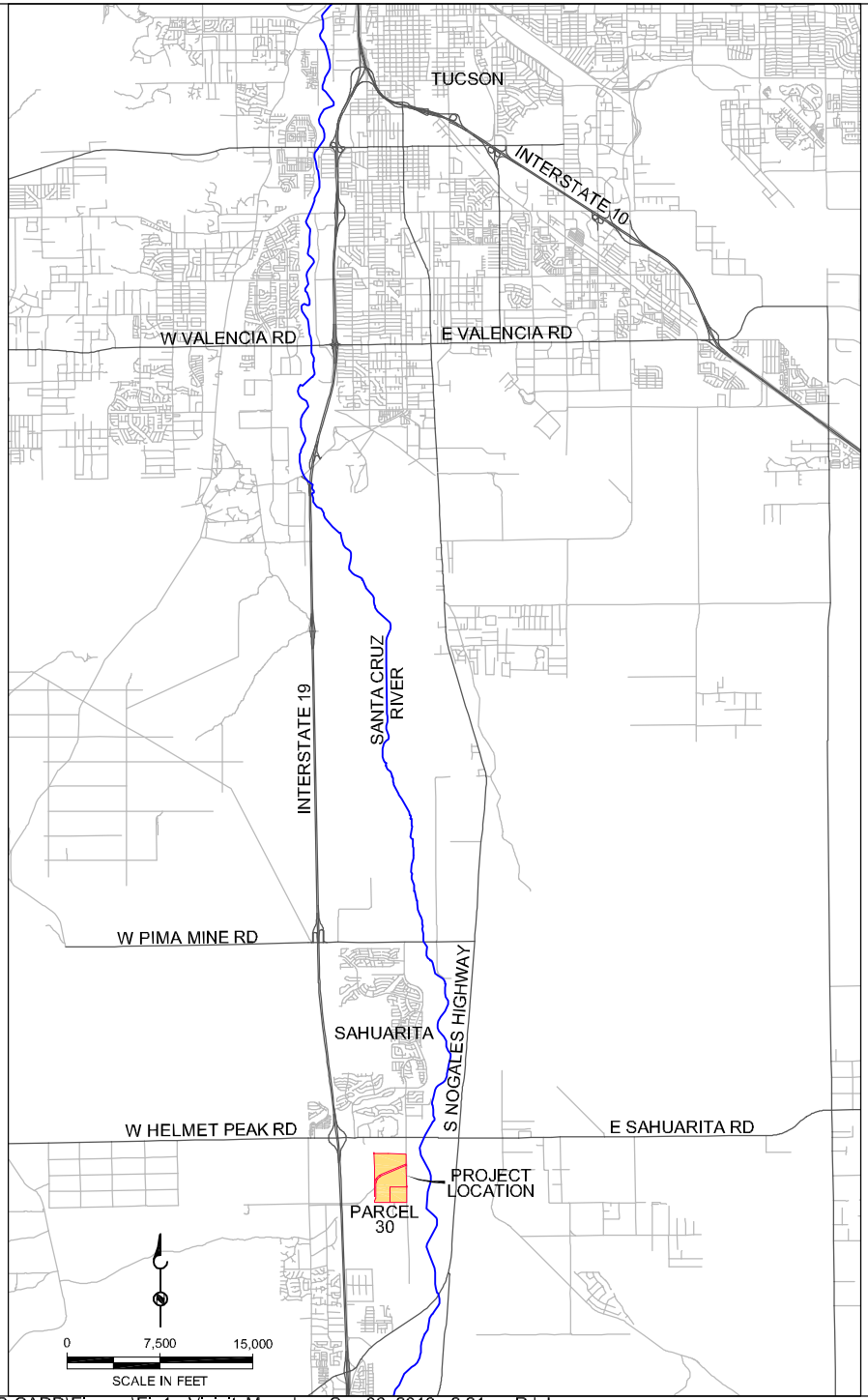


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Figure 1
PARCEL 30
LOCATION MAP
SAHUARITA, ARIZONA

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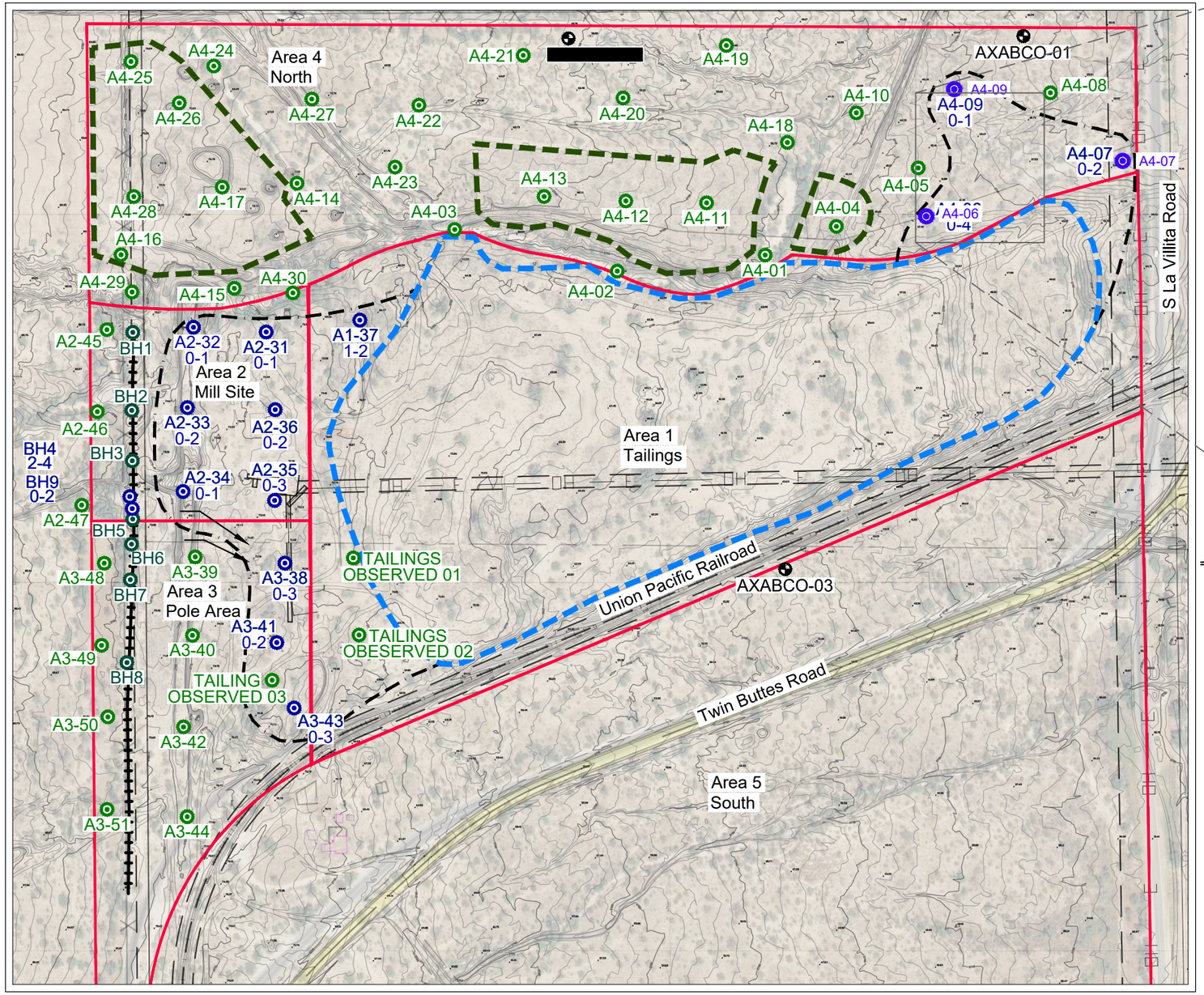

APPROXIMATE
SCALE IN FEET

SOURCE: ESRI IMAGERY

LEGEND

- AXABCO-01 WELL
- A4-10 SOIL SAMPLE LOCATION
- BH7 BC ABANDONED SPUR SOIL SAMPLE LOCATION
- A4-06 0-4 SOIL SAMPLE LOCATION
  DEPTH OF rSRL EXCEEDANCE IN FEET
- BH4 2-4 BC ABANDONED SPUR SOIL SAMPLE LOCATION
  DEPTH OF rSRL EXCEEDANCE IN FEET
- G16 NORTHEAST BASIN SOIL SAMPLE LOCATION
- 8-9 NORTHEAST BASIN SOIL SAMPLE LOCATION DEPTH OF rSRL EXCEEDANCE IN FEET
- ABANDONED RAILROAD SPUR
- ESTIMATED EXTENT OF rSRL EXCEEDANCE
- HISTORIC COVER SOIL BORROW LOCATIONS
- TAILING EXTENT (GOLDER, 2009)
- PARCEL 30 PROJECT AREA BOUNDARIES
- x66.41 SPOT ELEVATION (2766.41 - FOR LEGIBILITY, THE "27" PREFIX HAS BEEN TRUNCATED)
- 2745 EXISTING TOPOGRAPHIC CONTOUR - 5 FT
- EXISTING TOPOGRAPHIC CONTOUR - 1 FT

Brown AND Caldwell

Figure 2
HISTORICAL SAMPLE LOCATIONS MAP
PARCEL 30
SAHUARITA, ARIZONA

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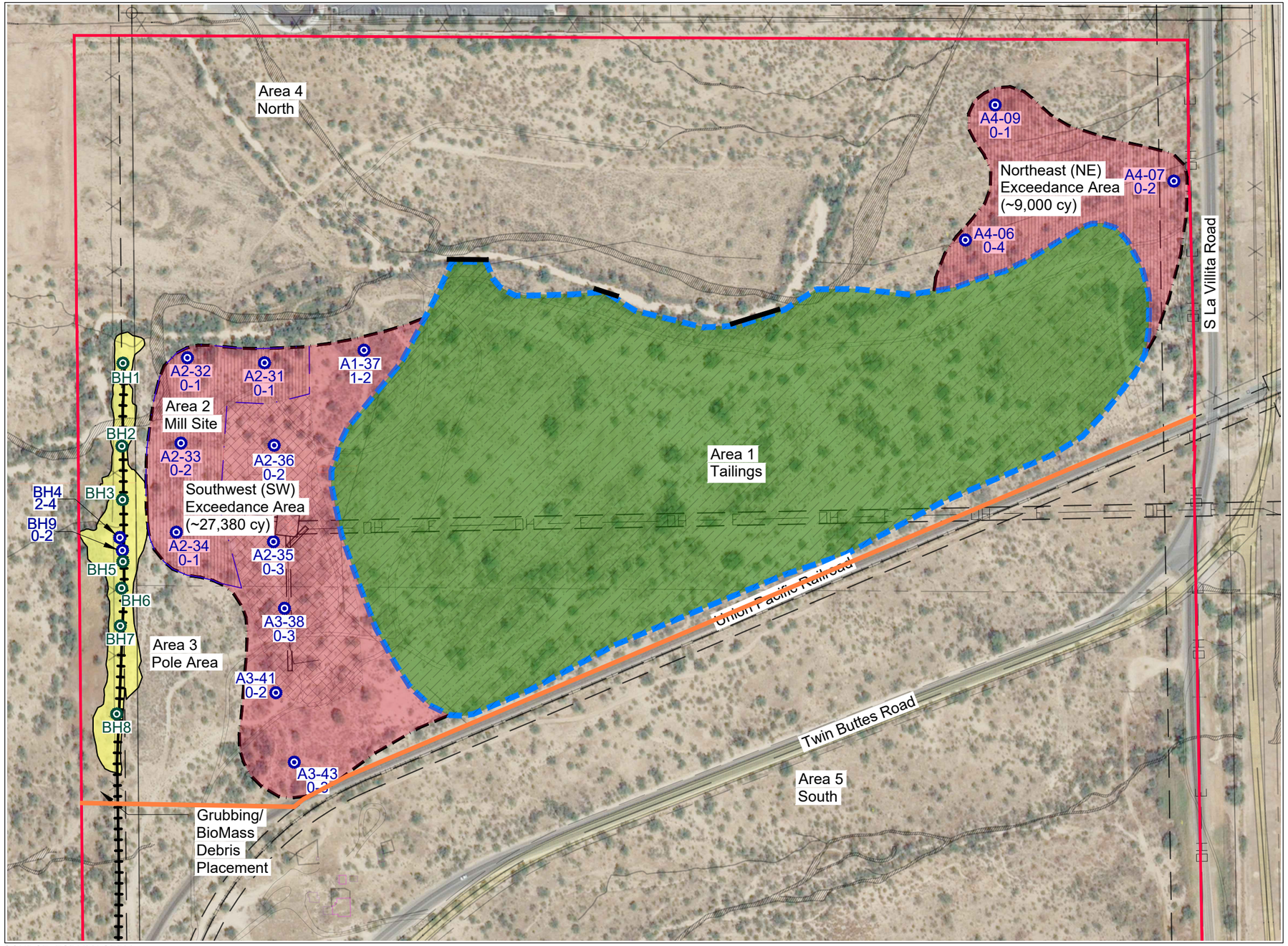

SOURCE: ESRI IMAGERY

0 125 250

APPROXIMATE
SCALE IN FEET

LEGEND

- BH7 — BC ABANDONED SPUR SOIL SAMPLE LOCATION
- A4-06 0-4 — SOIL SAMPLE LOCATION DEPTH OF rSRL EXCEEDANCE IN FEET
- BH4 2-4 — BC ABANDONED SPUR SOIL SAMPLE LOCATION DEPTH OF rSRL EXCEEDANCE IN FEET
- ABANDONED RAILROAD SPUR
- ESTIMATED EXTENT OF rSRL EXCEEDANCE
- TAILING EXTENT (GOLDER, 2009)
- PARCEL 30 PROJECT AREA
- CONSOLIDATION GRADING, AND 2-FOOT COVER
- SW COVER AREA (2 FT)
- AREA for ARMORING
- POTENTIAL COVER RESOURCE MATERIAL
- AREA OF CONTAMINATION, NORTH OF AND BOUNDED BY PARCEL 30 PROJECT AREA

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Figure 3

PROPOSED REMEDIATION SYSTEM LAYOUT

PARCEL 30
SAHUARITA, ARIZONA

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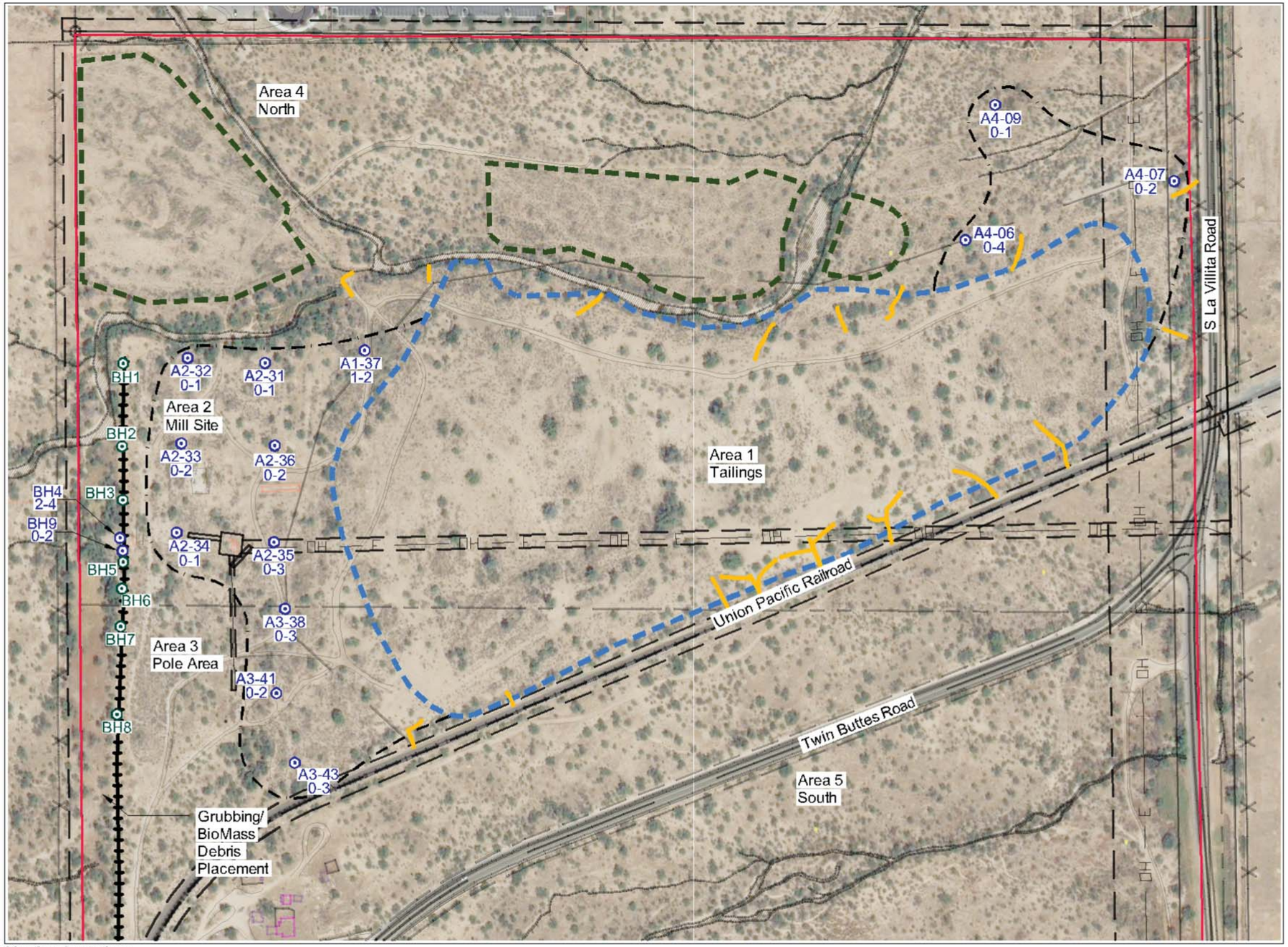

SOURCE: ESRI IMAGERY

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APPROXIMATE
SCALE IN FEET

LEGEND

- BH7 — BC ABANDONED SPUR SOIL SAMPLE LOCATION
- A4-06 0-4 — SOIL SAMPLE LOCATION DEPTH OF rSRL EXCEEDANCE IN FEET
- BH4 2-4 — BC ABANDONED SPUR SOIL SAMPLE LOCATION DEPTH OF rSRL EXCEEDANCE IN FEET
- ABANDONED RAILROAD SPUR
- ESTIMATED EXTENT OF rSRL EXCEEDANCE
- HISTORIC COVER SOIL BORROW LOCATIONS
- TAILING EXTENT (GOLDER, 2009)
- PARCEL 30 PROJECT AREA
- WATER CONVEYANCE FEATURE

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Figure 4

WATER
CONVEYANCE
FEATURES
PARCEL 30
SAHUARITA, ARIZONA

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