FINAL

THIRD FIVE-YEAR REVIEW REPORT

PAPAGO PARK MILITARY RESERVATION
PHOENIX, ARIZONA

Prepared for:

United States Army Environmental Command
Fort Sam Houston, Texas

Army National Guard

Papago Park Military Reservation
Phoenix, Arizona

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Approved By:

HAMMETT.ANTHONY.SCOTT.1116575562 Digitally signed by HAMMETT.ANTHONY.SCOTT.1116575562 Date: 2021.03.08 16:09:34 -05'00' 8 March 2021

Signature **Date**

Anthony Hammett
Colonel, U.S. Army
Chief, G-9 Army National Guard

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PAPAGO PARK MILITARY RESERVATION
PHOENIX, ARIZONA

Prepared by:

United States Army Corps of Engineers
Los Angeles District
915 Wilshire Boulevard, Suite 930
Los Angeles, California 90017

Dawson Technical, LLC
112 East Pecan Street, Suite 300
San Antonio, Texas 78205

Prepared Under Contract Number: W912PL-16-D-0042
Task Order Number: W912PL19F0092

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Executive Summary

Papago Park Military Reservation (PPMR) is located on 480 acres of land east of the city center of Phoenix, Arizona in Maricopa County (**Figure 1**). PPMR was established by Public Law 92 of the 71st Congress on April 21, 1930 and is currently an active Arizona Army National Guard (AZARNG) installation under the federal administration of the United States (U.S.) Army National Guard Directorate (ARNG) Cleanup and Restoration Branch. The facility serves as the Arizona Joint Forces Headquarters and as host to operational National Guard units and supports readiness centers; aviation operations and maintenance; logistics management, warehousing, munitions storage, and equipment maintenance; academic, live-fire range, and individual field training; and personnel service and recruiting centers. The Arizona Department of Emergency and Military Affairs and the Maricopa County Office of Emergency Management are also supported by PPMR facilities.

This statutory Five-Year Review was conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). PPMR is not on the National Priorities List (NPL). The purpose of a Five-Year Review is to determine whether selected remedies for an environmental site remain protective of human health and the environment. Five-Year Reviews also identify issues found during the review, if any, and provide recommendations to address them. This Five-Year Review has been prepared because hazardous substances, pollutants, or contaminants remain at the site at levels that do not allow for unlimited use and unrestricted exposure (UU/UE). This review includes one Installation Restoration Program site listed in **Table ES-1**.

Table ES-1 Papago Park Military Reservation Five-Year Review Site Crosswalk

AEDB-R ID	Description	HQAES ID
PMR-S	Former Skeet Range (Site S)	1077A.1006

AEDB-R – Army Environmental Database-Restoration
HQAES – Headquarters Army Environmental System
ID – Identification

The remedy selected in the 2005 Decision Document for Site S is access and institutional controls, which consists of preparing an amendment to the Real Property Master Plan to add a description of the land use controls (LUCs) implemented at Site S, limiting public access by maintaining the existing fence around the boundary of the area that includes Site S, and prohibiting residential use of Site S. In addition, any disturbance of soil at or removal of LUCs from Site S will require approval by the U.S. Army Environmental Command (USAEC) and Arizona Department of Environmental Quality (ADEQ). Finally, if ownership of Site S is transferred to a party other than the U.S. Department of the Army (Army), it will be necessary to either remediate the property or for the new owner to sign and obtain ADEQ approval of a Declaration of Environmental Use Restriction that has

been prepared in accordance with Arizona Administrative Code Section R18-7-207 (National Guard Bureau, 2005).

The remedy at Site S is protective of human health and the environment.

Access and institutional controls have been implemented at Site S. Annual LUC inspections and the Five-Year Review Site Inspection indicate physical and administrative LUCs are in place to limit public access to the site, prohibit residential use, and monitor any disturbance of soil or changes to LUCs at Site S to ensure potential exposure to contaminants of concern in soil and sediment, as well as lead shot that remains on the ground surface, is prevented.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Papago Park Military Reservation		
EPA ID: AZ4211890021		
Region: 9	**State:** AZ	**City/County:** Phoenix, Maricopa County

SITE STATUS	
NPL Status: Non-NPL	
Multiple OUs? No	**Has the site achieved construction completion?** Yes

REVIEW STATUS
Lead agency: Other Federal Agency **If "Other Federal Agency" was selected above, enter Agency name:** Arizona Army National Guard (AZARNG) under the federal administration of the United States Army National Guard Directorate (ARNG) Cleanup and Restoration Branch
Author name (Federal or State Project Manager): Kim Birdsall
Author affiliation: AZARNG
Review period: March 12, 2020 – March 8, 2021
Date of site inspection: October 15, 2020
Type of review: Statutory
Review number: 3
Initial triggering action date: April 4, 2006
Due date *(five-year cycle after initial triggering action date)*: April 4, 2021

Five-Year Review Summary Form (continued)

Issues/Recommendations		
OU(s) without Issues/Recommendations Identified in the Five-Year Review:		
Site S		
Protectiveness Statement(s)		
Operable Unit: Site S (Headquarters Army Environmental System [HQAES] Identification [ID] 1077A.1006)	*Protectiveness Determination:* Protective	*Addendum Due Date (if applicable):* Not applicable.
Protectiveness Statement: The remedy at Site S is protective of human health and the environment. Access and institutional controls have been implemented at Site S. Annual land use control (LUC) inspections and the Five-Year Review Site Inspection indicate physical and administrative LUCs are in place to limit public access to the site, prohibit residential use, and monitor any disturbance of soil or changes to LUCs at Site S to ensure potential exposure to contaminants of concern in soil and sediment, as well as lead shot that remains on the ground surface, is prevented.		

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ACRONYMS AND ABBREVIATIONS

§	Section
95UCL	95 Percent Upper Confidence Limit
ADEQ	Arizona Department of Environmental Quality
AEDB-R	Army Environmental Database-Restoration
Army	United States Department of the Army
ARNG	Army National Guard Directorate
AZARNG	Arizona Army National Guard
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of Concern
DAWSON	Dawson Technical, LLC
DD	Decision Document
EPA	United States Environmental Protection Agency
HQAES	Headquarters Army Environmental System
ID	Identification
LUC	Land Use Control
LUCIP	Land Use Control Implementation Plan
mg/kg	Milligrams per Kilogram
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	Operations and Maintenance
OSWER	Office of Solid Waste and Emergency Response
PAH	Polycyclic Aromatic Hydrocarbon
PPMR	Papago Park Military Reservation
RAO	Remedial Action Objective
RPDP	Real Property Development Plan
RPMP	Real Property Master Plan
rSRL	Residential Soil Remediation Level
U.S.	United States
USACE	United States Army Corps of Engineers
USAEC	United States Army Environmental Command
UU/UE	Unlimited Use and Unrestricted Exposure

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1.0 INTRODUCTION

This is the Third Five-Year Review for Papago Park Military Reservation (PPMR) located in Phoenix, Arizona. PPMR was established by Public Law 92 of the 71st Congress on April 21, 1930 and is currently an active Arizona Army National Guard (AZARNG) installation under the federal administration of the United States (U.S.) Army National Guard Directorate (ARNG) Cleanup and Restoration Branch. The facility serves as the Arizona Joint Forces Headquarters and as host to operational National Guard units. PPMR is not on the National Priorities List (NPL). This review includes the Installation Restoration Program site listed in **Table 1**.

Table 1 Papago Park Military Reservation Five-Year Review Site Crosswalk

AEDB-R ID	Description	HQAES ID
PMR-S	Former Skeet Range (Site S)	1077A.1006

AEDB-R – Army Environmental Database-Restoration
HQAES – Headquarters Army Environmental System
ID – Identification

1.1 PURPOSE

The purpose of the Five-Year Review is to determine whether site remedies remain protective of human health and the environment. Five-Year Reviews also identify issues discovered during the review, if any, and provide recommendations to address them. This Five-Year Review has been prepared because hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

1.2 AUTHORITY

The U.S. Army Corps of Engineers (USACE) Los Angeles District, with assistance from Dawson Technical, LLC (DAWSON), is preparing this Five-Year Review on behalf of the U.S. Army Environmental Command (USAEC) pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section (§) 121, 42 U.S. Code § 9621, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 Code of Federal Regulations (CFR) Part 300. CERCLA §121 (c) states the following:

> *"If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the*

> *President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews."*

The NCP, at 40 CFR § 300.430(f)(4)(ii), states:

> *"If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after initiation of the selected remedial action."*

PPMR is an active AZARNG installation under the federal administration of the ARNG Cleanup and Restoration Branch. The Arizona Department of Environmental Quality (ADEQ) is the lead regulatory agency providing oversight support for environmental investigations, risk management, and cleanup activities at PPMR.

In 2010, ADEQ adopted a policy requiring all final technical documents to be signed and stamped by a registered professional in accordance with the professional registration requirements contained in Arizona Revised Statute 32-125. However, Arizona Revised Statute Sections 32-144 and 32-101 explicitly exempt employees and officers of the federal government acting in that capacity from having to comply with these professional registration requirements. There is also no statutory or regulatory requirement under CERCLA or the NCP requiring final technical documents to be signed and stamped by a registered professional. Furthermore, federal facilities, whether they are listed on the NPL or not, are only required to comply with substantive state requirements that are promulgated under state environmental or facility siting laws. Federal facilities do not have to comply with state procedural requirements contained in non-environmental statutes, because Congress has clearly not waived sovereign immunity in this arena. Since ADEQ's policy regarding professional registrants is not a promulgated substantive requirement under state environmental laws, it is not an applicable or relevant and appropriate requirement with which federal facilities have to comply.

2.0 BACKGROUND

PPMR was established on April 21, 1930 by Public Law 92 of the 71st Congress on land formerly designated as the Papago Saguaro National Monument, an area originally selected to preserve the red sandstone buttes and desert flora. The Act abolished the Papago Saguaro National Monument and portions of the area were converted to Papago State Park and an AZARNG firing range (DAWSON, 2018).

2.1 PHYSICAL CHARACTERISTICS

PPMR is located on 480 acres of land east of the City center of Phoenix, Arizona in Maricopa County (**Figure 1**; National Guard Bureau, 2005). The installation is bordered to the north by Oak Street, the east by Papago State Park, the south by Papago Golf Course and residential properties, and the west by 52nd Street.

2.2 GEOLOGY

PPMR is constructed on Quaternary pediment colluvium/alluvium that originated from the western and southwestern flanks of Barnes Butte located within the PPMR facility. The pediment is the erosional remnant of an upthrown fault block, which has been cut by several smaller northwest trending faults, and the porous to crystalline bedrock surface is locally covered by a thin pediment colluvium/alluvium veneer. Up to 30 feet of the pediment colluvium/alluvium is composed of calichified angular to subangular rock fragments. In response to changes in the hydrologic regimes of the nearby Salt River, tributary streams that drain the pediment to the south have incised deep channels, locally exposing Precambrian and Tertiary bedrock; however, the portion of PPMR that is currently occupied by buildings and structures is covered by artificial fill soil imported for construction (National Guard Bureau, 2005).

Tertiary sedimentary rocks exposed at PPMR indicate a variation of sediment sources and reflect separate lobes of alluvial fans that coalesce with and overlie each other. The older, proximal facies are members of the Camel's Head Formation (Stadium Breccia, Barnes Butte Breccia, Zoo Breccia) and are typically very coarse and poorly stratified arkosic breccias, having originated as talus, mud flows, and debris flows. Mid-fan facies are represented by the Papago Park member and consists of alluvial deposits that were interbedded with debris flow deposits. Distal-facies are represented by the Tempe Beds that are typically finer-grained, well stratified, and well sorted. Crossbedding and mud cracks are prevalent (National Guard Bureau, 2005).

Basement rocks at PPMR consist of Precambrian Porphyritic Camelback Granite and Precambrian Metarhyolite. The Camelback Granite is characterized by large pink feldspar crystals that are locally highly sheared with granulation and alteration of original minerals. Metarhyolitic rocks consist of gray to pink, blocky, low grade metamorphosed rhyolite and based on historical drill logs, are common throughout the subsurface of PPMR. The Tertiary and Precambrian bedrock units are characterized by fractures and displaced by multiple high angle normal faults, primarily in the western portion of PPMR. The amount

of offset on the faults does not appear to be significant (tens of feet), but the depth of faulting in the basement is poorly understood (National Guard Bureau, 2005).

2.3 HYDROGEOLOGY

PPMR is on the bedrock highlands primarily underlain by crystalline basement units, which limits groundwater occurrence. Groundwater is present in local temporal perched aquifers in the artificial fill material and calichified pediment colluvium/alluvium and unconfined aquifers in fractured bedrock. The lithologic logs from monitor wells indicate the majority of groundwater exists under unconfined conditions within fractured Precambrian Camelback Granite and/or Metarhyolite (National Guard Bureau, 2005).

Since 1947, depth to groundwater has been increasing and ranges from 6 to 42 feet below ground surface at PPMR. Based on historical data, groundwater flow beneath PPMR is west to south-west at a gradient of 0.12 feet per foot, which is consistent with regional and historic flow toward Salt River. Groundwater at PPMR is not used for potable purposes (National Guard Bureau, 2005; DAWSON, 2018).

2.4 LAND AND RESOURCE USE

PPMR is an active AZARNG facility located in Phoenix, Arizona, a densely populated metropolitan area, and serves as the Arizona Joint Forces Headquarters and as host to operational National Guard units. PPMR supports readiness centers; aviation operations and maintenance; logistics management, warehousing, munitions storage, and equipment maintenance; academic, live-fire range, and individual field training; and personnel service and recruiting centers. The Arizona Department of Emergency and Military Affairs and the Maricopa County Office of Emergency Management are also supported by PPMR facilities. The area surrounding PPMR consists of densely developed residential and commercial properties. PPMR is anticipated to remain an active U.S. Department of the Army (Army) facility with industrial and military training uses (DAWSON, 2018).

3.0 SITE S

3.1 SITE CHRONOLOGY

The chronology for Site S is presented in **Table 2**.

Table 2 Chronology of Site S

Event	Date
PPMR established	April 21, 1930
Skeet Range constructed	1949-1954
Southern portion of PPMR fenced and signage posted	September 1957
Skeet Range demolished	1970-1977
PPMR Site Investigation performed	November 1998
Abbreviated Preliminary Assessment performed	July 2000
Risk evaluation performed	September 2003
Soil sampling performed and Site Characterization Report completed	October-November 2004
Statistical analysis of lead in surface soil and sediment performed	December 2004
Decision Document signed	April 4, 2006
Real Property Development Plan finalized	September 2006
Site suitability evaluation conducted on a portion of Site S	December 2007
First Five-Year Review Report completed	June 2011
Natural and Cultural Resources Assessment conducted	February 2015
Second Five-Year Review Report completed	April 2016
PPMR Land Use Control Implementation Plan finalized	March 2018
Draft Technical Memorandum for Closure Evaluation at Site S	February 2019

PPMR – Papago Park Military Reservation

3.2 PHYSICAL CHARACTERISTICS

Site S is located south of McDowell Road and southwest of a guard station that controls entry to south PPMR from McDowell Road (**Figure 2**). The boundary of Site S has not been formally established, but the maximum extent of the range, based on a 1970 aerial photograph, encompasses an area of approximately 11 acres later improved with Bushmaster Boulevard, Building M5705, and paved parking lots; the remainder of Site S is undeveloped land. Access to PPMR and Site S is restricted by the installation's perimeter fence, and portions of Site S are also fenced by interior installation fencing (Weston, 2019).

3.3 HISTORY OF CONTAMINATION

Based on historical aerial photographs, Site S, a former skeet range, was constructed between 1949 and 1954 and demolished between 1970 and 1977 (National Guard Bureau, 2005). Lead shot and clay pigeon fragments were deposited on the surface during normal range activities (DAWSON, 2018).

3.4 INITIAL RESPONSE

The former range was demolished between 1970 and 1977. Per the 2005 decision document (DD), earlier records for many of the historical environmental management practices are not available due to the age of PPMR (National Guard Bureau, 2005).

3.5 BASIS FOR TAKING ACTION

Surface soil samples were collected from locations at Site S formerly occupied by firing points, debris piles, and shotfall areas. Sediment samples from the bottom of the rills and drainages that carry storm water from Site S toward the retention basin to the west and in the storm water retention basin were also collected. Analysis of these soil and sediment samples showed that the concentration of total lead exceeded the Arizona Residential Soil Remediation Level (rSRL) of 400 milligrams per kilogram (mg/kg) in three areas at Site S. Concentrations of the polycyclic aromatic hydrocarbons (PAHs) benzo(a)pyrene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and benzo(b)fluoranthene also exceeded their rSRLs at three locations at Site S, which is consistent with contamination from clay pigeon debris.

In addition, lead shot remains on the ground surface in small areas, mainly in and near drainage rills in the central portion of Site S (National Guard Bureau, 2005).

3.6 REMEDIAL ACTIONS

3.6.1 REMEDIAL ACTION OBJECTIVES

No formal remedial action objectives (RAOs) were established in the 2005 DD (National Guard Bureau, 2005).

3.6.2 REMEDY DESCRIPTION

The remedy selected in the 2005 DD for Site S is *Access and Institutional Controls*. The remedy consists of preparing an amendment to the Real Property Master Plan (RPMP) to add a description of the land use controls (LUCs) implemented at Site S, limiting public access by maintaining the existing fence around the boundary of the area that includes Site S, and prohibiting residential use of Site S. In addition, any disturbance of soil at or removal of LUCs from Site S will require coordination with USAEC and ADEQ. Finally, if ownership of Site S is transferred to a party other than the Army, it will be necessary to either remediate the property or for the new owner to sign and obtain ADEQ approval of a Declaration of Environmental Use Restriction that has been prepared in accordance with Arizona Administrative Code § R18-7-207 (National Guard Bureau, 2005).

3.6.3 REMEDY IMPLEMENTATION

PPMR does not maintain an RPMP. In 2006, a Real Property Development Plan (RPDP) was prepared; however, it did not include a description of the LUCs for Site S (AZARNG, 2014; DAWSON, 2018). A LUC Implementation Plan (LUCIP) for Site S was finalized and concurred upon by ADEQ in March 2018. The LUCIP includes a description of the administrative and physical LUCs implemented at Site S, including notations in the RPDP, the requirement to limit public access to the site by maintaining the physical LUCs (i.e., installation fencing and signage), and prohibiting residential use of Site S. The LUCIP also explains that any activity that disturbs on-site soil or removal of LUCs requires approval by USAEC and ADEQ, and in the event of transfer of Site S from the State of Arizona, AZARNG will maintain responsibility for remediation (DAWSON, 2018). The 2018 LUCIP amends the existing 2006 RPDP (AZARNG, 2018a).

Physical LUCs were in place at Site S prior to the 2005 DD and included the installation perimeter fencing, signage, and guarded entry gates. Signage is mounted to the perimeter fence and reads “No Trespassing” (DAWSON, 2018).

Annual inspections for Site S consist of a visual check of the physical LUCs (i.e., fencing and signage) to ensure that proper maintenance is taking place and to note changes from the previous inspection. Annual inspection findings are documented in a Memorandum for Record.

3.6.3.1 Closure Evaluation

In a letter dated August 4, 2017, ADEQ notified AZARNG that a file review had been completed and Site S had the potential to be closed with UU/UE if concentrations of remaining contaminants of concern (COCs) were less than respective rSRLs. ADEQ outlined an approach to replicate the 2007 sampling event at Site S to determine whether areas with previously identified concentrations of COCs were still present greater than rSRLs.

As a result, a Closure Evaluation for Site S was performed from December 2018 to February 2019. The conditions for evaluating Site S for closure consisted of calculating site-wide 95 percent upper confidence limits (95UCLs) for arsenic and benzo(a)pyrene using the U.S. Environmental Protection Agency (EPA) ProUCL statistical software program to represent the exposure point concentration; collecting one additional surface soil sample from an anomalous data point collected in 2007, analyzing for arsenic and PAHs, and comparing results to regulatory limits; and comparing the calculated 95UCL results for arsenic and benzo(a)pyrene to rSRLs based on a cancer risk of 1×10^{-5}. If site-wide 95UCLs are less than the existing ADEQ rSRLs for carcinogenic residential land use, then Site S would be proposed for closure.

A portion of Site S was investigated in 2007 and included the analysis of surface soil samples for Resource Conservation and Recovery Act 8 metals (i.e., arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) and PAHs. Analytes were

selected for the Closure Evaluation based on this soil investigation, which detected only arsenic and the PAHs benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene greater than ADEQ rSRLs (Weston, 2019).

Surface soil samples were collected in December 2018 from one location where a 2007 soil sample contained PAHs greater than rSRLs. Arsenic and multiple PAHs, including benzo(a)pyrene, were identified in soil samples greater than the limit of detection, but the detections did not exceed current ADEQ rSRLs or EPA residential Regional Screening Levels (for compounds where an rSRL was not established). Additionally, the calculated exposure point concentrations for arsenic and benzo(a)pyrene were less than their ADEQ rSRLs under the most restrictive residential land use scenario. As a result, the Technical Memorandum for the Closure Evaluation at Site S recommended closure of Site S (Weston, 2019).

According to a March 2019 ADEQ comment letter on the Technical Memorandum for the Closure Evaluation at Site S, UU/UE status has not yet been achieved and the remedy will continue to be maintained at Site S to ensure its protectiveness.

3.6.4 OPERATIONS AND MAINTENANCE

Operations and maintenance (O&M) activities at Site S consist of the following:

- Annual LUC inspections,
- As needed LUC maintenance, and
- Annual Memoranda for Record.

The Annual LUC inspections include the following and findings are documented in the Annual Memorandum for Record:

- Inspection of LUC perimeter fencing and signage for evidence of damage;
- Observation of changes from the previous annual LUC inspection; and
- Photo-documentation of current site conditions.

Based upon review of the Annual LUC Inspection Reports since the previous Five-Year Review, the installation's boundary fence and "no trespassing" signs were found to be in good condition and continue to serve as an effective deterrent to public access. No changes to conditions at Site S were noted in the reports from 2016-2019 (AZARNG, 2016, 2018a, 2018b, 2019).

3.7 PROGRESS SINCE THE SECOND FIVE-YEAR REVIEW

The following presents the protectiveness statement from the previous Five-Year Review Report for Site S (Army, 2016):

The remedy at Site S is protective of human health and the environment. There are currently no complete ecological exposure pathways and the remedy LUCs and access controls prevent unacceptable exposures by restricting residential use in Site S.

Several non-critical recommendations were identified during the Second Five-Year Review. A summary of these recommendations and their status are provided in **Table 3.**

Table 3 Non-Critical Actions Taken Since the Second Five-Year Review

Issue Identified in Previous Review	Recommendation from Previous Review	Milestone Date	Action Taken	Date of Action
The administrative component of the remedy has not been fully implemented. An update to the RPMP is required to include restrictions and approvals required for specific activities.	*The RPMP should be updated to include all components of the remedy.*	*2017*	A LUCIP for Site S was completed and concurred upon by ADEQ. The LUCIP includes all components of the remedy and amends the existing 2006 RPDP.	March 20, 2018
The Decision Document figures contain only the extents of historical use and identified areas of elevated lead and PAH concentrations in soil and sediment. A site boundary has not been established for Site S.	*A formal site boundary should be established and incorporated into the RPMP.*	*2017*	Since PPMR is working towards closure of Site S, a Closure Evaluation was performed in lieu of a survey. As a result, there is currently no formal delineation of the boundary of Site S.	Ongoing

ADEQ – Arizona Department of Environmental Quality
LUCIP – Land Use Control Implementation Plan
PAH – polycyclic aromatic hydrocarbon
PPMR – Papago Park Military Reservation
RPDP – Real Property Development Plan
RPMP – Real Property Master Plan

3.8 FIVE-YEAR REVIEW PROCESS

3.8.1 ADMINISTRATIVE COMPONENTS

The ARNG initiated the Third Five-Year Review Report for PPMR on March 12, 2020, with a kick-off call with USACE Los Angeles District, USAEC, and DAWSON personnel to discuss the site and any items of interest pertaining to the protectiveness of the remedy currently in place. The PPMR Five-Year Review team was led by USACE Los Angeles District and included DAWSON personnel with expertise in remediation, regulatory compliance, geology, hydrogeology, geochemistry, and risk assessment. A review schedule was established that included:

- Community notification,
- Document and data review,
- Site inspection,
- Interviews, and
- Five-Year Review report development and review.

3.8.2 COMMUNITY NOTIFICATION

A public notice was issued in *The Arizona Republic* on April 5, 2020, notifying the public the ARNG was initiating the Five-Year Review at PPMR. Contact information was provided for the public to submit comments. No comments have been received to date from the public following publication of the Initial Public Notice. The Public Notice affidavit is included in **Appendix A**.

The results of the review and the report will be made available at the site information repository located at:

PPMR Facilities Management Environmental Office
5636 East McDowell Road
Phoenix, Arizona 85008

Upon completion of the Third Five-Year Review Report, a Final Public Notice will be placed in *The Arizona Republic* to announce availability of the Final Five-Year Review Report in the site information repository.

3.8.3 DOCUMENT AND DATA REVIEW

The Third Five-Year Review included a review of relevant site documents, including but not limited to decision/remedy selection documents, design and implementation reports, investigations, annual reports and related monitoring data, and regulatory documents.

The remedy for Site S consists of access and institutional controls; therefore, there was no data generated to be reviewed for this Five-Year Review.

3.8.4 SITE INSPECTION

The Third Five-Year Review Site Inspection of PPMR occurred on October 15, 2020. In attendance were Kim Birdsall (AZARNG), Natalie Romanoff (ADEQ), Breanna Stout (DAWSON), and Alexandria Lagos (DAWSON).

The Site Inspection was conducted to visually confirm and document the operation of the remedy, overall site conditions, and the surrounding area. The inspection included visual confirmation of institutional and engineering controls, as well as the overall site condition. The Site Inspection Checklist is presented in **Appendix B** and the Site Inspection Photograph Log is presented in **Appendix C**.

The Site Inspection Team inspected Site S, which consisted of an aged asphalt roadway, Building M5705with paved parking lots, and undeveloped open land. Fencing around Site S is the south PPMR perimeter fencing, which was noted to be in good condition. In addition, barbed or razor wire was observed atop fence lines in high foot traffic areas to prevent access (**Appendix C, Photographs 13-16**) and no access points were observed that would allow for human trespassing. Although a homeless encampment was observed exterior to the northern fence boundary, there was no evidence of trespass or waste interior to the PPMR perimeter fence (**Appendix C, Photograph 23**). The Site Inspection Team also observed approximately 15 signs posted on the PPMR perimeter fence at approximately 50-foot intervals and 100- to 200-foot intervals (**Appendix C, Photographs 14, 17, and 18**). The signs were noted as legible and in good condition; access roads at Site S were also observed in good condition. No evidence of stormwater runoff was observed at Site S at the time of the inspection.

3.8.5 INTERVIEWS

Interviews document any perceived problems or successes with the remedy that has been implemented to date at Site S. The project team requested interviews from the following individuals:

- Randy Wilkinson, Project Support Manager, Army National Guard G9, Cleanup Branch (National Guard Bureau contractor);
- Kim Birdsall, Restoration Program Manager, AZARNG;
- Karin Harker, Federal Projects Unit Manager, ADEQ; and
- Brian Stonebrink, Project Manager, ADEQ.

Interview summaries are presented in **Appendix D**.

Mr. Randy Wilkinson noted that the remedy is functioning as expected, no changes in conditions or exposure have occurred at Site S, and no significant changes or unexpected O&M difficulties or costs have arisen since the previous Five-Year Review. Mr. Wilkinson also mentioned that a Closure Evaluation was initiated last year and if supplemental sampling results to address data gaps are consistent, UU/UE will be proposed for Site S.

Ms. Kim Birdsall believes the selected remedy for Site S is effective and remains protective of human health and the environment. She explained that no significant changes or unexpected O&M difficulties or costs have occurred since the previous Five-Year Review. Finally, Ms. Birdsall explained that ADEQ is in support of the Closure Evaluation that took place in February 2019.

Ms. Karin Harker feels the remedy remains effective for Site S. She mentioned a site visit was performed during soil sampling completed as part of the Closure Evaluation, which concluded LUCs were still appropriate for Site S. Ms. Harker is not aware of any complaints, violations, or other incidents related to Site S.

Mr. Brian Stonebrink believes the remedy at Site S remains effective and is not aware of any complaints, violations, or other incidents related to Site S.

ADEQ's concurrence letter on the Draft Final PPMR Five-Year Review report is provided in **Appendix E.**

3.9 TECHNICAL ASSESSMENT

3.9.1 QUESTION A – IS THE REMEDY FUNCTIONING AS INTENDED BY THE DECISION DOCUMENT?

Yes, the remedy implemented at Site S is functioning as intended by the DD.

Access and institutional controls have been implemented and are effective. Although the 2006 PPMR RPDP was not amended with a description of Site S LUCs, the PPMR LUCIP was finalized in 2018 and contains LUC information for the site, including the requirement that public access to Site S be limited by maintaining physical LUCs (i.e., installation fencing and signage), prohibiting residential use of Site S, requiring any activity that will disturb on-site soil or remove LUCs from Site S be coordinated with USAEC and ADEQ, and ensuring if ownership of Site S is transferred to a party other than the Army, the Army will either remediate the property or require the new owner to sign and obtain ADEQ approval of a Declaration of Environmental Use Restriction that has been prepared in accordance with Arizona Administrative Code § R18-7-207. The 2018 LUCIP serves as an enforceable post-DD document to supplement the existing 2006 RPDP (AZARNG, 2018a).

Based on the annual LUC inspection reports and the Five-Year Review Site Inspection, the perimeter fence and signage are maintained in good condition and continue to limit public access to surface soil, sediment, and lead shot remaining on the ground surface at Site S. Finally, no changes at Site S were documented or observed.

3.9.2 QUESTION B – ARE THE EXPOSURE ASSUMPTIONS, TOXICITY DATA, CLEANUP LEVELS AND REMEDIAL ACTION OBJECTIVES USED AT THE TIME OF THE REMEDY SELECTION STILL VALID?

Yes, the exposure assumptions and toxicity data used at the time of the remedy selection are still valid. No changes in exposure assumptions have occurred at the site, as public access to Site S is restricted by the perimeter fence, residential development is still prohibited, and soil disturbance requires approval by USAEC and ADEQ. Furthermore, no changes at Site S were documented in the Annual LUC Inspection reports or observed during the Five-Year Review Site Inspection, and current and reasonably anticipated future land use at Site S remains unchanged (industrial).

Table 4 presents the Arizona rSRLs at the time of the DD compared to the most current values (2009). The comparison indicates current rSRLs are the same or greater than the rSRLs utilized at the time of the DD, indicating there is no change in risk at Site S. In addition, the 2019 Closure Evaluation for Site S determined that the exposure point concentration for benzo(a)pyrene, under the most restrictive residential land use scenario, was less than its corresponding rSRL, and analytical results from the December

2018 sampling event did not detect PAHs, including benzo(a)pyrene, greater than their current rSRLs. Finally, LUCs are in place to restrict residential development at Site S; limit public access to surface soil, sediment, and lead shot remaining on the ground surface at Site S; and monitor soil disturbing activities. Therefore, changes in the rSRLs do not affect the protectiveness of the remedy.

Table 4 Historical and Current Arizona rSRLs for Soil and Sediment COCs

COC	rSRL (mg/kg)[1]		Potential Change in Risk?
Lead	DD	400	No change in Risk. DD rSRL is the same as the current rSRL.
	Current	400	
Benzo(a)pyrene[2]	DD	0.61	No change in Risk. DD rSRL is lower than the current rSRL.
	Current	0.69	
Dibenz(a,h)anthracene[2]	DD	0.61	No change in Risk. DD rSRL is lower than the current rSRL.
	Current	0.69	
Indeno(1,2,3-cd)pyrene[2]	DD	6.1	No change in Risk. DD rSRL is lower than the current rSRL.
	Current	6.9	
Benzo(b)fluoranthene[2]	DD	6.1	No change in Risk. DD rSRL is lower than the current rSRL.
	Current	6.9	

[1] Current Arizona rSRLs were obtained from the 2009 version of the Arizona Administrative Code, Title 18, Chapter 7, which was accessed at https://apps.azsos.gov/public_services/Title_18/18-07.pdf.
[2] For carcinogenic COCs, the 10^{-5} Risk rSRL value was utilized.
COC – contaminant of concern
DD – Decision Document
mg/kg – milligrams per kilogram
rSRL – Residential Soil Remediation Level

No formal RAOs or cleanup levels were established in the 2005 DD for Site S.

3.9.3 Question C – Has any other information come to light that could call into question the protectiveness of the remedy?

There is no other information that calls into question the protectiveness of the remedy. No new ecological risks have been identified. There have been no impacts from natural disaster events or weather-related events that have affected the protectiveness of the remedy.

3.9.4 Technical Assessment Summary

The remedy at Site S was implemented and is functioning as intended. Access and institutional controls have been implemented and are effective at restricting access to Site

S to prevent potential exposure to COCs in soil and sediment, as well as lead shot that remains on the ground surface. There were no changes to the exposure assumptions, as the perimeter fence continues to restrict public access to Site S and changes at the site or in land use were not documented or observed since the previous Five-Year Review. In addition, the toxicity data used at the time of the remedy selection are still valid. The changes to rSRLs for Site S COCs did not result in a change to risk, as historical rSRLs are the same as or remain lower than current rSRLs. No other information that could affect the protectiveness of the remedy was noted.

3.10 ISSUES

No issues were identified during this Five-Year Review that prevent the remedy from being protective now or in the future.

3.11 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

No recommendations or follow-up actions are required since there were no issues identified during this Five-Year Review that affect current or future protectiveness of the remedy.

3.12 PROTECTIVENESS STATEMENT

The remedy at Site S is protective of human health and the environment.

Access and institutional controls have been implemented at Site S. Annual LUC inspections and the Five-Year Review Site Inspection indicate physical and administrative LUCs are in place to limit public access to the site, prohibit residential use, and monitor any disturbance of soil or changes to LUCs at Site S to ensure potential exposure to COCs in soil and sediment, as well as lead shot that remains on the ground surface, is prevented.

4.0 NEXT REVIEW

The next Five-Year Review Report will be due by April 4, 2026.

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5.0 REFERENCES

40 CFR Section 300. The National Oil and Hazardous Substances Pollution Contingency Plan.

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U.S. Environmental Protection Agency (EPA), 1989a. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part A), Interim Final. EPA/540/1-89/002, Office of Emergency and Remedial Response, Washington: USEPA.

EPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: “Standard Default Exposure Factors”, Office of Solid Waste and Emergency Response (OSWER) Directive 9285.6-03, March.

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Figures

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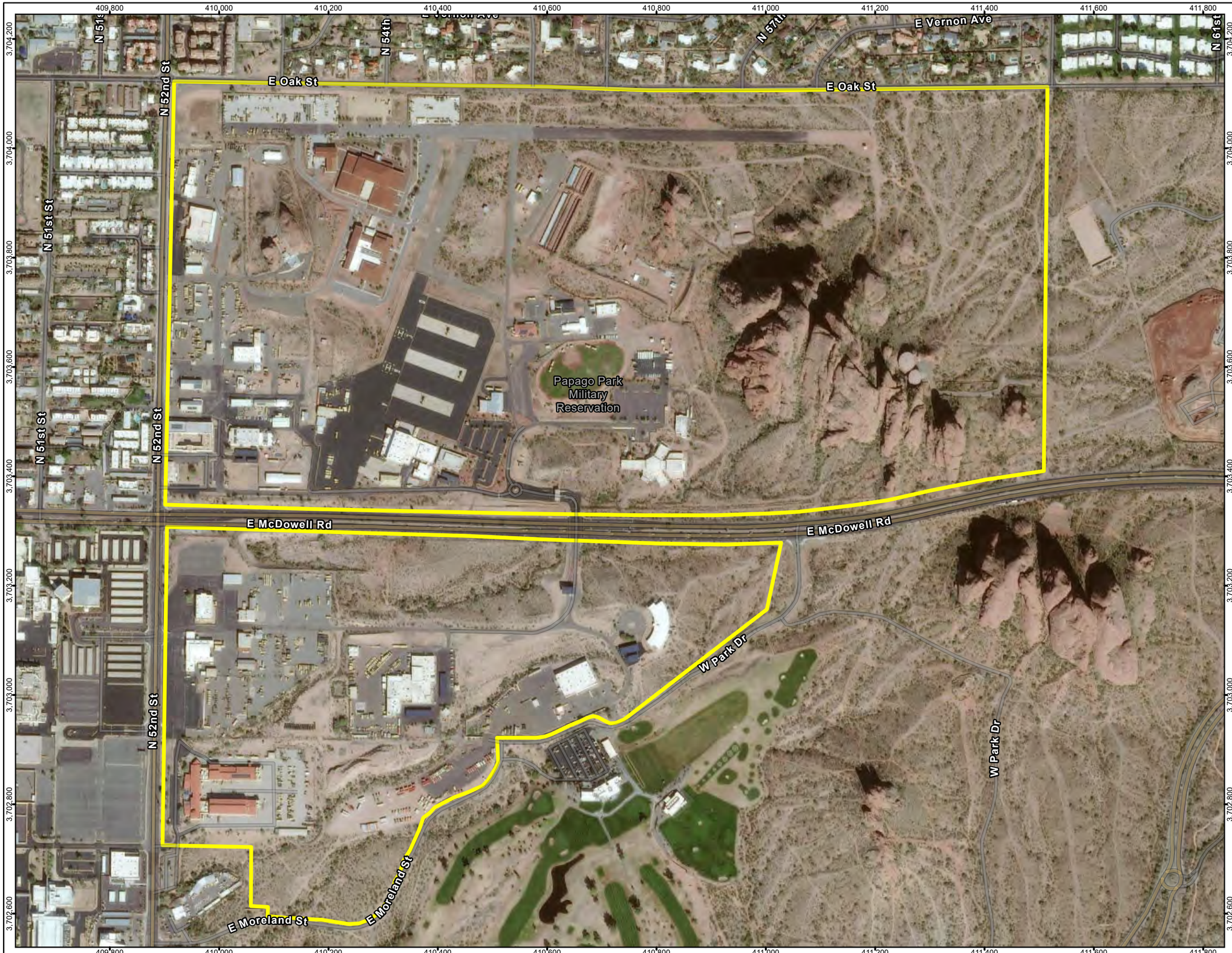
Figure 1
Papago Park Military Reservation Map

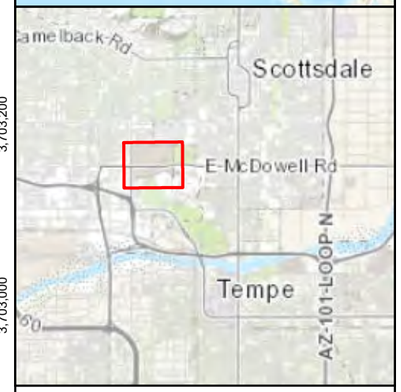
Date
NOVEMBER 2020

Figure
1

KEY

Papago Park Military Reservation





Engineering Scale
1" = 550'

Source(s)
DAWSON, Esri

Projection
WGS 1984 UTM Zone 12N

N W E S

0 275 550 Feet

DAWSON

Z:\Shared\ServiceLines\Environmental\GIS\PROJECTS\PapagoPark\GIS\PapagoPark\PapagoPark.aprx | 11/1/2020 | KKeith

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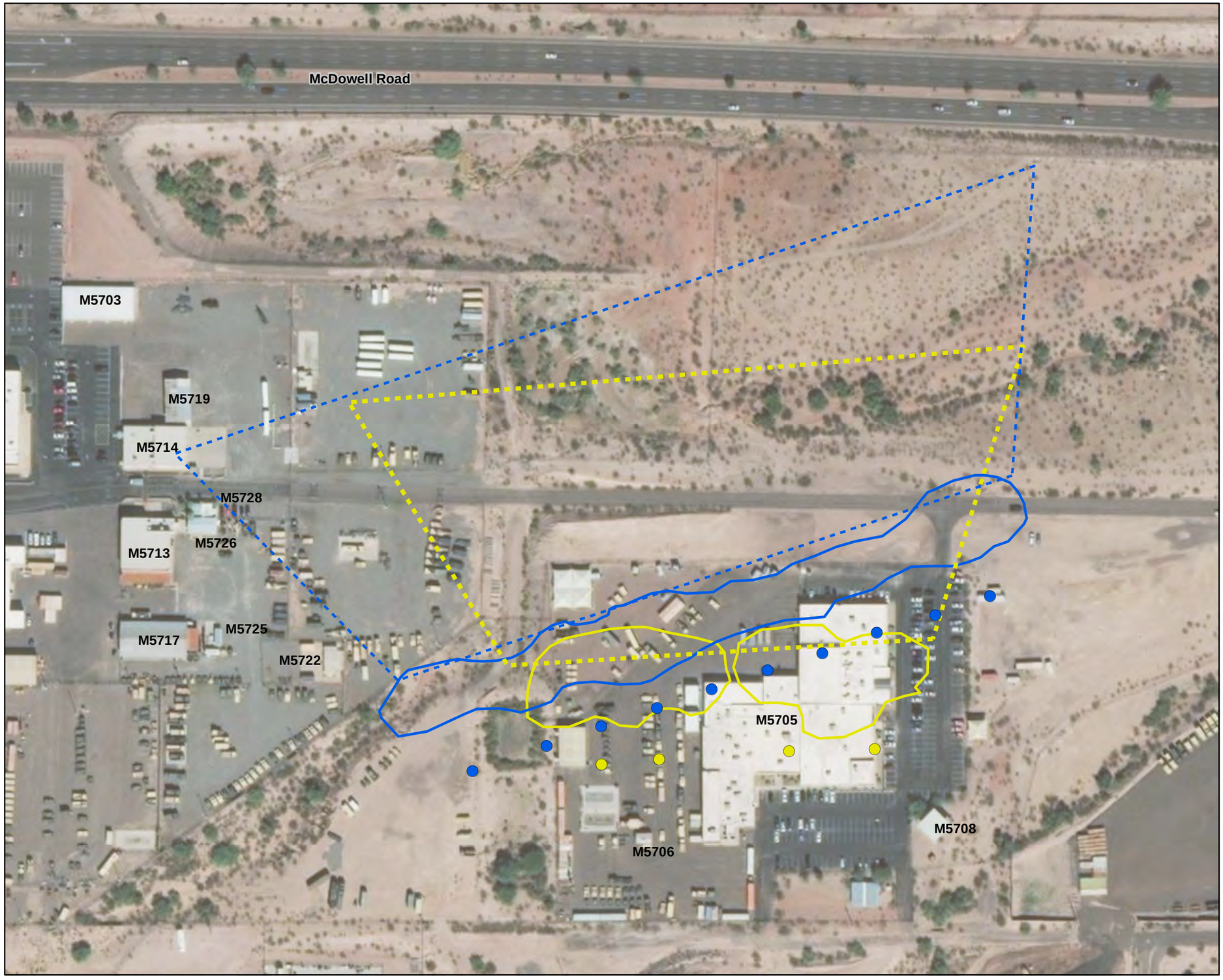

Legend

- Firing Line Stations 1954
- Firing Line Stations 1954-1977
- Area of Likely Shotfall 1954
- Visible Extent of Target Debris 1954
- Area of Likely Shotfall 1954-1977
- Visible Extent of Target Debris 1964
- Site Location

Site Features Source: EEC, 2005
Baselayer Source: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 2
Site S Map

Site S
Arizona Army National Guard
Papago Park Military Reservation
Phoenix, Arizona

0 75 150 225 300
Feet

N

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Appendix A

Public Notice Affidavit

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THE ARIZONA REPUBLIC

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Phone 1-602-444-7315 Fax 1-877-943-0443

PNI-Arizona Republic

AFFIDAVIT OF PUBLICATION

DAWSON
900 FORT STREET MALL, SUITE 1850
HONOLULU, HI 96813

Order#0004138237 **# of Affidavits 1**

P.0#

Published Date(s):

04/05/20

STATE OF WISCONSIN
COUNTY OF BROWN } **SS.**

I, being first duly sworn, upon oath deposes and says: That I am the legal clerk of the Arizona Republic, a newspaper of general circulation in the counties of Maricopa, Coconino, Pima and Pinal, in the State of Arizona, published weekly at Phoenix, Arizona, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates indicated.

Sworn to before me this

5 TH day of
APRIL 2020

Notary Public

My Commission expires: 9-19-21

Public Notice: Five-Year Review
Papago Park Military Reservation, Phoenix, Arizona

The National Guard Bureau is initiating the Third Five-Year Review for Papago Park Military Reservation located in Phoenix, Arizona. With oversight provided by the Arizona Department of Environmental Quality (ADEQ), the National Guard Bureau is conducting this Five-Year Review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act and the National Oil and Hazardous Substances Pollution Contingency Plan. The purpose of the Five-Year Review is to determine whether the selected remedy at a site remains protective of human health and the environment and to make recommendations if deficiencies are identified. This review evaluates protectiveness of the remedy for the Former Skeet Range - Site S pursuant to a 2005 decision document (DD).

The selected remedy for the Former Skeet Range - Site S is long-term management consisting of land use controls that restrict access and prohibit residential use, regulatory approval of soil disturbance, and routine reviews.

The Third Papago Park Military Reservation Five-Year Review Report is anticipated to be signed in April 2021. The National Guard Bureau will issue another public notice announcing the completion of the Five-Year Review. Once completed, the Final Five Year Review Report will be available at the administrative record at Papago Park Military Reservation and an information repository at ADEQ.

Papago Park Military Reservation
Environmental Management Office
Arizona Army National Guard
5636 E. McDowell Road, M5330
Phoenix, Arizona 85008

ADEQ Records Center
1110 W. Washington Street
Phoenix, Arizona 85007

Should members of the community have questions or comments about the Third Papago Park Military Reservation Five-Year Review or are interested in additional site information, please contact Ms. Kim Birdsall. Her contact information is as follows:

Kim Birdsall
Environmental Restoration Program Manager
Environmental Management Office
Arizona Army National Guard
5636 E. McDowell Road, M5330
Phoenix, Arizona 85008
(602) 267-2498
birdsallk@emo.azdema.gov

Published: April 5, 2020

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Appendix B

Site Inspection Checklist

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I. SITE INFORMATION	
Site name: Former Skeet Range (Site S) (Headquarters Army Environmental System [HQAES] 1077A.1006)	**Date of inspection:** October 15, 2020
Location and Region: Papago Park Military Reservation (PPMR), Phoenix, Arizona	**EPA ID:** AZ4211890021
Agency, office, or company leading the five-year review: United States Army Corps of Engineers (USACE)	**Weather/temperature:** Sunny, 78°C

Remedy Includes: (Check all that apply)

- ☐ Landfill cover/containment
- ☒ Access controls
- ☒ Institutional controls
- ☐ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☐ Other:_____
- ☐ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Vertical barrier walls

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** Kim Birdsall (Name) Restoration Program Manager (Title) April 8, 2018 (Date)
   Interviewed ☐ at site ☐ at office ☒ by phone Phone no. via email
   Problems, suggestions; ☒ Report attached _____

2. **O&M staff** Randy Wilkinson (Name) Project Support Manager (Title) April 10, 2020 (Date)
   Interviewed ☐ at site ☐ at office ☒ by phone Phone no. via email
   Problems, suggestions; ☒ Report attached _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency: Arizona Department of Environmental Quality (ADEQ)
Contact Karin Harker Federal Projects Unit Manager April 13, 2020 602-771-0361
Name Title Date Phone no.
Problems; suggestions; ☒ Report attached _____

Agency: ADEQ
Contact Brian Stonebrink Project Manager April 13, 2020 602-771-4197
Name Title Date Phone no.
Problems; suggestions; ☒ Report attached _____

4. **Other interviews** (optional)

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**

☐ O&M manual	☐ Readily available	☐ Up to date	☒ N/A
☐ As-built drawings	☐ Readily available	☐ Up to date	☒ N/A
☐ Maintenance logs	☐ Readily available	☐ Up to date	☒ N/A

Remarks: The Site Inspection Team was unable to verify on-site records due to Coronavirus 2019 (COVID-19) preventative measures. Document and record verification took place virtually prior to the Five-Year Review Site Inspection.

2. **Site-Specific Health and Safety Plan** ☐ Readily available ☐ Up to date ☒ N/A
☐ Contingency/Emergency Response Plan ☐ Readily available ☐ Up to date ☒ N/A
Remarks: The Site Inspection Team was unable to verify on-site records due to COVID-19 preventative measures. Document and record verification took place virtually prior to the Five-Year Review Site Inspection.

3. **O&M and OSHA Training Records** ☐ Readily available ☐ Up to date ☒ N/A
Remarks_____
_____

4. **Permits and Service Agreements**

☐ Air discharge permit	☐ Readily available	☐ Up to date	☒ N/A
☐ Effluent discharge	☐ Readily available	☐ Up to date	☒ N/A
☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☒ N/A
☐ Other permits _____	☐ Readily available	☐ Up to date	☒ N/A

Remarks _____
_____

5. **Gas Generation Records** ☐ Readily available ☐ Up to date ☒ N/A
Remarks _____
_____

6. **Settlement Monument Records** ☐ Readily available ☐ Up to date ☒ N/A
Remarks _____

7. **Groundwater Monitoring Records** ☐ Readily available ☐ Up to date ☒ N/A
Remarks: _____

8. **Leachate Extraction Records** ☐ Readily available ☐ Up to date ☒ N/A
Remarks _____

9. **Discharge Compliance Records**
☐ Air ☐ Readily available ☐ Up to date ☒ N/A
☐ Water (effluent) ☒ Readily available ☐ Up to date ☒ N/A
Remarks _____

10. **Daily Access/Security Logs** ☐ Readily available ☐ Up to date ☒ N/A
Remarks _____

IV. O&M COSTS

1. **O&M Organization**
☐ State in-house ☐ Contractor for State
☐ PRP in-house ☐ Contractor for PRP
☒ Federal Facility in-house ☐ Contractor for Federal Facility
☐ Other: _____

2. **O&M Cost Records**
☐ Readily available ☐ Up to date
☐ Funding mechanism/agreement in place
Original O&M cost estimate _____ ☐ Breakdown attached

Total annual cost by year for review period if available

From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost
From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost
From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost
From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost
From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost

3.	**Unanticipated or Unusually High O&M Costs During Review Period** Describe costs and reasons: The Site Inspection Team was informed that no unanticipated or unusually high O&M costs were noted during the Five-Year Review period.
V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A	
A. Fencing	
1.	**Fencing damaged** ☐ Location shown on site map ☒ Gates secured ☐ N/A Remarks: Fencing around Site S included the south Papago Park Military Reservation installation perimeter fencing. Fencing was observed to be in good condition at the time of inspection. A homeless encampment was observed exterior to the northern fence boundary; however, there was no evidence of trespass or waste interior to the installation perimeter fence (Photograph 23). Barbed or razor wire was observed atop fence lines in high foot traffic to prevent access (Photographs 13 – 16). No access points were observed that would allow for human trespassing. The addition of rebar, silt fences, rip rap, and metal patching to cover gaps along the fence bottom were observed to manage areas subject to erosion (Photographs 7, 12, 19, and 20)
B. Other Access Restrictions	
1.	**Signs and other security measures** ☐ Location shown on site map ☐ N/A Remarks: The Site Inspection Team also observed approximately 15 signs posted on the Papago Park Military Reservation perimeter fence at approximately 50-foot intervals and 100- to 200-foot intervals. Signage was legible and in good condition at the time of the Site Inspection (Photographs 14, 17, and 18).

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (*e.g.*, self-reporting, drive by): Site inspection

Frequency: Annual

Responsible party/agency: Arizona Army National Guard (AZARNG)

Contact Kim Birdsall (Name) Restoration Program Manager (Title) 602-267-2498 (Phone no.)

Reporting is up-to-date ☒ Yes ☐ No ☐ N/A

Reports are verified by the lead agency ☒ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No ☒ N/A

Violations have been reported ☐ Yes ☐ No ☒ N/A

Other problems or suggestions: ☐ Report attached

_____

_____

2. **Adequacy** ☒ ICs are adequate ☐ ICs are inadequate ☐ N/A

Remarks _____

_____

_____

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ☒ No vandalism evident

Remarks _____

_____

2. **Land use changes on site** ☒ N/A

Remarks _____

_____

3. **Land use changes off site** ☒ N/A

Remarks _____

_____

VI. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map ☒ Roads adequate ☐ N/A

Remarks: Roads were observed to be in good condition at the time of inspection.

B. Other Site Conditions

Remarks: _____

VII. LANDFILL COVERS ☐ Applicable ☒ N/A

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map ☐ Settlement not evident
   Areal extent _____ Depth _____
   Remarks _____
   _____

2. **Cracks** ☐ Location shown on site map ☐ Cracking not evident
   Lengths _____ Widths _____ Depths _____
   Remarks _____
   _____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
   Areal extent _____ Depth _____
   Remarks _____
   _____

4. **Holes** ☐ Location shown on site map ☐ Holes not evident
   Areal extent _____ Depth _____
   Remarks _____
   _____

5. **Vegetative Cover** ☐ Grass ☐ Cover properly established ☐ No signs of stress
   ☐ Trees/Shrubs (indicate size and locations on a diagram)
   Remarks _____
   _____

6. **Alternative Cover (armored rock, concrete, etc.)** ☐ N/A
   Remarks _____
   _____

7. **Bulges** ☐ Location shown on site map ☐ Bulges not evident
   Areal extent _____ Height _____
   Remarks _____
   _____

8. **Wet Areas/Water Damage** ☐ Wet areas/water damage not evident
☐ Wet areas ☐ Location shown on site map Areal extent _____
☐ Ponding ☐ Location shown on site map Areal extent _____
☐ Seeps ☐ Location shown on site map Areal extent _____
☐ Soft subgrade ☐ Location shown on site map Areal extent _____
Remarks _____
_____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map ☐ No evidence of slope instability
Areal extent _____
Remarks _____
_____

B. Benches ☐ Applicable ☒ N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map ☐ N/A or okay
Remarks _____
_____

2. **Bench Breached** ☐ Location shown on site map ☐ N/A or okay
Remarks _____
_____

3. **Bench Overtopped** ☐ Location shown on site map ☐ N/A or okay
Remarks _____
_____

C. Letdown Channels ☐ Applicable ☒ N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ Location shown on site map ☐ No evidence of settlement
Areal extent _____ Depth _____
Remarks _____
_____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
Material type _____ Areal extent _____
Remarks _____
_____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
Areal extent _____ Depth _____
Remarks _____
_____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
Areal extent _____ Depth _____
Remarks _____
_____

5. **Obstructions** ☐ No obstructions ☐ Location shown on site map
Type _____ Areal extent _____
Size _____
Remarks _____
_____

6. **Excessive Vegetative Growth** Type _____
☐ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent _____
Remarks _____
_____

D. Cover Penetrations ☐ Applicable ☒ N/A

1. **Gas Vents** ☐ Active ☐ Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

2. **Gas Monitoring Probes**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

3. **Monitoring Wells** (within surface area of landfill)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

4. **Leachate Extraction Wells**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks _____
_____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A
Remarks_____
_____

E. Gas Collection and Treatment ☐ Applicable ☒ N/A

1. **Gas Treatment Facilities**
   ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
   ☐ Good condition ☐ Needs Maintenance
   Remarks _____
   _____

2. **Gas Collection Wells, Manifolds and Piping**
   ☐ Good condition ☐ Needs Maintenance
   Remarks _____
   _____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   ☐ Good condition ☐ Needs Maintenance ☐ N/A
   Remarks _____
   _____

F. Cover Drainage Layer ☐ Applicable ☒ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A
   Remarks _____
   _____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A
   Remarks _____
   _____

G. Detention/Sedimentation Ponds ☐ Applicable ☒ N/A

1. **Siltation** Areal extent _____ Depth _____ ☐ N/A
   ☐ Siltation not evident
   Remarks _____
   _____

2. **Erosion** Areal extent _____ Depth _____
   ☐ Erosion not evident
   Remarks _____
   _____

3. **Outlet Works** ☐ Functioning ☐ N/A
   Remarks _____
   _____

4. **Dam** ☐ Functioning ☐ N/A
   Remarks _____
   _____

H. Retaining Walls ☐ Applicable ☒ N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
   Horizontal displacement _____ Vertical displacement _____
   Rotational displacement _____
   Remarks _____
   _____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
   Remarks _____
   _____

I. Perimeter Ditches/Off-Site Discharge ☐ Applicable ☒ N/A

1. **Siltation** ☐ Location shown on site map ☐ Siltation not evident
   Areal extent _____ Depth _____
   Remarks _____
   _____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
   ☐ Vegetation does not impede flow
   Areal extent _____ Type _____
   Remarks _____
   _____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
   Areal extent _____ Depth _____
   Remarks _____
   _____

4. **Discharge Structure** ☐ Functioning ☐ N/A
   Remarks _____
   _____

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
   Areal extent _____ Depth _____
   Remarks _____
   _____

2. **Performance Monitoring** Type of monitoring _____
   ☐ Performance not monitored
   Frequency _____ ☐ Evidence of breaching
   Head differential _____
   Remarks _____
   _____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☐ Applicable ☒ N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☐ Applicable ☒ N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   ☐ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☐ N/A
   Remarks _____
   _____
   _____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks _____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks _____
   _____

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ☒ N/A

1. **Collection Structures, Pumps, and Electrical**
   ☐ Good condition ☐ Needs Maintenance
   Remarks _____
   _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks _____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks _____
   _____

C. Treatment System ☐ Applicable ☒ N/A

1. **Treatment Train** (Check components that apply)
   ☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
   ☐ Air stripping ☐ Carbon adsorbers
   ☐ Filters _____
   ☐ Additive (*e.g.*, chelation agent, flocculent) _____
   ☐ Others _____
   ☐ Good condition ☐ Needs Maintenance
   ☐ Sampling ports properly marked and functional
   ☐ Sampling/maintenance log displayed and up to date
   ☐ Equipment properly identified
   ☐ Quantity of groundwater treated annually _____
   ☐ Quantity of surface water treated annually _____
   Remarks _____
   _____

2. **Electrical Enclosures and Panels** (properly rated and functional)
   ☐ N/A ☐ Good condition ☐ Needs Maintenance
   Remarks _____
   _____

3. **Tanks, Vaults, Storage Vessels**
   ☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
   Remarks _____
   _____

4. **Discharge Structure and Appurtenances**
   ☐ N/A ☐ Good condition ☐ Needs Maintenance
   Remarks _____
   _____

5. **Treatment Building(s)**
   ☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs Repair
   ☐ Chemicals and equipment properly stored
   Remarks _____
   _____

6. **Monitoring Wells** (pump and treatment remedy)
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ All required wells located ☐ Needs Maintenance ☐ N/A
   Remarks _____
   _____

D. Monitoring Data ☐ Applicable ☒ N/A

1. Monitoring Data
   ☐ Is routinely submitted on time ☐ Is of acceptable quality

2. Monitoring data suggests:
   ☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

E. Monitored Natural Attenuation ☐ Applicable ☒ N/A

1. **Monitoring Wells** (natural attenuation remedy)
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ All required wells located ☐ Needs Maintenance ☐ N/A
   Remarks: _____
   _____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The remedy at Site S includes access and institutional controls. The Site Inspection Team inspected Site S, which consisted of an aged asphalt roadway, Building M5705 with paved parking lots, and undeveloped open land.

Fencing around Site S includes the south Papago Park Military Reservation installation fencing. The installation was bordered to the north by Oak Street, the east by Papago State Park, the south by Papago Golf Course and residential properties, and the west by 52nd Street. Fencing was observed to be in good condition at the time of inspection. A homeless encampment was observed exterior to the northern fence boundary; however, there was no evidence of trespass or waste interior to the installation perimeter fence (Photograph 23). Barbed or razor wire was observed atop fence lines in high foot traffic to prevent access (Photographs 13 – 16). No access points were observed that would allow for human trespassing. The addition of rebar, silt fences, rip rap, and metal patching to cover gaps along the fence bottom were observed to manage areas subject to erosion (Photographs 7, 12, 19, and 20).

The Site Inspection Team also observed approximately 15 signs posted on the Papago Park Military Reservation perimeter fence at approximately 50-foot intervals and 100- to 200-foot intervals. The signs were noted as legible and in good condition; access roads at Site S were also observed in good condition. (Photographs 14, 17, and 18).

B.	**Adequacy of O&M**
	Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. O&M is adequate. Areas with the potential for erosion have preventative measures and/or repairs in place. At the time of inspection, there was no need for any additional maintenance activities outside of those prescribed by the remedy.
C.	**Early Indicators of Potential Remedy Problems**
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future. No early indicators to suggest the protectiveness of the remedy may be compromised in the future were observed during the Site Inspection.
D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. A tentative plan is being developed for additional field sampling to investigate the potential for closure with UU/UE status at Site S.

Appendix C

Site Inspection Photograph Log

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Photograph 1 **Location:** Papago Park Military Reservation **Date:** October 15, 2020 **Description:** Drainage channel in Site S, facing west.	
Photograph 2 **Location:** Papago Park Military Reservation **Date:** October 15, 2020 **Description:** Approximately 0.75 inch-diameter clay target disc remnants and bottlecaps.	

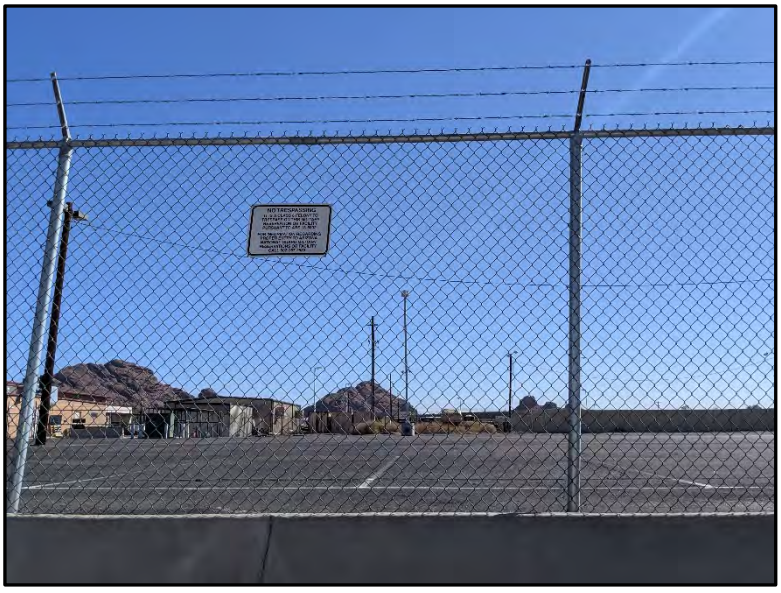
Photograph 3 **Location:** Papago Park Military Reservation **Date:** October 15, 2020 **Description:** Current site conditions, facing west.	
Photograph 4 **Location:** Papago Park Military Reservation **Date:** October 15, 2020 **Description:** Northern boundary fence, facing west.	

Photograph 5 **Location:** Papago Park Military Reservation **Date:** October 15, 2020 **Description:** Northern boundary fence, facing east.	
Photograph 6 **Location:** Papago Park Military Reservation **Date:** October 15, 2020 **Description:** Bedrock with lead shot remnants.	

Photograph 7 **Location:** Papago Park Military Reservation **Date:** October 15, 2020 **Description:** Current site conditions, facing west. Soil erosion with filter sock erosion prevention measures in place.	
Photograph 8 **Location:** Papago Park Military Reservation **Date:** October 15, 2020 **Description:** Storm water retention basin, facing east.	

Photograph 9 **Location:** Papago Park Military Reservation **Date:** October 15, 2020 **Description:** Drainage culvert, facing north.	
Photograph 10 **Location:** Papago Park Military Reservation **Date:** October 15, 2020 **Description:** Current site conditions, facing north. Asphalt access road.	

Photograph 11 **Location:** Papago Park Military Reservation **Date:** October 15, 2020 **Description:** Locked access gate, facing south.	
Photograph 12 **Location:** Papago Park Military Reservation **Date:** October 15, 2020 **Description:** Fence repairs along the western boundary fence line.	

Photograph 13 **Location:** Papago Park Military Reservation **Date:** October 15, 2020 **Description:** Locked access gate at the southwest entrance. Fencing with barbed wire.	
Photograph 14 **Location:** Papago Park Military Reservation **Date:** October 15, 2020 **Description:** Western boundary fence line, barbed wire, and signage.	

Photograph 15 **Location:** Papago Park Military Reservation **Date:** October 15, 2020 **Description:** Southern boundary fence line, barbed wire, and signage.	
Photograph 16 **Location:** Papago Park Military Reservation **Date:** October 15, 2020 **Description:** Southern boundary fence line, privacy fencing, and barbed wire.	

Photograph 17 **Location:** Papago Park Military Reservation **Date:** October 15, 2020 **Description:** "No Trespassing" signage along the southern boundary fence line.	
Photograph 18 **Location:** Papago Park Military Reservation **Date:** October 15, 2020 **Description:** "No Trespassing" signage along the western boundary fence line.	

Photograph 19 **Location:** Papago Park Military Reservation **Date:** October 15, 2020 **Description:** Erosion control rip-rap and storm water outfall along the western boundary fence line.	
Photograph 20 **Location:** Papago Park Military Reservation **Date:** October 15, 2020 **Description:** Storm water headwall and erosion control rip rap along the western boundary fence line.	

Photograph 21 **Location:** Papago Park Military Reservation **Date:** October 15, 2020 **Description:** Northern boundary fence line and access control signage.	
Photograph 22 **Location:** Papago Park Military Reservation **Date:** October 15, 2020 **Description:** Small animal burrow along the northern fence line, interior to the fence. Burrow direction was interior to the installation and shallow.	

Photograph 23	
Location: Papago Park Military Reservation	
Date: October 15, 2020	
Description A homeless encampment was observed on the northern installation fence line, near the Site S Former Skeet Range area. The Site Inspection Team observed trash and residences along the fence exterior, but did not observe any evidence of trespass or breach of the fence line.	

Appendix D

Interviews

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O&M STAFF INTERVIEW RECORD

Site Name: Papago Park Military Reservation Former Skeet Range (Site S)
Subject: Five-Year Review **Date:** April 10, 2020
Type: ☐ Telephone ☐ Visit X Other ☐ Incoming ☐ Outgoing
Location of Visit: NA

Contact Made By:

Name: Stacy Herring
Title: Senior Project Manager
Organization: Dawson Technical, LLC (DAWSON)

Individual Contacted:

Name: Randy Wilkinson
Title: Project Support Manager
Organization: Army National Guard G9, Cleanup Branch (ARNG-IES-D)
Telephone No: (928) 773-3208
Fax No: NA
E-Mail Address: randall.w.wilkinson2.ctr@mail.mil
Street Address: Camp Navajo,
City: Bellemont **State:** Arizona **Zip:** 86001

1. **What is your overall impression of the project? (general sentiment)**

Good.

2. **Is the remedy functioning as expected? How well is the remedy performing?**

Yes. No unacceptable exposure has been identified.

3. **What does the monitoring data show? Are there any trends that show contaminant levels are decreasing?**

Monitoring is visual only. No changes to site conditions have been observed.

4. **Is there a continuous on-site O&M presence? If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.**

There is currently one full-time remediation program manager in the AZARNG environmental office at Papago Park Military Reservation. This person conducts a visual inspection of the site annually.

5. **Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.**

No.

6. **Have there been unexpected O&M difficulties or costs at the site since start-up or in the last five years? If so, please give details.**

No.

7. Have there been opportunities to optimize O&M, or sampling efforts? Please describe changes and resultant or desired cost savings or improved efficiency.

A closure evaluation was initiated last year. The existing data supports possible UU/UE. If supplemental sampling results to address data gaps are consistent, UU/UE will be proposed.

8. Do you have any comments, suggestions, or recommendations regarding the project?

No.

O&M STAFF INTERVIEW RECORD

Site Name: Papago Park Military Reservation Former Skeet Range (Site S)
Subject: Five-Year Review **Date:** 8 APR 2018
Type: ☐ Telephone ☐ Visit ☒ Other ☐ Incoming ☐ Outgoing
Location of Visit: NA

Contact Made By:

Name: Staci Herring
Title: Senior Project Manager
Organization: DAWSON

Individual Contacted:

Name: Kim Birdsall
Title: Restoration Program Manager
Organization: AZARNG
Telephone No: 602.267.2498
Fax No: na
E-Mail Address: birdsallk@emo.azdema.gov
Street Address: 5636 E McDowell Road, M5330
City: Phoenix **State:** AZ **Zip:** 85008

1. **What is your overall impression of the project?**

   The selected remedy for Site S at Papago Park Military Reservation (PPMR) remains effective and no significant changes have occurred since the 2015 Five Year Review. However, the regulator is in support of a closure evaluation after additional sampling.

2. **Is the remedy functioning as expected? How well is the remedy performing?**

   Yes, the remedies at Site S is functioning as expected and remains protective of human health and the environment.

3. **What does the monitoring data show? Are there any trends that show contaminant levels are decreasing?**

   No environmental monitoring is conducted at Site S.

4. **Is there a continuous on-site O&M presence? If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.**

   Yes, there is a continuous O&M presence. The AZARNG Restoration Program Manager's office and the Facilities Maintenance Office is located directly across the street from Site S. In addition, AZARNG performs an annual inspection of the LUCs and distributes the results to the regulator.

5. **Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.**

   No.

6. **Have there been unexpected O&M difficulties or costs at the site since start-up or in the last five years? If so, please give details.**

   No.

7. **Have there been opportunities to optimize O&M, or sampling efforts? Please describe changes and resultant or desired cost savings or improved efficiency.**

   Yes, the regulator is in support of a closure evaluation of Site S. Additional sampling is planned for the 4Q20 or 1Q21 and if analytical results support closure, the site will achieve closure with UU/UE.

8. **Do you have any comments, suggestions, or recommendations regarding the project?**

   No.

STATE AND LOCAL AUTHORITIES INTERVIEW RECORD
(if applicable)

Site Name: Papago Park Military Reservation
Subject: Five-Year Review **Date: April 13, 2020**
Type: ☐ Telephone ☐ Visit ☒ Other ☐ Incoming ☐ Outgoing
Location of Visit:

Contact Made By:

Name: Kim Birdsall
Title: Restoration Program Manager
Organization: AZARNG

Individual Contacted:

Name: Karin Harker
Title: Federal Projects Unit Manager
Organization: Arizona Department of Environmental Quality
Telephone No: 602-771-0361
Fax No:
E-Mail Address: Harker.Karin@azdeq.gov
Street Address: 1110 West Washington Street
City: Phoenix **State:** AZ **Zip:** 85007

1. ***What is your overall impression of the project? (general sentiment)***
   The Land Use Controls remain effective for the Site S former skeet range.

2. ***Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results.***
   Routine communication has kept ADEQ Federal Programs informed. There has not been routine activities conducted by ADEQ regarding the site but a site visit was performed during soil sampling. After further evaluation the results concluded Land Use Controls were still appropriate for the site.

3. ***Have there been any complaints, violations, or other incidents related to the site requiring a response by your office? If so, please give details of the events and results of the responses.***
   No, not to my knowledge.

4. ***Do you feel well informed about the site's activities and progress?***
   Yes, regular communication by the National Guard.

5. ***Do you have any comments, suggestions, or recommendations regarding the site's management or operation?***
   There have been discussions of further characterization for Site S as recommended by ADEQ but currently Land Use Controls remain effective.

STATE AND LOCAL AUTHORITIES INTERVIEW RECORD
(if applicable)

Site Name: Papago Park Military Reservation
Subject: Five-Year Review **Date: 4/13/2020**
Type: ☐ Telephone ☐ Visit ☒ Other ☐ Incoming ☐ Outgoing
Location of Visit:

Contact Made By:

Name: Kim Birdsall
Title: Restoration Program Manager
Organization: AZARNG

Individual Contacted:

Name: Brian Stonebrink
Title: Project Manager
Organization: ADEQ
Telephone No: 602-771-4197
E-Mail Address: Stonebrink.Brian@azdeq.gov
Street Address: 1110 West Washington Street
City: Phoenix **State:** Arizona **Zip:** 85007

1. What is your overall impression of the project? (general sentiment)

Land Use Control remain effective for the Site S former skeet range.

2. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results.

Routine communication has kept ADEQ Federal Programs informed.

3. Have there been any complaints, violations, or other incidents related to the site requiring a response by your office? If so, please give details of the events and results of the responses.

None that I am aware of regarding CERCLA, MMRP and IRP programs.

4. Do you feel well informed about the site's activities and progress?

Yes, regular communication by the National Guard.

5. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

There have been discussions of further characterization for Site S as recommended by ADEQ.

Appendix E

ADEQ Concurrence Letter

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ARIZONA DEPARTMENT
OF
ENVIRONMENTAL QUALITY

Douglas A. Ducey
Governor

Misael Cabrera
Director

VIA E-MAIL
FPU 21-144

December 16, 2020

Kim T. Birdsall
Restoration Program Manager
AZARNG Environmental Management Office
Departments of Emergency and Military Affairs
5636 East McDowell Road
Phoenix, AZ 85008-3495

Re: Papago Park Military Reservation – ADEQ Evaluation of the *Draft Final Third Five Year Review Report*, dated November 5, 2020

Dear Ms. Birdsall:

The Arizona Department of Environmental Quality (ADEQ) Federal Projects Unit (FPU) appreciates the opportunity to review and comment on the above referenced document received via email on November 20, 2020. ADEQ concurs the remedy implement at Site S remains protective and has no further comment at this time.

Should you have any questions or comments regarding this correspondence, please contact me at (602) 771-0956 or romanoff.natalie@azdeq.gov.

Sincerely,

Natalie Romanoff
Project Manager, FPU
Waste Programs Division, ADEQ

ec: Randy Wilkinson, ARNG
Karin Harker, ADEQ FPU Manager

cc: ADEQ Project File and Reading File

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