Final Former Parks Air Force Base Site Inspection Report

Formerly Used Defense Site J09CA0083
Alameda County, California

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EXECUTIVE SUMMARY

The United States Army Corps of Engineers, Sacramento District, performed a Site Inspection at the former Parks Air Force Base (Parks AFB) in April – May 2017 to characterize potential contamination at multiple areas of interest related to past Department of Defense (DoD) activities. The Site Inspection was performed for Containerized Hazardous, Toxic, and Radioactive Waste (CON/HTRW) and Hazardous, Toxic, and Radioactive Waste (HTRW) Projects 01 and 02 for Formerly Used Defense Site property J09CA0083. The former Parks Air Force Base is located in the city of Dublin in Alameda County, California and is currently a mix of private commercial, private residential and county owned land (Figure 1).

The Site Inspection was conducted at the following areas of interest where there may have been potential releases, illustrated on Figure 2.

- AOI 16 – Building 1395/498 Oil Storage tank
- AOI 23 – Camp Shoemaker Burn Pit
- AOI 24 – Naval Small Bore Rifle Range
- AOI 28 – Sanitary Landfill

This work is being done under the regulatory oversight of the California Department of Toxic Substance Control (DTSC). The field work followed the Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP) presented in Chapter 5 of the Preliminary Assessment and Site Inspection Work Plan, which was approved by DTSC May 31, 2017. Rights of Entry were not able to be obtained to perform the Site Inspection at AOI 22 – Underground Fuel Oil Storage Depot.

Sample locations for this site inspection were selected based upon areas that have the highest probability of detecting a historical release from former DoD activities; in boreholes with multiple samples, an attempt was made to collect one or more samples within the suspected contamination zone and one sample below in order to vertically delineate the contamination. The data from this effort was sufficient to recommend either no DoD action is indicated (NDAI) or further investigation for each AOI.

All samples were sent to Curtis & Tompkins (C&T) Laboratory of Berkeley, CA, a DoD Environmental Laboratory Accreditation Program (ELAP) accredited facility. The laboratory followed the requirements in the UFP-QAPP, which are based upon the DoD Quality Systems Manual for Environmental Laboratories, version 5.0 (U.S. DoD and Department of Energy consolidated 2013). Data packages were received and validated by the USACE Project Chemist. Laboratory data packages are located in Appendix B and Validation reports are located in Appendix C. Below summarizes the results of the Site Inspection.

AOI 16: BUILDING 1395/498 OIL STORAGE TANK

AOI 16 is at the suspected location of a former heating oil tank for a 1940s-1950s era military officer's house. Near-surface soil samples were collected near the suspected Aboveground Storage Tank (AST) location. Soil samples were analyzed for petroleum hydrocarbons and naphthalene. TPH extractables Bunker C, Diesel, and Motor Oil were reported at low concentrations below the San Francisco Bay Regional Water Quality Control Board Environmental Screening Levels, however naphthalene was not detected above the laboratory limit of detection. Any remnants of a historical release do not pose a risk to human health based upon comparison to the screening levels. It is recommended that an NDAI determination be made for Building 1385/498 Oil Storage Tank.

AOI 22: FORMER UNDERGROUND FUEL OIL STORAGE DEPOT

AOI 22 is at the location of 5 tanks identified as an Underground Fuel Oil Storage Depot on a 1945 Naval map. The USACE has been unable to obtain Rights of Entry to complete the Site Inspection at this AOI. Any further action on this AOI is on hold until access to the property is obtained.

AOI 23: CAMP SHOEMAKER BURN PIT

AOI 23 is the location of a "Burning Pit" identified on a 1945 Naval map. During this Site Inspection, three trenches and three test pits were excavated and six borings were drilled throughout the area. In addition to ash, the burn pit contained a large amount of household bowls, cups and bottles. Arsenic, cadmium, cobalt, lead, and dioxin Toxic Equivalence Quotient (TEQ) were found above applicable screening levels in soil. All groundwater results at this AOI were below the screening levels. Based on the presence of buried debris and elevated levels of metals and dioxins exceeding the screening levels, the Camp Shoemaker Burn Pit is recommended for a Remedial Investigation.

AOI 24: NAVAL SMALL BORE RIFLE RANGE

AOI 24 is at the location of a "small bore rifle range" identified on a 1945 Naval map, but not visible on later military maps. Soil samples were collected from surface and near surface locations from eight locations at the suspected former target berm area. The site was visually inspected during sampling, including in a test pit and erosion rill for indications of the former small arms range. No bullets, casings, target debris or any remnant of a former range were found. Lead results in the samples were well below the California HERO Note 3 modified regional screening level (RSL) for lead (80 mg/kg) and were in the range of expected ambient soil conditions. Based on the lack of range debris, and having no lead levels above the screening level, it is recommended that an NDAI determination be made for the Naval Small Bore Rifle Range.

AOI 28: HICKMAN ROAD SANITARY LANDFILL AREA

AOI 28 is at the location of an area identified as a sanitary fill pit on military maps from the 1940s-1950s. Nine soil borings were drilled at AOI 28, including three which were converted into temporary wells for groundwater sampling. Debris, consisting mainly of wood, but also glass, metal, and newspapers were found in all boreholes. Soil samples contained arsenic results above the screening level, however the results are consistent with ambient conditions and do not appear to be related to the AOI. Naphthalene and 1,4-dichlorobenzene were found above the screening level in one soil boring location. Groundwater samples contained concentrations above the screening levels for naphthalene, benzene, 1,4-dichlorobenzene, arsenic, barium and cobalt. Due to the presence of buried debris and contaminants of concern found above screening levels, the Hickman Road Sanitary Landfill Area is recommended for a Remedial Investigation.

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ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
AOI	Area of Interest
AST	Aboveground Storage Tank
bgs	below ground surface
C&T	Curtis & Tompkins Laboratory
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CON/HTRW	Containerized Hazardous Toxic Radioactive Waste
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
ELAP	Environmental Laboratory Accreditation Program
FUDS	Formerly Used Defense Site
GPS	Global Positioning System
HTRW	Hazardous, Toxic, Radioactive Waste
ID	Identification number
IDW	Investigative derived waste
INPR	Inventory Project Report
LOD	limit of detection
LOQ	limit of quantitation
mg/kg	milligram per kilogram
MS/MSD	matrix spike/matrix spike duplicate
msl	mean sea level
NDAI	no DoD action is indicated
PA	Preliminary Assessment
PAHs	Polynuclear Aromatic Hydrocarbons
QAPP	Quality Assurance Project Plan
QC	Quality Control
RFTA	Reserve Forces Training Area
RSLs	EPA Regional Screening Levels
SI	Site Inspection
SIM	Selective Ion Monitoring
TEQ	Toxic Equivalency Quotient
TPH	Total Petroleum Hydrocarbons
TPH-DRO	Total Petroleum Hydrocarbons-diesel range organics
TPH-GRO	Total Petroleum Hydrocarbons-gasoline range organics
TPH-ORO	Total Petroleum Hydrocarbons-oil range organics
UFP-QAPP	Uniform Federal Policy-Quality Assurance Project Plan
USA	Underground Service Alert
USACE	United States Army Corps of Engineers
VOCs	volatile organic compounds
SVOCs	semi volatile organic compounds

1.0 INTRODUCTION

1.1 SCOPE OF REPORT

This Site Inspection (SI) Report describes site inspection field efforts and analytical results at various areas of interest identified at the former Parks Air Force Base (AFB), Formerly Used Defense Site (FUDS) property J09CA0083, located in the city of Dublin in Alameda County, California (Figure 1). The SI was conducted by the United States Army Corps of Engineers (USACE), Sacramento District.

In 1986, Congress established the Defense Environmental Restoration Program (DERP) under 10 United States Code 2701 et seq. This program directed the Secretary of Defense to "carry out a program of environmental restoration at facilities under the jurisdiction of the Secretary." The Department of Defense (DoD) role in DERP is to ensure that policy and management of the overall program are consistent with the provisions of the DERP statute, and where appropriate, Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (as amended by Superfund Amendments and Reauthorization Act) and the National Oil and Hazardous Substance Pollution Contingency Plan. At a FUDS, execution of the program has been delegated by DoD to the USACE. Engineer Regulation 200-3-1, *Environmental Quality Formerly Used Defense Sites (FUDS) Program Policy* (May 2004) provides policy and guidance for management and execution of the FUDS program. Former Parks AFB has been designated by the DoD as a FUDS, property number J09CA0083. The method of evaluating a FUDS property/project follows the CERCLA process.

The identification of areas of interest discussed in this report were based on a recent review of historical information and FUDS policy, as contained in the 2017 Preliminary Assessment and Site Inspection Work Plan. These areas of interest were investigated under the Containerized Hazardous, Toxic, and Radioactive Waste (CON/HTRW) (Project 01) and Hazardous, Toxic, and Radioactive Waste (HTRW) (Project 02) for Parks AFB property. This SI is intended to provide information to determine if any further investigation or action by the Department of Defense is required.

The Site Inspection was conducted at the following areas of interest where there may have been potential releases, illustrated in Figure 2.

- AOI 16 – Building 1395 Oil Storage tank
- AOI 23 – Camp Shoemaker Burn Pit
- AOI 24 –Naval Small Bore Rifle Range
- AOI 28 – Sanitary Landfill

The field work followed the Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP) presented in Chapter 5 of the Preliminary Assessment and Site Inspection Work Plan, finalized in May 2017. Rights of Entry to perform the Site Inspection were not able to be obtained for AOI 22 – Underground Fuel Oil storage Depot.

1.2 PROJECT OBJECTIVES

The SI objective is to characterize any contamination in applicable media in the vicinity of multiple areas of potential release identified in the SI Work Plan. The ultimate goal of the SI field effort was to gather sufficient information regarding potential impacts to determine if additional investigation or action by the Department of the Defense is necessary.

2.0 SITE BACKGROUND

2.1 SITE DESCRIPTION

Former Parks AFB is comprised of approximately 1,100 acres in Alameda County, California, and is located in the City of Dublin, approximately 30 miles southeast of San Francisco. The majority of the property has been redeveloped as private commercial and residential property. A significant portion is owned by Alameda County, and used for a jail, police training facility, animal shelter, and park space.

2.2 SITE HISTORY

Prior to DoD ownership, the Parks AFB was unincorporated grassland. In 1943 Camp Parks, Camp Shoemaker and the U.S. Naval Hospital Shoemaker were established under the U.S. Navy, and operated as "Fleet City" during World War II. In 1946 the U.S. Navy disestablished the three components and demolished most of the buildings constructed in the early 1940s. The U.S. Navy reacquired the land in 1951 and in 1953 it was transferred to the U.S. Air Force. In 1959, the area was transferred to the U.S. Army, who operated it as Camp Parks from 1959 to 1973. In 1980, the western and northern parts of the property were designated Camp Parks Reserve Forces Training Area (RFTA). Camp Parks RFTA remains a training facility for the San Francisco Bay Area Army Reserve, California National Guard and Naval Reserve Seabees. The remainder of the property was quitclaimed at various times from 1957 to 1972, and those portions are now FUDS eligible. From the 1940s to 1980s, Alameda County used the area formerly known as the U.S. Naval Disciplinary Barracks (in the southern portion of the former Camp Shoemaker) for use as a prison farm. The FUDS eligible portions of property are currently owned by a variety of private landowners for commercial and residential use, as well as by Alameda County, who operates the Santa Rita Jail, a Sheriff's Department Regional Training Center, an Animal Shelter, and multiple parks within the boundaries of the FUDS eligible former Parks AFB.

2.2.1 Previous Reports

1994 Revised Inventory Project Report (INPR) - The INPR recommended creation of a Containerized/Hazardous, Toxic, Radioactive Waste (CON/HTRW) project (Project 01) and Hazardous, Toxic, Radioactive Waste (HTRW) project (Project 02).

2017 Parks Air Force Base Preliminary Assessment and Site Inspection Work Plan
The Preliminary Assessment (PA) identified twenty-eight HTRW and CON/HTRW Areas of Interest (AOIs) at former Parks Air Force Base. Of the 28 AOIs identified, five were recommended for a Site Inspection and included in the QAPP contained in Chapter 5 of the document. The five AOIs recommend for Site Inspection were:

- AOI 16 – Building 1395 Oil Storage Tank
- AOI 22 – Underground Fuel Oil Storage Depot
- AOI 23 – Camp Shoemaker Burn Pit
- AOI 24 – Naval Small Bore Rifle Range
- AOI 28 – Sanitary Landfill

AOI 25 – Building 299 Laundry and Boiler Room was recommended for Remedial Investigation as sufficient data had already been collected during previous investigations to document a release of chlorinated solvents. The appropriate response to AOI 8, Buildings 468A and 468B Gas Stations, is currently being discussed by the USACE and Alameda County. AOI 6, Hickman Road Firing Range, is considered a Potential Responsible Party project. The remaining 20 AOIs were recommended for No

Department of Defense Action Indicated. A discussion of all AOIs is contained in Chapter 4 of the PA and the QAPP, which is the primary work plan for this Site Inspection.

Rights of Entry could not be obtained for AOI 22, therefore it was not included in this SI or within the QAPP. The SI results for the remainder of the AOIs specified in the QAPP are included within this report. All the AOIs from the QAPP are shown in Figure 2.

As described in the Data Quality Objectives in the QAPP, the primary goal of the SI is to determine the presence or absence of contamination at certain AOIs at levels exceeding default screening levels based on unrestricted use. The SI would obtain sufficient data to achieve this goal and fill data gaps existing from any prior investigations. The presence or absence of contamination would be used to support a NDAI decision or referral to an RI process. The principal study question identified in the QAPP was as follows:

1. Do any existing soil and/or groundwater concentrations of detected analytes pose a threat to human health at these sites by exceeding the unrestricted use screening levels?

    - For AOIs except 23 and 28, if all soil and groundwater concentration results are below screening levels, then the AOI will be recommended for NDAI.

    - For AOI 28, if all soil and groundwater concentration results are below screening levels, and no evidence of debris was found any of the 8 boreholes, then the AOI will be recommended for NDAI.

    - For each AOI, if one or more soil or groundwater concentration results are above the screening levels, then the AOI will proceed to the RI phase. For AOI 28, evidence of debris in any borehole will also cause this AOI to proceed to the RI phase, regardless of soil or groundwater concentration results.

AOI 23 will be proceeding to the RI phase due to existing evidence of buried debris and previous sampling results. At AOI 23, the SI phase will simply obtain additional information that will assist in scoping future RI data collection. If debris is found at AOI 28, an evaluation will be made as to the applicability of CCR Title 27.

2.3 NATURAL SETTING

2.3.1 Topography

The former Parks AFB is located on an alluvial plain in the Livermore Valley, which has moderately steep hills with rounded summits that rise to the north. The elevation at the Site ranges from 337 feet above mean sea level (msl) to 765 feet above msl; however, elevation of some areas within the Site may have been altered due to cutting and filling from land development. Former Camp Shoemaker and U.S. Naval Hospital Shoemaker are relatively flat except for the northeastern portion of the area, which is hilly.

2.3.2 Soils

The following summary of soil types at former Parks AFB was obtained from EDR's GeoPlus Report (in Appendix B of PA/SIWP) and the United States Department of Agriculture (USDA), Natural Resource Conservation Service Soil Data Mart (2007).

Former Camp Shoemaker and the U.S. Naval Hospital Shoemaker - The dominant soil component is listed as the Clear Lake Clay, and the surface texture of the soil is described as clay. The parent material consists of alluvium derived from sedimentary rock. The soil water-holding capacity ranges between 0.12 and 0.16 inch of water per inch of soil from 0 to 65 inches below ground surface (bgs). The pH of the soil ranges from 6.5 to 8.4 increasing with depth. The risk of corrosion of uncoated steel and concrete is high and moderate, respectively. The soil is moderately well drained and has medium surface runoff. The soil meets the requirements for a hydric soil because it is poorly or very poorly drained and has a water table at a depth of 1.0 foot or less during the growing season when permeability is less than 6.0 inches per hour in any layer within a depth of 20 inches.

2.3.3 Geology

Former Parks AFB is located in the California Coast Ranges Geomorphic Province, characterized by a well-developed northwest-southeast oriented geomorphic features produced by structural features of the same trend (Norris and Webb 1990). However, the dominating geologic force in the area is the Diablo Range uplift. In the vicinity of the Site, rock types are dominantly sedimentary underlain by Franciscan basement. The main geologic unit mapped at the Site is the Plio-Pleistocene Tassajara Formation. It is obscured in some areas by Holocene surficial valley-fill (Barlock 1988). The Plio-Pleistocene Livermore Formation is not exposed at the Site, but overlies the Tassajara Formation and plays a significant role in the Livermore Valley hydrogeology.

Former Parks AFB is located in the intermontane region of the Northern Diablo Range. The Diablo Range is part of the northwest-trending Coast Ranges and parallels three major fault systems in the area: the San Andreas, the Sur-Nacimiento, and the Coast Range Thrust. These faults can generally be considered to define three different lithologic blocks. The westernmost block is the Salinian Block, which lies east of the Sur-Nacimiento Fault and west of the San Andreas Fault. This block consists primarily of metamorphic and granitic rock. To the east of the Salinian Block is the Franciscan Assemblage, lying between the San Andreas and the Coast Range Thrust Fault zones. It is composed of marine sedimentary and volcanic rocks. The next block positioned above the Coast Range Thrust Fault zone consists of late Mesozoic through late Tertiary marine sedimentary rocks overlying complex ancient oceanic and continental crust rocks. This block lies primarily along the eastern margin of the Coast Range Province. Structural relationships along the Coast Range thrust are complex due to later reactivation of the thrust by high-angle normal and strike slip faults (Department of Energy [DoE] 1992).

The Hayward fault, which is part of the San Andreas Fault system, forms the western boundary of the East Bay Hills and is located about 12 miles west of the Site. Another branch of the San Andreas Fault system, the Calaveras Fault zone, trends northwest through the San Ramon Valley, which borders the Livermore Valley to the west. Geologic hazards likely to affect the Site in the event of a large magnitude earthquake along surrounding faults are ground shaking, liquefaction, and surface rupture.

2.3.4 Hydrogeology

Hydrogeological data were obtained from the California Department of Water Resources (DWR) *Groundwater Bulletin 118* (DWR 2003), a statewide inventory of groundwater basins that includes individual hydrogeologic descriptions for each delineated groundwater basin in California.

The Site is located in the Livermore Valley Groundwater Basin. This basin extends from the Pleasanton Ridge east to the Altamont Hills and from the Livermore Upland north to the Orinda Upland. Some geologic structures restrict the lateral movement of groundwater, but the general groundwater gradient is to the west, then south towards Arroyo de la Laguna.

The entire floor of Livermore Valley and portions of the upland areas on all sides of the valley comprise groundwater-bearing materials. The materials are continental deposits from alluvial fans, outwash plains, and lakes. They include valley-fill materials, the Livermore Formation, and the Tassajara Formation. Under most conditions, the valley-fill and Livermore sediments yield adequate to large quantities of groundwater to all types of wells.

Within the Livermore Valley Groundwater Basin, faults are the major structural features known to have marked effect on the movement of groundwater. Faults in this region tend to act as barriers to the lateral movement of groundwater. The resulting groundwater levels stand higher on the up-gradient side. The Livermore, Pleasanton, and Parks faults act as such barriers, dividing the Quaternary Alluvium into five groundwater subbasins.

According to the California Department of Water Resources' Water Data Library (www.water.ca.gov/waterdatalibrary), no drinking water wells are located on the property or in the nearby vicinity. The nearest non-observation well (in this case 'industrial' use) is approximately 1 mile south of highway I-580, which forms the southern boundary of the Parks AFB FUD site.

3.0 FIELD SAMPLING

3.1 GENERAL INFORMATION

The field work for this SI was conducted during April and May 2017. All field work was performed with approval from the regulatory agency and project proponents in accordance with the Uniform Federal Policy Quality Assurance Project Plan (UFP-QAPP), May 2017 (contained in Chapter 5 of the Preliminary Assessment and Site Inspection Workplan) and a Site Health and Safety Plan, September 2016, and Accident Prevention Plan, November 2016. Underground Service Alert (USA) was notified prior to conducting drilling activities; the contract driller, Woodward Drilling, also had a private utility locator company do a clearance prior to field work. Sample locations at AOIs 23 and 28 were mapped by a survey crew after the sampling, and at AOIs 16 and 24 using a less accurate handheld GPS mobile application. GPS coordinates for each sample location are listed in Table 1. All coordinates are based on California Coordinate System Zone III NAD 83 NAVD88 Datum.

Table 3-1: Sample Locations and GPS Coordinates

Area	Location	Sample ID	Depth	Latitude	Longitude
AOI 16	Hand dug surface soil samples	AOI16-S-SF-01	0-2”	37.719722	-121.891952
		AOI16-S-SF-02	0-2”	37.719719	-121.891942
AOI 23 Soil Borings	SB-AOI23-01	AOI 23-SI-S-13-01	13'	37.720571	-121.87561
		AOI 23-SI-S-17-01	17'		
		AOI 23-SI-S-21-01	21'		
	SB-AOI23-02	AOI 23-SI-S-09-02	9'	37.720566	-121.875485
		AOI 23-SI-S-14-02	14'		
		AOI 23-SI-S-16-02	16'		
	SB-AOI23-03	AOI 23-SI-S-07-03	7'	37.72052	-121.8757
		AOI 23-SI-S-12-03	12'		
		AOI 23-SI-S-30-03	30'		
	SB-AOI23-04	AOI 23-SI-S-7-04	7'	37.720498	-121.875745
		AOI 23-SI-S-12-04	12'		
		AOI 23-SI-S-30-04	30'		
	SB-AOI23-05	AOI 23-SI-S-07-05	7'	37.720492	-121.875584
		AOI 23-SI-S-10-05	10'		
		AOI 23-SI-S-14-05	14'		
	SB-AOI23-06	AOI 23-SI-S-07-06	7'	37.72068	-121.875707
		AOI 23-SI-S-10-06	10'		
		AOI 23-SI-S-14-06	14'		
	Trench EW-1	AOI23-SI-TR-08-01	8’	37.720438	-121.875868
		AOI23-SI-TR-09-02	9’	37.720431	-121.875799
		AOI23-SI-TR-07-03	7’	37.72042	-121.875711
		AOI23-SI-TR-06-04	6’	37.720416	-121.875665
		AOI23-SI-TR-08-05	8’	37.720411	-121.875644
		AOI23-SI-TR-04-06	4’	37.720407	-121.875581
	Trench NS-1	AOI23-SI-TR-05-07	5’	37.720399	-121.875658
		AOI23-SI-TR-05-08 &	5’ & 7.5’	37.720385	-121.875662

Area	Location	Sample ID	Depth	Latitude	Longitude
AOI 23 Trench and Test Pit Sample Locations		AOI23-SI-TR-7.5-09			
		AOI23-SI-TR-07-10	7’	37.720429	-121.875655
		AOI23-SI-TR-06-11	6’	37.720443	-121.875652
		AOI23-SI-TR-07-12	7’	37.720461	-121.875647
		AOI23-SI-TR-04-13	4’	37.72048	-121.875644
		AOI23-SI-TR-06-14	6’	37.720498	-121.875639
		AOI23-SI-TR-06-15	6’	37.720528	-121.875631
		AOI23-SI-TR-06-16	6’	37.720571	-121.875622
		AOI23-SI-TR-05-17	5’	37.720605	-121.875615
		AOI23-SI-TR-03-18	3’	37.720643	-121.875607
		AOI23-SI-TR-04-19	4’	37.72066	-121.875604
	Trench EW-2	AOI23-SI-TR-06-20	6’	37.720554	-121.875585
		AOI23-SI-TR-3.5-21	3.5’	37.720555	-121.875605
		AOI23-SI-TR-04-22	4’	37.720562	-121.875656
		AOI23-SI-TR-04-23	4’	37.720567	-121.875702
		AOI23-SI-TR-3.5-24	3.5’	37.720573	-121.875733
	Test Pit 1	AOI23-SI-TR-01-25	1’	37.720669	-121.875715
	Test Pit 2	AOI23-SI-TR-02-26	2’	37.720671	-121.875758
	Test Pit 3	AOI23-SI-TR-04-27	4’	37.720671	-121.875795
AOI 24	Hand dug surface and near surface soil samples	AOI24-01	1” and 12”	37.720107	-121.885849
		AOI24-02	1” and 12”	37.720099	-121.885743
		AOI24-03	1” and 12”	37.720116	-121.885686
		AOI24-05	1” and 12”	37.720071	-121.88539
		AOI24-04	1” and 12”	37.72006	-121.885211
		AOI24-06	1” and 12”	37.720022	-121.885027
		AOI24-07	1” and 12”	37.720004	-121.884852
		AOI24-08	1” and 12”	37.719928	-121.88458
AOI 28	SB-AOI28-01	AOI 28-SI-S-11-01	11'	37.717473	-121.876733
		AOI 28-SI-S-46-01	46'		
	SB-AOI28-02	AOI 28-SI-S-18.5-02	18.5'	37.718084	-121.876613
		AOI 28-SI-S-29-02	29'		
	SB-AOI28-03A	AOI 28-SI-S-08-03A	8'	37.717848	-121.876672
	SB-AOI28-04	AOI 28-SI-S-17-04	17'	37.71785	-121.876875
		AOI 28-SI-S-19.5-04	19.5'		
	SB-AOI28-05	AOI 28-SI-S-09-05	9'	37.717662	-121.876859
		AOI 28-SI-S-21-05	21'		
	SB-AOI28-06	AOI 28-SI-S-09-06	9'	37.717561	-121.877126
		AOI 28-SI-S-19-06	19'		
	SB-AOI28-07	AOI 28-SI-S-16-07	16'	37.717289	-121.877244
		AOI 28-SI-S-30-07	30'		
	SB-AOI28-08	AOI 28-SI-S-17-08	17'	37.717853	-121.876358
		AOI 28-SI-S-29-08	29'		
	SB-AOI28-09	AOI 28-SI-S-12-09	12'	37.717721	-121.876492
		AOI 28-SI-S-20-09	20'		

3.2 SAMPLING PROCEDURES

A total of 15 soil borings from which soil samples were collected were advanced a using a BK-81 drill rig, equipped with 8-inch solid flight augers. The drill rig was operated by Woodward Drilling, while USACE geologists logged soil, collected samples, recorded field observations, and supervised drilling. Boring locations were verified against maps and USA markings prior to drilling.

After hand augering to 5 feet bgs, soil was collected continuously from the subsurface using California-Modified drive samplers. Drive samplers were split open for visual inspection to identify the disturbed soil/native soil interface to aid in determining the appropriate collection depth. Terracore™ samplers were then used to sample soil at depths determined by the USACE geologist based on field observations of subsurface conditions and PID readings. In general, an attempt was made to collect one sample within the suspected contamination zone, and one in the suspected clean zone below in order to vertically delineate the contamination. Five Terracore™ samples and one 8 ounce glass jar were typically collected for each sample depending on the analyses selected for that sample in the work plan. Due to the small amount of soil needed for each sample, field duplicate samples could be collected from the same drive sample within the same interval as the primary samples.

Fresh nitrile gloves were used to avoid cross-contamination between sample collection. Following sample collection, the drive samplers were cleaned in a three-bucket decontamination setup: first a water scrub to remove soil, followed by washing with a non-phosphate detergent, and last a rinse with distilled water. Drill augers were cleaned between sample locations using high-pressure steam cleaning.

Temporary wells were installed in five of the borings and water samples were collected. Water samples were collected using no purge sampling with a bladder pump in all wells except for SB-AOI28-08, where a hand bailer was used due to insufficient groundwater recharge. Water samples were collected at least 24 hours after installing the temporary well. All borings were grouted following completion of sampling.

Trenches and test pits were excavated using a Case Super M Plus backhoe with an 18-inch bucket by ABC Constructors, Inc., a subcontractor of Woodward Drilling. Soil and debris from test pits and trenches were temporarily stored on a clean liner, and used as backfill after soil sampling and other subsurface activities were completed. Fresh nitrile gloves were used to avoid cross-contamination between samples in the field. Soil samples were collected using a disposable plastic scooper to scoop soil into sample containers. For depths greater than four feet, the backhoe excavated soil from the specified depth and the soil sample was collected from the bucket. Soil sample locations were based on visual and olfactory observations, PID field screening results, and professional judgment.

All containerized samples were placed in a chilled cooler for temporary storage during the day's fieldwork. Coolers were then picked up by a courier from the laboratory. In general, coolers were sent to the laboratory on a daily basis. Standard Chain of Custody procedures were used.

3.3 INVESTIGATION-DERIVED WASTE DISPOSAL

Wash fluids and soil cuttings were safely containerized in DOT-rated, 55-gallon steel drums for disposal and stored onsite in a designated area of the respective AOI: twenty-one (21) drums at AOI 28 and nine (9) drums at AOI 23. One representative soil sample of the waste from each AOI was collected and submitted for analysis to McCampbell Analytical, Inc. for TRPH with Silica Gel Clean-Up, VOCs, Organochlorine Pesticides, LUFT 5 Metals, Metals (STLC), and Metals (TCLP) (Lab Reports for IDW are included in Appendix F). For each AOI, material was taken from each drum and was composited to form a sample for waste disposal purposes. The waste was characterized as non-hazardous waste based on the analytical results and transported offsite on 17 August 2017 for final disposal at U.S. Ecology in Beatty, Nevada (Waste manifest is included in Appendix F).

4.0 INVESTIGATION RESULTS

Both qualitative and quantitative results are presented in this section by investigation area. A table of all analytical results for AOIs 23 and 28 is located in Appendix E, while all analytical results for AOIs 16 and 24 are located in Tables 4-1 and 4-5. Per the UFP-QAPP (USACE, 2017), screening levels were the lowest of the following:

Soil

1. DTSC HERO Note 3 modified regional screening levels (RSLs)
2. EPA RSLs
3. San Francisco Bay Regional Water Quality Control Board (RWQCB) Environmental Screening Levels (ESLs)

Groundwater

1. California maximum contaminant levels (MCLs)
2. EPA MCLs
3. DTSC HERO Note 3 modified RSLs
4. EPA RSLs
5. San Francisco Bay RWQCB ESLs

The latest EPA RSLs (May 2018), were used for comparison in this report. As detailed in Section 2.2.1, the Data Quality Objectives include determining if soil and/or groundwater concentrations of detected analytes pose a threat to human health at these sites by exceeding the unrestricted use screening levels, and for AOI 28, also determining whether debris is present.

4.1 AOI 16: BUILDING 1395/498 OIL STORAGE TANK

4.1.1 Background

The Master Plan Central Heating System listing for Parks AFB identified the Officer's Family Housing Building (Building 1395/498) as having an oil heating system (USACE, 2017). No information pertaining to the location or size of an oil storage tank was found during research; however, according to Sergeant McElroy in 2007, this tank was an above ground storage tank (AST) and removed in the 1990s. Currently, only the foundation and rubble of the building remains. During a May 2016 site visit, there was one possible AST footing that was identified on the south side of the building (USACE, 2017).

4.1.2 Field Activities

Two grab sample locations, one on either side of the apparent AST footing, approximately 0 to 2 inches below the surface of the ground were collected with disposable sampling equipment.

4.1.3 Results and Observations

4.1.3.1 Field Observations

Sample 1 (AOI16-S-SF-01) was taken approximately 1 foot to the east of the potential AST footing. Sample 2 (AOI16-S-SF-02), and its duplicate (AOI16-S-SF-02D) were taken approximately 1 foot to the west of the potential AST footing. A picture with the sampling locations marked is in Appendix D. Soil was extremely dry and hard packed clay. Due to the hard packed clay soils present, samples were taken at 0-2 inches bgs instead of the 1-4 inches bgs called for in the UFP-QAPP. This was both for ease and because

the movement of contaminants through such a material was deemed to be unlikely, thus the 0-2 inch sample would be more likely to capture any contaminants present.

4.1.3.2 Analytical Results

Due to this AST serving a house, and being identified as part of the heating system, samples were analyzed for Total Petroleum Hydrocarbons (TPH) extractables (Bunker C, Diesel, Motor Oil) and PAH 8270 SIM Naphthalene. Analytical results for AOI 16 are listed in Table 4-1. The TPH extractable test was run a second time with Silica Gel Cleanup (SGCU), and those results are also depicted in Table 4-1.

Table 4-1: Soil Sampling Results at AOI 16

Sample ID/ Location	Compound	Concentration (mg/kg)	Concentration w/ SGCU (mg/kg)	Screening level[1] (mg/kg)
AOI16-S-SF-01	Diesel C10-C24	120 Y	60 Y	230
	Motor Oil C24-C36	190	77	5100
	Bunker C C12-C40	550	230	5100
	Naphthalene	<0.0023 U	-	3.8
AOI16-S-SF-02	Diesel C10-C24	43 Y	15 Y	230
	Motor Oil C24-C36	75	29	5100
	Bunker C C12-C40	210	80	5100
	Naphthalene	<0.0024 U	-	3.8

1. San Francisco Bay Regional Water Quality Control Board Environmental Screening Levels (February 2016)
2. Y flag indicates results do not match hydrocarbon standard, U flag indicates non-detect

Diesel results were given a Y flag indicating that the results did not match the hydrocarbon standards, possibly indicating that the hydrocarbons have degraded. All sampling results, including with and without silica gel cleanup, for AOI 16 were below the screening levels.

4.2 AOI 23: CAMP SHOEMAKER BURN PIT

4.2.1 Background

A map of U.S. Naval facilities on Camp Shoemaker, "showing conditions on 30 June, 1945" depicts a 'burning pit' east of the Water Storage tanks, north of the hospital. No records could be found that detailed specific use of the site. During a 2006 effort to rehabilitate a drainage ditch along Barnet Boulevard, a contractor of Alameda County, Fugro West, Inc. found evidence of this former DoD burn pit near part of the drainage ditch. Thirteen samples were collected from 13 exploratory trenches in the area of the drainage ditch, and 13 samples from underlying clay, at approximately 4 to 5 feet bgs. Samples from the trenches closest in location to the historic burn pit had near surface lead levels from 28 to 840 mg/kg, while deeper samples and those further from the pit had lead levels of 4.2 to 11 mg/kg. No polynuclear aromatic hydrocarbons were found in any samples (Fugro 2006).

A 23 February 2016 site visit by USACE staff with Alameda County Sheriff's Office personnel found evidence of a landfill and previous burning of debris. Debris dug up by burrowing animals was present, including bed springs, broken glass and ceramics, a spark plug, and melted glass. Alameda County has also in the past done surface sweeps of the area to remove debris that had surfaced through erosion and burrowing animals.

4.2.2 Field Activities

During this investigation, approximately 300 linear feet of trenches and 3 test pits were excavated, 6 soil borings were advanced, and two temporary wells were installed (Figure 4, Table 3-1). Subsurface soils samples were visually classified using the Unified Soil Classification System and observations were logged on field forms (Appendix A). Test Pit observations were noted in the field book (Appendix D).

Trenches and test pits were excavated and backfilled with a Case Super M Plus backhoe. Trench EW-1 was approximately 110 feet in length, Trench EW-2 was approximately 60 feet in length, and Trench NS-1 was approximately 120 feet in length (Trench logs can be seen in Appendix A). The approximate width of the trenches was 2 feet and depths of the trenches was 4 to 10 feet bgs. The vertical extent of the test pits were approximately 1 to 4 feet bgs and ranged from 2 to 3 feet in width. Prior to excavating a trench or test pit, a clean liner was placed adjacent to the area. As soil and buried debris was excavated, it was placed directly on the liner and stockpiled until subsurface activities were completed. Immediately upon completion of subsurface activities, the temporarily stockpiled material was used as backfill and placed back into the open excavation and compacted in lifts with the backhoe bucket prior to beginning the next trench or test pit. The week following the conclusion of trenching and boring, six inches of clean imported fill was placed and compacted across all disturbed soil.

Soil borings were advanced using an 8-inch Hollow Stem Auger (HSA) equipped with a four-point bit driven by a BK 81 drill rig. The following six soil borings were advanced: SB AOI 23-01, -02, -03, -04, -05, and -06 (Figure 4). Soil boring depths ranged from 14 feet to 30 feet bgs. Soil samples were collected using a California modified 2-inch split spoon drive sampler (see Table 3-1 for sample IDs, depths and locations). Shallow groundwater was encountered at 14 feet bgs at SB-AOI23-01, at 11 feet bgs in SB-AOI23-02, and at 13 feet bgs in SB-AOI23-06 and -05. Borings SB-AOI23-03 and SB-AOI23-04 were both drilled to 30 feet bgs, and no groundwater was encountered in either boring.

Twenty four (24) soil samples were collected from the trenches, one (1) soil sample was collected from each test pit, and three (3) soil samples were collected from each boring (Table 3-1). The analytical soil samples were collected from varying depths based on visual and olfactory observations, photoionization

device (PID) screening results, and best professional judgment, as described in Section 3.2. Locations of the trenches, test pits, and borings can be found in Figure 4. Figure 5 shows the locations of soil samples collected from the trenches and test pits.

Temporary wells without filter packs were installed in two of the borings: SB-AOI 23-01 and SB-AOI 23-02. Temporary wells were constructed using 2-inch Schedule 40 PVC 10 feet blank risers and 10-15 foot long screens depending on depth of bore hole. Groundwater samples were collected using no-purge sampling with a bladder pump 24 hours after the installation of the temporary well. Groundwater samples were filtered by the laboratory. The temporary well casings were pulled from the boreholes after the collection of groundwater samples. All borings were abandoned by grouting the boreholes using a tremie pipe placed on the bottom on the bore hole.

4.2.3 Results and Observations

4.2.3.1 Field Observations

Debris such as ceramic material, plastic, and metal scraps was found throughout the burn pit area disturbed by the SI investigation within the top 2 feet bgs, as well as in the nearby surrounding surface area, such as in the nearby dirt road. This is thought to be due to recent regrading activities for erosion control. This surface debris was not indicative of the location of the burn pit. The burn pit was found to be roughly round and between 3 to 8 feet bgs (see Figure 4 for estimated extent of burn pit based on visual observations).

Between the trenching and boring activities, the extents of the burn pit are well-constrained. Ashy layers extend out from the main burn pit around 4 feet bgs and appear to be a result of animal burrowing. The burn pit consists of predominately ash, but also a significant amount of ceramics and glass. Unbroken cups, mortar and pestles, glass soda bottles, and medicine bottles were found among the debris.

4.2.3.2 Geology

The primary soil at AOI 23 is a dark brown sandy silt which grades to silty sand toward the northeast. The sandy silt was moist with a medium to high plasticity and the silty sand was moist with medium plasticity. The top 2 feet bgs has been extensively disturbed across the AOI and vegetation dominated the top six inches. Overall, the soil on site is fairly homogeneous. The burn pit is overlain by topsoil and underlain by sandy silt or silty sand (see trench logs in Appendix A).

4.2.3.3 Analytical Results

Both water and soil samples were analyzed for dioxins/furans (SW8290A), semi-volatile organic compounds (SVOCs, by SW8270D), volatile organic compounds (VOCs, by SW8260C) and low level Polynuclear Aromatic Hydrocarbons (PAHs, by 8270 SIM), petroleum hydrocarbons, including gasoline, diesel, motor oil, and bunker C (8015D DRO and GRO) and CAM17 metals (6010C and 7471B).

Soil Sampling Results

Table 4-2 below summarizes soil sample results that exceeded their respective screening levels. Arsenic was found in nearly all samples to exceed the respective screening level but the majority appear to be within the expected background range of naturally occurring metals. Based on a study of Bay Area soils, 11 mg/kg is the upper estimate (99th percentile) of what is considered a regional background level of arsenic (Duvergé, 2011). For simplicity, only arsenic above this assumed background level of 11 mg/kg are shown

in Table 4-2 (and all arsenic data is included in Appendix E). This assumed background level is not based on site-specific data and is not used in decision making for this AOI.

Table 4-2: Soil Sampling Results above Screening Levels at AOI 23

Analyte	Sample ID	Location	Depth (feet bgs)	Result	Screening level
Arsenic (mg/kg)	AOI23-SI-TR-04-06	Trench EW-1	4	25	11[1]
	AOI23-SI-TR-04-13	Trench NS-1	4	28	
	AOI23-SI-TR-06-16	Trench NS-1	6	62	
	AOI23-SI-TR-1-25	Test Pit 1	1	20	
	AOI23-SI-S-12-03	Soil Boring 3	12	12	
	AOI 23-SI-S-10-06	Soil Boring 6	10	15	
Cadmium (mg/kg)	AOI23-SI-TR-06-16	Trench NS-1	6	5.7	5.2[2]
Cobalt (mg/kg)	AOI 23-SI-S-10-06	Soil Boring 6	10	31	23[3]
Lead (mg/kg)	AOI23-SI-TR-06-04	Trench EW-1	6	200	80[2]
	AOI23-SI-TR-04-06	Trench EW-1	4	380	
	AOI23-SI-TR-04-13	Trench NS-1	4	580	
	AOI23-SI-TR-06-15	Trench EW-1	6	150	
	AOI23-SI-TR-06-16	Trench NS-1	6	3000	
	AOI23-SI-TR-05-17	Trench EW-1	5	82	
	AOI 23-SI-TR-4-22	Trench EW-2	4	350	
	AOI23-SI-TR-1-25	Test Pit 1	1	1700	
Dioxin TEQ (ng/kg)	AOI23-SI-TR-04-06	Trench EW-1	4	7.85	4.8[3]
	AOI 23-SI-TR-4-22	Trench EW-2	4	10.2 J	

1. California HERO Note 3 modified regional screening levels (RSL) = Table 1. DTSC-Recommended Screening Levels for Soil. June 2018 is 0.11 mg/kg for Arsenic. 11 mg/kg is the upper estimate (99th percentile) for Bay Area regional background level (Duvergé, 2011). Results shown in Table 4-2 are only those over 11 mg/Kg, all arsenic detections are included in Appendix E.
2. California HERO Note 3 modified regional screening levels (RSL) = Table 1. DTSC-Recommended Screening Levels for Soil. June 2018
3. Regional screening levels (RSL) = "Regional Screening Tables: "Screening Levels for Chemical Contaminants, Residential Soils." EPA May 2018

Arsenic, cadmium, cobalt, lead, and dioxin Toxic Equivalency Quotient (TEQ) were detected above screening levels in several locations. All other analytes, including VOCs, SVOCs, PAHs and petroleum hydrocarbons, were not detected above screening levels in any soil sample. However, as detailed in the AOI 23 table in Appendix E, several PAHs (such as Pyrene and Benzo(a)anthracene), VOCs (such as Acetone and Methylene Chloride), and Hydrocarbons (such as Motor Oil and Bunker C) were found above the limit of detection, but well below the screening levels. Figure 6 depicts the results above screening levels at AOI 23, and Appendix E has tables of all results and results above the limits of detection.

Groundwater Sampling Results

All groundwater data from AOI 23 is included in Appendix E. Table 4-3 depicts the results from the groundwater samples collected at AOI 23 that were detected above the laboratory limits of detection. No groundwater sample from AOI 23 had detections above the screening levels for any analyte. Metals samples were filtered by the laboratory.

Table 4-3: Groundwater Sampling Results above Limits of Detection at AOI 23

Analyte	AOI23-SI-GW-01 (µg/L)	AOI28-SI-GW-02 (µg/L)	Screening Level (µg/L)
Dioxin TEQ	0.00E-06	6.34E-08	3.0E-05[1]
Diesel C10-C24	19 JY	84 Y	100
Antimony	<8 U	3.1 J	6[1]
Barium	52	44	2000[1]
Chromium	3.6 J	< 1.3 J	100[1]
Lead	5.7 J	11 J	15[3]
Molybdenum	12	3.3 J	100[3]
Silver	4.2 J	16 J	94[3]

Notes: J flag indicates an estimated value, U flag indicates non-detect, Y flag indicates results do not match hydrocarbon standard

1. Regional screening levels (RSL) = "Regional Screening Tables: "Screening Levels for Chemical Contaminants, MCL." EPA May 2018
2. California HERO Note 3 modified regional screening levels (RSL) = Table 4. Screening Levels for Tap Water that Exceed the California Maximum Contaminant Levels. June 2018
3. Regional screening levels (RSL) = "Regional Screening Tables: "Screening Levels for Chemical Contaminants, Tap Water." EPA May 2018

4.3 AOI 24: NAVAL SMALL BORE RIFLE RANGE

4.3.1 Background

A map of U.S. Naval facilities on Camp Shoemaker, "showing conditions on 30 June, 1945" depicts a 'small bore rifle range' west of the Water Storage tanks, north of Philadelphia Street (12th St on later Army maps). Berms in this location consistent with a rifle range are visible on aerial photos from 1949 to 1982 (USACE, 2017). A May 2016 site visit by USACE staff with Alameda County Sheriff's Office personnel found no evidence of a range, such as bullets or casings. During the site visit, Sherriff Frank Matteo stated that the Sherriff's Office was unaware of any evidence of a range.

4.3.2 Field Activities

Sixteen near surface soil samples were taken at AOI 24. Two discrete samples were taken at each of eight locations (see Figure 7), one at 1 inches bgs and one at 12 inches bgs. These samples were collected with disposable sampling equipment, and the disturbed soil was placed back into sample location. All sample locations were located approximately 3 to 6 feet from the base of the hill, at what would be expected to be range target height. The surface and near surface soils were visually inspected for any casings or other remnants indicative of a rifle range. In order to verify that a shallow cover fill had not previously covered

up evidence of a range, a test pit down to 2 feet below the surface of the hill was dug near sample AOI24-03.

4.3.3 Results and Observations

4.3.3.1 Field Observations

No indications of former small arms range use was noted in the sample locations, the test pit, or along the entire length of the hillside. Sample AOI24-05 was collected within an erosion rill, therefore the 12 inch sample at this location was approximately 2.5 feet below the surface of the hillside, and the surface sample at this location was approximately 1.5 feet below the surface of the hillside. The test pit and sampling in the erosion rill allowed for sampling and observation at deeper depths, in case earth had been moved during road construction that could have covered over the historical range. The test pit and full erosion rill were also visually inspected, and no evidence of range debris was seen. Photos from sampling at this AOI on 3-4 April 2017 are included in Appendix D.

4.3.3.2 Analytical Results

All samples were analyzed for total lead by EPA Method 6010C. Table 4-4 and Figure 8 depict all the results for all samples taken at AOI 24. No results exhibited concentrations over the screening levels at AOI 24. The lead results appear to be within the expected background concentrations of naturally occurring metals.

Table 4-4: Soil Sampling Lead Results at AOI 24

Sample ID	Depth (inches bgs)	Lead Concentration (mg/kg)	Screening Level (mg/kg)
AOI24-SI-S-SF-01	0-4	7.7	80[1]
AOI24-SI-S-SF-02		8.1	
AOI24-SI-S-SF-03		7.0	
AOI24-SI-S-SF-04		7.4	
AOI24-SI-S-SF-05		8.8	
AOI24-SI-S-SF-06		8.2	
AOI24-SI-S-SF-07		5.3	
AOI24-SI-S-SF-08		7.3	
AOI24-SI-S-1-01	12-16	6.3	
AOI24-SI-S-1-02		6.5	
AOI24-SI-S-1-03		7.7	
AOI24-SI-S-1-04		7.2	
AOI24-SI-S-1-05		8.4	
AOI24-SI-S-1-06		6.1	
AOI24-SI-S-1-07		6.9	
AOI24-SI-S-1-08		8.9	

[1] California HERO Note 3 modified regional screening levels (RSL) = Table 1. DTSC-Recommended Screening Levels for Soil. January 2018

4.4 AOI 28: HICKMAN ROAD SANITARY LANDFILL AREA

4.4.1 Background

According to the 1945 Naval Shoemaker Map and the 1951 Parks AFB Preliminary Master Plan, a sanitary fill area was located in the northeast portion of former Camp Shoemaker (USACE, 2017). No further historical documentation, such as what may have been put into the landfill, was found. The current area is now a paved area used for motorcycle training and an adjacent gravel pad used for vehicle storage, both operated by the Alameda County Sheriffs' Office.

4.4.2 Field Activities

During this investigation, nine soil borings were drilled, three of which were converted into temporary wells for groundwater sampling. The locations of the borings are shown on Figure 9. Two samples were collected per boring, except in boring SB-AOI28-03A. Boring SB-AOI28-03 was drilled to a depth of 14 feet bgs, where refusal was encountered within a layer of wood and concrete debris over five feet thick. Boring SB-AOI28-03A was then drilled approximately 15 feet from the boring SB-AOI28-03. Significant wood debris was also encountered in boring SB-AOI28-03A and thus only one soil sample could be collected. A bladder pump was used to sample temporary wells at SB-AOI28-01 and SB-AOI28-02. Insufficient water was encountered in temporary well at SB-AOI28-08 to use a pump so a hand bailer was used to collect the sample.

4.4.3 Results and Observations

4.4.3.1 Field Observations

Debris from 5 to 20.5 feet thick (with an average of approximately 12 feet thick) was found in all borings except the southernmost boring SB-AOI28-07, which had very limited debris between 3 and 11 feet bgs. The top of the debris zone is generally approximately 6 feet bgs but gets deeper to about 13 feet bgs in the two borings furthest to the east. The bottom of the debris zone ranges from 18-27 feet, with depth increasing toward the north. (see Appendices A and D for full boring logs and field notes). Debris consisted mainly of wood, but also glass, metal, and newspapers. Evidence of partially burned material was also found. A sweet chemical odor was observed in borings SB-AOI28-06 and SB-AOI28-09 along with high PID readings (see boring logs in Appendix A for details).

4.4.3.2 Geology

The dominant soil in the AOI is a dark brown clay. A water-bearing sand was encountered in most borings at approximately 16 to 22 feet bgs.

4.4.3.3 Analytical Results

Both groundwater and soil samples were analyzed for VOCS (SW8260C), SVOCs (SW8270D), low level PAHs (8270 SIM), and CAM17 metals (6010C and 7471B).

Soil Sampling Results

A table depicting all the detected analytes is included in Appendix E, as well as a table of all results. Soil sample results that were above their respective screening levels at AOI 28 are listed below in Table 4-5. Arsenic, 1,4-dichlorobenzene and naphthalene were detected above screening levels. All arsenic results, while over the 0.11 mg/kg screening level, were between 1.0 and 6.6 mg/kg, which is within normal ambient

conditions for the region and below the estimated regional background level of 11 mg/kg (Duvergé, 2011), and are therefore not shown in Table 4-5 (results can be seen in Appendix E however). All other analytes were not reported above screening levels in any sample. However, as detailed in the AOI 28 table in Appendix E, several PAHs (such as fluorene and phenanthrene), VOCs (such as acetone and 2-butanone), and SVOCs (such as dibenzofuran and 2,4,5-trichlorophenol) were found above the limit of detection, but well below the screening levels. Figure 10 depicts the soil results above screening levels at AOI 28.

Table 4-5: Soil Sample Results above Screening Levels at AOI 28

Analyte	Sample ID	Location	Depth (feet bgs)	Result (mg/Kg)	Screening level (mg/Kg)
1,4-Dichlorobenzene	AOI28-SI-S-20-09	Soil Boring 9	20	3.0 J	2.6[1]
Naphthalene	AOI28-SI-S-12-09	Soil Boring 9	12	5.9	3.8[1]

Notes: J flag indicates an estimated value

1. Regional screening levels (RSL) = "Regional Screening Tables: "Screening Levels for Chemical Contaminants, Residential Soils." EPA May 2018

Groundwater Sampling Results

A table showing all groundwater results can be found in Appendix E. Groundwater results that were detected above the laboratory limits of detection are listed in Table 4-6. Groundwater metals samples were filtered by the laboratory.

Table 4-6: Groundwater Sampling Results Above Limits of Detection at AOI 28

Analyte	AOI28-SI-GW-01 (µg/L)	AOI28-SI-GW-02 (µg/L)	AOI28-SI-GW-08 (µg/L)	Screening Level (µg/L)
Phenanthrene	<0.08 U	0.05 J	<0.08 U	1800[1]
Carbon Disulfide	<2.0 U	1.3 J	<2.0 U	810[1]
Fluorene	<0.08 U	0.1 J	<0.08 U	290[1]
2-Methylnaphthalene	<0.08 U	0.1 J	<0.08 U	36[1]
Naphthalene	0.03 J	**1.9 J**	< 0.04 U	0.17[1]
Acetone	<16 U	<16 U	120	14000[1]
Benzene	<1.0 U	**2.4 J**	<1.0 U	0.15[2]
2-Butanone	<4.0 U	2.6 J	13 J	5600[1]
Chlorobenzene	<1.0 U	11	<1.0 U	70[3]
1,4-Dichlorobenzene	<1.0 U	**10 J**	<1.0 U	0.48[1]
Arsenic	**16**	**16**	**14**	0.0082[2]
Barium	**2600**	870	810	2000[4]
Beryllium	0.65 J	0.58 J	<1.0 U	4[2]
Cadmium	0.35 J	0.93 J	0.42 J	6[4]
Cobalt	**5.8**	**9.1**	<2.5 U	5[1]
Copper	<2.5 U	8.6	<2.5 U	800[1]
Vanadium	16	25	17	86[1]
Molybdenum	20	15	36	100[1]

Nickel	5.3	16	3.8 J	100[3]
Selenium	<5 U	6.1 J	2.9 J	50[4]
Silver	3.2 J	<2.5 U	4.2 J	94[1]
Thallium	<5 U	7.3 J	3.7 J	0.2[1]
Zinc	<10 U	<10 U	18 J	6000[1]

Notes: J flag indicates an estimated value, U flag indicates non-detect

[1.] Regional screening levels (RSL) = "Regional Screening Tables: "Screening Levels for Chemical Contaminants, Tap Water." EPA May 2018

[2.] California HERO Note 3 modified regional screening levels (RSL) = Table 2. DTSC-Recommended Screening Levels for Tap Water. January 2018

[3.] California HERO Note 3 modified regional screening levels (RSL) = Table 4. Screening Levels for Tap Water that Exceed the California Maximum Contaminant Levels. January 2018

[4].Regional screening levels (RSL) = "Regional Screening Tables: "Screening Levels for Chemical Contaminants, MCL." EPA May 2018

Naphthalene, benzene, 1,4-dichlorobenzene, arsenic, barium and cobalt were detected above screening levels; these results are bolded and shaded in the table. All other analytes not shown in Table 4-6 were not detected in any sample. Figure 11 depicts all groundwater results that were above screening levels at AOI 28.

4.5 DATA QUALITY ASSESSMENT AND USABILITY

All samples were sent to Curtis & Tompkins (C&T) Laboratory, Berkeley, a DoD ELAP accredited facility. The laboratory followed the requirements in the UFP-QAPP, which are based upon the DoD Quality Systems Manual for Environmental Laboratories, version 5.0 (U.S. DoD and Department of Energy consolidated 2013). Data packages were received and validated by the USACE project chemist. Laboratory data packages are located in Appendix B and Validation reports are located in Appendix C.

Field duplicate samples were collected and analyzed for quality assurance and quality control (QA/QC). Temperature blanks were included in each cooler sent to the project laboratory. Trip blanks were included in each cooler containing samples to be analyzed for VOCs. Duplicate samples were collected by filling a second sample container for each analysis at the time of sample collection. Duplicate samples were analyzed by the same methods as the primary samples.

One hundred percent of the laboratory data generated was validated in accordance with the appropriate guidelines and control criteria. The purpose of the data validation is to ensure that the data has integrity and reliability based on precision, accuracy, representativeness, comparability, and completeness (PARCC). The validation consisted of the evaluation of field duplicates, method blanks, matrix spikes, matrix spike duplicates, laboratory control samples, and surrogates.

All groundwater and soil data were deemed usable with respect to the data quality objectives (DQOs) except for 9 results that were rejected based upon matrix spike/matrix spike duplicate recoveries. Rejected were 4,6-dinitro-2-methylphenol in samples AOI23-SI-TR-06-04, AOI-SI-S-07-06 AOI28-SI-S-16-07; 2,4-dinitrophenol in sample AOI-SI-S-07-06; antimony in sample AOI23-SI-TR-1-25; benzoic acid in samples AOI23-SI-S-07-06 and AOI23-SI-TR-1-25; pentachlorophenol in sample AOI-SI-TR-06-04 and silver in sample AOI23-SI-TR-1-25. Despite these rejected results the completeness for the overall sampling event is close to 100%. The data quality validation indicated that the laboratories correctly performed the analyses with the necessary accuracy and precision to meet the DQOs of the project.

5.0 CONCLUSION AND RECOMMENDATIONS

Sample locations for this SI were selected based upon areas that have the highest probability of detecting a historical release from former Parks AFB activities, where possible, or in locations chosen to help bound the extent of visible impacts. The data from this effort was sufficient to recommend either no DoD action is indicated (NDAI) or further investigation.

5.1 AOI 16: BUILDING 1395/498 OIL STORAGE TANK

All soil sample data is below the San Francisco Bay Regional Water Quality Control Board Environmental Screening Levels. Any remnants of a historical release do not pose a risk to any users based upon comparison to the screening levels. It is recommended that an NDAI determination be made for this investigation area.

5.2 AOI 22: FORMER UNDERGROUND FUEL OIL STORAGE DEPOT

No investigation was completed at AOI 22. Further action on this AOI is on hold until access to the property is obtained.

5.3 AOI 23: CAMP SHOEMAKER BURN PIT

Based on the presence of buried debris and arsenic, cadmium, cobalt, lead, and dioxin TEQ exceeding the screening levels in multiple soil samples, a Remedial Investigation is recommended for this AOI.

5.4 AOI 24: NAVAL SMALL BORE RIFLE RANGE

Due to the lack of any evidence in the field of the range having been used, and no lead results over screening levels, it is recommended that an NDAI determination be made for this AOI.

5.5 AOI 28: HICKMAN ROAD SANITARY LANDFILL AREA

Based on the type of debris found in this landfill and the burn pit at AOI 23, (the dominant findings were large amounts of wood at the landfill and kitchen dishes at the burn pit) it seems likely that these AOIs were used during demolition of the wood buildings that were built on the base for World War II and demolished soon afterwards. An evaluation will be made as to the applicability of CCR Title 27 for this AOI. Due to the presence of debris and contaminants of concern found above screening levels, a Remedial Investigation is recommended for this AOI.

6.0 REFERENCES

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Figures

Former Parks AFB

Figure 1

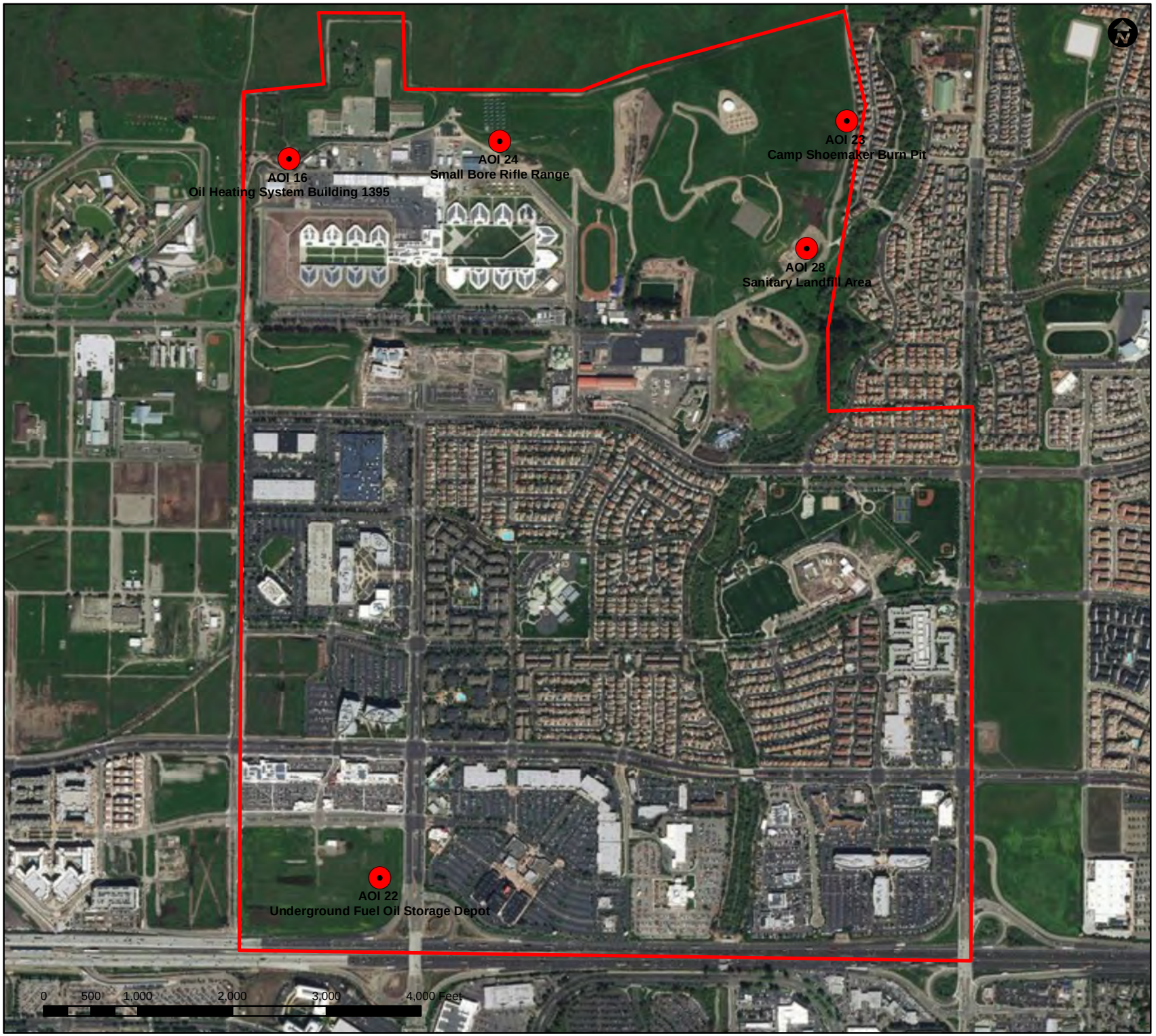
Site Location Map

Legend

FUDS Eligible Property

Site Inspection Report

Date: July 2017



Former Parks AFB

Figure 2

AOIs in QAPP

Legend

- AOIs in QAPP
- FUDS Eligible Property

Site Inspection Report

Date: July 2017

Former Parks AFB

Figure 3

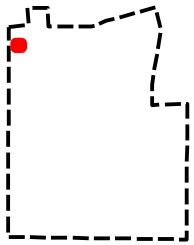
AOI 16 Building 1395/ 498 Oil Storage Tank Sample Locations

Legend

- AOI16 Soil Samples

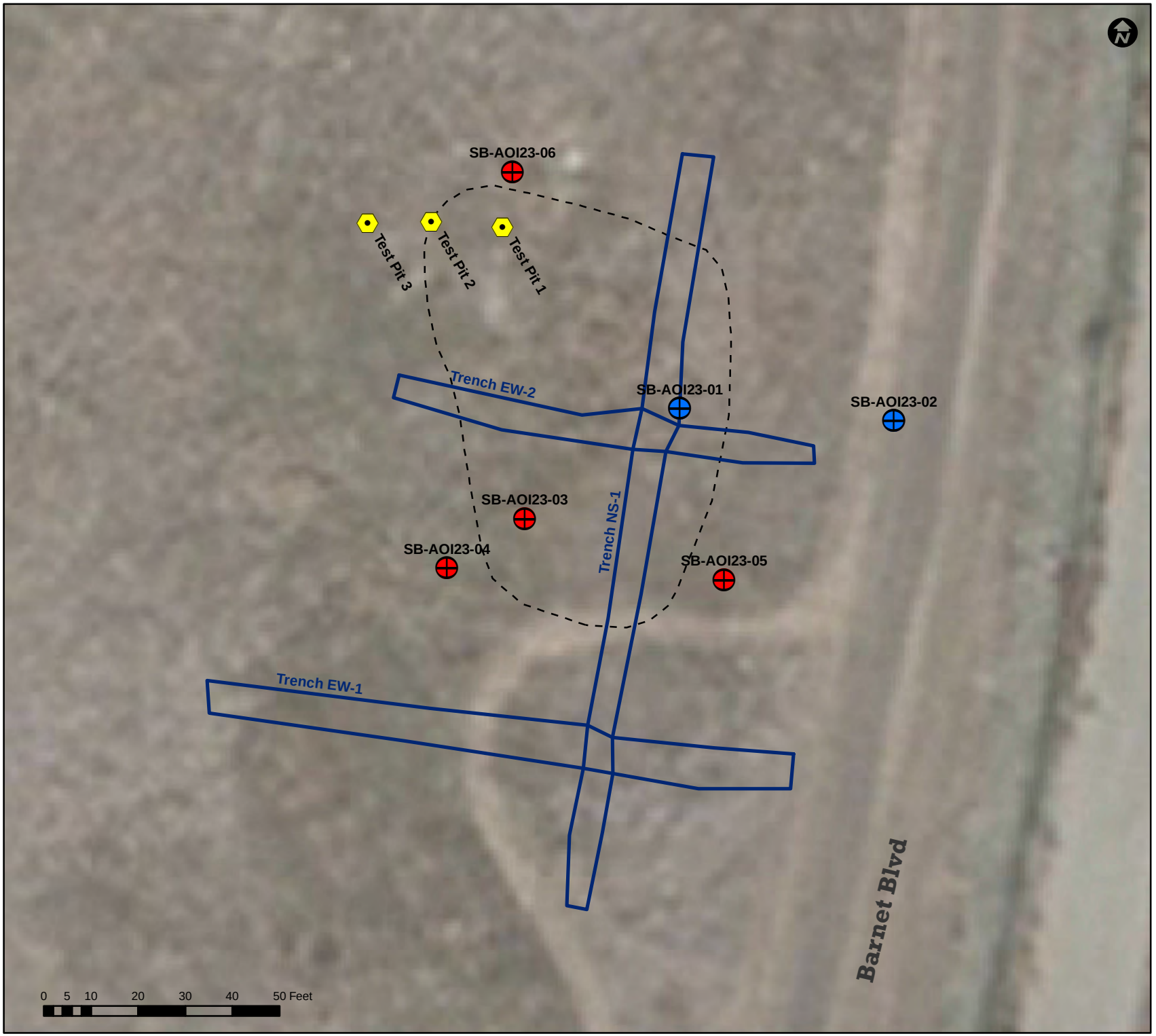
Site Inspection Report

Date: June 2018



Former Parks AFB
Figure 4

AOI 23
Camp Shoemaker
Burn Pit
Sampling Overview

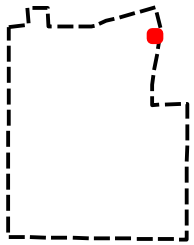


Legend

- AOI23 Soil Borings
- AOI23 Soil Borings with Temporary Wells
- AOI23 Test Pits
- AOI23 Trenches
- AOI23 Estimated Burn Pit Extent from Field Observations

Site Inspection Report

Date: July 2017



Former Parks AFB

Figure 5

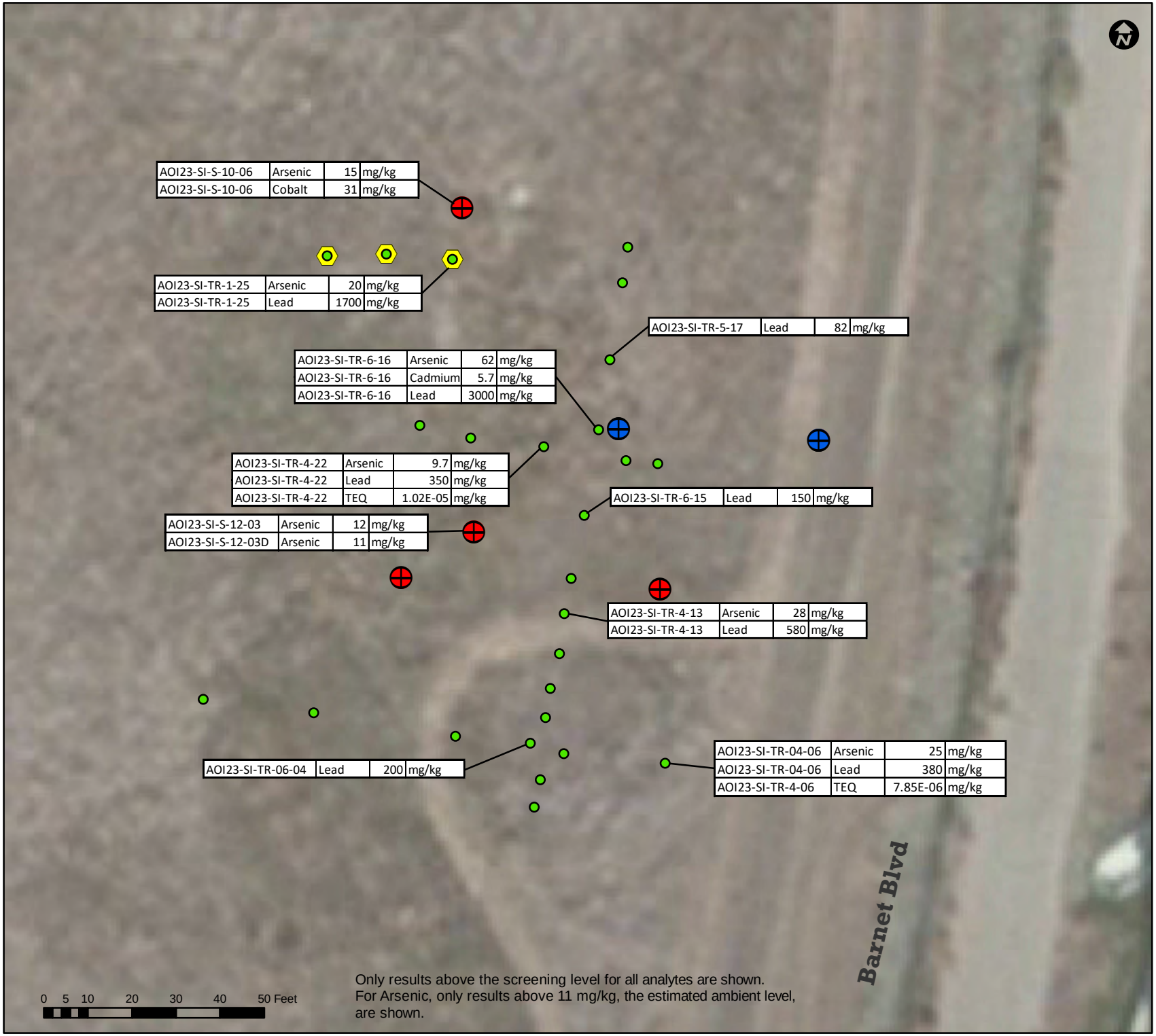
AOI 23 Camp Shoemaker Burn Pit Trench and Test Pit Sample Locations

Legend

- AOI23 Soil Samples

Site Inspection Report

Date: July 2017



Former Parks AFB

Figure 6

AOI 23 Camp Shoemaker Burn Pit Soil Sampling Results

Legend

- AOI23 Soil Borings
- AOI23 Soil Borings with Temporary Wells
- AOI23 Test Pits
- AOI23 Soil Samples

Site Inspection Report

Date: July 2017

Former Parks AFB

Figure 7

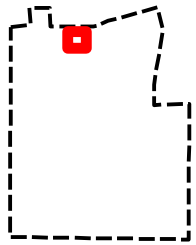
AOI 24
Rifle Range
Sample Locations

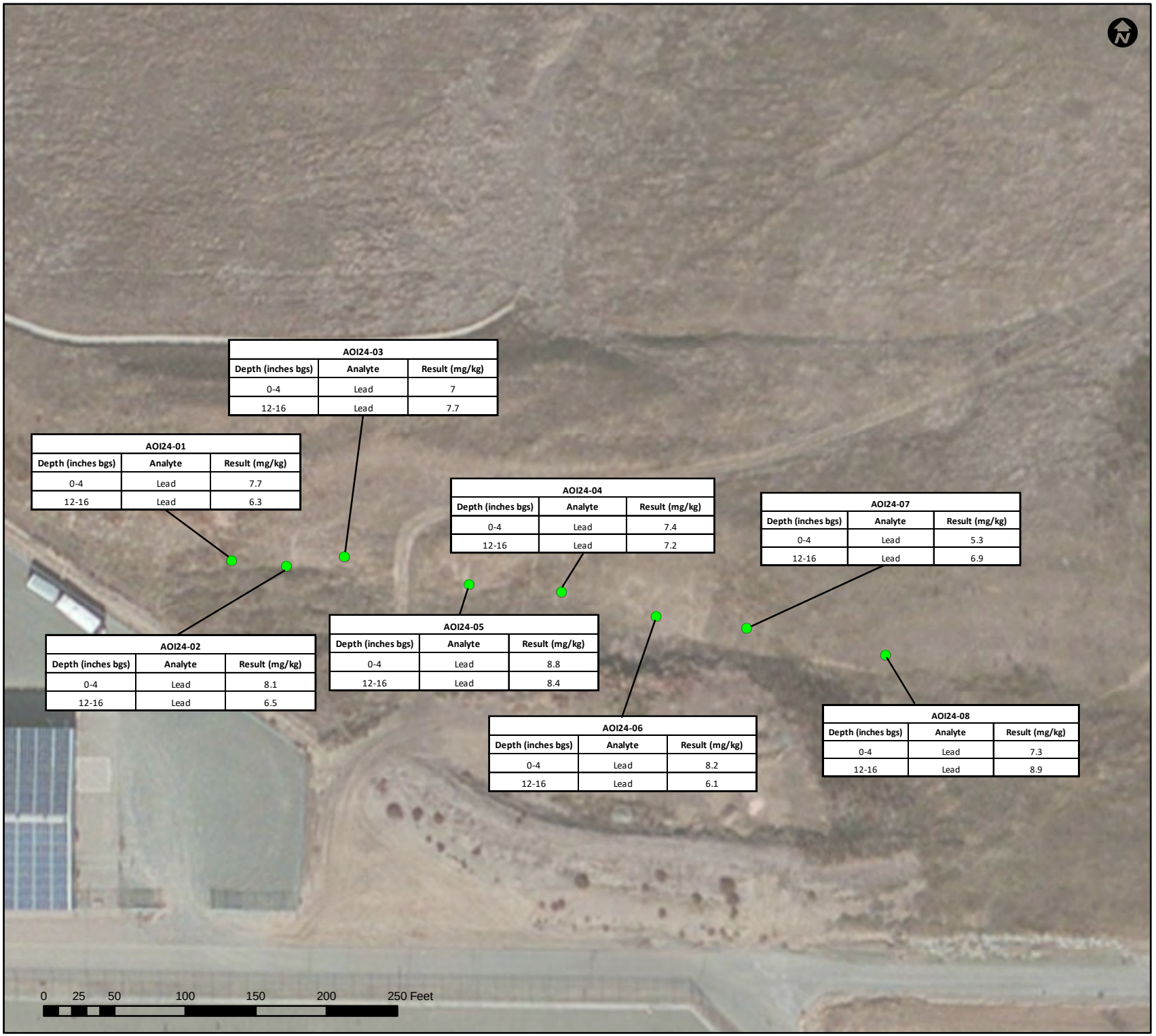
Legend

- AOI24 Soil Samples

Site Inspection Report

Date: July 2017





Former Parks AFB

Figure 8

AOI 24 Rifle Range Sample Results

Legend

- AOI24 Soil Samples

Site Inspection Report

Date: July 2017

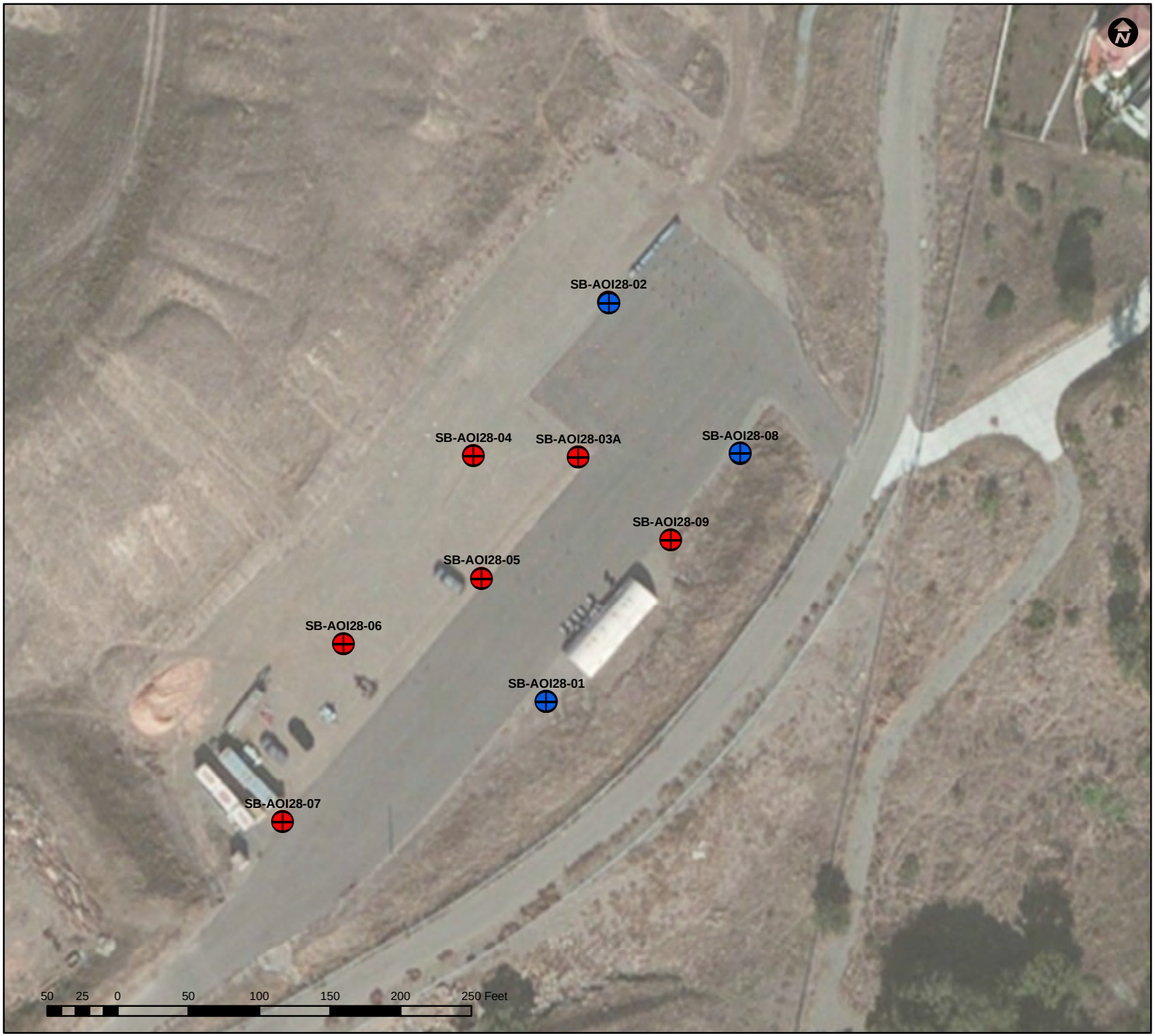


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Figure 9

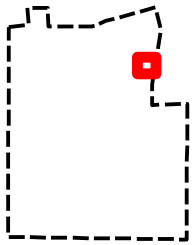
AOI 28 Sanitary Landfill Boring Locations

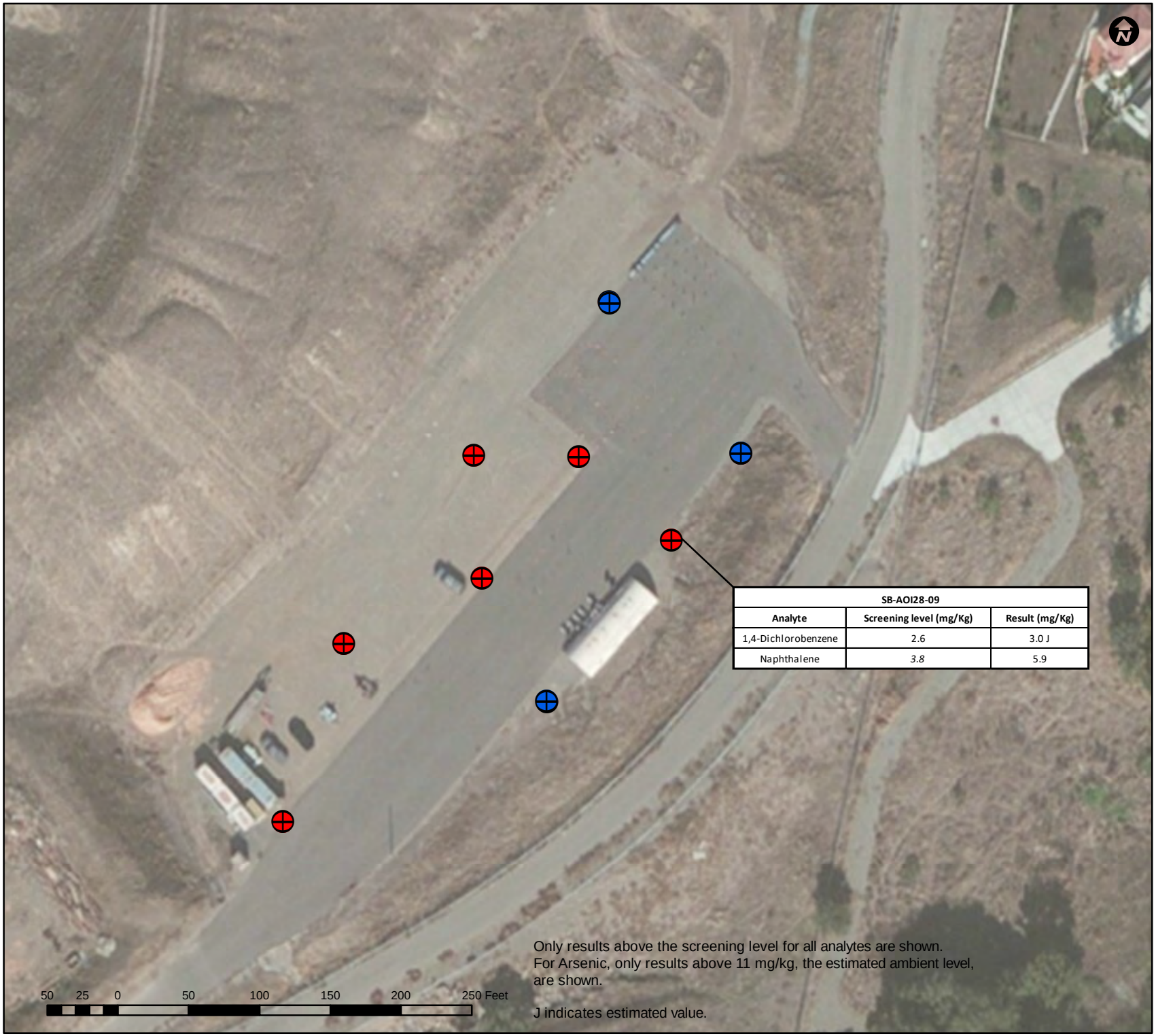
Legend

- AOI28 Soil Borings
- AOI28 Soil Borings with Temporary Wells

Site Inspection Report

Date: July 2017





Former Parks AFB

Figure 10

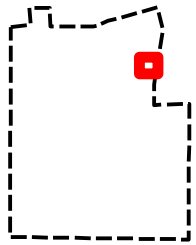
AOI 28 Sanitary Landfill Soil Sampling Results

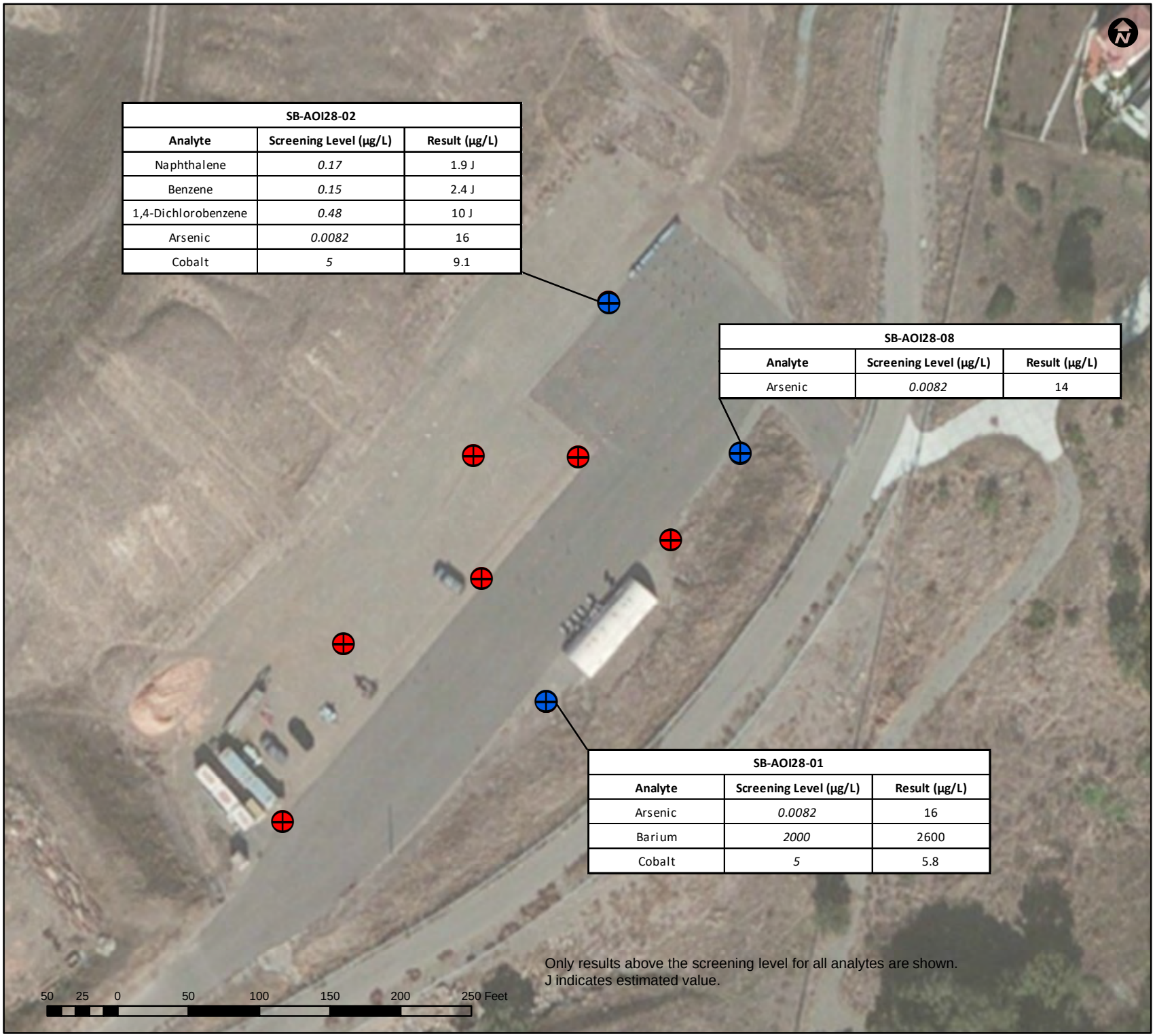
Legend

- AOI28 Soil Borings
- AOI28 Soil Borings with Temporary Wells

Site Inspection Report

Date: July 2017





Former Parks AFB

Figure 11

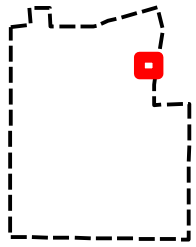
AOI 28 Sanitary Landfill Groundwater Sampling Results

Legend

- AOI28 Soil Borings
- AOI28 Soil Borings with Temporary Wells

Site Inspection Report

Date: Aug 2018



Appendices
A, B, C and F included on CD

Former Parks Air Force Base
FUDS Number J09CA0083

Appendix D
Photos

(Scans of Field notes included on CD)

Site Photos-SI Field Work
Spring 2017

AOI 16
Building 1395/498 Oil Storage Tank

AOI 16: 4/3/17 Base of pink flags are where surface soil samples were taken. Possible AST footing can be seen in mid-right foreground of photo (surrounded by concrete)

AOI 23

Backhoe about to begin trenching trench EW-1, camera facing East

USACE Geologist logging trench NS-1. Native soil visible in foreground; ash and debris visible in background. Camera facing North

View into Trench NS-1. Debris and ash visible.

Medicine bottle discovered at AOI 23

AOI 23, continued

View into Trench NS-1. A small ash layer is visible.

Spoils pile for NS-1. Debris including ceramics and glass bottles visible. Camera facing Northwest.

Site conditions after trenches were backfilled. Camera facing Northwest

AOI 23, continued

Debris from burn pit including ceramics and ash.

Backhoe bucket with ash (light grey), decomposed ceramics (reddish brown), and native soil (dark drown).

Spoils pile for NS-1 showing native sandy silt (foreground), ash and debris (midground), and native silty sand (background). Camera facing Northeast.

AOI 24

Example of shallow sampling location.

Example of deep sampling location.

View of suspected berm, camera facing Northeast.

View of suspected berm, camera facing East.

View of suspected berm, camera facing West.

Sample location 5, inside erosion rill

AOI 28

Woodward drillers operating the drill rig on SB-AOI28-01.

Soil core showing debris including legible pieces of newspaper.

AOI 28, continued

Samplers with cores showing poor recovery and woody debris.

USACE Geologists logging SB-AOI28-01. Camera facing South.

USACE representatives a taking a depth to groundwater measurement before groundwater sampling.

Appendix E
AOI 23 and AOI 28
Soil Sampling
Detected Results Tables

(Table of All Results included on CD)

AOI 23: Camp Shoemaker Burn Pit
SI Soil Sampling
Detected Results
Former Parks Air Force Base
Site Inspection Report 2017

	VOCs and SVOCs							Dioxins	PAHs													Hydrocarbons								
Analyte:	2-Butanone	Acetone	Benzene	bis(2-Ethylhexyl)phthalate	Chloroform	Methylene Chloride	Phenol	Toxic Equivalency Quotient	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	Bunker C C12-C40	Diesel C10-C24	Gasoline C7-C12	Motor Oil C24-C36	Antimony	Arsenic	Barium	Beryllium	Cadmium
Screening Level (mg/kg)	27000	61000	0.33	39	0.32	1.9	19000	4.8E-06	3600	18000	1.1	0.11	1.1	1800	11	110	2400	2400	1.1	3.8	18000	1800	5100	230	NE	5100	31	0.11	15000	15	5.2
Sample ID																															
Soil Borings																															
AOI23-SI-S-13-01	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.66 JY	0.054 J	U	U	**8.0**	300 J+	0.77	0.56
AOI23-SI-S-17-01	U	0.0037 J	U	U	U	U	U	1.81E-08	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.012 J	U	U	**4.6**	130	0.55	0.36
AOI23-SI-S-21-01	U	0.0088 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.012 J	U	U	**6.2**	140	0.49	0.39
AOI23-SI-S-09-02	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.56 JY	0.012 J	U	U	**5.3**	170	0.6	0.72
AOI23-SI-S-14-02	U	0.016 J	U	U	U	U	U	0.00	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.68 JY	0.015 J	3.0 JY	U	**0.92**	150	0.67	0.43
AOI23-SI-S-16-02	U	0.069 J+	U	U	0.0044 J+	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.61 JY	0.013 J	2.3 JY	U	**1.1**	120	0.61	0.45
AOI23-SI-S-07-03	U	0.0035 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	7.1 Y	0.53 JY	0.0014 J	3.4 JY	U	**3.8**	520	0.61	0.38
AOI23-SI-S-12-03	U	0.0059 J	U	U	U	U	U	0.00	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.43 JY	U	U	U	**12**	1200	0.52	0.57
AOI23-SI-S-30-03	U	0.0056 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	**4.8**	280	0.6	0.39
AOI23-SI-S-07-04	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.6 JY	U	U	U	**3.7**	400	0.64	0.4
AOI23-SI-S-12-04	U	0.0031 J	U	U	U	U	U	1.71E-09	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.39 JY	U	U	U	**4.8**	150	0.41	0.31 J
AOI23-SI-S-30-04	U	0.006 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.019 J	U	U	**4.4**	150	0.58	0.33
AOI23-SI-S-10-05	U	0.0033 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.38 JY	U	U	U	**5.5**	150	0.51	0.44
AOI23-SI-S-14-05	U	0.0043 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	**5.6**	170	0.44	0.4
AOI23-SI-S-07-06	U	0.004 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.44 JY	U	U	U	**4.0**	150 J+	0.65	0.33
AOI23-SI-S-10-06	U	0.0031 J	U	U	U	U	U	2.82E-08	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.52 JY	0.013 J	U	0.55 J	**15**	300	0.63	0.9
AOI23-SI-S-14-06	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.53 JY	U	U	U	**7.1**	220	0.46	0.48
Trenches and Test Pits																															
AOI23-SI-TR-1-25	U	U	U	U	U	U	U	U	U	U	0.0015 J	U	0.0079 J	U	U	0.0032 J	0.0021 J	U	U	0.0019 J	0.0025 J	0.0031 J	250 Y	36 Y	U	98	U	**20 J**	650	0.22	3.8
AOI23-SI-TR-2-26	U	0.0069 J	U	U	U	U	0.084 J	U	U	U	U	U	U	U	U	U	U	U	U	0.0018 J	U	0.0014 J	870	57 Y	U	420	U	**3.2**	280	0.68	0.47
AOI23-SI-TR-3.5-24	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	78	2.5 Y	U	36 Y	U	**3.4**	280	0.65	0.43
AOI23-SI-TR-4-22	U	U	U	U	U	U	U	**1.02E-05 J**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	8.8	1.1 JY	U	3.6 JY	1.7	**9.7**	310	0.43	2.0
AOI23-SI-TR-4-23	U	0.0062 J	U	U	U	U	U	U	U	U	U	0.0012 J-	0.002 J-	0.0017 J-	U	0.0012 J-	0.003 J-	U	U	U	0.0015 J-	0.0037 J-	U	0.61 JY	U	U	U	**4.2**	310	0.59	0.5
AOI23-SI-TR-4-27	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U		6.3 Y	U	U	2.7 J	U	**2.9**	240	0.63	0.39
AOI23-SI-TR-04-06	U	U	U	U	U	0.0025 J	U	**7.54E-06**	U	U	0.012 J	0.0013 J	0.0021 J	0.0021 J	U	0.0019 J	0.017 J	U	U	U	0.014 J	0.017 J	50	3.6 Y	U	23	3.1	**25**	430	0.71 J+	1.7 J+
AOI23-SI-TR-06-04	U	U	U	U	U	0.0029 J	U	U	U	U	0.0018 J	0.0022 J	0.004 J	0.0026 J	U	0.0033 J	0.0021 J	U	0.0016 J	U	U	0.0016 J	120	11 Y	0.092 J	41	6.2	**7.8**	380	0.58	1.6
AOI23-SI-TR-07-03	U	0.0036 J	U	U	U	0.0049 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	2.5 JY	1.5	**5.5**	210	0.64	0.43
AOI23-SI-TR-08-01	U	0.0052 J	U	U	U	0.0041 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.46 JY	0.02 J	U	1.9	**6.2**	250	0.59	0.43
AOI23-SI-TR-08-05	U	0.0062 J	U	0.012 J	U	0.0068 J	U	9.61E-08	U	U	U	U	U	U	U	U	U	U	U	U	U	U	8.3 Y	0.71 JY	0.018 J	3.8 JY	1.6	**5.5**	290	0.63	0.43
AOI23-SI-TR-09-02	U	0.0038 J	U	U	U	0.0041 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.019 J	U	U	**4.9**	640	0.62	0.42
AOI23-SI-TR-3.5-21	U	0.015 J	U	0.029 J	U	U	U	U	U	U	U	U	U	0.0012 J	U	U	U	U	U	U	U	U	U	U	U	U	U	**7.6**	330	0.66	0.61
AOI23-SI-TR-3-18	U	U	U	U	U	U	U	3.3E-6 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	12 Y	0.95 JY	U	5.4 J	U	**6.5**	260	0.63	0.39
AOI23-SI-TR-4-19	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.68 JY	U	2.1 J	U	**4.2**	240	0.63	0.25 J
AOI23-SI-TR-5-17	U	0.0054 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.61 J	**5.8**	330	0.71	0.7
AOI23-SI-TR-6-16	U	U	0.0008 J	U	U	U	U	U	U	U	U	U	U	0.0013 J	U	0.0013 J	U	U	U	U	U	U	41 Y	4.3 Y	U	18	20	**62**	1000	0.46	**5.7**
AOI23-SI-TR-6-20	U	U	U	0.042 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	8.5 Y	0.62 JY	U	4.1 J	U	**5.3**	270	0.7	0.42
AOI23-SI-TR-05-07	0.0013 J	U	U	U	U	0.0022 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	1.1 J	0.13 J	6.2 J	U	**6.7**	330	0.66	0.46
AOI23-SI-TR-05-08	U	U	U	U	U	0.0017 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.0014 J	U	0.92 J	0.037 J	6.2	U	**4.6**	240	0.59	0.29 J
AOI23-SI-TR-4-13	0.0018 J	U	U	U	U	0.0025 J	U	U	0.0031 J	0.0038 J	0.0078	0.0068	0.0096	0.0038 J	0.0025 J	0.011	0.016	0.0018 J	0.0031 J	0.0018 J	0.023	0.023	87 Y	12 Y	0.055 J	33	3.5	**28**	550	0.42	2.5
AOI23-SI-TR-6-11	U	U	U	U	U	0.0038 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	42 Y	2.3 Y	0.055 J	20	U	**4.6**	280	0.62	0.3 J
AOI23-SI-TR-6-14	U	0.0081 J	U	U	U	0.0063 J	U	2.3E-08 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.072 J	U	U	**4.5**	200	0.7	0.42
AOI23-SI-TR-6-15	U	0.0096 J	U	U	U	0.0069 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	24 Y	5.1 Y	0.16 J	7.7	0.19 J-	**6.3 J+**	330	0.55	0.62 J+
AOI23-SI-TR-7.5-09	U	U	U	U	U	0.0025 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.46 J	0.040 J	U	U	**5.1**	250	0.64	0.35
AOI23-SI-TR-7-10	0.0013 J	U	U	U	U	0.0039 J	U	2.33E-07 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	7.0 Y	0.43 J	0.036 J	3.1 J	U	**5.2**	290	0.66	0.4
AOI23-SI-TR-7-12	0.0012 J	0.0048 J	U	U	U	0.0051 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	6.6 Y	0.51 J	0.086 J	2.6 J	U	**4.9**	340	0.6	0.33

AOI 23: Camp Shoemaker Burn Pit
SI Soil Sampling
Detected Results
Former Parks Air Force Base
Site Inspection Report 2017

	Metals										
Analyte:	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Vanadium	Zinc
Screening Level (mg/kg)	NE	23	3100	80	11	390	490	390	94	390	23000
Sample ID											
Soil Borings											
AOI23-SI-S-13-01	43	11 J	30 J	15 J	0.015 J	0.28 J-	47	2.6	U	64 J	80
AOI23-SI-S-17-01	27	9.6	16 J	11 J	0.013 J	0.079 J	36	U	U	48	48
AOI23-SI-S-21-01	26	9.8	15 J	9.9 J	0.0063 J	0.15 J	38	1.2	U	53	45
AOI23-SI-S-09-02	31	13	45 J	19 J	0.013 J	0.79	40	0.49 J	U	45	150
AOI23-SI-S-14-02	40	12	28 J	15 J	0.022 J	U	42	4.3	U	65	72
AOI23-SI-S-16-02	37	8.1	25 J	12 J	0.017 J	U	38	2.2	U	46	58
AOI23-SI-S-07-03	26	11	15 J	13 J	0.0095 J	0.14 J	36	0.68 J	U	37	42
AOI23-SI-S-12-03	29	3.8	14 J	10 J	0.022	0.48	33	1.2	U	60	49
AOI23-SI-S-30-03	31	11	17	7.3	0.019 J	U	41	0.46 J	U	52	57
AOI23-SI-S-07-04	28	10	17	6.6	0.01 J	0.073 J	37	0.64 J	U	39	47
AOI23-SI-S-12-04	25	6.2	8.7	4	0.012 J	U	24	U	U	47	38
AOI23-SI-S-30-04	24	8.9	14	5.9	0.0094 J	U	27	0.62 J	U	39	42
AOI23-SI-S-10-05	28	8.2	12	6.2	0.018 J	0.15 J	31	U	U	36	48
AOI23-SI-S-14-05	26	8.2	11	5.5	0.015 J	0.15 J	31	U	U	36	45
AOI23-SI-S-07-06	20	11 J	11	7.0	U	U	24 J	U	U	33	30
AOI23-SI-S-10-06	26	**31**	12	7.8	0.012 J	1.7	46	1.5 J	U	64	72
AOI23-SI-S-14-06	27	6.8	11	4.5	0.014 J	0.65	31	U	U	39	43
Trenches and Test Pits											
AOI23-SI-TR-1-25	70	8.7 J-	230	**1700 J-**	2.5	5.5 J-	61 J	18 J	U	39	1400
AOI23-SI-TR-2-26	30	15	23	16	0.14	U	40	0.42	U	40	57
AOI23-SI-TR-3.5-24	38	13	25	7.2	0.023	U	43	U	U	44	47.0
AOI23-SI-TR-4-22	39	12	150	**350**	0.026	0.63	54	U	U	48	2000
AOI23-SI-TR-4-23	35	17	76	11	0.026	U	76	0.29 J	U	42	380
AOI23-SI-TR-4-27	26	14	18	8.9	0.031	U	29	U	U	43	43
AOI23-SI-TR-04-06	36	13 J+	57	**380**	0.34	0.69	47 J	2.6 J-	U	99	330
AOI23-SI-TR-06-04	44	10	67	**200**	0.76	0.9	41	U	U	52	550
AOI23-SI-TR-07-03	28	11	20	13	0.0079 J	0.18	32	U	U	44	47
AOI23-SI-TR-08-01	29	9.9	18	13	0.007 J	0.17 J	31	0.37 J	U	54	45
AOI23-SI-TR-08-05	27	11	20	14	0.04	0.096 J	31	0.88 J	U	42	45
AOI23-SI-TR-09-02	26	9.7	17	12	U	U	29	U	U	40	42
AOI23-SI-TR-3.5-21	28	13	18	13	U	0.45	39	U	U	64	230
AOI23-SI-TR-3-18	31	11	18	22	0.021	U	33	U	U	52	49
AOI23-SI-TR-4-19	28	13	14	15	0.011 J	U	29	U	U	48	39
AOI23-SI-TR-5-17	37	12	31	**82**	0.015 J	0.19 J	37	U	U	54	160
AOI23-SI-TR-6-16	110	22	500	**3000 J**	0.3	7.2	92	4.3	11 J	60	2700
AOI23-SI-TR-6-20	32	13	19	27	0.035	0.25 J	32	U	U	55	61
AOI23-SI-TR-05-07	35	11	22	23	0.071	1.1	39	U	U	54	97
AOI23-SI-TR-05-08	30	8.8	16	13	0.023	U	32	U	U	45	40
AOI23-SI-TR-4-13	86	15	370	**580**	0.48	2.9	53	1.5	U	43	1300
AOI23-SI-TR-6-11	29	12	16	12	0.026	0.11 J	32	U	U	48	41
AOI23-SI-TR-6-14	29	13	19	11	U	U	37	U	U	42	120
AOI23-SI-TR-6-15	37 J+	14 J+	34 J+	**150 J+**	0.0062 J	0.55	42	0.29 J	U	49	210 J+
AOI23-SI-TR-7.5-09	29	13	17	11	0.0077 J	U	36	U	U	38	46
AOI23-SI-TR-7-10	32	11	20	11	U	U	36	U	U	51	51
AOI23-SI-TR-7-12	28	10	16	9.6	U	0.24 J	33	U	U	45	44

Notes:
U indicates non-detect
J indicates estimated value
NE indicates not established

Analytes detected at or above the screening level are bolded and highlighted.

AOI 28: Sanitary Landfill
SI Soil Sampling
Detected Results
Former Parks Air Force Base
Site Inspection Report 2017

	VOCs and SVOCs																				PAHs											
Analyte:	1,2,4-Trimethylbenzene	1,2-Dichlorobenzene	1,4-Dichlorobenzene	2,4,5-Trichlorophenol	2-Butanone	2-Chlorotoluene	4-Methylphenol	Acetone	Benzene	Carbon Disulfide	Chlorobenzene	Dibenzofuran	Isopropylbenzene	Methylene Chloride	n-Butylbenzene	o-Xylene	para-Isopropyl Toluene	Propylbenzene	sec-Butylbenzene	Toluene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene
Screening Level (mg/kg)	300	1800	2.6	6300	27000	480	6300	61000	0.33	NE	280	73	1900	1.9	1200	650	NE	3800	2200	1100	240	3600	3600	18000	1.1	0.11	1.1	1800	11	110	0.11	2400
Sample ID																																
AOI28-S1-S-11-01	U	U	0.018 J	U	0.021	U	U	0.084	0.0005 J	0.0008 J	0.0005 J	U	U	0.0065 J	U	U	U	U	U	0.0006 J	0.015 J	U	U	U	U	U	U	U	U	0.0017 J	U	U
AOI28-S1-S-46-01	U	U	U	U	U	U	U	U	U	U	U	U	U	0.0057 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
AOI28-S1-S-18.5-02	U	U	0.1 J	U	0.0042 J	U	U	0.021	0.0014 J	0.018 J-	U	U	U	0.0062 J	U	U	U	U	U	U	U	0.0013 J	U	U	U	U	U	U	U	U	U	U
AOI28-S1-S-29-02	U	U	0.0007 J	U	U	U	U	U	U	U	U	U	0.0005 J	0.0044 J	U	U	0.0005 J	U	U	0.0004 J	U	U	U	U	U	U	U	U	U	U	U	U
AOI28-SI-S-8-03A	U	U	U	U	0.0043 J	U	U	0.027	U	U	U	U	U	0.0062 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
AOI28-SI-S-17-04	U	U	0.033 J	U	0.014	U	U	0.069	0.003 J	U	0.02	0.012 J	0.0008 J	0.0086 J	0.0025 J	U	U	0.0013 J	0.0015 J	U	0.023 J	0.024	0.0017 J	0.05	0.045 J	0.023	0.027 J	0.0055 J	0.012 J	0.048 J	0.0029 J-	0.14
AOI28-SI-S-19.5-04	U	U	0.55	U	U	U	U	U	0.014 J	U	0.13 J	U	U	U	U	U	U	U	U	U	0.17	U	U	U	U	U	U	U	U	U	U	U
AOI28-SI-S-9-05	U	U	U	U	0.0026 J	U	U	0.02	U	U	U	U	U	0.006 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
AOI28-SI-S-21-05	U	U	0.067 J	U	0.027	U	U	0.14	0.0055 J	0.0025 J	0.0079	U	U	0.0098 J	U	0.001 J	U	0.001 J		U	0.048 J	0.0025 J	U	U	0.0019 J	0.0035 J	U	0.003 J	U	0.0043 J	U	0.0046 J
AOI28-SI-S-9.0-06	0.0042 J	0.0006 J	0.53	U	0.021	0.001 J	U	0.09	0.0009 J	0.0007 J	U	U	0.0007 J	0.0084 J	0.0033 J	U	U	0.0015 J	0.0016 J	U	0.057 J	U	U	U	U	U	U	U	U	U	U	U
AOI28-SI-S-19-06	0.001 J	U	0.066 J	U	0.015	U	U	0.066	0.0016 J	U	0.003 J	U	U	0.0077 J	U	U	U	U	U	U	U	0.0017 J	U	U	U	U	U	U	U	U	U	U
AOI28-SI-S-16-07	U	U	U	U	0.0014 J	U	U	0.012 J	U	U	U	U	U	0.011 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
AOI28-SI-S-17-07	U	U	U	U	U	U	U	0.0097 J	U	U	U	U	U	0.012 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
AOI28-SI-S-30-07	U	U	U	U	U	U	U	U	U	U	U	U	U	0.0074 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
AOI28-SI-S-17-08	U	U	U	0.013 J	0.011	U	0.028 J	0.05	U	0.0007 J	U	U	U	0.004 J	U	U	U	U	U	U	0.023 J	U	0.0094	0.0031 J	0.0046 J	0.0053 J	U	0.0028 J	U	0.0083	U	0.012
AOI28-SI-S-29-08	U	U	U	U	U	U	U	0.0071 J	U	0.0005 J	U	U	U	0.0056 J	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
AOI28-SI-S-12-09	U	U	0.17 J	U	U	U	U	U	U	U	0.079 J	U	U	U	0.013 J	U	U	U	0.015 J	U	0.04 J	U	U	0.0017 J	0.0028 J	0.0015 J	0.0018 J	U	U	0.0064 J-	U	0.0069
AOI28-SI-S-20-09	U	U	**3.0 J**	U	U	U	U	U	0.013 J	U	0.25 J	U	0.0079 J	U	0.023 J	U	0.54	0.014 J	0.013 J	U	U	U	U	U	U	U	0.029 J	U	U	0.041 J-	U	0.1 J

Notes:
U indicates non-detect
J indicates estimated value
NE indicates not established

Analytes detected at or above the screening level are bolded and highlighted.

AOI 28: Sanitary Landfill
SI Soil Sampling
Detected Results
Former Parks Air Force Base
Site Inspection Report 2017

						Metals															
Analyte:	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Screening Level (mg/kg)	2400	1.1	3.8	18000	1800	0.11	15000	15	5.2	NE	23	3100	80	11	390	490	390	94	0.78	390	23000
Sample ID																					
AOI28-S1-S-11-01	0.0031 J	U	0.012 J	0.0044 J	0.003 J	**1.0**	360	0.73	0.19 J	34	11	20	23	0.32	U	34	U	U	U	59	43
AOI28-S1-S-46-01	U	U	U	U	U	**3.5**	180	0.74	0.2 J	39	12	28	10	0.021	U	45	U	U	U	62	68
AOI28-S1-S-18.5-02	0.0013 J	U	0.024	U	U	**2.6**	200	0.62	0.24 J	39	12	25	9.4	0.03	U	42 J-	U	U	U	60	65 J+
AOI28-S1-S-29-02	U	U	0.0013 J	U	U	**2.5**	130	0.49	0.13 J	25	9.6	13	7.1	0.021	U	26	U	U	U	52	44
AOI28-SI-S-8-03A	U	U	U	U	U	U	200	0.7	0.087 J	27	11	24	10	0.0084 J	U	40	0.54 J	U	U	33	60
AOI28-SI-S-17-04	0.047	0.0062 J	0.6	0.2	0.14	**2.0**	260	0.6	0.21 J	27	10	17	7.5	0.028	U	36	U	U	U	47	48
AOI28-SI-S-19.5-04	0.022 J	U	2.7	0.027 J	U	**2.3**	310	0.62	0.21 J	22	9.3	16	9.3	0.016 J	U	28	0.66 J	U	U	51	37
AOI28-SI-S-9-05	U	U	U	U	U	**3.3**	320 J	0.68	0.31 J	33 J+	11	19	12	0.014 J	U	39	U	U	U	54	59
AOI28-SI-S-21-05	0.0066	U	0.068 J	0.011	0.0062 J	**2.7**	310	0.66	0.28 J	32	9.9	15	12	0.24	U	32	U	2.3	0.34 J	59	52
AOI28-SI-S-9.0-06	U	U	0.2	U	U	**2.0**	330	0.56	0.2 J	22	8.9	17	10	0.018 J	U	28	0.46 J	U	U	42	32
AOI28-SI-S-19-06	0.0017 J	U	0.027	0.0019 J	U	**2.3**	300	0.64	0.22 J	24	9.5	18	8.5	0.013 J	U	31	0.78 J	U	U	49	39
AOI28-SI-S-16-07	U	U	U	U	U	**5.1**	340	0.36	0.62	23	8.9	9.4	4.3	0.039	1.6	30	0.51	U	U	51	28
AOI28-SI-S-17-07	U	U	U	U	U	**3.4**	380	0.59	0.16 J	30	11	15	8.7	0.019 J	0.079 J	34	U	U	0.36 J	63	48
AOI28-SI-S-30-07	U	U	U	U	U	**3.4**	640	0.69	0.19 J	33	12	22	10	0.013 J	U	45	U	U	U	47	60
AOI28-SI-S-17-08	0.0058 J	0.0016 J	0.032	0.015	0.014	**6.3**	190 J+	0.42	0.56	27	8.5 J	31	21 J+	0.017 J	0.3 J	39 J-	0.71 J	U	U	58 J	190 J+
AOI28-SI-S-29-08	U	U	U	U	U	U	190	0.68	0.12 J	29	11	24	9.9	0.01 J	U	40	0.57 J	U	U	38	59
AOI28-SI-S-12-09	0.015	U	**5.9**	0.028	0.011	**1.8**	340	0.65	0.33	36	10	18	29	0.57	U	34	U	U	U	57	61
AOI28-SI-S-20-09	0.2 J	U	0.94 J	0.67 J	0.28 J	**6.6**	210	0.46	0.44	30	13	30	30	0.065	0.43	43	U	U	0.47 J	48	67