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Record of Decision:**

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Final Record of Decision for
Operable Unit 1
Schofield Army Barracks
Island of Oahu, Hawaii

Prepared for

U.S. Army Environmental Center
Installation Restoration Division

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September 29, 1995

Total Environmental Program Support

Final Record of Decision for Operable Unit 1
Schofield Army Barracks, Island of Oahu, Hawaii

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Contact Number DAAA15-91-D-0013
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1.0 DECLARATION

This Final Record of Decision (ROD) for Operable Unit (OU) 1 has been prepared by Harding Lawson Associates (HLA) for the U.S. Army Environmental Center (USAEC) under Delivery Order 0005 (Task 5) of the Total Environmental Program Support (TEPS) Contract DAAA15-91-D-0013. This ROD documents the remedial action plan for OU 1 at Schofield Army Barracks (Schofield Barracks), Island of Oahu, Hawaii.

1.1 Site Name and Location

Schofield Barracks is located in the north-central plateau of the Island of Oahu in the State of Hawaii (Figure 1.1). The Schofield Barracks installation is approximately 22 miles northwest of the City of Honolulu. The closest municipality is Wahiawa, which is immediately north of Schofield Barracks. The installation is divided into two sections, the East Range and the Main Post (Figure 1.2), encompassing a total area of approximately 27.7 square miles. Wheeler Army Airfield lies between and to the south of the two Schofield Barracks sections.

The Schofield Barracks Operable Unit 1 (OU 1) investigated the following 12 onpost sites, as shown in Figure 1.3.

- Site 17: Directorate of Logistics (DOL) Vehicle Maintenance Motor Pool (Building 1029)
- Site 18: Distribution Warehouse (Building 1052)
- Site 20: Petroleum, Oil and Lubricants (POL) Area (Area R)
- Site 25: Automobile Craft Shop (Building 910)
- Site 42: Maintenance Area (Building 387)
- Site 50: Old Burn Area
- Site 51: East Range Drum Disposal Area
- Site 52: Old Laundry
- Site 53: Shaft Pump Chamber and Storage Chambers
- Site 54a: Aircraft Fuselage Dumping and Cleaning Area
- Site 54b: Aircraft Storage Area
- Site 54c: Aircraft Engine Rebuild Area

Based on the preliminary assessment/site investigation (PA/SI), 10 sites were identified as the most likely sources of the trichloroethene (TCE) contamination detected in the Schofield Barracks water-supply wells and were the subject of the subsequent remedial investigation (RI). Two of the twelve sites investigated, Site 52 - Old Laundry and Site 53 - Shaft Pump Chamber and Storage Chambers were eliminated as possible TCE sources based on the PA/SI effort. The above twelve sites are discussed further in this document.

1.2 Statement of Basis and Purpose

This decision document (ROD) presents a response action for OU 1, which consists of the 12 sites listed in the previous section. These sites were selected in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This ROD explains the basis for selecting the response action for the twelve sites comprising OU 1. Information supporting the selected response action is contained in the Administrative Record for Schofield Barracks. The U.S. Environmental Protection Agency (EPA) and the State of Hawaii concur with the selected response action remedy).

1.3 Description of the Selected Remedy

On the basis of data collected at the OU 1 sites, no response action is necessary for the OU 1 sites because these sites do not pose a current or potential threat to human health or the environment.

1.4 Declaration Statement

No response action is necessary to protect human health or the environment at the OU 1 site. This "no remedial action" alternative was selected because no contaminants were found at the OU 1 sites investigated that presented an unacceptable risk to human health or the environment based on EPA risk guidelines.

The "no remedial action" alternative is protective of human health and the environment and complies with federal and State of Hawaii requirements that are legally applicable or relevant and appropriate to the remedial action. This action is a permanent solution to the maximum extent practicable or necessary for OU 1. Because this action will not result in hazardous substances remaining onsite exceeding unacceptable health-based levels, the five-year review will not apply to this action.

Lawrence Miike, M.D.
Director of Health
State of Hawaii

2.0 DECISION SUMMARY

This section provides an overview of the site-specific factors and analyses that led to the selection of the "no remedial action" decision for the OU 1 sites. This overview includes a general site description, site history, enforcement and regulatory history, highlights of community Participation, scope and role of OU 1, site characteristics, summary of site risks, and documentation of significant changes to these elements. Much of the information presented in this section was derived from previous investigations performed by the U.S. Department of the Army (Army), its contractors, and the EPA and has been previously, presented in more detail in the PA/SI Report (HLA, 1992a), Remedial Investigation/Feasibility Study (RI/FS) Work Plan (HLA, 1992b), the OU 1 Sampling and Analysis Plan (SAP) (HLA, 1993), the OU 1 RI (HLA, 1995).

2.1 Schofield Barracks Site Location and Description

Schofield Barracks is located in central Oahu (Figure 1.1) within the physiographic province known as the Schofield Plateau. Ground surface elevations range from approximately 700 feet (National Geodetic Vertical Datum of 1929 [NGVD]) near the central portion of Schofield Barracks to approximately 4000 feet (NGVD) near the western boundary of the Main Post in the Waianae Mountain Range. The drainage divide of the Schofield Plateau runs roughly east-west through the center of the Main Post. North of this divide, watercourses flow to the north and discharge into Kaiaka Bay at the town of Haleiwa. South of this divide, watercourses flow south and discharge into the West Loch of Pearl Harbor. Narrow gulches dissect the plateau where streams have eroded the land surface.

The relatively flat Schofield Plateau was formed as basaltic lava flowed from the adjacent Koolau and Waianae volcanoes to the east and west, respectively. The upper 100 to 200 feet of the basaltic bedrock within the Schofield Plateau is weathered saprolite. The saprolite consists of soil (primarily fine-grained materials including silt and clay) formed by in situ decomposition of the basaltic bedrock. The saprolite is underlain by relatively unweathered basaltic bedrock consisting of interbedded pahoehoe and a'a lava flows. The lava flows are highly fractured with cinder and clinker zones.

Three types of groundwater systems have been identified in central Oahu: (1) the Schofield High-level Water Body, (2) basal groundwater, and (3) dike-impounded groundwater (Figures 2.1 and 2.2). The Schofield High-Level Water Body is located beneath the Schofield Plateau, and subsequently, the site. This water body is bound to the east and west by dike-impounded groundwater and to the north and south by basal groundwater. Lower permeability rocks (possibly volcanic dikes and/or buried ridges) structurally separate these groundwater systems from one another. The Schofield High-level Water Body aquifer has a relatively high transmissivity and hydraulic conductivity. The depth to groundwater at the site is approximately 600 feet below ground surface (bgs) (approximately 270 feet above mean sea level [MSL]).

The climate at Schofield Barracks, which is south of the Tropic of Cancer at approximately 21 degrees north latitude, is characterized by moderate temperatures that remain relatively constant throughout the year. The average annual rainfall in the vicinity of Schofield Barracks is approximately 1.2 meters (Giambelluca and others, 1986), more than half of which occurs during the rainy season from November through February. Trade winds have an average speed of 12 knots and prevail from the northeast or east approximately 70 percent of the time.

Because of the relatively large amounts of undeveloped land, combined with a relatively large amount of vertical relief, Schofield Barracks is host to diverse and abundant flora and fauna. Undisturbed natural vegetation at Schofield Barracks is found primarily in the steep gulches on the south and west sides. These gulches support birds and other fauna and blocks of forestry plantings and dense shrubbery growth.

2.2 Schofield Barracks Installation Operational History

Schofield Barracks was established in 1908 as a base for the Army's mobile defense of Pearl Harbor and the Island of Oahu. It served as a major support facility during World War II (WWII) temporarily housing more than 1 million troops. It also served as a support and training facility during the Korean and Vietnam conflicts. Since the Vietnam conflict, it has served primarily as a training facility. Schofield Barracks is the Army's largest installation outside of the continental United States.

It currently serves as the home of the 25th Infantry Division (Light), whose mission is to be prepared to respond to war at a moment's notice. Installation facilities include a medical facility, community and housing support facilities, and transportation and repair facilities.

2.3 Enforcement and Regulatory History

TCE, a commonly used cleaning solvent, was detected in the Schofield Barracks water-supply wells in 1985. The source of the TCE contamination could not be identified. In September 1986, the Army installed air-stripping treatment units to remove TCE from the Schofield Barracks domestic water supply. In 1987, the EPA established a Maximum Contaminant Level (MCL) for TCE of 5 parts per billion in drinking water. TCE has not been detected in the Schofield Barracks' treated groundwater at concentrations greater than this EPA-established limit.

As a result of the detection of TCE in the Schofield Barracks water-supply wells, Schofield Barracks was placed on the National Priorities List (NPL) in August 1991. The NPL was developed by EPA to identify sites that may present a risk to public health or the environment.

After Schofield Barracks was placed on the NPL, a Federal Facility Agreement (FFA) was negotiated among the EPA, the State of Hawaii, and the Army under CERCLA, Section 120. The FFA was signed by the Army on September 23, 1991, and by the EPA on September 27, 1991. Signature by the State of Hawaii is still pending. The FFA identified Schofield Barracks as being under the jurisdiction, custody, or control of the U.S. Department of Defense (DOD) and subject to the Defense Environmental Restoration Program (DERP). There have been no enforcement actions at the OU 1 sites.

2.4 Operable Unit 1 Site Selection History

As a part of the FFA, the Army and regulatory agencies agreed to divide the program into subunits called operable units (OUs) to address potential areas of contamination at Schofield Barracks in an organized manner. This ROD addresses OU 1, which was established to investigate suspected sources of TCE contamination to the groundwater system.

Nine sites were identified in the FFA as suspected sources of TCE contamination. These sites included:

- Site 17: DOL Vehicle Maintenance Motor Pool (Building 1029)
- Site 18: Distribution Warehouse (Building 1052)
- Site 25: Auto Craft Shop (Building 910)
- Site 42: Maintenance Area (Building 387)
- Site 50: Old Burn Area
- Site 51: East Range Drum Disposal Area
- Site 52: Old Laundry
- Site 53: Shaft Pump Chamber and Storage Chambers
- Site 54: East Range Aircraft Cleaning Areas

After signing of the FFA, the Army performed a PA on these nine sites. The PA involved a site reconnaissance and extensive records searches to assess whether past or present activities at these sites could have resulted in contaminant releases. Also, an SI, which involved limited sampling to assess the presence of site contamination, was conducted at Site 52 (Old Laundry) and Site 51 (East Range Disposal Area). The results of the PA and SI indicated that no contamination was present at the Old Laundry site and that past activities at the Old Laundry and the Shaft Pump Chamber and Storage Chambers (Site 53) did not present a potential for the release of contamination. Therefore, these sites were eliminated from further investigations upon completion of the PA/SI. In addition, based on information obtained during the PA it was believed that the East Range Aircraft Cleaning Areas (Site 54) included three areas having distinctly different operation histories. Therefore, Site 54 was divided into the following three sites:

- Site 54a: Aircraft Fuselage Dumping and Cleaning Area
- Site 54b: Aircraft Storage Area
- Site 54c: Aircraft Engine Rebuild Area

On the basis of the above discussed PA/SI, one site (20) was added to the nine originally

identified OU 1 sites in the FFA, Site 54 was divided into three sites (Sites 54a, 54b, and 54c) and two sites (52 and 53) were deleted, for a total of ten OU 1 sites (17, 18, 20, 25, 42, 50, 51, 54a, 54b, and 54c) to be investigated during the RI. Site 20 (POL Area R) had been used to store and distribute POLs.

In 1992, the Army conducted an RI of the ten OU 1 sites. The RI included extensive soil-gas, surface and subsurface soil, and surface-water and sediment sampling. The results of the RI were presented in a Final RI Report, which was completed on April 18, 1995, and is available along with the PA/SI Report in the Administrative Record.

2.5 Operable Unit 1 Site Description

The location of the twelve sites (i.e., the 10 sites identified above plus Sites 52 and 53.) investigated under the PA/SI or RI are shown in Figure 1.3. Six of the sites are located on the Schofield Barracks Main Post, and six of the sites are located on the Schofield Barracks East Range. A description of each OU 1 site, including physical characteristics, past operations, and potential sources of contamination, is provided below.

2.5.1 Site, 17: DOL Vehicle Maintenance Motor Pool (Building 1029)

Site 17, which includes Building 1029 and its surrounding yard, is currently used for motor pool storage and repair. The site is in the north-central portion of the Main Post. Figure 2.3 shows the major features at the site. Aerial photographs taken from 1967 through 1981 indicate that up to 150 vehicles were stored in the yard. A grease rack installed during the 1970s is located near Building 1029. Most of the site is covered by a gravel parking lot.

Records and historical aerial photographs indicate that the area around Building 1029 has been used for vehicle storage and maintenance for many years. This type of maintenance operation may have involved the use of solvents for cleaning engine parts. A 1978 U.S. Army Corps of Engineers (COE) report listed this site as one of the facilities that discharged POL and solvents into a drainage ditch. There is a potential that solvents may have spilled at the site, particularly in the area near the grease rack.

2.5.2 Site 18: Distribution Warehouse (Building 1052)

Site 18, which includes Building 1052, a paved yard, and adjacent drainage ditch, is in the north-central portion of the Main Post. Figure 2.4 shows the major features of the site. Records indicated that Building 1052 was destroyed and rebuilt several times since its original construction in 1950. This building was used to store automobile parts from 1950 to 1985. Historical aerial photographs indicate that the surrounding parking lot was used to store crates or boxes. During certain periods after the building was removed, large and small vehicles were stored on a concrete slab southeast of the building. After 1985, the site was used to store a variety of materials, including drums of solvents. Because of past vehicle and solvent storage, there is a potential that solvents, oils, and lubricants may have been spilled on the parking lot surrounding the building.

2.5.3 Site 20; Petroleum Oil and Lubricant Area (Area R)

Site 20, also known as Area R, is north of McMahon Road and is a storage area for POL products. Site 20 contains aboveground storage and dispensing tanks enclosed in concrete retaining structures for leakage containment. Major features of the site are shown in Figure 2.5. Waste POL and solvents are stored at the site, and records indicate that waste oil and waste solvent were stored onsite in drums during past operations. Large areas of stained soil were observed during the review of historical aerial photographs. This site was investigated because of the potential for spillage or leaks of POLs or solvents during site operations.

2.5.4 Site 25: Auto Craft Shop (Building 910)

Site 25 is approximately 800 feet west of Lyman Gate on the Main Post of Schofield Barracks. The major site features are shown in Figure 2.6. The site consists of Building 910, which was constructed in 1977 and is used as an automobile craft shop. Prior to 1977, this site used as a parade and practice ground by the 11th Signal Corps. Building 910 has 32 bays that are used for a variety of vehicle repairs. Oils and other materials generated from facility wash down and

steam-cleaning operations are collected in an oil/water separator. Oils are then discharged to a waste-oil storage tank, and water is discharged to the sewer. Unused solvents and antifreeze are stored in a small shed in 5-gallon containers and 55-gallon drums. The site was investigated because of its past history of solvent use and the associated potential for spillage.

2.5.5 Site 42: Maintenance Area (Building 387)

Site 42 is in the eastern portion of the Main Post. The site consists of Building 387, which currently houses the U.S. Army Test, Measurement, and Diagnostic Equipment Support Detachment (TMDE) calibration shop. Major site features are shown in Figure 2.7. The building was originally constructed in 1924 and was used as an ice plant, refrigeration shop, and cold plant during much of its history. There is also some evidence suggesting that the site was used as a maintenance facility at one time. Records indicated that during past operations, wastes, possibly chlorinated solvents, were stored in an aboveground storage tank and that waste oil may have been stored in drums above a lined sand pit. More recently, oil and solvents were stored in 55-gallon drums before being transferred to the central POL collection point. The site was investigated because of the reported usage of solvents for weed and dust control and because of the potential for leakage from the waste storage tank.

2.6.6 Site 50: Old Burn Area

Site 50 is a ½-acre site on the north side of Kauai Street between Niihau and Lanai Streets on the Main Post just west of the Former Landfill. Major site features are shown in Figure 2.8. The site is a burn area used to incinerate unknown refuse material before the sanitary landfill was constructed. Burn operations may have begun as early as 1942 and likely occurred from 1950 to 1960 and in 1985. The site is currently used to dispose of excess gunpowder. A review of historical aerial photographs indicated that several potential disposal trenches were excavated at the site. Drums were visible in some of these aerial photographs. The site terrain is generally flat, however, north-south trending areas of subsided ground are present and may be a result of the disposal trenches. The southern portion of the site is used for bivouac and round cutting operations. The northern portion of the site is used exclusively for the ignition of cut powder in the burn trench. Records indicate that the types of materials incinerated at the site likely consisted of gunpowder and construction debris. The site was investigated because of its past history of disposal operations and because drums were observed in some of the disposal trenches.

2.5.7 Site 51: East Range Drum Disposal Area

Site 51, known as the East Range Drum Disposal Area, is on a southwesterly facing slope of a ravine in the Schofield Barracks East Range, approximately 2 miles east-northeast of the Schofield Barracks water-supply wells. The southwest facing cliff drops approximately 150 feet to a northern tributary of the South Fork of Kaukonahua Stream. As shown in Figure 2.9, three separate disposal areas are located within the ravines along this southwest-facing cliff. Records indicate that dumping at the site has occurred since WWII, when troops were bivouacked in the area. Wastes appear to be composed of barbed and concertina wire, broken concrete and building debris, and empty, unmarked 55-gallon drums. As many as 827 drums were reported to have been present at the site in 1988 (HLA, 1992a). A review of historical aerial photographs indicates that wastes or debris appeared to have been dumped at the East Range Disposal Area after 1953 and before 1970. Most of the debris and rusted drum remnants were removed in 1989. The site was investigated because of the potential that the disposed drums may have contained solvents or other contaminants.

2.5.8 Site 52: Old Laundry

Site 52, known as the Old Laundry, was immediately north of the Schofield water-supply wells and began operation around 1943. An associated boiler plant was adjacent to the laundry facility on the east side. Figure 2.10 shows the location of the Old Laundry and associated boiler plant. The laundry facility was demolished in approximately 1971, and most of the site now lies beneath approximately 30 feet of artificial fill and a portion of the H2 Freeway. No indication was found of onsite dry-cleaning equipment or solvent storage tanks at the Old Laundry. However, review of records indicated that past usages of TCE at Schofield Barracks included many household products, industrial dry-cleaning solvents, and degreasing agents. Because of the proximity of the site to the Schofield Barracks water-supply wells and the possibility of

historical dry cleaning operations, the Army requested that the Old Laundry be investigated as a potential source of TCE or solvents to soil or groundwater.

2.5.9 Site 53: Shaft Pump Chamber and Storage Chambers

Site 53 consists of two subterranean chambers (the underground storage chamber and the pump chamber) in which the four Schofield Barracks water-supply wells and various pumping and electrical equipment are located (Figure 2.11). The water-supply wells provide water to Schofield Barracks, parts of Wheeler Army Airfield, Helemano Military Reservation, and the Naval Communications station near Wahiawa. The pump chamber is between Kamehameha Highway and the H2 Freeway. Oil was used in the pump chamber to lubricate the turbine-type pump assemblies. Records indicate that operations in the tunnel are performed carefully and that precautions are taken to prevent chemicals from entering the wells. At times, pump motors failed, spraying machine oil on the walls of the pump room. These spills were cleaned up with wood shavings up through the 1970s, but more recently they have been cleaned up with clean rags and biodegradable detergents approved for the food industry. Drums have been used to store waste oil in the pump chamber (Figure 2.12). Three 10,000-gallon underground tanks are present in the underground storage chamber (Figure 2.13). The underground tanks were used in the past to power emergency generators during power failures. These underground tanks were also located in the underground storage chamber. These underground tanks contained gasoline and were reported to have been cleaned and filled with water before 1970 and are currently not in use. Records indicate that solvents were not used at this site.

2.5.10 Site 54a: Aircraft Fuselage Dumping and Cleaning Area

Site 54a is a relatively flat area between two unnamed tributaries of Kaukonahua Stream. The site was reported to have been used as an aircraft fuselage dumping and cleaning area. The site is a few hundred feet west of the East Range Disposal Area. The site shown in Figure 2.14, is approximately 600 feet by 1400 feet in dimension, with a total area of approximately 19 acres. This area was investigated because solvents, including TCE, were reportedly used to clean airplane parts in this area.

2.5.11 Site 54b: Aircraft Storage Area

Site 54b is the location of a former aircraft storage area that was identified through interviews with former and current Schofield Barracks employees and a review of historical aerial photographs. The major features of this site are shown in Figure 2.15. The site is in the southwest corner of the East Range and the southeast corner of Wheeler Army Airfield. The Leilehua Golf Course occupies part of the site, extending across both Kamehameha Highway and the H2 Freeway. The site also includes the eastern portion of Wheeler Army Airfield and a commercial offpost area south of the golf course. Site 54b was used to store aircraft and also could have been used as an aircraft cleaning area. Several bunkers were built on the site to protect airplanes from attack during WWII. The site was investigated because TCE, carbon tetrachloride, or other solvents may have been used to clean and degrease aircraft at the site.

2.5.12 Site 54c: Aircraft Engine Rebuild Area

Site 54c is the site of a former aircraft engine rebuild area. Records indicate that this site may have been an aircraft engine maintenance area for the entire Pacific region. As shown in Figure 2.16, this site occupied a stream ravine that was probably chosen because it provided protection from air attacks. The site operated 24 hours per day from 1942 through 1945 to overhaul piston-type aircraft engines. Carbon tetrachloride was the solvent used for this type of activity during WWII, but other solvents may also have been used.

The rebuild operations took place in 16 to 17 open structures that were located on concrete pads and had roofs but no permanent walls. The site was investigated because of the use of carbon tetrachloride and possibly other solvents, including TCE.

2.6 Highlights of Community Participation

In an effort to involve the public, the Army has undertaken several public and community awareness efforts including issuance of employee bulletins and post newspaper articles for Schofield Barracks employees, media interviews, news releases, and meetings with local officials

and neighborhood boards for offpost residents. In addition, the Army has held public meetings, issued fact sheets, and established an Army contact for the public at Schofield Barracks' Public Affairs Office. Information repositories containing copies of work plans, technical reports, fact sheets, and other materials related to the project are available for public review at the following local repositories:

Mililani Public Library
95-450 Makaimoimo Street
Mililani, Hawaii 96879

Wahiawa Public Library
820 California Avenue
Wahiawa, Hawaii 96786

U.S. Army Garrison, Hawaii
Directorate of Public Works
Building 300
Wheeler Army Airfield, Hawaii

State of Hawaii Department of Health
Environmental Quality Control Office
465 South King Street
Honolulu, Hawaii 96813

On May 23, 1995, the Army presented the Proposed Plan for OU 1 at Schofield Barracks to the public for review and comment. The Proposed Plan summarizes information collected during the OU 1 PA/SI and RI and other documents in the Administrative Record for the Schofield Barracks that are available at the above local repositories.

Comments regarding the Proposed Plan were accepted during a 30-day public review and comment period that began on July 7, 1995. A public meeting was held on July 18, 1995, at Hale Koa at Wahiawa District Park, Wahiawa, Hawaii. At that time, the public had the opportunity to ask the Army questions and express concerns about the plan. In addition, written comments were accepted during the public comment period. Responses to comments received during the public comment period are included in the Responsiveness Summary (Section 3.0), which is part of this ROD. The public comment period, as discussed above, is a continuation of the Army's commitment to community involvement in the Schofield Barracks Installation Restoration Program (IRP) and is required by CERCLA.

2.7 Scope and Role of Operable Unit 1

The role of OU 1 overall NPL program for Schofield Barracks is to identify and eliminate sources of TCE to the groundwater system. The cleanup of TCE already in the groundwater system is addressed under OU 2. OU 3 addresses contamination sources at Schofield Barracks not covered by other OUs. OU 4 addresses contamination at the Former Schofield Barracks Landfill.

The objectives of the OU 1 program are to:

- Assess the presence or absence of TCE and other contaminants at these sites.
- Assess if TCE and other contaminant are present, assess the extent of contamination.
- Assess if TCE and, other contaminant are present, assess environmental and human health risks posed by this contamination.
- Assess if TCE and other contaminants are present in levels that endanger human health and the environment, identify and evaluate remedial alternatives for site cleanup.
- Cleanup site contamination to levels that are protective of human health and the environment by implementing the preferred remedial alternative.

A PA/SI and/or RI was performed for each of the initial 12 OU 1 sites. TCE was the primary contaminant of concern that was analyzed for at the OU 1 sites. However, other potential contaminants were tested for during the OU 1 investigations. The list of contaminants that were tested for was based on past site operations. SI and RI activities conducted at the OU 1 sites included surface geophysics, shallow and deep soil-gas sampling, surface soil sampling,

subsurface soil sampling of soil borings, and surface-water and sediment sampling. The results of these OU 1 field investigations indicated that no current or potential threat to human health or the environment existed at the OU 1 sites. Therefore, "no remedial action" is necessary to achieve protection of human health and the environment for the OU 1 sites. For this reason, an FS to evaluate alternatives for remediating, the OU 1 sites was not performed.

2.8 Site Characteristics

To assess site characteristics surface geophysics, soil-gas, surface-water, sediment, surface soil, subsurface soil, tank residual and/or perched groundwater sampling/surveying were performed. Samples were analyzed for target compound list (TCL) volatile organic compounds (VOCs), TCL semivolatile organic compounds (SVOCs), target analyte list (TAL) metals, total volatile hydrocarbons (TVH), TCL pesticides/polychlorinated biphenyls (PCBs), explosives, polychlorinated dibenzodioxins (PCDDs), and/or dibenzofurans; (PCDFs). A summary of detected organic analytes in surface soil and subsurface soil samples are presented in Tables 2.1 and 2.2, respectively.

To assess the detected metals in surface and subsurface soil, background soil samples were collected and analyzed. Background analyses of surface soil and subsurface soil were performed to assess whether the concentrations of chemicals detected at the Schofield Barracks sites are representative of natural conditions. Background concentrations are the concentrations of analytes occurring in native soil related to geologic conditions and processes as well as to soil chemistry. Samples for background analyses were collected in areas assumed to be outside potentially contaminated areas.

For this assessment, the background concentrations for inorganic analytes are represented by the 95 percent upper confidence limit (UCL) developed using the data for background samples. The 95 percent UCL was calculated using the Student t distribution. The use of the 95 percent UCL analyte concentration in environmental samples is consistent with EPA guidance (EPA, 1989). A discussion of the background sampling and data evaluation is presented in the Final Remedial Investigation Report for OU 1 (HLA, 1995).

In cases where analytes were not detected above the analytical reporting level (RL), a value equal to one-half the RL was used to calculate the UCL. For some analytes, the majority of the values used to calculate the 95 percent UCL were not detected above the RL. Therefore, the calculated value for the 95 percent UCL background concentration is less than the RL for the respective analyte(s) in the investigative samples. In these cases and in cases where the analyte was not detected above the respective RL, the RL is used instead of the 95 percent UCL on the appropriate summary table of analyte concentrations that are greater than background concentrations. Therefore, the discussions in the following subsections will pertain only to those analytes that were detected above the corresponding RL and that exceed the 95 percent UCL background concentration.

Sections 2.8.1 through 2.8.12 present an evaluation of the investigative results for the 12 OU 1 sites.

2.8.1 Site 17:DOL Vehicle Maintenance Motor Pool (Building 1029)

Soil-gas sampling was performed at Site 17 as a screening tool to identify areas within the site where VOCs may be present. This soil-gas information, in conjunction with site-specific information, was then used to direct and perform subsequent sampling activities (i.e., surface and subsurface soil sampling) in areas of highest potential contamination. Twenty-six shallow soil-gas samples were collected and analyzed at Site 17 (Figure 2.3). No detections of TCE or other solvents were reported above method detection limits in any of the shallow soil-gas samples at Site 17. Relatively low concentrations of TVH and aromatic VOCs related to fuel products (including ethylbenzene, toluene, and total xylenes) were detected in some of the shallow soil-gas samples. The highest concentrations of TVH were detected in samples collected from under and to the east of the grease rack.

Surface soil samples were collected from four rectangular plots at the site (Figure 2.3). The samples were analyzed for TCL SVOCs and TAL metals. TCL SVOCs were not detected in any of the four samples in concentrations above the method detection limit. Metals were detected in the four samples. Metals concentrations exceeding background concentrations in surface soil are

summarized in Table 2.3.

At Site 17, four borings were drilled and sampled to 20 feet bgs. The locations of the four borings are shown in Figure 2.3. Subsurface soil samples from each of the borings were analyzed for TCL VOCs, TCL SVOCs, TAL metals, and TVH. VOCs were not detected at concentrations above the method detection limits in subsurface samples from the four borings. The only SVOCs detected were low concentrations of tentatively identified compounds (TICs). TVH (diesel fraction) was detected at a concentration of 17.0 micrograms per gram (μg) at 2.5 feet bgs in Boring 17MPSB001 (Table 2.2). The location of Boring 17MPSB001 is presented in Figure 2.3 as Soil Boring Location 1. Metals concentrations exceeding background concentrations for subsurface soil are presented in Table 2.4.

In summary, TCE or other solvents were not detected in the samples collected and analyzed at Site 17. The absence of TCE detections at Site 17 indicates that significant quantities of TCE were not released at this site and that the site does not appear to be a source of TCE. Low levels of TVH and some fuel-related aromatic VOCs were detected in the shallow soil-gas and subsurface soil samples indicating that motor pool operations at Site 17 may have resulted in the release of small amounts of POLs to soil at the site. Some metals were detected in the surface and subsurface soil samples above background concentrations; however, on the basis of available historical site information, no activities have been identified that could have resulted in metals deposition (HLA, 1995).

2.8.2 Site 18: Distribution Warehouse (Building 1052)

Soil-gas sampling was performed at Site 18 as a screening tool to identify areas within the site where VOCs may be present. This soil-gas information, in conjunction with site-specific information was then used to direct and perform subsequent sampling activities (i.e., surface and subsurface soil sampling) in areas of highest potential contamination. Twenty shallow soil-gas samples were collected and analyzed at Site 18 (Figure 2.4). No detections of TCE or other solvents were reported above method detection limits in the shallow soil-gas samples at Site 18. Relatively low concentrations of TVH and aromatic VOCs related to fuel products (including ethylbenzene, toluene, and total xylenes) were detected in some of the shallow soil-gas samples. The highest concentrations of TVH were detected in samples collected from the following areas: (1) near the southern corner of the building where 55-gallon drums are presently stored; (2) on the northeast side of the building, which is outside the commodity storage area; and (3) adjacent to and in the northwestern end of the drainage ditch.

A deep soil-gas sample was collected and analyzed from Boring 18DWSB005 (Soil Boring Location 5 in Figure 2.4) at a depth of 20 feet. No TVH or VOCs were detected above method detection limits in this sample.

Three surface soil samples were collected from the drainage area, which is the only unpaved area of the site (Figure 2.4). The samples were analyzed for TCL SVOCs and TAL metals. SVOCs were not detected in any of the three samples in concentrations above the method detection limit. Metals were detected in all of the surface soil samples. Metals concentration exceeding background concentrations in surface soil are summarized in Table 2.5.

At Site 18, five soil borings were drilled and sampled. The locations of the five borings are shown in Figure 2.4. Four of the five borings were drilled to 20 feet bgs, and one was drilled to 60 feet bgs. Subsurface soil samples from each of the borings: were analyzed for TCL VOCs, TCL SVOCs, TAL metals, and TVH. TCE was detected at a concentration of 0.220 $\mu\text{g}/\text{g}$ in Boring 18DWSB003 (Soil Boring Location 3 in Figure 2.4) at a depth of 2.5 feet (Table 2.2). However, this result was qualified by the laboratory as uncertain because of analytical interferences from the native soil matrix making the quantitation and/or identification of TCE suspect. Boring 18DWSB003 is one of two 20-foot borings located in the drainage ditch adjacent to Site 18. This TCE detection is believed to be an anomaly because (1) it is a low concentration that was qualified by the laboratory as estimated because of interferences in the sample, (2) TCE was not detected in deeper soil samples from the same boring, and (3) TCE was not detected in any of the soil samples from a 20-foot boring upstream of Boring 18DWSB003 in the same drainage ditch. No other VOCs were detected above method detection limits in any of the subsurface soil samples collected at Site 18.

The only SVOCs detected in the subsurface soil samples were low concentrations of TICs. TVH was

not detected at concentrations exceeding the method detection limits in the subsurface soil samples. Metals were detected in the subsurface soil samples. Metals concentrations exceeding background concentrations in subsurface soil are summarized in Table 2.6.

In summary, a low concentration of TCE was detected in a shallow subsurface soil sample in the drainage ditch adjacent to the site. However, because this sample was qualified as estimated and because TCE was not detected in deeper samples from the same boring, samples from an upstream boring in the same drainage ditch or other samples from the site, it is considered to be a spurious detection of TCE. This lack of TCE contamination indicates that significant quantities of TCE have not been released at Site 18 and that this site does not appear to be a source of TCE to the groundwater system. No other solvents were detected in any of the samples. Low levels of TVH and some fuel-related aromatic VOCs were detected in the shallow soil-gas samples indicating that motor pool operations at Site 18 may have resulted in release of small amounts of POLs to soil at the site. However, TVH was not detected in subsurface soil samples throughout the site. Metals were detected in concentrations above background concentrations in the surface and subsurface soil samples (HLA, 1995); however, on the basis of available historical information, no activities have been identified that could have resulted in metals deposition (HLA, 1992a).

2.8.3 Site 20: Petroleum, Oil and Lubricants Area (Area R)

Soil-gas sampling was performed at Site 20 as a screening tool to identify areas within the site where VOCs may be present. This soil-gas information, in conjunction with site-specific information, was then used to direct and perform the subsequent sampling activities (i.e., surface and subsurface soil sampling) in areas of highest potential contamination. Thirty-five shallow soil-gas samples were collected at Site 20 (Figure 2.5). Neither TCE or other solvents were detected above method detection limits in the shallow soil-gas samples. TVH and aromatic VOCs related to fuel products (including toluene, total xylenes, and benzene) were detected in some of the shallow soil-gas samples. The highest concentrations of TVH were detected in samples just off the road within Waikoloa Gulch and on either side of the solvent storage tanks.

Deep soil-gas samples were collected from three soil borings drilled at Site 20 (Figure 2.5). Neither TCE or other solvents were detected above method detection limits in these samples. TVH was detected in samples from the three borings.

Surface soil samples were collected from three rectangular plots at the site (Figure 2.5). The samples were analyzed for TCL SVOCs and TAL metals. SVOCs were not detected in the three samples in concentrations exceeding the method detection limits. Metals were detected in the three surface soil samples. Metals concentrations exceeding background concentrations in surface soil are summarized in Table 2.7.

Three borings were drilled and sampled at the site. Two of the borings were drilled to 100 feet bgs, and one boring was drilled to 60 feet bgs (Figure 2.5). Subsurface soil samples from each of the borings were analyzed for TCL VOCs, TCLs SVOCs, TAL metals, TVH, and pesticides/polychlorinated biphenyls; (PCBs). SVOCs were not detected at concentrations exceeding the method detection limits in the subsurface soil samples. Acetone was the only VOC detected (Table 2.2). Acetone was detected in Boring 20ARSB002 (Soil Boring Location 2 in Figure 2.5) at 2.5, 9.0, and 19.0 feet bgs at concentrations of 0.014, 0.028, and 0.018 µg/g, respectively. Acetone is commonly used in analytical laboratories. Therefore, it is likely that this low level of acetone is a laboratory artifact (HLA, 1995). Arochlor 1260 was detected at a concentration of 0.201 µg/g in one sample from a depth of 2.5 feet in Boring 20ARSB001 (Table 2.2). The location of Boring 20ARSB001 is presented in Figure 2.5 as Soil Boring Location 1. Because Arochlor 1260 was detected in only one sample and because it was not detected in surface soil, it is believed to either be an anomaly or the result of a very small, localized spill that does not necessitate further investigation. Metals concentrations were detected in the subsurface soil samples. Metals concentrations exceeding the background concentrations in subsurface soil are summarized in Table 2.8.

Samples of residual tank contents were collected from the three solvent storage tanks at Battery 2A. The sampling activity was conducted at the request of USAEC. The liquid samples were submitted to the laboratory for solvent identification. Tank samples were labeled TANK1, TANK2, and TANK3 and, correspondingly, the solvent tanks are identified from east to west as 1, 2, and 3 (see Figure 2.5). Target VOCs that were detected in Sample TANK1 include acetone and total

xylenes at concentrations of 6.0 grams per liter g/l and 2.0 g/l, respectively. Acetone was the only target VOC detected in Sample TANK2. Acetone was detected at a concentration of 5.5 g/l. Target VOCs detected in Sample TANK3 include acetone and total xylenes; at concentrations of 5.3 g/l and 1.8 g/l, respectively. TCE was not detected in the three storage tank samples. Several TICs were reported in the three tank samples. Many of the TICs appear to be related to petroleum products. For this reason, it is believed that the most recent use of these tanks was to store petroleum-related products.

In summary, no TCE or other solvents were detected in the soil samples, indicating that TCE or other solvents were not released in significant quantities at Site 20 and that this site does not appear to be a source of contamination to the groundwater system. However, because of the presence of TICs related to petroleum products (gasoline), it is believed that these tanks were most recently used to store petroleum products. Metals were detected above background concentrations in the surface and subsurface soil samples; however, on the basis of available historical information, no activities have been identified that could have resulted in metals deposition (HLA, 1995). Low concentrations of TVH and aromatic VOCs were detected in the shallow soil-gas samples, which indicates that activities at Site 20, also known as the Bulk Fuel Yard, may have resulted in the release of small quantities of some POL products to the soil. However, TVH was not detected in the subsurface-soil samples located in the area of highest soil-gas concentrations.

2.8.4 Site 25: Automobile Craft Shop (Building 910)

Soil-gas sampling was performed at Site 25 as a screening tool to identify areas within the site where VOCs may be present. This soil-gas information, in conjunction with site-specific information, was then used to direct and perform the subsequent sampling activities (i.e., subsurface soil sampling) in areas of highest potential contamination. Eighteen shallow soil-gas samples at Site 25 were collected and analyzed from locations shown in Figure 2.6. No TCE or other solvents were detected above method detection limits in the shallow soil-gas samples. TVH and toluene were the only volatiles detected in some of the soil-gas locations. The highest concentrations of TVH were detected in samples from the easternmost end of the building and at the drum storage area.

At Site 25, three borings were drilled and sampled to 20 feet bgs. The locations of these borings are shown in Figure 2.6. Subsurface soil samples from each of the borings; were analyzed for TCL VOCs, TCL SVOCs, TAL metals and TVH. The only reported detections of VOCs were acetone and methylethyl ketone (MEK) (Table 2.2). Acetone was detected in samples from Boring 25ARSB001 (Soil Boring Location 1 in Figure 2.6) at 2.0 and 2.5 feet bgs at concentrations of 0.180 and 0.020 µg/g, respectively, and from Boring 25ARSB002 (Soil Boring Location 2 in Figure 2.6) at 2.5 and 14.5 feet bgs at concentrations of 0.200 and 0.440 µg/g, respectively. MEK was detected in a sample from Boring 25ARSB002 at 14.5 feet bgs at a concentration of 0.047µg/g. Because of the low concentrations of these compounds and because they are both common laboratory contaminants, it is likely that these detections are laboratory artifacts. The only SVOCs reported by the laboratory were identified as low concentrations of TICs. TVH was not detected in any of the subsurface soil samples. Metals were detected in the subsurface soil samples. Metals concentration exceeding background concentrations in subsurface soil are summarized in Table 2.9.

In summary, TCE was not detected in the environmental samples collected and analyzed from this site, indicating that TCE was not released in significant quantities at Site 25 and that this site does not appear to be a source of contamination to the groundwater system. The only solvents detected in samples at Site 25 were low concentrations of acetone and MEK, which are likely laboratory artifacts. Metals were detected in the subsurface soil samples above background concentrations; however, on the basis of available historical information, no activities have been identified that could have resulted in metals deposition (HLA, 1995).

TVH and toluene were detected at low levels in some shallow soil-gas samples. The detection of low concentrations of TVH and toluene indicates that the Automobile Craft Shop (Site 25) operations may have resulted in the release of small quantities of POL products to the soil at this site. However, TVH was not detected in the subsurface soil samples located in the areas of highest soil-gas concentrations.

2.8.5 Site 42: Maintenance Area (Building 387)

Soil-gas sampling was performed at Site 42 as a screening tool to identify areas within the site where VOCs may be present. This soil-gas information, in conjunction with site-specific information, was then used to direct and perform subsequent sampling activities (i.e., subsurface soil sampling) in areas of highest potential contamination. Twelve shallow soil-gas samples were collected and analyzed from Site 42 (Figure 2.7). Neither TCE nor other solvents were reported above method detection limits in the shallow soil-gas samples. TVH was detected in samples from 3 of the 12 sampling locations. The highest concentrations of TVH were detected near the loading platforms on the northeast and southeast sides of the building.

Two borings were drilled and sampled at Site 42. One of the borings was drilled to 20 feet bgs on the basis of the shallow soil-gas survey results. The other boring was drilled to 60 feet bgs in the suspected location of a reported 250-gallon storage tank. The locations of the borings are shown in Figure 2.7. Subsurface soil samples from each boring were analyzed for TCL VOCs, TCL SVOCs, TAL metals, and TVH. VOCs were not detected at concentrations exceeding the method detection limits in the subsurface soil samples from the two borings. The only SVOCs that were reported by the laboratory were identified as low concentrations of TICs. Metals were detected in both borings, and concentrations exceeding background concentrations are summarized in Table 2.10. TVH (diesel fraction) was detected in Boring 42MASB001 (Soil Boring Location 1 in Figure 2.7) at a concentration of 19.7 µg/g in a sample collected at 2.5 feet bgs (Table 2.2). TVH as gasoline was detected in Boring 42MASB002 (Soil Boring Location 2 in Figure 2.7) at 2.5 feet bgs at a concentration of 13.9 µg/g (Table 2.2).

In summary, TCE and other solvents were not detected in any of the samples from this site, indicating that TCE was not released in significant quantities at Site 42 and that this site does not appear to be a source of TCE contamination to the groundwater system. Metals concentrations exceeding background were detected in the soil samples; however, on the basis of available information, no activities have been identified that could have resulted in metals deposition (HLA, 1995). Low concentrations of TVH were detected in shallow soil-gas samples and in two subsurface soil samples, respectively. The detection of low TVH concentrations indicates that the past maintenance operations at this site may have resulted in the release of small quantities of some POL products to the soil.

2.8.6 Site 50: Old Burn Area

Two geophysical methods, magnetics and electromagnetic (EM) profiling, were used to assess the locations and extent of disposal areas at Site 50. The extent of the disposal areas was mapped by correlating areas of anomalous geophysical response recorded on adjacent survey transects. The locations of the geophysical survey transects and interpreted locations of subsurface disposal at Site 50 are shown in Figure 2.17. In general, substantial amounts of buried metal were detected in the western half of the site. The data indicate that there may be subsurface debris to the north, south, and west, beyond the limits of the geophysical survey. In particular, EM data obtained along the access road in the southwest corner of the site indicate that buried metal is present approximately 50 feet west of the current site boundary. In addition, data obtained along Transects N 337.5 and N 075, the northern and southern site boundaries, show anomalous patterns indicative of buried metal. Because of the surrounding dense brush, the geophysical survey area could not be extended to the limits of subsurface disposal.

There are north-south trending elongated depressions in the ground surface in the western half of Site 50. The depressions are 2 to 3 feet wide and spaced 2 to 3 feet apart, suggesting narrow and closely-spaced burial trenches. It is not possible to distinguish the individual trench boundaries on the basis of the geophysical data because the data show overlapping patterns in this area.

Soil-gas sampling was performed at Site 50 as a screening tool to identify areas within the site where VOCs may be present. This soil-gas information, in conjunction with site-specific information, was then used to direct and perform the subsequent sampling activities (i.e., surface and subsurface soil sampling) in areas of highest potential contamination. Thirty-four shallow soil-gas samples at Site 50 were collected and analyzed from the sample locations shown in Figure 2.8. VOCs were not detected above method detection limits in the shallow soil-gas samples. TVH was detected in some of the shallow soil-gas samples. The highest TVH concentrations were detected in the west and southwest areas of the site.

Deep soil-gas samples were collected and analyzed for Borings 50BASB003, 50BASB004, and

50BASB005 (Soil Boring Locations 3 through 5, respectively, in Figure 2.8). Low concentrations of TVH; 1,1,1-trichloroethane (1,1,1 -TCA); and tetrachlorethene (PCE) were detected in some of the deep soil-gas samples.

Surface soil samples were collected from seven rectangular plots at the site (Figure 2.8). The samples were analyzed for TCL SVOCs, TCL pesticides/PCBs, TAL metals, explosives, and PCDD/PCDF.

The SVOCs fluorene and phenanthrene were detected in Sample 50BASS003 (Surface Soil Sampling Location 3 in Figure 2.8) at concentrations of 4.40 and 0.670 µg/g, respectively (Table 2.1). These analytes are combustion products of petroleum fuels. Metals were detected in all seven of the samples; those samples exceeding background concentrations are summarized in Table 2.11. Arochlor 1260 was detected in Samples 50BASS001, 50BASS003, and 50BASS005 (Surface Soil Sampling Locations 1, 3, and 5 in Figure 2.8) at concentrations of 0.0422, 0.0724, and 0.0672 µg/g, respectively (Table 2.1). Arochlor 1260 concentrations in Sample 50BASS001 were not confirmed by the laboratory. PCDD and PCDF were detected in the surface soil samples. PCDD concentrations ranged from 0.000002 to 0.003800 µg/g, and PCDF concentrations ranged from 0.000001 to 0.000640 µg/g. The highest PCDD concentration was detected in Sample 50BASS006 (Surface Soil Sample Location 6 in Figure 2.8), and the highest PCDF concentration was detected in Sample 50BASS002 (Surface Soil Sample Location 2 in Figure 2.8).

Seven borings were drilled and sampled at the site on the basis of geophysics, soil-gas results, and requirements of the Final OU 1 SAP (HLA, 1993). Four of the borings were drilled to 20 feet bgs, and three were drilled to 60 feet bgs. Boring locations are shown in Figure 2.8. Subsurface soil samples from each boring were analyzed for TCL VOCs, TCL SVOCs, TAL metals, explosives, TCL pesticides/PCBs, and PCDD/PCDF.

Acetone, a common laboratory contaminant, was the only VOC detected in the subsurface soil samples (Table 2.2). Acetone was detected at a concentration of 0.016 µg/g in a duplicate sample at 9.0 feet bgs in Boring 50BASB001 (Soil Boring Location 1 in Figure 2.8). The only SVOCs reported by the laboratory were identified as low concentrations of TICs. Metals were detected in some of the subsurface soil samples, and those exceeding the background concentrations are summarized in Table 2.12. PCDD and PCDF were detected in samples from the seven borings. Table 2.13 presents the borings, depths, and PCDD and PCDF concentrations at Site 50. An explosive analyte, 2,6-dinitrotoluene, was detected at a concentration of 0.975 µg/g from a sample collected at 58.5 feet bgs in Boring 50BASB005 (Table 2.2). The location of Boring 50BASB005 is presented in Figure 2.8 as Soil Boring Location 5.

In summary, TCE was not detected in any of the samples from Site 50, indicating that significant quantities of TCE were not released at this site and that the site does not appear to be a source of contamination to the groundwater system. Low concentrations of 1,1,1-TCA and PCE were detected in the deep soil-gas samples. However, similar detections of 1,1,1-TCA were found in the system blanks, indicating that the low concentrations of 1,1,1-TCA and possibly PCE were the result of contaminated tubing or equipment. Low levels of the SVOCs fluorene and phenanthrene were detected in one surface soil sample, and a low concentration of the explosive 2,6-dinitrotoluene was detected in one subsurface soil sample. Low concentrations of TVH were detected in the shallow and deep soil-gas samples. Low concentrations of Arochlor 1260 were detected in surface soil samples and may have resulted from past storage activities at the site. Some metals were detected above background concentrations in the surface and subsurface soil samples; however, on the basis of available historical site information, no activities have been identified that could have resulted in metals deposition (HLA, 1995). The low-level detections of fluorene; phenanthrene; 2,6-dinitrotoluene; PCDDs; and PCDFs indicate that burn operations at this site have resulted in releases of small quantities of contaminant to the soil at Site 50.

2.8.7 Site 51: East Range Drum Disposal Area

Soil-gas sampling was performed at Site 51 as a screening tool to identify areas within the site where VOCs may be present. This soil-gas information, in conjunction with site-specific information, was then used to direct and perform the subsequent sampling activities (i.e., surface and subsurface soil sampling) in areas of highest potential contamination. Sixteen shallow soil-gas samples were collected at Site 51 and analyzed from locations shown in Figure 2.9. TCE and other solvents were not detected above method detection limits in any of the

soil-gas samples. TVH was detected in samples from 3 of the 16 sampling locations. The highest concentrations of TVH were detected near the stream at the base of the westernmost valley.

Deep soil-gas samples were collected at 50, 150, and 200 feet bgs in Boring 51DASB001 (Soil Boring Location 1 in Figure 2.9). TCE and other solvents were not detected above method detection limits in any of the soil-gas samples. One very low concentration of TVH was detected at 150 feet bgs. This detection was considered unreliable because the ambient air and system blank samples collected before sampling and after sampling also had similar TVH concentrations.

Surface soil samples were collected from three rectangular plots at the site (Figure 2.9). The samples were analyzed for TCL SVOCs and TAL metals. An SVOC, 4-methylphenol, was detected at a concentration of 0.54 µg in Sample 51DASS001 (Table 2.1). The location of Surface Soil Sample 51DASS001 is presented in Figure 2.9 as Surface Soil Sample Location 1. Metals were detected in the surface soil samples. Metals concentrations exceeding background concentrations in surface soil samples are summarized in Table 2.14.

One slant boring was drilled at the site to 277 feet bgs (Figure 2.9). This boring was drilled at approximately 30 degrees from vertical, parallel to the surface of the slope on which drums and other material were reported to have been disposed. Subsurface soil samples were analyzed for TCL VOCs, TCL SVOCs, TAL metals, and TVH. VOCs, SVOCs, and TVH were not detected in the subsurface soil samples. Metals were detected in the subsurface soil samples. Metals concentrations exceeding background concentrations in subsurface soil are presented in Table 2.15.

Four surface-water and stream sediment samples were also collected and analyzed from Site 51. The sample locations are shown in Figure 2.9. Mean stream flow at the sampling locations ranged from 0.09 to 0.32 cubic feet per second (cfs) (Table 2.16). The samples were analyzed for TCL VOCs, TCL SVOCs, TCL pesticides/PCBs, explosives, total and dissolved TAL metals (water), and total TAL metals (sediment).

Acetone and MEK were the only VOCs detected in the surface water at Site 51. Acetone concentrations of 3.7 and 4.3 micrograms per liter (µg/l) were detected in Samples 51DASW001 and 51DASW002 (Surface Water Sample Locations 1 and 2 in Figure 2.9), respectively. MEK was detected at a concentration of 11.0 µg/l in Sample 51DASW003 (Surface Water Sample Location 3 in Figure 2.9). These analytes are common laboratory contaminants. Therefore, these low concentrations are likely laboratory artifacts.

Acetone, methylene chloride, and MEK were the only VOCs detected in the sediment samples collected at Site 51. Acetone was detected in three of the four samples at concentrations ranging from 0.0056 to 0.0059 micrograms per gram (µg/g). Methylene chloride was detected in the four samples at concentrations ranging from 0.0033 to 0.0097 µg/g. MEK was detected in Samples 51DASE001 and 51DASE003 (Surface Water Sample Locations 1 and 3 in Figure 2.9) at concentrations of 0.0028 and 0.0088 µg/g, respectively. These analytes are common laboratory contaminants. Therefore, these low concentrations are likely laboratory artifacts. The only SVOCs reported by the laboratory were identified as low concentrations of TICs. Metals were detected in the surface-water and sediment samples. Metals detected in surface-water and stream sediment samples at Site 51 are summarized in Tables 2.17 through 2.18. Although an increase in metals concentrations was observed between the upgradient and downgradient surface-water samples, this increase could be the result of contributions from either natural soil or disposal operations.

In summary, with the exception of low concentrations of likely laboratory artifacts in the surface-water and sediment samples, TCE and other solvents were not detected in any of the samples from this site. The absence of TCE in samples collected from this site indicate that TCE was not released in significant quantities at Site 51 and that this site does not appear to be a source of contamination to the groundwater system. Low concentrations of TVH were detected in the shallow soil-gas samples. Some metals were detected above background concentrations in the surface and subsurface soil, and surface water and sediment samples; however, on the basis of available historical site information, no activities have been identified that could have resulted in metals deposition (HLA,1995).

2.8.8 Site 52: Old Laundry

During the PA/SI (HLA, 1992), eight shallow soil-gas samples were collected at Site 52 and analyzed from locations shown in Figure 2.18. Soil-gas sampling was performed at Site 52 as a screening tool to identify areas within the site where VOCs may be present. This soil-gas information in conjunction with site-specific information was then used to direct and perform the subsequent sampling activities (i.e., subsurface soil sampling) in areas of highest potential contamination. No detections of TCE; PCE; 1,1,1-TCA; or fuel contamination (possibly caused by the boiler plant) were detected during the soil-gas investigation above background levels.

Three soil borings were drilled and sampled during the PA/SI- Two were drilled to depths of 100.5 feet bgs and one to a depth of 120.5 feet bgs. The locations of these borings; are shown in Figure 2.19. A total of 35 (33 investigative and 2 quality control) samples were submitted for TCL VOC analysis. TCE was not detected in the samples analyzed, and detections of toluene were reported in 3 of the 35 samples. An unknown hydrocarbon was also detected in one sample. Toluene was detected at some relatively shallow depths (i.e., 24.7 and 29.0 feet bgs). The toluene was not detected below these depths. Based on this data, Site 53 was eliminated from OU 1 upon completion of the PA/SI.

2.8.9 Site 53: Shaft Pump Chamber and Storage Chambers

As previously discussed in this document, the results of the OU 1 PA/SI (HLA, 1992a) indicated that past activities at the Shaft Pump Chamber and Storage Chambers did not present a potential for the release of TCE contamination. Therefore, this site was eliminated from OU 1 upon completion of the PA/SI and no additional characterization of this site was necessary to be performed during the OU 1 RI.

2.8.10 Site 54a: Aircraft Fuselage Dumping and Cleaning Area

Soil-gas sampling was performed at Site 54a as a screening tool to identify areas within the site where VOCs may be present. This soil-gas information, in conjunction with site-specific information, was then used to direct and perform subsequent sampling activities (i.e., surface and subsurface soil sampling) in areas of highest potential contamination. Twenty-two shallow soil-gas samples at Site 54a were collected and analyzed at the locations presented in Figure 2.14. TCE and other solvents were not detected above method detection limits in the soil-gas samples. TVH was detected at 5 of the 22 sampling locations. The highest concentrations of TVH were detected near the north and southwest sides of the site. Benzene, an aromatic VOC related to petroleum products, was detected in one shallow soil-gas sample. Deep soil-gas samples were collected from three soil borings at Site 54a. TVH and VOCs were not detected above method detection limits. No TVH or VOCs were detected in the deep soil-gas samples.

Surface soil samples were collected from four areas of the site (Figure 2.14). The samples were analyzed for TCL SVOCs and TAL metals. The only SVOCs reported by the laboratory were identified as low concentrations of TICs. Metals were detected in the four surface soil samples. Metals concentrations exceeding background concentrations in surface soil are summarized in Table 2.19.

Three borings were drilled and sampled at the site. Two borings were drilled to approximately 100 feet bgs and the third was drilled to 87 feet bgs. Subsurface soil samples from each boring were analyzed for TCL VOCs, TCL SVOCs, and TAL metals. Acetone, a common laboratory contaminant, was the only VOC detected (Table 2.2). It was detected at a concentration of 0.018 µg/g in a duplicate sample from Boring 54AFDSB00I (Soil Boring Location 1 in Figure 2.14) at 13.5 feet bgs. The only SVOCs reported by the laboratory were identified as low concentrations of TICs. Metals were detected in the four subsurface samples. Metals concentrations exceeding background concentrations in subsurface soil are summarized in Table 2.20.

In summary, with the exception of the detection of a low concentration of acetone in one subsurface soil sample, TCE and other solvents were not detected in any of the samples. Therefore, it is believed that significant quantities of TCE were not released at Site 54a and that this site is not a source of contamination to the groundwater system. Low concentrations of TVH and benzene were detected in the shallow soil-gas samples. The detection of low concentrations of TVH and benzene indicate that the aircraft fuselage dumping and cleaning operations may have resulted in the release of small quantities of POL products to the soil at the site. Some metals were detected above background concentrations in the surface and subsurface soil samples; however, on the basis of available historical site information, no

activities have been identified that could have resulted in metals deposition (HLA, 1995).

2.8.11 Site 54b: Aircraft Storage Area

Soil-gas sampling was performed at Site 54b as a screening tool to identify areas within the site where VOCs may be present. This soil-gas information, in conjunction with site-specific information, was then used to direct and perform the subsequent sampling activities (i.e., subsurface soil sampling) in areas of highest potential contamination. Fifty-five shallow soil-gas samples at Site 54b were collected and analyzed at the locations shown in Figure 2.15. A low concentration of PCE was detected in one sample. This detection was not confirmed in the replicate sample. No other solvents were detected above method detection limits in any of the other samples. TVH was detected in samples from 15 of the 55 sampling locations. The highest concentration of TVH was detected at the easternmost aircraft storage area next to the golf course.

Some aromatic VOCs related to petroleum products were also detected. Toluene was detected in samples from 5 of the 55 sampling locations. Ethylbenzene was detected in samples from 2 of the sampling locations. Total xylenes were detected in samples from 4 of the sampling locations.

Deep soil-gas samples were collected in 10 soil borings at various depths. TVH was detected in the deep soil-gas sample from 7 of the 10 borings. TCE was not detected above method detection limits in any of the samples; however, other solvent compounds (e.g., methylene chloride; chloroform; 1,1,1-TCA; carbon tetrachloride, and PCE) were detected at low concentrations.

Nine borings were drilled and sampled to 100 feet bgs. At the request of USAEC, three additional 100-foot borings were drilled. The locations of the 12 borings are shown in Figure 2.15. Subsurface soil samples from each of the borings were analyzed for TCL VOCs, TCL SVOCs, and TAL metals. VOCs were not detected at concentrations above the method detection limits in the samples from the 12 borings. The only SVOCs reported by the laboratory were identified as low concentrations of TICs. Metals were detected in most of the samples. Metals concentrations exceeding background concentrations in subsurface soil are summarized in Table 2.21.

A perched groundwater sample was collected from Boring 54BASSB001 (Soil Boring Location 1 in Figure 2.15). The sample was analyzed for TCL VOCs, TCL SVOCs, and TAL metals. No VOCs were detected in the sample. The only SVOC detected was bis(2-ethylhexyl) phthalate at a concentration of 1.80 µg/l. Because of its low concentration and common laboratory use, this SVOC detection is likely a laboratory artifact.

In summary, TCE was not detected in any of the samples, indicating that TCE was not released in significant quantities at this site and that the site does not appear to be a source of contamination to the groundwater system. Low concentrations of a few other solvent compounds were detected in the deep soil-gas samples only. A low concentration of bis(2-ethylhexyl) phthalate, which is a likely laboratory artifact, was detected in the perched groundwater sample. Low concentrations of TVH were detected in the shallow and deep soil-gas samples. Some metals concentrations were detected above background concentrations in the subsurface soil samples; however, on the basis of available historical site information, no activities have been identified that could have resulted in metals deposition (HLA, 1995). The low concentrations of solvent compounds, TVH, and aromatic VOCs indicate that the past aircraft storage and cleaning operations may have resulted in the release of small quantities of solvent and POL products to the soil at the site.

2.8.12 Site 54c: Aircraft Engine Rebuild Area

Soil-gas sampling was performed at Site 54c as a screening tool to identify areas within the site where VOCs may be present. This soil-gas information in conjunction with site-specific information was then used during subsequent sampling (i.e., surface and subsurface soil sampling) to direct and perform the subsequent sampling activities in areas of highest potential contamination. One-hundred and four shallow soil-gas samples at Site 54c were collected and analyzed from the locations shown in Figure 2.16. TCE and other solvents were not detected above method detection limits in the shallow soil-gas samples. TVH was detected in samples from 18 of the 104 sampling locations. The highest concentrations of TVH were detected in the western part of the site. A few aromatic VOCs related to petroleum products were also detected. Benzene was detected in four samples, toluene was detected in two samples, and total xylenes were detected

in one sample.

Deep soil-gas samples were collected from three of the four soil borings at Site 54c. A low concentration of methylene chloride was the only compound detected in the deep soil-gas samples.

A surface soil sample was collected from one rectangular plot at the site (Figure 2.16). The sample was analyzed for TCL SVOCs and TAL metals. The only SVOC reported by the laboratory was a low concentration of a TIC. Metals were also detected in the sample. Metals concentrations exceeding background concentrations are summarized in Table 2.22.

Four borings were drilled and sampled at the site. The four borings were drilled to approximately 100 feet bgs. Subsurface soil samples from the borings were analyzed for TCL VOCs, TCL SVOCs, TAL metals, and TVH. Acetone, a common laboratory contaminant, was the only VOC detected (Table 2.2). It was detected at concentrations of 0.020 and 0.024 $\mu\text{g/g}$ in samples from 2.5 and 9.0 feet, respectively, at Boring 54CAESB001 (Soil Boring Location 1 in Figure 2.16). The only SVOCs reported by the laboratory were identified as low concentrations of TICs. Metals were detected in the subsurface soil samples. Metals concentrations exceeding background concentrations in subsurface soil samples are summarized in Table 2.23.

Shallow groundwater samples were collected from the four test borings at the site. The groundwater samples were analyzed for TVH, TCL VOCs, TCL SVOCs, and TAL metals. Acetone, methylene chloride, and MEK were found in samples from Borings 54CAESB001, 54CAESB003, and 54CAESB004 (Soil Boring Locations 1, 3, and 4, respectively, in Figure 2.16). Acetone detections ranged from 3.00 to 4.00 $\mu\text{g/l}$, methylene chloride concentrations ranged from 2.6 to 4.5 $\mu\text{g/l}$, and MEK (detections ranged from 2.10 to 4.50 $\mu\text{g/l}$). These analytes are common laboratory contaminants; therefore, these low concentrations are likely laboratory artifacts. Metals were detected in the groundwater samples. Metals concentrations in the groundwater samples are summarized in Table 2.24. TVH (as diesel) was detected in one groundwater sample from Boring 54CAESB003 at a concentration of 110.00 $\mu\text{g/l}$.

Five surface water and five stream sediment samples were collected and analyzed. Samples were analyzed for TCL VOC, TCL SVOCs, TCL pesticides/PCBs, explosives, and total and dissolved TAL metals (water) or total TAL metals (sediment). The following VOCs were detected in the surface-water and stream sediment samples: acetone; 1,2-dichloroethane (1,2-DCA); methylene chloride; and MEK. Table 2.25 summarizes the concentrations of organics detected in the surface water samples collected from Site 54c. These concentrations were detected near or below the detection levels specified in the SAP (HLA, 1993). A review of the data package indicated that 1,2-DCA was present in the laboratory blank at a concentration below the reporting limit. Therefore, these detections are believed to likely be laboratory artifacts.

Bis(2-ethylhexyl) phthalate was the only SVOC detected in the surface-water and sediment samples. It was detected in surface-water Sample 54CAESW004 (Surface Water Sample Location 4 in Figure 2.16) at a concentration of 3.4 $\mu\text{g/l}$. Because of its low concentration and common laboratory usage, it is likely a laboratory artifact.

Metals were detected in the filtered and unfiltered surface-water samples and in sediment samples. Metals concentrations are summarized in Tables 2.26 and 2.27 for surface water and Table 2.28 for sediments. No trend in surface-water or sediment concentrations was observed.

In summary, with the exception of low concentrations of VOCs that are likely laboratory artifacts, TCE and other solvents were not detected in soil-gas, soil, or water samples. Therefore, TCE is not believed to have been released in significant quantities at Site 54c and the site does not appear to be a source of contamination to the groundwater system. A low concentration of bis(2-ethylhexyl) phthalate, which is a likely laboratory artifact, was detected in one surface-water sample. Some metals were detected in soil samples above background concentrations. Metals were detected in surface-water and sediment samples but no trends were observed; however, on the basis of available historical site information, no activities have been identified that could have resulted in metals deposition (HLA, 1995). TVH and aromatic VOCs were detected in soil-gas samples, and TVH was detected in one groundwater sample. The detection of low concentrations of TVH and aromatic VOCs indicates that past aircraft engine rebuild operations may have resulted in the release of small quantities of POL products to the soil and groundwater at the site. However, TVH was not detected in the subsurface soil samples located in the areas of highest soil-gas concentrations.

TCE was detected at only one of the OU 1 sites, at a concentration of 0.220 µg/g in one subsurface soil sample at Site 18. This detection was qualified as estimated by the laboratory because of sample interferences and is believed to be anomalous. This detection is also below the EPA Region IX Preliminary Remediation Goal (PRG) of 25.0 µg/g for industrial soil (EPA, 1993). Therefore, it can be concluded that TCE does not present a risk to humans or the environment at the OU 1 sites investigated under the RI.

As part of the OU 1 RL risk values were estimated for other specific organic and inorganic chemicals detected at the ten OU 1 sites to assess whether further investigation is warranted. The following presents a summary of the risks at these sites. Further discussions regarding the 1) identification of potential chemicals of concern (COCs) included in the risk estimation, 2) risk estimation procedures and results, and 3) a perspective on background concentrations of inorganic chemicals in soil of the Hawaiian Islands are presented in the Final OU 1 RI (HLA, 1995).

To allow evaluation of the potential risks, chemicals of concern were identified for each of the OU 1 sites. Only a few organic compounds were detected at very low concentrations in samples from the OU 1 sites. TCE was detected in only one sample at a very low level. Organic chemicals detected in concentrations greater than EPA Region IX risk-based guidelines (PRGs) were identified as chemicals of concern. The detected levels of most of these organic compounds, including the TCE detection, were too low to qualify as chemicals of concern. Based on the results of the OU 1 sampling program, the OU 1 sites are not considered to be sources of TCE to the groundwater system. Most of the chemicals selected as chemicals of concern were naturally occurring metals.

Risk estimates were developed for the chemicals of concern at each site to assess the potential cumulative affects of these chemicals on human health. A discussion of the estimated risks for each site is provided below. The chemicals of concern were assessed as not being a threat to human health if the risk estimates were within ranges considered acceptable by EPA (i.e., a 10⁻⁴ to 10⁻⁶ risk range for carcinogenic risks or a hazard index of 1.0 for noncarcinogenic health risks), detections were within the range of background detections and are likely to be representative of background conditions, or a route of exposure to the chemical did not exist. None of the identified chemicals of concern exceeded these criteria. On this basis, none of the chemicals of concern or OU 1 sites poses a threat to human health. Because of the lack of contamination and because the OU 1 sites are designated for industrial use, they also do not pose a threat to the environment. A summary of the risk evaluations for the OU 1 sites investigated under the RI is presented below.

Site 17: DOL Vehicle Maintenance Motor Pool (Building 1029)

The chemicals of concern identified at Site 17 include aluminum, arsenic, and manganese in subsurface soil. Risk estimates indicated that the levels of arsenic in the subsurface soil were within a risk range considered acceptable by EPA and were not a threat to human health or the environment. The manganese and aluminum present a minor noncarcinogenic risk to human health. However, because the levels of these chemicals are below the maximum levels detected in background samples, the aluminum and manganese detections are believed to be representative of background conditions. In addition, because the detections occurred in the subsurface soil at an industrial site, a human or ecological route of exposure does not exist. Therefore, the contaminants present at this site do not present a threat to human health or the environment.

Site 18: Distribution Warehouse (Building 1052)

The chemicals of concern identified at Site 18 include beryllium in surface soil, and aluminum and arsenic in subsurface soil. Estimated risks indicate that the levels of both beryllium and arsenic are within a risk range considered acceptable by EPA. The aluminum presents a minor noncarcinogenic risk to human health. However, because the levels of aluminum are below the maximum levels detected in background samples, these detections are believed to be representative of background conditions. In addition, because the aluminum detections occurred in the subsurface soil at an industrial site, a human or ecological route of exposure does not exist. Therefore, a threat to human health or the environment does not exist.

Site 20: Petroleum, Oil, and Lubricants (POL) Area (Area R)

The chemicals of concern identified at Site 20 include arsenic, beryllium, and manganese in surface soil, and aluminum and manganese in subsurface soil. The estimated risks for arsenic and beryllium are within a risk range considered acceptable by EPA. The detections of manganese in the surface soil and aluminum and manganese in the subsurface soil pose a small noncarcinogenic risk to human health. However, these detections are believed to be representative of background levels of aluminum and manganese in Hawaiian soil. In addition, the current and anticipated usage of this site for industrial purposes does not warrant further action.

Site 25: Automobile Craft Shop (Building 910)

The only chemical of concern identified at Site 25 was arsenic in subsurface soil. Risk estimates indicate that arsenic concentrations in subsurface soil at this site were within a risk range considered acceptable by EPA. Therefore, the site does not pose a risk to human health or the environment.

Site 42: Maintenance Area (Building 387)

The chemicals of concern identified at Site 42 include aluminum and arsenic in subsurface soil. The estimated risks for arsenic are within a risk range considered acceptable by EPA. The aluminum presents a minor noncarcinogenic risk to human health. However, because the aluminum concentrations are below the maximum levels detected in background samples, these detections are believed to be representative of background conditions. In addition, because the aluminum was detected in the subsurface soil at an industrial site, a human or ecological route of exposure does not exist. Therefore, a threat to human health and the environment does not exist.

Site 50: Old Bum Area

The chemicals of concern for Site 50 include beryllium and some dioxin compounds in surface soil, and aluminum, arsenic, and some dioxin compounds in subsurface soil. Estimated risks indicate that the levels of the arsenic, beryllium, and dioxin compounds are within a risk range considered acceptable by EPA. The aluminum presents a minor noncarcinogenic risk to human health. However, because the aluminum concentrations are below the maximum levels detected in background samples, these detections are believed to be representative of background conditions. In addition, because the aluminum was detected in the subsurface soil at an industrial site, a human or ecological route of exposure does not exist. Therefore, the site does not pose a threat to human health or the environment.

Site 51: East Range Drum Disposal Area .

The chemicals of concern identified at Site 51 include arsenic and beryllium in surface soil. The estimated risks for these chemicals are within a risk range considered acceptable by EPA. Therefore, no threat to human health or the environment exists at this site.

Site 54a: Aircraft Fuselage Dumping and Cleaning Area

The chemicals of concern identified at Site 54a include arsenic and beryllium in surface soil, and aluminum in subsurface soil. The estimated risks resulting from the arsenic and beryllium detections are within a risk range considered acceptable by EPA. The aluminum detected in the subsurface soil presents a minor noncarcinogenic health risk. However, several detections of aluminum in background soil were greater than the maximum detection at Site 54a. Therefore, this maximum detection of aluminum is believed to be representative of aluminum levels in background soil and does not pose a threat to human health or the environment greater than that presented by natural Hawaiian soil.

Site 54b: Aircraft Storage Area

The chemicals of concern identified at Site 54b include beryllium in surface soil, and aluminum and arsenic in subsurface soil. The estimated risk for arsenic and beryllium are within a risk range considered acceptable by EPA. The aluminum presents a minor noncarcinogenic risk to human health. However, because the aluminum concentrations are below the maximum levels detected in background samples, these detections are believed to be representative of background conditions.

In addition, because the aluminum was detected in the subsurface soil at an industrial site, a human or ecological route of exposure does not exist. Therefore, no threat to human health or the environment exists at this site.

Site 54c: Aircraft Engine Rebuild Area

The chemicals of concern identified at Site 54c include beryllium in the surface soil, and aluminum and arsenic in subsurface soil. The estimated risks for arsenic are within a risk range considered acceptable by EPA. The aluminum presents a minor noncarcinogenic risk to human health. However, because the aluminum concentrations are below the maximum levels detected in background samples, these detections are believed to be representative of background conditions. In addition, because the aluminum was detected in the subsurface soil at an industrial site, a human or ecological route of exposure does not exist. Therefore, no threat to human health or the environment exists at this site.

2.10 Selection of No Action Alternative Based an Risk Evaluation

Risk evaluations performed on the RI data for the OU 1 sites indicate that chemicals detected in the surface soil, subsurface soil, and surface water and sediment at the OU 1 sites do not pose a threat to human health and the environment because either: (1) estimated risks are within ranges considered acceptable by EPA; (2) chemical concentrations are representative of background conditions; and/or (3) a route of exposure does not exist. Therefore, no remedial actions at the OU 1 sites are necessary for protection of human health and the environment.

2.11 Documentation of Significant Changes

As described in the Responsiveness-Summary (Section 3.0), the Proposed Plan was released for public comment on May 23, 1994, and a public meeting was held on June 7, 1994. This Proposed Plan identified as "no action" as the selected response action for the OU 1 sites investigated.

Comments collected over the 30-day public review period between May 23 and June 22, 1994, did not necessitate any significant changes to the conclusions or procedures outlined in the Proposed Plan. In addition, no new OU 1 sites beyond those previously investigated that may require further investigation have been identified.

3.1 Overview

This section provides a summary of the public comments and concerns regarding the Proposed Plan at Schofield Barracks, Island of Oahu, Hawaii. At the time of the public review period, the Army had selected the "no remedial action" preferred alternative for the OU 1 sites. On the basis of the written and verbal comments received, the Army's Proposed Plan was generally accepted by the public.

3.2 Background on Community Involvement

The Army has implemented a progressive public relations and involvement program for environmental activities at Schofield Barracks. A Technical Review Committee, comprised of representatives from the Army, the EPA, the State of Hawaii Department of Health, HLA, and members of the general public has been established and meets periodically to involve the public in decisions made regarding investigation results, proposed work, and potential remedial actions. The Army has also presented RI plans and results at public meetings conducted on February 25, 1993 and on September 13 and 14, 1994. Prior to each of these public meetings, the Army distributed over 50 copies of a fact sheet to interested parties and to the information repositories (Section 2.4). These fact sheets described the installation restoration program at Schofield Barracks, including a discussion of how the public could get more information and get involved in the program. A synopsis of community relations activities conducted by the Army is presented in Appendix A.

The Army held a public comment period on the OU 1 no action preferred alternative from July 7 through August 6, 1995. One hundred copies of the Proposed Plan were mailed to the public for review and comment and were placed in the above discussed repositories (Section 2.4). The Proposed Plan also invited readers to a public meeting to voice their concerns. This public meeting was held to discuss the selected "no remedial action" preferred alternative. The meeting was held on July 18, 1995, from 7:00 to 8:00 p.m., in the Hale Koa at Wahiawa District Park, Wahiawa, Hawaii.

Comments received during the public comment period are addressed below.

3.3 Summary of Comments Received During Public Comment Period and Department of the Army Responses

The following presents the comments to the Draft ROD for OU 1 received from the public during the public comment period. The Army's responses are presented immediately following the corresponding comment.

3.3.1 Comments from Marcus Oshiro, State Representative

Comment No. 1

The objective of the OU 1 remedial investigation was to identify source of the TCE found in the Army's drinking water wells. The source has NOT been found or identified.

Further remedial action on other operable units that also address the TCE appears useless if the primary source of contamination has not been identified.

The conclusions presented at the July 18, 1995 public informational meeting noted that the TCE contamination is situated "somewhere" on the East Range and is "large". I find this conclusion inadequate in addressing the problem that still remains at hand.

Response

The Army is also very frustrated that we have not been able to locate the source of TCE. In any remedial investigation, the primary emphasis is placed on finding the sources of contamination. The Army feels that removal of a contaminant source is far more effective and efficient than removing the contaminants once they have migrated from the source. This is precisely why the Army placed TCE source identification at the top of its priorities.

The normal approach for such an investigation is to use monitoring wells to locate the plume and track the contamination back to its source. However, because of the extreme depth to groundwater at Schofield Barracks, this approach is not economically feasible. Therefore, the Army was faced with locating a source that may be as much as 40 years old and for which little, if any, visible evidence may still exist. In an area covering over 13,000 acres, this is an extremely difficult task.

The approach used by the Army included locating probable TCE source areas through intensive records searches, interviews with past personnel and residents, review of historical aerial photographs, and site visits. The Army has conducted a thorough search of Army records regarding activities at Schofield Barracks (and Wheeler Army Airfield) and within Wahiawa, conducted interviews with past employees knowledgeable about past activities and reviewed historical aerial photographs from early 1940 up to the present. This effort included a review of over 136 historical aerial photographs, 120 interviews with past personnel and residents, and onsite surveys of 138 sites. From these efforts, the Army and EPA identified over 120 individual sites where some type of activity occurred or soil was disturbed. Each of these sites was subsequently investigated for possible contamination.

The 12 sites noted in the OU 1 report are the only sites identified as probable sources of TCE. These 12 sites were subjected to extensive investigations under OU 1. However, recent information obtained during the OU 4 investigation indicates that even such extensive investigations may not be effective in determining whether a site is the source of TCE groundwater contamination. An infiltration test recently performed as a part of OU 4 indicated that liquids may move through the fine-grained surface materials much more quickly than anticipated. This means that, even if large volumes of TCE were disposed of at some of the OU 1 sites in the past, the TCE may have been washed out of the fine-grained surface materials by infiltrating rainfall and may no longer be detectable. The TCE source may now be several hundred feet below the ground surface and, therefore, would not be detectable or treatable with current available technologies. Under these circumstances, additional investigations to locate a surface or near surface source of TCE would be considered an inefficient use of taxpayer funds.

Regarding the Army's conclusions, the source is located somewhere in the East Range and is large. These conclusions are based on groundwater level data which show the groundwater is flowing from the east to the Schofield supply wells and chemical data from the Schofield supply wells which indicate that the concentrations have not decreased over the 10 years since data collection was initiated. The data that were used to generate these general conclusions are also being used in our continuing effort to determine the potential for the TCE plume to migrate to other supply wells downgradient of the installation. That effort is being conducted under OU 2 (Groundwater Investigations). The ongoing groundwater investigations, scheduled to be completed in November 1995, will provide the basis for evaluating how to best address the potential exposure of the public to contaminated groundwater.

As a team, the Army, the Hawaii Department of Health and the EPA have agreed that the most effective and technically feasible approach to preventing exposure of the general public to TCE contaminated groundwater is to monitor the wells identified in the path of the plume and to install treatment systems on impacted wells. Although the Army's search for the source of TCE has not been successful, the overall program is designed to ensure that human health and the environment are protected. By initiating a long term monitoring program of wells within the path of the plume, the Army will provide for the earliest possible detection of TCE and installation of effective treatment systems. This approach will protect the public. The Army has investigated areas of the East Range for which available information indicated that there was a potential for the presence of TCE. Because the Army's current approach will ensure protection of the public health, further investigations without new leads would provide no additional benefit. However, the Army continues to be committed to further investigation should new information arise.

Comment No. 2

Based upon the comments by meeting attendee Mr. Bob Kent of the Wahiawa Neighborhood Board, it appears that he or other members of the general public may have additional knowledge that could assist the U.S. Army in identifying the source of TCE contamination.

Thus, a more comprehensive historical review of U.S. Army records and public survey is necessary and in order.

Response

As discussed in our response to your first comment, the Army, in conjunction with the EPA and the Hawaii Department of Health, has conducted an extensive review of historical records, conducted interviews with past employees (both military and civilian), and reviewed stacks of historical aerial photographs from the 1940's to the present in search of possible information that would point us to the source.

That effort is a continuing one as evidenced by our recent investigation of sites that was performed as a result of an interview with an enlisted soldier who served during the late sixties and early seventies. Based on his information, the Army investigated the Koolau Reservoir, the Ku Tree Reservoir, two ravines, and Building 6015, all on the East Range, for signs of past dumping activities.

Based on site surveys, magnetometer sweeps, and soil sampling, none of these sites are considered possible sources of the TCE.

Another recent sampling effort was prompted by information from Mr. Ken Stover, Mililani Neighborhood Board member, who used to be a soldier in the tank brigade on Schofield Barracks approximately 40 years ago. According to Mr. Stover, large amounts of TCE were dumped into a trench located within the boundaries of a main post motor pool (Site K under investigation under OU 3). Although we had already investigated this site and found no concerns, we had Mr. Stover point out the specific trench location, we conducted a geophysical survey to assess if the area had been disturbed. In addition, we install three 20-foot deep soil borings at the trench location and took soil samples from each boring for analysis for VOCs. Laboratory data from this effort is not yet available; however, field instrument readings indicated no VOCs were present in the samples.

The Army has always been willing to follow up on information and will continue that practice; however, continuing an active program to search for a TCE source is not considered practical, based on thorough search already conducted.

Comment No. 3

Given the inability to precisely predict groundwater flows, there exists the opportunity for the TCE to migrate into the surrounding aquifer systems, namely the Wahiawa aquifer and the Pearl Harbor aquifer.

While it is my understanding that the U.S. Army addresses the TCE contamination in its water supply through a filtration system, is the U.S. Army willing to be responsible for filtering the civilian water systems if they become contaminated with significant amounts of TCE?

Response

While "precise" predictions of groundwater flows are not possible because of the depth to ground water, the flat water table, and limited water level data, the Army and its contractors have developed a firm understanding of the aquifers underlying Schofield Barracks and the surrounding area. We are also in the final stages of developing a groundwater model which will assist in predictions of potential impacts downgradient of the installation.

We know that the Schofield High Level Water Body, which is the aquifer that serves both the Schofield supply wells and the Wahiawa supply wells, is contaminated; however, contamination has not been detected in the Wahiawa wells. We also know from water level surveys and literature reviews of past hydrogeological studies of Oahu that the Schofield High Level Water Body is fed by water flowing predominantly from the Koolau Mountain Range and to a lesser extent from the

Waianae Mountain Range. The groundwater flowing into the system from the east (predominantly) and the west then flows south to the Honolulu-Pearl Harbor Basal Aquifer and north to the Waialua Basal Aquifer over groundwater dams created by areas of higher impermeability (possible buried ridges). These groundwater dams have created what is known as the Schofield High Level Water Body from which the Schofield supply wells and Wahiawa supply wells draw water.

We also know, based on past hydrogeological studies of the island, that the majority of the

water flows to the south (approximately 125 million gallons per day). Also, based on the proximity of the Schofield supply wells to the southern groundwater dam and on data from monitoring wells on the Main Post of Schofield and from the Wahiawa supply wells, the East Range TCE plume is migrating towards the south.

The information gathered during our studies has narrowed down the downgradient supply wells potentially impacted by the TCE. The groundwater model, along with a continuing supply well sampling program, will provide an early warning of potential impacts to those wells in the path of the plume. There will be plenty of time to react to rising concentrations in the wells when, and if, they occur. The Army's plans for the groundwater operable unit (OU 2) do commit the Army to installing treatment systems on the supply wells if they are impacted by contamination emanating from the Schofield Barracks/Wheeler Army Airfield complex. These plans are available in the information repositories established to provide information about the Schofield Barracks Installation Restoration Program. The Army's goal is to meet the requirements of CERCLA to ensure protection of human health and the environment.

3.3.2 Comments from the Mililani/Waipio/Melemanu Neighborhood Board No. 25

Comment No.1

The Board believes that the Army should complete and report the second, third and fourth priorities in the investigation and cleanup, and if there is a failure to pinpoint the source of contamination during these additional studies it should intensify its search for sources of contamination. Otherwise, any possible cleanup will be negated by continuing contamination from the source.

Response

In any remedial investigation, the primary emphasis is placed on finding the sources of contamination. The Army feels that removal of a contaminant source is far more effective and efficient than removing the contaminant once they have migrated from the source. This is precisely why the Army placed TCE source identification at the top of its priorities.

The normal approach for such an investigation is to use monitoring wells to locate the plume and track the contamination back to its source. However, because of the extreme depth to groundwater at Schofield Barracks, this approach is not economically feasible. Therefore, the Army was faced with locating a source that may be as much as 40 years old and for which little, if any, visible evidence may still exist. In an area covering over 13,000 acres, this is an extremely difficult task.

The approach used by the Army included locating probable TCE source areas through intensive records searches, interviews with past personnel and residents, review of historical aerial photographs, and site visits. The Army has conducted a thorough search of Army records regarding activities at Schofield Barracks (and Wheeler Army Airfield) and within Wahiawa, conducted interviews with past employees knowledgeable about past activities and reviewed historical aerial photographs from the early 1940s up to the present. This effort included a review of over 136 historical aerial photographs, 120 interviews with past personnel and residents, and onsite surveys of 138 sites. From these efforts, the Army and EPA identified over 120 individual sites where some type of activity occurred or soil was disturbed. Each of these sites was subsequently investigated for possible contamination.

The 12 sites noted in the OU 1 report are the only sites identified as probable sources of TCE. These 12 sites were subjected to extensive investigations under OU 1. However, recent information obtained during the OU 4 investigation indicates that even such extensive investigations may not be effective in determining whether a site is the source of the TCE groundwater contamination. An infiltration test recently performed as a part of OU 4 indicated that liquids may move through the fine-grained surface materials much more quickly than anticipated. This means that, even if large volumes of TCE were disposed of at some of the OU 1 sites in the past, the TCE may have been washed out of the fine-grained surface materials by infiltrating rainfall and may no longer be detectable. The TCE source may now be several hundred feet below the ground surface and, therefore, would not be detectable or treatable with current available technologies. Under these circumstances, additional investigations to locate a surface or near surface source of TCE would be considered an inefficient use of tax payer funds.

Regarding your recommendation that a final decision, and possibly further action on OU 1, be delayed until the investigative results of the other "priorities" are available, the other operable units were established to investigate other concerns, not to identify the TCE source. OU 2 will address TCE, but only in the groundwater and what should be done to protect the public from exposure to contaminated groundwater. OU 3 will investigate the small waste sites on the installation; these sites were already screened out as potential sources of TCE. Finally, OU 4 was established to investigate the former sanitary landfill and to identify what actions have to be taken at that site to prevent migration of contaminants. OU 4 has been found to be the source of a localized TCE plume in the groundwater beneath the landfill; however, this plume is not connected to the East Range TCE plume that has contaminated the Schofield supply wells. Because the other three operable units will provide no further information regarding the location of TCE source areas, there is no need to delay action on the OU 1 sites discussed in the Proposed Plan.

The Army has always been willing to followup on information and will continue that practice; however continuing an active program to search for a TCE source is not considered practical, based on the thorough search already conducted.

Comment No. 2

While it is reasonable for the Army to suspend drilling Phase one, the Board is concerned that the adoption of a "no action" proposal may mean the end of the search for the source of contamination in OU 1, The area should be reserved for further resolution unless the sources of contamination are found in the other three areas. There should be an effort to investigate areas outside of the present boundaries of the study.

Response

As discussed in our response to your first comment, the Army, in conjunction with the EPA and the Hawaii Department of Health, has conducted an extensive review of historical records, conducted interviews with past employees (both military and civilian) and residents, and reviewed stacks of historical aerial photographs from the 1940's to the present in search of possible information that would point us to the source. This effort included a review of over 136 historical aerial photographs, 120 interviews with past personnel and residents, and onsite surveys of 138 sites. That effort is a continuing one as evidenced by our recent investigation of sites based on an interview with an enlisted soldier who served during the late sixties and early seventies. Based on his information, the Army investigated the Koolau Reservoir, the Ku Tree Reservoir, two ravines, and Building 6015, all on the East Range, for signs of past dumping activities. Based on site surveys, magnetometer sweeps, and soil sampling, none of these sites are considered possible sources of the TCE. Another recent sampling effort was prompted by information from Mr. Ken Stover, Milalani Neighborhood Board Member, who used to be a soldier in the tank brigade on Schofield Barracks approximately 40 years ago. According to Mr. Stover, large amounts of TCE were dumped in a trench located within the boundaries of a main post motor pool (Site K under investigation under OU 3). Although we had already investigated this site and found no concerns, we had Mr. Stover point out the specific trench location, and we conducted a geophysical survey to assess if the area had been disturbed. In addition, we install three 20-foot deep soil borings at the trench location and took soil samples from each boring for analysis for VOCs. Laboratory data from this effort is not yet available; however, field instrument readings indicated no VOCs were present in the samples.

The Army has always been willing to follow up on information and will continue that practice; however, continuing an active program to search for a TCE source is not considered practical, based on the thorough search already conducted. Although the Army's search for the source of TCE has not been successful, the overall program is designed to ensure that human health and the environment are protected. By initiating a long term monitoring program of wells within the path of the plume, the Army will provide for the earliest possible detection of TCE and installation of effective treatment systems. This approach will protect the public. Also, as discussed in our response to your first comment, the objectives of the other operable unit investigations are not intended to continue the search for the TCE source; the sites still under investigation under those operable units have been screened out as possible TCE sources.

Regarding searching for sources outside of the Schofield Barracks boundaries, the Army has included Wheeler Army Air field in its search for a TCE source and the Air Force is conducting an ongoing, comprehensive investigation of contaminant sources on Wheeler under its installation

restoration program. The Army also conducted an industrial activity survey as part of the original Preliminary Assessment/Site Investigation efforts conducted in 1991. Through the industrial activity survey, the Army identified to the EPA and Hawaii Department of Health potential historical sources of TCE in the town of Wahiawa. The potential sites included an old train depot, several dry cleaners, and three disposal sites. Appropriations limitations on the Defense Environmental Restoration Account, which pays for the installation restoration program, prohibit investigation of non-Defense Department sites, unless the contamination migrated across an installation boundary onto private property. Any investigations of private sites must be conducted by the State or EPA.

Comment No. 3

We therefore urge the Army to keep an open mind and reserve the option of revisiting OU #1. In the meantime, we ask that the Army keep us up to date on the levels of contamination in the Schofield Wells and present an analysis of the trends in such detection. Any other information regarding the ongoing studies will help the public to better understand the issue.

Response

As discussed in our response to your second comment, the Army intends to follow up on all leads on potential sources of TCE on the installation as they are brought to our attention. We firmly believe the best solution is to remove the source. However, as we have discussed, we have reviewed the Army records and have eliminated identified sites as sources of TCE. As always, members of your neighborhood board are invited to attend and participate in the Technical Review Committee (TRC) meetings. You will find that the TRC meetings are an excellent forum for learning more about the program and the technical rationale for the decisions made by the Army, EPA, and Hawaii Department of Health. Current data and conclusions are presented at these meetings and discussed thoroughly to provide a continuing guide to the program.

4.0 ACRONYMS

1,1,1-TCA	1,1,1-Trichloroethane
1,2-DCA	1,2-Dichloroethane
Army	U.S. Department of the Army
bgs	Below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cfs	Cubic feet per second
COE	U.S. Army Corps of Engineers
DERP	Defense Environmental Restoration Program
DOD	U.S. Department of Defense
DOL	Directorate of Logistics
EM	Electromagnetic
EPA	U.S. Environmental Protection Agency
FFA	Federal Facility Agreement
FS	Feasibility study
g/l	Grams per liter
HLA	Harding Lawson Associates
IRP	Installation Restoration Program
MCL	Maximum contaminant level
MEK	Methylethyl ketone
MSL	Mean sea level
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NGVD	National Geodetic Vertical Datum of 1929
NPL	National Priorities List
OU	Operable unit
PA/SI	Preliminary assessment/site investigation
PCB	Polychlorinated biphenyl
PCDD	Polychlorinated dibenzodioxin
PCDF	Polychlorinated dibenzofuran
PCE	Tetrachloroethene
POL	Petroleum, oil and lubricants
PRG	Preliminary remediation goal
RI	Remedial investigation
ROD	Record of Decision
SAP	Sampling and Analysis Plan
SARA	Superfund Amendments and Reauthorization Act of 1986
Schofield Barracks	Schofield Army Barracks
SVOC	Semivolatile organic carbon
TAL	Target analyte list
TCE	Trichloroethene
TCL	Target compound list
TEPS	Total Environmental Program Support
TIC	Tentatively identified compound
TRC	Technical Review Committee
TVH	Total volatile hydrocarbons
USAEC	U.S. Army Environmental Center
VOC	Volatile organic compound
WWII	World War II
µg/g	Micrograms per gram
µg/l	Micrograms per liter

5.0 REFERENCES

- Giambelluca, T.W., M.A. Nullet and T.A. Schroeder. 1986. Rainfall atlas of Hawaii. Report No. R76. Water Resources Research Center, University of Hawaii, June.
- Harding Lawson Associates. 1992a. Final preliminary assessment/site investigation report for operable units 1, 2, and 4, Schofield Army Barracks, island of Oahu, Hawaii, May 14.
- Harding Lawson Associates. 1992b. Final work plan for the Schofield Barracks remedial investigation/feasibility study, October 15.
- Harding Lawson Associates. 1993. Final sampling and analysis plan for operable unit 1, Schofield Army Barracks remedial investigation, January 28.
- Harding Lawson Associates. 1995. Final remedial investigation report for operable unit 1, Schofield Army Barracks, island of Oahu, Hawaii, April 17.
- U.S. Environmental Protection Agency. 1989. Interim guidance on establishing soil lead cleanup levels at superfund cleanup sites.

TABLES

Table 2.1 Summary of Target Organic Analytes Detected In Operable Unit 1 Surface Soil Samples

Sample Number	Site 50			Site 51
	50BASS003	50BASS001	50BASS005	51DASS01
SVOCs				
Fluorene	4.40 X	---	---	---
Phenanthrene	0.670	---	---	---
4---Methylphenol	---	---	---	0.54
PCB				
Arochlor 1260	0.0724 C	0.422 PUJ	0.0672 C	---

Concentrations are reported in micrograms per gram.

--- Not detected above background concentration.

C Analysis was confirmed.

J Value is estimated.

p Result less than reporting limit but greater than instrument detection limit.

U Analysis is unconfirmed.

X Analyte recovery outside of certified range but within acceptable limits.

PCB Polychlorinated biphenyls (A total of 6 PCB target compounds were analyzed for in the soil samples. Target PCBs not detected, except those shown on this table).

SVOCs Semivolatile organic compounds (A total of 64 SVOC target compounds were analyzed for in the soil samples. Target SVOCs not detected, except those shown on this table).

Table 2.2 (continued)

Boring No.	Site 50		Site 52			Site 54a	Site 54c	
	50BASB001	50BASB005	52LYSO016D	52LYSO026A	52LYSO027B	54AFDSB001	54CAESB001	
Depth (feet bgs)	9.0	58.5	19.0	24.7	29.0	13.5	2.5	9.0
VOCS								
TCE	---	---	---	---	---	---	---	---
Acetone	0.016 D	---	---	---	---	0.018	0.020	0.024
MEK	---	---	---	---	---	---	---	---
Toluene	---	---	0.202	0.135	0.238	---	---	---
PCB								
Arochlor 1260	---	---	---	---	---	---	---	---
TVH	---	---	---	---	---	--	--	---
Explosives								
2,6-Dinitrotoluene	---	0.975	---	---	---	---	---	---

Concentrations are reported in micrograms per gram.

--- Not detected above background concentration.

C Analysis was confirmed.

D Duplicate analysis

L Interferences in sample make quantification and/or identification to be suspect.

X Analyte recovery outside of certified range, but within acceptable limits.

MEK Methyl ethyl ketone.

bgs Below ground surface.

Explosives A total of 9 explosives were analyzed for in the soil samples. Explosives not detected, except those shown on this table.

PCH Polychlorinated biphenyls (A total of 6 PCB target compounds were analyzed for in the soil samples. Target PCBs not detected, except those shown on this table).

TVH Total volatile hydrocarbons.

VOCS Volatile organic compounds (A total of 33 VOC target compounds were analyzed for In the soil samples. Target VOCs not detected, except those shown on this table).

* Of the 64 semivolatile and 21 pesticide target compounds analyzed, no semivolatile or pesticide target compounds were detected.

Table 2.3: Summary of Metal Concentrations in Surface Soil that are Greater than Background Concentrations - Site 17 (DOL Vehicle Maintenance Motor Pool [Building 1029])

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Sample Number			
			17MPSS001	17MPSS002	17MPSS003	17MPSS004
Aluminum	26,400 to 91,500	56,400	---	---	---	---
Antimony	ND	6	---	---	---	---
Arsenic	2.29 to 55.2	18.0	---	---	---	---
Barium	ND to 81.2	35.5	63.8	56.5	64.9	55.2
Beryllium	2.11 to 3.42	1.69	---	---	---	---
Cadmium	ND to 1.77	0.89	1.90	2.09	2.80	8.35
Calcium	ND to 186,000	34,600	---	---	55,100	129,000
Chromium	71.6 to 614	400	---	---	---	---
Cobalt	ND to 68.4	22.5	33.3	36.8	28.6	23.4
Copper	50.1 to 149	105	---	---	--	---
Cyanide	ND to 3.23	1.43	---	---	---	---
Iron	56,600 to 330,000	206,000	---	---	---	---
Lead	5.55 to 61.4	32.0	51.0	320	170	170
Magnesium	ND to 15,100	3570	8160	8010	9620	9370
Manganese,	265 to 9700	3160	---	---	---	---
Mercury	ND to 0.86	0.53	---	---	---	---
Nickel	26.0 to 176	87.7	127	98.8	115	---
Potassium	ND to 1510	773	---	---	---	---
Selenium	1.66 to 11.4	5.35	---	---	---	---
Silver	ND to 3.19	1.56	---	---	---	---
Sodium	ND to 1280	634	1120	1210	1450	1650
Thallium	ND	1	---	---	---	---
Vanadium	116 to 695	475	---	---	---	---
Zinc	64.8 to 308	142	---	---	245	229

Concentrations are reported in milligrams per kilogram.

- Not detected above background concentration
- ND Not detected at laboratory's instrument detection limit
- UCL Upper confidence limit

Table 2.4: Summary of Metal Concentrations In Subsurface Soil that are Greater than Background Concentrations - Site 17 (DOL Vehicle Maintenance Motor Pool [Building 10291])

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentrations	Boring Number and Sample Depth (feet)					
			17MPSB001			17MPSB002		
			2.5	9.5	19.5	2.5	9.0	19.5
Aluminum	ND to 125,000	96,100	---	---	---	115,000	---	115,000
Antimony	ND to 21.4	7.83	---	---	---	---	---	---
Arsenic	ND to 25.3	8.97	9.87	---	---	90.0 IJ	---	---
Barium	ND to 107	32.0	96.3	---	---	80.1	55.8	---
Beryllium	ND to 20.5	3.26	---	---	---	---	---	---
Cadmium	ND to 2.81	0.96	---	---	---	---	---	---
Calcium	ND to 32,900	3520	33,100	---	---	---	---	---
Chromium	ND to 1090	465	---	---	644	---	---	---
Cobalt	ND to 95.3	19.4	102	---	26.5	73.1	21.6	28.6
Copper	ND to 161	107	148	---	139	153	---	133
Cyanide	ND	1.05	---	---	---	---	---	---
Iron	ND to 294,000	188,000	---	---	---	---	---	---
Lead	ND to 62.9	18.3	34.3	21.4	---	---	---	---
Magnesium	ND to 2720	693	3540	---	---	---	---	---
Mangnese	ND to 16,000	2240	14,000	---	---	3660	---	---
Mercury	ND to 1.25	0.49	---	---	---	---	---	---
Nickel	ND to 244	126	---	---	353	168	153	253
Potassium	ND to 1250	565	---	---	---	---	---	---
Selenium	ND to 11.4	5.75	---	---	6.44	---	---	---
Silver	ND to 3.84	1.33	---	---	---	---	---	---
Sodium	ND	500	---	---	---	---	---	---
Thallium	ND	1	---	---	---	---	---	---
Vanadium	ND to 745	424	---	---	---	---	---	442
Zinc	ND to 158	90.4	105	---	---	165	140	101

Table 2.4 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentrations	Boring Number and Sample Depth (feet)					
			17MPSB003			17MPSB004		
			3.5	9.5	14.5	2.0	9.5	19.5
Aluminum	ND to 125,000	96,100	---	---	---	---	---	---
Antimony	ND to 21.4	7.83	---	---	---	---	---	---
Arsenic	ND to 25.3	8.97	---	---	22.0IJ	9.84	12.0JP	19.0IJ
Barium	ND to 107	32.0	---	---	---	63.2	---	---
Beryllium	ND to 20.5	3.26	---	---	---	---	---	---
Cadmium	ND to 2.81	0.96	---	---	---	---	---	---
Calcium	ND to 32,900	3520	---	---	---	---	---	---
Chromium	ND to 1090	465	---	---	---	---	---	601
Cobalt	ND to 95.3	19.4	134	---	---	71.5	---	---
Copper	ND to 161	107	124	---	---	133	136	147
Cyanide	ND	1.05	---	---	---	---	---	---
Iron	ND to 294,000	188,000	---	---	---	---	---	---
Lead	ND to 62.9	18.3	---	---	---	---	---	24.7
Magnesium	ND to 2720	693	---	---	---	---	---	---
Manganese	ND to 16,000	2240	3510	---	---	5020	---	---
Mercury	ND to 1.25	0.49	0.541	---	---	---	---	---
Nickel	ND to 244	126	---	---	---	---	331	183
Potassium	ND to 1250	565	---	---	---	---	---	---
Selenium	ND to 11.4	5.75	---	---	---	---	---	---
Silver	ND to 3.84	1.33	---	---	---	---	---	---
Sodium	ND	500	---	---	---	---	---	---
Thallium	ND	1	---	---	---	---	---	---
Vanadium	ND to 745	424	---	---	---	---	---	---
Zinc	ND to 158	90.4	101	92.0	132	137	143	---

Concentrations are reported in milligrams per kilogram.

--- Not detected above background concentration

I Interferences in sample make quantitation and/or identification suspect

J Value is estimated

ND Not detected above laboratory's instrument detection limit

P Value is less than the method reporting limit but greater than the instrument detection limit

UCL Upper confidence limit

Table 2.5. Summary of Metal Concentrations In Surface Soil that are Greater than Background Concentrations - Site 18 (Distribution Warehouse [Building 1052])

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Sample Number		
			18DWSS001	IODWSS002	18DWSS003
Aluminum	26,400 to 91,500	56,400	79,100	80,600	66,700
Antimony	ND	6	---	---	---
Arsenic	2.29 to 55.2	18.0	---	---	---
Barium	ND to 81.2	35.5	63.7	97.2	84.4
Beryllium	2.11 to 3.42	1.69	2.35	2.16	1.93
Cadmium	ND to 1.77	0.89	---	2.01	1.87
Calcium	ND to 186,000	34,600	---	---	---
Chromium	71.6 to 614	400	---	---	---
Cobalt	ND to 68.4	22.5	49.9	61.3	47.5
Copper	50.1 to 149	105	124	154	143
Cyanide	ND to 3.23	1.43	---	---	---
Iron	56,600 to 330,000	206,000	---	---	---
Lead	5.55 to 61.4	32.0	---	100	75.0
Magnesium	ND to 15,100	3570	---	---	---
Manganese	265 to 9700	3160	3580	9100	6300
Mercury	ND to 0.86	0.53	---	---	---
Nickel	26.0 to 176	87.7	101	116	105
Potassium	ND to 1510	773	---	---	---
Selenium	1.68 to 11.4	5.35	---	---	---
Silver	ND to 3.19	1.56	---	---	---
Sodium	ND to 1280	634	---	---	---
Thallium	ND	1	---	---	---
Vanadium	116 to 695	475	---	---	---
Zinc	64.8 to 308	142	174	237	191

Concentrations are reported in milligrams per kilogram.

- Not detected above background concentration
- ND Not detected above laboratory's instrument detection limit
- UCL Upper confidence limit

Table 2.6. Summary of Metal Concentrations In Subsurface Soil that are Greater than Background Concentrations - Site 18 (Distribution Warehouse (Building 1052])

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Soil Sample Depth (feet)					
			18DWSB001			IBDWPSB002		
			2.5	15.5	19.5	2.5	9.5	19.5
Aluminum	ND to 125,000	96,100	---	---	---	---	---	---
Antimony	ND to 21.4	7.83	---	---	---	---	---	---
Arsenic	ND to 25.3	8.97	13.0 JP	---	---	---	---	---
Barium	ND to 107	32.0	---	---	---	---	---	---
Beryllium	ND to 2.05	3.26	---	---	---	---	---	---
Cadmium	ND to 2.81	0.96	---	---	---	---	---	---
Calcium	ND to 32,900	3520	---	---	---	---	---	---
Chromium	ND to 1090	465	---	---	---	---	---	---
Cobalt	ND to 95.3	19.4	---	---	---	30.2	---	---
Copper	ND to 161	107	---	---	---	---	---	---
Cyanide	ND	1.05	---	---	4.48	---	---	---
Iron	ND to 294,000	188,000	---	---	---	---	---	---
Lead	ND to 62.9	18.3	37.0	---	---	---	---	---
Magnesium	ND to 2720	693	---	---	---	---	---	---
Manganese	ND to 16,000	2240	---	---	---	---	---	---
Mercury	ND to 1.25	0.49	---	---	---	---	---	---
Nickel	ND to 244	126	---	---	---	---	---	---
Potassium	ND to 1250	565	---	---	---	---	---	---
Selenium	ND to 11.4	5.75	13.0IJ	---	---	---	---	---
Silver	ND to 3.84	1.33	---	---	---	---	---	---
Sodium	ND	500	---	---	---	---	---	---
Thallium	ND	1	---	---	---	---	---	---
Vanadium	ND to 745	424	---	---	---	---	---	---
Zinc	ND to 158	90.4	93.4	---	---	99.5	145	---

Table 2.6 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	18DWSB003			18DWPSB004		
			2.5	9.5	19.5	2.5	9.5	19.5
Aluminum	ND to 125,000	96,100	105,000	---	---	---	---	---
Antimony	ND to 21.4	7.83	---	---	---	---	---	---
Arsenic	ND to 25.3	8.97	9.95	---	---	10.0JP	10.0JP	---
Barium	ND to 107	32.0	---	---	---	---	---	---
Beryllium	ND to 20.5	3.26	---	---	---	---	---	---
Cadmium	ND to 2.81	0.96	---	---	---	---	---	---
Calcium	ND to 32,900	3520	15,900	---	---	---	---	---
Chromium	ND to 1090	465	---	---	---	---	481	---
Cobalt	ND to 95.3	19.4	62.2	---	---	56.9	---	---
Copper	ND to 161	107	141	---	---	---	---	---
Cyanide	ND	1.05	---	---	---	---	---	---
Iron	ND to 294,000	188,000	---	---	---	---	---	---
Lead	ND to 62.9	18.3	24.5	---	---	---	---	---
Magnesium	ND to 2720	693	1770	---	---	---	---	---
Manganese	ND to 16,000	2240	6280	---	---	---	---	---
Mercury	ND to 1.25	0.49	---	---	---	0.531	---	---
Nickel	ND to 244	126	---	---	---	---	158	---
Potassium	ND to 1250	565	---	---	---	---	---	---
Selenium	ND to 11.4	5.75	---	---	---	---	---	---
Silver	ND to 3.84	1.33	---	---	---	---	---	---
Sodium	ND	500	---	---	---	---	---	---
Thallium	ND	1	---	---	---	---	---	---
Vanadium	ND to 745	42.4	---	---	---	---	---	---
Zinc	ND to 158	90.4	145	138	---	91.8	105	---

Table 2.6 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Soil Sample Depth (feet)				
			5.0.	7.5	18.0	38.0	58.0
Aluminum	ND to 125,000	96,100	---	102,000	---	97,400	---
Antimony	ND to 21.4	7.83	---	---	---	---	17.8
Arsenic	ND to 25.3	8.97	---	---	---	---	---
Barium	ND to 107	32.0	---	65.7	---	---	320
Beryllium	ND to 20.5	3.26	---	---	---	---	---
Cadmium	ND to 2.81	0.96	---	---	---	---	---
Calcium	ND to 32,900	3520	---	---	---	---	---
Chromium	ND to 1090	465	---	---	---	781	---
Cobalt	ND to 95.3	19.4	---	---	---	---	160
Copper	ND to 161	107	109	135	117	121	218
Cyanide	ND	1.05	---	---	---	---	---
Iron	ND to 294,000	188,000	---	---	---	199,000	---
Lead	ND to 62.9	18.3	---	---	---	---	---
Magnesium	ND to 2720	693	---	---	---	---	---
Manganese	ND to 16,000	2240	---	---	---	---	---
Mercury	ND to 1.25	0.49	---	---	---	---	---
Nickel	ND to 244	126	---	293	142	728	409
Potassium	ND to 1250	565	---	---	---	---	---
Selenium	ND to 11.4	5.75	---	---	---	---	---
Silver	ND to 3.84	1.33	---	---	---	---	---
Sodium	ND	500	---	---	---	---	---
Thallium	ND	1	---	---	---	---	---
Vanadium	ND to 745	424	---	---	---	---	---
Zinc	ND to 158	90.4	---	213	---	106	---

Concentrations are reported in milligrams per kilogram.

- Not detected above background concentration
- I Interferences in sample make quantitation, and/or identification suspect
- J Value is estimated
- P Value is less than the method reporting limit but greater than the instrument detection limit
- UCL Upper confidence limit

Table 2.7: Summary of Metal Concentrations In Surface Soil that are Greater than Background Concentrations - Site 20 (Petroleum, Oil, and Lubricants Area [Area R])

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Sample Number		
			20ARSS001	20ARSS002	20ARSS003
Aluminum	26,400 to 91,500	56,400	---	62,700	---
Antimony	ND	6	---	---	---
Arsenic	2.29 to 55.2	18.0	27.0	---	---
Barium	ND to 81.2	35.5	225	104	88.2
Beryllium	2.11 to 3.42	1.69	---	1.83	---
Cadmium	ND to 1.77	0.89	1.59	1.41	---
Calcium	ND to 186,000	34,600	148,000	43,200	44,300
Chromium	71.6 to 614	400	---	---	---
Cobalt	ND to 68.4	22.5	42.8	44.7	41.4
Copper	50.1 to 149	105	380	125	---
Cyanide	ND to 3.23	1.43	---	---	---
Iron	56,600 to 330,000	206,000	---	---	---
Lead	5.55 to 61.4	32.0	120	32.7	84.0
Magnesium	ND to 15,100	3570	5430	---	---
Manganese	265 to 9700	3160	3690	11,000	---
Mercury	ND to 0.86	0.53	---	---	---
Nickel	26.0 to 176	87.7	102	202	112
Potassium	ND to 1510	773	---	---	---
Selenium	1.68 to 11.4	5.35	---	---	---
Silver	ND to 3.19	1.56	---	---	---
Sodium	ND to 1280	634	---	---	---
Tallium	ND	1	---	---	---
Vanadium	116 to 695	475	---	---	---
Zinc	64.8 to 308	142	452	---	---

Concentrations are reported in milligrams per kilogram

--- Not detected above background concentration

ND Not detected above laboratory's instrument detection level

UCL Upper confidence limit concentrations for background surface soil samples

Table 2.8.- Summary of Metal Concentrations In Subsurface Soil that are Greater than Background Concentrations - Site 20 (Petroleum, Oil, and Lubricants Area [Area R])

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Soil Sample Depth (feet)				
			ZOARSB001				
			2.5	9.0	19.0	39.0	59.0
Aluminum	ND to 125,000	96,100	---	116,000	---	---	---
Antimony	ND to 21.4	7.83	---	---	---	---	---
Arsenic	ND to 25.3	8.97	---	---	---	---	---
Barium	ND to 107	32.0	88.1	249	75.4	---	178
Beryllium	ND to 20.5	3.26	---	---	---	---	---
Cadmium	ND to 2.81	0.96	---	---	---	---	---
Calcium	ND to 32,900	3520	8480	---	---	---	---
Chromium	ND to 1090	465	---	507	1360	---	---
Cobalt	ND to 95.3	19.4	22.7	33.9	23.4	---	135
Copper	ND to 161	107	123	274	284	114	145
Cyanide	ND	1.05	---	---	---	---	---
Iron	ND to 294,000	188,000	---	---	---	---	---
Lead	ND to 62.9	18.3	61.2	---	---	---	---
Magnesium	ND to 2720	693	1410	---	---	---	---
Manganese	ND to 16,000	2240	---	---	---	---	4520
Mercury	ND to 1.25	0.49	---	---	---	---	---
Nickel	ND to 244	126	199	444	340	180	137
Potassium	ND to 1250	565	---	---	---	---	---
Selenium	ND to 11.4	5.75	---	---	---	---	---
Silver	ND to 3.84	1.33	---	---	---	---	---
Sodium	ND	500	---	---	---	---	---
Thallium	ND	1	---	---	---	---	---
Vanadium	ND to 745	424	---	---	---	---	---
Zinc	ND to 158	90.4	183	107	---	---	---

Table 2.8 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Soil Sample Depth (feet)						
			20ARSBO02						
			2.5	9.0	19.0	39.0	59.0	79.0	99.0
Aluminum	ND to 125,000	96,100	---	---	---	---	97,300	---	---
Antimony	ND to 2.14	7.83	---	---	---	---	---	---	---
Arsenic	ND to 25.3	8.97	---	---	---	---	---	---	---
Barium	ND to 107	32.0	---	---	---	115	112	111	129
Beryllium	ND to 20.5	3.26	---	---	---	---	---	---	---
Cadmium	ND to 2.81	0.96	---	---	---	---	---	---	---
Calcium	ND to 32,900	3520	---	---	---	---	---	---	---
Chromium	ND to 1090	465	547	530	---	---	---	---	---
Cobalt	ND to 95.3	19.4	23.6	25.6	---	27.0	47.0	71.3	51.6
Copper	ND to 161	107	---	---	---	---	239	147	109
Cyanide	ND	1.05	---	---	---	---	---	---	---
Iron	ND to 294,000	188,000	---	---	---	---	---	---	---
Lead	ND to 62.9	18.3	---	---	---	---	---	---	---
Magnesium	ND to 2720	693	---	---	---	3080	4130	3410	---
Manganese	ND to 16,000	2240	2570	---	---	---	---	---	---
Mercury	ND to 1.25	0.49	---	---	---	---	---	---	---
Nickel	ND to 244	126	286	286	145	224	609	440	389
Potassium	ND to 1250	565	---	---	---	---	---	---	---
Selenium	ND to 11.4	5.75	---	---	---	---	---	---	---
Silver	ND to 3.84	1.33	---	---	---	---	---	---	---
Sodium	ND	500	---	---	---	---	---	---	---
Thallium	ND	1	---	---	---	---	---	---	---
Vanadium	ND to 745	424	---	---	---	---	---	---	---
Zinc	ND to 158	90.4	103	---	---	---	257	183	132

Table 2.8 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Soil Sample Depth (feet)						
			2.5	9.0	20ARSBO02			79.0	99.0
					19.0	39.0	59.0		
Aluminum	ND to 125,000	96,100	---	---	---	---	---	---	---
Antimony	ND to 2.14	7.83	---	---	---	---	---	---	---
Arsenic	ND to 25.3	8.97	---	---	---	---	---	---	---
Barium	ND to 107	32.0	88.9	---	---	---	---	64.3	64.3
Beryllium	ND to 20.5	3.26	---	---	---	---	---	---	---
Cadmium	ND to 2.81	0.96	---	---	---	---	---	---	---
Calcium	ND to 32,900	3520	91,900	---	---	---	---	---	---
Chromium	ND to 1090	465	---	778	1030	---	---	---	526
Cobalt	ND to 95.3	19.4	46.6	---	---	---	---	19.7	---
Copper	ND to 161	107	---	---	---	---	---	114	---
Cyanide	ND	1.05	---	---	---	---	---	---	---
Iron	ND to 294,000	188,000	---	---	189,000	---	---	---	---
Lead	ND to 62.9	18.3	---	---	---	---	---	---	---
Magnesium	ND to 2720	693	5640	---	---	---	---	---	---
Manganese	ND to 16,000	2240	11,000	---	---	---	---	---	---
Mercury	ND to 1.25	0.49	---	---	---	---	---	---	---
Nickel	ND to 244	126	---	337	554	294	---	---	260
Potassium	ND to 1250	565	---	---	---	---	---	---	---
Selenium	ND to 11.4	5.75	---	---	---	---	---	---	---
Silver	ND to 3.84	1.33	---	---	---	---	---	---	---
Sodium	ND	500	---	---	---	---	---	---	---
Thallium	ND	1	---	---	---	---	---	---	---
Vanadium	ND to 745	424	---	---	---	---	---	---	---
Zinc	ND to 158	90.4	---	---	---	---	---	---	---

--- Not detected above background concentration

ND Not detected above laboratory's instrument detection level

UCL Upper confidence limit concentrations for background surface soil samples

Table 2.9: Summary of Metal Concentrations In Subsurface Soil that are Greater than Background Concentrations - Site 25 (Auto Craft Shop [Building 910])

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Soil Sample Depth (feet)		
			2.5	9.5	19.5
Aluminum	ND to 125,000	96,100	---	---	---
Antimony	ND to 21.4	7.83	---	---	---
Arsenic	ND to 25.3	8.97	14.8	---	---
Barium	ND to 107	32.0	273	---	---
Beryllium	ND to 20.5	3.26	---	---	---
Cadmium	ND to 2.81	0.96	2.12	---	---
Calcium	ND to 32,900	3520	11,300	7230	---
Chromium	ND to 1090	465	---	---	---
Cobalt	ND to 95.3	19.4	121	---	---
Copper	ND to 161	107	156	---	124
Cyanide	ND	1.05	---	---	---
Iron	ND to 294,000	188,000	---	---	---
Lead	ND to 62.9	18.3	19.1	---	---
Magnesium	ND to 2720	693	2740	1360	---
Manganese	ND to 16,000	2240	5900	---	---
Mercury	ND to 1.25	0.49	---	---	---
Nickel	ND to 244	126	446	145	134
Potassium	ND to 1250	565	1660	---	---
Selenium	ND to 11.4	5.75	---	8.20 IJ	11.0 IJ
Silver	ND to 3.84	1.33	---	---	---
Sodium	ND	500	---	---	---
Thallium	ND	1	---	---	---
Vanadium	ND to 745	424	---	---	---
Zinc	ND to 158	90.4	209	---	---

Table 2.9 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Soil Sample Depth (feet)			
			2.5	4.5	25ACSB002 14.5	19.5
Aluminum	ND to 125,000	96,100	---	---	---	---
Antimony	ND to 21.4	7.83	---	---	---	---
Arsenic	ND to 25.3	8.97	10.6	---	---	---
Barium	ND to 107	32.0	---	---	---	---
Beryllium	ND to 20.5	3.26	---	---	---	---
Cadmium	ND to 2.81	0.96	1.46	---	1.81	---
Calcium	ND to 32,900	3520	4500	---	---	---
Chromium	ND to 1090	465	---	---	---	---
Cobalt	ND to 95.3	19.4	---	---	---	---
Copper	ND to 161	107	---	---	---	---
Cyanide	ND	1.05	---	---	---	---
Iron	ND to 294,000	188,000	---	---	---	---
Lead	ND to 62.9	18.3	24.0	18.9	---	---
Magnesium	ND to 2720	693	1420	---	---	---
Manganese	ND to 16,000	2240	---	---	---	---
Mercury	ND to 1.25	0.49	0.883	0.863	---	---
Nickel	ND to 244	126	---	145	---	---
Potassium	ND to 1250	565	---	---	---	---
Selenium	ND to 11.4	5.75	6.20 JP	---	11.0IJ	8.80 IJ
Silver	ND to 3.84	1.33	---	---	---	---
Sodium	ND	500	---	---	---	---
Thallium	ND	1	---	---	---	---
Vanadium	ND to 745	424	---	---	---	---
Zinc	ND to 158	90.4	101	94.8	---	---

Table 2.9 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Soil Sample Depth (feet)		
			2.5	25ACSB003 13.5	18.5
Aluminum	ND to 125,000	96,100	---	---	---
Antimony	ND to 21.4	7.83	---	---	---
Arsenic	ND to 25.3	8.97	15.2	---	---
Barium	ND to 107	32.0	222	---	---
Beryllium	ND to 20.5	3.26	---	---	---
Cadmium	ND to 2.81	0.96	1.40	---	---
Calcium	ND to 32,900	3520	8230	---	---
Chromium	ND to 1090	465	---	---	500
Cobalt	ND to 95.3	19.4	85.9	---	---
Copper	ND to 161	107	108	---	---
Cyanide	ND	1.05	---	---	---
Iron	ND to 294,000	188,000	---	---	---
Lead	ND to 62.9	18.3	---	---	---
Magnesium	ND to 2720	693	2260	---	---
Manganese	ND to 16,000	2240	3440	---	---
Mercury	ND to 1.25	0.49	---	0.803	---
Nickel	ND to 244	126	319	158	198
Potassium	ND to 1250	565	1450	---	---
Selenium	ND to 11.4	5.75	---	---	---
Silver	ND to 3.84	1.33	---	---	---
Sodium	ND	500	---	---	---
Thallium	ND	1	---	---	---
Vanadium	ND to 745	424	---	---	---
Zinc	ND to 158	90.4	220	----	-

Concentrations are reported in milligrams per kilogram.

--- Not detected above background concentration

I Interferences in sample make quantitation and/or identification to be suspect

J Concentration is estimated

ND Not detected above laboratory's instrument detection level (IDL)

P Concentration is less than the reporting limit, but greater than the IDL

UCL Upper confidence limit concentrations for background surface soil samples

Table 2.10: Summary of Metal Concentrations In Subsurface Soil that are Greater than Background Concentrations - Site 42 (Maintenance Area [Building 387])

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Soil Sample Depth (feet)		
			2.5	42MASB001 9.0	19.5
Aluminum	ND to 125,000	96,100	---	116,000	---
Antimony	ND to 21.4	7.83	---	---	---
Arsenic	ND to 25.3	8.97	---	10.0 JP	---
Barium	ND to 107	32.0	---	---	---
Beryllium	ND to 20.5	3.26	---	---	---
Cadmium	ND to 2.81	0.96	---	---	---
Calcium	ND to 32,900	3520	---	---	---
Chromium	ND to 1090	465	---	499	---
Cobalt	ND to 95.3	19.4	---	28.2	19.8
Copper	ND to 161	107	130	150	---
Cyanide	ND	1.05	---	---	---
Iron	ND to 294,000	188,000	---	---	---
Lead	ND to 62.9	18.3	---	---	---
Magnesium	ND to 2720	693	---	---	---
Manganese	ND to 16,000	2240	---	---	---
Mercury	ND to 1.25	0.49	0.610	---	---
Nickel	ND to 244	126	130	197	---
Potassium	ND to 1250	565	1370	---	---
Selenium	ND to 11.4	5.75	6.06	---	---
Silver	ND to 3.84	1.33	---	---	---
Sodium	ND	500	---	---	---
Thallium	ND	1	---	---	---
Vanadium	ND to 745	424	---	---	---
Zinc	ND to 158	90.4	125	143	—

Table 2.10 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Soil Sample Depth (feet)				
			2.5	8.5	25MASB002		59.5
					19.5	39.0	
Aluminum	ND to 125,000	96,100	---	101,000	---	110,000	108,000
Antimony	ND to 21.4	7.83	---	---	---	---	---
Arsenic	ND to 25.3	8.97	---	---	---	---	---
Barium	ND to 107	32.0	---	---	---	516	106
Beryllium	ND to 20.5	3.26	---	---	---	---	---
Cadmium	ND to 2.81	0.96	---	---	---	---	---
Calcium	ND to 32,900	3520	4100	---	---	---	---
Chromium	ND to 1090	465	---	---	---	---	622
Cobalt	ND to 95.3	19.4	---	---	---	27.5	---
Copper	ND to 161	107	---	112	---	---	---
Cyanide	ND	1.05	---	---	---	---	---
Iron	ND to 294,000	188,000	---	---	---	---	---
Lead	ND to 62.9	18.3	37.6	---	---	---	---
Magnesium	ND to 2720	693	---	---	---	---	---
Manganese	ND to 16,000	2240	---	---	---	2850	---
Mercury	ND to 1.25	0.49	---	---	---	---	---
Nickel	ND to 244	126	---	131	---	215	398
Potassium	ND to 1250	565	---	---	---	---	---
Selenium	ND to 11.4	5.75	---	---	12.6	---	---
Sliver	ND to 3.84	1.33	---	---	---	---	---
Sodium	ND	500	---	---	---	---	---
Thallium	ND	1	---	---	---	---	---
Vanadium	ND to 745	424	---	---	---	---	---
Zinc	ND to 158	90.4	102	128	---	---	---

Concentrations are reported in milligrams per kilogram.

--- Not detected above background concentration

J Concentration is estimated

ND Not detected above laboratory's instrument detection limit (IDL)

P Concentration is less than the reporting limit, but greater than the IDL

UCL Upper confidence limit concentrations for background surface soil samples

Table 2.11: Summary of Metal Concentrations In Surface Soil that are Greater than Background Concentrations - Site 50 (Old Burn Area)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Sample Number			
			50BASS001	50BASS002	50BASS003	50BASS004
Aluminum	264,00 to 91,500	56,400	74,300	76,300	69,400	83,400
Antimony	ND	6	---	---	---	---
Arsenic	2.29 to 55.2	18.0	---	---	---	---
Barium	ND to 81.2	35.5	71.3	---	87.5	50.8
Beryllium	2.11 to 3.42	1.69	---	1.83	---	---
Cadmium	ND to 1.77	0.89	1.82	---	---	1.32
Calcium	ND to 186,000	34,600	---	---	---	---
Chromium	7.16 to 614	400	---	---	---	---
Cobalt	ND to 68.4	22.5	65.6	46.7	51.7	104
Copper	50.1 to 149	105	112	107	112	117
Cyanide	ND to 3.23	1.43	---	---	---	---
Iron	56,600 to 330,000	206,000	---	---	---	---
Lead	5.55 to 61.4	32.0	35.8	76.8	52.8	---
Magnesium	ND to 15,100	3570	---	---	---	---
Manganese	265 to 9700	3160	5700	---	6200	4900
Mercury	ND to 0.86	0.53	0.584	---	---	---
Nickel	26.0 to 176	87.7	167	204	167	211
Potassium	ND to 1510	773	1460	---	1820	---
Selenium	1.68 to 11.4	5.35	---	---	---	---
Silver	ND to 3.19	1.56	---	---	---	---
Sodium	ND to 1280	634	---	---	---	---
Thallium	ND	1	---	---	---	---
Vanadium	116 to 695	475	---	---	---	---
Zinc	64.8 to 308	142	144	---	---	---

Table 2.11 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Sample Number		
			50BASS005	50BASS006	50BASS007
Aluminum	264,00 to 91,500	56,400	67,600	78,100	75,300
Antimony	ND	6	—	—	---
Arsenic	2.29 to 55.2	18.0	—	—	---
Barium	ND to 81.2	35.5	—	79.7	93.0
Beryllium	2.11 to 3.42	1.69	—	—	---
Cadmium	ND to 1.77	0.89	—	—	---
Calcium	ND to 186,000	34,600	—	—	---
Chromium	7.16 to 614	400	452	—	---
Cobalt	ND to 68.4	22.5	26.6	124	78.8
Copper	50.1 to 149	105	—	136	129
Cyanide	ND to 3.23	1.43	—	—	---
Iron	56,600 to 330,000	206,000	—	—	---
Lead	5.55 to 61.4	32.0	—	42.7	78.7
Magnesium	ND to 15,100	3570	—	—	---
Manganese	265 to 9700	3160	—	8200	6600
Mercury	ND to 0.86	0.53	—	—	---
Nickel	26.0 to 176	87.7	211	228	233
Potassium	ND to 1510	773	—	—	1220
Selenium	1.68 to 11.4	5.35	—	—	---
Silver	ND to 3.19	1.56	—	—	---
Sodium	ND to 1280	634	—	—	---
Thallium	ND	1	—	—	---
Vanadium	116 to 695	475	—	—	---
Zinc	64.8 to 308	142	—	—	---

Concentrations are reported in milligrams per kilogram.

- Not detected above background concentration
- ND Not detected above laboratory's instrument detection limit
- UCL Upper confidence limit

Table 2.12: Summary of Metal Concentrations In Subsurface Soil that are Greater than Background Concentrations - Site 50 (Old Burn Area)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Sample Depth (feet)					
			50BASBOOI			50BASR002		
			2.5	9.5	19.5	2.5	9.0	19.5
Aluminum	ND to 125,000	96,100	136,000	—	109,000	—	—	—
Antimony	ND to 21.4	7.83	---	—	—	—	---	---
Arsenic	ND to 25.3	8.97	11.3	9.00	JP 9.09	—	—	---
Barium	ND to 107	32.0	---	---	97.8	—	---	---
Beryllium	ND to 20.5	3.26	---	—	---	—	—	---
Cadmium	ND to 2.81	0.96	---	---	---	1.42	—	---
Calcium	ND to 32,900	3520	---	---	—	—	—	---
Chromium	ND to 1090	465	490	982	853	---	761	1240
Cobalt	ND to 95.3	19.4	42.6	—	---	57.9	---	---
Copper	ND to 161	107	147	---	—	211	114	---
Cyanide	ND	1.05	---	—	—	—	—	---
Iron	ND to 294,000	188,000	---	---	---	—	—	224,000
Lead	ND to 62.9	18.3	22.5	---	---	51.3	—	---
Magnesium	ND to 2720	693	---	---	—	3770	—	---
Manganese	ND to 16,000	2240	—	—	—	7000	—	---
Mercury	ND to 1.25	0.49	0.856	—	—	0.566	0.497	---
Nickel	ND to 244	126	324	406	1060	232	264	435
Potassium	ND to 1250	565	---	—	—	1310	—	---
Selenium	ND to 11.4	5.75	—	---	7.00	JP —	7.80	IJ 7.00 JP
Silver	ND to 3.84	1.33	—	—	—	—	---	---
Sodium	ND	500	---	---	---	---	—	---
Thallium	ND	1	---	—	---	---	—	---
Vanadium	ND to 745	424	---	---	—	—	—	---
Zinc	ND to 158	90.4	131	—	—	151	—	—

Table 2.12 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Sample Depth (feet)				
			50BASB003				
			2.5	8.5	19.0	39.0	59.0
Aluminum	ND to 125,000	96,100	---	---	---	---	---
Antimony	ND to 21.4	7.83	---	---	---	---	---
Arsenic	ND to 25.3	8.97	---	---	---	---	---
Barium	ND to 107	32.0	---	---	---	---	---
Beryllium	ND to 20.5	3.26	---	---	---	---	---
Cadmium	ND to 2.81	0.96	---	---	---	---	---
Calcium	ND to 32,900	3520	---	---	---	---	---
Chromium	ND to 1090	465	---	637	---	---	---
Cobalt	ND to 95.3	19.4	139	---	---	---	---
Copper	ND to 161	107	127	---	110	---	---
Cyanide	ND	1.05	---	---	---	---	---
Iron	ND to 294,000	188,000	---	---	---	---	---
Lead	ND to 62.9	18.3	---	---	---	---	---
Magnesium	ND to 2720	693	---	---	---	---	---
Manganese	ND to 16,000	2240	4210	---	---	---	---
Mercury	ND to 1.25	0.49	---	---	---	---	---
Nickel	ND to 244	126	392	306	221	196	131
Potassium	ND to 1250	565	---	---	---	---	---
Selenium	ND to 11.4	5.75	---	---	---	---	---
Silver	ND to 3.84	1.33	---	---	---	---	---
Sodium	ND	500	---	---	---	---	---
Thallium	ND	1	---	---	---	---	---
Vanadium	ND to 745	424	---	---	---	---	---
Zinc	ND to 158	90.4	112	---	---	---	---

Table 2.12 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Sample Depth (feet)				
			4.5	9.5	25.5	39.5	49.0
Aluminum	ND to 125,000	96,100	---	109,000	---	—	109,000
Antimony	ND to 21.4	7.83	---	---	---	—	---
Arsenic	ND to 25.3	8.97	---	---	---	---	---
Barium	ND to 107	32.0	---	---	---	---	405
Beryllium	ND to 20.5	3.26	---	---	---	---	---
Cadmium	ND to 2.81	0.96	---	---	---	—	---
Calcium	ND to 32,900	3520	---	---	---	—	---
Chromium	ND to 1090	465	---	636	---	—	532
Cobalt	ND to 95.3	19.4	---	---	---	---	---
Copper	ND to 161	107	---	---	---	---	181
Cyanide	ND	1.05	---	---	---	---	---
Iron	ND to 294,000	188,000	---	---	---	---	---
Lead	ND to 62.9	18.3	---	---	---	---	---
Magnesium	ND to 2720	693	---	---	---	---	---
Manganese	ND to 16,000	2240	---	---	---	---	2300
Mercury	ND to 1.25	0.49	---	---	---	---	---
Nickel	ND to 244	126	207	526	146	—	507
Potassium	ND to 1250	565	---	---	---	—	---
Selenium	ND to 11.4	5.75	---	---	---	—	---
Silver	ND to 3.84	1.33	---	---	---	—	---
Sodium	ND	500	---	---	---	—	---
Thallium	ND	1	---	---	---	—	---
Vanadium	ND to 745	424	---	---	---	—	---
Zinc	ND to 158	90.4	---	---	---	—	—

Table 2.12 (continued)

Boring Number and Sample Depth (feet)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	50BASB005				
			3.5	9.5	19.5	39.0	58.5
Aluminum	ND to 125,000	96,100	---	---	---	117,000	119,000
Antimony	ND to 21.4	7.83	---	---	---	---	---
Arsenic	ND to 25.3	8.97	---	---	---	---	---
Barium	ND to 107	32.0	---	---	---	81.1	186
Beryllium	ND to 20.5	3.26	---	---	---	---	---
Cadmium	ND to 2.81	0.96	---	---	---	---	---
Calcium	ND to 32,900	3520	---	---	---	---	---
Chromium	ND to 1090	465	---	861	---	---	541
Cobalt	ND to 95.3	19.4	29.3	---	---	---	46.2
Copper	ND to 161	107	—	146	111	120	232
Cyanide	ND	1.05	—	---	---	---	---
Iron	ND to 294,000	188,000	---	193,000	---	---	---
Lead	ND to 62.9	18.3	---	---	---	---	---
Magnesium	ND to 2720	693	---	---	---	---	---
Manganese	ND to 16,000	2240	---	---	---	---	---
Mercury	ND to 1.25	0.49	---	---	---	---	---
Nickel	ND to 244	126	221	385	---	254	355
Potassium	ND to 1250	565	---	---	---	---	---
Selenium	ND to 11.4	5.75	---	---	---	---	---
Silver	ND to 3.84	1.33	---	---	---	---	---
Sodium	ND	500	---	---	---	---	---
Thallium	ND	1	---	---	---	---	---
Vanadium	ND to 745	424	---	436	---	---	---
Zinc	ND to 158	90.4	---	---	---	---	—

Table 2.12 (continued)

Analyte	Range of Background Concentrations	Boring Number and Sample Depth (feet)						
		95 Percent UCL Background Concentration		50BASB006			50BASB007	
		2.5	9.5	19.5	2.5	9.5	19.5	
Aluminum	ND to 125,000	96,100	110,000	---	---	---	96,900	---
Antimony	ND to 21.4	7.83	—	---	---	—	17.9	---
Arsenic	ND to 25.3	8.97	11.2	---	---	17.0 IJ	11.0 JP	---
Barium	ND to 107	32.0	—	---	---	61.7	—	---
Beryllium	ND to 20.5	3.26	---	---	---	---	---	---
Cadmium	ND to 2.81	0.96	---	---	—	---	—	---
Calcium	ND to 32,900	3520	---	---	---	7040	—	---
Chromium	ND to 1090	465	---	894	1320	—	549	---
Cobalt	ND to 95.3	19.4	37.8	---	---	62.8	20.2	20.9
Copper	ND to 161	107	111	183	133	122	109	146
Cyanide	ND	1.05	—	---	---	—	---	---
Iron	ND to 294,000	188,000	---	191,000	233,000	—	—	---
Lead	ND to 62.9	18.3	---	---	---	45.3	---	---
Magnesium	ND to 2720	693	---	---	---	1440	—	---
Manganese	ND to 16,000	2240	2570	---	---	4970	—	---
Mercury	ND to 1.25	0.49	---	---	---	—	---	---
Nickel	ND to 244	126	270	501	923	233	3400	157
Potassium	ND to 1250	565	1400	---	---	—	---	---
Selenium	ND to 11.4	5.75	---	---	9.58	---	—	5.90 JP
Silver	ND to 3.84	1.33	---	---	---	---	---	---
Sodium	ND	500	---	---	---	—	---	---
Thallium	ND	1	---	---	---	—	---	---
Vanadium	ND to 745	424	---	---	---	---	—	---
Zinc	ND to 158	90.4	138	---	118	121	---	—

Concentrations are reported in milligrams per kilogram.

- Not detected above background concentration
- I Interferences in sample make quantitation and/or identification suspect
- J Concentration is estimated
- ND Not detected above laboratory's instrument detection limit (IDL)
- P Concentration is less than reporting limit, but greater than the IDL
- UCL Upper confidence limit

Table 2.13: Concentration Ranges of Polychlorinated Dibenzodioxins and Dibenzofurans Detected In Subsurface Soil Samples - Site 50 (Old Burn Area)

Depth (feet)	Boring Number						
	050BASB001	50BASB002	50BASB003	50HASB004	50BASB005	50BASB006	50BASB007
2.0	---	---	4.7E-5	---	---	---	---
2.5	ND	8.51E-6 to 1.8E-4	---	---	---	5AE-5	5.1E-6 to 2.9E-3
3.5	---	---	---	ND	---	---	---
4.3	---	---	---	ND	---	---	---
8.0	---	---	2.0E-5	---	---	---	---
9.0	1.5E-5	ND	---	7.0E-6 to 8.0E-5	---	---	---
9.3	---	---	---	---	9.0E-6 to 8.1E-5	---	---
9.5	ND	---	---	---	---	ND	3-9E-5
18.5	---	---	1.7E-5	---	---	---	---
19.0	---	---	---	---	ND	---	8.5E-6 to 1.1E-3
19.5	ND	ND	---	---	---	ND	ND
24.5	---	---	---	ND	---	---	---
38.0	---	---	---	---	ND	---	---
38.5	---	---	ND	---	ND	---	---
39.3	---	---	---	ND	---	---	---
48.5	---	---	---	ND	---	---	---
58.0	---	---	---	---	ND	---	---
58.5	---	---	ND	---	---	---	---

Concentrations reported in micrograms per gram.

--- Depth interval was not sampled

E Scientific notation used to shorten long numbers (e.g., 1.0E-5 = 1.0 x 10⁻⁵ = 0.00001)

ND Not detected

Table 2.14: Summary of Metal Concentrations In Surface Soil that are Greater than Background Concentrations - Site 51 (East Range Drum Disposal Area)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number		
			51DASS001	51DASS002	51DASS003
Aluminum	26.400 to 91,500	56,400	---	70,400	81,400
Antimony	ND	6	---	---	---
Arsenic	2.29 to 55.2	18.0	57.9	---	---
Barium	ND to 81.2	35.5	---	---	---
Beryllium	2.11 to 3.42	1.69	1.80	1.79	1.88
Cadmium	ND to 1.77	0.89	---	---	---
Calcium	ND to 186.000	34,600	4.51	---	---
Chromium	71.6 to 614	400	---	---	431
Cobalt	ND to 68.4	22.5	---	---	---
Copper	50.1 to 149	105	136	---	---
Cyanide	ND to 3.23	1.43	---	---	---
Iron	56,600 to 330,000	206,000	290,000	---	208,000
Lead	5.55 to 61.4	32.0	56.4	---	---
Magnesium	ND to 15,100	3570	---	---	---
Manganese	265 to 9700	3160	---	---	---
Mercury	ND to 0.86	0.53	0.791	0.946	0.859
Nickel	26.0 to 176	87.7	---	---	---
Potassium	ND to 1510	773	---	1410	1180
Selenium	1.68 to 11.4	5.35	---	---	7.63
Silver	ND to 3.19	1.56	---	---	---
Sodium	ND to 1280	634	---	---	---
Thallium	ND	1	---	---	---
Vanadium	116 to 695	475	---	---	---
Zinc	64.8 to 308	142	1280	---	---

Concentrations are reported in milligrams per kilogram.

- Not detected above background concentration
- ND Not detected above laboratory's instrument detection limit
- UCL Upper confidence limit concentrations for background surface soil samples

Table 2.15: Summary of Metal Concentrations in Subsurface Soil that are Greater than Background Concentrations - Site, 51 (East Range Drum Disposal Area)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Soil Sample Depth (feet) 51DASB001				
			50.0	100.0	150.5	200.0	250.0
Aluminum	ND to 125,000	96,100	---	---	---	---	---
Antimony	ND to 21.4	7.83	---	---	---	---	---
Arsenic	ND to 25.3	8.97	---	---	---	---	---
Barium	ND to 107	32.0	---	---	114	386	448
Beryllium	ND to 20.5	3.26	---	---	---	---	3.91
Cadmium	ND to 2.81	0.96	---	---	---	---	---
Calcium	ND to 32,900	3520	---	---	---	---	---
Chromium	ND to 1090	465	---	---	525	---	510
Cobalt	ND to 95.3	19.4	22.1	---	45.7	82.9	82.2
Copper	ND to 161	107	---	---	140	---	305
Cyanide	ND	1.05	---	---	---	---	---
Iron	ND to 294,000	188,000	---	---	---	---	---
Lead	ND to 62.9	18.3	---	---	---	---	---
Magnesium	ND to 2720	693	---	---	---	---	---
Manganese	ND to 16,000	2240	---	---	---	2980	2570
Mercury	ND to 1.25	0.49	---	---	---	---	---
Nickel	ND to 244	126	143	133	283	154	652
Potassium	ND to 1250	565	---	---	---	---	---
Selenium	ND to 11.4	5.75	---	---	---	---	---
Silver	ND to 3.84	1.33	---	---	---	---	---
Sodium	ND	500	---	---	---	---	---
Thallium	ND	1	---	---	---	---	---
Vanadium	ND to 745	424	---	---	---	---	---
Zinc	ND to 158	90.4	---	---	---	---	132

Concentrations are reported in milligrams per kilogram.

- - NO
 - UCL
- Not detected above background concentration
Not detected above laboratory's instrument detection limit
Upper confidence limit concentrations for background subsurface soil samples

Table 2.16: Stream Flow Measurements at Site 51 (East Range Drum Disposal Area)

Sample ID Number	Transact Number	Stream Width (feet)	Stream Depth (feet)	Stream Velocity (feet/sec)	Stream Flow (cubic feet/sec)	Mean Stream Flow at Each Sample Location (cubic feet/sec)
51 DASE001	1		9.5	0.5	0.03	0.14
	2	5.3	0.4	0.04	0.08	0.09
	3	9.5	0.6	0.01	0.06	
51 DASE002	1	11.0	0.6	0.02	0.13	
	2	11.3	0.7	0.02	0.16	0.32
	3	10.5	1.0	0.065	0.68	
51 DASE003	1	6.5	0.45	0.05	0.15	
	2	5.0	0.3	0.08	0.12	0.13
	3	4.5	0.35	0.08	0.13	
51 DASE004	1	6.3	0.6	0.03	0.11	
	2	4.0	0.5	0.09	0.06	0.10
	3	6.0	1.0	0.02	0.12	

feet/sec Feet per second
 ID Identification

Table 2.17: Summary of Metal Concentrations In Filtered Surface Water - Site 51 (East Range Drum Disposal Area)

Analyte	Sample Number				
	51DASW001	51DASW002	51DASW002---DUP	51DASW003	51DASW004
Aluminum	15.9 FPJB	52.5 FPJB	19.1 FDPJB	15.2 FPJB	18.1 FPJB
Antimony	---	---	---	---	---
Arsenic	---	---	---	---	---
Barium	---	---	---	---	---
Beryllium	---	---	---	---	---
Cadmium	---	---	---	---	---
Calcium	4560 FPJ	5070 F	4780 FDPJ	4700 FPJ	5030 F
Chromium	---	---	---	---	---
Cobalt	---	---	---	---	---
Copper	16.1 FPJB	8.89 FPJB	7.22 FDPJB	6.12 FPJB	22.1 FPJB
Cyanide	---	---	---	---	---
Iron	268 FB	440 FB	279 FDB	328 FB	283 FB
Lead	---	---	---	---	---
Magnesium	1380 FPJ	1670 FPJ	1590 FDPJ	1550 FPJ	1520 FPJ
Manganese	56.0 F	84.7 F	81.4 FD	45.9 F	14.2 FPJ
Mercury	---	---	---	---	---
Nickel	4.68 FPJB	---	---	4.68 FPJB	---
Potassium	498 FPJ	618 FPJ	685 FDPJ	510 FPJ	601 FPJ
Selenium	---	---	---	---	---
Silver	---	---	---	---	---
Sodium	9250 F	8130 F	8850 FD	9310 F	9930 F
Thallium	---	---	---	---	---
Vanadium	---	---	---	---	---
Zinc	6.03 FPJB	3.41 FPJB	3.45 FDPJB	3.46 FPJB	5.11 FPJB

Concentrations are reported in micrograms per liter.

- Analyte not detected at concentration exceeding the instrument detection limit (IDL)
- B Analyte was detected in blank as well as sample. However, the concentration detected in the blank was significantly lower than the concentration detected in the sample; therefore, the data are acceptable
- D Duplicate sample
- F Sample was filtered before analysis
- J Concentration is estimated
- ND Not detected above laboratory's instrument detection limit IDL
- P Concentration is less than the reporting limit, but greater than the IDL.

Table 2.18: Summary of Organic Concentrations In Sediment Samples - Site 51 (East Range Drum Disposal Area)

Analyte	Sample ID Number				
	51DASE001	51DASE002	51DASE002-DUP	51DASE003	51DASE004
Acetone	0.00560 2VPBJ	---	0.00570 2VDPBJ	---	0.00760 2PBJ
Methylene chloride	0.00390 2VPBJ	0.00400 2VPBJ	0.00330 2VDPBJ	0.00590 2PBJ	0.00970 2PBJ
Methyethyl ketone	0.00280 2VPBJ	---	---	0.00880 2PBJ	---
Tricosane	0.330 VS	---	---	---	---
Heptacosane	---	---	0.170 VDS	---	---
Octadecanoic acid, butylester	---	0.510 VS	0.370 VDS	---	---
9-Octyleicosane	---	---	---	0.160S	---
3-Methoxy-D-friedoolean-14-ene	---	---	---	---	0.150S
Octacosane	---	---	---	---	0.130S

Concentrations are reported in micrograms per gram.

--- Analyte not detected at concentration exceeding the instrument detection limit (IDL).

2 Ending calibration was not within acceptable limits. However, further review of the data using the Army control charts indicates the data are acceptable.

B Analyte was detected in blank as well as sample. However, the concentration detected in the blank was significantly lower than the concentration detected in the sample; therefore, the data are acceptable.

D Duplicate sample.

J Value is estimated.

P Concentration is less than the reporting limit, but greater than the IDL.

S Results based on internal standard.

V Sample was subjected to unusual storage conditions. Although the sample may have exceeded temperature requirements, further review indicates the data are acceptable.

Table 2.19: Summary of Metal Concentrations In Surface Soil that are Greater than Background Concentrations - Site 54a (Aircraft Fuselage Dumping and Cleaning Area)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Sample Number			
			54AFDSS001	54AFDSS002	54AFDASS003	55AFDASS004
Aluminum	26,400 to 91,500	56,400	95,500	91,400	66,400	76,100
Antimony	ND	6	---	---	—	---
Arsenic	2.29 to 55.2	18.0	24.0 IJ	---	—	---
Barium	ND to 81.2	35.5	---	---	—	---
Beryllium	2.11 to 3.42	1.69	1.91	2.06	2.25	2.58
Cadmium	ND to 1.77	0.89	---	1.53	—	1.31
Calcium	ND to 186,000	34,600	---	---	—	---
Chromium	71.6 to 614	400	---	---	415	515
Cobalt	ND to 68.4	22.5	---	---	—	---
Copper	50.1 to 149	105	---	---	—	---
Cyanide	ND to 3.23	1.43	---	---	—	---
Iron	56,600 to 330,000	206,000	---	---	—	232,000
Lead	5.55 to 61.4	32.0	---	38.0 U	—	---
Magnesium	ND to 15,100	3570	---	---	—	---
Manganese	265 to 9700	3160	---	---	—	---
Mercury	ND to 0.86	0.53	---	0.566	—	---
Nickel	26.0 to 176	87.7	---	---	—	---
Potassium	ND to 1510	773	---	1220	—	---
Selenium	1.68 to 11.4	5.35	---	6.60 IJ	11.0 IJ	15.0 IJ
Silver	ND to 3.19	1.56	---	---	—	---
Sodium	ND to 1280	634	---	---	—	---
Thallium	ND	1	---	---	—	---
Vanadium	116 to 695	475	---	---	—	---
Zinc	64.8 to 308	142	---	---	—	---

Concentrations are reported in milligrams per kilogram

--- Not detected above background concentration.

I Interferences in sample make quantitation and/or identification suspect.

i Value is estimated.

ND Not detected above laboratory's instrument detection limit.

U Unacceptable data because of low recoveries for all spikes.

UCL Upper confidence limit concentrations for background surface soil samples.

Table 2.20: Summary of Metal Concentrations In Subsurface Soil that are Greater than Background Concentrations - Site 54a (Aircraft Fuselage Dumping and Cleaning Area)

(feet)	95 Percent UCL	Boring Number and Soil Sample Depth							
		Background Concentration	4.0	14.0	54AFDSB001				
Analyte	Range of Background Concentrations				19.0	38.5	53.5	58.5	78.0
Aluminum	ND to 125,000	96,100	118,000	106,000	---	112,000	115,000	101,000	96,800
Antimony	ND to 21.4	7.83	---	21.5	---	---	---	---	---
Arsenic	ND to 25.3	8.97	---	---	---	---	---	---	---
Barium	ND to 107	32.0	---	---	---	108	75.1	122	---
Beryllium	ND to 20.5	3.26	---	---	---	---	---	---	---
Cadmium	ND to 2.81	0.96	---	---	---	---	---	---	---
Calcium	ND to 32,900	3520	---	---	---	---	---	---	---
Chromium	ND to 95.3	1090	555	---	---	---	---	526	698
Cobalt	ND to 95.3	19.4	---	28.0	---	---	46.7	182	25.3
Copper	ND to 161	107	113	164	108	153	---	146	129
Cyanide	ND	1.05	---	---	---	---	---	---	---
Iron	ND to 294,000	188,000	---	---	---	---	---	---	---
Lead	ND to 62.9	18.3	---	---	---	---	---	---	---
Magnesium	ND to 2720	693	---	1900	---	---	---	---	---
Manganese	ND to 16,000	2240	---	---	---	---	---	---	---
Mercury	ND to 1.25	0.49	---	---	---	---	---	---	---
Nickel	ND to 244	126	---	138	---	273	275	506	659
Potassium	ND to 1250	565	---	---	---	---	---	---	---
Selenium	ND to 11.4	5.75	---	---	12.0 IJ	---	8.60 IJ	8.40 IJ	---
Silver	ND to 3.84	1.33	---	---	---	---	---	---	---
Sodium	ND	500	---	---	---	---	---	---	---
Thallium	ND	1	---	---	---	---	---	---	---
Vanadium	ND to 745	424	---	438	---	---	---	---	---
Zinc	ND to 158	90.4	114	---	---	---	---	---	110

Table 2.20 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Soil Sample Depth (feet)							
			2.5	14.0	54AFDSB002		19.0	39.0	59.0	79.0
Aluminum	ND to 125,000	96,100	---	117,000	128,000	117,000	115,000	123,000	123,000	
Antimony	ND to 21.4	7.83	---	---	---	---	---	18.9	---	
Arsenic	ND to 25.3	8.97	---	---	---	---	---	---	---	
Barium	ND to 107	32.0	---	---	---	---	137	---	69.8	
Beryllium	ND to 20.5	3.26	---	---	---	---	---	---	---	
Cadmium	ND to 2.81	0.96	---	---	---	---	---	---	---	
Calcium	ND to 32,900	3520	---	---	---	---	---	---	---	
Chromium	ND to 1090	465	501	---	---	---	1150	---	---	
Cobalt	ND to 95.3	19.4	---	---	---	27.9	47.4	---	24.2	
Copper	ND to 161	107	136	---	---	---	172	164	---	
Cyanide	ND	1.05	---	---	---	---	---	---	---	
Iron	ND to 294,000	188,000	190,000	---	---	---	---	---	---	
Lead	ND to 62.9	18.3	---	---	---	---	---	---	---	
Magnesium	ND to 2720	693	---	---	---	---	---	---	---	
Manganese	ND to 16,000	2240	---	---	---	---	---	---	---	
Mercury	ND to 1.25	0.49	---	---	---	---	---	---	---	
Nickel	ND to 244	126	---	171	186	258	978	245	185	
Potassium	ND to 1250	565	---	---	---	---	---	---	---	
Selenium	ND to 11.4	5.75	---	---	---	---	7.60JP	---	---	
Silver	ND to 3.84	1.33	---	---	---	---	---	---	---	
Sodium	ND	500	---	---	---	---	---	---	---	
Thallium	ND	1	---	---	---	---	---	---	---	
Vanadium	ND to 745	424	---	---	---	---	---	---	---	
Zinc	ND to 158	90.4	---	---	---	---	113	---	---	

Table 2.20 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Soil Sample Depth (feet)							
			2.5	14.0	54AFDSB002		19.0	39.0	59.0	79.0
Aluminum	ND to 125,000	96.100	177,000	---	174,000	111,000	---	163,000	117,000	
Antimony	ND to 21.4	7.83	---	---	---	---	---	---	---	
Arsenic	ND to 25.3	8.97	---	---	---	---	---	---	---	
Barium	ND to 107	32.0	---	---	---	---	153	---	---	
Beryllium	ND to 20.5	3.26	---	---	---	---	---	---	---	
Cadmium	ND to 2.81	0.96	---	---	---	---	---	---	---	
Calcium	ND to 32,900	3520	---	---	---	---	---	---	---	
Chromium	ND to 1090	465	---	486	571	---	---	---	---	
Cobalt	ND to 95.3	19.4	---	---	---	---	56.5	---	---	
Copper	ND to 161	107	138	118	202	138	---	163	138	
Cyanide	ND	1.05	---	---	---	---	---	---	---	
Iron	ND to 294,000	188,000	---	200,000	194,000	---	---	---	---	
Lead	ND to 62.9	18.3	---	---	---	---	---	---	---	
Magnesium	ND to 2720	693	---	---	---	---	---	---	---	
Manganese	ND to 16,000	2240	---	---	---	---	---	---	---	
Mercury	ND to 1.25	0.49	---	---	---	---	---	---	---	
Nickel	ND to 244	126	---	---	232	144	280	319	229	
Potassium	ND to 1250	565	---	---	---	---	---	---	---	
Selenium	ND to 11.4	5.75	---	15.0 IJ	---	---	---	---	---	
Silver	ND to 3.84	1.33	---	---	---	---	---	---	---	
Sodium	ND	500	---	---	---	---	---	---	---	
Thallium	ND	1	---	---	---	---	---	---	---	
Vanadium	ND to 745	424	---	---	454	---	---	---	---	
Zinc	ND to 158	90.4	---	103	---	---	---	---	---	

Concentrations are reported in milligrams per kilogram.

--- Not detected above background concentration

I Interferences in sample make quantitation and/or identification suspect

J Concentration is estimated

ND Not detected above laboratory's instrument detection limit (IDL)

P Concentration is less than reporting limit, but greater than the IDL

UCL Upper confidence limit

Table 2.21 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Sample Depth (feet)						
			2.5	8.5	54BASSB002		58.5	79.0	98.5
Aluminum	ND to 125,000	96,100	---	---	157,000	121,000	124,000	116,000	113,000
Antimony	ND to 21.4	7.83	---	---	---	---	—	---	---
Arsenic	ND to 25.3	8.97	---	---	---	---	—	---	---
Barium	ND to 107	32.0	51.4	---	---	---	106	127	153
Beryllium	ND to 20.5	3.26	---	---	---	---	—	---	3.55
Cadmium	ND to 2.81	0.96	---	---	---	---	—	1.59	---
Calcium	ND to 32,900	3520	10,900	---	---	---	—	---	---
Chromium	ND to 1090	465	---	---	---	---	—	---	634
Cobalt	ND to 95.3	19.4	43.4	---	---	---	19.7	25.6	54.8
Copper	ND to 161	107	152	---	---	---	201	145	178
Cyanide	ND	1.05	---	---	---	---	—	---	---
Iron	ND to 294,000	188,000	---	---	---	---	—	---	---
Lead	ND to 62.9	18.3	---	---	---	---	—	---	3320
Magnesium	ND to 2720	693	---	---	---	—	—	---	---
Manganese	ND to 16,000	2240	4070	---	---	---	—	---	---
Mercury	ND to 1.25	0.49	---	---	---	---	—	---	---
Nickel	ND to 244	126	138	127	169	281	191	191	320
Potassium	ND to 1250	575	1590	---	---	---	—	---	---
Selenium	ND to 11.4	5.75	---	6.50 JP	---	---	—	---	---
Silver	ND to 3.84	1.33	---	---	---	---	—	---	---
Sodium	ND	500	---	---	---	---	—	---	---
Thallium	ND	1	---	---	---	---	—	---	---
Vanadium	ND to 745	424	---	---	---	---	—	---	---
Zinc	ND to 158	90.4	163	---	---	93.4	—	---	217

Table 2.21 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Sample Depth (feet)						
			2.5	9.0	19.0	39.0	59.0	79.0	98.5
Aluminum	ND to 125,000	96,100	---	---	---	---	—	---	---
Antimony	ND to 21.4	7.83	---	---	---	---	—	---	---
Arsenic	ND to 25.3	8.97	---	---	---	---	—	---	---
Barium	ND to 107	32.0	---	---	---	---	—	201	217
Beryllium	ND to 20.5	3.26	---	---	---	---	—	---	---
Cadmium	ND to 2.81	0.96	---	---	---	---	—	---	---
Calcium	ND to 32,900	3520	---	---	---	---	—	---	---
Chromium	ND to 1090	465	---	---	---	---	—	---	---
Cobalt	ND to 95.3	19.4	---	---	---	---	—	50.0	69.6
Copper	ND to 161	107	---	---	---	---	—	---	199
Cyanide	ND	1.05	---	---	---	---	—	---	---
Iron	ND to 294,000	188,000	---	---	---	---	—	---	---
Lead	ND to 62.9	18.3	---	---	---	---	—	---	---
Magnesium	ND to 2720	693	—	---	---	---	—	---	1560
Manganese	ND to 16,000	2240	---	---	---	---	—	---	---
Mercury	ND to 1.25	0.49	---	---	---	---	—	---	---
Nickel	ND to 244	126	---	---	---	---	—	---	---
Potassium	ND to 1250	565	---	---	---	---	—	---	223
Selenium	ND to 11.4	5.75	---	---	---	---	—	---	---
Silver	ND to 3.84	1.33	---	---	---	---	—	---	---
Sodium	ND	500	---	---	---	---	—	---	—
Thallium	ND	1	---	---	---	---	—	---	—
Vanadium	ND to 745	424	---	---	---	---	—	---	---
Zinc	ND to 158	90.4	---	---	---	---	—	---	122

Table 2.21 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Sample Depth (feet)					
			2.5	8.0	54BASSB004		59.0	79.0
Aluminum	ND to 125,000	96,100	---	---	---	---	---	---
Antimony	ND to 21.4	7.83	---	---	---	---	---	---
Arsenic	ND to 25.3	8.97	12.7	---	---	---	---	---
Barium	ND to 107	32.0	---	---	305	---	86.0	214
Beryllium	ND to 20.5	3.26	---	---	---	---	---	---
Cadmium	ND to 2.81	0.96	---	---	---	---	---	---
Calcium	ND to 32,900	3520	---	24,200	---	---	---	---
Chromium	ND to 1090	465	---	---	---	---	---	---
Cobalt	ND to 95.3	19.4	25.6	---	62.8	---	---	76.2
Copper	ND to 161	107	---	---	---	---	---	---
Cyanide	ND	1.05	---	---	---	---	---	---
Iron	ND to 294,000	188,000	---	---	---	---	---	---
Lead	ND to 62.9	18.3	29.0	---	---	---	---	---
Magnesium	ND to 2720	693	---	---	---	---	---	---
Manganese	ND to 16,000	2240	3130	---	---	---	---	2280
Mercury	ND to 1.25	0.49	---	---	---	---	---	---
Nickel	ND to 244	126	---	---	---	---	---	154
Potassium	ND to 1250	565	---	---	---	---	---	---
Selenium	ND to 11.4	5.75	---	---	---	7.56	---	---
Silver	ND to 3.84	1.33	---	---	---	---	---	---
Sodium	ND	500	---	---	---	---	---	---
Thallium	ND	1	---	---	---	---	---	---
Vanadium	ND to 745	424	---	---	---	---	---	---
Zinc	ND to 158	90.4	---	---	---	---	---	---

Table 2.21 (continued)

Analyte	Range of Background Concentrations	Boring Number and Sample Depth (feet)								
		95 Percent UCL Background		54BASSB006						
		Concentration		2.5	8.5	18.5	39.0	59.0	79.0	99.0
Aluminum	ND to 125,000	96,100	110,000	---	---	---	123,000	133,000	103,000	122,000
Antimony	ND to 21.4	7.83	---	---	---	---	---	19.9	---	---
Arsenic	ND to 25.3	8.97	10.9	---	---	---	---	---	---	---
Barium	ND to 107	32.0	---	---	---	---	---	---	66.7	138
Beryllium	ND to 20.5	3.26	---	---	---	---	---	---	---	---
Cadmium	ND to 2.81	0.96	---	---	---	---	---	---	---	---
Calcium	ND to 32,900	3520	---	---	---	---	---	---	---	---
Chromium	ND to 1090	465	---	---	---	---	---	---	---	---
Cobalt	ND to 95.3	19.4	---	---	---	---	---	---	---	25.6
Copper	ND to 161	107	166	---	---	---	145	---	123	140
Cyanide	ND	1.05	---	---	---	---	---	3.28	---	---
Iron	ND to 294,000	188,000	---	---	---	---	---	---	---	---
Lead	ND to 62.9	18.3	---	---	---	---	---	---	19.2	---
Magnesium	ND to 2720	693	---	---	---	---	---	---	---	---
Manganese	ND to 16,000	2240	---	---	---	---	---	---	---	---
Mercury	ND to 1.25	0.49	---	---	---	---	---	---	---	---
Nickel	ND to 244	126	168	---	---	---	---	136	140	221
Potassium	ND to 1250	565	1480	---	---	---	---	---	---	---
Selenium	ND to 11.4	5.75	---	---	---	---	---	---	---	---
Silver	ND to 3.84	1.33	---	---	---	---	---	---	---	---
Sodium	ND	500	---	---	---	---	---	---	---	---
Thallium	ND	1	---	---	---	---	---	---	---	---
Vanadium	ND to 745	424	---	---	---	---	---	---	---	---
Zinc	ND to 158	90.4	172	---	---	---	---	---	162	92.3

Table 2.21 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Sample Depth (feet)						
			54BASSB007						
			2.0	9.0	19.0	39.0	59.0	79.0	99.0
Aluminum	ND to 125,000	96,100	---	---	---	---	---	---	---
Antimony	ND to 21.4	7.83	---	---	---	---	---	---	---
Arsenic	ND to 25.3	8.97	9.97	---	---	---	---	---	---
Barium	ND to 107	32.0	---	---	---	---	---	178	985
Beryllium	ND to 20.5	3.26	---	---	---	---	---	---	---
Cadmium	ND to 2.81	0.96	---	---	---	---	---	---	---
Calcium	ND to 32,900	3520	---	---	---	---	---	---	---
Chromium	ND to 1090	465	---	---	---	---	---	---	---
Cobalt	ND to 95.3	19.4	43.0	---	---	---	---	37.8	523
Copper	ND to 161	107	114	138	---	---	---	146	155
Cyanide	ND	1.05	---	---	---	---	---	---	---
Iron	ND to 294,000	188,000	---	---	---	---	---	---	---
Lead	ND to 62.9	18.3	19.8	---	---	---	---	---	---
Magnesium	ND to 2720	693	---	---	---	---	---	---	1730
Manganese	ND to 16,000	2240	3690	---	---	---	---	1430	9000
Mercury	ND to 1.25	0.49	---	---	---	---	---	---	---
Nickel	ND to 244	126	---	161	---	170	---	180	267
Potassium	ND to 1250	565	---	---	---	---	---	---	---
Selenium	ND to 11.4	5.75	---	---	8.23	---	---	---	---
Silver	ND to 3.84	1.33	---	---	---	---	---	---	---
Sodium	ND	500	---	---	---	---	---	---	---
Thallium	ND	1	---	---	---	---	---	---	---
Vanadium	ND to 745	424	---	---	480	---	---	---	---
Zinc	ND to 158	90.4	120	---	91.4	---	---	---	146

Table 2.21 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Sample Depth (feet)						
			54BASSB008						
			2.5	9.0	19.0	39.0	59.0	79.0	99.0
Aluminum	ND to 125,000	96,100	---	---	---	---	---	---	---
Antimony	ND to 21.4	7.83	---	---	---	---	---	---	---
Arsenic	ND to 25.3	8.97	11.8	---	---	---	---	---	---
Barium	ND to 107	32.0	79.6	---	---	---	---	---	167
Beryllium	ND to 20.5	3.26	---	---	---	---	---	---	---
Cadmium	ND to 2.81	0.96	---	---	---	---	---	---	---
Calcium	ND to 32,900	3520	---	---	---	---	---	---	---
Chromium	ND to 1090	465	---	---	---	---	---	---	---
Cobalt	ND to 95.3	19.4	74.8	---	---	---	---	---	56.4
Copper	ND to 161	107	136	---	---	---	---	147	125
Cyanide	ND	1.05	---	---	---	---	---	---	---
Iron	ND to 294,000	188,000	---	---	---	---	---	---	---
Lead	ND to 62.9	18.3	27.1	---	---	---	---	---	---
Magnesium	ND to 2720	693	---	---	---	---	---	---	---
Manganese	ND to 16,000	2240	3300	---	---	---	---	---	---
Mercury	ND to 1.25	0.49	---	---	---	---	---	---	---
Nickel	ND to 244	126	---	---	---	---	---	---	207
Potassium	ND to 1250	565	---	---	---	---	---	---	---
Selenium	ND to 11.4	5.75	---	---	---	---	---	---	---
Silver	ND to 3.84	1.33	---	---	---	---	---	---	---
Sodium	ND	500	---	---	---	---	---	---	---
Thallium	ND	1	---	---	---	---	---	---	---
Vanadium	ND to 745	424	---	---	---	---	---	---	---
Zinc	ND to 158	90.4	118	---	---	---	---	---	---

Table 2.21 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Sample Depth (feet)						
			54BASSB009						
			2.5	8.0	19.0	39.0	59.0	79.0	99.0
Aluminum	ND to 125,000	96,100	---	---	---	---	---	---	---
Antimony	ND to 21.4	7.83	---	---	---	---	---	---	---
Arsenic	ND to 25.3	8.97	---	---	---	---	---	---	---
Barium	ND to 107	32.0	---	---	---	70.2	---	119	76.6
Beryllium	ND to 20.5	3.26	---	---	---	---	---	---	---
Cadmium	ND to 2.81	0.96	---	---	---	---	---	---	---
Calcium	ND to 32,900	3520	---	---	---	---	---	---	---
Chromium	ND to 1090	465	---	---	---	---	---	---	---
Cobalt	ND to 95.3	19.4	---	---	---	---	---	---	23.1
Copper	ND to 161	107	109	---	---	---	---	148	164
Cyanide	ND	1.05	---	---	---	---	---	---	---
Iron	ND to 294,000	188,000	---	---	---	---	---	---	---
Lead	ND to 62.9	18.3	---	---	---	---	---	---	---
Magnesium	ND to 2720	693	---	---	---	---	---	---	---
Manganese	ND to 16,000	2240	---	---	---	---	---	---	---
Mercury	ND to 1.25	0.49	0.68	---	---	---	---	---	---
Nickel	ND to 244	126	---	---	---	136	---	182	---
Potassium	ND to 1250	565	---	---	---	---	---	---	---
Selenium	ND to 11.4	5.75	---	---	---	---	---	---	---
Silver	ND to 3.84	1.33	---	---	---	---	---	---	---
Sodium	ND	500	---	---	---	---	---	---	---
Thallium	ND	1	---	---	---	---	---	---	---
Vanadium	ND to 745	424	---	---	---	---	---	---	---
Zinc	ND to 158	90.4	90.9	---	---	---	---	---	---

Table 2.21 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Sample Depth (feet)					
			2.5	10.5	54BASSB011		80.5	100.5
					21.0	41.0		
Aluminum	ND to 125,000	96,100	---	---	---	108,000	113,000	---
Antimony	ND to 21.4	7.83	---	---	---	---	---	---
Arsenic	ND to 25.3	8.97	23.7	---	---	---	---	---
Barium	ND to 107	32.0	63.5	---	---	---	---	487
Beryllium	ND to 20.5	3.26	---	---	---	---	---	---
Cadmium	ND to 2.81	0.96	---	---	---	---	---	---
Calcium	ND to 32,900	3520	13,000	---	---	---	---	---
Chromium	ND to 1090	465	---	---	---	---	---	---
Cobalt	ND to 95.3	19.4	63.5	---	---	---	---	179
Copper	ND to 161	107	137	116	116	193	---	259
Cyanide	ND	1.05	---	---	---	---	---	---
Iron	ND to 294,000	188,000	---	---	---	---	---	---
Lead	ND to 62.9	18.3	57.0	---	---	---	---	---
Magnesium	ND to 2720	693	---	---	---	---	---	---
Manganese	ND to 16,000	2240	4670	---	---	---	---	---
Mercury	ND to 1.25	0.49	0.81	---	---	---	---	3840
Nickel	ND to 244	126	---	145	---	132	167	---
Potassium	ND to 1250	565	2460	—	---	---	---	298
Selenium	ND to 11.4	5.75	---	---	---	---	---	---
Silver	ND to 3.84	1.33	---	---	---	---	---	---
Sodium	ND	500	---	---	---	---	---	---
Thallium	ND	1	---	---	---	---	---	---
Vanadium	ND to 745	424	---	437	---	---	---	---
Zinc	ND to 158	90.4	174	---	---	---	---	201

Table 2.21 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Sample Depth (feet)						
			3.9	10.5	54BASSB012				
					21.5	46.5	66.5	81.5	101.5
Aluminum	ND to 125,000	96,100	---	---	104,000	---	---	---	---
Antimony	ND to 21.4	7.83	18.9	---	---	---	---	---	---
Arsenic	ND to 25.3	8.97	---	---	---	---	---	---	---
Barium	ND to 107	32.0	---	---	52.0	---	---	173	82.3
Beryllium	ND to 20.5	3.26	---	---	---	---	---	---	---
Cadmium	ND to 2.81	0.96	---	---	---	---	---	---	---
Calcium	ND to 32,900	3520	5090	---	---	---	---	---	---
Chromium	ND to 1090	465	---	---	---	---	---	---	---
Cobalt	ND to 95.3	19.4	---	---	---	---	---	57.6	24.3
Copper	ND to 161	107	111	---	---	127	---	116	153
Cyanide	ND	1.05	---	---	---	---	---	---	---
Iron	ND to 294,000	188,000	---	---	---	---	---	---	---
Lead	ND to 62.9	18.3	---	---	---	---	---	---	---
Magnesium	ND to 2720	693	---	---	---	---	---	---	---
Manganese	ND to 16,000	2240	---	---	---	---	---	2400	---
Mercury	ND to 1.25	0.49	---	---	---	---	---	---	---
Nickel	ND to 244	126	---	---	159	---	---	---	226
Potassium	ND to 1250	565	---	---	---	---	---	---	---
Selenium	ND to 11.4	5.75	---	---	---	---	---	---	---
Silver	ND to 3.84	1.33	---	---	---	---	---	---	---
Sodium	ND	500	---	---	---	---	---	---	---
Thallium	ND	1	---	---	---	---	---	---	---
Vanadium	ND to 745	424	---	---	---	---	---	---	---
Zinc	ND to 158	90.4	---	---	---	---	---	---	159

Concentrations are reported in milligrams per kilogram.

- Not detected above background concentration.
- I Interferences in sample make quantitation and/or identification suspect.
- J Concentration is estimated.
- ND Not detected above laboratory's instrument detection limit (IDL).
- P Concentration is less than reporting limit, but greater than the IDL.
- UCL Upper confidence limit.

Table 2.22: Summary of Metal Concentrations in Surface Soil that are Greater than Background Concentrations - Site 54c (Aircraft Engine Rebuild Area)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Sample Number
			54CAESS001
Aluminum	26,400 to 91,500	56,400	-
Antimony	ND	6	-
Arsenic	2.29 to 55.2	18.0	-
Barium	ND to 81.2	35.5	-
Beryllium	2.11 to 3.42	1.69	2.06
Cadmium	ND to 1.77	0.89	1.80
Calcium	ND to 186,000	34,600	57,400
Chromium	71.6 to 614	400	-
Cobalt	ND to 68.4	22.5	-
Copper	50.1 to 149	105	-
Cyanide	ND to 3.23	1.43	-
Iron	56,600 to 330,000	206,000	-
Lead	5.55 to 61.4	32.0	-
Magnesium	ND to 15,100	3570	-
Manganese	265 to 9700	3160	-
Mercury	ND to 0.86	0.53	0.603
Nickel	26.0 to 176	87.7	-
Potassium	ND to 1510	773	-
Selenium	1.68 to 11.4	5.35	5.95
Silver	ND to 3.19	1.56	-
Sodium	ND to 1280	634	-
Thallium	ND	1	-
Vanadium	116 to 695	475	-
Zinc	64.8 to 308	142	-

Concentrations reported in milligrams per kilogram.

ND Not detected above laboratory's instrument detection limit.

UCL Upper confidence limit concentrations for background surface soil samples.

Table 2.23: Summary of Metal Concentrations in Subsurface Soil that are Greater than Background Concentrations - Site 54c (Aircraft Engine Rebuild Area)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Soil Sample Depth (feet)						
			2.5	9.0	19.0	39.0	59.0	79.0	99.0
			54CAESB001						
Aluminum	ND to 125,000	96,100	---	108,000	106,000	106,000	140,000	120,000	---
Antimony	ND to 21.4	7.83	---	---	---	---	---	---	---
Arsenic	ND to 25.3	8.97	11.0JP	13.0JP	12.0JP	9.80JP	13.0JP	12.0JP	---
Barium	ND to 107	32.0	---	---	---	---	137	89.8	904
Beryllium	ND to 20.5	3.26	---	---	---	---	---	---	---
Cadmium	ND to 2.81	0.96	---	---	---	---	---	---	---
Calcium	ND to 32,900	3520	127,000	21,500	4470	---	---	---	---
Chromium	ND to 1090	465	---	---	535	723	---	---	---
Cobalt	ND to 95.3	19.4	---	---	---	20.1	---	24.0	154
Copper	ND to 161	107	---	131	135	165	137	222	232
Cyanide	ND	1.05	---	---	---	---	---	---	---
Iron	ND to 294,000	188,000	---	---	---	---	---	---	350,000
Lead	ND to 62.9	18.3	---	---	---	---	---	---	---
Magnesium	ND to 2720	693	4050	1930	---	---	---	---	---
Manganese	ND to 16,000	2240	---	---	---	---	---	---	21,000
Mercury	ND to 1.25	0.49	---	---	---	---	---	---	---
Nickel	ND to 244	126	181	276	231	400	332	252	136
Potassium	ND to 1250	565	---	---	---	---	---	---	---
Selenium	ND to 11.4	5.75	---	9.40IJ	15.0IJ	---	---	---	11.0IJ
Silver	ND to 3.84	1.33	---	---	---	---	---	---	---
Sodium	ND	500	---	---	---	---	---	---	---
Thallium	ND	1	---	---	---	---	---	---	---
Vanadium	ND to 745	424	---	---	---	---	---	---	---
Zinc	ND to 158	90.4	---	---	93.6	---	---	---	201

Table 2.23 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Soil Sample Depth (feet)						
			4.0	9.5	19.0	39.0	59.0	79.0	99.0
Aluminum	ND to 125,000	96,100	---	---	121,000	121,000	129,000	106,000	118,000
Antimony	ND to 21.4	7.83	---	---	---	---	---	---	---
Arsenic	ND to 25.3	8.97	13.0JP	12.0JP	12.0JP	12.0JP	12.0JP	10.0JP	12.0JP
Barium	ND to 107	32.0	---	---	---	---	230	140	214
Beryllium	ND to 20.5	3.26	---	---	---	---	4.39	---	3.76
Cadmium	ND to 2.81	0.96	---	---	---	---	---	---	---
Calcium	ND to 32,900	3520	---	---	---	---	---	---	---
Chromium	ND to 1090	465	502	497	---	---	---	---	---
Cobalt	ND to 95.3	19.4	---	---	---	---	51.4	26.6	73.7
Copper	ND to 161	107	115	---	152	128	313	167	236
Cyanide	ND	1.05	---	---	---	---	---	---	---
Iron	ND to 294,000	188,000	---	208,000	---	---	---	---	---
Lead	ND to 62.9	18.3	---	---	---	---	---	---	---
Magnesium	ND to 2720	693	---	---	---	---	---	---	1600
Manganese	ND to 16,000	2240	---	---	---	---	---	---	---
Mercury	ND to 1.25	0.49	---	---	---	---	---	---	---
Nickel	ND to 244	126	175	135	307	334	1000	172	742
Potassium	ND to 1250	565	---	---	---	---	---	---	---
Selenium	ND to 11.4	5.75	---	6.18	8.70IJ	---	8.80IJ	---	11.0IJ
Silver	ND to 3.84	1.33	---	---	---	---	---	---	---
Sodium	ND	500	---	---	---	---	---	---	---
Thallium	ND	1	---	---	---	---	---	---	---
Vanadium	ND to 745	424	---	---	---	---	---	---	---
Zinc	ND to 158	90.4	---	---	---	---	193	148	199

Table 2.23 (continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Soil Sample Depth (feet)						
			4.0	9.0	19.0	39.0	54CAESB003		99.0
			59.0	79.0					
Aluminum	ND to 125,000	96,100	—	—	112,000	125,000	118,000	117,000	---
Antimony	ND to 21.4	7.83	---	—	---	---	---	—	---
Arsenic	ND to 25.3	8.97	14.0 JP	—	9.40 JP	—	---	---	---
Barium	ND to 107	32.0	---	—	---	—	---	107	---
Beryllium	ND to 20.5	3.26	—	—	—	---	—	—	---
Cadmium	ND to 2.81	0.96	---	—	---	—	—	—	---
Calcium	ND to 32,900	3520	—	—	---	---	---	—	---
Chromium	ND to 1090	465	584	600	476	590	---	565	---
Cobalt	ND to 95.3	19.4	—	---	—	—	—	—	---
Copper	ND to 161	107	---	—	115	120	149	177	---
Cyanide	ND	1.05	—	—	—	—	—	—	---
Iron	ND to 294,000	188,000	227,000	242,000	—	—	---	---	---
Lead	ND to 62.9	18.3	—	---	---	---	---	—	---
Magnesium	ND to 2720	693	—	---	—	—	—	---	---
Manganese	ND to 16,000	2240	—	—	---	---	—	---	---
Mercury	ND to 1.25	0.49	0.499	0.75	---	—	—	---	---
Nickel	ND to 244	126	130	127	---	345	358	403	---
Potassium	ND to 1250	565	---	—	—	—	—	—	---
Selenium	ND to 11.4	5.75	19.0 IJ	8.70	---	—	—	—	---
Silver	ND to 3.84	1.33	—	—	—	—	---	---	---
Sodium	ND	500	—	—	—	---	—	—	---
Thallium	ND	1	—	—	---	—	---	---	---
Vanadium	ND to 745	424	—	—	---	---	---	—	---
Zinc	ND to 158	90.4							

Table 2.23(continued)

Analyte	Range of Background Concentrations	95 Percent UCL Background Concentration	Boring Number and Soil Sample Depth (feet)						
			4.0	9.0	19.0	39.0	54CAESB004		98.5
Aluminum	ND to 125,000	96,100	---	—	124,000	119,000	146,000	—	110,000
Antimony	ND to 21.4	7.83	---	---	---	---	—	---	---
Arsenic	ND to 25.3	8.97	11.0 JP	9.10 JP	9.10 JP	—	---	—	---
Barium	ND to 107	32.0	---	—	---	---	207	126	115
Beryllium	ND to 20.5	3.26	---	—	—	---	4.07	4.26	3.93
Cadmium	ND to 2.81	0.96	---	—	---	---	---	—	---
Calcium	ND to 32,900	3520	---	---	---	---	—	---	---
Chromium	ND to 1090	465	476	---	548	661	—	—	777
Cobalt	ND to 95.3	19.4	---	—	39.9	41.1	67.2	118	83.4
Copper	ND to 161	107	---	—	121	251	156	148	172
Cyanide	ND	1.05	---	---	---	—	---	—	---
Iron	ND to 294,000	188,000	---	---	---	327,000	---	—	---
Lead	ND to 62.9	18.3	---	---	—	---	—	---	---
Magnesium	ND to 2720	693	---	---	---	---	---	---	---
Manganese	ND to 16,000	2240	---	---	---	---	—	—	---
Mercury	ND to 1.25	0.49	—	—	—	---	---	—	---
Nickel	ND to 244	126	147	138	235	492	268	155	562
Potassium	ND to 1250	565	—	---	---	—	—	—	---
Selenium	ND to 11.4	5.75	6.37	7.09	---	—	—	---	---
Silver	ND to 3.84	1.33	---	—	---	—	---	—	---
Sodium	ND	500	---	—	---	---	—	---	---
Thallium	ND	1	---	---	---	---	---	—	---
Vanadium	ND to 745	424	---	---	—	439	—	—	---
Zinc	ND to 158	90.4	---	---	---	137	186	216	180

Concentrations are reported in milligrams per kilogram.

- Not detected above background concentration.
- I Interferences in sample make quantitation and/or identification suspect.
- J Concentration is estimated.
- ND Not detected above laboratory's instrument detection limit.
- P Concentration is less than reporting limit, but greater than the instrument detection limit.
- UCL Upper confidence limit.

Table 2.24: Summary of Metal Concentrations in Perched, Unfiltered Groundwater - Site 54c (Aircraft Engine Rebuild Area)

Analyte	Sample Number				
	54CAESB001	54CAESB002	54CAESB003	54CAESB004	54CAESB004-DUP
Aluminum	13,600	17,400	1,000,000	500,000	730,000 D
Antimony	---	---	---	41.0PJ	42.0DPJ
Arsenic	---	---	---	---	---
Barium	27.7 PJ	66.0 PJ	1400	1600	2000 D
Beryllium	---	---	8.30 PJ	12.0	16.0 D
Cadmium	0.96	---	27.0	---	---
Calcium	1060 PBJ	635 PBJ	940 PBJ	1900 PBJ	2200 DPBJ
Chromium	68.0	62.0	4400	2400	3200 D
Cobalt	8.50 PJ	24.5 PJ	510	790	60 D
Copper	30.2	35.9	1900	870	1100 D
Cyanide	16,200 B	---	---	---	11.0 D
Iron	7.00	18,700 B	1,300,000 B	630,000 B	840,000 DB
Lead	1050 PJ	5.50	26.2	5.60	5.50 D
Magnesium	160	1900 PJ	4800 PJ	8900 PJ	1500 D
Manganese	0.869	63.3	14,000	1200	---
Mercury	38.8 PJ	---	1.00	---	---
Nickel	490 PJ	63.8	3800	2200	3000 D
Potassium	8370 B	435 PJ	1100 PJ	870 PJ	1200 DPJ
Selenium	---	---	---	---	---
Silver	---	---	---	---	---
Sodium	51.6	10,600 B	13,000 PBJ	15,000 B	14,000 DB
Thallium	---	---	---	---	---
Vanadium	17.7 PBJ	51.6	2800	1600	2200 D
Zinc	---	46.5 B	620 B	1300 B	1700 DB

Concentrations are reported in micrograms per liter.

- Analyte not detected at concentration exceeding the instrument detection limit (IDL).
- B Analyte detected in blank as well as sample.
- D Duplicate sample.
- F Sample was filtered before analysis.
- J Concentration is estimated.
- P Concentration is less than the reporting limit, but greater than the IDL.

**Table 2.25: Summary of Organic Concentrations in Unfiltered Surface Water.
Site 54c (Aircraft Engine Rebuild Area)**

Analyte	Sample Number					
	54CAESW001	54CAESW002	54CAESW003	54CAESW003--- DUP	54CAESW004	54CAESW005
Acetone	---	---	4.50 BPJ	---	2.30 BPJ	3.10 BPJ
bis (2-Ethylhexyl) phthalate	---	---	---	---	3.40 BPJ	---
1,2-Dichloroethane	1.30	---	---	---	---	---
Methylene chloride	3.00 B	2.60 B	2.70 B	2.10 DB	---	---
Methylethyl ketone	---	---	5.40 BPJ	---	---	---

Concentrations are reported in micrograms per liter.

- Analyte not detected at concentration exceeding the instrument detection limit (IDL).
- B Analyte was detected in blank as well as sample. However, the concentration detected in the blank was significantly lower the concentration detected in the sample; therefore, the data are acceptable.
- D Duplicate sample.
- J Concentration is estimated.
- P Concentration is less than the reporting limit, but greater than the IDL.

Table 2.26. Summary of Metal Concentrations In Unfiltered Surface Water
Site 54c (Aircraft England Rebuild Area)

Analyte	Sample Number					
	54CAESW001	54CAESW002	54CAESW003	54CAESW003-DUP	54CAESW004	54CAES2005
Aluminum	585	523	6810	456 D	879	1620
Antimony	---	---	---	---	---	---
Arsenic	---	---	---	---	---	---
Barium	---	---	9.92 B	---	---	---
Beryllium	---	---	---	---	---	---
Cadmium	0.96	---	---	---	---	---
Calcium	984 PJ	1180 PJ	1470 PJ	1140 DPJ	1210 PJ	1170 PJ
Chromium	---	---	29.5	---	---	---
Cobalt	---	---	---	---	---	---
Copper	5.14 PJ	---	---	---	---	---
Cyanide	---	---	---	---	---	---
Iron	819	800	10,500	719	1700	2240
Lead	---	---	---	---	---	---
Magnesium	1370 PJ	1570 PJ	1790 PJ	1540 DPJ	1620 PJ	1570 PJ
Manganese	8.27 PJ	13.9 PJ	152	16.0 D	26.2	62.5
Mercury	---	---	---	---	---	---
Nickel	---	---	21.6 PJ	---	---	---
Potassium	202 PJ	259 PJ	278 PJ	243 DPJ	259 PJ	281 PJ
Selenium	---	---	---	---	---	---
Silver	---	---	---	---	---	---
Sodium	5580	6530	6080	5940 D	5970	7960
Thallium	---	---	---	---	---	---
Vanadium	---	---	---	---	---	---
Zinc	4.90 PJ	6.58 PJ	22.2	4.93 DPJ	8.20 PJ	8.14 PJ

Concentrations are reported in micrograms per liter.

--- Analyte not detected at concentration exceeding background.

B Analyte was detected in blank as well as sample.

D Duplicate sample.

J Concentration is estimated.

P Concentration is less than the reporting limit, but greater than the instrument detection limit.

**Table 2.27: Summary of Metal Concentrations In Filtered Surface Water -
Site 54c (Aircraft Engine Rebuild Area)**

Analyte	Sample Number					
	54CAESW001	54CAESW002	4CAESW003DUP	54CAESW003DUP	54CAESW004	54CAESW005
Aluminum	153 FPJ	150 FPJ	69.7 FPJ	84.9 DFPJ	552 F	254 F
Antimony	---	---	---	34.6 DFPJ	---	---
Arsenic	---	---	---	---	---	---
Barium	---	---	---	3.65 DFPJ	---	---
Beryllium	---	---	---	---	---	---
Cadmium	0.96	---	---	---	---	---
Calcium	1020 FPJ	1190 FPJ	1170 FPJ	1190 DFPJ	1280 FPJ	1210 FPJ
Chromium	---	---	---	---	---	---
Cobalt	---	---	---	---	---	---
Copper	6.77 FPJ	---	---	44.6 DF	18.1 FPJ	11.3 FPJ
Cyanide	---	---	---	---	---	---
Iron	285 F	298 F	157 F	177 DF	944 F	432 F
Lead	---	---	---	---	---	---
Magnesium	1390 FPJ	1560 FPJ	1510 FPJ	1520 DFPJ	1590 FPJ	1530 FPJ
Manganese	7.96 FPJ	12.4 FPJ	32.2 F	23.4 DF	18.4 F	42.9
Mercury	---	---	---	---	---	---
Nickel	---	---	---	---	---	---
Potassium	145 FPJ	116 FPJ	169 FPJ	218 DFPJ	266 FPJ	300 FPJ
Selenium	---	---	---	---	---	---
Silver	---	---	---	5.19 DFPJ	---	---
Sodium	5890 F	6050 F	5720 F	5900 DF	5940 F	6060 F
Thallium	---	---	---	---	---	---
Vanadium	---	---	---	---	---	---
Zinc	11.6 FPJ	6.65 FPJ	7.52 FPJ	9.73 DFPJ	9.83 FPJ	9.08 FPJ

Concentrations are reported in micrograms per liter.

--- Analyte not detected at concentration exceeding background.

D Duplicate sample.

F Sample was filtered before analysis.

J Concentration is estimated.

P Concentration is less than the reporting limit, but greater than the instrument reporting limit.

**Table 2.28: Summary of Metal Concentrations In Sediment Samples -
Site 54c (Aircraft Engine Rebuild Area)**

Analyte	Sample Number					
	54CAESE001	54CAESE002	54CAESE002-DUP	54CAESE003	54CAESE004	54CAESE005
Aluminum	72,600	70,500	73,200 D	68,800	41,500	71,400
Antimony	7.87 PJ	6.98 PJ	7.35 DPJ	7.07 PJ	13.6 PJ	17.0 PJ
Arsenic	---	1.17 PJ	1.99 DPJ	1.19 PJ	2.30 PJ	0.955 PJ
Barium	104	102	106 D	86.8	56.7 PJ	97.0
Beryllium	1.81	1.95	20.6 D	1.93	1.84 PJ	2.24 PJ
Cadmium	1.39 PJL	2.13 PJL	---	---	2.28 PJL	---
Calcium	1730	1,280 PJ	1410 DPJ	1620 PJ	897 PJ	980 PJ
Chromium	295 L	330 L	364 DL	325 L	306 L	336 L
Cobalt	241	79.0	78.2 D	60.7	62.4	88.2
Copper	159	83.5	85.4 D	81.4	89.5	120
Cyanide	---	---	---	---	---	---
Iron	114,000	111,000	126,000 D	108,000	131,000	107,000
Lead	3.45	4.33	4.01 D	7.02	11.6	6.18
Magnesium	2400	4030	3980 D	2510	1270 PJ	1590 PJ
Manganese	976	1100	1090 D	716	567	582
Mercury	0.181 PJ	---	---	---	0.390 PJ	---
Nickel	233	245	261 D	237	144	261
Potassium	247 PJ	168 PJ	214 DPJ	233 PJ	150 PJ	223
Selenium	0.808 PJ	0.710 PJ	1.28 DPJ	---	4.07	1.23 PJ
Silver	---	---	---	1.75 PJ	---	1.43 PJ
Sodium	347 PJ	318 PJ	318 DPJ	332 PJ	292 PJ	355 PJ
Thallium	---	---	---	---	---	---
Vanadium	256	234	284 D	235	343	268
Zinc	139(7)	99.5(7)	108 D7	100(7)	85.0(7)	111(7)

Concentrations are reported in milligrams per gram.

- Analyte not detected at concentration exceeding the instrument detection limit (IDL).
- (7) Low spike recovery is not within control limits.
- D Duplicate sample.
- J Concentration is estimated.
- L Out of control, data was rejected due to low recoveries. Therefore, cadmium and chromium data were not evaluated for this report.
- P Concentration is less than the reporting limit, but greater than the IDL.

FIGURES

Appendix A

SYNOPSIS OF COMMUNITY RELATIONS ACTIVITIES

May 1985 - Schofield Barracks issued a press release regarding the detection of Trichloroethylene (TCE) in the Schofield Barracks Supply wells and the temporary switch to city and county water supplies.

August 1990 - Schofield Barracks issued a press release regarding the placement of the installation on the National Priorities List (NPL).

October 1990 - Schofield Barracks Public Affairs Office and Environmental Office addressed the Wahiawa Neighborhood Board regarding Army plans to conduct investigations on Schofield Barracks to identify sources of TCE.

January 1992 - Schofield Barracks and U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) submitted press releases requesting public involvement in locating the source(s) of TCE contamination in and around Schofield Barracks.

January 1992 - Schofield Barracks and USATHAMA conducted interviews with twenty local residents to assist in the development of a Community Relations Plan for the Schofield Barracks Installation Restoration Program (IRP).

June 1992 - The Army finalized the Community Relations Plan for Schofield Barracks and placed copies in the newly established information repositories located in the Mililani Public Library, the Wahiawa Public Library, The Hawaii Department of Health, and the Directorate of Public Works in Building 300 of Wheeler Army Airfield.

February 25, 1993 - Schofield Barracks and the Army Environmental Center (AEC) conducted a public meeting at the Hale Koa at Wahiawa District Park in Wahiawa to provide the public with an update on the IRP and the results of the first phase of the investigations.

February 1993 - In conjunction with the public meeting, the Army published and distributed a fact sheet that provided an update on the IRP and initial investigative results.

September 13 and 14, 1994 - Schofield Barracks and the AEC conducted public availability sessions at the Hale Koa at Wahiawa District Park (September 13) and at the Schofield Barracks Post Library (September 14) to provide an update on the IRP.

September 13 and 14, 1994 - In conjunction with the public availability sessions, the Army solicited interest in the formation of a Restoration Advisory Board (RAB) comprised of local citizen representatives, Army representatives, and regulatory agency representatives that would oversee the conduct of the Army's IRP at Schofield Barracks.

September 12 through 14, 1994 - The Army presented a poster display that summarized installation restoration efforts and plans for Schofield Barracks at the 1st Hawaii National Technologies Conference sponsored by the Hawaii Department of Health

September 1994 - In conjunction with the public availability session, the Army published and distributed a fact sheet that provided an update on the IRP and initial investigative results.

July 7 through August 6, 1995 - Schofield Barracks conducted a public review period for the Proposed Plan for Operable Unit 1.

July 18, 1995 - Schofield Barracks and the AEC conducted a public meeting to present the Operable Unit 1 Proposed Plan and solicit public comments.