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DEPARTMENT OF THE AIR FORCE

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29 October 2014

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New Mexico Environment Department
Attn: Mr. John Kieling, Chief
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Dear Mr. Kieling

Holloman Air Force Base is pleased to submit the Final Interim Measures Work Plan for SD027 Pad 9 Drainage Pit (SWMU 141) for your review.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions, please contact me (575) 572-3931 or by email at deanna.rothhaupt@holloman.af.mil.

Sincerely

DEANNA ROTHHAUPT, GS-12, DAFC

Attachment:
Final Interim Measures Work Plan for SD027 Pad 9 Drainage Pit (SWMU 141)

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HOLLOMAN AIR FORCE BASE
NEW MEXICO

FINAL INTERIM MEASURES WORK PLAN FOR SD027 PAD 9 DRAINAGE PIT (SWMU 141)

October 2014

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HOLLOMAN AIR FORCE BASE, NEW MEXICO

FINAL INTERIM MEASURES WORK PLAN FOR SD027 PAD 9 DRAINAGE PIT (SWMU 141)

EPA ID# NM6572124422

October 2014

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ACRONYMS AND ABBREVIATIONS

µg/kg	microgram(s) per kilogram
µg/L	microgram(s) per liter
ACC	Air Combat Command
ACM	Accelerated Corrective Measures
AFB(s)	Air Force Base(s)
AFCEC	Air Force Civil Engineer Center
AMC	Air Materiel Command
AOC	Area of Concern
Bhate	Bhate Environmental Associates, Inc.
bgs	below ground surface
COPEC	contaminant of potential ecological concern
DPT	direct push technology
DRO	diesel range organics
EFH	extractable fuel hydrocarbons
EPA	U.S. Environmental Protection Agency
ft^2	square feet
FPM	FPM Remediations Inc.
FOD	foreign object debris
GRO	gasoline range organics
HAFB	Holloman Air Force Base
HASP	Health and Safety Plan
HGL	HydroGeoLogic, Inc.
IDW	investigation derived waste
in.	inch(es)
ISCO	*in-situ* chemical oxidation
J&E	Johnson and Ettinger
LF	linear foot or feet
LTM	Long-Term Monitoring
MCL(s)	Maximum Contaminant Level(s)
mg/L	milligram per liter
mg/kg	milligrams per kilogram
NFA	No Further Action
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMWQCC	New Mexico Water Quality Control Commission
NMWRRI	New Mexico Water Resources Research Institute
ORNL	Oak Ridge National Laboratory
OSWER	Office of Solid Waste and Emergency Response
PA/SI	Preliminary Assessment/Site Investigation
PCB(s)	polychlorinated biphenyl(s)
pCi/g	picocuries per gram
PCSEM	preliminary conceptual site exposure model
PID	photoionization detector
POV	privately owned vehicle
PPE	personal protective equipment
PRG(s)	preliminary remediation goal(s)
QAPP	Quality Assurance Project Plan
Radian	Radian Corporation
RCRA	Resource Conservation and Recovery Act

RI	Remedial Investigation
RFI	RCRA Facility Investigation
ROI	radius of influence
SL(s)	screening level(s)
SLERA	screening level ecological risk assessment
SOP(s)	Standard Operating Procedure(s)
SSL(s)	Soil Screening Level(s)
SVOC(s)	semivolatile organic compound(s)
SWMU	Solid Waste Management Unit
TDS	total dissolved solids
TPH	total petroleum hydrocarbons
TRPH	total recoverable petroleum hydrocarbons
UIC	underground injection control
URS	URS Group, Inc.
USAF	United States Air Force
USDA	U.S. Department of Agriculture
USDW(s)	underground source(s) of drinking water
VI	vapor intrusion
VOC(s)	volatile organic compound(s)

1.0 INTRODUCTION

This Interim Measures Work Plan was prepared by URS Group, Inc. (URS), who is the subcontractor to FPM Remediations, Inc. (FPM), on behalf of Holloman Air Force Base (HAFB) for SD027 Pad 9 Drainage Pit, Solid Waste Management Unit (SWMU) 141 at HAFB, New Mexico, hereinafter referred to as the Site. This work plan is prepared in accordance with in the Performance-Based Remediation Contract for Cannon, Holloman, and Kirtland Air Force Bases (AFBs) located in New Mexico, and Luke AFB located in Arizona under contract to the U.S. Air Force Civil Engineer Center (AFCEC), Contract No. FA8903-13-C-0008. An Accelerated Corrective Measures (ACM) Work Plan was submitted by Tetra Tech, Inc. in 2009 which detailed additional site characterization activities and proposed a remedial action of excavation (Tetra Tech, 2009). The monitoring well installation and investigative sampling proposed in the 2009 ACM Work Plan was performed by Tetra Tech between November 2010 and March 2011 while the ACM Work Plan was under review by New Mexico Environmental Department (NMED). An addendum was submitted by Tetra Tech, Inc. in January 2012 which provided investigative results obtained at the site, an assessment of all site data with respect to current risk-based criteria for the protection of human health and the environment, and included a recommendation for site closeout (Tetra Tech, 2012). URS has used the 2012 ACM Work Plan Addendum submitted by Tetra Tech, Inc. (Tetra Tech, 2012) as a basis for this report. All applicable figures, tables, and appendices which were included and/or referenced in the 2012 Work Plan Addendum are also included in this Interim Measures Work Plan as support documentation. The organization of this Interim Measures Work Plan by URS is outlined in Section 1.4.

In this Interim Measures Work Plan, URS proposes *in situ* chemical oxidation (ISCO) for the remedial treatment of volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH), present in saturated and unsaturated soil, and groundwater located at SD027. Baseline soil and groundwater sampling will be conducted prior to a two series injection procedure designed to decrease VOC and TPH concentrations to below applicable regulatory standards. The first injection event (pilot test), covers an area of approximately 6,000 square feet (ft^2) and the second event is designed to remediate the entire area requiring remediation of approximately 8,000 $ft^2$and/or assist with residual high concentration zones. Performance monitoring and sampling will be conducted between the pilot test and the second injection event, and following the second injection event. Based on the results from the second performance monitoring, the site will either be eligible for close-out or further remediation may be required.

1.1 INSTALLATION BACKGROUND

1.1.1 Location

HAFB is situated in south-central New Mexico, in the northwest-central part of Otero County. The Base is located approximately 75 miles northeast of El Paso, Texas, and 7 miles west of Alamogordo, New Mexico. The Base occupies about 50,000 acres in the northeast quarter of section Township 17 South, Range 8 East. Additional land extending northward is occupied by the White Sands Missile Range testing facilities. An installation location map is provided; see Figure 1-1 in the ACM Work Plan (Tetra Tech, 2012).

1.1.2 History

HAFB, formally Alamogordo Army Airfield, was initiated as a temporary facility during World War II, with construction commencing on February 6, 1942. Its status, mission, and Command have periodically changed over its 68-year history.

Prior to 1942, the property occupied by HAFB was undeveloped rangeland. The Alamogordo Army Airfield was established in 1942 and was deactivated in 1945. The facility was reactivated in 1945 and was operated by the Air Materiel Command (AMC) until 1951. The AMC tested pilot-less aircraft, guided missiles, and other equipment. The facility mission remained largely unchanged until 1971. However, the facility identification changed several times during the 20-year span as follows:

- Air Force Missile Test Center (1951 to 1952);
- Holloman Air Development Center (1952 to 1957); and
- Air Force Missile Test Center (1957 to 1971).

The Tactical Air Command operated the facility from 1972 to 1992 and housed the 49th Tactical Fighter Wing, 479th Tactical Training Wing, 833rd Air Division, and 4449th Mobile Support Squadron. In 1992, HAFB was realigned under the Air Combat Command (ACC). Currently, HAFB is still operated under the Command of the ACC.

1.2 SD027 PAD 9 WASHRACK AREA (SWMU 141)

The following section details the location, site description, and contamination history of SD027.

1.2.1 Location

The SD027 Pad 9 Discharge Pit (SWMU 141) is located east of Taxiway F near former Building T884. The site is located within the airfield, significantly limiting unauthorized access. The location of SD027 with respect to HAFB is shown on Figure 1-2 in the ACM Work Plan (Tetra Tech, 2012). Figure 1-3 in the ACM Work Plan (Tetra Tech, 2012) shows the SD027 Pad 9 Discharge Pit in detail, including the proximity to Building T884.

1.2.2 Site Description

SD027, as shown on Figure 1-3 in the ACM Work Plan (Tetra Tech, 2012), is an inactive washrack area that consists of the following:

- A circular concrete pad, which was used as a washrack, that is approximately 150 feet in diameter;
- A concrete constructed drainage gallery that is approximately 75 feet long and 15 feet wide (the depth has not been verified);
- A concrete constructed sump that is approximately 4 feet wide, 7 feet long, and 1 to 1.5 feet deep located within the drainage gallery approximately 31 feet from the west edge of the drainage gallery;
- An associated concrete-lined drainage trough that is 0.5 feet wide and 0.5 feet deep runs from the sump to the edge of the concrete washrack, approximately 67 feet long;
- A drainage pipe that runs between the washrack and former drainage pit that is approximately 160 linear feet (LF); and
- A former unlined drainage pit that is approximately 50 feet in diameter and 12 feet deep.

The drainage gallery/sump discharged accumulated wash water to a former drainage pit, located approximately 140 feet south of the concrete pad via an underground discharge pipe as shown on Figure 1-3 in the ACM Work Plan (Tetra Tech, 2012). The washrack concrete pad appeared to be in relatively good condition, with only a few fractures and cracks evident. No petroleum or unusual stains were observed on the pad during Supplemental Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) field activities (HydroGeoLogic, Inc. [HGL], 2007). The concrete pad is

connected to Taxiway F by a partially degraded asphalt service road. The sump was constructed of concrete and covered with a thick steel grate. Prior to Supplemental RFI field activities, the sump and associated drainage gallery were nearly filled with accumulated sediments, grasses, and a cactus. Upon removal of the accumulated sediments, the base of the sump was determined to be in good condition. No soil staining, unusual solids or liquids, or unknown odors were noted in the sediment contained within the former sump and concrete trench (HGL, 2007).

A broken floor drain was present in the center of the sump floor. The floor drain was believed to connect the sump to the former drainage pit via an underground drainage pipe. The drain inlet was broken and filled-in with sediments. The outlet of the drainage pipe, located in the former drainage pit, was not observed during the Supplemental RFI site inspection. The former drainage pit was described in previous reports as being unlined approximately 50 feet in diameter by 12 feet deep. At the time of the Supplemental RFI site inspection, the drainage pit had been backfilled to within 2 to 3 feet of grade. The backfilled pit supported a thick concentration of shrubs, which were trimmed down prior to field sampling activities. No unusual stains or odors were noted on the surface soils within or around the former drainage pit. No surface expression of the only building formerly located on site, Building T884, was observed during the Supplemental RFI field event (HGL, 2007).

The area immediately surrounding SD027 is unpaved, undeveloped and currently used as a safety buffer for Base runway operations. An active taxiway, Taxiway F, is located approximately 200 feet west of the SD027.

1.2.3 Contamination History

The former washrack at SD027 was used to wash down drones and manned aircraft that had flown through clouds of nuclear blast materials in the late 1940s and early 1950s. The planes washed at the site were reportedly involved in a project studying fallout from nuclear explosions. The planes were equipped with air sampling devices and were flown through blast clouds to collect fallout samples. After sampling activities, the planes were washed down at Pad 9. Wash water would collect in the sump and discharge via the drainage pipe to the discharge pit. No information on the exact year when washrack activities ceased at SD027 was obtained. However, according to former military personnel, no aircraft maintenance activities have occurred at SD027 since the cessation of washing down potentially radioactive contaminated drones and manned aircraft (Radian Corporation [Radian], 1993).

1.3 SCOPE AND OBJECTIVE

The purpose of this Interim Measures Work Plan is to present a remedial strategy and a corrective measures work plan for SD027. This Interim Measures Work Plan also presents historical data collected at SD027. Historical data were compared to the current risk-based screening levels for pathways of concern at the site. The results of this assessment provide the rationale used to define the remedial strategy. A streamlined interim measures work plan is also provided to guide the activities required to implement the recommended site remediation. These actions are intended to achieve unrestricted site closure for SD027. The goal of this project is to bring the Site to corrective action complete status without controls.

1.4 WORK PLAN ORGANIZATION

As mentioned above, the ACM Work Plan Addendum submitted by Tetra Tech, Inc. was used as a basis for this Interim Measures Work Plan submitted by URS. Sections 1 through 3 and Sections 5and 6 are representative of the Tetra Tech, Inc. Addendum (Tetra Tech, 2012) while Section 4 has been modified to support interim measures to be performed by URS. Overall, this work plan is organized into six sections:

- Section 1 is the introduction
- Section 2 presents the site specific environmental setting of the SD027 Pad 9 Drainage Pit
- Section 3 provides the previous site investigations, provides data evaluation and the rationale for the ACM, and presents the corrective measures work plan
- Section 4 presents the interim measures work plan
- Section 5 describes the site closure strategy
- Section 6 provides the references cited in this work plan

All applicable figures, tables, and appendices which were included and/or referenced in the 2012 ACM Work Plan Addendum are also included in this Interim Measures Work Plan as support documentation. Analytical laboratory reports, field logs, waste manifests, etc. have been removed from this Interim Measures Work Plan but may be referenced in the ACM Work Plan Addendum submitted by Tetra Tech, Inc. (Tetra Tech, 2012). A copy of the URS Quality Assurance Project Plan (QAPP) and Health and Safety Plan (HASP) will be provided following the submittal of this Work Plan. The HAFB Standard Operative Procedures (SOPs) pertinent to the planned work at SD027 will be provided in the QAPP.

2.0 SITE-SPECIFIC ENVIRONMENTAL SETTING

The environmental setting information in the following subsections is obtained from the 2012 ACM Work Plan Addendum prepared by Tetra Tech, Inc. which was reproduced primarily from the Supplemental RFI Report prepared by HGL for the SD027 Pad 9 Drainage Pit (HGL, 2007) unless cited otherwise.

2.1 DEMOGRAPHICS

Alamogordo is the county seat of Otero County and the only town of appreciable size within 30 to 50 miles of the Base. The population of Alamogordo was 23,535 in 1975 and has since grown to approximately 31,500 (Tetra Tech, 2012). The economy of Alamogordo depends largely upon HAFB and other military installations in the area. Approximately 5,500 people live at HAFB.

2.2 CLIMATE

The climate in the Tularosa Basin is arid with low annual rainfall and low relative humidity. The surrounding mountain ranges greatly influence the local weather. They modify approaching weather systems and provide orographic lifting which produces summer thunderstorms.

HAFB receives most of its total annual rainfall from thunderstorm activity from May through October. Winter is generally dry and is characterized by clear skies and erratic snowfall. The period from March through May is characterized by strong southerly wind flow and periods of blowing dust and sand. Mean annual precipitation is 7.9 inches (in.). The mean annual lake evaporation rate, commonly used as an estimate of the mean annual evapotranspiration rate, is approximately 67 in. per year. As presented by Huff in the 49th Annual New Mexico Water Conference Proceedings (New Mexico Water Resources Research Institute [NMWRRI], 2005), approximately 30,000 acre-feet per year of groundwater left the Tularosa basin through evapotranspiration under 1995 conditions.

2.3 TOPOGRAPHY

SD027 is located in a generally flat portion of HAFB, although an overall southwestwardly dip is present. The drainage pit represents the lowest topographic feature on or near the SD027 site. The base of the pit is extremely hummocky reflecting former backfilling activities.

2.4 SURFACE WATER

No surface water bodies or surface water drainage features are present within or adjacent to SD027. No surface water was observed within the washrack sump, the drainage gallery, or within the former discharge pit. Precipitation falling onto the unpaved soil surrounding the site most likely either evaporates or infiltrates into the subsurface soil. No visual evidence of overland flow was observed immediately surrounding the site. Precipitation falling on the paved portion of SD027 evaporates or infiltrates into the subsurface along the few observed cracks and fractures. If a sufficient amount of precipitation falls on the concrete-paved area, it discharges as an overland flow to the sump, drainage gallery, or surrounding unpaved areas (HGL, 2007).

2.5 SOILS

The soils beneath SD027 are classified by the U.S. Department of Agriculture (USDA) Soil Conservation Service as belonging to the well-drained, sandy loam, and gypsum of the Holloman-Gypsum Land-Yesum complex (USDA, 1981). The soils of this association are formed from alluvial and eolian

gypsiferous sediments. The Holloman unit makes up about 35 percent of the complex and is described as being a light brown to pink, very fine, sandy loam with high gypsum content. The soil is moderately permeable, calcareous, and mildly to moderately alkaline. The Gypsum Land unit makes up about 30 percent of the complex and is described as being a soft to hard white gypsum, typically overlain by less than one inch of very fine, sandy loam. The Yesum unit, which makes up 20 percent of the complex, is light brown to pinkish-white, very fine sandy loam that is also high in gypsum. The Yesum unit is moderately calcareous, and mildly alkaline (USDA, 1981).

2.6 OVERBURDEN GEOLOGY

Site-specific geologic information was obtained from soil borings completed during the Preliminary Assessment/Site Investigation (PA/SI) (Radian, 1993), Supplemental RFI (HGL, 2007), and SD027 ACM field work (as described in the ACM Work Plan (Tetra Tech, 2012)). Field logs for soil borings completed for the previous investigations can be obtained from the previous investigation reports.

Based on a review of the boring logs, the soil beneath SD027 is very heterogeneous. No single lithologic unit was observed to be continuous across the site (HGL, 2007). During the PA/SI, a 1- to 2-ft thick clay lens was encountered within the first 5 feet of soil beneath the eastern portion of SD027 (Radian, 1993). However, this continuous unit was not observed in any of the Supplemental RFI borings (HGL, 2007). Supplemental RFI borings completed through or in the immediate vicinity of the concrete pad encountered soil composed primarily of silty, very fine- to medium-grained sand. In addition, these borings encountered refusal between 8.5 and 13 feet below ground surface (bgs). No subsurface obstructions were observed that would result in borehole refusal. South of the concrete pad, subsurface soils were primarily sandy, silty, and sandy clay. Borings completed south of the pad were advanced to a maximum depth of 20 feet bgs without encountering refusal.

ACM borings completed within and adjacent to the former drainage pit provide further evidence of the heterogeneity of the overburden at SD027. The ACM borings were advanced using direct push technology utilizing a Geoprobe 7822 equipped with 2.25-inch rods and were advanced in November 2010 and March 2011. According to the boring logs, the overburden within and adjacent to the former drainage pit is composed primarily of silty sand and sandy silt. Within and to the south of the former drainage pit, refusal on a hard layer, composed of gypsiferous material, was encountered at depths ranging from 9.5 to 22.5 feet bgs. This hard layer is present at shallow depths (9.5 to 10 feet bgs) primarily within the area of the former discharge pit. To the south and southeast of the former drainage pit, the hard layer was encountered much deeper at depths of 19 to 22.5 feet bgs. Discontinuous lenses of sand, silty clay, and clay are present in this area at various depths southwest of the former drainage pit.

2.7 HYDROGEOLOGY

As part of SD027 ACM activities, five flush-mounted groundwater monitoring wells were installed in November 2010 (see Figure 2-1 in the ACM Work Plan (Tetra Tech, 2012)). Details of the well completions are summarized in Table 2-1 in the ACM Work Plan (Tetra Tech, 2012). An upgradient monitoring well (MW27-01) was installed north of the concrete washrack, while the remaining four monitoring wells (MW27-02 through MW27-05) were installed in the vicinity of the former drainage pit to assess the extent of impacts that historical activities at SD027 had on groundwater. Historical groundwater elevation measurements have been collected at SD027 between November 2010 and August 2013. Based on these measurements, groundwater in the vicinity of the former drainage pit ranges from a depth of 8.50 to 11.5 feet bgs. The groundwater gradient has ranged from 0.001 feet/feet (April 2011) to 0.007 feet/feet (January 2011) for an average of 0.004 feet/feet. As indicated on Figure 2-1 in the Tetra Tech, Inc. ACM Work Plan, groundwater flow appears to be in a slightly southwestern direction across the site (Tetra Tech, 2012).

In April 2011, several recharge tests were conducted by Tetra Tech at SD027 for monitoring wells MW27-02, -03, and -04. Two tests were conducted at each monitoring well and the hydraulic conductivities calculated from these tests are:

- MW27-02
  - Test 1 – 0.16 feet/day
  - Test 2 – 0.18 feet/day
- MW27-03
  - Test 1 – 0.16 feet/day
  - Test 2 – 0.19 feet/day
- MW27-04
  - Test 1 – 0.27 feet/day
  - Test 2 – 0.14 feet/day

Using an average hydraulic conductivity of 0.183 feet/day, a hydraulic gradient of 0.004 feet/feet, and an estimated porosity of 30 percent, the linear groundwater flow velocity across SD027 is estimated to be 0.002 feet/day, or approximately 1 foot/year (Tetra Tech, 2012).

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3.0 PREVIOUS SITE INVESTIGATIONS

Investigations and field activities previously performed at SD027 include:

1. Radiation Site Screening (1976);
2. Preliminary Assessment/Site Investigation (PA/SI) (1993);
3. Phase II Remedial Investigation (RI) (1998);
4. Supplemental RFI Activities (2006);
5. Accelerated Corrective Measure Work Plan Field Activities (2011); and
6. Recommended Remedial Action

The sediment and soil analytical results from all previous investigations are provided in chronological order in Tables 3-1 through 3-8 in the ACM Work Plan (Tetra Tech, 2012). The historical soil results shown in Tables 3-1 through 3-4 in the ACM Work Plan (Tetra Tech, 2012) were taken from the previous investigation reports listed above and have been formatted (see table footnotes) to show exceedances of the NMED Soil Screening Levels (SSLs) for residential, commercial/industrial, and the construction worker exposure pathways (Table A-1, NMED, 2009). These same sediment and soil results are re-presented in Tables 3-5 through 3-8 in the ACM Work Plan (Tetra Tech, 2012) and have been formatted to show exceedances of the calculated SSLs for the vapor intrusion (VI) exposure pathway. VI screening criteria are only provided for contaminants with sufficient volatility for vapor intrusion. The VI SSLs were calculated following U.S. Environmental Protection Agency (EPA) methodology (EPA, 2004) in accordance with NMED guidance (NMED, 2009).

The historical groundwater analytical results from previous investigations are provided in Table 3-9 in the ACM Work Plan (Tetra Tech, 2012). The historical groundwater samples were collected from temporary wells only. The analytical results have been formatted to show exceedances of the following:

- NMED residential tap water soil screening levels (SSLs) (Table A-1, NMED, 2009);
- Maximum Contaminant Levels (MCLs);
- EPA Preliminary Remediation Goals for residential tap water (PRGs) (EPA, 2011); and
- VI from groundwater to indoor air exposure pathway default screening levels (SLs) (EPA, 2002).

An evaluation of HAFB background values for metals and radionuclides in soil and groundwater showed that the SSLs for soil and SLs for groundwater represented higher concentration levels than background for all metals in soil and for all metals except arsenic in groundwater. Background levels for radionuclides (where available) were higher than most EPA PRGs used for screening in soil. For arsenic in groundwater, the NMED SL for tap water is 0.448 micrograms per liter (µg/L); the HAFB background is 10 µg/L but is noted to be based on the EPA MCL. Because background was lower than the SSLs and SLs (with the noted exception for arsenic and radionuclides), background values were not listed in the analytical tables that did not include presentation of radionuclide results. Background was also not included in the tables formatted to assess vapor intrusion risk because background is not applicable for the volatile contaminants.

The locations of all historical soil samples are shown on Figure 3-1 in the ACM Work Plan (Tetra Tech, 2012). It is noted that the SD027 ACM investigation soil sample and monitoring well locations are also shown on Figure 3-1 (Tetra Tech, 2012) for completeness. As shown in the figure legend, the timing of the sampling event is noted by the sample location symbol on the figure.

The locations of all historical groundwater samples from non-well sample locations [e.g., borehole or direct push technology (DPT) samples] and new monitoring well locations installed during the SD027 ACM investigation are shown on Figure 3-2 in the ACM Work Plan (Tetra Tech, 2012).

A general discussion of the previous investigations is presented in Sections 3.1 through 3.5 of this document.

3.1 RADIATION SITE SCREENING

In May 1976, a radiation site screening investigation was conducted within the former drainage pit at SD027. No information regarding this investigation was obtained from the Base Administrative Record. However, the results of the investigation were summarized in the 1993 PA/SI Report (Radian, 1993). As presented in the PA/SI Report, soil samples were collected from the bottom of the former drainage pit and submitted for analysis. Information presented in the PA/SI Report indicated analytical results for samples collected within the former drainage pit did not contain radiation above normal background. However, the PA/SI Report did not provide information regarding the number or locations of samples collected, radiological analyses performed, or the actual radiological analytical results. After the sampling event, the drainage pit was backfilled to grade (Radian, 1993).

3.2 PRELIMINARY ASSESSMENT/SITE INVESTIGATION

In 1993, a PA/SI was conducted at SD027 by Radian. The study focused on three areas of possible contamination, including:

- The former drainage pit;
- A fenced transformer area, where stained soil was observed; and
- A location south of the concrete washrack near the former drainage pipe.

As shown on Figure 3-1 in the ACM Work Plan (Tetra Tech, 2012), five soil samples (BH27-01 through BH27-05) were collected from the above locations and selectively analyzed for organic constituents, radioactivity, and polychlorinated biphenyls (PCBs). The PA/SI analytical sampling results are summarized in Tables 3-1 and 3-5 in the ACM Work Plan (Tetra Tech, 2012).

Three soil samples (BH27-01, -02, -03) were collected at SD027 and analyzed for gross alpha and gross beta. Additionally, a background sample (BH27-05) was collected approximately 500 feet north of SD027 and analyzed for gross alpha and gross beta. As indicated in Table 3-1 (Tetra Tech, 2012), gross alpha ranged from 8.95 to 19.29 picocuries per gram (pCi/g) and gross beta ranged from 12.15 to 16.69 pCi/g at the site. Compared against the background sample, these samples are within the same order of magnitude and appear to be comparable. Solids with alpha activity exceeding 30 pCi/g are considered radioactive waste by Oak Ridge National Laboratory (ORNL). None of the samples at SD027 exceeded these levels. It was determined that radioactivity was background and not attributable to anthropogenic sources.

Based on the results presented in Table 3-1 (Tetra Tech 2012), soil sample BH27-03 was collected within the former drainage pit and selectively analyzed for extractable fuel hydrocarbons (EFH) and purgeable fuel hydrocarbons in addition to gross alpha and gross beta. During the advancement of soil borings, stained soil with a fuel odor was encountered at the base of the former drainage pit, below the water table. No evidence of staining or contamination was observed above the water table. Stained soil was observed in all of the soil borings from approximately 8 to 16 feet bgs. Soil sample BH27-03 was collected within the stained soil (8 to 10 feet bgs). Analytical results from the sample collected from BH27-03 for EFH and purgeable fuel hydrocarbons indicated concentrations are well below the residential soil screening levels. Table 3-1 (Tetra Tech, 2012) summarizes the analytical results.

One soil sample (BH27-04) was collected within the fenced transformer area and analyzed for PCBs. Aroclor-1254 was detected at a concentration of 200 micrograms per kilogram (µg/kg) which is below the residential soil screening level of 1,120,000 µg/kg. Table 3-1 in the ACM Work Plan (Tetra Tech, 2012) summarizes the analytical results of soil borings BH27-01 through BH27-05.

A qualitative risk assessment was also conducted as part of the PA/SI. This assessment identified all possible contaminant migration and exposure pathways for both human and ecological receptors. These pathways included:

- Volatilization – determined to be minimal due to the semivolatile nature of PCBs and that hydrocarbon contamination is buried at the base of the former drainage pit.
- Fugitive dust generation – determined to be minimal due to radioactivity being present at levels comparable to background, the surface area of PCB contamination being very small (3-ft by 5-ft), and the hydrocarbons detected are buried.
- Surface water runoff – determined to be minimal due to the fact that there are no known areas where surface water from the site collects.
- Infiltration and percolation – determined to be the most likely modes of contaminant transport due to the presence of hydrocarbons at and below the water table.

The assessment determined that off-Base residents are not expected to be affected by the site. The assessment stated that ecological receptors may be exposed via dermal contact or ingestion to PCBs in surface soils and to fuel hydrocarbons through uptake by plants. A site-specific health-based concentration was calculated for PCBs to evaluate whether a potential risk could exist, given existing and potential future exposure scenarios. The risk-based concentration was calculated to be 987 µg/kg based on dermal exposure for an adult worker. The concentration of Aroclor-1254 was 200 µg/kg, lower than the risk-based exposure concentration.

3.3 PHASE II REMEDIAL INVESTIGATION

After reviewing the PA/SI Report, NMED requested additional investigation to further delineate the vertical extent of contamination in the former drainage pit. In 1994, Radian conducted a Phase II RI to comply with NMED's request. During the RI, one soil boring (94-27-B01R) was advanced through the former drainage pit to a depth of 16 feet bgs (see Figure 3-1 in the ACM Work Plan (Tetra Tech, 2012)). During drilling activities, visible staining and a petroleum odor was observed at a depth of approximately 10 to 16 feet bgs. Three soil samples were collected from the boring and analyzed for VOCs, semivolatile organic compounds (SVOCs), and total recoverable petroleum hydrocarbons (TRPH) (Foster Wheeler and Radian, 1996). One sample was collected from each of three depth intervals, including 10 and 12 feet bgs, 12 and 14 feet bgs, and 14 and 15 feet bgs. All three soil samples were collected below the top of the underlying water bearing unit. The Phase II results are summarized in Tables 3-2 and 3-6 in the ACM Work Plan (Tetra Tech, 2012).

As shown in Table 3-2 in the ACM Work Plan (Tetra Tech, 2012), five VOCs, seven SVOCs, and TRPH were detected in the Phase II RI soil samples. Ethylbenzene and TRPH were detected at concentrations exceeding the residential soil screening level in the 10 to 12 feet bgs soil interval. No other compound concentrations exceeded the residential soil screening level. Most of the analytes maximum concentrations were detected primarily in the 10 to 12 feet bgs soil interval while the lowest concentrations were detected in the 12 to 14 feet bgs soil interval.

Based on the results of the PA/SI and Phase II RI, HAFB submitted a No Further Action (NFA) and Site Close Out Petition letter for SD027 (SWMU 141) in December 2001. In a March 5, 2002 letter, NMED responded to the NFA petition by requesting additional soil and groundwater characterization data. The following data gaps were identified by NMED (Bhate Environmental Associates, Inc. [Bhate], 2003b):

- The condition of the washrack drainage gallery;
- The lack of soil and groundwater quality data beneath the washrack drainage gallery to determine the presence or absence of hazardous materials; and

- The lack of soil and groundwater quality data beneath the drainage pit to determine if any hazardous constituents are present in the subsurface directly below the pit.

3.4 SUPPLEMENTAL RFI ACTIVITIES

To address NMED comments on the Site Closeout Petition, a Supplemental RFI was conducted during May and June 2006. The Supplemental RFI consisted of sediment sampling and removal of sediment within the drainage gallery, the collection of seven soil samples, and the collection of four groundwater samples.

3.4.1 Drainage Gallery Assessment and Sediment Sampling

During the PA/SI performed in 1993, it was noted that the sump within the drainage gallery was filled with soil (i.e., sediment). Therefore, the sediment was removed during Supplemental RFI activities. During the removal, one composite sample (SD27-01) was collected and analyzed for RCRA metals, SVOCs, VOCs, TPH-diesel range organics (DRO), TPH-gasoline range organics (GRO), and radionuclides. These constituents were screened against applicable NMED SSLs in place at the time of removal, with the exception of radionuclides, which were screened against direct ingestion of soil SSLs obtained from the EPA (NMED, 2006a and NMED, 2006b). The sediment sample analytical results are summarized in Tables 3-3 and 3-7 in the ACM Work Plan (Tetra Tech, 2012).

As shown in Table 3-3 in the ACM Work Plan (Tetra Tech, 2012), 6 RCRA metals, 17 SVOCs, 8 VOCs, TPH-DRO, 9 radionuclides, and gross alpha/beta were detected in the sediment sample. Of the analytes detected, only benzo(a)pyrene, dibenzo(a,h)anthracene, total chromium, and lead were detected at concentrations exceeding NMED SSLs. Benzo(a)pyrene and lead were detected at concentrations exceeding NMED residential and industrial SSLs. Lead also exceeded the NMED SSL for construction workers. Dibenzo(a,h)anthracene and chromium were detected at concentrations exceeding residential SSLs. In addition, the radionuclides lead-210, radium-226, and radium-228 were detected above EPA radiological SSLs for direct ingestion of site soils.

After removal of the accumulated sediment, the washrack sump was determined to be approximately 7 feet long, 4 feet wide, and ranged in depth from 1.0 to 1.5 feet below the grade of the pad. The metal grate covering the sump was in good condition. The sump was observed to be constructed of concrete sidewalls and a concrete floor with the floor sloping inward from the sidewalls to the center of the sump. The concrete appeared to be in good condition with no cracks or fractures observed. In addition, no concrete staining was observed. A floor drain covered with a broken cover was present in the center of the sump and filled with sediment (HGL, 2007).

The concrete-lined trench extended from the south end of the concrete slab, sloping towards the southern edge of the sump to promote drainage to the sump. The trench was approximately 0.5-feet wide and 0.5-feet deep. A small amount of sediment has accumulated on the floor of the trench. No staining of the trench sidewalls, floor, or sediment was observed and no unusual odors noted. Radiation field screening did not detect radiation above background in the trench (HGL, 2007).

The sediment within the former sump was removed and stockpiled within plastic pending analytical results. Based on the obtained analytical data, the sediment was transported off base on September 12, 2006 and disposed as non-hazardous material (HGL, 2007).

3.4.2 Subsurface Soil and Groundwater Sampling

Eight soil borings, designated as SB27-01 through SB27-08 (see Figure 3-2 in the Tetra Tech, Inc. ACM Work Plan), were advanced within the washrack concrete pad, within the former drainage pit, and in the

vicinity of the former discharge pipe. Initially, only three soil borings were proposed for assessing the soil and groundwater quality in the vicinity of the former drainage pit and discharge pipe. Soil and groundwater samples were anticipated from these three borings as well as boring SB27-01 completed as part of the drainage gallery assessment. However, borehole refusals were encountered in two of the borings (SB27-01 at 8.5 feet bgs and SB27-04 at 10.5 feet bgs) prior to reaching the underlying water table. Consequently, additional borings SB27-05 through SB27-08 were completed at the site. Borehole refusal was experienced in both SB27-05 (13 feet bgs) and SB27-06 (11.5 ft bgs) prior to reaching the underlying water table. SB27-07 was completed to 22.5 feet bgs near the former drainline by abandoning soil sampling activities and hydraulically hammering a sampler to the underlying water table. The remaining boring, SB27-08, was completed in an inferred hydraulically upgradient location in an effort to assess background metals and radionuclides concentrations in groundwater. The locations of Supplemental RFI soil borings are depicted on Figure 3-2 in the ACM Work Plan (Tetra Tech, 2012).

Continuous soil sampling was conducted for borings SB27-01 through SB27-05. Soil sampling was not performed during the advancement of borings SB27-06 through SB27-08 since the goal of these boreholes was to obtain groundwater samples. Elevated photoionization detector (PID) readings and stained soils were observed below 6 feet bgs in borings SB27-02 and SB27-03. Consequently, two soil samples from borings SB27-02 and SB27-03 were analyzed for VOCs, SVOCs, RCRA metals, and radionuclides. The shallower soil sample was collected from a soil interval above the water table, which reflected the greatest potential for contamination based on field screening results and visual observations. The deeper soil samples were collected at or below the water table interface in accordance with the Bhate work plan (Bhate, 2003b). These samples were collected to evaluate soil quality beneath the water table, a soil zone previously sampled and determined to contain elevated concentrations of TRPH. With respect to borings SB27-01, SB27-04, and SB27-05, refusal was encountered prior to reaching the underlying water table. Because field screening and visual observations did not indicate a preferential contaminated soil interval in the shallow subsurface, the soil interval immediately above where refusal was encountered was collected and analyzed for VOCs, SVOCs, RCRA metals, and radionuclides. Soil analytical results are summarized in Tables 3-4 and 3-8 in the ACM Work Plan (Tetra Tech, 2012).

After soil sampling activities were completed, soil borings SB27-02, SB27-03, SB27-07, and SB27-08 (see Figure 3-2 in the Tetra Tech, Inc. ACM Work Plan) were converted into 1-inch diameter, 10-foot long screen, temporary groundwater wells. Groundwater samples were analyzed for VOCs, SVOCs, RCRA metals (total and dissolved), and radionuclides (total and dissolved). Dissolved RCRA metals and radionuclides were filtered in the field using a 0.4 micron in-line filter during the sample collection process. Sixteen VOCs, eight SVOCs, TPH-GRO, TPH-DRO, metals, and radionuclides were detected in the groundwater underlying SD027 at concentrations exceeding the site-specific background groundwater sample collected from boring SB27-08. A summary of the groundwater analytical results is included as Table 3-9 in the ACM Work Plan (Tetra Tech, 2012).

Based on the Supplemental RFI data, further investigation of SD027 was recommended to determine appropriate remedial actions, if necessary. Field activities recommended included: (1) the sampling and potential removal of sediment within the washrack concrete trough which terminates at the concrete washrack; (2) a subsurface soil investigation to delineate the extent of impacted soils in the vicinity of the discharge pit targeting VOCs, TPH-GRO, TPH-DRO, metals, and radionuclides; (3) the installation of five permanent groundwater monitoring wells (i.e. one upgradient well, one downgradient of washrack, and three downgradient monitoring wells; and (4) at least one round of groundwater sampling to assess VOCs, SVOCs, TPH-DRO, metals (total and dissolved), gross alpha and gross beta emitters (total and dissolved), and total dissolved solids (TDS) concentrations in the underlying groundwater.

3.5 ACCELERATED CORRECTIVE MEASURE WORK PLAN ADDENDUM ACTIVITIES (Tetra Tech, 2012)

The following sections present the summary of all site investigation results, and evaluate all the data with respect to the identified cleanup criteria. The data have been evaluated with regard for both human health and the potential for ecological risks. Completion of these steps has resulted in identification of the contaminants, media, and pathways of concern, and has supported the identification of areas and volumes of contaminated media that must be addressed to meet the site closure strategy. Finally, the rational for cleanup and the recommended remedial action are described. Discussion of the activities required to implement the remedy are provided in Section 3.6 of this document, Interim Measures Work Plan.

The preferred closure strategy for RCRA sites at HAFB is to support unrestricted future land use (i.e., closure without controls) where technically and economically feasible. To support this strategy, this ACM addendum for SD027 focuses on data evaluation and remedial actions that will support future residential use. As discussed below, because the residential cleanup criteria for all contaminants detected in environmental media at SD027 are the lowest for all potential human receptors (i.e., resident, commercial/industrial, and construction workers), the data evaluation and remedial strategy for a future resident ensures that the most sensitive human receptor is identified.

3.5.1 Soil and Sediment Evaluation

As described in the ACM Work Plan (Tetra Tech, 2009) and summarized in Section 4.1 of the ACM Work Plan Addendum (Tetra Tech, 2012), soil field screening and sampling was conducted at a total of 31 locations during the 2010-2011 ACM site investigation. The soil investigation focused on soils in and around the former drainage pit located south of the washrack. Soil samples were collected at multiple depths at each location. The results for all contaminants detected in the 2010-2011 soil samples are presented in Tables 4-1 and 4-2 in the ACM Work Plan (Tetra Tech, 2012). As was provided for the historical soil samples (see Tables 3-1 through 3-8 in the ACM Work Plan (Tetra Tech, 2012)), Tables 4-1 and 4-2 (Tetra Tech, 2012) are formatted to show exceedances of the direct contact SSLs and Table 4-3 (Tetra Tech, 2012) is formatted to show exceedances of the VI SSLs only for detected contaminants with sufficient volatility.

The soil sample locations and sample depths containing contaminants that exceeded residential SSLs for direct contact and/or VI risk for indoor air are shown on Figure 4-1 in the ACM Work Plan (Tetra Tech, 2012). Only the 2010-2011 ACM site investigation sample locations are shown on Figure 4-1. It is noted that the 1993, 1994, and 2006 historical soil samples collected in the former drainage pit area (see Figure 3-1 and Tables 3-1 through 3-8 in the Tetra Tech, Inc. ACM Work Plan) are consistent with the 2010-2011 ACM sample results, but the historical results do not necessarily represent conditions during the 2010 and 2011 activities and therefore are not shown on Figure 4-1. As described previously, historical soil samples located in and near the washrack did not show exceedances (with the exception of sediment within the washrack sump). The focus of the 2010-2011 soil evaluation was the former drainage pit area; however, sediment that has accumulated in the washrack sump (see Tables 3-1, 3-5, and Figure 3-1 in the Tetra Tech, Inc. ACM Work Plan) had exceedances of the SSLs (sample SD27-01) and was addressed.

3.5.1.1 Sediment

Evaluation of the data presented in Table 3-3 in the ACM Work Plan (Tetra Tech, 2012) (sample location SD27-01 shown on Figure 3-1 in the Tetra Tech, Inc. ACM Work Plan) shows that the contaminants detected in sediment listed below exceeded residential direct contact SSLs in the washrack sump at SD027:

- SVOCs – benzo(a)pyrene, dibenz(a,h)anthracene
- Metals – barium, chromium, and lead

Evaluation of the data presented in Table 3-7 in the ACM Work Plan (Tetra Tech, 2012) (sample location shown on Figure 3-1 in the Tetra Tech, Inc. ACM Work Plan) indicates VOC concentrations were not detected in sediment greater than the vapor intrusion $1x10^{-5}$ risk SSLs for residential indoor air in the washrack sump at SD027.

3.5.1.2 Soil

Evaluation of the data presented in Tables 3-1, 3-2, and 3-4, and Tables 4-1 and 4-2 in the ACM Work Plan (Tetra Tech, 2012) shows that the contaminants detected in soil listed below exceeded residential direct contact SSLs at one or more locations (where indicated on Figure 4-1 in the Tetra Tech, Inc. ACM Work Plan) in and around the former drainage pit at SD027:

- VOCs – 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, acrolein, benzene, ethylbenzene, m,p-xylenes
- TRPH and TPH C10- C28
- Metals – arsenic (one sample), chromium (three samples), and lead (one sample)

Evaluation of the data presented in Tables 3-5, 3-6, and 3-8, and Table 4-3 in the ACM Work Plan (Tetra Tech, 2012)shows that the contaminants detected in soil listed below exceeded vapor intrusion $1x10^{-5}$ risk SSLs for residential indoor air in and around the former drainage pit at SD027 (where indicated on Figure 4-1 in the Tetra Tech, Inc. ACM Work Plan):

- VOCs – 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, acrolein, benzene, benzyl chloride, carbon disulfide, chloroform, ethylbenzene, hexane, isopropylbenzene, m,p-xylene, n-butylbenzene, n-propylbenzene, naphthalene, o-xylene, sec-butylbenzene, toluene, and trichloroethene.

3.5.2 Groundwater Evaluation

As described in the ACM Work Plan (Tetra Tech, 2009) and summarized in Section 4.1 of the ACM Work Plan Addendum (Tetra Tech, 2012), five new groundwater monitoring wells were installed during the 2010 ACM site investigation. Subsequently, all monitoring wells (MW-01 through MW-05) were sampled in November 2010 and in January, April, and July 2011 as part of the ongoing long-term monitoring (LTM) program at HAFB. Monitoring wells MW-01 through MW-05 were sampled again in December 2012 and March, June, and August 2013. The results for all contaminants detected in groundwater for all LTM sample events are presented in Table 4-4 in the ACM Work Plan (Tetra Tech, 2012). As was provided for the historical groundwater samples (see Table 3-9 in the ACM Work Plan (Tetra Tech, 2012)), the 2010-2011 groundwater data table was formatted to show exceedances of the NMED groundwater SSLs for residential tap water (or EPA MCLs) and exceedances of the vapor intrusion from groundwater to indoor air exposure pathway (per EPA 2002 default criteria).

Evaluation of the data presented in Table 3-9 and Table 4-4 in the ACM Work Plan (Tetra Tech, 2012) shows that the contaminants listed below exceeded residential tap water SSLs, or MCLs, in groundwater at one or more locations at SD027:

- VOCs – 1,2-dichloroethane, benzene, ethylbenzene, chloroform, naphthalene, toluene, xylenes
- Metals – arsenic, selenium
- Others – nitrate

Of the above listed contaminants that exceed the tap water SSLs, none were exceeded at well MW-03 and historical locations GW27-07 and GW27-08; only arsenic exceeded at well MW-01; and only arsenic and isopropylbenzene exceeded at well MW-04. The majority of exceedances of the tap water SSLs occurred at wells MW-02 and MW-05 and at historical locations GW27-02 and GW27-03, as shown in Figure 4-2 in the ACM Work Plan (Tetra Tech, 2012).

Evaluation of the data presented in Tables 3-9 and Table 4-4 in the ACM Work Plan (Tetra Tech, 2012) shows that the contaminants listed below exceeded the VI $1x10^{-5}$ risk SLs for groundwater to indoor air at one or more locations at SD027:

- VOCs – 1,2-dichloroethane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, isopropylbenzene, n- propylbenzene, naphthalene, toluene, and trichloroethene.

Of the above listed contaminants that exceed the tap water SSLs, none were exceeded at wells MW-01, MW-03 or at historical locations GW27-07 and GW27-08; and only isopropylbenzene exceeded at well MW-04. The majority of exceedances of the VI SLs occurred at wells MW-02 and MW-05 and at historical locations GW27-02 and GW27-03, as shown in Figure 4-2 in the ACM Work Plan (Tetra Tech, 2012).

The data show that impacts to groundwater are greatest within and downgradient (southwest) of the former drainage pit. The impacts at well MW-05 suggest that ponding and periods of higher hydraulic head in the pit acted to distribute some groundwater contamination upgradient of the pit, or that a release occurred from the pipeline in that area. Overall, the data indicate that a plume of groundwater contamination extends in an elongated pattern running northeast to southwest through the former drainage pit.

3.5.3 Radionuclides in Sediment, Soil, and Groundwater

Exceedances in soil and groundwater of the screening levels for radiological contaminants are shown in Tables 3-1, 3-4, 3-9, 4-1, and 4-4 in the ACM Work Plan (Tetra Tech, 2012); it is noted that all groundwater results for gross alpha and gross beta in Table 4-4 (Tetra Tech, 2012) were rejected due to high levels of dissolved solids in the samples. To determine if the screening values and underlying assumptions should be used as cleanup levels for radionuclides at SD027, the data were reviewed by a URS radiological specialist, Dr. Bob Meyer, PhD. Dr. Meyer's review of the soil radiological sample results provided in Section 3 (historical) and Section 4 (ACM) data tables and his consideration of the Radiation Protection Program and Baseline Gamma Survey Summary report for SD027 (Tetra Tech, 2010) led to his conclusions regarding the source, potential risk, and soil management at SD027, as quoted below:

"As can be seen in the (analytical results) tables, most of the radionuclide soil concentration data of potential interest in the light of the Office of Soil Waste and Emergency Response (OSWER) comparison values represent naturally occurring radionuclides, at concentrations typical for natural, uncontaminated soils. These nuclides are present in many types of soil throughout the world, and are not associated with detonations of fission weapons. A few of these values fall outside the single-value comparison concentrations from OSWER, but those values all fall well within the normal range of variation of these nuclides in the natural environment, and do not represent concentrations of concern, or concentrations suggesting the need for further study. Very low residual concentrations as found here (reference SD027), the result of fallout atmospheric plumes and rainfall washout into soils well downwind of the test site and across the entire U.S., do not represent concentrations of concern, or concentrations suggesting the need for further study. The subject site's soils, as represented by the measured radionuclide concentrations, are not of concern in terms of human or environmental risk. If excavated, the soil represented by these radionuclide measurements may be disposed of as though it were ordinary soil, uncontaminated by radionuclides. The soil results do not indicate any potential for groundwater contamination."

It was concluded from Dr. Meyer's evaluation that the EPA radiological screening guidelines for soil are not applicable cleanup criteria for SD027 because concentrations detected at the site represent background conditions and that soil and groundwater do not represent a potential human health or environmental risk. Further discussion or evaluation of soil and groundwater for radionuclides is not included in this report. The referenced gamma survey summary report for SD027 (Tetra Tech, 2010) and Dr. Meyer's biography are provided in the January 2012 Work Plan Addendum (Tetra Tech, 2012).

3.5.4 Vapor Analysis

NMED has not published criteria for assessing risk via indoor air vapor intrusion from contaminated sediment, soil, or groundwater. In accordance with the technical background guidance (NMED, 2009), the latest EPA guidance for assessing vapor intrusion potential (EPA, 2004) was consulted. For soil at Site SD027, the latest versions of EPA's Johnson & Ettinger (J&E) model spreadsheets were used to calculate VI SSLs for both $1x10^{-6}$ and $1x10^{-5}$ indoor air risk levels. The model lookup inputs for a 'loam' soil were selected to represent the site based on the site boring logs and soil survey data. The fraction of organic carbon in soil (i.e., 0.5 percent) used in the VI modeling was based on the soil survey property tables (USDA, 2002).

A vadose zone soil vapor permeability value of $1x10^{-8}$, which represents an upper range for loam soils, was used in the model to lend a measure of conservativeness to the VI screening levels. The calculation spreadsheets used to derive the VI screening levels are provided in the ACM Work Plan Addendum submitted by Tetra Tech in 2012. Application of the J&E modeled VI SSLs assumes that the soil samples are not saturated (i.e., default soil moisture model inputs were used in the modeling that assume the soil lies above the water table). This results in an increased level of conservatism for soil that lies below the water table because an increase in the soil moisture content will result in a higher (less conservative) SSL. Use of the J&E modeled VI SSLs results in a conservative analysis for soil below the water table; however, it cannot be predicted when or how often the contaminated soils currently below the water table may lie above the zone of saturation due to future fluctuations of the shallow aquifer. Use of conservative SSLs is consistent with the goal of future unrestricted site use.

3.5.5 Media and Pathways of Concern for Human Health

The data evaluation presented in the Section 3.5 of this document demonstrates that concentrations of contaminants in sediment, soil, and groundwater at SD027 exceed the risk-based SLs and VI SLs. It was reported in the Supplemental RFI Report that sediment lying in the sump within the washrack was removed and disposed (HGL, 2007); therefore there is no existing sediment media of concern. However, both soil and groundwater are existing media of concern. Contaminants in soil and groundwater exceed both the risk- based screening criteria for direct contact and for potential vapor intrusion to indoor air.

3.5.5.1 Soil Pathways

Unacceptable risk from soil at SD027 may occur via two pathways:

1. Direct human contact with soil (e.g., construction worker in excavation), and
2. Human occupation of buildings constructed near contaminated soil via VI.

For direct contact risk evaluation, soil data Tables 3-1, 3-2, and 3-4, and Tables 4-1 and 4-2 in the ACM Work Plan (Tetra Tech, 2012) provide SSLs for the resident, commercial/industrial, and construction worker receptors and identify the contaminants and sample locations that exceeded these criteria. Review of the tables shows that for all contaminants that exceeded one or more of these criteria, the residential SSL was the lowest of all receptors; thus, identification of contaminants that exceed residential criteria, by default, identifies risks for all of the listed human receptors. While current conditions do not indicate

direct contact risk for a current site user (base worker) or a future resident because impacted soils lie below 2 feet depth, current construction workers could excavate into contaminated soils and unrestricted site closure could result in future residential exposure due to the excavation and redistribution of contaminated soils on the surface during construction activities.

For VI evaluation, the soil data Tables 3-5, 3-6, and 3-8, and Table 4-3 in the ACM Work Plan (Tetra Tech, 2012) provide SSLs for both the $1x10^{-6}$ and $1x10^{-5}$ indoor air risk levels for residential receptors. Due to assumptions and simplifications in the modeling used to derive VI SSLs based on bulk soil analytical data, the $1x10^{-5}$ risk level is deemed protective of current and future site users. While site conditions do not indicate a vapor intrusion risk for current site users (no occupied building on or near site) a future exposure could occur if buildings are constructed following unrestricted site closure. It should be noted that Tables 3-5, 3-6, and 3-8, and Table 4-3 report the same result for $1x10^{-6}$ and $1x10^{-5}$ indoor air risk levels. These tables were created by Tetra Tech, Inc. and prepared in the ACM Work Plan (Tetra Tech, 2012).

3.5.5.2 Groundwater Pathways

The data evaluation presented in Section 3.5 of this document shows that human health risks exist at SD027 from exposure to contaminants in groundwater. Contaminants in groundwater have been shown to exceed both the residential tap water SSLs (or MCLs) and the SLs for groundwater to indoor air VI risk. The residential tap water use pathway is deemed not applicable for SD027 for the following reasons:

- There is no current groundwater withdrawal or use at the site or within the vicinity of the site
- The data tables show that groundwater at the site is high in TDS (see Table 4-4 in the ACM Work Plan (Tetra Tech, 2012)). High TDS is persistent over all areas of the site (all well locations). Because TDS exceeds 10,000 milligrams per liter (mg/L), the groundwater is not considered a potable groundwater source. According to the New Mexico Administrative Code (NMAC), waters with TDS concentrations greater than 10,000 mg/L are not regulated and do not have clean-up criteria concentrations for contaminants (NMAC, 20.6.2.3103); therefore risk via the groundwater pathway is incomplete.
- Although groundwater depth is shallow (10 feet bgs), access to groundwater at the Site is restricted to a location which requires specific access not generally available to the public. The potential for a residential scenario would follow Site close-out and HAFB closure.

Unacceptable risk from groundwater at SD027 may occur via human occupation of buildings constructed near contaminated groundwater via the vapor intrusion pathway.

3.5.6 Media and Pathways of Concern for Ecological Risk

The results of a HAFB site-wide ecological risk assessment prepared by Sirrine Environmental Consultants were included in the *Risk Assessment Report for the Remedial Investigation, Volume IV* of the RI Report (Radian, 1992). In the *Phase I RCRA Facility Investigation Report, Volume II* (Radian, 1994), the ecological risk assessment was updated. However, potential ecological risks at site SD027 were not specifically addressed in either of these reports.

NMED provides guidance for conducting a screening level ecological risk assessment (NMED, 2000). Tier 1 of the Screening-Level Ecological Risk Assessment (SLERA) includes a Scoping Assessment. The purpose of the Scoping Assessment is to gather information about a site that can be used to determine if there is “any reason to believe that ecological receptors and/or complete exposure pathways exist at or in the locality of the site”. The components of the Scoping Assessment that may be used to address each component are presented below.

- Basic Site Information – Sections 1 and 2 of the ACM Work Plan (Tetra Tech, 2012) provide the site history and the site/locality environmental setting.
- Site Visits – Site visits to identify community level habitat and ecological receptor observations are not known to have been conducted or have not been documented for SD027. Threatened & Endangered species and sensitive habitats are known to exist within HAFB.
- Identify Preliminary Contaminants of Potential Ecological Concern (COPECs) – Tables 3-1 through 3-9 and Tables 4-1 through 4-4 in the ACM Work Plan (Tetra Tech, 2012) provide lists of contaminants that have been detected in sediment, soil, and groundwater at the site. Contaminated sediment within the washrack sump has been removed. It is noted that the data show that contaminants were released to a former drainage pit and that subsurface soil and groundwater have been impacted. The pit area was previously reclaimed by covering with clean soil to the approximate surrounding contour. The soil investigation conducted in 2010-2011 of the former pit area showed that only subsurface soils below a depth of about 6 feet bgs are impacted by COPECs (see Section 4.3.1 in the ACM Work Plan (Tetra Tech, 2012)).
- Develop a Preliminary Conceptual Site Exposure Model (PCSEM) – As indicated above, contaminated soil lies at a depth of 6 feet bgs or greater. The local water table has been observed to fluctuate between approximately 8 to 11 feet bgs. There are no deep drainages or nearby surface water bodies where groundwater from the site may be accessed by ecological receptors. Because contaminated soil and groundwater are present at depths of 6 feet bgs or greater, there is no complete exposure pathway for ecological receptors at or near the site.
- Prepare a Scoping Assessment Report – The data presented in the 2012 ACM Work Plan Addendum supports a finding that the depth of soil and groundwater contamination at SD027 results in no potential ecological exposure pathways. In the absence of a complete exposure pathway, it is surmised that there is no reason to believe that ecological receptors and/or complete exposure pathways exist at or in the locality of the site.

3.5.7 Areas and Volumes of Contamination

3.5.7.1 Soil Contamination

Contaminants in soil that exceed the SSLs, as shown in Tables 3-1 through 3-8 and Tables 4-1 through 4-3 in the ACM Work Plan (Tetra Tech, 2012), and the sample locations that contain exceedances as shown on Figure 4-1 in the ACM Work Plan (Tetra Tech, 2012), define the area at SD027 that represents contaminated soil. Contaminated sediment and soil has been identified at SD027, as follows:

- Soil in and around the former drainage pit containing:
  - VOCs, TPH, and metals (chromium, arsenic) that represent direct contact risk, and
  - VOCs that represent vapor intrusion risk

As indicated on Figure 4-1 in the Tetra Tech, Inc. ACM Work Plan, soil contamination is associated with the release of washrack discharge fluids into the former drainage pit located approximately 140 feet south of the washrack. Samples collected during the 2010-2011 ACM site investigations show the lateral and vertical extent of impacts to soil to be greatest within the immediate area of the former pit, but indicates that contamination has spread to the south and west of the pit following advective groundwater flow, predominantly within the zone of water table fluctuation. Figure 4-1, from the Tetra Tech, Inc. ACM Work Plan, shows the areas of soil contamination that represent both direct contact and vapor intrusion risk, and the estimated areas and volumes of contaminated media are listed in Table 4-5 in the ACM Work Plan (Tetra Tech, 2012).

3.5.7.2 Groundwater Contamination

Contaminants in groundwater that exceed the residential tap water and/or VI SLs, are shown in Tables 3-9 and 4-4 in the ACM Work Plan (Tetra Tech, 2012), and plotted on Figure 4-2 in the ACM Work Plan (Tetra Tech, 2012), represent contaminated groundwater at SD027. Contaminated groundwater lies beneath and hydraulically downgradient from the former drainage pit. Groundwater impacts are also observed to the north of the pit, somewhat upgradient. This is attributed to the periodic buildup of hydraulic head in the pit and episodic radial groundwater flow (and contaminant migration) away from the pit. Alternatively, leakage from the buried pipeline may also have occurred. The current location of groundwater that exceeds the tap water and/or the VI SLs suggests that contaminants have moved slowly downgradient from the source area in response to advective groundwater flow. As shown on Figure 4-2 in the ACM Work Plan (Tetra Tech, 2012), the total area of the plume that exceeds VI SLs and that represents the pathway of concern for groundwater at SD027 is approximately 0.4 acres. This groundwater is shallow; the water table generally lies between 8 to 11 feet bgs. The lateral and vertical extent of the groundwater plume has been estimated based on soil field screening during the DPT soil coring and the location and depth of impacted soil samples based on chemical analyses (see Figure 4-1 in the Tetra Tech, Inc. ACM Work Plan). From this soil data, it is concluded that the plume extends from the water table at 8 to 11 feet bgs to a depth of approximately 15 to 20 feet bgs along the axis of the plume (DPT locations DPT-08, -11, -18 on Figure 4-1 in the Tetra Tech, Inc. ACM Work Plan). Along the plume perimeter, the data indicate impacts are limited to a depth of about 12 feet bgs (i.e., associated with the zone of water table fluctuation between approximately 8 to 11 feet bgs).

3.6 RECOMMENDED REMEDIAL ACTION

Both subsurface soil and groundwater at SD027 have been impacted and represent unacceptable risk for unrestricted future land use (e.g., residential). The areas of contaminated subsurface soil have been shown to be associated with the former drainage pit and areas hydraulically downgradient of the pit. As indicated on Figure 4-3 and described in Table 4-5 in the ACM Work Plan (Tetra Tech, 2012), there are three areas of concern (AOC): soil exceeding direct contact SSLs, soil exceeding VI SLs, and groundwater exceeding VI SLs. The recommended AOC is the soil exceeding direct contact SSLs. Following remediation of this AOC, the surrounding AOCs should naturally attenuate to concentrations below respective VI SLs. Therefore, the AOC size to be remediated is approximately 6,000 square feet (ft^2) (see Table 4-5 in the ACM Work Plan (Tetra Tech, 2012)). Soil contamination appears to be within the same shallow layer across the site and exists between approximately 5 feet bgs and 15 feet bgs. Remedial efforts at the site are recommended to be focused within this area and interval of the site.

At the completion of this action, all areas currently containing soil contamination exceeding criteria for unrestricted future site use would be remediated. Furthermore, soil contaminant mass that may be contributing to ongoing leaching of contaminants to groundwater and impacted aquifer matrix would be removed, thus preventing future degradation of groundwater quality from soil source areas.

Groundwater at SD027 (and HAFB) is not potable due to elevated concentrations of TDS (greater than 10,000 mg/L). While groundwater has been impacted by contaminants that exceed tap water SSLs, remedial action to restore groundwater to meet the tap water cleanup levels is not recommended (i.e., the pathway is not and will not be complete). However, VOCs detected in groundwater represent current and future risk to human health via VI if buildings are occupied near the groundwater plume. The area of groundwater that represents current and future VI risk, as shown in Figure 4-2 in the ACM Work Plan (Tetra Tech, 2012), is approximately 18,300 ft^2 in area. By treatment of the soil exceeding direct contact SSLs, residual concentrations detected within groundwater should be reduced through natural attenuation and removal of the source to groundwater.

The data indicate that the plume has slowly migrated to the southwest of the former drainage pit. Based on site history, it is likely that contaminant releases and impacts to groundwater began up to 60 years ago. The southwestern extension of the plume currently extends approximately 140 feet downgradient from the former drainage pit, suggesting an average plume velocity of about 2.2 feet/year that is consistent with the estimated low site groundwater velocity (1 feet/year, see Section 2.7). Several technologies were evaluated to remediate soil and groundwater. Tetra Tech, Inc. in their 2012 Work Plan Addendum suggested implementing soil excavation to mitigate risk associated with impacted soil and groundwater.

Upon evaluation of the data, contamination in soil exceeding direct contact SSLs is considered to be the primary AOC. As described above, the area of soil exceeding direct contact SSLs is approximately 6,000 ft^2. Soil contamination within this AOC appears to be a continuing source for groundwater contamination. Upon removal of soil impacts within the primary AOC, groundwater concentrations which extend beyond the treated AOC will begin to decrease due to the removal of the source contamination. Although risk from groundwater concentrations is not present, an additional 2,000 ft^2 area has been added to address potential soil concentrations surrounding SD027-MW-5 due the high concentrations detected in the groundwater from SD027-MW-05. This increases the area of the AOC to approximately 8,000 ft^2 (see Figure 4-4). URS recommends implementing ISCO to address the impacted saturated soils and soils within the capillary fringe. By implementing ISCO within this zone, soil concentrations as well as groundwater concentrations may be reduced to below applicable regulatory standards within the same injection event.

ISCO injections are anticipated to remediate petroleum based compounds to below applicable regulatory standards; however, ISCO will not actively treat the adsorbed metals found at the site such as arsenic, chromium, and lead. Based on soil concentration data from 2010 and 2011, arsenic, chromium, and lead exceed applicable regulatory standards in one, three, and one samples respectively. Baseline sampling will be conducted prior to ISCO injections and these updated soil analytical results may indicate a reduction in metal concentrations. If baseline concentrations of these metals exceed applicable regulatory standards additional remedial action in combination with ISCO will be implemented. If additional remedial actions are required, these actions will also reduce dissolved metal concentrations in groundwater. The following section outlines a work plan developed to implement ISCO injections and any additional remedial actions at the Site.

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4.0 INTERIM MEASURES WORK PLAN

This section presents a detailed plan to treat contaminated soil at SD027 using ISCO. Based on the results of previous investigations conducted at SD027, petroleum based compounds, arsenic, chromium, and lead exceed NMED direct contact SSLs within an area of approximately 8,000 ft^2 (discussed in Section 3.6). ISCO has been recommended as the corrective action to be implemented at the Site. Field activities to be completed during implementation of ISCO at SD027 are as follows:

- Pre-mobilization planning;
- Site preparation, mobilization, and baseline sampling;
- Initial ISCO injection;
- Performance monitoring and sampling;
- Secondary ISCO injection;
- Post-injection performance monitoring and sampling;
- Collect confirmation soil boring and groundwater samples; and
- Monitoring well abandonment, site restoration, investigative derived waste, and closeout.

4.1 PROJECT PLANNING DOCUMENTS

4.1.1 Quality Assurance Project Plan

A site specific QAPP will be prepared and submitted for AFCEC and NMED review and approval. The *Uniform Federal Policy Quality Assurance Project Plan, SD-027 – Pad 9 Drainage Pit* (United States Air Force [USAF], 2014a) outlined sampling and analytical requirements necessary to ensure that the functional activities, organization, and quality assurance/quality control protocols are achieved in accordance with the project's data quality objectives. The QAPP will serve as the basis for data collection activities, groundwater and soil sampling procedures, sample preparation, sample transportation, record keeping and field documentation. The QAPP provides SOPs for the activities to be performed by this work plan. URS has compiled a list of SOPs to be utilized when work is performed at HAFB. The SOPs are included in the URS QAPP. URS will formally amend the plan as needed for any field activities not covered in the existing documentation and will submit amendments for AFCEC and NMED review and approval. The site specific QAPP will be submitted to the AFCEC following the submittal of this work plan.

4.1.2 Health and Safety Plan

The *Health and Safety Plan – Selected Sites Under the Air Force Civil Engineer Center (AFCEC) Contract No. FA8903-13-C-0008 (SS-017;SS-018; DP-030/SD-033; SS-039; OT-037/OT-038; SS-065; SS-069; SD-027)* (USAF, 2014) has been prepared and addresses the tasks and conditions to be encountered during this project. The HASP will discuss employee training, personal protective equipment, medical surveillance requirements, and a contingency plan. The HASP may be modified if any changes to specific tasks or scope are made. Updates to the HASP will be maintained in the project file.

All field work will be completed in accordance with the HASP. A tailgate safety meeting will be conducted before beginning work for the day. This will include a review of site specific safety concerns and job safety analyses from both URS and the ISCO subcontractor. The level of personal protective equipment (PPE) required for this work is anticipated to be Level D, which includes hard hats, steel-toed boots, long sleeved shirts, safety glasses, and appropriate gloves when sampling or handling soil. Any additional safety precautions specific to HAFB will be adhered to.

4.2 PRE-MOBILIZATION PLANNING

Before site mobilization, it will be necessary to complete several pre-mobilization/planning activities. These activities include, but are not limited to:

- Obtain HAFB access badges for all personnel working at the site during the ISCO injections.
- Prior to conducting the ISCO injections, schedule a mobilization to the site to identify and address unforeseen conflicts with the proposed work plan (i.e., access to large amounts of water, rig access and egress, equipment storage).
- Following the approval of this Work Plan by HAFB and AFCEC, a site reconnaissance/survey will be conducted to verify and survey the limits of the treatment area and finalize the implementation schedule.
- A pre-construction meeting will be scheduled and conducted, and HAFB/AFCEC/NMED will be notified of the intent to begin work.

4.2.1 Permits and Requirements

This section details the permits and requirements necessary to conduct ACM at SD027.

4.2.1.1 HAFB Regulations

The work will be performed on a secure Air Force installation and the contractor personnel must become familiar with and comply with HAFB regulations. All required badges, passes, and vehicle permits will be acquired with proper authority and prior to commencing work at SD027 (e.g., access pass, camera pass, etc.).

4.2.1.2 Site Access

SD027 is located east of Taxiway F and northwest of Runway 07/25 in the active airfield at HAFB (see Figure 1-2 in the Tetra Tech, Inc. ACM Work Plan). Due to its location, access to SD027 is limited to authorized personnel. Coordination with either the Airfield Manager or the Assistant Airfield Manager is mandatory to access the site. All personnel will be required to attend an airfield briefing, administered by the Assistant Airfield Manager, prior to entry onto SD027. Additionally, every vehicle will be required to register their vehicles with the Assistant Airfield Manager and obtain a privately owned vehicle (POV) pass prior to entry onto SD027. A person with a current Flightline Driver Training Certificate of Competency (AF IMT 483) will be required as an escort on-site at all times during field activities.

Access to SD027 will be gained by using a very specific route through the airfield. This route includes crossing Runway 07/25 at the POV Crossing on 49er Avenue. This crossing requires escort by person with a current AF IMT 482 certificate. Personnel will then use an access road to reach Pad 8 by the Maintenance Building. At this location, personnel will cross Taxiway F to reach SD027. A map showing the route to access SD027 is presented on Figure 5-1 in the ACM Work Plan (Tetra Tech, 2012). It should be noted the route shown in Figure 5-1 is to the landfarm which is in the process of being closed. An additional access route will need to be determined and verified with HAFB prior to conducting work.

Foreign object debris (FOD) checks are required prior to crossing all runways and taxiways. FOD checks consist of checking the tires and other parts of vehicles to identify and remove any debris (e.g., dirt, mud, rock, etc.) that may fall from the vehicle onto the runway or taxiway. Access into SD027 requires crossing one runway and one taxiway; therefore, two FOD checks are required to access SD027 and two FOD checks are required when leaving SD027.

4.2.1.3 Utility Clearances and Drilling Permits

Invasive subsurface (injection) activities at HAFB will be required to comply with HAFB SOP-3 on utility clearance and dig permits within the specified timeframe prior to commencing the work. If a utility line is located at SD027 during the corrective measures implementation, work will cease and the appropriate authority will be contacted for inspection and line determination.

Injection wells are regulated by the EPA under the authority of the Underground Injection Control (UIC) program, as provided for by Part C of the Safe Drinking Water Act. "Injection" includes seeping, flowing, leaching, and pumping, with or without added pressure. The UIC Program regulates the subsurface injection of waste fluids below, into and above underground sources of drinking water (USDWs). A USDW is defined as any ground water containing 10,000 mg/L or less of total dissolved solids, in a quantity that can sustain a public water supply system (minimum 15 connections or 25 persons). Although groundwater underlying the Site has a total dissolved solids concentration of greater than 10,000 mg/L, regulatory information is provided as a contingency.

Some states have been partially or fully delegated authority for the UIC program. The state of New Mexico delegates regulatory compliance to the NMED, Ground Water Quality Bureau. The injection well registration is for inventory reporting purposes. The point of contact for injection well registration is as follows:

Attn: John Hall
New Mexico Environmental Department
1190 St. Francis Drive, Suite S2250
Santa Fe, NM 87505
Email: john.hall@state.nm.us
Phone: (505) 827-1049

The injection well registration form will be completed for injection boreholes. This form will be completed and submitted online at the following address:

- http://www.nmenv.state.nm.us/gwb/FORMS/NewMexicoEnvironmentDepartment-GroundWaterQualityBureau-Forms.htm

4.2.2 Site Reconnaissance

Prior to injection activities, SD027 will be visually inspected and site features investigated to identify and address any issues prior to subcontractor mobilization to the site. A licensed surveyor may be used to survey locations of important current or future site features, such as potential monitoring well locations, boring locations, existing structures, etc.

4.3 SITE PREPARATION, MOBILIZATION, AND BASELINE SAMPLING

Prior to initiating the field activities, URS will perform the following activities:

- Procure and select all necessary qualified and experienced subcontractors for the project;
- Complete and receive approval for all Work Plans, underground utility clearances, and drilling permit requirements;
- Coordinate scheduled activities with HAFB personnel;

- Communicate scheduled activities to the USAF, NMED, and Otero County and address their needs/concerns, as necessary; and
- Locate the specific areas at the Site to be evaluated.

Prior to initiating intrusive activities, a completed and approved Air Force Form 332 will be obtained for authorization of construction work at Holloman AFB. A request for locating underground utilities in the area will be submitted to the local one-call utility notification center, as applicable. Additionally, Air Force Form 103 will be submitted to request that the location of underground utilities be marked at the specified areas. Drilling locations will be identified with paint, flags, or stakes, as appropriate to the surface material. Utility clearance approvals will be completed by the appropriate Holloman AFB utility office (e.g., telephone, sewer, water, natural gas, etc.).

4.3.1 Metal Concentration Treatment Approach

Historical soil borings SD27-01, DPT-02, DPT-08, and DPT-19 contained concentrations of total chromium (SD27-01, DPT-02, and DPT-08), arsenic (DPT-19), and lead (SD27-01) which exceeded applicable SSLs. Total chromium was detected between 6.5 and 8.5 feet bgs in both DPT-02 and DPT-08 while arsenic was detected between 18 and 20 feet bgs. Concentrations of total chromium and lead were detected between 0 and 2 feet bgs in the soil sample collected from SD27-01. Concentrations of total chromium exceed the current SSL of 219 milligram per kilogram (mg/kg) with concentrations of 290 mg/kg, 262 mg/kg, and 228 mg/kg in SD27-01, DPT-02, and DPT-08 respectively. The arsenic concentration of 8.7 mg/kg in DPT-19 exceeds the current SSL of 3.9 mg/kg. The lead concentration of 1,900 mg/kg in SD27-01 exceeds the current SSL of 400 mg/kg. The proposed remedial technology outlined below will not remediate the concentrations of metals within the unsaturated or saturated soils; however, based on historical concentrations and the limited area in which concentrations were detected, URS will advance soil borings in proximity to historical borings SD27-01, DPT-02, DPT-08, and DPT-19 and analyze for total chromium, lead, and arsenic. If updated analytical data suggests concentrations of total chromium, lead, and arsenic are below the current SSLs, no remedial action is required. If the updated analytical results indicate total chromium, lead, and arsenic concentrations are above the current SSLs, URS will submit a revised ACM Work Plan Addendum to address the concern of metal concentrations present in saturated and/or unsaturated soils.

The soil borings advanced in the vicinity of SD27-01, DPT-02, DPT-08, and DPT-19 will be performed in conjunction with the baseline sampling which is described below.

4.3.2 Baseline Sampling

Baseline sampling will be performed prior to ISCO remedial activities. Baseline groundwater samples will be obtained from the monitoring well network (SD27-MW-1 through SD27-MW-5) as well as the baseline soil borings. Baseline groundwater samples will be analyzed for VOCs, SVOCs, and RCRA metals. Baseline groundwater samples will be collected following the procedures outlined by the URS QAPP. Baseline soil samples will be obtained by advancing soil borings adjacent and/or in the vicinity to historical soil borings which exhibited a high concentration of petroleum based compounds and/or metals.

Baseline soil samples will be collected from consistent sampling intervals as the historical sampling locations. A total of seven soil borings will be advanced for the baseline soil sampling event. Figure 5-2 illustrated the proposed locations of the baseline soil and groundwater samples. Baseline soil samples will be analyzed for VOCs, TPH, and RCRA metals (chromium as total chromium). If total chromium concentrations in the baseline soil samples exceed applicable regulatory standards, additional soil samples will be collected and analyzed for hexavalent chromium. Soil sampling procedures for baseline sampling will be performed according to the procedures outlined in the URS QAPP.

4.4 ISCO INJECTIONS AND FIELD ACTIVITIES

URS will coordinate with an appropriate subcontractor to devise an optimum injection layout to be implemented at the Site. The following outlines the approach to be utilized to achieve reduced soil and groundwater concentrations. The subcontractor will provide additional documentation describing the technical approach for performing the field work.

4.4.1 ISCO Program Design

The area requiring treatment encompasses the area in which soil concentrations exceed the direct contact SSL and to include subsurface groundwater and soil between DPT-01 and the vicinity around SD27-MW-5. This area is approximately 8,300 ft^2 and a URS subcontractor has been contracted to perform ISCO injections to remediate this area (see Figure 4-4 in the ACM Work Plan). The subcontractor has planned for one injection event which expands throughout a portion of the entire treatment area as a pilot test and includes up to one follow-up injection event to decrease soil and groundwater concentrations to below applicable regulatory standards.

The injection event(s) include an array of temporary injection points with 19 injections within the first event (pilot test). The second injection event will encompass the entire treatment area and consist of up to 25 injections. The follow-up injection event may have a modified number of injection points and differing locations based on the reduction in contamination. The number of injections is based on an anticipated radius of influence (ROI) of 10 feet. A site map depicting the first injection event is presented in Figure 5-3. The number and location of injections for the pilot test and follow-up injection events are subject to change based on results obtained through baseline sampling.

Direct-push technology will be used to install the temporary injection points. Historically at the site, direct-push has occasionally experienced refusal. If refusal is encountered an additional drilling method will be employed; the use of hollow stem auger is the preferred alternative drilling method. The URS subcontractor will retain a drilling contractor to perform drilling services during remedial activities. Prior to drilling activities, underground utilities will be identified and located by public and private utility locators. Injection points are subject to change in the field due to the presence of underground utilities.

All temporary injection points will be advanced up to 15 feet bgs by direct-push technology. The depth of each injection point will be determined by field conditions at each location (i.e., depth to groundwater). Each injection point will be equipped with a specially designed temporary 5-foot long injection screen through which the ISCO solution will be injected. The ISCO solution is pre-mixed at the surface prior to injection in large tanks. The ISCO solution is prepared using water, hydrogen peroxide, and a pH buffered ferrous iron complex. A catalyst is also used to assist with the destruction of subsurface contamination. The method for injecting the ISCO solution at each injection point is as follows:

- Water Rinse (approximately 10 gallons)
- Catalyst Injection (ranges between 50 and 100 gallons)
- Water Rinse (approximately 10 gallons)
- Reagent Injection (hydrogen peroxide/ferrous iron solution) (ranges between 50 and 100 gallons)
- Water Rinse (approximately 10 gallons)

After the ISCO injection is performed at a location, the direct-push rod is removed and the bore hole is sealed with bentonite pellets hydrated with water and a 1-foot cap of concrete to prevent migration of subsurface fluids (i.e., generated vapors and/or injection solutions). Storage of materials used to complete the ISCO injections will be coordinated with URS, their subcontractor, and HAFB prior to the start of field work in the pre-mobilization planning phase.

4.4.2 Groundwater and Soil Sampling

Groundwater and soil sampling will be performed between and after injection events as necessary and is described in further detail in the following Section 4.5 of this document.

4.4.3 Decontamination

Decontamination of equipment and sampling tools will be performed to avoid cross- contamination, health and safety precautions, and to limit the migration of contaminants off-site.

All heavy equipment will be decontaminated in accordance with applicable SOPs developed by URS. Generally, heavy equipment will be decontaminated by initially removing gross soil accumulation using a scraper, brush, or other device, then further decontamination using a high-pressure spray wash at a constructed decontamination pad designed to contain wash water fluids and sediment. Each piece of heavy equipment will be decontaminated and visually inspected prior to leaving SD027.

Decontamination of reusable sampling equipment and tools is required and will be conducted in accordance with applicable URS SOPs.

On-site trucks and equipment necessary for the ISCO injections will generally remain within the exclusion zone rather than be decontaminated. On-site trucks and equipment will be decontaminated once ISCO activities are completed and prior to leaving SD027. Handling and disposing of generated decontamination water is described in Section 4.8 below.

4.5 PERFORMANCE MONITORING AND SAMPLING

This section presents the performance monitoring and sampling activities planned for SD027. The general site layout of SD027 is shown on Figure 1-3 in the ACM Work Plan (Tetra Tech, 2012) and the treatment area proposed is shown on Figure 5-3. These protocols and procedures provide guidelines as to how monitoring and sampling will be performed to identify the performance of contaminant destruction by the ISCO injections. Subsurface groundwater and soil sampling for two performance monitoring periods are outlined below. Two performance monitoring periods have been selected, the first follows the initial site wide ISCO injection, and the second follows the secondary ISCO injection, if necessary.

The first performance monitoring event will be conducted approximately one week following the completion of first ISCO injection. If soil and groundwater analytical results indicate contaminant concentrations remain greater than applicable regulatory standards, a second ISCO injection will be performed to target the remaining locations where contaminant concentrations exceed applicable regulatory standards. The second ISCO injection shall be scheduled within approximately one week upon receiving analytical results from the first performance sampling. Following the second ISCO injection, an additional round of soil and groundwater samples will be obtained approximately one week following the completion of the second ISCO injection. Based on the results of the second performance monitoring, concentrations will have either 1) decreased below applicable regulatory standards and the site will be eligible for close-out 2) remain slightly above the applicable regulatory standards and monitored natural attenuation may be performed to reduce the concentrations or 3) remain above applicable regulatory standards in significant concentrations to warrant further remedial action. If further remedial action is necessary, URS has provided a contingency to implement an additional remediation strategy to achieve reduction in contaminant concentrations. If this contingency is necessary, an additional work plan addendum will be submitted to AFCEC and NMED for approval prior to implementation. URS-SOPs relevant to sampling activities are included in the QAPP.

Groundwater monitoring and sampling will be performed once between injection events from monitoring wells SD27-MW-2 through SD27-MW-5 (SD27-MW-1 if warranted). Additional groundwater samples will be collected as needed within the treatment area (reference Figure 5-2). The three or more groundwater samples will be selected based on results from the baseline sampling. Groundwater monitoring and sampling procedures are outlined in the URS SOPs.

Soil sampling will be performed once between injection events from within the treatment area. Soil samples shall be collected by direct push technology (hollow stem auger as an alternative) utilizing 2-foot long acetate sleeve samplers. Soil sampling locations will be advanced adjacent to and within the same sample interval as the baseline soil sampling (see Figure 5-2).

Investigative Derived Waste (IDW) generated will be handled and disposed following the guidelines outlined in Section 4.8 of this document.

Monitoring and sampling performed during the second performance period, shall be collected in a similar procedure as described for the first performance period. Sampling locations may be the same as the previous performance period or based on the results of previous performance sampling, be relocated to provide further Site specific data.

4.6 CONFIRMATION SOIL BORING AND GROUNDWATER SAMPLING

Confirmation soil and groundwater samples will be collected approximately three months following the second performance monitoring period to verify contaminant concentrations have remained below applicable regulatory standards for both soil and groundwater. Confirmation groundwater samples will be collected from monitoring wells SD27-MW-1 through SD27-MW-5 and analyzed for VOCs, SVOCs, TPH-GRO and TPH-DRO, and RCRA metals. Confirmation groundwater samples will be collected following a three well casing volume purge of each monitoring well. The three volume purge will be performed using a submersible pump and operated at a low flow rate. Groundwater sampling will follow procedures outlined in URS SOPs which will be included in the QAPP. IDW generated during confirmation groundwater sampling will be properly stored and disposed following the guidelines outlined in Section 4.8 below.

Confirmation soil borings will be advanced using a direct push rig (hollow stem auger as an alternative) utilizing 2-foot long acetate sleeve samplers. The location of confirmation soil borings will target previous soil borings and intervals in which high concentrations of contaminants were detected. Confirmation soil borings should be advanced as close as possible to historical borings and/or baseline soil samples obtained prior to the ISCO injections. Confirmation soil borings will be analyzed for VOCs, SVOCs, TPH-GRO and TPH-DRO, and RCRA metals. IDW generated will be handled and disposed following the guidelines outlined in the QAPP.

The site can apply for closure without restricted use, if concentrations in both groundwater and soil samples are below applicable regulatory standards (i.e., MCLs, SSLs, etc.) at the site. However, if concentrations detected in confirmation soil or groundwater samples have not been reduced to below applicable regulatory standards, performance monitoring will continue and/or additional remedial actions may be performed to achieve concentrations below regulatory standards.

4.7 MONITORING WELL ABANDONMENT

Once the confirmation samples have determined concentrations in subsurface soil and groundwater have been successfully reduced to levels below regulatory concern, the site may apply for close-out. Upon approval of site close-out, groundwater monitoring wells located on site will be abandoned by appropriate procedures outlined by the NMAC and NMED. Site restoration activities may be initiated, if warranted and final reports on activities performed at the Site will be drafted and submitted.

4.8 INVESTIGATIVE DERIVED WASTE (IDW)

The IDW generated during the ISCO injections, groundwater monitoring, and soil boring advancement will include spent and unused sample material, personal protective equipment, miscellaneous sampling supplies, decontamination water, and purge water. The IDW will be managed in accordance with SOP 49, "IDW Management" provided in the QAPP. Prior to performing sampling, the field team leader will discuss with the field sampling personnel waste reduction methods. Practices to be instituted to support waste minimization include, but are not limited to, the following:

- Restriction of materials (especially hazardous materials) to those needed for performance of work
- Substitution of recyclable materials for disposable items
- Reuse of items, when practical
- Segregation of contaminated from uncontaminated waste
- Segregation of reusable items (such as personal protective equipment and tools)
- Waste characterization will be evaluated based on the comparison of analytical results with applicable regulatory levels.

Soil IDW potentially generated from ISCO injections and performance sampling will either be containerized in drums or spread among the surroundings based on the amount generated. If a drum is necessary, a label posted on each drum will identify the contents and convey a warning that no material should be added or removed. Waste characterization will be performed by collecting individual samples of each generated waste container and sent to the analytical laboratory for analysis.

Purge water IDW potentially generated from ISCO injections and performance sampling will either be containerized in drums or discharged to surface based on the analytical results. A label posted on each drum will identify the contents and convey a warning that no material should be added or removed. Purge water characterization will be performed by collecting composite samples of generated waste and sent to the analytical laboratory for analysis. The detected constituent concentrations will be compared to the NMWQCC Regulations, Part 2, 3103, A, B, and C groundwater quality standards (20 NMAC 6.2).

Decontamination wastewater will be generated during between ISCO injections and performance samples by the drilling contractor. The drilling contractor will provide equipment used to store, handle, and contain all equipment and decontamination water generated during these activities. Wastewater IDW generated will be containerized in the most efficient method (drums or tanks) to be determined by the amount of IDW generated. A label posted on each drum or tank will identify the contents and convey a warning that no material should be added or removed. Decontamination water characterization will be performed by collecting composite samples of generated waste and sent to the analytical laboratory for analysis. The detected constituent concentrations will be compared to the NMWQCC Regulations, Part 2, 3103, A, B, and C groundwater quality standards (20 NMAC 6.2).

A Notice of Intent to discharge development, purge, and decontamination water will be prepared and submitted to NMED Ground Water Quality Bureau for approval prior to discharging any groundwater to surface. Results from laboratory analyses will be summarized and concentrations evaluated for individual containers based on the volume added from the wells from which the purge water and decontamination water originated. The maximum concentrations will be used to determine whether purge water meets the discharge requirements. After NMED provides their approval, the water will be discharged to the ground surface at the Site. If the results indicate that the water cannot be released to the ground surface, it will be disposed at an appropriate facility.

All personal protective equipment and disposable equipment will be placed in double plastic bags and sealed for disposal in dumpsters at the Base.

4.9 REPORTING

Upon completion of the corrective action field work, an Interim Measures Report will be submitted to the USAF detailing the remedial performance. The report will include at a minimum:

- Results of the soil and groundwater samples from each of the boring locations;
- Groundwater monitoring results from the existing monitoring wells;
- Results of each ISCO injection event:
    - Injection rates, pressures, and volumes; and
- Tables and figures
- Based on analytical results, recommend site-closure or implement additional corrective action contingency.

The Draft Interim Measures Report will be submitted to the AFCEC for acceptance and approval. AFCEC comments will be incorporated into the Final Interim Measures Report and resubmitted to the AFCEC prior to submittal to NMED.

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5.0 SITE CLOSURE

Site closure for SD027 is based on a remedial strategy to achieve the following objectives:

- Cleanup of soil to meet residential SSLs; and
- Mitigate risk via vapor intrusion from groundwater.

The objectives for site closure will be achieved by implementing the remedial actions described below.

5.1 SOIL CLEANUP

The area of contaminated soil which exceeds regulatory cleanup levels that must be addressed to achieve residential land use have been identified. ISCO injections are expected to remediate saturated soil and groundwater concentrations of contaminants to below applicable regulatory cleanup levels. A description of the ISCO injections is provided in Sections 4.3 and 4.4 above. In the event confirmation soil samples exhibit concentrations which exceed cleanup criteria, then additional remedial measures may be required to fulfill this objective (e.g., additional ISCO injections and/or evaluation of another remedial technology).

5.2 GROUNDWATER CLEANUP

ISCO injections within the saturated and capillary fringe zones are expected to reduce petroleum-based compounds in soil and groundwater concurrently. As a result of removing soil contamination, the continuing source to groundwater will be removed. It is expected that residual groundwater concentrations exceeding applicable regulatory standards or VI screening levels may exist outside the ISCO treatment zone. Residual groundwater concentrations are expected to be reduced below regulatory standards due to natural attenuation. If groundwater concentrations within the ISCO treatment zone exceed applicable regulatory standards, additional remedial measures may be required to obtain site close-out (e.g., additional ISCO injections and/or evaluation of another remedial technology).

5.3 REQUEST FOR NO FURTHER ACTION

An Interim Measures Report will be submitted to AFCEC and NMED following remedial action that will provide the analytical data to assess whether the remedial objective of reducing soil and groundwater concentrations to below applicable regulatory standards have been obtained. Once these goals have been met, a request for NFA status based on NFA Criterion 5 is recommended for SD027:

The SWMU/AOC has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

The NFA request will be accompanied by a formal request to NMED for a Class 3 Permit Modification to transfer SD027 from permit Appendix 4.A Table A (SWMUs/AOCs Requiring Corrective Action) to Appendix 4.A Table B (SWMUs/AOCs Not Requiring Corrective Action).

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TABLES

Table 2-1
Monitoring Well Construction Details for SD-27
Holloman AFB, New Mexico

Well ID	Installation Date	Survey Data				Boring Information		Well Construction Information						
		Northing[1]	Easting[1]	Elevation (ft msl)		Borehole Depth (ft bgs)	Borehole diameter (in)	Total Well Depth (ft bgs)	PVC Diameter (in)	Length of Riser Pipe (ft)[3]	Screen Slot Size (in)	Length of Screen (ft)	Screened Interval (ft bgs)	
				Top of Casing[2]	Ground[2]								Top	Bottom
SD-27 - Pad 9 Washrack Area														
MW27-01	11/10/2010	673935.93	1684057.36	4063.93	4063.84	18.03	3.25	17.99	2	8.08	0.01	10.0	7.99	17.69
MW27-02	11/6/2010	673560.57	1683937.63	4063.20	4063.33	17.33	3.25	17.29	2	7.16	0.01	10.0	7.29	16.99
MW27-03	11/5/2010	673541.52	1683974.40	4063.08	4063.24	15.28	3.25	15.24	2	7.58	0.01	7.5	7.74	14.94
MW27-04	11/6/2010	673586.15	1684019.49	4063.43	4063.52	17.44	3.25	17.43	2	7.34	0.01	10.0	7.43	17.13
MW27-05	11/9/2010	673654.29	1684003.46	4063.58	4063.59	19.95	3.25	19.91	2	9.90	0.01	10.0	9.91	19.61

Notes:

[1] All locations are in NAD 83 State Plane New Mexico C Grid with the exception of well MW30&33-05R whose location is in US survey feet.

[2] NAVD 88, with the exception of wells at SD-27 and SS-39 which are in EMG96.

[3] Includes stickup

amsl - above mean sea level
bgs - below ground surface
EMG96 - Earth Gravitational Model 1996
ID - identification
in - inches; ft - feet
NAD 83 - North American Datum 1983
NAVD 88 - North American Vertical Datum 1988
PVC - polyvinyl chloride

Reference: (TetraTech, 2012)

Table 3-1
Screening Preliminary Assessment/Visual Inspection Soil Analytical Results for Direct Contact Risk
SD-27 (SWMU 141) - Pad 9 Washrack Area Work Plan
Holloman AFB, New Mexico

Analyte	NMED Soil Screening Level (1)			BH-27-05	BH-27-01	BH-27-02	BH-27-03	BH-27-04
	Residential	Industrial	Construction Worker	Background 4-6	0-2	6-8	8-10	0-2
Extractable Fuel Hydrocarbons (µg/kg)								
Kerosene	760000	1810000	n/a	NA	NA	NA	430	NA
Purgeable Fuel Hydrocarbons (µg/kg)								
Ethylbenzene	69,663	384,570	6,625,408	NA	NA	NA	680	NA
Toluene	5,569,952	57,863,048	21,126,666	NA	NA	NA	51	NA
Xylenes	1,086,180	3,609,755	3,134,204	NA	NA	NA	2700	NA
Radioactivity (pCi/g)								
Gross alpha	n/a	n/a	n/a	7.35	8.95	19.29	13.5	NA
Gross beta	n/a	n/a	n/a	7.68	16.69	15.31	12.15	NA
PCBs (µg/kg)								
PCB-1254	1,120,000	8,260,000	4,360,000	NA	NA	NA	NA	200

Notes:

(1) NMED Soil Screening Levels: NEW MEXICO ENVIRONMENT DEPARTMENT Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program, Table A-1, TECHNICAL BACKGROUND DOCUMENT FOR DEVELOPMENT OF SOIL SCREENING LEVELS, REVISION 5.0, July 2009

(µg/kg) = micrograms per kilogram
(pCi/g) = picocuries per gram
NA = not analyzed
NMED = New Mexico Environment Department
PCB = polychlorinated biphenyl
n/a - not applicable
Red indicates > Residential SSLs for direct contact
Underline indicates > Commerical/Industrial SSLs for direct contact
Yellow shade indicates > Construction Worker SSLs for direct contact

Reference: (TetraTech, 2012)

Table 3-2
Screening Phase II Remedial Investigation Soil Analytical Results for Direct Contact Risk
SD-27 (SWMU 141) - Pad 9 Washrack Area Work Plan
Holloman AFB, New Mexico

Analyte	NMED Soil Screening Level (1)			94-27-01R								
				10-12			12-14			14-16		
	Residential	Industrial	Construction Worker	Result	DL	Q	Result	DL	Q	Result	DL	Q
Volatile Organic Compounds (µg/kg)												
Acetone	67,455,916	850,852,227	262,713,781	<	2,360	U	4830	2,360		21700	2,360	
Benzene	15,493	85,381	471,147	3430	406		2550	406		12300	406	
Toluene	5,569,952	57,863,048	21,126,666	111000	663		20300	663		58500	663	
Ethylbenzene	69,663	384,570	6,625,408	**102000**	436		29600	436		51600	436	
Xylenes	1,086,180	3,609,755	3,134,204	242000	416		22500	416		134000	416	
Semivolatile Organic Compounds (µg/kg)												
Naphthalene	44,951	251,978	702,260	8800	5100		550	5100	J	2100	5100	J
2-Methylnaphthalene	310,000	4,100,000	n/a	7900	170		790	170		3200	170	
Dibenzofuran	78,000	1,000,000	n/a	340	170		40	170	J	80	170	J
Di-n-butylphthalate	n/a	n/a	n/a	30	170	J	60	170	J	<	170	U
Butyl benzyl phthalate	260,000	910,000	n/a	40	170	BJ	<	170	U	<	170	U
Bis(2-ethylhexyl)phthalate	n/a	n/a	n/a	160	170	BJ	210	170	BJ	110	170	BJ
Di-n-octyl phthalate	n/a	n/a	n/a	<	170	U	210	170		<	170	U
Total Recoverable Petroleum Hydrocarbons - (mg/kg)												
TRPH	760	1180	n/a	**6000**	25		150	25		240	25	

Notes:

(1) NMED Soil Screening Levels: NEW MEXICO ENVIRONMENT DEPARTMENT Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program, Table A-1, TECHNICAL BACKGROUND DOCUMENT FOR DEVELOPMENT OF SOIL SCREENING LEVELS, REVISION 5.0, July 2009

< = Not detected above the detection limit

B = positive detection considered to be attributable to laboratory blank contamination

J = positive detection result considered an estimate

U = non-detect value equal to reporting limit

µg/kg = micrograms per kilogram

mg/kg = milligrams per kilogram

DL = detection limit

Q = data qualifier

TRPH = total recoverable petroleum hydrocarbons

NA = not analyzed

n/a = not applicable

NMED = New Mexico Environment Department

Red indicates > Residential SSLs for direct contact

Underline indicates > Commerical/Industrial SSLs for direct contact

Yellow shade indicates > Construction Worker SSLs for direct contact

Reference: (TetraTech, 2012)

Table 3-3
Screening Supplemental RFI Sediment Analytical Results for Direct Contact Risk
SD-27 (SWMU 141) - Pad 9 Washrack Area Work Plan
Holloman AFB, New Mexico

Analyte	Soil Screening Levels					SD27-01	
	HAFB Background	Residential[1]	Industrial[1]	Construction Worker[1]	EPA Radiological PRGs[4]	Val	Q
Volatile Organic Compounds (µg/kg)							
1,2,4-Trimethylbenzene	n/a	62,000	260,000	n/a	n/a	3.68	J
Benzene	n/a	15,493	85,381	471,147	n/a	5	J
Chloroform	n/a	5,718	31,941	670,634	n/a	0.58	J
m, p-Xylene (sum of isomers) [2]	n/a	8,290	27,200	23,800	n/a	4.78	J
n-Butylbenzene	n/a	3,900,000	51,000,000	n/a	n/a	2.1	J
Naphthalene	n/a	44,951	251,978	702,260	n/a	57	J
o-Xylene	n/a	9,547,753	31,511,172	27,483,017	n/a	2.28	J
p-Cymene (p-Isopropyltoluene)	n/a	n/a	n/a	n/a	n/a	1.66	J
Semi-Volatile Organic Compounds (µg/kg)							
4-Nitrophenol	n/a	n/a	n/a	n/a	n/a	53	J
Acenaphthene	n/a	3,440,511	36,670,255	18,581,818	n/a	124	J
Acenaphthylene	n/a	n/a	n/a	n/a	n/a	291	
Anthracene	n/a	17,202,556	183,351,274	66,841,073	n/a	2960	
Benzo(a)anthracene	n/a	6,214	23,442	212,877	n/a	2680	
Benzo(a)pyrene	n/a	621	2,344	21,288	n/a	3200	
Benzo(b)fluoranthene	n/a	6,214	23,442	212,877	n/a	4100	
Benzo(g,h,i)perylene	n/a	n/a	n/a	n/a	n/a	2710	
Benzo(k)fluoranthene	n/a	62,136	234,415	2,061,878	n/a	2320	
bis(2-Ethylhexyl)phthalate	n/a	n/a	n/a	n/a	n/a	5490	
Chrysene	n/a	621,362	2,344,150	20,618,784	n/a	3800	
Dibenz(a,h)anthracene	n/a	621	2,344	21,281	n/a	**1250**	
Dibenzofuran	n/a	78,000	1,000,000	n/a	n/a	352	
Fluoranthene	n/a	2,293,674	24,446,837	8,912,143	n/a	6670	
Indeno(1,2,3-c,d)pyrene	n/a	6,214	23,442	212,877	n/a	2020	
Phenanthrene	n/a	1,833,147	20,522,088	7,146,853	n/a	470	
Pyrene	n/a	1,720,256	18,335,127	6,684,107	n/a	5880	
Other Compounds (mg/kg)							
D-TPH	n/a	760	1,810	n/a	n/a	107	
Metals (mg/kg) [3]							
Arsenic	3.7	4	18	65	n/a	3.81	
Barium	169.3	15,596	223,980	4,353	n/a	13500	
Cadmium	0.3	78	1,124	309	n/a	21.6	
Chromium, total*	25	219	2922	449	n/a	**290**	
Lead	10.9	400	800	800	n/a	1900	
Mercury*	10.8	7.82	114	31	n/a	0.08	
Radiological Parameters (pCi/g) [4]							
Alpha, Gross	n/a	n/a	n/a	n/a	n/a	3.06	
Beta, Gross	n/a	n/a	n/a	n/a	n/a	16.6	
Bismuth-214	n/a	n/a	n/a	n/a	7950	0.528	
Cesium-137	n/a	n/a	n/a	n/a	4.02	1.01	
Lead-210	1.04	n/a	n/a	n/a	0.335	**3.62**	
Lead-214	n/a	n/a	n/a	n/a	44800	0.592	
Potassium-40	n/a	n/a	n/a	n/a	0.116	**11**	
Radium-226	1.35	n/a	n/a	n/a	0.199	**2.88**	
Radium-228	0.95	n/a	n/a	n/a	0.269	**0.53**	
Thallium-208	n/a	n/a	n/a	n/a	23100	0.148	
Thorium-228	1.35	n/a	n/a	n/a	23.4	0.533	

Notes:

(1) NMED Soil Screening Levels: NEW MEXICO ENVIRONMENT DEPARTMENT Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program, Table A-1, TECHNICAL BACKGROUND DOCUMENT FOR DEVELOPMENT OF SOIL SCREENING LEVELS, REVISION 5.0, July 2009

(2) m-Xylenes screening levels used as a surrogate for m,p-Xylenes

(3) NMED SSLs for hexavalent chromium and methylmercury used.

(4) Radiological screening criteria is the lowest of EPA PRGs for all residential pathways (ingestion of soil; inhalation of fugitive dusts; and external radiation exposure) (source: http://epa-prgs.ornl.gov/radionuclides/download.html).

NMED = New Mexico Environment Department
n/a = not applicable
(µg/kg) = micrograms per kilogram
mg/kg = milligrams per kilogram
pCi/g = picocuries per gram
ft = feet
Val = validated result
Q = data qualifier
J = estimated positive detection
SSL = soil screening level

Red indicates > Residential SSLs for direct contact
Underline indicates > Commerical/Industrial SSLs for direct contact
Yellow shade indicates > Construction Worker SSLs for direct contact
Green shade indicates > EPA Residential PRGs for radionuclides

Reference: (TetraTech, 2012)

Table 3-4
Screening Supplemental RFI Soil Analytical Results for Direct Contact Risk
SD-27 (SWMU 141) - Pad 9 Washrack Area Work Plan
Holloman AFB, New Mexico

Analyte	Soil Screening Level					SB27-01 16-May-2006		SB27-02 16-May-2006						SB27-03 16-May-2006						SB27-04 16-May-2006		SB27-05 18-May-2006	
	HAFB Background	Residential[1]	Industrial[1]	Construction Worker[1]	EPA Radiological PRGs[5]	6.00-8.00 ft.		6.00-8.00 ft.		11.00-13.00 ft.				11.00-13.00 ft.				16.00-18.00 ft.		8.00-10.00 ft.		7.00-8.00 ft.	
						Val	Q	Val	Q	Val	Q	Val [2]	Q [2]	Val	Q	Val [2]	Q [2]	Val	Q	Val	Q	Val	Q
Volatile Organic Compounds (µg/kg)																							
1,2,4-Trimethylbenzene	n/a	62,000	260,000	n/a	n/a	6	J	0.148	U	53800		NA		5850	J	5950		2.67	J	4.16	J	0.0535	U
1,3,5-Trimethylbenzene	n/a	780	10,000	n/a	n/a	10	U	10	U	17000		NA		2310	J	1910		0.21	U	10	U	0.21	U
Benzene	n/a	15,493	85,381	471,147	n/a	0.236	U	0.236	U	6170		NA		34.4		42.8	J	0.0644	U	0.236	U	0.0644	U
Ethylbenzene	n/a	69,663	384,570	6,625,408	n/a	10	U	10	U	61000		NA		3490	J	2880		10	U	10	U	0.0376	U
Isopropylbenzene	n/a	3,211,290	14,877,923	10,289,467	n/a	2.35	J	2.62	J	14200		NA		1410		1080		0.13	U	0.105	U	0.13	U
m,p-Xylene (sum of isomers) [3]	n/a	8,290	27,200	23,800	n/a	3.12	J	7.29	J	74900		NA		5170	J	5340		0.0714	U	2.43	J	0.0714	U
Methylene chloride	n/a	199,476	1,085,484	10,561,087	n/a	50	U	50	U	0.315	U	NA		50	U	50.6	J	50	U	50	U	50	U
n-Butylbenzene	n/a	3,900,000	51,000,000	n/a	n/a	0.116	U	6.37	J	9680		NA		1210		932		10	U	1.83	J	0.0979	U
n-Propylbenzene	n/a	3,400,000	21,000,000	n/a	n/a	10	U	10	U	21600		NA		2450	J	1740		1.08	J	10	U	0.0421	U
Naphthalene	n/a	44,951	251,978	702,260	n/a	14.1	J	32.6	J	11500		NA		1050		1130		37.7	U	8.71	J	0.441	U
o-Xylene	n/a	9,547,753	31,511,172	27,483,017	n/a	1.62	J	4.44	J	33600		NA		2480	J	2320		0.0679	U	1.76	J	0.0679	U
p-Cymene (p-Isopropyltoluene)	n/a	n/a	n/a	n/a	n/a	0.105	U	3.92	J	6160		NA		1070		730		2.6	J	1.48	J	0.0679	U
Sec-Butylbenzene	n/a	n/a	n/a	n/a	n/a	30.5		10	U	7830		NA		1330		874		2.53	J	10	U	0.0632	U
Toluene	n/a	5,569,952	57,863,048	21,126,666	n/a	10	U	10	U	49900		NA		1500		1110		10	U	10	U	10	U
Semi-Volatile Organic Compounds (µg/kg)																							
1-Methylnaphthalene	n/a	22,000	99,000	n/a	n/a	47.5	U	47.5	U	15800		NA		1420		1580		47.5	U	47.5	U	47.5	U
2-Methylnaphthalene	n/a	310,000	4,100,000	n/a	n/a	41	U	41	U	16700		NA		1440		1600		41	U	41	U	41	U
Fluoranthene	n/a	2,293,674	24,446,837	8,912,143	n/a	45.6	U	45.6	U	45.6	U	NA		45.6	U	45.6	U	45.6	U	45.6	U	85.3	J
Other Compounds (mg/kg)																							
G-TPH	n/a	n/a [5]	n/a [5]	n/a [5]	n/a	309		0.121	U	4,790		NA		419		282		0.121	U	0.121	U	0.121	U
D-TPH	n/a	760	1,810	n/a [5]	n/a	124		7.28	U	3,480		NA		435		288		7.28	U	7.28	U	7.28	U
Metals (mg/kg)																							
Barium	169.3	15,596	223,980	4,353	n/a	7.34		11.5		9.5		NA		60.2		49.9		38.4		11		8.84	
Chromium, total [4]	25	219	2,922	449	n/a	1.31		47.7		5.6		NA		4.76		3.72		5.75		1.51		0.456	J
Lead	10.9	400	800	800	n/a	0.367	U	1		7.03		NA		6.26		4.46		7.8		0.886	J	0.65	U
Silver	1.1	391	5,678	1,548	n/a	0.0044	U	0.0044	U	0.0044	U	NA		0.0044	U	0.0044	U	0.0044	U	0.0044	U	0.565	
Radiological Parameters (pCi/g)[5]																							
Beta, Gross	n/a	n/a	n/a	n/a	n/a	2.1		3.97		5.11		5.72		3.66		NA		7.89		0.63	U	NA	
Bismuth-214	n/a	n/a	n/a	n/a	7950	0.129		0.351		0.371		0.351		0.251		NA		0.579		0.326		NA	
Lead-210	1.04	n/a	n/a	n/a	0.335	1.19		1.25	U	1.56		1.22	U	1.45	U	NA		1.66	U	1.68	U	NA	
Lead-214	n/a	n/a	n/a	n/a	44800	0.201		0.364		0.341		0.491		0.362		NA		0.505		0.354		NA	
Potassium-40	n/a	n/a	n/a	n/a	0.116	1.87		2.75		5.03		5.56		2.58		NA		10.6		2.2		NA	
Radium-226	1.35	n/a	n/a	n/a	0.199	1.45	U	2.58		1.68	U	1.41	U	1.53	U	NA		1.98	U	2.48	U	NA	
Radium-228	0.95	n/a	n/a	n/a	0.269	0.318	U	0.408	U	0.241	U	0.353		0.425	U	NA		0.332	U	0.404	U	NA	
Thallium-208	n/a	n/a	n/a	n/a	23100	0.055		0.072	U	0.084		0.115		0.108	U	NA		0.152		0.121	U	NA	
Thorium-228	1.35	n/a	n/a	n/a	23.4	0.097	U	0.126	U	0.27		0.33		0.194		NA		0.48		0.184		NA	
Uranium-235	0.08	n/a	n/a	n/a	0.192	0.344	U	0.174		0.102	U	0.401	U	0.418	U	NA		0.121	U	0.77	U	NA	

Notes:

(1) NMED Soil Screening Levels: NEW MEXICO ENVIRONMENT DEPARTMENT Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program, Table A-1, TECHNICAL BACKGROUND DOCUMENT FOR DEVELOPMENT OF SOIL SCREENING LEVELS, REVISION 5.0, July 2009

(2) duplicate

(3) NMED SSL for m-Xylenes used as a surrogate for m,p-Xylenes

(4) NMED SSL for hexavalent chromium used

(5) Radiological screening criteria is the lowest of EPA PRGs for all residential pathways (ingestion of soil; inhalation of fugitive dusts; and external radiation exposure) (source: http://epa-prgs.ornl.gov/radionuclides/download.html).

Q = data qualifier

NA = not analyzed

n/a = not applicable

Red indicates > Residential SSLs for direct contact

Underline indicates > Commerical/Industrial SSLs for direct contact

Yellow shade indicates > Construction Worker SSLs for direct contact

Green shade indicates > EPA Residential PRGs for radionuclides

NMED = New Mexico Environment Department

pCi/g = picocuries per gram

µg/kg = micrograms per kilogram

mg/kg = milligrams per kilogram

ft = feet

Val = validated result

J = estimated positive detection

SSL = soil screening level

Reference: (TetraTech, 2012)

Table 3-5
Screening Preliminary Assessment/Visual Inspection Soil Analytical Results for Vapor Intrusion Risk
SD-27 (SWMU 141) - Pad 9 Washrack Area Work Plan
Holloman AFB, New Mexico

Analyses	Vaport Intrusion Screening Level (µg/kg) [1]		BH-27-05	BH-27-01	BH-27-02	BH-27-03	BH-27-04
	1e-6	1e-5	Background 4-6	0-2	6-8	8-10	0-2
Extractable Fuel Hydrocarbons (µg/kg)							
Kerosene	n/a	n/a	NA	NA	NA	430	NA
Purgeable Fuel Hydrocarbons (µg/kg)							
Ethylbenzene	21710	21710	NA	NA	NA	680	NA
Toluene	5073	5073	NA	NA	NA	51	NA
Xylenes [2]	2371	2371	NA	NA	NA	**2700**	NA
Radioactivity (pCi/g)							
Gross alpha	n/a	n/a	7.35	8.95	19.29	13.5	NA
Gross beta	n/a	n/a	7.68	16.69	15.31	12.15	NA
PCBs (µg/kg)							
PCB-1254	n/a	n/a	NA	NA	NA	N	200

Notes:

(1) Johnson and Ettinger (1991) Model for Subsurface Vapor Intrusion into Buildings incorporated into Appendix G of of the EPA OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway (November, 2002).

[2] p-Xylene criteria used for xylenes

Red indicates > 10-6 VI Risk.

Yellow shade indicates > 10-5 VI risk

(Mg/kg) = micrograms per kilogram

(pCi/g) = picocuries per gram

NA = not analyzed

NMED = New Mexico Environment Department

PCB = polychlorinated biphenyl

n/a = not applicable

Reference: (TetraTech, 2012)

Table 3-6
Screening Phase II Remedial Investigation Soil Analytical Results for Vapor Intrusion Risk
SD-27 (SWMU 141) - Pad 9 Washrack Area Work Plan
Holloman AFB, New Mexico

Analyte	Vapor Intrusion Screening Level (µg/kg) [1]		94-27-01R								
			10-12			12-14			14-16		
	1e-6	1e-5	Result	DL	Qual	Result	DL	Qual	Result	DL	Qual
Volatile Organic Compounds (µg/kg)											
Acetone	61,057	61,057	<	2,360	U	4830	2,360		21700	2,360	
Benzene	2	18	**3430**	406		**2550**	406		**12300**	406	
Toluene	5,073	5,073	**111000**	663		**20300**	663		**58500**	663	
Ethylbenzene	21,710	21,710	**102000**	436		**29600**	436		**51600**	436	
Xylenes [2]	2,371	2,371	**242000**	416		**22500**	416		**134000**	416	
Semivolatile Organic Compounds (µg/kg)											
Naphthalene	6,576	6,576	**8800**	5100		550	5100	J	2100	5100	J
2-Methylnaphthalene	n/a	n/a	7900	170		790	170		3200	170	
Dibenzofuran	n/a	n/a	340	170		40	170	J	80	170	J
Di-n-butylphthalate	n/a	n/a	30	170	J	60	170	J	<	170	U
Butyl benzyl phthalate	n/a	n/a	40	170	BJ	<	170	U	<	170	U
Bis(2-ethylhexyl)phthalate	n/a	n/a	160	170	BJ	210	170	BJ	110	170	BJ
Di-n-octyl phthalate	n/a	n/a	<	170	U	210	170		<	170	U
Total Recoverable Petroleum Hydrocarbons - (mg/kg)											
TRPH	n/a	n/a	6000	25		150	25		240	25	

Notes:

(1) Johnson and Ettinger (1991) Model for Subsurface Vapor Intrusion into Buildings incorporated into Appendix G of of the EPA OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway (November, 2002).

[2] p-Xylene criteria used for xylenes

Red indicates > 10-6 VI Risk.

Yellow shade indicates > 10-5 VI risk

< = Not detected above the detection limit

B = positive detection considered to be attributable to laboratory blank contamination

J = positive detection result considered an estimate

U = non-detect value equal to reporting limit

µg/kg = micrograms per kilogram

mg/kg = milligrams per kilogram

DL = detection limit

Qual = qualifier

TRPH = total recoverable petroleum hydrocarbons

NA = not analyzed

n/a = not applicable

NMED = New Mexico Environment Department

Reference: (TetraTech, 2012)

Table 3-7
Screening Supplemental RFI Sediment Analytical Results for Vapor Intrusion Risk
SD-27 (SWMU 141) - Pad 9 Washrack Area Work Plan
Holloman AFB, New Mexico

Analyte	Vapor Intrusion Screening Level (µg/kg) [1]		SD27-01 16-May-2006 0.00-2.00 ft	
	1e-6	1e-5	Val	Q
Volatile Organic Compounds (µg/kg)				
1,2,4-Trimethylbenzene	662	662	3.68	J
Benzene	1.75	17.52	**5.42**	J
Chloroform	0.63	6.31	0.58	J
m, p-Xylene (sum of isomers)[2]	2371	2371	4.78	J
n-Butylbenzene	6217	6217	2.1	J
Naphthalene	6576	6576	57	J
o-Xylene	3163	3163	2.28	J
p-Cymene (p-Isopropyltoluene)	n/a	n/a	1.66	J
Semi-Volatile Organic Compounds (µg/kg)				
4-Nitrophenol	n/a	n/a	53	J
Acenaphthene	n/a	n/a	124	J
Acenaphthylene	n/a	n/a	291	
Anthracene	n/a	n/a	2960	
Benzo(a)anthracene	n/a	n/a	2680	
Benzo(a)pyrene	n/a	n/a	3200	
Benzo(b)fluoranthene	n/a	n/a	4100	
Benzo(g,h,i)perylene	n/a	n/a	2710	
Benzo(k)fluoranthene	n/a	n/a	2320	
bis(2-Ethylhexyl)phthalate	n/a	n/a	5490	
Chrysene	n/a	n/a	3800	
Dibenz(a,h)anthracene	n/a	n/a	1250	
Dibenzofuran	n/a	n/a	352	
Fluoranthene	n/a	n/a	6670	
Indeno(1,2,3-c,d)pyrene	n/a	n/a	2020	
Phenanthrene	n/a	n/a	470	
Pyrene	n/a	n/a	5880	
Other Compounds (mg/kg)				
D-TPH	n/a	n/a	107	
Metals (mg/kg)				
Arsenic	n/a	n/a	3.81	
Barium	n/a	n/a	13500	
Cadmium	n/a	n/a	21.6	
Chromium, total	n/a	n/a	290	
Lead	n/a	n/a	1900	
Mercury	n/a	n/a	0.08	
Radiological Parameters (pCi/g)				
Alpha, Gross	n/a	n/a	3.06	
Beta, Gross	n/a	n/a	16.6	
Bismuth-214	n/a	n/a	0.528	
Cesium-137	n/a	n/a	1.01	
Lead-210	n/a	n/a	3.62	
Lead-214	n/a	n/a	0.592	
Potassium-40	n/a	n/a	11	
Radium-226	n/a	n/a	2.88	
Radium-228	n/a	n/a	0.53	
Thallium-208	n/a	n/a	0.148	
Thorium-228	n/a	n/a	0.533	

Notes:

(1) Johnson and Ettinger (1991) Model for Subsurface Vapor Intrusion into Buildings incorporated into Appendix G of of the EPA OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway (November, 2002).

[2] p-Xylene criteria used for m, p-Xylene (sum of isomers)

Red indicates > 10-6 VI Risk.

Yellow shade indicates > 10-5 VI risk

NMED = New Mexico Environment Department
mg/kg = milligrams per kilogram
pCi/g = picocuries per gram
ft = feet
Val = validated result
Q = data qualifier
n/a = not applicable
J = estimated positive detection
SSL = soil screening level

Reference: (TetraTech, 2012)

Table 3-8
Screening Supplemental RFI Soil Analytical Results for Vapor Intrusion Risk
SD-27 (SWMU 141) - Pad 9 Washrack Area Work Plan
Holloman AFB, New Mexico

Analyte	Vapor Intrusion Screening Level (µg/kg) [1]		SB27-01 16-May-2006		SB27-02 16-May-2006						SB27-03 16-May-2006						SB27-04 16-May-2006		SB27-05 18-May-2006	
	1e-6	1e-5	6.00-8.00 ft.		6.00-8.00 ft.		11.00-13.00 ft.				11.00-13.00 ft.				16.00-18.00 ft.		8.00-10.00 ft.		7.00-8.00 ft.	
			Val	Q	Val	Q	Val	Q	Val [2]	Q [2]	Val	Q	Val [2]	Q [2]	Val	Q	Val	Q	Val	Q
Volatile Organic Compounds (µg/kg)																				
1,2,4-Trimethylbenzene	662	662	5.95	J	0.148	U	**53800**		NA		**5850**	**J**	**5950**		2.67	J	4.16	J	0.0535	U
1,3,5-Trimethylbenzene	694	694	10	U	10	U	**17000**		NA		**2310**	**J**	**1910**		0.21	U	10	U	0.21	U
Benzene	2	18	0.236	U	0.236	U	**6170**		NA		**34.4**		**42.8**	**J**	0.0644	U	0.236	U	0.0644	U
Ethylbenzene	21,710	21,710	10	U	10	U	**61000**		NA		3490	J	2880		10	U	10	U	0.0376	U
Isopropylbenzene	7,128	7,128	2.35	J	2.62	J	**14200**		NA		1410		1080		0.13	U	0.105	U	0.13	U
m, p-Xylene (sum of isomers) [3]	2,371	2,371	3.12	J	7.29	J	**74900**		NA		**5170**	**J**	**5340**		0.0714	U	2.43	J	0.0714	U
Methylene chloride	27	268	50	U	50	U	0.315	U	NA		50	U	**50.6**	**J**	50	U	50	U	50	U
n-Butylbenzene	6,217	6,217	0.116	U	6.37	J	**9680**		NA		1210		932		10	U	1.83	J	0.0979	U
n-Propylbenzene	3,820	3,820	10	U	10	U	**21600**		NA		2450	J	1740		1.08	J	10	U	0.0421	U
Naphthalene	6,576	6,576	14.1	J	32.6	J	**11500**		NA		1050		1130		37.7	U	8.71	J	0.441	U
o-Xylene	3,163	3,163	1.62	J	4.44	J	**33600**		NA		2480	J	2320		0.0679	U	1.76	J	0.0679	U
p-Cymene (p-Isopropyltoluene)	n/a	n/a	0.105	U	3.92	J	6160		NA		1070		730		2.6	J	1.48	J	0.0679	U
Sec-Butylbenzene	19,407	19,407	30.5		10	U	7830		NA		1330		874		2.53	J	10	U	0.0632	U
Toluene	5,073	5,073	10	U	10	U	**49900**		NA		1500		1110		10	U	10	U	10	U
Semi-Volatile Organic Compounds (µg/kg)																				
1-Methylnaphthalene	n/a	n/a	47.5	U	47.5	U	15800		NA		1420		1580		47.5	U	47.5	U	47.5	U
2-Methylnaphthalene	n/a	n/a	41	U	41	U	16700		NA		1440		1600		41	U	41	U	41	U
Fluoranthene	n/a	n/a	45.6	U	45.6	U	45.6	U	NA		45.6	U	45.6	U	45.6	U	45.6	U	85.3	J
Other Compounds (mg/kg)																				
G-TPH	n/a	n/a	309		0.121	U	4790		NA		419		282		0.121	U	0.121	U	0.121	U
D-TPH	n/a	n/a	124		7.28	U	3480		NA		435		288		7.28	U	7.28	U	7.28	U
Metals (mg/kg)																				
Barium	n/a	n/a	7.34		11.5		9.5		NA		60.2		49.9		38.4		11		8.84	
Chromium, total	n/a	n/a	1.31		47.7		5.6		NA		4.76		3.72		5.75		1.51		0.456	J
Lead	n/a	n/a	0.367	U	1		7.03		NA		6.26		4.46		7.8		0.886	J	0.65	U
Silver	n/a	n/a	0.0044	U	0.0044	U	0.0044	U	NA		0.0044	U	0.0044	U	0.0044	U	0.0044	U	0.565	
Radiological Parameters (pCi/g)																				
Beta, Gross	n/a	n/a	2.1		3.97		5.11		5.72		3.66		NA		7.89		0.63	U	NA	
Bismuth-214	n/a	n/a	0.129		0.351		0.371		0.351		0.251		NA		0.579		0.326		NA	
Lead-210	n/a	n/a	1.19		1.25	U	1.56		1.22	U	1.45	U	NA		1.66	U	1.68	U	NA	
Lead-214	n/a	n/a	0.201		0.364		0.341		0.491		0.362		NA		0.505		0.354		NA	
Potassium-40	n/a	n/a	1.87		2.75		5.03		5.56		2.58		NA		10.6		2.2		NA	
Radium-226	n/a	n/a	1.45	U	2.58		1.68	U	1.41	U	1.53	U	NA		1.98	U	2.48	U	NA	
Radium-228	n/a	n/a	0.318	U	0.408	U	0.241	U	0.353		0.425	U	NA		0.332	U	0.404	U	NA	
Thallium-208	n/a	n/a	0.055		0.072	U	0.084		0.115		0.108	U	NA		0.152		0.121	U	NA	
Thorium-228	n/a	n/a	0.097	U	0.126	U	0.27		0.33		0.194		NA		0.48		0.184		NA	
Uranium-235	n/a	n/a	0.344	U	0.174		0.102	U	0.401	U	0.418	U	NA		0.121	U	0.77	U	NA	

Notes:
[1] Johnson and Ettinger (1991) Model for Subsurface Vapor Intrusion into Buildings incorporated into Appendix G of of the EPA OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway (November, 2002).
[2] duplicate
[3] p-Xylene criteria used for m, p-Xylene (sum of isomers)
Red indicates > 10-6 VI Risk.
Yellow shade indicates > 10-5 VI risk
pCi/g = picocuries per gram
ft = feet
Val = validated result
Q = data qualifier

NMED = New Mexico Environment Department

µg/kg = micrograms per kilogram
NA = not analyzed
n/a = not applicable

Reference: (TetraTech, 2012)

Table 3-9
Screening Supplemental RFI Groundwater Analytical Results for Tap Water and Vapor Intrusion Risk
SD-27 (SWMU 141) - Pad 9 Washrack Area Work Plan
Holloman AFB, New Mexico

Analyte	NMED Tap Water (1)	Vapor Intrusion 1e-5 (2)	GW27-02				GW27-03				GW27-07		GW27-08	
			05/16/06		05/20/06		05/16/06				06/16/06		06/16/06	
			Val	Q	Val	Q	Val	Q	Val (3)	Q (3)	Val	Q	Val	Q
Volatile Organic Compounds (µg/L)														
1,2-Dichloroethane	1.49	23	0.0557	U	NA		**52.4**	J	0.0557	U	0.0557	U	0.0557	U
1,2,4-Trimethylbenzene	n/a	24	412		NA		940		1460		1	U	1	U
1,3,5-Trimethylbenzene (mesitylene)	n/a	25	118		NA		266		427		1	U	1	U
Acetone	21800	220000	0.854	U	NA		0.854	U	850	J	0.854	U	0.854	U
Benzene	4.13	14	**7750**		NA		**2360**		**2800**		1.57	U	1	U
Ethylbenzene	14.8	700	**1030**		NA		**2330**		**3080**		1	U	1	U
Isopropylbenzene (cumene)	679	8.4	82	J	NA		230		374		1	U	1	U
m,p-Xylene (sum of isomers)	203	22000	**1430**		NA		**1460**		**1930**		1	U	1	U
n-Butylbenzene	n/a	260	33.2	J	NA		44.8	J	95.6	J	1	U	0.04	U
n-Propylbenzene	n/a	320	110		NA		264		443		1	U	1	U
Naphthalene	1.43	150	**133**	J	NA		**163**	J	**232**	J	0.4	U	0.4	U
o-Xylene	1430	33000	755		NA		1020		1390		1	U	1	U
p-Cymene (p-Isopropyltoluene)	n/a	n/a	20.2	J	NA		39.8	J	75.6	J	0.0513	U	1	U
Sec-Butylbenzene	n/a	250	28	J	NA		51.6	J	105		1	U	1	U
Toluene	2280	1500	**5690**		NA		1940		**2430**		1.14	U	1	U
Trichloroethene (TCE)	16.5	5	6.89	J	NA		0.0495	U	0.0495	U	0.22	J	0.17	J
Semi-Volatile Organic Compounds (µg/L)														
1-Methylnaphthalene	n/a	n/a	21.1		NA		23.2		29.8		0.5	U	0.5	U
2-Methylnaphthalene	n/a	3300	15.2		NA		15.3		21.1		0.4	U	0.4	U
2,4-Dimethylphenol	730	n/a	15.2		NA		0.9	U	0.9	U	0.9	U	0.9	U
Acetophenone	3650	800000	20		NA		17.8		22.8		0.6	U	0.6	U
Benzoic acid	n/a	n/a	106		NA		0.7	U	0.7	U	0.7	U	0.7	U
Cresols, m & p	n/a	n/a	53.8		NA		2.4	J	0.4	U	0.4	U	0.4	U
Diethyl phthalate	29200	n/a	10.9		NA		0.8	U	0.8	U	0.8	U	0.8	U
Total Cresols	n/a	n/a	13.3		NA		0.6	U	0.6	U	0.6	U	0.6	U
Other Compounds (mg/L)														
G-TPH	n/a	n/a	56.4		NA		24.2		23.6		0.0272	U	0.0272	U
D-TPH	n/a	n/a	4.17	J	NA		29.1		60.2		0.106	U	0.106	U
Metals (µg/L)														
Barium	7300	n/a	40		NA		22		36		345		52	
Chromium	100	n/a	3	J	NA		1.4	U	1.4	U	48		1.4	U
Lead	15	n/a	1.6	U	NA		1.6	U	1.6	U	**17**		1.6	U
Silver	183	n/a	0.2	U	NA		14		14		13		11	
Filtered Metals (µg/L)														
Barium (Filtered)	7300	n/a	NA		17		22		23		39		29	
Selenium (Filtered)	183	n/a	NA		**289**		97		81		7	J	10	
Silver (Filtered)	183	n/a	NA		0.2	U	0.2	U	0.2	U	11		0.2	U
Radiological Parameters (pCi/L)														
Beta, Gross	50	n/a	33.7	U	NA		37.4	U	33.6	U	44.5	U	**61.5**	
Bismuth-214	*214*	n/a	12.2		NA		12.5	U	10.6		25.5		15.6	
Lead-214	*154*	n/a	10	U	NA		9.51	U	9.45	U	17		12.4	
Radium-223	*0.222*	n/a	**6.35**		NA		**6.9**		**6.69**		5.79	U	**6.28**	
Radium-228	5	n/a	14.1	U	NA		13.3	U	**16.1**		**14.9**		-0.809	
Thallium-208	n/a	n/a	5.95	U	NA		5.39	U	6.45	U	6.22		5.39	
Uranium-235	20	n/a	18.1	U	NA		19.3		18.4		17.9	U	15	
Filtered Radiological Parameters (pCi/L)														
Bismuth-214	*214*	n/a	12.2		NA		12.537	U	15.647	U	NA		NA	
Radium-223	*0.222*	n/a	**9.68**		NA		**6.903**		6.694	U	NA		NA	
Radium-228	5	n/a	14.092	U	NA		13.338	U	**15.392**		NA		NA	
Uranium-235	20	n/a	18.084	U	NA		**22.63**		18.414	U	NA		NA	

Notes:
(1) NMED Tapwater Screening Levels: NEW MEXICO ENVIRONMENT DEPARTMENT Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program, Table A-1, TECHNICAL BACKGROUND DOCUMENT FOR DEVELOPMENT OF SOIL SCREENING LEVELS, REVISION 5.0, July 2009.
Underline indicates EPA MCL and italics indicates EPA PRG for radionuclides.
(2) EPA OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance) Table 2b November 2002
(3) Duplicate
Bold value indicates > NMED Tap Water SL or EPA MCL.
Highlighted value indicates > EPA OSWER Vapor Intrusion from Groundwater to Indoor Air Pathway 1e-

µg/L = micrograms per liter
mg/L = milligrams per liter
pCi/L = picocuries per liter
TDS = total dissolved solids
Val = analytical result
Q = data qualifier
J = positive detection, value between RL and the MDL
U = non-detect result
MDL = method detection limit
RL = reporting limit
G- TPH = gasoline-range total petroleum hydrocarbons
D- TPH = diesel-range total petroleum hydrocarbons
EPA = U.S. Environmental Protection Agency
MCL = Maximum Contaminant Level
n/a = not applicable

Reference: (TetraTech, 2012)

Table 4-1. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
SVOCs, Metals, and Radionuclides
Site SD-27, Holloman AFB

						Location:	SD27-DPT-01		SD27-DPT-01		SD27-DPT-02		SD27-DPT-03	
						Collection Date:	11/03/2010		11/03/2010		11/03/2010		11/03/2010	
						Depth (ft):	8.5		10.7		8.5		8.5	
						Depth Range (ft):	6.5 to 8.5		10 to 10.7		6.5 to 8.5		6.5 to 8.5	
						SampleID:	SD27-DPT-01A		SD27-DPT-01B		SD27-DPT-02A		SD27-DPT-03A	
						QCType:	N		N		N		N	
Test Group	Parameter	HAFB Background	NMED (1)			EPA Radiological PRGs(2)								
			Res Soil	Ind Soil	Const Soil		Value	Q	Value	Q	Value	Q	Value	Q
SVOCs	1-Methylnaphthalene	n/a	22	99	n/a	n/a	0.023	U	0.0768	J	0.023	U	1.06	
	2-Methylnaphthalene	n/a	310	4100	n/a	n/a	0.023	U	0.021	U	0.023	U	0.92	
	Naphthalene	n/a	45	252	702	n/a	50	U	0.034	U	0.038	U	0.474	
Metals, Total	Arsenic	3.7	3.59	17.7	65.4	n/a	1.4		1.4		2.5		1.3	
	Barium	169.3	15600	224000	4350	n/a	27.3		39		19.7		30.8	
	Cadmium	0.3	77.9	1120	309	n/a	0.061	U	0.061	J	0.16	J	0.28	
	Chromium (3)	25	219	2922	449	n/a	4.4	J	3.8	J	**262**		35.3	
	Lead	10.9	400	800	800	n/a	1.3		1.6		3.1		3.7	
	Mercury (3)	10.8	7.82	114	31	n/a	0.011	J	0.01	U	0.012	U	0.011	U
	Selenium	1.4	391	5680	1550	n/a	6000	U	2.2	U	2	U	2.4	U
Radio-chemistry	Lead-210	1.04	n/a	n/a	n/a	0.335	0.4072	J	0.1751	U	0.1289	U	0.7175	J
	Plutonium-239	n/a	n/a	n/a	n/a	2.58	-0.0122	UJ	0.0380	UJ	0.0303	U	0.0281	U
	Radium-226	1.35	n/a	n/a	n/a	0.199	0.8639		0.5235	J	0.4401	J	0.6546	J
	Radium-228	0.95	n/a	n/a	n/a	0.269	0.6563	J	0.4328	U	0.2592	U	0.4410	U
	Strontium-90	n/a	n/a	n/a	n/a	0.344	0.2159	U	0.2279	U	0.0528	U	-0.2884	U
	Thorium-228	1.35	n/a	n/a	n/a	23.4	0.4378		0.3018	J	0.3635		0.4587	
	Thorium-230	1.55	n/a	n/a	n/a	3.46	0.4522		0.4799		0.3850		0.4460	
	Thorium-232	1.33	n/a	n/a	n/a	3.07	0.4317		0.2976	J	0.3628		0.3561	
	Uranium-234	1.43	n/a	n/a	n/a	4.02	0.5028		0.8308		0.7022		0.7126	
	Uranium-235	0.08	n/a	n/a	n/a	0.192	-0.005433	U	0.0182	U	0.08046	J	0.1033	J
	Uranium-238	0.75	n/a	n/a	n/a	4.48	0.3997		0.6313		0.5411		0.4988	

Table 4-1. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
SVOCs, Metals, and Radionuclides
Site SD-27, Holloman AFB

		SD27-DPT-04 11/03/2010 8.5 6.5 to 8.5 SD27-DPT-04A N		SD27-DPT-05 11/03/2010 8.5 6.5 to 8.5 SD27-DPT-05A N		SD27-DPT-05 11/03/2010 12 10 to 12 SD27-DPT-05B N		SD27-DPT-06 11/03/2010 8.5 6.5 to 8.5 SD27-DPT-06A N		SD27-DPT-06 11/03/2010 8.5 6.5 to 8.5 SD27-DPT-DUP01 FD		SD27-DPT-07 11/03/2010 8.5 6.5 to 8.5 SD27-DPT-07A N	
Test Group	Parameter	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q
SVOCs	1-Methylnaphthalene	1.04		0.022	U	0.187	J	0.022	U	0.019	U	0.022	U
	2-Methylnaphthalene	0.575	J	0.022	U	0.195	J	0.022	U	0.019	U	0.022	U
	Naphthalene	0.578	J	0.036	U	0.0931	J	0.035	U	0.031	U	0.035	U
Metals, Total	Arsenic	1.1		1.6		1.3		1.8		1.3		0.52	J
	Barium	46.4		24.5		25		29.7	J	57.9	J	19	
	Cadmium	0.22	J	0.052	U	0.13	J	0.069	J	0.058	U	0.065	U
	Chromium (3)	28.7		2.5	J	4.4	J	14.6	J	7.3	J	6.5	
	Lead	3.6		1.2		1.5		1.3		1.9		0.9	J
	Mercury (3)	0.011	U	0.01	U	0.01	U	0.01	U	0.0093	U	0.0099	U
	Selenium	2.7	U	2.1	U	2.1	U	2	U	2.3	U	2.6	U
Radio-chemistry	Lead-210	0.4848	J	-0.1957	U	0.2034	U	0.5111	J	0.2816	J	0.0369	U
	Plutonium-239	0.0157	U	0.0188	U	0.1073	UJ	0.0149	U	0.1854	J	-0.0505	U
	Radium-226	0.5826	J	0.7215	J	0.4547	J	0.4681	J	1.1950		0.5178	J
	Radium-228	0.8416	J	**1.0373**	J	**1.0534**	J	0.5513	J	**1.8481**	J	0.3548	U
	Strontium-90	0.4267	J	0.1159	U	0.2126	U	0.2047	U	0.0877	U	0.3438	J
	Thorium-228	0.4047		0.2962	J	0.2166		0.5134		0.3473		0.2132	J
	Thorium-230	0.6754		0.5895		0.4251		0.7070		0.5670		0.4127	
	Thorium-232	0.4669		0.3711		0.2997		0.2156		0.3328	J	0.2198	
	Uranium-234	0.4332		0.4060		0.7419		1.1050		0.7064		0.5503	
	Uranium-235	0.05144	U	0.02521	U	0.0435	U	0.06611	U	0.04919	U	0.02008	U
	Uranium-238	0.3209		0.2838		0.3188		0.5706		0.4742		0.4622	

Table 4-1. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
SVOCs, Metals, and Radionuclides
Site SD-27, Holloman AFB

		SD27-DPT-08 11/04/2010 8.5 6.5 to 8.5 SD27-DPT-08A N		SD27-DPT-08 11/04/2010 15 10 to 15 SD27-DPT-08B N		SD27-DPT-08 11/04/2010 15 10 to 15 SD27-DPT-DUP02 FD		SD27-DPT-08 11/04/2010 18 16.5 to 18 SD27-DPT-08C N		SD27-DPT-08 11/04/2010 24 22 to 24 SD27-DPT-08D N		SD27-DPT-09 11/04/2010 9 7 to 9 SD27-DPT-09A N		SD27-DPT-09 11/04/2010 14 12 to 14 SD27-DPT-09B N	
Test Group	Parameter	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q
SVOCs	1-Methylnaphthalene	2.66		6.21				0.306		0.02	U	1.34		10.9	
	2-Methylnaphthalene	1.25	J	6.64	J			0.277		0.02	U	0.0872	J	6.24	
	Naphthalene	1.64	J	3.01				0.0964	J	0.033	U	0.215	J	3.65	
Metals, Total	Arsenic	0.86		1.7				1.4		2.3		0.51		0.87	
	Barium	20.1		33.2	J			77.6		50.8		24.3		41.8	
	Cadmium	0.88		0.17	J			0.2	J	0.35		0.045	U	0.23	
	Chromium (3)	**228**		7.3				21.2		9.4		29		7.2	
	Lead	4.9		2.9	J			3		4.3		1		2.7	
	Mercury (3)	0.011	U	0.011	U			0.01	U	0.0099	U	0.01	U	0.01	U
	Selenium	2.1	U	2	U			2.2	U	2	U	1.8	U	2.2	U
Radio-chemistry	Lead-210	0.4451	J	0.4324	J	-0.0701	U	0.5727	J	0.4114	J	-0.0371	U	0.4369	J
	Plutonium-239	0.0362	U	-0.0140	U	0.0526	U	0.0115	U	-0.0134	U	0.0194	U	0.0000	U
	Radium-226	0.4818	J	0.4925	J	0.7344		0.5362		1.3270		0.6110		1.1650	
	Radium-228	**1.5693**	J	**1.7871**	J	0.8878	J	**1.7916**	J	**1.1224**	J	0.8043	J	**1.1049**	J
	Strontium-90	-0.2761	U	0.0762	U	0.3810	J	0.2016	U	0.2798	U	-0.2042	U	0.0191	U
	Thorium-228	0.2596	J	0.5191		0.3356		0.3749		0.6411		0.3448		0.6419	
	Thorium-230	0.3720		0.4325		0.6858		0.5229		1.2160		0.4641		0.6624	
	Thorium-232	0.3125		0.6720		0.5521		0.4234		0.7203		0.2720		0.3596	
	Uranium-234	1.3590		0.6566		0.5092		0.5353		0.9970		0.4073		0.5496	
	Uranium-235	0.1025	J	0	U	0.03052	U	0.01572	U	0.06907	U	0.04862	U	0.09013	J
	Uranium-238	0.8388		0.3473		0.5924		0.4250		1.0540		0.4404		0.6138	

Table 4-1. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
SVOCs, Metals, and Radionuclides
Site SD-27, Holloman AFB

		SD27-DPT-09 11/04/2010 18 16 to 18 SD27-DPT-09C N		SD27-DPT-10 11/04/2010 10 8 to 10 SD27-DPT-10A N		SD27-DPT-10 11/04/2010 14.5 12.4 to 14.5 SD27-DPT-10B N		SD27-DPT-10 11/04/2010 19 17 to 19 SD27-DPT-10C N		SD27-DPT-11 11/04/2010 8.5 6.5 to 8.5 SD27-DPT-11A N		SD27-DPT-11 11/04/2010 8.5 6.5 to 8.5 SD27-DPT-DUP03 FD		SD27-DPT-11 11/04/2010 12 10 to 12 SD27-DPT-11B N	
Test Group	Parameter	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q
SVOCs	1-Methylnaphthalene	0.02	U	2.93		4.34		0.019	U	0.021	U	0.02	U	0.491	
	2-Methylnaphthalene	0.02	U	0.11	U	3.28		0.019	U	0.021	U	0.02	U	0.347	
	Naphthalene	0.031	U	0.17	U	1.77		0.03	U	0.034	U	0.032	U	0.325	
Metals, Total	Arsenic	0.71		0.52	J	1.2		0.9		0.5	J	0.66		1.3	
	Barium	25.3		18.9		41.9		38.8		23.5		21.6		26.3	
	Cadmium	0.92		0.06	J	0.42		0.75		0.44		0.29		0.42	
	Chromium (3)	8.6		2.1	J	7.4		5.6		21.5	J	9.6	J	6	
	Lead	21.8		1	J	3	J	2.2	J	0.37	J	0.85	J	1.2	J
	Mercury (3)	0.0086	U	0.01	U	0.0095	U	0.0095	U	0.01	U	0.0098	U	0.011	U
	Selenium	2	U	2.2	U	1.9	U	1.7	U	2.2	U	1.6	U	1.9	U
Radio-chemistry	Lead-210	0.2458	J	0.1364	J	0.1497	J	0.1285	J	0.2095	J	0.5488		0.4647	J
	Plutonium-239	0.0447	U												
	Radium-226	0.8527		0.6588	J	0.8229		1.3080		-0.0045	U	0.5616	J	**1.9650**	
	Radium-228	0.6838	J	0.5902	J	**1.3131**	J	**1.6282**	J	0.8334	J	**1.1755**	J	0.7741	J
	Strontium-90	0.0000	U												
	Thorium-228	0.6315		0.3306	J	0.5369		0.4244		0.6682		0.5477		0.1910	J
	Thorium-230	1.0200		0.3273	J	0.8376		0.7094		0.6449		0.5566		0.4477	
	Thorium-232	0.5936		0.4357		0.5927		0.4165		0.7153		0.3930	J	0.2275	
	Uranium-234	0.4774		0.4411		0.7749		0.5335		0.5253		0.4721		0.5502	
	Uranium-235	0.02741	U	0.01094	U	0.0439	U	0.04505	U	0.05311	U	0.0887	J	0.005358	U
	Uranium-238	0.5479		0.2542		0.6140		0.5776		0.2908		0.2815		0.3607	

Table 4-1. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
SVOCs, Metals, and Radionuclides
Site SD-27, Holloman AFB

		SD27-DPT-11 11/04/2010 19.7 18 to 19.7 SD27-DPT-11C N		SD27-DPT-12 11/04/2010 8.5 6.5 to 8.5 SD27-DPT-12A N		SD27-DPT-12 11/04/2010 13.5 11.5 to 13.5 SD27-DPT-12B N		SD27-DPT-12 11/04/2010 19 17 to 19 SD27-DPT-12C N		SD27-DPT-13 11/05/2010 8.5 6.5 to 8.5 SD27-DPT-13A N		SD27-DPT-13 11/05/2010 13.5 11.5 to 13.5 SD27-DPT-13B N		SD27-DPT-13 11/05/2010 18.5 16.5 to 18.5 SD27-DPT-13C N	
Test Group	Parameter	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q
SVOCs	1-Methylnaphthalene	0.021	U	0.023	U	14		0.02	U	0.019	U	0.142		0.018	U
	2-Methylnaphthalene	0.021	U	0.023	U	13.2		0.02	U	0.019	U	0.02	U	0.018	U
	Naphthalene	0.034	U	0.036	U	8.91		0.033	U	0.031	U	0.032	U	0.03	U
Metals, Total	Arsenic	0.58		1.3		0.5		1		0.81		0.97		0.61	
	Barium	27		24.7		21.2		87		21.3	J	25.5	J	37.5	J
	Cadmium	0.47		0.061	U	0.3		0.95		0.27		0.25		0.086	J
	Chromium (3)	3	J	3.2	J	25.2		9		2.8	J	4.1	J	3.9	J
	Lead	1.8	J	1	J	0.92	J	3.4	J	1.1		1.2		1.2	
	Mercury (3)	0.01	U	0.011	U	0.0096	U	0.0089	U	0.0097	U	0.0098	U	0.013	J
	Selenium	1.8	U	2.5	U	1.8	U	2.1	U	1.5	U	1.9	U	1.6	U
Radio-chemistry	Lead-210	0.2372	J	0.1883	J	0.4673	J	0.0229	U	1.0147	J	0.6591	J	0.5856	J
	Plutonium-239														
	Radium-226	0.5138	J	0.7444		0.7021		0.6303		0.3494	J	0.4191	U	0.2155	U
	Radium-228	0.4535	U	0.8315	J	0.3707	U	0.9220	J	0.5987	J	0.5940	J	0.6913	J
	Strontium-90														
	Thorium-228	0.3470	J	0.3764		0.3382		0.6660		0.1914	J	0.3463		0.4171	
	Thorium-230	0.6175		0.6843		0.5646		0.5005		0.3713	J	0.6605		0.4901	
	Thorium-232	0.5656		0.3180		0.4119		0.5038		0.2481		0.3699		0.4292	
	Uranium-234	0.3749		0.5858		0.5099		0.4941		0.2810		0.6143		0.3418	
	Uranium-235	0.1027	J	0.09633	J	-0.009174	U	-0.01164	U	0.008497	U	0.0242	U	0.01304	U
	Uranium-238	0.4874		0.5030		0.3965		0.5751		0.1537	J	0.3102		0.2663	

Table 4-1. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
SVOCs, Metals, and Radionuclides
Site SD-27, Holloman AFB

		SD27-DPT-14 03/22/2011 7 5 to 7 SD27-DPT-14A N		SD27-DPT-14 03/22/2011 12 10 to 12 SD27-DPT-14B N		SD27-DPT-14 03/22/2011 15 13 to 15 SD27-DPT-14C N		SD27-DPT-14 03/22/2011 22 20 to 22 SD27-DPT-14D N		SD27-DPT-15 03/22/2011 7 5 to 7 SD27-DPT-15A N		SD27-DPT-15 03/22/2011 12.5 10.5 to 12.5 SD27-DPT-15B N		SD27-DPT-15 03/22/2011 20 18 to 20 SD27-DPT-15C N	
Test Group	Parameter	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q
SVOCs	1-Methylnaphthalene	0.2	U	0.19	U	0.19	U	0.2	U	0.2	U	0.0379	J	0.19	U
	2-Methylnaphthalene	0.2	U	0.19	U	0.19	U	0.2	U	0.2	U	0.2	U	0.19	U
	Naphthalene	0.2	U	0.19	U	0.19	U	0.2	U	0.2	U	0.2	U	0.19	U
Metals, Total	Arsenic	0.88	U	1.1	U	0.99	J	1.1	U	1	U	1.1	U	1	U
	Barium	15	J	15.5	J	56.9	J	66.6	J	12.8	J	46.2	J	38.8	J
	Cadmium	0.44	U	0.53	U	0.39	U	0.54	U	0.51	U	0.53	U	0.51	U
	Chromium (3)	1.6	J	3.4	J	6.5		3.7	J	1.4	J	5.2	J	4.3	J
	Lead	0.91	J	1	J	3.5	J	2.3	J	0.51	U	2.6	J	2.2	J
	Mercury (3)	0.01	U	0.0089	U	0.0092	U	0.0096	U	0.01	U	0.0098	U	0.0092	U
	Selenium	1.8	U	2.1	U	1.5	U	2.2	U	2.1	U	2.1	U	2.3	J
Radio-chemistry	Lead-210														
	Plutonium-239														
	Radium-226														
	Radium-228														
	Strontium-90														
	Thorium-228														
	Thorium-230														
	Thorium-232														
	Uranium-234														
	Uranium-235														
	Uranium-238														

Table 4-1. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
SVOCs, Metals, and Radionuclides
Site SD-27, Holloman AFB

		SD27-DPT-16 03/22/2011 10 8 to 10 SD27-DPT-16A N		SD27-DPT-16 03/22/2011 15 13 to 15 SD27-DPT-16B N		SD27-DPT-16 03/22/2011 17.5 15.5 to 17.5 SD27-DPT-16C N		SD27-DPT-16 03/22/2011 22 20 to 22 SD27-DPT-16D N		SD27-DPT-17 03/22/2011 10 8 to 10 SD27-DPT-17A N		SD27-DPT-17 03/22/2011 12.5 10.5 to 12.5 SD27-DPT-17B N		SD27-DPT-17 03/22/2011 12.5 10.5 to 12.5 SD27-DPT-DUP05 FD	
Test Group	Parameter	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q
SVOCs	1-Methylnaphthalene	0.2	U	0.19	U	0.19	U	0.19	U	0.21	U	0.232		0.283	
	2-Methylnaphthalene	0.2	U	0.19	U	0.19	U	0.19	U	0.21	U	0.18	U	0.18	U
	Naphthalene	0.2	U	0.19	U	0.19	U	0.19	U	0.21	U	0.18	U	0.18	U
Metals, Total	Arsenic	0.75	U	1.4	J	0.92	U	3.1	J	0.96	U	0.86	U	0.86	U
	Barium	27.7	J	53.6	J	62.5	J	28.1	J	20.2	J	17.8	J	15.8	J
	Cadmium	0.37	U	0.45	U	0.46	U	0.47	U	0.48	U	0.43	U	0.43	U
	Chromium (3)	3	J	8.1		6.8		6.4		2.7	J	3.5	J	4.1	J
	Lead	1.6	J	4.2	J	2.8	J	3.7	J	1.2	J	1.2	J	2.1	J
	Mercury (3)	0.0096	U	0.0091	U	0.0091	U	0.0094	U	0.0096	U	0.0089	U	0.0082	U
	Selenium	3	U	1.8	U	1.8	U	1.9	U	1.9	U	1.7	U	1.7	U
Radio-chemistry	Lead-210														
	Plutonium-239														
	Radium-226														
	Radium-228														
	Strontium-90														
	Thorium-228														
	Thorium-230														
	Thorium-232														
	Uranium-234														
	Uranium-235														
	Uranium-238														

Table 4-1. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
SVOCs, Metals, and Radionuclides
Site SD-27, Holloman AFB

		SD27-DPT-17 03/22/2011 17 15 to 17 SD27-DPT-17C N		SD27-DPT-17 03/22/2011 22 20 to 22 SD27-DPT-17D N		SD27-DPT-18 03/22/2011 10 8 to 10 SD27-DPT-18A N		SD27-DPT-18 03/22/2011 13 11 to 13 SD27-DPT-18B N		SD27-DPT-18 03/22/2011 17 15 to 17 SD27-DPT-18C N		SD27-DPT-18 03/22/2011 25 23 to 25 SD27-DPT-18D N		SD27-DPT-19 03/22/2011 10 8 to 10 SD27-DPT-19A N	
Test Group	Parameter	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q
SVOCs	1-Methylnaphthalene	0.19	U	0.19	U	0.2	U	6.19		1.24		0.21	U	1.78	
	2-Methylnaphthalene	0.19	U	0.19	U	0.2	U	6.69		0.143	J	0.21	U	1.62	
	Naphthalene	0.19	U	0.19	U	0.2	U	3.29		0.77	U	0.21	U	0.307	J
Metals, Total	Arsenic	1.1	J	0.94	U	1.4	J	1.7	J	1.5	J	2.3	J	0.84	U
	Barium	26.6	J	18.8	J	18.7	J	24.2	J	28.7	J	50.1	J	24.1	J
	Cadmium	0.38	U	0.47	U	0.53	U	0.5	U	0.4	U	0.43	UJ	0.42	U
	Chromium (3)	2.5	J	2.7	J	2.3	J	2.8	J	4.9		10.4	J	1.6	J
	Lead	1.5	J	1.6	J	1	J	1.2	J	2.5	J	5.1	J	0.44	J
	Mercury (3)	0.0089	U	0.0088	U	0.0088	U	0.0083	U	0.0095	U	0.0091	U	0.0096	U
	Selenium	3	U	1.9	U	2.1	U	2	U	1.6	U	1.7	UJ	1.7	U
Radio-chemistry	Lead-210														
	Plutonium-239														
	Radium-226														
	Radium-228														
	Strontium-90														
	Thorium-228														
	Thorium-230														
	Thorium-232														
	Uranium-234														
	Uranium-235														
	Uranium-238														

Table 4-1. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
SVOCs, Metals, and Radionuclides
Site SD-27, Holloman AFB

		SD27-DPT-19 03/22/2011 12.5 10.5 to 12.5 SD27-DPT-19B N		SD27-DPT-19 03/22/2011 12.5 10.5 to 12.5 SD27-DPT-DUP06 FD		SD27-DPT-19 03/22/2011 20 18 to 20 SD27-DPT-19C N		SD27-DPT-19 03/22/2011 25 23 to 25 SD27-DPT-19D N		SD27-DPT-20 03/23/2011 9 7 to 9 SD27-DPT-20A N		SD27-DPT-20 03/23/2011 12.5 10.5 to 12.5 SD27-DPT-20B N		SD27-DPT-20 03/23/2011 12.5 10.5 to 12.5 SD27-DPT-DUP07 FD	
Test Group	Parameter	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q
SVOCs	1-Methylnaphthalene	1.22	J	2.21	J	0.19	U	0.18	U	0.19	U	0.0205	J	0.0947	J
	2-Methylnaphthalene	1.39	J	2.54	J	0.19	U	0.18	U	0.19	U	0.19	U	0.18	U
	Naphthalene	0.641	J	1.36	J	0.19	U	0.18	U	0.19	U	0.19	U	0.18	U
Metals, Total	Arsenic	0.92	U	0.97	U	**8.4**		1.3	J	0.89	U	0.92	U	0.9	U
	Barium	21.1	J	16.6	J	37.2	J	30.9	J	12	J	19.5	J	18.4	J
	Cadmium	0.46	U	0.48	U	0.48	U	0.38	U	0.45	U	0.46	U	0.45	U
	Chromium (3)	2.7	J	2.9	J	3.2	J	7.3		1.7	J	2.3	J	2.1	J
	Lead	1.4	J	1.2	J	1.8	J	4.3	J	0.45	U	0.91	J	1	J
	Mercury (3)	0.0089	U	0.009	U	0.0086	U	0.0088	U	0.0096	U	0.0089	U	0.0089	U
	Selenium	1.8	U	1.9	U	1.9	U	1.5	J	1.8	U	1.8	U	1.8	U
Radio-chemistry	Lead-210														
	Plutonium-239														
	Radium-226														
	Radium-228														
	Strontium-90														
	Thorium-228														
	Thorium-230														
	Thorium-232														
	Uranium-234														
	Uranium-235														
	Uranium-238														

Table 4-1. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
SVOCs, Metals, and Radionuclides
Site SD-27, Holloman AFB

		SD27-DPT-20 03/23/2011 17.5 15.5 to 17.5 SD27-DPT-20C N		SD27-DPT-20 03/23/2011 25 23 to 25 SD27-DPT-20D N		SD27-DPT-21 03/23/2011 10 8 to 10 SD27-DPT-21A N		SD27-DPT-21 03/23/2011 14 12 to 14 SD27-DPT-21B N		SD27-DPT-21 03/23/2011 17.5 15.5 to 17.5 SD27-DPT-21C N		SD27-DPT-22 03/23/2011 10 8 to 10 SD27-DPT-22A N		SD27-DPT-22 03/23/2011 14.5 12.5 to 14.5 SD27-DPT-22B N	
Test Group	Parameter	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q
SVOCs	1-Methylnaphthalene	0.19	U	0.18	U	0.19	U	0.18	U	0.19	U	0.19	U	1.75	
	2-Methylnaphthalene	0.19	U	0.18	U	0.19	U	0.18	U	0.19	U	0.19	U	1.82	
	Naphthalene	0.19	U	0.18	U	0.19	U	0.18	U	0.19	U	0.19	U	0.84	
Metals, Total	Arsenic	2.9	J	2.1	J	1.1	J	2.1	J	1.2	U	0.97	U	1	U
	Barium	43.2	J	44.7	J	20.9	J	57.8	J	40.8	J	15.9	J	35.4	J
	Cadmium	0.49	U	0.42	U	0.44	U	0.55	U	0.58	U	0.48	U	0.5	U
	Chromium (3)	5.7		8.5		2.2	J	12.9		6.6		2	J	6.4	
	Lead	3.5	J	4.7	J	0.94	J	5.8	J	3.3	J	1.3	J	2.9	J
	Mercury (3)	0.0095	U	0.0079	U	0.0094	U	0.0088	U	0.0096	U	0.0096	U	0.0091	U
	Selenium	2	U	1.7	U	1.7	U	2.2	U	2.3	U	1.9	U	2	U
Radio-chemistry	Lead-210														
	Plutonium-239														
	Radium-226														
	Radium-228														
	Strontium-90														
	Thorium-228														
	Thorium-230														
	Thorium-232														
	Uranium-234														
	Uranium-235														
	Uranium-238														

Table 4-1. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
SVOCs, Metals, and Radionuclides
Site SD-27, Holloman AFB

		SD27-DPT-22 03/23/2011 17 15 to 17 SD27-DPT-22C N		SD27-DPT-23 03/23/2011 10 8 to 10 SD27-DPT-23A N		SD27-DPT-23 03/23/2011 15 12 to 15 SD27-DPT-23B N		SD27-DPT-24 03/23/2011 10 8 to 10 SD27-DPT-24A N		SD27-DPT-24 03/23/2011 12 10 to 12 SD27-DPT-24B N		SD27-DPT-24 03/23/2011 17 15 to 17 SD27-DPT-24C N		SD27-DPT-25 03/23/2011 10 8 to 10 SD27-DPT-25A N	
Test Group	Parameter	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q
SVOCs	1-Methylnaphthalene	0.18	U	0.19	U	0.19	U	0.19	U	1.4		0.19	U	2.56	
	2-Methylnaphthalene	0.18	U	0.19	U	0.19	U	0.19	U	0.38	U	0.19	U	2.49	
	Naphthalene	0.18	U	0.19	U	0.19	U	0.19	U	0.38	U	0.19	U	0.803	
Metals, Total	Arsenic	0.96	U	0.75	U	0.8	U	0.74	U	0.72	U	0.9	U	0.77	U
	Barium	23.5	J	16.7	J	49.3	J	21.4	J	15.8	J	33.4	J	18	J
	Cadmium	0.48	U	0.37	U	0.4	U	0.37	U	0.36	U	0.45	U	0.38	U
	Chromium (3)	4.8		1.9	J	6.6		1.8	J	2.8	J	2.8	J	2	J
	Lead	2.6	J	1.1	J	3.4	J	7.4	U	7.2	U	9	U	7.7	U
	Mercury (3)	0.0093	U	0.0089	U	0.0088	U	0.009	R	0.0092	R	0.0087	R	0.0093	R
	Selenium	1.9	U	1.5	U	1.6	U	1.5	U	1.4	U	1.8	U	1.5	U
Radio-chemistry	Lead-210														
	Plutonium-239														
	Radium-226														
	Radium-228														
	Strontium-90														
	Thorium-228														
	Thorium-230														
	Thorium-232														
	Uranium-234														
	Uranium-235														
	Uranium-238														

Table 4-1. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
SVOCs, Metals, and Radionuclides
Site SD-27, Holloman AFB

		SD27-DPT-25 03/23/2011 15 12 to 15 SD27-DPT-25B N		SD27-DPT-26 03/23/2011 10 8 to 10 SD27-DPT-26A N		SD27-DPT-26 03/23/2011 15 12.5 to 15 SD27-DPT-26B N		SD27-DPT-27 03/23/2011 10 8 to 10 SD27-DPT-27A N		SD27-DPT-27 03/23/2011 15 12.5 to 15 SD27-DPT-27B N		SD27-DPT-28 03/23/2011 10 8 to 10 SD27-DPT-28A N		SD27-DPT-28 03/23/2011 10 8 to 10 SD27-DPT-DUP08 FD	
Test Group	Parameter	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q
SVOCs	1-Methylnaphthalene	0.2	U	0.19	U	0.19	U	0.2	U	0.2	U	0.2	U	0.2	U
	2-Methylnaphthalene	0.2	U	0.19	U	0.19	U	0.2	U	0.2	U	0.2	U	0.2	U
	Naphthalene	0.2	U	0.19	U	0.19	U	0.2	U	0.2	U	0.2	U	0.2	U
Metals, Total	Arsenic	4.2	U	0.92	U	5	U	0.99	U	1.2	U	4.7	U	4.9	U
	Barium	54.7	J	19.5	J	58.3	J	23.2	J	64.9	J	27.4	J	26.3	J
	Cadmium	0.42	U	0.46	U	0.5	UJ	0.49	U	0.59	U	0.47	U	0.49	U
	Chromium (3)	8.6		2.3	J	6.8		2.6	J	10.8		2.7	J	2.9	J
	Lead	8.3	U	9.2	U	10	U	9.9	U	12	U	9.4	U	9.9	U
	Mercury (3)	0.0091	R	0.0095	R	0.009	R	0.0088	R	0.0092	R	0.0099	R	0.0096	U
	Selenium	1.8	J	1.8	U	2	UJ	2	U	2.4	U	1.9	U	2	U
Radio-chemistry	Lead-210														
	Plutonium-239														
	Radium-226														
	Radium-228														
	Strontium-90														
	Thorium-228														
	Thorium-230														
	Thorium-232														
	Uranium-234														
	Uranium-235														
	Uranium-238														

Table 4-1. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
SVOCs, Metals, and Radionuclides
Site SD-27, Holloman AFB

		SD27-DPT-28 03/23/2011 15 12.5 to 15 SD27-DPT-28B N		SD27-DPT-28 03/23/2011 20 18 to 20 SD27-DPT-28C N		SD27-DPT-29 03/23/2011 12 10 to 12 SD27-DPT-29A N		SD27-DPT-29 03/23/2011 12 10 to 12 SD27-DPT-DUP09 FD		SD27-DPT-29 03/23/2011 15 12.5 to 15 SD27-DPT-29B N		SD27-DPT-30 03/23/2011 12 10 to 12 SD27-DPT-30A N		SD27-DPT-31 03/23/2011 12 10 to 12 SD27-DPT-31A N		SD27-DPT-31 03/23/2011 15 13 to 15 SD27-DPT-31B N	
Test Group	Parameter	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q
SVOCs	1-Methylnaphthalene	0.34		0.19	U	1.62		1.43		0.19	U	0.18	U	0.0624	J	0.19	U
	2-Methylnaphthalene	0.19	U	0.19	U	1.72		1.37		0.19	U	0.18	U	0.19	U	0.19	U
	Naphthalene	0.19	U	0.19	U	0.845	J	0.289	J	0.19	U	0.18	U	0.19	U	0.19	U
Metals, Total	Arsenic	0.92	U	0.93	U	1.1	U	0.91	U	1.1	U	0.84	U	0.95	U	1.1	U
	Barium	17.2	J	46.4	J	17	J	22.8	J	41.9	J	25.6	J	22.2	J	69.1	J
	Cadmium	0.46	U	0.47	U	0.54	U	0.46	U	0.57	U	0.42	U	0.48	U	0.55	U
	Chromium (3)	2.9	J	4.3	J	3.8	J	5.6		8.5		3.5	J	2.8	J	8.7	
	Lead	9.2	U	9.3	U	11	U	9.1	U	11	U	17	U	9.5	U	11	U
	Mercury (3)	0.0095	R	0.0092	R	0.009	R	0.0096	U	0.0087	R	0.0088	U	0.0082	U	0.009	U
	Selenium	2.2	J	1.9	U	2.2	U	1.8	U	2.6	J	3.3	U	1.9	U	2.2	U
Radio-chemistry	Lead-210																
	Plutonium-239																
	Radium-226																
	Radium-228																
	Strontium-90																
	Thorium-228																
	Thorium-230																
	Thorium-232																
	Uranium-234																
	Uranium-235																
	Uranium-238																

Table 4-1. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
SVOCs, Metals, and Radionuclides
Site SD-27, Holloman AFB

Notes:
Units for metals and SVOCs are all milligram per kilogram (mg/kg); unist for radionuclides are picocuries per gram (pci/g).

(1) NMED Soil Screening Levels: NEW MEXICO ENVIRONMENT DEPARTMENT Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program, Table A-1, TECHNICAL BACKGROUND DOCUMENT FOR DEVELOPMENT OF SOIL SCREENING LEVELS, REVISION 5.0, July 2009. Underlined criteria taken from EPA June 2011 RSL table.

(2) Radiological screening criteria is the lowest of EPA PRGs for all residential pathways (ingestion of soil; inhalation of fugitive dusts; and external radiation exposure) (source: http://epa-prgs.ornl.gov/radionuclides/download.html).

(3) NMED SSLs for hexavalent chromium and methyl mercury used.

Blank 'value' cell indicates not analyzed.

Red indicates > Residential SSLs for direct contact for SVOCs and metals.

Underline indicates > Commerical/Industrial SSLs for direct contact for SVOCs and metals.

Yellow shade indicates > Construction Worker SSLs for direct contact for SVOCs and metals.

Green shade indicates > EPA Residential PRGs for radionuclides

Blank 'value' cell indicates not analyzed.

Reference: (TetraTech, 2012)

Table 4-2. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
VOCs and TPH
Site SD-27, Holloman AFB

			Location:	SD27-DPT-01		SD27-DPT-01		SD27-DPT-02		SD27-DPT-03		SD27-DPT-04	
			Collection Date:	11/09/2010		11/09/2010		11/09/2010		11/09/2010		11/09/2010	
			Depth (ft):	8.5		10.7		8.5		8.5		8.5	
			Depth Range (ft):	6.5 to 8.5		10 to 10.7		6.5 to 8.5		6.5 to 8.5		6.5 to 8.5	
			SampleID:	SD27-DPT-01AV		SD27-DPT-01BV		SD27-DPT-02AV		SD27-DPT-03AV		SD27-DPT-04AV	
			QCType:	N		N		N		N		N	
Parameter	NMED [1]												
	Res Soil	Com/Ind Soil	Const Soil										
1,1-Dichloroethene	618	2216	1830	0.0011	U	0.065	U	0.1	U	0.33	U	0.41	U
1,2,4-Trimethylbenzene	62	260	n/a	0.00083	U	2.08		2.12		40.1		41.3	
1,3,5-Trimethylbenzene	780	10000	n/a	0.00099	U	0.732		0.095	U	16.8		16.9	
n-Butylbenzene	3900	51000	n/a	0.00099	U	0.173	J	0.12	J	5.16		1.64	
4-Methyl-2-pentanone	5949	73293	23100	0.0042	U	0.25	U	0.4	U	1.3	U	1.6	U
Acetone	67456	850852	262714	0.015	R	0.93	R	1.5	R	4.7	R	5.8	R
Acrolein	1	2	2	0.0083	UJ	0.51	UJ	0.8	UJ	2.6	UJ	3.2	U
Benzene	15	85	471	0.0011	U	0.142	J	0.232	J	5.05		12.6	
Benzyl Chloride	n/a	n/a	n/a	0.0011	U	0.069	U	0.11	U	0.35	U	0.44	U
Carbon disulfide	1935	7544	5890	0.0015	U	0.093	U	0.15	U	0.96	J	0.58	U
Chloroform	6	32	671	0.00091	U	0.056	U	0.088	U	0.28	U	0.35	U
Cymene	n/a	n/a	n/a	0.00091	U	2.63		0.144	J	5.17		4.12	
Ethylbenzene	70	385	6625	0.00076	U	0.657		0.474		15		13.2	
Hexane	1255	4989	3843	0.0014	UJ	0.088	UJ	0.14	UJ	5.82	J	2.62	J
Isopropylbenzene	3211	14878	10289	0.00083	U	0.356		0.341	J	5.87		3.49	
m,p-Xylene [2]	600	2600	n/a	0.0017	U	1.21		0.626	J	46.3		46.9	
Methylene chloride	199	1085	10561	0.0076	U	0.46	U	0.73	U	2.3	U	5.63	U
Naphthalene	45	252	702	0.0015	U	0.108	J	0.15	U	5.43		5.53	
n-Propylbenzene	3400	21000	n/a	0.0011	U	0.396		0.388		6.53		2.15	
o-Xylene	9548	31511	27483	0.00076	U	0.49		0.0902	J	17.1		18.8	
Sec-Butylbenzene	n/a	n/a	n/a	0.0012	U	0.25		0.186	J	5.95		3.23	
Tert-butyl benzene	n/a	n/a	n/a	0.00091	U	0.056	U	0.088	U	0.28	U	0.47	J
Toluene	5570	57863	21127	0.00091	U	0.166	J	0.088	U	18.1		36.6	
Trichloroethene	46	253	4598	0.00091	U	0.056	U	0.088	U	0.28	U	0.35	U
TPH-GRO (C6-C10)	n/a	n/a	n/a	2.5	U	179	J	112		2940	J	1590	
TPH (C10-C28)	760	1810	n/a	4.6	U	15.3		12		469		606	

Table 4-2. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
VOCs and TPH
Site SD-27, Holloman AFB

	SD27-DPT-05 11/09/2010 8.5 6.5 to 8.5 SD27-DPT-05AV N		SD27-DPT-05 11/09/2010 12 10 to 12 SD27-DPT-05BV N		SD27-DPT-06 11/09/2010 8.5 6.5 to 8.5 SD27-DPT-06AV N		SD27-DPT-06 11/09/2010 8.5 6.5 to 8.5 SD27-DPT-DUP01V FD		SD27-DPT-07 11/09/2010 8.5 6.5 to 8.5 SD27-DPT-07AV N		SD27-DPT-08 11/10/2010 8.5 6.5 to 8.5 SD27-DPT-08AV N	
Parameter												
1,1-Dichloroethene	0.001	U	0.14	U	0.0012	U	0.0012	U	0.0012	U	0.15	U
1,2,4-Trimethylbenzene	0.00079	U	9.33		0.00093	U	0.00097	U	0.00092	U	13.8	
1,3,5-Trimethylbenzene	0.00094	U	3.29		0.0011	U	0.0011	U	0.0011	U	9.2	
n-Butylbenzene	0.00094	U	0.704		0.0011	U	0.0011	U	0.0011	U	0.291	J
4-Methyl-2-pentanone	0.004	U	0.54	U	0.0046	U	0.0049	U	0.0046	U	0.58	U
Acetone	0.014	R	2	R	0.017	R	0.024	J	0.0173	J	2.1	U
Acrolein	0.0079	UJ	1.1	UJ	0.0093	U	0.0097	UJ	0.0092	UJ	1.2	U
Benzene	0.0011	U	4.8		0.0036	J	0.0086	J	0.0054		1.2	
Benzyl Chloride	0.0011	U	0.15	U	0.0013	U	0.0013	U	0.0013	U	0.16	U
Carbon disulfide	0.0014	U	0.2	U	0.0036	J	0.0018	U	0.0017	U	0.225	J
Chloroform	0.00087	U	0.12	U	0.001	U	0.0011	U	0.001	U	0.13	U
Cymene	0.00087	U	3.33		0.001	U	0.0011	U	0.001	U	2.26	
Ethylbenzene	0.00072	U	9.53		0.00088	J	0.0012	J	0.00084	U	5.4	
Hexane	0.0014	UJ	0.19	UJ	0.0016	UJ	0.0017	UJ	0.0016	UJ	0.436	J
Isopropylbenzene	0.00079	U	1.81		0.00093	U	0.0011	J	0.0047		1.05	
m,p-Xylene (2)	0.0016	U	9.69		0.0019	U	0.0019	U	0.0018	U	17.3	
Methylene chloride	0.0072	U	0.45	U	0.0084	U	0.0088	U	0.0084	U	0.48	U
Naphthalene	0.0014	U	1.3		0.0017	U	0.0018	U	0.0017	U	1.78	
n-Propylbenzene	0.001	U	2.12		0.0012	U	0.0012	U	0.003	J	0.49	J
o-Xylene	0.00072	U	5.87		0.00084	U	0.00088	U	0.00084	U	7.95	
Sec-Butylbenzene	0.0012	U	0.9		0.0014	U	0.0014	U	0.0018	J	1.33	
Tert-butyl benzene	0.00087	U	0.12	U	0.001	U	0.0011	U	0.001	U	0.13	U
Toluene	0.00087	U	6.67		0.001	U	0.0011	U	0.001	U	6.95	
Trichloroethene	0.00087	U	0.12	U	0.001	U	0.0011	U	0.001	U	0.13	U
TPH-GRO (C6-C10)	2.3	U	772	J	2.6	U	2.4	U	2.4	U	643	
TPH (C10-C28)	4.6	U	102		4.4	U	3.9	U	4.5	U	**1360**	

Table 4-2. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
VOCs and TPH
Site SD-27, Holloman AFB

	SD27-DPT-08 11/10/2010 15 10 to 15 SD27-DPT-08BV N		SD27-DPT-08 11/10/2010 18 16.5 to 18 SD27-DPT-08CV N		SD27-DPT-08 11/10/2010 ?? 22 to ??? SD27-DPT-08DV N		SD27-DPT-09 11/10/2010 9 7 to 9 SD27-DPT-09AV N		SD27-DPT-09 11/10/2010 14 12 to 14 SD27-DPT-09BV N	
Parameter										
1,1-Dichloroethene	1.4	U	0.29	U	NA		0.69	U	0.69	U
1,2,4-Trimethylbenzene	**105**		15.2		NA		57.6		**87.2**	
1,3,5-Trimethylbenzene	33.9		5.09		NA		24.2		29.9	
n-Butylbenzene	17.2		1.84		NA		5.71		14.5	
4-Methyl-2-pentanone	5.5	U	1.1	U	NA		2.7	U	2.7	U
Acetone	20	UJ	4.1	U	NA		9.8	U	9.8	U
Acrolein	11	U	2.3	U	NA		5.4	U	5.4	U
Benzene	**23.7**		1.37		NA		2.91		2.97	
Benzyl Chloride	1.5	U	0.31	U	NA		0.74	U	1.6	J
Carbon disulfide	2	U	0.41	U	NA		0.98	U	0.98	U
Chloroform	1.2	U	0.25	U	NA		0.59	U	0.59	U
Cymene	12.1		1.85		NA		8.4		10.8	
Ethylbenzene	**107**	J	16.8		NA		36.4		**76.1**	
Hexane	22.7		1.07		NA		0.931	J	5.44	
Isopropylbenzene	25.4	J	3.73		NA		9.58		23.3	
m,p-Xylene (2)	132		17.3		NA		69.2		73.2	
Methylene chloride	4.6	U	0.95	U	NA		2.3	U	2.3	U
Naphthalene	20.1		2.63		NA		8.31		2.9	
n-Propylbenzene	37.3	J	5.67		NA		12.2		34.4	
o-Xylene	60.9	J	8.21		NA		34.4		39.4	
Sec-Butylbenzene	14.8		2.15		NA		6.84		14.1	
Tert-butyl benzene	1.2	U	0.25	U	NA		0.614	J	0.728	J
Toluene	93.9	J	9.46		NA		37		8.79	
Trichloroethene	1.2	U	0.25	U	NA		0.59	U	0.59	U
TPH-GRO (C6-C10)	4400	J	863	J	NA		1480		2540	J
TPH (C10-C28)	**1890**		146		4	U	760		**2870**	

Table 4-2. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
VOCs and TPH
Site SD-27, Holloman AFB

	SD27-DPT-09 11/10/2010 18 16 to 18 SD27-DPT-09CV N		SD27-DPT-10 11/10/2010 10 8 to 10 SD27-DPT-10AV N		SD27-DPT-10 11/10/2010 14.5 12.4 to 14.5 SD27-DPT-10BV N		SD27-DPT-10 11/10/2010 19 17 to 19 SD27-DPT-10CV N		SD27-DPT-11 11/10/2010 8.5 6.5 to 8.5 SD27-DPT-11AV N		SD27-DPT-11 11/10/2010 8.5 6.5 to 8.5 SD27-DPT-DUP03V FD	
Parameter												
1,1-Dichloroethene	0.00097	U	0.0011	U	0.61	U	0.061	U	0.0011	U	0.0012	U
1,2,4-Trimethylbenzene	0.002	J	0.0379		33.6		4.46		0.00083	U	0.00096	U
1,3,5-Trimethylbenzene	0.00091	U	0.0219		11.7		1.58		0.00099	U	0.0011	U
n-Butylbenzene	0.00091	U	0.00098	J	3.73		0.493		0.00099	U	0.0011	U
4-Methyl-2-pentanone	0.0038	U	0.0041	U	2.4	U	0.24	U	0.0042	U	0.0048	U
Acetone	0.014	U	0.015	U	8.8	U	0.87	U	0.015	U	0.017	U
Acrolein	0.0077	U	0.0083	U	4.8	U	0.48	U	0.0083	U	0.0096	U
Benzene	0.0028	J	0.0109		0.66	U	0.065	U	0.0011	U	0.0013	U
Benzyl Chloride	0.001	U	0.0011	U	0.66	U	0.065	U	0.0011	U	0.0013	U
Carbon disulfide	0.0018	J	0.0024	J	0.88	U	0.087	U	0.0015	U	0.0017	U
Chloroform	0.00084	U	0.0009	U	0.53	U	0.052	U	0.00091	U	0.001	U
Cymene	0.00084	U	0.004		3.1		0.511		0.00091	U	0.001	U
Ethylbenzene	0.0042		0.0029	J	43.6		2.18		0.00076	U	0.00087	U
Hexane	0.0013	U	0.0014	U	1.88	J	0.0882	J	0.0014	U	0.0017	U
Isopropylbenzene	0.00077	U	0.0075		8.91		1.32		0.00083	U	0.00096	U
m,p-Xylene [(2)]	0.003	J	0.0085		60.2		1.1		0.0017	U	0.0019	U
Methylene chloride	0.009	U	0.0103	U	2	U	0.43	U	0.0035	U	0.004	U
Naphthalene	0.0014	U	0.0015	U	3.19		0.261		0.0015	U	0.0017	U
n-Propylbenzene	0.00097	U	0.0059		11.7		2		0.0011	U	0.0012	U
o-Xylene	0.002	J	0.00075	U	24.9		0.45		0.00076	U	0.00087	U
Sec-Butylbenzene	0.0011	U	0.0057		4.32		0.911		0.0012	U	0.0014	U
Tert-butyl benzene	0.00084	U	0.0009	U	0.53	U	0.052	U	0.00091	U	0.001	U
Toluene	0.0014	J	0.0009	U	10.2		0.293		0.00091	U	0.001	U
Trichloroethene	0.00084	U	0.0009	U	0.53	U	0.052	U	0.00091	U	0.001	U
TPH-GRO (C6-C10)	2.3	U	2.4	U	1970	J	418	J	2.3	U	2.8	U
TPH (C10-C28)	3.9	U	**1970**		**1150**		16.7		4.2	U	3.8	U

Table 4-2. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
VOCs and TPH
Site SD-27, Holloman AFB

	SD27-DPT-11 11/10/2010 12 10 to 12 SD27-DPT-11BV N		SD27-DPT-11 11/10/2010 19.7 18 to 19.7 SD27-DPT-11CV N		SD27-DPT-12 11/10/2010 8.5 6.5 to 8.5 SD27-DPT-12AV N		SD27-DPT-12 11/10/2010 13.5 11.5 to 13.5 SD27-DPT-12BV N		SD27-DPT-12 11/10/2010 19 17 to 19 SD27-DPT-12CV N		SD27-DPT-13 11/05/2010 8.5 6.5 to 8.5 SD27-DPT-13A N	
Parameter												
1,1-Dichloroethene	1.4	U	0.056	U	0.0011	U	0.68	U	0.0011	U	NA	
1,2,4-Trimethylbenzene	**166**		4.73		0.00085	U	56.5		0.0118		NA	
1,3,5-Trimethylbenzene	56.8		1.82		0.001	U	19.6		0.0046		NA	
n-Butylbenzene	24.1		0.309		0.001	U	8.14		0.001	U	NA	
4-Methyl-2-pentanone	5.5	U	0.22	U	0.0042	U	2.7	U	0.0043	U	NA	
Acetone	20	U	0.8	U	0.015	U	9.8	U	0.016	U	NA	
Acrolein	11	UJ	0.44	U	0.0085	U	5.4	U	0.0086	U	NA	
Benzene	**60.6**		0.321		0.0012	U	4.22		0.0012	U	NA	
Benzyl Chloride	1.5	U	0.06	U	0.0012	U	0.73	U	0.0012	U	NA	
Carbon disulfide	2	U	0.08	U	0.0015	U	0.98	U	0.003	J	NA	
Chloroform	1.2	U	0.048	U	0.00092	U	0.59	U	0.00094	U	NA	
Cymene	17.7		0.474		0.00092	U	28.4		0.0036	J	NA	
Ethylbenzene	**190**		4.67		0.00077	U	**73.7**		0.0048		NA	
Hexane	69.2	J	0.163	J	0.0015	U	10		0.0043		NA	
Isopropylbenzene	44.6		1.45		0.00085	U	16.2		0.0034	J	NA	
m,p-Xylene (2)	257		0.512		0.0017	U	105		0.0042	J	NA	
Methylene chloride	4.6	U	0.4	U	0.0088	U	2.2	U	0.0085	U	NA	
Naphthalene	32.9		0.08	U	0.0015	U	8.45		0.0016	U	NA	
n-Propylbenzene	57.7		1.71		0.0011	U	21.1		0.0045		NA	
o-Xylene	129		0.248		0.00077	U	44.1		0.0017	J	NA	
Sec-Butylbenzene	23.2		0.775		0.0012	U	7.41		0.0037	J	NA	
Tert-butyl benzene	1.25	J	0.048	U	0.00092	U	0.59	U	0.00094	U	NA	
Toluene	152		0.256		0.00092	U	67.7		0.0018	J	NA	
Trichloroethene	1.2	U	0.048	U	0.00092	U	0.59	U	0.00094	U	NA	
TPH-GRO (C6-C10)	7040	J	437	J	2.6	U	3600	J	2.3	U	NA	
TPH (C10-C28)	586		4.3	U	4.4	U	**5690**		4.2	U	3.8	U

Table 4-2. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
VOCs and TPH
Site SD-27, Holloman AFB

	SD27-DPT-13 11/05/2010 13.5 11.5 to 13.5 SD27-DPT-13B N		SD27-DPT-13 11/05/2010 18.5 16.5 to 18.5 SD27-DPT-13C N		SD27-DPT-14 03/22/2011 7 5 to 7 SD27-DPT-14A N		SD27-DPT-14 03/22/2011 12 10 to 12 SD27-DPT-14B N		SD27-DPT-14 03/22/2011 15 13 to 15 SD27-DPT-14C N		SD27-DPT-14 03/22/2011 22 20 to 22 SD27-DPT-14D N	
Parameter												
1,1-Dichloroethene	NA		NA		0.0046	UJ	0.0046	UJ	0.0041	UJ	0.0035	UJ
1,2,4-Trimethylbenzene	NA		NA		0.0046	UJ	0.0211	J	0.0017	J	0.0035	UJ
1,3,5-Trimethylbenzene	NA		NA		0.0046	UJ	0.0064	J	0.0041	UJ	0.0035	UJ
n-Butylbenzene	NA		NA		0.0046	UJ	0.0046	UJ	0.0041	UJ	0.0035	UJ
4-Methyl-2-pentanone	NA		NA		0.023	UJ	0.023	UJ	0.02	UJ	0.018	UJ
Acetone	NA		NA		0.046	UJ	0.046	UJ	0.041	UJ	0.035	UJ
Acrolein	NA		NA		0.023	UJ	0.023	UJ	0.02	UJ	0.018	UJ
Benzene	NA		NA		0.0046	UJ	0.0046	UJ	0.0041	UJ	0.0035	UJ
Benzyl Chloride	NA		NA		0.0046	UJ	0.0046	UJ	0.0041	UJ	0.0035	UJ
Carbon disulfide	NA		NA		0.0046	UJ	0.0046	UJ	0.0041	UJ	0.0035	UJ
Chloroform	NA		NA		0.0046	UJ	0.0046	UJ	0.0041	UJ	0.0035	UJ
Cymene	NA		NA		0.0046	UJ	0.0048	J	0.0041	UJ	0.0035	UJ
Ethylbenzene	NA		NA		0.0046	UJ	0.0237	J	0.0015	J	0.0018	J
Hexane	NA		NA		0.0046	UJ	0.0046	UJ	0.0041	UJ	0.0035	UJ
Isopropylbenzene	NA		NA		0.0046	UJ	0.0063	J	0.0041	UJ	0.0035	UJ
m,p-Xylene [(2)]	NA		NA		0.0093	UJ	0.0092	UJ	0.0082	UJ	0.007	UJ
Methylene chloride	NA		NA		0.0093	UJ	0.0092	UJ	0.0082	UJ	0.007	UJ
Naphthalene	NA		NA		0.0046	UJ	0.0049	J	0.0041	UJ	0.0035	UJ
n-Propylbenzene	NA		NA		0.0046	UJ	0.0087	J	0.0041	UJ	0.0035	UJ
o-Xylene	NA		NA		0.0046	UJ	0.0046	UJ	0.0041	UJ	0.0035	UJ
Sec-Butylbenzene	NA		NA		0.0046	UJ	0.0042	J	0.0041	UJ	0.0035	UJ
Tert-butyl benzene	NA		NA		0.0046	UJ	0.0046	UJ	0.0041	UJ	0.0035	UJ
Toluene	NA		NA		0.0046	UJ	0.0046	UJ	0.0041	UJ	0.0035	UJ
Trichloroethene	NA		NA		0.0046	UJ	0.0046	UJ	0.0041	UJ	0.0035	UJ
TPH-GRO (C6-C10)	NA		NA		6.3	U	5.3	U	5.8		5.2	U
TPH (C10-C28)	66.9		3.7	U	4.06	J	9.6	U	9.6	U	9.8	U

Table 4-2. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
VOCs and TPH
Site SD-27, Holloman AFB

	SD27-DPT-15 03/22/2011 7 5 to 7 SD27-DPT-15A N		SD27-DPT-15 03/22/2011 12.5 10.5 to 12.5 SD27-DPT-15B N		SD27-DPT-15 03/22/2011 20 18 to 20 SD27-DPT-15C N		SD27-DPT-16 03/22/2011 10 8 to 10 SD27-DPT-16A N		SD27-DPT-16 03/22/2011 15 13 to 15 SD27-DPT-16B N		SD27-DPT-16 03/22/2011 17.5 15.5 to 17.5 SD27-DPT-16C N	
Parameter												
1,1-Dichloroethene	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
1,2,4-Trimethylbenzene	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
1,3,5-Trimethylbenzene	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.0042	J	0.0035	UJ	0.0039	UJ
n-Butylbenzene	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
4-Methyl-2-pentanone	0.019	UJ	0.024	UJ	0.018	UJ	0.02	UJ	0.017	UJ	0.019	UJ
Acetone	0.039	UJ	0.048	UJ	0.036	UJ	0.04	UJ	0.035	UJ	0.039	UJ
Acrolein	0.019	UJ	0.024	UJ	0.018	UJ	0.02	UJ	0.017	UJ	0.019	UJ
Benzene	0.0039	UJ	0.0109	J	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
Benzyl Chloride	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
Carbon disulfide	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
Chloroform	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
Cymene	0.0039	UJ	0.0017	J	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
Ethylbenzene	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.0028	J	0.0035	UJ	0.0039	UJ
Hexane	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
Isopropylbenzene	0.0039	UJ	0.195	J	0.0036	UJ	0.003	J	0.0035	UJ	0.0039	UJ
m,p-Xylene [(2)]	0.0078	UJ	0.0096	UJ	0.0072	UJ	0.008	UJ	0.007	UJ	0.0078	UJ
Methylene chloride	0.0078	UJ	0.0096	UJ	0.0072	UJ	0.008	UJ	0.007	UJ	0.0078	UJ
Naphthalene	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
n-Propylbenzene	0.0039	UJ	0.153	J	0.0036	UJ	0.0011	J	0.0035	UJ	0.0039	UJ
o-Xylene	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.00087	J	0.0035	UJ	0.0039	UJ
Sec-Butylbenzene	0.0039	UJ	0.0701	J	0.0036	UJ	0.0018	J	0.0035	UJ	0.0039	UJ
Tert-butyl benzene	0.0039	UJ	0.005	J	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
Toluene	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
Trichloroethene	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
TPH-GRO (C6-C10)	4.8	U	410		4.4	U	4.6	U	4.2	U	4.2	U
TPH (C10-C28)	10	U	30.7		9.4	U	10	U	9.4	U	9.4	U

Table 4-2. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
VOCs and TPH
Site SD-27, Holloman AFB

	SD27-DPT-16 03/22/2011 22 20 to 22 SD27-DPT-16D N		SD27-DPT-17 03/22/2011 10 8 to 10 SD27-DPT-17A N		SD27-DPT-17 03/22/2011 12.5 10.5 to 12.5 SD27-DPT-17B N		SD27-DPT-17 03/22/2011 12.5 10.5 to 12.5 SD27-DPT-DUP05 FD		SD27-DPT-17 03/22/2011 17 15 to 17 SD27-DPT-17C N		SD27-DPT-17 03/22/2011 22 20 to 22 SD27-DPT-17D N	
Parameter												
1,1-Dichloroethene	0.0041	UJ	0.0039	UJ	0.23	UJ	0.26	UJ	0.0041	UJ	0.0041	UJ
1,2,4-Trimethylbenzene	0.0041	UJ	0.0039	UJ	18.3	J	9.47	J	0.0016	J	0.0041	UJ
1,3,5-Trimethylbenzene	0.0041	UJ	0.0039	UJ	6.63	J	4.16	J	0.0041	UJ	0.0041	UJ
n-Butylbenzene	0.0041	UJ	0.0039	UJ	0.6	J	0.413	J	0.0041	UJ	0.0041	UJ
4-Methyl-2-pentanone	0.02	UJ	0.019	UJ	1.1	UJ	1.3	UJ	0.02	UJ	0.02	UJ
Acetone	0.041	UJ	0.039	UJ	2.21	J	2.6	UJ	0.041	UJ	0.041	UJ
Acrolein	0.02	UJ	0.019	UJ	1.1	UJ	1.3	UJ	0.02	UJ	0.02	UJ
Benzene	0.0041	UJ	0.0039	UJ	0.23	UJ	0.26	UJ	0.0041	UJ	0.0041	UJ
Benzyl Chloride	0.0041	UJ	0.0039	UJ	0.23	UJ	0.26	UJ	0.0041	UJ	0.0041	UJ
Carbon disulfide	0.0041	UJ	0.0039	UJ	0.23	UJ	0.26	UJ	0.0041	UJ	0.0041	UJ
Chloroform	0.0041	UJ	0.0039	UJ	0.23	UJ	0.26	UJ	0.0041	UJ	0.0041	UJ
Cymene	0.0041	UJ	0.0039	UJ	6.56	J	4.37	J	0.0041	UJ	0.0041	UJ
Ethylbenzene	0.0041	UJ	0.0039	UJ	7.84	J	3.93	J	0.0041	UJ	0.0041	UJ
Hexane	0.0041	UJ	0.0039	UJ	0.23	UJ	0.26	UJ	0.0041	UJ	0.0041	UJ
Isopropylbenzene	0.0041	UJ	0.0039	UJ	3.21	J	2.01	J	0.0041	UJ	0.0041	UJ
m,p-Xylene (2)	0.0081	UJ	0.0077	UJ	0.423	J	0.185	J	0.0081	UJ	0.0081	UJ
Methylene chloride	0.0081	UJ	0.0077	UJ	0.45	UJ	0.52	UJ	0.0081	UJ	0.0081	UJ
Naphthalene	0.0041	UJ	0.0039	UJ	0.23	UJ	0.26	UJ	0.0041	UJ	0.0041	UJ
n-Propylbenzene	0.0041	UJ	0.0039	UJ	3.34	J	1.94	J	0.0041	UJ	0.0041	UJ
o-Xylene	0.0041	UJ	0.0039	UJ	0.37	J	0.17	J	0.0041	UJ	0.0041	UJ
Sec-Butylbenzene	0.0041	UJ	0.0039	UJ	1.36	J	0.836	J	0.0041	UJ	0.0041	UJ
Tert-butyl benzene	0.0041	UJ	0.0039	UJ	0.23	UJ	0.26	UJ	0.0041	UJ	0.0041	UJ
Toluene	0.0041	UJ	0.0039	UJ	0.23	UJ	0.26	UJ	0.0041	UJ	0.0041	UJ
Trichloroethene	0.0041	UJ	0.0039	UJ	0.23	UJ	0.26	UJ	0.0041	UJ	0.0041	UJ
TPH-GRO (C6-C10)	4.6	U	5.2	U	1070		869		4.5	U	4.7	U
TPH (C10-C28)	9.3	U	10	U	29.8		26.3		9.5	U	9.5	U

Table 4-2. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
VOCs and TPH
Site SD-27, Holloman AFB

	SD27-DPT-18 03/22/2011 10 8 to 10 SD27-DPT-18A N		SD27-DPT-18 03/22/2011 13 11 to 13 SD27-DPT-18B N		SD27-DPT-18 03/22/2011 17 15 to 17 SD27-DPT-18C N		SD27-DPT-18 03/22/2011 25 23 to 25 SD27-DPT-18D N		SD27-DPT-19 03/22/2011 10 8 to 10 SD27-DPT-19A N		SD27-DPT-19 03/22/2011 12.5 10.5 to 12.5 SD27-DPT-19B N	
Parameter												
1,1-Dichloroethene	0.26	UJ	2.2	UJ	2	UJ	0.0057	UJ	0.25	UJ	2.3	UJ
1,2,4-Trimethylbenzene	0.271	J	**71**	J	22.1	J	0.0057	UJ	2.17	J	58.8	J
1,3,5-Trimethylbenzene	0.22	J	24.3	J	9.43	J	0.0057	UJ	1.09	J	26.4	J
n-Butylbenzene	0.0721	J	12.2	J	1.79	J	0.0057	UJ	0.264	J	6.93	J
4-Methyl-2-pentanone	1.3	UJ	11	UJ	10	UJ	0.028	UJ	1.2	UJ	12	UJ
Acetone	2.6	UJ	22	UJ	40.4	J	0.057	UJ	2.5	UJ	23	UJ
Acrolein	1.3	UJ	11	UJ	10	UJ	0.028	UJ	1.2	UJ	12	UJ
Benzene	0.109	J	9.27	J	1.17	J	0.0057	UJ	0.25	UJ	2.3	UJ
Benzyl Chloride	0.26	UJ	2.2	UJ	2	UJ	0.0057	UJ	0.25	UJ	2.3	UJ
Carbon disulfide	0.26	UJ	2.2	UJ	2	UJ	0.0057	UJ	0.25	UJ	2.3	UJ
Chloroform	0.26	UJ	2.2	UJ	2	UJ	0.0057	UJ	0.25	UJ	2.3	UJ
Cymene	0.116	J	8.21	J	23.1	J	0.0057	UJ	0.298	J	6.4	J
Ethylbenzene	0.081	J	**76**	J	0.578	J	0.0057	UJ	0.232	J	9.18	J
Hexane	0.26	UJ	21.8	J	2	UJ	0.0057	UJ	0.25	UJ	17	J
Isopropylbenzene	0.26	UJ	20.5	J	8.81	J	0.0057	UJ	0.373	J	12.4	J
m,p-Xylene [(2)]	0.52	UJ	111	J	4	UJ	0.011	UJ	1.19	J	52.2	J
Methylene chloride	0.52	UJ	4.4	UJ	4	UJ	0.011	UJ	0.5	UJ	4.7	UJ
Naphthalene	0.26	UJ	12.3	J	2	UJ	0.0057	UJ	0.259	J	6.59	J
n-Propylbenzene	0.26	UJ	26.7	J	13.5	J	0.0057	UJ	0.419	J	14.1	J
o-Xylene	0.0929	J	53.9	J	2	UJ	0.0057	UJ	0.903	J	30.1	J
Sec-Butylbenzene	0.26	UJ	10.6	J	14.8	J	0.0057	UJ	0.328	J	8.11	J
Tert-butyl benzene	0.26	UJ	2.2	UJ	2	UJ	0.0057	UJ	0.25	UJ	2.3	UJ
Toluene	0.0697	J	52.9	J	2	UJ	0.0057	UJ	0.25	UJ	0.939	J
Trichloroethene	0.26	UJ	2.2	UJ	2	UJ	0.0057	UJ	0.25	UJ	2.3	UJ
TPH-GRO (C6-C10)	61.9	J	4680	J	479		6.8	U	231	J	4130	J
TPH (C10-C28)	10	U	**881**		376		9.5	U	332		132	J

Table 4-2. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
VOCs and TPH
Site SD-27, Holloman AFB

	SD27-DPT-19 03/22/2011 12.5 10.5 to 12.5 SD27-DPT-DUP06 FD		SD27-DPT-19 03/22/2011 20 18 to 20 SD27-DPT-19C N		SD27-DPT-19 03/22/2011 25 23 to 25 SD27-DPT-19D N		SD27-DPT-20 03/23/2011 9 7 to 9 SD27-DPT-20A N		SD27-DPT-20 03/23/2011 12.5 10.5 to 12.5 SD27-DPT-20B N		SD27-DPT-20 03/23/2011 12.5 10.5 to 12.5 SD27-DPT-DUP07 FD	
Parameter												
1,1-Dichloroethene	1.1	UJ	0.004	UJ	0.004	UJ	0.0043	UJ	0.0041	UJ	0.0038	UJ
1,2,4-Trimethylbenzene	40	J	0.004	UJ	0.004	UJ	0.0043	UJ	0.174	J	1.91	J
1,3,5-Trimethylbenzene	18.4	J	0.004	UJ	0.004	UJ	0.0043	UJ	0.121	J	1.24	J
n-Butylbenzene	5.08	J	0.004	UJ	0.004	UJ	0.0043	UJ	0.0039	J	0.0065	J
4-Methyl-2-pentanone	5.6	UJ	0.02	UJ	0.02	UJ	0.022	UJ	0.02	UJ	0.019	UJ
Acetone	11	UJ	0.04	UJ	0.04	UJ	0.043	UJ	0.041	UJ	0.038	UJ
Acrolein	5.6	UJ	0.02	UJ	0.02	UJ	0.022	UJ	0.02	UJ	0.019	UJ
Benzene	1.1	UJ	0.006	J	0.004	UJ	0.0043	UJ	0.0041	UJ	0.0038	UJ
Benzyl Chloride	1.1	UJ	0.004	UJ	0.004	UJ	0.0043	UJ	0.0041	UJ	0.0038	UJ
Carbon disulfide	1.1	UJ	0.004	UJ	0.004	UJ	0.0043	UJ	0.0054	J	0.0096	J
Chloroform	1.1	UJ	0.004	UJ	0.004	UJ	0.0043	UJ	0.0041	UJ	0.0038	UJ
Cymene	4.96	J	0.004	UJ	0.004	UJ	0.0043	UJ	0.0388	J	0.05	J
Ethylbenzene	6.47	J	0.004	UJ	0.004	UJ	0.0043	UJ	0.0206	J	0.038	J
Hexane	6.02	J	0.004	UJ	0.004	UJ	0.0043	UJ	0.0041	UJ	0.0038	UJ
Isopropylbenzene	8.89	J	0.0037	J	0.0027	J	0.0043	UJ	0.0465	J	0.0644	J
m,p-Xylene (2)	36	J	0.008	UJ	0.008	UJ	0.0087	UJ	0.0082	UJ	0.0076	UJ
Methylene chloride	2.3	UJ	0.008	UJ	0.008	UJ	0.0087	UJ	0.0082	UJ	0.0076	UJ
Naphthalene	4.66	J	0.004	UJ	0.004	UJ	0.0043	UJ	0.0041	UJ	0.0038	UJ
n-Propylbenzene	9.9	J	0.002	J	0.004	UJ	0.0043	UJ	0.0395	J	0.0519	J
o-Xylene	20.5	J	0.004	UJ	0.004	UJ	0.0043	UJ	0.0019	J	0.0047	J
Sec-Butylbenzene	5.82	J	0.004	UJ	0.004	UJ	0.0043	UJ	0.0336	J	0.045	J
Tert-butyl benzene	1.1	UJ	0.004	UJ	0.004	UJ	0.0043	UJ	0.0041	UJ	0.0038	UJ
Toluene	0.772	J	0.004	UJ	0.004	UJ	0.0043	UJ	0.0041	UJ	0.0038	UJ
Trichloroethene	1.1	UJ	0.004	UJ	0.004	UJ	0.0043	UJ	0.0041	UJ	0.0038	UJ
TPH-GRO (C6-C10)	3830	J	4.5	U	4.7	U	4	U	651	J	206	J
TPH (C10-C28)	**883**	J	9.5	U	9.2	U	9.4	U	15.8		17.4	

Table 4-2. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
VOCs and TPH
Site SD-27, Holloman AFB

	SD27-DPT-20 03/23/2011 17.5 15.5 to 17.5 SD27-DPT-20C N		SD27-DPT-20 03/23/2011 25 23 to 25 SD27-DPT-20D N		SD27-DPT-21 03/23/2011 10 8 to 10 SD27-DPT-21A N		SD27-DPT-21 03/23/2011 14 12 to 14 SD27-DPT-21B N		SD27-DPT-21 03/23/2011 17.5 15.5 to 17.5 SD27-DPT-21C N		SD27-DPT-22 03/23/2011 10 8 to 10 SD27-DPT-22A N	
Parameter												
1,1-Dichloroethene	0.0038	U	0.0037	U	0.0041	U	0.0048	U	0.0032	U	0.0036	U
1,2,4-Trimethylbenzene	0.0038	U	0.0037	U	0.0041	U	0.0048	U	0.0032	U	0.0972	
1,3,5-Trimethylbenzene	0.0038	U	0.0037	U	0.0041	U	0.0048	U	0.0032	U	0.0376	
n-Butylbenzene	0.0038	U	0.0037	U	0.0041	U	0.0048	U	0.0032	U	0.0037	
4-Methyl-2-pentanone	0.019	U	0.018	U	0.021	U	0.024	U	0.016	U	0.018	U
Acetone	0.038	U	0.037	U	0.041	U	0.048	U	0.032	U	0.036	U
Acrolein	0.019	UJ	0.018	UJ	0.021	UJ	0.024	UJ	0.016	UJ	0.018	UJ
Benzene	0.0038	U	0.0037	U	0.0041	U	0.0048	U	0.0032	U	0.0036	U
Benzyl Chloride	0.0038	U	0.0037	U	0.0041	U	0.0048	U	0.0032	U	0.0036	U
Carbon disulfide	0.0038	U	0.0037	U	0.0041	U	0.0048	U	0.0032	U	0.0066	
Chloroform	0.0038	U	0.0037	U	0.0041	U	0.0048	U	0.0032	U	0.0036	U
Cymene	0.0038	U	0.0037	U	0.0041	U	0.0048	U	0.0032	U	0.0158	
Ethylbenzene	0.0038	U	0.0037	U	0.0041	U	0.0048	U	0.0032	U	0.0251	
Hexane	0.0038	UJ	0.0037	UJ	0.0041	UJ	0.0048	UJ	0.0032	U	0.0036	UJ
Isopropylbenzene	0.0038	U	0.0026	J	0.0041	U	0.0048	U	0.0015	J	0.0232	
m,p-Xylene (2)	0.0076	U	0.0074	U	0.0082	U	0.0095	U	0.0063	U	0.0189	
Methylene chloride	0.0076	U	0.0074	U	0.0082	U	0.0095	U	0.0063	U	0.0072	U
Naphthalene	0.0038	U	0.0037	U	0.0041	U	0.0048	U	0.0032	U	0.0036	UJ
n-Propylbenzene	0.0038	U	0.0037	U	0.0041	U	0.0048	U	0.0032	U	0.0257	
o-Xylene	0.0038	U	0.0037	U	0.0041	U	0.0048	U	0.0032	U	0.0083	
Sec-Butylbenzene	0.0038	U	0.0037	U	0.0041	U	0.0048	U	0.0032	U	0.0206	
Tert-butyl benzene	0.0038	U	0.0037	U	0.0041	U	0.0048	U	0.0032	U	0.0036	U
Toluene	0.0038	U	0.0037	U	0.0041	U	0.0048	U	0.0032	U	0.0036	U
Trichloroethene	0.0038	U	0.0037	U	0.0041	U	0.0048	U	0.0032	U	0.0036	U
TPH-GRO (C6-C10)	3.7	U	3.8	U	5.5	U	4.2	U	4.3	U	308	
TPH (C10-C28)	9.5	U	8.9	U	9.8	U	9.4	U	9.6	U	9.9	U

Table 4-2. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
VOCs and TPH
Site SD-27, Holloman AFB

	SD27-DPT-22 03/23/2011 14.5 12.5 to 14.5 SD27-DPT-22B N		SD27-DPT-22 03/23/2011 17 15 to 17 SD27-DPT-22C N		SD27-DPT-23 03/23/2011 10 8 to 10 SD27-DPT-23A N		SD27-DPT-23 03/23/2011 15 12 to 15 SD27-DPT-23B N		SD27-DPT-24 03/23/2011 10 8 to 10 SD27-DPT-24A N		SD27-DPT-24 03/23/2011 12 10 to 12 SD27-DPT-24B N	
Parameter												
1,1-Dichloroethene	0.22	U	0.0012	J	0.0038	U	0.0039	U	0.0039	U	0.24	U
1,2,4-Trimethylbenzene	**79.8**		0.0053	UJ	0.0038	U	0.0039	U	0.0039	U	7.63	
1,3,5-Trimethylbenzene	27		0.004	UJ	0.0038	U	0.0039	U	0.0039	U	5.98	
n-Butylbenzene	10.9	J	0.004	UJ	0.0038	U	0.0039	U	0.0039	U	0.861	
4-Methyl-2-pentanone	1.1	U	0.02	UJ	0.019	U	0.02	U	0.02	U	1.2	U
Acetone	2.2	U	0.04	UJ	0.038	U	0.039	U	0.039	U	2.4	U
Acrolein	1.1	UJ	0.02	UJ	0.019	UJ	0.02	UJ	0.02	U	1.2	U
Benzene	0.465		0.004	UJ	0.0038	U	0.0039	U	0.0039	U	0.24	U
Benzyl Chloride	0.22	U	0.004	UJ	0.0038	U	0.0039	U	0.0039	U	0.24	U
Carbon disulfide	0.22	U	0.004	UJ	0.0038	U	0.0039	U	0.0039	U	0.24	U
Chloroform	0.22	U	0.004	UJ	0.0038	U	0.0039	U	0.0039	U	0.24	U
Cymene	7.61	J	0.004	UJ	0.0038	U	0.0039	U	0.0039	U	2.9	
Ethylbenzene	41.9		0.004	UJ	0.0038	U	0.0039	U	0.0039	U	0.24	U
Hexane	0.22	UJ	0.004	UJ	0.0038	UJ	0.0039	UJ	0.0039	UJ	0.24	UJ
Isopropylbenzene	15.6	J	0.004	UJ	0.0038	U	0.0039	U	0.0039	U	3.48	
m,p-Xylene (2)	114		0.008	UJ	0.0076	U	0.0079	U	0.0079	U	0.47	U
Methylene chloride	0.44	U	0.008	UJ	0.0076	U	0.0079	U	0.0079	U	0.47	U
Naphthalene	0.603		0.004	UJ	0.0038	U	0.0039	U	0.0055	U	0.133	J
n-Propylbenzene	21		0.004	UJ	0.0038	U	0.0039	U	0.0039	U	3.39	
o-Xylene	46.6		0.004	UJ	0.0038	U	0.0039	U	0.0039	U	0.24	U
Sec-Butylbenzene	10.3	J	0.004	UJ	0.0038	U	0.0039	U	0.0039	U	4.03	
Tert-butyl benzene	0.22	U	0.004	UJ	0.0038	U	0.0039	U	0.0039	U	0.24	U
Toluene	26.9		0.004	UJ	0.0038	U	0.0039	U	0.0039	U	0.24	U
Trichloroethene	0.22	U	0.004	UJ	0.0038	U	0.0039	U	0.0039	U	0.24	U
TPH-GRO (C6-C10)	3290	J	4.6	U	4.9	U	4.1	U	5.3	U	2130	
TPH (C10-C28)	306		9.1	U	9.4	U	9.5	U	9.4	U	455	

Table 4-2. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
VOCs and TPH
Site SD-27, Holloman AFB

	SD27-DPT-24 03/23/2011 17 15 to 17 SD27-DPT-24C N		SD27-DPT-25 03/23/2011 10 8 to 10 SD27-DPT-25A N		SD27-DPT-25 03/23/2011 15 12 to 15 SD27-DPT-25B N		SD27-DPT-26 03/23/2011 10 8 to 10 SD27-DPT-26A N		SD27-DPT-26 03/23/2011 15 12.5 to 15 SD27-DPT-26B N		SD27-DPT-27 03/23/2011 10 8 to 10 SD27-DPT-27A N	
Parameter												
1,1-Dichloroethene	0.0039	U	0.24	U	0.0038	U	0.0045	U	0.0037	U	0.0038	U
1,2,4-Trimethylbenzene	0.0039	U	20.9		0.0045		0.0045	U	0.0037	U	0.0038	U
1,3,5-Trimethylbenzene	0.0039	U	7.54		0.0018	J	0.0045	U	0.0037	U	0.0038	U
n-Butylbenzene	0.0039	U	1.53		0.0038	U	0.0045	U	0.0037	U	0.0038	U
4-Methyl-2-pentanone	0.02	U	1.2	U	0.019	U	0.023	U	0.019	U	0.019	U
Acetone	0.039	U	2.4	U	0.038	U	0.045	U	0.037	UJ	0.038	U
Acrolein	0.02	UJ	1.2	UJ	0.019	UJ	0.023	U	0.019	UJ	0.019	U
Benzene	0.0039	U	0.24	U	0.0038	U	0.0045	U	0.0037	U	0.0038	U
Benzyl Chloride	0.0039	U	0.24	U	0.0038	U	0.0045	U	0.0037	UJ	0.0038	U
Carbon disulfide	0.0039	U	0.24	U	0.0038	U	0.0045	U	0.0037	U	0.0038	U
Chloroform	0.0039	U	0.24	U	0.0038	U	0.0045	U	0.0037	U	0.0038	U
Cymene	0.0039	U	2.8		0.0038	U	0.0045	U	0.0037	U	0.0038	U
Ethylbenzene	0.0039	U	4.2		0.0015	J	0.0045	U	0.0037	U	0.0038	U
Hexane	0.0039	UJ	0.24	UJ	0.0038	U	0.0045	U	0.0037	UJ	0.0038	U
Isopropylbenzene	0.0039	U	2.6		0.0011	J	0.0045	U	0.0037	U	0.0038	U
m,p-Xylene (2)	0.0078	U	9.28		0.0047	J	0.0091	U	0.0075	U	0.0076	U
Methylene chloride	0.0078	U	0.47	U	0.0077	U	0.0091	U	0.0075	U	0.0052	J
Naphthalene	0.0039	U	3.27		0.0017	J	0.0045	U	0.0037	U	0.0038	U
n-Propylbenzene	0.0039	U	2.83		0.0038	U	0.0045	U	0.0037	U	0.0038	U
o-Xylene	0.0039	U	6.64		0.0023	J	0.0045	U	0.0037	U	0.0038	U
Sec-Butylbenzene	0.0039	U	2.48		0.0038	U	0.0045	U	0.0037	U	0.0038	U
Tert-butyl benzene	0.0039	U	0.24	U	0.0038	U	0.0045	U	0.0037	U	0.0038	U
Toluene	0.0039	U	1.35		0.0038	U	0.0045	U	0.0037	U	0.0038	U
Trichloroethene	0.0039	U	0.24	U	0.0038	U	0.0045	U	0.0037	U	0.0038	U
TPH-GRO (C6-C10)	4.9	U	1450		4.6	U	4.5	U	4.8	U	4.4	U
TPH (C10-C28)	9.9	U	449		9.9	U	9.6	U	9.6	U	9.6	U

Table 4-2. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
VOCs and TPH
Site SD-27, Holloman AFB

	SD27-DPT-27 03/23/2011 15 12.5 to 15 SD27-DPT-27B N		SD27-DPT-28 03/23/2011 10 8 to 10 SD27-DPT-28A N		SD27-DPT-28 03/23/2011 10 8 to 10 SD27-DPT-DUP08 FD		SD27-DPT-28 03/23/2011 15 12.5 to 15 SD27-DPT-28B N		SD27-DPT-28 03/23/2011 20 18 to 20 SD27-DPT-28C N		SD27-DPT-29 03/23/2011 12 10 to 12 SD27-DPT-29A N	
Parameter												
1,1-Dichloroethene	0.004	U	0.0034	U	0.0041	U	0.19	U	0.0029	U	1.1	U
1,2,4-Trimethylbenzene	0.004	U	0.0034	U	0.0041	U	5.43		0.0029	U	14.7	
1,3,5-Trimethylbenzene	0.004	U	0.0034	U	0.0041	U	2.35		0.0029	U	6.76	
n-Butylbenzene	0.004	U	0.0011	J	0.0014	J	0.238		0.0029	U	1.88	
4-Methyl-2-pentanone	0.02	U	0.017	U	0.02	U	0.97	U	0.014	U	5.4	UJ
Acetone	0.04	U	0.0716	J	0.0388	J	2.81		0.029	U	6.7	J
Acrolein	0.02	U	0.017	UJ	0.02	UJ	**2.29**		0.014	U	5.4	U
Benzene	0.004	U	0.0034	U	0.0041	U	0.19	U	0.0029	U	1.1	U
Benzyl Chloride	0.004	U	0.0034	UJ	0.0041	UJ	0.19	U	0.0029	U	1.1	U
Carbon disulfide	0.004	U	0.0034	U	0.0041	U	0.19	U	0.0029	U	1.1	U
Chloroform	0.004	U	0.0034	U	0.0041	U	0.156	J	0.0029	U	0.335	J
Cymene	0.004	U	0.0034	U	0.0041	U	0.735		0.0029	U	2.35	
Ethylbenzene	0.004	U	0.0104		0.0093		2.65		0.0029	U	2.51	
Hexane	0.004	U	0.0034	U	0.0041	U	0.19	U	0.0029	U	1.1	U
Isopropylbenzene	0.004	U	0.0283	J	0.0299	J	1.53		0.0029	U	3.85	
m,p-Xylene (2)	0.008	U	0.0067	U	0.0081	U	1.22		0.0058	U	2.1	U
Methylene chloride	0.0053	J	0.0042	J	0.0081	U	0.39	U	0.0058	U	2.1	U
Naphthalene	0.004	U	0.0034	U	0.0041	U	0.19	U	0.0029	U	1.35	
n-Propylbenzene	0.004	U	0.0053		0.0074		1.61		0.0029	U	4.91	
o-Xylene	0.004	U	0.0034	U	0.0041	U	1.24		0.0029	U	1.2	
Sec-Butylbenzene	0.004	U	0.008		0.0087		0.807		0.0029	U	2.69	
Tert-butyl benzene	0.004	U	0.0034	U	0.0041	U	0.19	U	0.0029	U	1.1	U
Toluene	0.004	U	0.0034	U	0.0041	U	0.19	U	0.0029	U	1.1	U
Trichloroethene	0.004	U	0.0034	U	0.0041	U	0.19	U	0.0029	U	1.1	U
TPH-GRO (C6-C10)	4.9	U	4.6	U	4.3	U	435	J	3.9	U	929	J
TPH (C10-C28)	10	U	9.9	U	9.9	U	87.9		9.5	U	314	

Table 4-2. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
VOCs and TPH
Site SD-27, Holloman AFB

	SD27-DPT-29 03/23/2011 12 10 to 12 SD27-DPT-DUP09 FD		SD27-DPT-29 03/23/2011 15 12.5 to 15 SD27-DPT-29B N		SD27-DPT-30 03/23/2011 12 10 to 12 SD27-DPT-30A N		SD27-DPT-31 03/23/2011 12 10 to 12 SD27-DPT-31A N		SD27-DPT-31 03/23/2011 15 13 to 15 SD27-DPT-31B N	
Parameter										
1,1-Dichloroethene	0.22	U	0.0034	U	0.0039	U	0.2	U	0.0036	U
1,2,4-Trimethylbenzene	13.3		0.0034	U	0.0039	U	0.364		0.0036	U
1,3,5-Trimethylbenzene	5.54		0.0034	U	0.0039	U	0.152	J	0.0036	U
n-Butylbenzene	1.73		0.0034	U	0.0039	U	0.2	U	0.0036	U
4-Methyl-2-pentanone	14.8	J	0.017	U	0.02	U	1	U	0.018	U
Acetone	2.2	U	0.034	U	0.039	U	2	U	0.036	U
Acrolein	1.1	U	0.017	U	0.02	U	1	U	0.018	U
Benzene	0.22	U	0.0034	U	0.0039	U	0.2	U	0.0036	U
Benzyl Chloride	0.22	U	0.0034	U	0.0039	U	0.2	U	0.0036	U
Carbon disulfide	0.22	U	0.0034	U	0.0039	U	0.2	U	0.0036	U
Chloroform	0.22	U	0.0034	U	0.0039	U	0.2	U	0.0036	U
Cymene	1.92		0.0034	U	0.0039	U	0.0671	J	0.0036	U
Ethylbenzene	1.86		0.0034	U	0.0039	U	0.102	J	0.0036	U
Hexane	0.22	U	0.0034	U	0.0039	U	0.2	U	0.0036	U
Isopropylbenzene	3.26		0.0034	U	0.0039	U	0.107	J	0.0036	U
m,p-Xylene [(2)]	0.44	U	0.0068	U	0.0078	U	0.41	U	0.0073	U
Methylene chloride	0.44	U	0.0068	U	0.0078	U	0.41	U	0.0073	U
Naphthalene	1.02		0.0034	U	0.0039	U	0.2	U	0.0036	U
n-Propylbenzene	4.37		0.0034	U	0.0039	U	0.141	J	0.0036	U
o-Xylene	0.889		0.0034	U	0.0039	U	0.2	U	0.0036	U
Sec-Butylbenzene	2.37		0.0034	U	0.0039	U	0.102	J	0.0036	U
Tert-butyl benzene	0.22	U	0.0034	U	0.0039	U	0.2	U	0.0036	U
Toluene	0.22	U	0.0034	U	0.0039	U	0.2	U	0.0036	U
Trichloroethene	0.22	U	0.0017	J	0.0039	U	0.2	U	0.0018	J
TPH-GRO (C6-C10)	832	J	4.2	U	4.1	U	75.8		4.7	U
TPH (C10-C28)	296		9.7	U	9.3	U	47.8		9.4	U

Table 4-2. Screening ACM Chemicals Detected in Soil for Direct Contact Risk
VOCs and TPH
Site SD-27, Holloman AFB

All units are milligram per kilogram (mg/kg)

(1) NMED Soil Screening Levels: NEW MEXICO ENVIRONMENT DEPARTMENT Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program, Table A-1, TECHNICAL BACKGROUND DOCUMENT FOR DEVELOPMENT OF SOIL SCREENING LEVELS, REVISION 5.0, July 2009. Underlined criteria taken from EPA June 2011 RSL table.

(2) p-Xylene criteria used for m,p-xylenes

Red indicates > Residential SSLs for direct contact

Underline indicates > Commerical/Industrial SSLs for direct contact

Yellow shade indicates > Construction Worker SSLs for direct contact

n/a - not applicable

NA - not analyzled

Reference: (TetraTech, 2012)

Table 4-3. Screening ACM Chemicals Detected in Soil for Vapor Intrusion Risk
Site SD-27, Holloman AFB

		Location:	SD27-DPT-01		SD27-DPT-01		SD27-DPT-02		SD27-DPT-03		SD27-DPT-04		SD27-DPT-05	
		Collection Date:	11/09/2010		11/09/2010		11/09/2010		11/09/2010		11/09/2010		11/09/2010	
		Depth (ft):	8.5		10.7		8.5		8.5		8.5		8.5	
		Depth Range (ft):	6.5 to 8.5		10 to 10.7		6.5 to 8.5		6.5 to 8.5		6.5 to 8.5		6.5 to 8.5	
		SampleID:	SD27-DPT-01AV		SD27-DPT-01BV		SD27-DPT-02AV		SD27-DPT-03AV		SD27-DPT-04AV		SD27-DPT-05AV	
		QCType:	N		N		N		N		N		N	
Parameter	VI [1]													
	(10^{-6})	(10^{-5})												
1,1-Dichloroethene	0.295	0.295	0.0011	U	0.065	U	0.1	U	0.33	U	0.41	U	0.001	U
1,2,4-Trimethylbenzene	0.662	0.662	0.00083	U	**2.08**		**2.12**		**40.1**		**41.3**		0.00079	U
1,3,5-Trimethylbenzene	0.694	0.694	0.00099	U	**0.732**		0.095	U	**16.8**		**16.9**		0.00094	U
n-Butylbenzene	6.22	6.22	0.00099	U	0.173	J	0.12	J	5.16		1.64		0.00094	U
4-Methyl-2-pentanone	263	262.7	0.0042	U	0.25	U	0.4	U	1.3	U	1.6	U	0.004	U
Acetone	61.1	61.1	0.015	R	0.93	R	1.5	R	4.7	R	5.8	R	0.014	R
Acrolein	0.00128	0.0013	0.0083	UJ	0.51	UJ	0.8	UJ	2.6	UJ	3.2	U	0.0079	UJ
Benzene	0.00175	0.018	0.0011	U	**0.142**	J	**0.232**	J	**5.05**		**12.6**		0.0011	U
Benzyl Chloride	0.00417	0.042	0.0011	U	0.069	U	0.11	U	0.35	U	0.44	U	0.0011	U
Carbon disulfide	0.79	0.79	0.0015	U	0.093	U	0.15	U	**0.96**	J	0.58	U	0.0014	U
Chloroform	0.00063	0.0063	0.00091	U	0.056	U	0.088	U	0.28	U	0.35	U	0.00087	U
Cymene	n/a	n/a	0.00091	U	2.63		0.144	J	5.17		4.12		0.00087	U
Ethylbenzene	21.7	21.7	0.00076	U	0.657		0.474		15		13.2		0.00072	U
Hexane	0.068	0.068	0.0014	UJ	0.088	UJ	0.14	UJ	**5.82**	J	**2.62**	J	0.0014	UJ
Isopropylbenzene	7.13	7.13	0.00083	U	0.356		0.341	J	5.87		3.49		0.00079	U
m,p-Xylene [2]	2.37	2.37	0.0017	U	1.21		0.626	J	**46.3**		**46.9**		0.0016	U
Methylene chloride	0.027	0.27	0.0076	U	0.46	U	0.73	U	2.3	U	5.63	U	0.0072	U
Naphthalene	6.58	6.58	0.0015	U	0.108	J	0.15	U	5.43		5.53		0.0014	U
n-Propylbenzene	3.82	3.82	0.0011	U	0.396		0.388		**6.53**		2.15		0.001	U
o-Xylene	3.16	3.16	0.00076	U	0.49		0.0902	J	**17.1**		**18.8**		0.00072	U
Sec-Butylbenzene	19.4	19.4	0.0012	U	0.25		0.186	J	5.95		3.23		0.0012	U
Tert-butyl benzene	4.47	4.47	0.00091	U	0.056	U	0.088	U	0.28	U	0.47	J	0.00087	U
Toluene	5.07	5.07	0.00091	U	0.166	J	0.088	U	**18.1**		**36.6**		0.00087	U
Trichloroethene	0.00016	0.0016	0.00091	U	0.056	U	0.088	U	0.28	U	0.35	U	0.00087	U
TPH-GRO (C6-C10)	n/a	n/a	2.5	U	179	J	112		2940	J	1590		2.3	U
TPH (C10-C28)	n/a	n/a	4.6	U	15.3		12		469		606		4.6	U

Table 4-3. Screening ACM Chemicals Detected in Soil for Vapor Intrusion Risk
Site SD-27, Holloman AFB

	SD27-DPT-05 11/09/2010 12 10 to 12 SD27-DPT-05BV N		SD27-DPT-06 11/09/2010 8.5 6.5 to 8.5 SD27-DPT-06AV N		SD27-DPT-06 11/09/2010 8.5 6.5 to 8.5 SD27-DPT-DUP01V FD		SD27-DPT-07 11/09/2010 8.5 6.5 to 8.5 SD27-DPT-07AV N		SD27-DPT-08 11/10/2010 8.5 6.5 to 8.5 SD27-DPT-08AV N		SD27-DPT-08 11/10/2010 15 10 to 15 SD27-DPT-08BV N	
Parameter												
1,1-Dichloroethene	0.14	U	0.0012	U	0.0012	U	0.0012	U	0.15	U	1.4	U
1,2,4-Trimethylbenzene	**9.33**		0.00093	U	0.00097	U	0.00092	U	**13.8**		**105**	
1,3,5-Trimethylbenzene	**3.29**		0.0011	U	0.0011	U	0.0011	U	**9.2**		**33.9**	
n-Butylbenzene	0.704		0.0011	U	0.0011	U	0.0011	U	0.291	J	**17.2**	
4-Methyl-2-pentanone	0.54	U	0.0046	U	0.0049	U	0.0046	U	0.58	U	5.5	U
Acetone	2	R	0.017	R	0.024	J	0.0173	J	2.1	U	20	UJ
Acrolein	1.1	UJ	0.0093	U	0.0097	UJ	0.0092	UJ	1.2	U	11	U
Benzene	**4.8**		**0.0036**	J	**0.0086**	J	**0.0054**		**1.2**		**23.7**	
Benzyl Chloride	0.15	U	0.0013	U	0.0013	U	0.0013	U	0.16	U	1.5	U
Carbon disulfide	0.2	U	0.0036	J	0.0018	U	0.0017	U	0.225	J	2	U
Chloroform	0.12	U	0.001	U	0.0011	U	0.001	U	0.13	U	1.2	U
Cymene	3.33		0.001	U	0.0011	U	0.001	U	2.26		12.1	
Ethylbenzene	9.53		0.00088	J	0.0012	J	0.00084	U	5.4		**107**	J
Hexane	0.19	UJ	0.0016	UJ	0.0017	UJ	0.0016	UJ	**0.436**	J	**22.7**	
Isopropylbenzene	1.81		0.00093	U	0.0011	J	0.0047		1.05		**25.4**	J
m,p-Xylene (2)	**9.69**		0.0019	U	0.0019	U	0.0018	U	**17.3**		**132**	
Methylene chloride	0.45	U	0.0084	U	0.0088	U	0.0084	U	0.48	U	4.6	U
Naphthalene	1.3		0.0017	U	0.0018	U	0.0017	U	1.78		**20.1**	
n-Propylbenzene	2.12		0.0012	U	0.0012	U	0.003	J	0.49	J	**37.3**	J
o-Xylene	**5.87**		0.00084	U	0.00088	U	0.00084	U	**7.95**		**60.9**	J
Sec-Butylbenzene	0.9		0.0014	U	0.0014	U	0.0018	J	1.33		14.8	
Tert-butyl benzene	0.12	U	0.001	U	0.0011	U	0.001	U	0.13	U	1.2	U
Toluene	**6.67**		0.001	U	0.0011	U	0.001	U	**6.95**		**93.9**	J
Trichloroethene	0.12	U	0.001	U	0.0011	U	0.001	U	0.13	U	1.2	U
TPH-GRO (C6-C10)	772	J	2.6	U	2.4	U	2.4	U	643		4400	J
TPH (C10-C28)	102		4.4	U	3.9	U	4.5	U	1360		1890	

Table 4-3. Screening ACM Chemicals Detected in Soil for Vapor Intrusion Risk
Site SD-27, Holloman AFB

	SD27-DPT-08 11/10/2010 18 16.5 to 18 SD27-DPT-08CV N		SD27-DPT-08 11/10/2010 ?? 22 to ??? SD27-DPT-08DV N		SD27-DPT-09 11/10/2010 9 7 to 9 SD27-DPT-09AV N		SD27-DPT-09 11/10/2010 14 12 to 14 SD27-DPT-09BV N		SD27-DPT-09 11/10/2010 18 16 to 18 SD27-DPT-09CV N		SD27-DPT-10 11/10/2010 10 8 to 10 SD27-DPT-10AV N		SD27-DPT-10 11/10/2010 14.5 12.4 to 14.5 SD27-DPT-10BV N	
Parameter														
1,1-Dichloroethene	0.29	U	NA		0.69	U	0.69	U	0.00097	U	0.0011	U	0.61	U
1,2,4-Trimethylbenzene	**15.2**		NA		**57.6**		**87.2**		0.002	J	0.0379		**33.6**	
1,3,5-Trimethylbenzene	**5.09**		NA		**24.2**		**29.9**		0.00091	U	0.0219		**11.7**	
n-Butylbenzene	1.84		NA		5.71		**14.5**		0.00091	U	0.00098	J	3.73	
4-Methyl-2-pentanone	1.1	U	NA		2.7	U	2.7	U	0.0038	U	0.0041	U	2.4	U
Acetone	4.1	U	NA		9.8	U	9.8	U	0.014	U	0.015	U	8.8	U
Acrolein	2.3	U	NA		5.4	U	5.4	U	0.0077	U	0.0083	U	4.8	U
Benzene	**1.37**		NA		**2.91**		**2.97**		**0.0028**	J	**0.0109**		0.66	U
Benzyl Chloride	0.31	U	NA		0.74	U	**1.6**	J	0.001	U	0.0011	U	0.66	U
Carbon disulfide	0.41	U	NA		0.98	U	0.98	U	0.0018	J	0.0024	J	0.88	U
Chloroform	0.25	U	NA		0.59	U	0.59	U	0.00084	U	0.0009	U	0.53	U
Cymene	1.85		NA		8.4		10.8		0.00084	U	0.004		3.1	
Ethylbenzene	16.8		NA		**36.4**		**76.1**		0.0042		0.0029	J	**43.6**	
Hexane	**1.07**		NA		**0.931**	J	**5.44**		0.0013	U	0.0014	U	**1.88**	J
Isopropylbenzene	3.73		NA		**9.58**		**23.3**		0.00077	U	0.0075		**8.91**	
m,p-Xylene [(2)]	**17.3**		NA		**69.2**		**73.2**		0.003	J	0.0085		**60.2**	
Methylene chloride	0.95	U	NA		2.3	U	2.3	U	0.009	U	0.0103	U	2	U
Naphthalene	2.63		NA		**8.31**		2.9		0.0014	U	0.0015	U	3.19	
n-Propylbenzene	**5.67**		NA		**12.2**		**34.4**		0.00097	U	0.0059		**11.7**	
o-Xylene	**8.21**		NA		**34.4**		**39.4**		0.002	J	0.00075	U	**24.9**	
Sec-Butylbenzene	2.15		NA		6.84		14.1		0.0011	U	0.0057		4.32	
Tert-butyl benzene	0.25	U	NA		0.614	J	0.728	J	0.00084	U	0.0009	U	0.53	U
Toluene	**9.46**		NA		**37**		**8.79**		0.0014	J	0.0009	U	**10.2**	
Trichloroethene	0.25	U	NA		0.59	U	0.59	U	0.00084	U	0.0009	U	0.53	U
TPH-GRO (C6-C10)	863	J	NA		1480		2540	J	2.3	U	2.4	U	1970	J
TPH (C10-C28)	146		4	U	760		2870		3.9	U	1970		1150	

Table 4-3. Screening ACM Chemicals Detected in Soil for Vapor Intrusion Risk
Site SD-27, Holloman AFB

	SD27-DPT-10 11/10/2010 19 17 to 19 SD27-DPT-10CV N		SD27-DPT-11 11/10/2010 8.5 6.5 to 8.5 SD27-DPT-11AV N		SD27-DPT-11 11/10/2010 8.5 6.5 to 8.5 SD27-DPT-DUP03V FD		SD27-DPT-11 11/10/2010 12 10 to 12 SD27-DPT-11BV N		SD27-DPT-11 11/10/2010 19.7 18 to 19.7 SD27-DPT-11CV N		SD27-DPT-12 11/10/2010 8.5 6.5 to 8.5 SD27-DPT-12AV N		SD27-DPT-12 11/10/2010 13.5 11.5 to 13.5 SD27-DPT-12BV N	
Parameter														
1,1-Dichloroethene	0.061	U	0.0011	U	0.0012	U	1.4	U	0.056	U	0.0011	U	0.68	U
1,2,4-Trimethylbenzene	**4.46**		0.00083	U	0.00096	U	**166**		**4.73**		0.00085	U	**56.5**	
1,3,5-Trimethylbenzene	**1.58**		0.00099	U	0.0011	U	**56.8**		**1.82**		0.001	U	**19.6**	
n-Butylbenzene	0.493		0.00099	U	0.0011	U	**24.1**		0.309		0.001	U	**8.14**	
4-Methyl-2-pentanone	0.24	U	0.0042	U	0.0048	U	5.5	U	0.22	U	0.0042	U	2.7	U
Acetone	0.87	U	0.015	U	0.017	U	20	U	0.8	U	0.015	U	9.8	U
Acrolein	0.48	U	0.0083	U	0.0096	U	11	UJ	0.44	U	0.0085	U	5.4	U
Benzene	0.065	U	0.0011	U	0.0013	U	**60.6**		**0.321**		0.0012	U	**4.22**	
Benzyl Chloride	0.065	U	0.0011	U	0.0013	U	1.5	U	0.06	U	0.0012	U	0.73	U
Carbon disulfide	0.087	U	0.0015	U	0.0017	U	2	U	0.08	U	0.0015	U	0.98	U
Chloroform	0.052	U	0.00091	U	0.001	U	1.2	U	0.048	U	0.00092	U	0.59	U
Cymene	0.511		0.00091	U	0.001	U	17.7		0.474		0.00092	U	28.4	
Ethylbenzene	2.18		0.00076	U	0.00087	U	**190**		4.67		0.00077	U	**73.7**	
Hexane	**0.0882**	J	0.0014	U	0.0017	U	**69.2**	J	**0.163**	J	0.0015	U	**10**	
Isopropylbenzene	1.32		0.00083	U	0.00096	U	**44.6**		1.45		0.00085	U	**16.2**	
m,p-Xylene [(2)]	1.1		0.0017	U	0.0019	U	**257**		0.512		0.0017	U	**105**	
Methylene chloride	0.43	U	0.0035	U	0.004	U	4.6	U	0.4	U	0.0088	U	2.2	U
Naphthalene	0.261		0.0015	U	0.0017	U	**32.9**		0.08	U	0.0015	U	**8.45**	
n-Propylbenzene	2		0.0011	U	0.0012	U	**57.7**		1.71		0.0011	U	**21.1**	
o-Xylene	0.45		0.00076	U	0.00087	U	**129**		0.248		0.00077	U	**44.1**	
Sec-Butylbenzene	0.911		0.0012	U	0.0014	U	**23.2**		0.775		0.0012	U	7.41	
Tert-butyl benzene	0.052	U	0.00091	U	0.001	U	1.25	J	0.048	U	0.00092	U	0.59	U
Toluene	0.293		0.00091	U	0.001	U	**152**		0.256		0.00092	U	**67.7**	
Trichloroethene	0.052	U	0.00091	U	0.001	U	1.2	U	0.048	U	0.00092	U	0.59	U
TPH-GRO (C6-C10)	418	J	2.3	U	2.8	U	7040	J	437	J	2.6	U	3600	J
TPH (C10-C28)	16.7		4.2	U	3.8	U	586		4.3	U	4.4	U	5690	

Table 4-3. Screening ACM Chemicals Detected in Soil for Vapor Intrusion Risk
Site SD-27, Holloman AFB

	SD27-DPT-12 11/10/2010 19 17 to 19 SD27-DPT-12CV N		SD27-DPT-13 11/05/2010 8.5 6.5 to 8.5 SD27-DPT-13A N		SD27-DPT-13 11/05/2010 13.5 11.5 to 13.5 SD27-DPT-13B N	SD27-DPT-13 11/05/2010 18.5 16.5 to 18.5 SD27-DPT-13C N		SD27-DPT-14 03/22/2011 7 5 to 7 SD27-DPT-14A N		SD27-DPT-14 03/22/2011 12 10 to 12 SD27-DPT-14B N		SD27-DPT-14 03/22/2011 15 13 to 15 SD27-DPT-14C N	
Parameter													
1,1-Dichloroethene	0.0011	U	NA		NA	NA		0.0046	UJ	0.0046	UJ	0.0041	UJ
1,2,4-Trimethylbenzene	0.0118		NA		NA	NA		0.0046	UJ	0.0211	J	0.0017	J
1,3,5-Trimethylbenzene	0.0046		NA		NA	NA		0.0046	UJ	0.0064	J	0.0041	UJ
n-Butylbenzene	0.001	U	NA		NA	NA		0.0046	UJ	0.0046	UJ	0.0041	UJ
4-Methyl-2-pentanone	0.0043	U	NA		NA	NA		0.023	UJ	0.023	UJ	0.02	UJ
Acetone	0.016	U	NA		NA	NA		0.046	UJ	0.046	UJ	0.041	UJ
Acrolein	0.0086	U	NA		NA	NA		0.023	UJ	0.023	UJ	0.02	UJ
Benzene	0.0012	U	NA		NA	NA		0.0046	UJ	0.0046	UJ	0.0041	UJ
Benzyl Chloride	0.0012	U	NA		NA	NA		0.0046	UJ	0.0046	UJ	0.0041	UJ
Carbon disulfide	0.003	J	NA		NA	NA		0.0046	UJ	0.0046	UJ	0.0041	UJ
Chloroform	0.00094	U	NA		NA	NA		0.0046	UJ	0.0046	UJ	0.0041	UJ
Cymene	0.0036	J	NA		NA	NA		0.0046	UJ	0.0048	J	0.0041	UJ
Ethylbenzene	0.0048		NA		NA	NA		0.0046	UJ	0.0237	J	0.0015	J
Hexane	0.0043		NA		NA	NA		0.0046	UJ	0.0046	UJ	0.0041	UJ
Isopropylbenzene	0.0034	J	NA		NA	NA		0.0046	UJ	0.0063	J	0.0041	UJ
m,p-Xylene [(2)]	0.0042	J	NA		NA	NA		0.0093	UJ	0.0092	UJ	0.0082	UJ
Methylene chloride	0.0085	U	NA		NA	NA		0.0093	UJ	0.0092	UJ	0.0082	UJ
Naphthalene	0.0016	U	NA		NA	NA		0.0046	UJ	0.0049	J	0.0041	UJ
n-Propylbenzene	0.0045		NA		NA	NA		0.0046	UJ	0.0087	J	0.0041	UJ
o-Xylene	0.0017	J	NA		NA	NA		0.0046	UJ	0.0046	UJ	0.0041	UJ
Sec-Butylbenzene	0.0037	J	NA		NA	NA		0.0046	UJ	0.0042	J	0.0041	UJ
Tert-butyl benzene	0.00094	U	NA		NA	NA		0.0046	UJ	0.0046	UJ	0.0041	UJ
Toluene	0.0018	J	NA		NA	NA		0.0046	UJ	0.0046	UJ	0.0041	UJ
Trichloroethene	0.00094	U	NA		NA	NA		0.0046	UJ	0.0046	UJ	0.0041	UJ
TPH-GRO (C6-C10)	2.3	U	NA		NA	NA		6.3	U	5.3	U	5.8	
TPH (C10-C28)	4.2	U	3.8	U	66.9	3.7	U	4.06	J	9.6	U	9.6	U

Table 4-3. Screening ACM Chemicals Detected in Soil for Vapor Intrusion Risk
Site SD-27, Holloman AFB

	SD27-DPT-14 03/22/2011 22 20 to 22 SD27-DPT-14D N		SD27-DPT-15 03/22/2011 7 5 to 7 SD27-DPT-15A N		SD27-DPT-15 03/22/2011 12.5 10.5 to 12.5 SD27-DPT-15B N		SD27-DPT-15 03/22/2011 20 18 to 20 SD27-DPT-15C N		SD27-DPT-16 03/22/2011 10 8 to 10 SD27-DPT-16A N		SD27-DPT-16 03/22/2011 15 13 to 15 SD27-DPT-16B N		SD27-DPT-16 03/22/2011 17.5 15.5 to 17.5 SD27-DPT-16C N	
Parameter														
1,1-Dichloroethene	0.0035	UJ	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
1,2,4-Trimethylbenzene	0.0035	UJ	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
1,3,5-Trimethylbenzene	0.0035	UJ	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.0042	J	0.0035	UJ	0.0039	UJ
n-Butylbenzene	0.0035	UJ	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
4-Methyl-2-pentanone	0.018	UJ	0.019	UJ	0.024	UJ	0.018	UJ	0.02	UJ	0.017	UJ	0.019	UJ
Acetone	0.035	UJ	0.039	UJ	0.048	UJ	0.036	UJ	0.04	UJ	0.035	UJ	0.039	UJ
Acrolein	0.018	UJ	0.019	UJ	0.024	UJ	0.018	UJ	0.02	UJ	0.017	UJ	0.019	UJ
Benzene	0.0035	UJ	0.0039	UJ	**0.0109**	J	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
Benzyl Chloride	0.0035	UJ	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
Carbon disulfide	0.0035	UJ	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
Chloroform	0.0035	UJ	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
Cymene	0.0035	UJ	0.0039	UJ	0.0017	J	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
Ethylbenzene	0.0018	J	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.0028	J	0.0035	UJ	0.0039	UJ
Hexane	0.0035	UJ	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
Isopropylbenzene	0.0035	UJ	0.0039	UJ	0.195	J	0.0036	UJ	0.003	J	0.0035	UJ	0.0039	UJ
m,p-Xylene [(2)]	0.007	UJ	0.0078	UJ	0.0096	UJ	0.0072	UJ	0.008	UJ	0.007	UJ	0.0078	UJ
Methylene chloride	0.007	UJ	0.0078	UJ	0.0096	UJ	0.0072	UJ	0.008	UJ	0.007	UJ	0.0078	UJ
Naphthalene	0.0035	UJ	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
n-Propylbenzene	0.0035	UJ	0.0039	UJ	0.153	J	0.0036	UJ	0.0011	J	0.0035	UJ	0.0039	UJ
o-Xylene	0.0035	UJ	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.00087	J	0.0035	UJ	0.0039	UJ
Sec-Butylbenzene	0.0035	UJ	0.0039	UJ	0.0701	J	0.0036	UJ	0.0018	J	0.0035	UJ	0.0039	UJ
Tert-butyl benzene	0.0035	UJ	0.0039	UJ	0.005	J	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
Toluene	0.0035	UJ	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
Trichloroethene	0.0035	UJ	0.0039	UJ	0.0048	UJ	0.0036	UJ	0.004	UJ	0.0035	UJ	0.0039	UJ
TPH-GRO (C6-C10)	5.2	U	4.8	U	410		4.4	U	4.6	U	4.2	U	4.2	U
TPH (C10-C28)	9.8	U	10	U	30.7		9.4	U	10	U	9.4	U	9.4	U

Table 4-3. Screening ACM Chemicals Detected in Soil for Vapor Intrusion Risk
Site SD-27, Holloman AFB

	SD27-DPT-16 03/22/2011 22 20 to 22 SD27-DPT-16D N		SD27-DPT-17 03/22/2011 10 8 to 10 SD27-DPT-17A N		SD27-DPT-17 03/22/2011 12.5 10.5 to 12.5 SD27-DPT-17B N		SD27-DPT-17 03/22/2011 12.5 10.5 to 12.5 SD27-DPT-DUP05 FD		SD27-DPT-17 03/22/2011 17 15 to 17 SD27-DPT-17C N		SD27-DPT-17 03/22/2011 22 20 to 22 SD27-DPT-17D N		SD27-DPT-18 03/22/2011 10 8 to 10 SD27-DPT-18A N	
Parameter														
1,1-Dichloroethene	0.0041	UJ	0.0039	UJ	0.23	UJ	0.26	UJ	0.0041	UJ	0.0041	UJ	0.26	UJ
1,2,4-Trimethylbenzene	0.0041	UJ	0.0039	UJ	**18.3**	J	**9.47**	J	0.0016	J	0.0041	UJ	0.271	J
1,3,5-Trimethylbenzene	0.0041	UJ	0.0039	UJ	**6.63**	J	**4.16**	J	0.0041	UJ	0.0041	UJ	0.22	J
n-Butylbenzene	0.0041	UJ	0.0039	UJ	0.6	J	0.413	J	0.0041	UJ	0.0041	UJ	0.0721	J
4-Methyl-2-pentanone	0.02	UJ	0.019	UJ	1.1	UJ	1.3	UJ	0.02	UJ	0.02	UJ	1.3	UJ
Acetone	0.041	UJ	0.039	UJ	2.21	J	2.6	UJ	0.041	UJ	0.041	UJ	2.6	UJ
Acrolein	0.02	UJ	0.019	UJ	1.1	UJ	1.3	UJ	0.02	UJ	0.02	UJ	1.3	UJ
Benzene	0.0041	UJ	0.0039	UJ	0.23	UJ	0.26	UJ	0.0041	UJ	0.0041	UJ	**0.109**	J
Benzyl Chloride	0.0041	UJ	0.0039	UJ	0.23	UJ	0.26	UJ	0.0041	UJ	0.0041	UJ	0.26	UJ
Carbon disulfide	0.0041	UJ	0.0039	UJ	0.23	UJ	0.26	UJ	0.0041	UJ	0.0041	UJ	0.26	UJ
Chloroform	0.0041	UJ	0.0039	UJ	0.23	UJ	0.26	UJ	0.0041	UJ	0.0041	UJ	0.26	UJ
Cymene	0.0041	UJ	0.0039	UJ	6.56	J	4.37	J	0.0041	UJ	0.0041	UJ	0.116	J
Ethylbenzene	0.0041	UJ	0.0039	UJ	7.84	J	3.93	J	0.0041	UJ	0.0041	UJ	0.081	J
Hexane	0.0041	UJ	0.0039	UJ	0.23	UJ	0.26	UJ	0.0041	UJ	0.0041	UJ	0.26	UJ
Isopropylbenzene	0.0041	UJ	0.0039	UJ	3.21	J	2.01	J	0.0041	UJ	0.0041	UJ	0.26	UJ
m,p-Xylene [(2)]	0.0081	UJ	0.0077	UJ	0.423	J	0.185	J	0.0081	UJ	0.0081	UJ	0.52	UJ
Methylene chloride	0.0081	UJ	0.0077	UJ	0.45	UJ	0.52	UJ	0.0081	UJ	0.0081	UJ	0.52	UJ
Naphthalene	0.0041	UJ	0.0039	UJ	0.23	UJ	0.26	UJ	0.0041	UJ	0.0041	UJ	0.26	UJ
n-Propylbenzene	0.0041	UJ	0.0039	UJ	3.34	J	1.94	J	0.0041	UJ	0.0041	UJ	0.26	UJ
o-Xylene	0.0041	UJ	0.0039	UJ	0.37	J	0.17	J	0.0041	UJ	0.0041	UJ	0.0929	J
Sec-Butylbenzene	0.0041	UJ	0.0039	UJ	1.36	J	0.836	J	0.0041	UJ	0.0041	UJ	0.26	UJ
Tert-butyl benzene	0.0041	UJ	0.0039	UJ	0.23	UJ	0.26	UJ	0.0041	UJ	0.0041	UJ	0.26	UJ
Toluene	0.0041	UJ	0.0039	UJ	0.23	UJ	0.26	UJ	0.0041	UJ	0.0041	UJ	0.0697	J
Trichloroethene	0.0041	UJ	0.0039	UJ	0.23	UJ	0.26	UJ	0.0041	UJ	0.0041	UJ	0.26	UJ
TPH-GRO (C6-C10)	4.6	U	5.2	U	1070		869		4.5	U	4.7	U	61.9	J
TPH (C10-C28)	9.3	U	10	U	29.8		26.3		9.5	U	9.5	U	10	U

Table 4-3. Screening ACM Chemicals Detected in Soil for Vapor Intrusion Risk
Site SD-27, Holloman AFB

	SD27-DPT-18 03/22/2011 13 11 to 13 SD27-DPT-18B N		SD27-DPT-18 03/22/2011 17 15 to 17 SD27-DPT-18C N		SD27-DPT-18 03/22/2011 25 23 to 25 SD27-DPT-18D N		SD27-DPT-19 03/22/2011 10 8 to 10 SD27-DPT-19A N		SD27-DPT-19 03/22/2011 12.5 10.5 to 12.5 SD27-DPT-19B N		SD27-DPT-19 03/22/2011 12.5 10.5 to 12.5 SD27-DPT-DUP06 FD		SD27-DPT-19 03/22/2011 20 18 to 20 SD27-DPT-19C N	
Parameter														
1,1-Dichloroethene	2.2	UJ	2	UJ	0.0057	UJ	0.25	UJ	2.3	UJ	1.1	UJ	0.004	UJ
1,2,4-Trimethylbenzene	**71**	J	**22.1**	J	0.0057	UJ	**2.17**	J	**58.8**	J	**40**	J	0.004	UJ
1,3,5-Trimethylbenzene	**24.3**	J	**9.43**	J	0.0057	UJ	**1.09**	J	**26.4**	J	**18.4**	J	0.004	UJ
n-Butylbenzene	**12.2**	J	1.79	J	0.0057	UJ	0.264	J	**6.93**	J	5.08	J	0.004	UJ
4-Methyl-2-pentanone	11	UJ	10	UJ	0.028	UJ	1.2	UJ	12	UJ	5.6	UJ	0.02	UJ
Acetone	22	UJ	40.4	J	0.057	UJ	2.5	UJ	23	UJ	11	UJ	0.04	UJ
Acrolein	11	UJ	10	UJ	0.028	UJ	1.2	UJ	12	UJ	5.6	UJ	0.02	UJ
Benzene	**9.27**	J	**1.17**	J	0.0057	UJ	0.25	UJ	2.3	UJ	1.1	UJ	**0.006**	J
Benzyl Chloride	2.2	UJ	2	UJ	0.0057	UJ	0.25	UJ	2.3	UJ	1.1	UJ	0.004	UJ
Carbon disulfide	2.2	UJ	2	UJ	0.0057	UJ	0.25	UJ	2.3	UJ	1.1	UJ	0.004	UJ
Chloroform	2.2	UJ	2	UJ	0.0057	UJ	0.25	UJ	2.3	UJ	1.1	UJ	0.004	UJ
Cymene	8.21	J	23.1	J	0.0057	UJ	0.298	J	6.4	J	4.96	J	0.004	UJ
Ethylbenzene	**76**	J	0.578	J	0.0057	UJ	0.232	J	9.18	J	6.47	J	0.004	UJ
Hexane	**21.8**	J	2	UJ	0.0057	UJ	0.25	UJ	**17**	J	**6.02**	J	0.004	UJ
Isopropylbenzene	**20.5**	J	**8.81**	J	0.0057	UJ	0.373	J	**12.4**	J	**8.89**	J	0.0037	J
m,p-Xylene [(2)]	**111**	J	4	UJ	0.011	UJ	1.19	J	**52.2**	J	**36**	J	0.008	UJ
Methylene chloride	4.4	UJ	4	UJ	0.011	UJ	0.5	UJ	4.7	UJ	2.3	UJ	0.008	UJ
Naphthalene	**12.3**	J	2	UJ	0.0057	UJ	0.259	J	**6.59**	J	4.66	J	0.004	UJ
n-Propylbenzene	**26.7**	J	**13.5**	J	0.0057	UJ	0.419	J	**14.1**	J	**9.9**	J	0.002	J
o-Xylene	**53.9**	J	2	UJ	0.0057	UJ	0.903	J	**30.1**	J	**20.5**	J	0.004	UJ
Sec-Butylbenzene	10.6	J	14.8	J	0.0057	UJ	0.328	J	8.11	J	5.82	J	0.004	UJ
Tert-butyl benzene	2.2	UJ	2	UJ	0.0057	UJ	0.25	UJ	2.3	UJ	1.1	UJ	0.004	UJ
Toluene	**52.9**	J	2	UJ	0.0057	UJ	0.25	UJ	0.939	J	0.772	J	0.004	UJ
Trichloroethene	2.2	UJ	2	UJ	0.0057	UJ	0.25	UJ	2.3	UJ	1.1	UJ	0.004	UJ
TPH-GRO (C6-C10)	4680	J	479		6.8	U	231	J	4130	J	3830	J	4.5	U
TPH (C10-C28)	881		376		9.5	U	332		132	J	883	J	9.5	U

Table 4-3. Screening ACM Chemicals Detected in Soil for Vapor Intrusion Risk
Site SD-27, Holloman AFB

	SD27-DPT-19 03/22/2011 25 23 to 25 SD27-DPT-19D N		SD27-DPT-20 03/23/2011 9 7 to 9 SD27-DPT-20A N		SD27-DPT-20 03/23/2011 12.5 10.5 to 12.5 SD27-DPT-20B N		SD27-DPT-20 03/23/2011 12.5 10.5 to 12.5 SD27-DPT-DUP07 FD		SD27-DPT-20 03/23/2011 17.5 15.5 to 17.5 SD27-DPT-20C N		SD27-DPT-20 03/23/2011 25 23 to 25 SD27-DPT-20D N		SD27-DPT-21 03/23/2011 10 8 to 10 SD27-DPT-21A N	
Parameter														
1,1-Dichloroethene	0.004	UJ	0.0043	UJ	0.0041	UJ	0.0038	UJ	0.0038	U	0.0037	U	0.0041	U
1,2,4-Trimethylbenzene	0.004	UJ	0.0043	UJ	0.174	J	**1.91**	J	0.0038	U	0.0037	U	0.0041	U
1,3,5-Trimethylbenzene	0.004	UJ	0.0043	UJ	0.121	J	**1.24**	J	0.0038	U	0.0037	U	0.0041	U
n-Butylbenzene	0.004	UJ	0.0043	UJ	0.0039	J	0.0065	J	0.0038	U	0.0037	U	0.0041	U
4-Methyl-2-pentanone	0.02	UJ	0.022	UJ	0.02	UJ	0.019	UJ	0.019	U	0.018	U	0.021	U
Acetone	0.04	UJ	0.043	UJ	0.041	UJ	0.038	UJ	0.038	U	0.037	U	0.041	U
Acrolein	0.02	UJ	0.022	UJ	0.02	UJ	0.019	UJ	0.019	UJ	0.018	UJ	0.021	UJ
Benzene	0.004	UJ	0.0043	UJ	0.0041	UJ	0.0038	UJ	0.0038	U	0.0037	U	0.0041	U
Benzyl Chloride	0.004	UJ	0.0043	UJ	0.0041	UJ	0.0038	UJ	0.0038	U	0.0037	U	0.0041	U
Carbon disulfide	0.004	UJ	0.0043	UJ	0.0054	J	0.0096	J	0.0038	U	0.0037	U	0.0041	U
Chloroform	0.004	UJ	0.0043	UJ	0.0041	UJ	0.0038	UJ	0.0038	U	0.0037	U	0.0041	U
Cymene	0.004	UJ	0.0043	UJ	0.0388	J	0.05	J	0.0038	U	0.0037	U	0.0041	U
Ethylbenzene	0.004	UJ	0.0043	UJ	0.0206	J	0.038	J	0.0038	U	0.0037	U	0.0041	U
Hexane	0.004	UJ	0.0043	UJ	0.0041	UJ	0.0038	UJ	0.0038	UJ	0.0037	UJ	0.0041	UJ
Isopropylbenzene	0.0027	J	0.0043	UJ	0.0465	J	0.0644	J	0.0038	U	0.0026	J	0.0041	U
m,p-Xylene [(2)]	0.008	UJ	0.0087	UJ	0.0082	UJ	0.0076	UJ	0.0076	U	0.0074	U	0.0082	U
Methylene chloride	0.008	UJ	0.0087	UJ	0.0082	UJ	0.0076	UJ	0.0076	U	0.0074	U	0.0082	U
Naphthalene	0.004	UJ	0.0043	UJ	0.0041	UJ	0.0038	UJ	0.0038	U	0.0037	U	0.0041	U
n-Propylbenzene	0.004	UJ	0.0043	UJ	0.0395	J	0.0519	J	0.0038	U	0.0037	U	0.0041	U
o-Xylene	0.004	UJ	0.0043	UJ	0.0019	J	0.0047	J	0.0038	U	0.0037	U	0.0041	U
Sec-Butylbenzene	0.004	UJ	0.0043	UJ	0.0336	J	0.045	J	0.0038	U	0.0037	U	0.0041	U
Tert-butyl benzene	0.004	UJ	0.0043	UJ	0.0041	UJ	0.0038	UJ	0.0038	U	0.0037	U	0.0041	U
Toluene	0.004	UJ	0.0043	UJ	0.0041	UJ	0.0038	UJ	0.0038	U	0.0037	U	0.0041	U
Trichloroethene	0.004	UJ	0.0043	UJ	0.0041	UJ	0.0038	UJ	0.0038	U	0.0037	U	0.0041	U
TPH-GRO (C6-C10)	4.7	U	4	U	651	J	206	J	3.7	U	3.8	U	5.5	U
TPH (C10-C28)	9.2	U	9.4	U	15.8		17.4		9.5	U	8.9	U	9.8	U

Table 4-3. Screening ACM Chemicals Detected in Soil for Vapor Intrusion Risk
Site SD-27, Holloman AFB

	SD27-DPT-21 03/23/2011 14 12 to 14 SD27-DPT-21B N		SD27-DPT-21 03/23/2011 17.5 15.5 to 17.5 SD27-DPT-21C N		SD27-DPT-22 03/23/2011 10 8 to 10 SD27-DPT-22A N		SD27-DPT-22 03/23/2011 14.5 12.5 to 14.5 SD27-DPT-22B N		SD27-DPT-22 03/23/2011 17 15 to 17 SD27-DPT-22C N		SD27-DPT-23 03/23/2011 10 8 to 10 SD27-DPT-23A N		SD27-DPT-23 03/23/2011 15 12 to 15 SD27-DPT-23B N	
Parameter														
1,1-Dichloroethene	0.0048	U	0.0032	U	0.0036	U	0.22	U	0.0012	J	0.0038	U	0.0039	U
1,2,4-Trimethylbenzene	0.0048	U	0.0032	U	0.0972		**79.8**		0.0053	UJ	0.0038	U	0.0039	U
1,3,5-Trimethylbenzene	0.0048	U	0.0032	U	0.0376		**27**		0.004	UJ	0.0038	U	0.0039	U
n-Butylbenzene	0.0048	U	0.0032	U	0.0037		**10.9**	J	0.004	UJ	0.0038	U	0.0039	U
4-Methyl-2-pentanone	0.024	U	0.016	U	0.018	U	1.1	U	0.02	UJ	0.019	U	0.02	U
Acetone	0.048	U	0.032	U	0.036	U	2.2	U	0.04	UJ	0.038	U	0.039	U
Acrolein	0.024	UJ	0.016	UJ	0.018	UJ	1.1	UJ	0.02	UJ	0.019	UJ	0.02	UJ
Benzene	0.0048	U	0.0032	U	0.0036	U	**0.465**		0.004	UJ	0.0038	U	0.0039	U
Benzyl Chloride	0.0048	U	0.0032	U	0.0036	U	0.22	U	0.004	UJ	0.0038	U	0.0039	U
Carbon disulfide	0.0048	U	0.0032	U	0.0066		0.22	U	0.004	UJ	0.0038	U	0.0039	U
Chloroform	0.0048	U	0.0032	U	0.0036	U	0.22	U	0.004	UJ	0.0038	U	0.0039	U
Cymene	0.0048	U	0.0032	U	0.0158		7.61	J	0.004	UJ	0.0038	U	0.0039	U
Ethylbenzene	0.0048	U	0.0032	U	0.0251		**41.9**		0.004	UJ	0.0038	U	0.0039	U
Hexane	0.0048	UJ	0.0032	U	0.0036	UJ	0.22	UJ	0.004	UJ	0.0038	UJ	0.0039	UJ
Isopropylbenzene	0.0048	U	0.0015	J	0.0232		**15.6**	J	0.004	UJ	0.0038	U	0.0039	U
m,p-Xylene [(2)]	0.0095	U	0.0063	U	0.0189		**114**		0.008	UJ	0.0076	U	0.0079	U
Methylene chloride	0.0095	U	0.0063	U	0.0072	U	0.44	U	0.008	UJ	0.0076	U	0.0079	U
Naphthalene	0.0048	U	0.0032	U	0.0036	UJ	0.603		0.004	UJ	0.0038	U	0.0039	U
n-Propylbenzene	0.0048	U	0.0032	U	0.0257		**21**		0.004	UJ	0.0038	U	0.0039	U
o-Xylene	0.0048	U	0.0032	U	0.0083		**46.6**		0.004	UJ	0.0038	U	0.0039	U
Sec-Butylbenzene	0.0048	U	0.0032	U	0.0206		10.3	J	0.004	UJ	0.0038	U	0.0039	U
Tert-butyl benzene	0.0048	U	0.0032	U	0.0036	U	0.22	U	0.004	UJ	0.0038	U	0.0039	U
Toluene	0.0048	U	0.0032	U	0.0036	U	**26.9**		0.004	UJ	0.0038	U	0.0039	U
Trichloroethene	0.0048	U	0.0032	U	0.0036	U	0.22	U	0.004	UJ	0.0038	U	0.0039	U
TPH-GRO (C6-C10)	4.2	U	4.3	U	308		3290	J	4.6	U	4.9	U	4.1	U
TPH (C10-C28)	9.4	U	9.6	U	9.9	U	306		9.1	U	9.4	U	9.5	U

Table 4-3. Screening ACM Chemicals Detected in Soil for Vapor Intrusion Risk
Site SD-27, Holloman AFB

	SD27-DPT-24 03/23/2011 10 8 to 10 SD27-DPT-24A N		SD27-DPT-24 03/23/2011 12 10 to 12 SD27-DPT-24B N		SD27-DPT-24 03/23/2011 17 15 to 17 SD27-DPT-24C N		SD27-DPT-25 03/23/2011 10 8 to 10 SD27-DPT-25A N		SD27-DPT-25 03/23/2011 15 12 to 15 SD27-DPT-25B N		SD27-DPT-26 03/23/2011 10 8 to 10 SD27-DPT-26A N		SD27-DPT-26 03/23/2011 15 12.5 to 15 SD27-DPT-26B N	
Parameter														
1,1-Dichloroethene	0.0039	U	0.24	U	0.0039	U	0.24	U	0.0038	U	0.0045	U	0.0037	U
1,2,4-Trimethylbenzene	0.0039	U	**7.63**		0.0039	U	**20.9**		0.0045		0.0045	U	0.0037	U
1,3,5-Trimethylbenzene	0.0039	U	**5.98**		0.0039	U	**7.54**		0.0018	J	0.0045	U	0.0037	U
n-Butylbenzene	0.0039	U	0.861		0.0039	U	1.53		0.0038	U	0.0045	U	0.0037	U
4-Methyl-2-pentanone	0.02	U	1.2	U	0.02	U	1.2	U	0.019	U	0.023	U	0.019	U
Acetone	0.039	U	2.4	U	0.039	U	2.4	U	0.038	U	0.045	U	0.037	UJ
Acrolein	0.02	U	1.2	U	0.02	UJ	1.2	UJ	0.019	UJ	0.023	U	0.019	UJ
Benzene	0.0039	U	0.24	U	0.0039	U	0.24	U	0.0038	U	0.0045	U	0.0037	U
Benzyl Chloride	0.0039	U	0.24	U	0.0039	U	0.24	U	0.0038	U	0.0045	U	0.0037	UJ
Carbon disulfide	0.0039	U	0.24	U	0.0039	U	0.24	U	0.0038	U	0.0045	U	0.0037	U
Chloroform	0.0039	U	0.24	U	0.0039	U	0.24	U	0.0038	U	0.0045	U	0.0037	U
Cymene	0.0039	U	2.9		0.0039	U	2.8		0.0038	U	0.0045	U	0.0037	U
Ethylbenzene	0.0039	U	0.24	U	0.0039	U	4.2		0.0015	J	0.0045	U	0.0037	U
Hexane	0.0039	UJ	0.24	UJ	0.0039	UJ	0.24	UJ	0.0038	U	0.0045	U	0.0037	UJ
Isopropylbenzene	0.0039	U	3.48		0.0039	U	2.6		0.0011	J	0.0045	U	0.0037	U
m,p-Xylene [(2)]	0.0079	U	0.47	U	0.0078	U	**9.28**		0.0047	J	0.0091	U	0.0075	U
Methylene chloride	0.0079	U	0.47	U	0.0078	U	0.47	U	0.0077	U	0.0091	U	0.0075	U
Naphthalene	0.0055	U	0.133	J	0.0039	U	3.27		0.0017	J	0.0045	U	0.0037	U
n-Propylbenzene	0.0039	U	3.39		0.0039	U	2.83		0.0038	U	0.0045	U	0.0037	U
o-Xylene	0.0039	U	0.24	U	0.0039	U	**6.64**		0.0023	J	0.0045	U	0.0037	U
Sec-Butylbenzene	0.0039	U	4.03		0.0039	U	2.48		0.0038	U	0.0045	U	0.0037	U
Tert-butyl benzene	0.0039	U	0.24	U	0.0039	U	0.24	U	0.0038	U	0.0045	U	0.0037	U
Toluene	0.0039	U	0.24	U	0.0039	U	1.35		0.0038	U	0.0045	U	0.0037	U
Trichloroethene	0.0039	U	0.24	U	0.0039	U	0.24	U	0.0038	U	0.0045	U	0.0037	U
TPH-GRO (C6-C10)	5.3	U	2130		4.9	U	1450		4.6	U	4.5	U	4.8	U
TPH (C10-C28)	9.4	U	455		9.9	U	449		9.9	U	9.6	U	9.6	U

Table 4-3. Screening ACM Chemicals Detected in Soil for Vapor Intrusion Risk
Site SD-27, Holloman AFB

	SD27-DPT-27 03/23/2011 10 8 to 10 SD27-DPT-27A N		SD27-DPT-27 03/23/2011 15 12.5 to 15 SD27-DPT-27B N		SD27-DPT-28 03/23/2011 10 8 to 10 SD27-DPT-28A N		SD27-DPT-28 03/23/2011 10 8 to 10 SD27-DPT-DUP08 FD		SD27-DPT-28 03/23/2011 15 12.5 to 15 SD27-DPT-28B N		SD27-DPT-28 03/23/2011 20 18 to 20 SD27-DPT-28C N		SD27-DPT-29 03/23/2011 12 10 to 12 SD27-DPT-29A N	
Parameter														
1,1-Dichloroethene	0.0038	U	0.004	U	0.0034	U	0.0041	U	0.19	U	0.0029	U	1.1	U
1,2,4-Trimethylbenzene	0.0038	U	0.004	U	0.0034	U	0.0041	U	**5.43**		0.0029	U	**14.7**	
1,3,5-Trimethylbenzene	0.0038	U	0.004	U	0.0034	U	0.0041	U	**2.35**		0.0029	U	**6.76**	
n-Butylbenzene	0.0038	U	0.004	U	0.0011	J	0.0014	J	0.238		0.0029	U	1.88	
4-Methyl-2-pentanone	0.019	U	0.02	U	0.017	U	0.02	U	0.97	U	0.014	U	5.4	UJ
Acetone	0.038	U	0.04	U	0.0716	J	0.0388	J	2.81		0.029	U	6.7	J
Acrolein	0.019	U	0.02	U	0.017	UJ	0.02	UJ	**2.29**		0.014	U	5.4	U
Benzene	0.0038	U	0.004	U	0.0034	U	0.0041	U	0.19	U	0.0029	U	1.1	U
Benzyl Chloride	0.0038	U	0.004	U	0.0034	UJ	0.0041	UJ	0.19	U	0.0029	U	1.1	U
Carbon disulfide	0.0038	U	0.004	U	0.0034	U	0.0041	U	0.19	U	0.0029	U	1.1	U
Chloroform	0.0038	U	0.004	U	0.0034	U	0.0041	U	**0.156**	J	0.0029	U	**0.335**	J
Cymene	0.0038	U	0.004	U	0.0034	U	0.0041	U	0.735		0.0029	U	2.35	
Ethylbenzene	0.0038	U	0.004	U	0.0104		0.0093		2.65		0.0029	U	2.51	
Hexane	0.0038	U	0.004	U	0.0034	U	0.0041	U	0.19	U	0.0029	U	1.1	U
Isopropylbenzene	0.0038	U	0.004	U	0.0283	J	0.0299	J	1.53		0.0029	U	3.85	
m,p-Xylene [(2)]	0.0076	U	0.008	U	0.0067	U	0.0081	U	1.22		0.0058	U	2.1	U
Methylene chloride	0.0052	J	0.0053	J	0.0042	J	0.0081	U	0.39	U	0.0058	U	2.1	U
Naphthalene	0.0038	U	0.004	U	0.0034	U	0.0041	U	0.19	U	0.0029	U	1.35	
n-Propylbenzene	0.0038	U	0.004	U	0.0053		0.0074		1.61		0.0029	U	**4.91**	
o-Xylene	0.0038	U	0.004	U	0.0034	U	0.0041	U	1.24		0.0029	U	1.2	
Sec-Butylbenzene	0.0038	U	0.004	U	0.008		0.0087		0.807		0.0029	U	2.69	
Tert-butyl benzene	0.0038	U	0.004	U	0.0034	U	0.0041	U	0.19	U	0.0029	U	1.1	U
Toluene	0.0038	U	0.004	U	0.0034	U	0.0041	U	0.19	U	0.0029	U	1.1	U
Trichloroethene	0.0038	U	0.004	U	0.0034	U	0.0041	U	0.19	U	0.0029	U	1.1	U
TPH-GRO (C6-C10)	4.4	U	4.9	U	4.6	U	4.3	U	435	J	3.9	U	929	J
TPH (C10-C28)	9.6	U	10	U	9.9	U	9.9	U	87.9		9.5	U	314	

Table 4-3. Screening ACM Chemicals Detected in Soil for Vapor Intrusion Risk
Site SD-27, Holloman AFB

	SD27-DPT-29 03/23/2011 12 10 to 12 SD27-DPT-DUP09 FD		SD27-DPT-29 03/23/2011 15 12.5 to 15 SD27-DPT-29B N		SD27-DPT-30 03/23/2011 12 10 to 12 SD27-DPT-30A N		SD27-DPT-31 03/23/2011 12 10 to 12 SD27-DPT-31A N		SD27-DPT-31 03/23/2011 15 13 to 15 SD27-DPT-31B N	
Parameter										
1,1-Dichloroethene	0.22	U	0.0034	U	0.0039	U	0.2	U	0.0036	U
1,2,4-Trimethylbenzene	**13.3**		0.0034	U	0.0039	U	0.364		0.0036	U
1,3,5-Trimethylbenzene	**5.54**		0.0034	U	0.0039	U	0.152	J	0.0036	U
n-Butylbenzene	1.73		0.0034	U	0.0039	U	0.2	U	0.0036	U
4-Methyl-2-pentanone	14.8	J	0.017	U	0.02	U	1	U	0.018	U
Acetone	2.2	U	0.034	U	0.039	U	2	U	0.036	U
Acrolein	1.1	U	0.017	U	0.02	U	1	U	0.018	U
Benzene	0.22	U	0.0034	U	0.0039	U	0.2	U	0.0036	U
Benzyl Chloride	0.22	U	0.0034	U	0.0039	U	0.2	U	0.0036	U
Carbon disulfide	0.22	U	0.0034	U	0.0039	U	0.2	U	0.0036	U
Chloroform	0.22	U	0.0034	U	0.0039	U	0.2	U	0.0036	U
Cymene	1.92		0.0034	U	0.0039	U	0.0671	J	0.0036	U
Ethylbenzene	1.86		0.0034	U	0.0039	U	0.102	J	0.0036	U
Hexane	0.22	U	0.0034	U	0.0039	U	0.2	U	0.0036	U
Isopropylbenzene	3.26		0.0034	U	0.0039	U	0.107	J	0.0036	U
m,p-Xylene [(2)]	0.44	U	0.0068	U	0.0078	U	0.41	U	0.0073	U
Methylene chloride	0.44	U	0.0068	U	0.0078	U	0.41	U	0.0073	U
Naphthalene	1.02		0.0034	U	0.0039	U	0.2	U	0.0036	U
n-Propylbenzene	**4.37**		0.0034	U	0.0039	U	0.141	J	0.0036	U
o-Xylene	0.889		0.0034	U	0.0039	U	0.2	U	0.0036	U
Sec-Butylbenzene	2.37		0.0034	U	0.0039	U	0.102	J	0.0036	U
Tert-butyl benzene	0.22	U	0.0034	U	0.0039	U	0.2	U	0.0036	U
Toluene	0.22	U	0.0034	U	0.0039	U	0.2	U	0.0036	U
Trichloroethene	0.22	U	**0.0017**	J	0.0039	U	0.2	U	**0.0018**	J
TPH-GRO (C6-C10)	832	J	4.2	U	4.1	U	75.8		4.7	U
TPH (C10-C28)	296		9.7	U	9.3	U	47.8		9.4	U

Table 4-3. Screening ACM Chemicals Detected in Soil for Vapor Intrusion Risk
Site SD-27, Holloman AFB

All units are milligram per kilogram (mg/kg)

(1) Johnson and Ettinger (1991) Model for Subsurface Vapor Intrusion into Buildings incorporated into Appendix G of of the EPA OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway (November, 2002).

(2) p-Xylene criteria used for m,p-xylenes

Red indicates > 10-6 VI risk

Yellow shade indicates > 10-5 VI risk

n/a - not applicable

NA - not analyzled

Reference: (TetraTech, 2012)

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW02		SD27-MW02	
		Collection Date:	11/11/2010		1/25/2011		4/7/2011		7/11/2011		12/13/2012		3/6/2013		6/26/2013		8/28/2013		11/10/2010		11/10/2010	
		SampleID:	SD27-TTMW-01		MW27-01-012511		MW27-01-040711		MW27-01-071111		SD27-MW01-13122012		MW27-01-030613		MW27-01-062613		MW27-01-082013		SD27-TTMW-02		SD27-TTMW-02-FD	
		QCType:	N		N		N		N		N		N		N		N		N		FD	
Parameter	SV (1)	VI SV (2)																				
Dissolved Gases																						
Carbon dioxide	n/a	n/a					121000															
Methane	n/a	n/a					0.16	U														
General Chemistry																						
Alkalinity, total	387000	n/a					111000															
Nitrate	10000	n/a					**51400**	**J**														
Solids, total dissolved	1000	n/a	**21700**		**16500**	**J**	**12300**	**J**	**21200**										**16300**		**16700**	
Sulfate	17419000	n/a					2E+06															
Hydrocarbons																						
TPH (C10-C28)	550	18,500	129	J	95	U	96	U	96	U									**1380**		**1160**	
TPH-GRO (C6-C10)	550	18,500	50	U	50	U	50	U	50	U									**3310**		**3550**	
Metals, Dissolved																						
Arsenic	10	n/a	8	U	2	U	**12**		4.8	J									7.7	J	5.4	J
Barium	1000	n/a	48.9	J	27.1	J	23	J	23.7	J									29.2	J	25.6	J
Cadmium	5	n/a	4	U	1	U	1	U	1	U									1	U	1	U
Chromium	50	n/a	4	U	5	U	4	U	4	U									4	U	4	U
Lead	15	n/a	4	U	5	U	4	U	4	U									4	U	4	U
Mercury	2	0.68	0.05	U	0.05	U	0.05	U	0.17	J									0.056	J	0.051	J
Selenium	50	n/a	8	U	10	U	9.6	J	8	U									9.4	J	8	U
Silver	50	n/a	1	U	1	U	1	U	1	U									1	U	1	U
Metals, Total																						
Arsenic	10	n/a	**16.8**	**J**	6.5	J	**14**		6.4	J									8	U	8	U
Barium	1000	n/a	290	J	25.2	J	24.9	J	22.2	J									46.9	J	37.5	J
Cadmium	5	n/a	5	U	1	U	1	U	1	U									4	U	4	U
Chromium	50	n/a	23.2	J	5	U	4	U	4	U									7.6	J	4.2	J
Lead	15	n/a	11.9	J	5	U	4	U	4	U									4	U	4	U
Mercury	2	0.68	0.05	U	0.05	U	0.05	U	0.05	U									0.086	J	0.05	U
Selenium	50	n/a	10	U	10	U	10.2	J	8	U									8	U	8	U
Silver	50	n/a	1	U	1	U	1	U	1	U									1	U	1	U

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02	
		Collection Date:	1/25/2011		1/25/2011		4/7/2011		4/7/2011		7/11/2011		7/11/2011		12/12/2012		12/12/2012		3/6/2013		6/26/2013	
		SampleID:	MW27-02-012511		MW27-DUP01-012511		MW27-02-040711		MW27-DUP01-040711		MW27-02-071111		MW27-DUP01-071111		SD27-MW02-12122012		SD27-MW02-DUP 01		MW27-02-030613		MW27-02-062613	
		QCType:	N		FD		N		FD		N		FD		N		FD		N		N	
Parameter	SV (1)	VI SV (2)																				
Dissolved Gases																						
Carbon dioxide	n/a	n/a					148000															
Methane	n/a	n/a					1.17		1.45													
General Chemistry																						
Alkalinity, total	387000	n/a					138000															
Nitrate	10000	n/a					**73100**		**71700**													
Solids, total dissolved	1000	n/a	**11100**		**13300**		**16700**		**13400**		**20700**		**17800**									
Sulfate	17419000	n/a					1E+06		2E+06													
Hydrocarbons																						
TPH (C10-C28)	550	18,500	**609**		**584**		524		**574**		377	J	515	J								
TPH-GRO (C6-C10)	550	18,500	**1150**		**1250**		**658**		**859**		**755**		**784**									
Metals, Dissolved																						
Arsenic	10	n/a	2	U	2	U	7.1	J	7.6	J	2	U	2	U								
Barium	1000	n/a	24.1	J	23.6	J	22.9	J	21.8	J	22.4	J	22.3	J								
Cadmium	5	n/a	1	U	1	U	1	U	1	U	1	U	1	U								
Chromium	50	n/a	5	U	5	U	4	U	4	U	4	U	4	U								
Lead	15	n/a	5	U	5	U	4	U	4	U	4	U	4	U								
Mercury	2	0.68	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U								
Selenium	50	n/a	10	U	10	U	8	U	8	U	8	U	8	U								
Silver	50	n/a	1	U	1	U	1	U	1	U	1	U	1	U								
Metals, Total																						
Arsenic	10	n/a	2.3	J	2	U	5.8	J	6.2	J	2.1	J	2	U								
Barium	1000	n/a	23.9	J	24.2	J	22.2	J	21.9	J	21.3	J	21.5	J								
Cadmium	5	n/a	1	U	1	U	1	U	1	U	1	U	1	U								
Chromium	50	n/a	5	U	5	U	4	U	4	U	4	U	4	U								
Lead	15	n/a	5	U	5	U	4	U	4	U	4	U	4	U								
Mercury	2	0.68	0.05	U	0.05	U	0.05	U	0.05	U	0.056	J	0.064	J								
Selenium	50	n/a	10	U	10	U	8	U	8	U	8	U	8	U								
Silver	50	n/a	1	U	1	U	1	U	1	U	1	U	1	U								

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW02		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW04	
		Collection Date:	8/28/2013		11/10/2010		1/25/2011		4/6/2011		7/12/2011		12/13/2012		3/7/2013		6/26/2013		8/28/2013		11/10/2010	
		SampleID:	MW27-02-082013		SD27-TTMW-03		MW27-03-012511		MW27-03-040611		MW27-03-071211		SD27-MW03-13122012		MW27-03-030713		MW27-03-062613		MW27-03-082013		SD27-TTMW-04	
		QCType:	N		N		N		N		N		N		N		N		N		N	
Parameter	SV (1)	VI SV (2)																				
Dissolved Gases																						
Carbon dioxide	n/a	n/a																				
Methane	n/a	n/a																				
General Chemistry																						
Alkalinity, total	387000	n/a																				
Nitrate	10000	n/a																				
Solids, total dissolved	1000	n/a			**28200**		**25800**		**19100**	**J**	**22700**										**29600**	
Sulfate	17419000	n/a																				
Hydrocarbons																						
TPH (C10-C28)	550	18,500			247		226	J	190	J	170	J									446	
TPH-GRO (C6-C10)	550	18,500			217		82.1	J	50	U	50	U									427	
Metals, Dissolved																						
Arsenic	10	n/a			2.5	J	2	U	3.8	J											6.9	J
Barium	1000	n/a			55.9	J	35.7	J	31.3	J											22.4	J
Cadmium	5	n/a			1	U	1	U	1	U											1	U
Chromium	50	n/a			4	U	5	U	4	U											4	U
Lead	15	n/a			4	U	5	U	4	U											4	U
Mercury	2	0.68			0.05	U	0.05	U	0.05	U											0.05	U
Selenium	50	n/a			8	U	10	U	8	U											8	U
Silver	50	n/a			1	U	1	U	1	U											1	U
Metals, Total																						
Arsenic	10	n/a			8	U	3.3	J	7	J	2	U									8	U
Barium	1000	n/a			67.9	J	35.8	J	32.6	J	30.9	J									24.9	J
Cadmium	5	n/a			4	U	1	U	1	U	1	U									4	U
Chromium	50	n/a			4	U	5	U	4	U	4	U									4	U
Lead	15	n/a			5	U	5	U	4	U	4	U									5	U
Mercury	2	0.68			0.05	U	0.05	U	0.05	U	0.05	U									0.05	U
Selenium	50	n/a			8	U	10	U	8.8	J	8	U									8	U
Silver	50	n/a			4	U	1	U	1	U	1	U									4	U

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW05		SD27-MW05	
		Collection Date:	1/25/2011		4/6/2011		7/11/2011		12/12/2012		3/7/2013		6/26/2013		8/28/2013		11/11/2010		1/25/2011	
		SampleID:	MW27-04-012511		MW27-04-040611		MW27-04-071111		SD27-MW04-12122012		MW27-04-030713		MW27-04-062613		MW27-04-082013		SD27-TTMW-05		MW27-05-012511	
		QCType:	N		N		N		N		N		N		N		N		N	
Parameter	SV (1)	VI SV (2)																		
Dissolved Gases																				
Carbon dioxide	n/a	n/a																		
Methane	n/a	n/a																		
General Chemistry																				
Alkalinity, total	387000	n/a																		
Nitrate	10000	n/a																		
Solids, total dissolved	1000	n/a	**28300**		**18300**	**J**	**30800**										**15300**		**14000**	
Sulfate	17419000	n/a																		
Hydrocarbons																				
TPH (C10-C28)	550	18,500	149	J	104	J	107	J									**1320**		**1160**	
TPH-GRO (C6-C10)	550	18,500	128		50	U	98	J									**6100**		**4380**	
Metals, Dissolved																				
Arsenic	10	n/a	2	U	**14.3**		8	U									6.4	J	2	U
Barium	1000	n/a	20.5	J	19.3	J	18.4	J									48.6	J	27.5	J
Cadmium	5	n/a	1	U	1	U	4	U									1	U	1	U
Chromium	50	n/a	5	U	4	U	4	U									4	U	5	U
Lead	15	n/a	5	U	4	U	10	U									4	U	5	U
Mercury	2	0.68	0.05	U	0.05	U	0.05	U									0.05	U	0.05	U
Selenium	50	n/a	10	U	8	U	8	U									8	U	10	U
Silver	50	n/a	1	U	1	U	4	U									1	U	1	U
Metals, Total																				
Arsenic	10	n/a	7.8	J	**15.2**		8	U									10	U	9.3	J
Barium	1000	n/a	21.4	J	21.5	J	18.8	J									69.4	J	30.6	J
Cadmium	5	n/a	1	U	1	U	4	U									5	U	1	U
Chromium	50	n/a	5	U	4	U	7.4	J									5	U	6.4	J
Lead	15	n/a	5	U	4	U	50	U									5	U	5	U
Mercury	2	0.68	0.05	U	0.05	U	0.05	U									0.05	U	0.055	J
Selenium	50	n/a	10	U	8	U	8	U									10	U	10	U
Silver	50	n/a	1	U	1	U	4	U									1	U	1	U

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05	
		Collection Date:	4/7/2011		7/11/2011		12/11/2012		3/7/2013		3/7/2013		6/26/2013		6/26/2013		8/28/2013		8/28/2013	
		SampleID:	MW27-05-040711		MW27-05-071111		SD27-MW05-11122012		MW27-05-030713		MW27-DUP01-030713		MW27-05-062613		MW27-DUP01-062613		MW27-05-082013		MW27-DUP01-082013	
		QCType:	N		N		N		N		FD		N		FD		N		FD	
Parameter	SV (1)	VI SV (2)																		
Dissolved Gases																				
Carbon dioxide	n/a	n/a																		
Methane	n/a	n/a																		
General Chemistry																				
Alkalinity, total	387000	n/a																		
Nitrate	10000	n/a																		
Solids, total dissolved	1000	n/a	**16300**		**18500**															
Sulfate	17419000	n/a																		
Hydrocarbons																				
TPH (C10-C28)	550	18,500	**1230**		470															
TPH-GRO (C6-C10)	550	18,500	**3310**	**J**	**1100**															
Metals, Dissolved																				
Arsenic	10	n/a	6.2	J	2	U														
Barium	1000	n/a	25.1	J	23.4	J														
Cadmium	5	n/a	1	U	1	U														
Chromium	50	n/a	4	U	4	U														
Lead	15	n/a	4	U	4	U														
Mercury	2	0.68	0.05	U	0.05	U														
Selenium	50	n/a	8	U	8	U														
Silver	50	n/a	1	U	1	U														
Metals, Total																				
Arsenic	10	n/a	8	J	2	U														
Barium	1000	n/a	25.8	J	24.1	J														
Cadmium	5	n/a	1	U	1	U														
Chromium	50	n/a	25	J	4	U														
Lead	15	n/a	4	U	4	U														
Mercury	2	0.68	0.05	U	0.05	U														
Selenium	50	n/a	8	U	8	U														
Silver	50	n/a	1	U	1	U														

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW02		SD27-MW02	
		Collection Date:	11/11/2010		1/25/2011		4/7/2011		7/11/2011		12/13/2012		3/6/2013		6/26/2013		8/28/2013		11/10/2010		11/10/2010	
		SampleID:	SD27-TTMW-01		MW27-01-012511		MW27-01-040711		MW27-01-071111		SD27-MW01-13122012		MW27-01-030613		MW27-01-062613		MW27-01-082013		SD27-TTMW-02		SD27-TTMW-02-FD	
		QCType:	N		N		N		N		N		N		N		N		N		FD	
Radiochemistry																						
Alpha, gross	15	n/a	129.46	R															0	R	17.718	R
Beta, gross	50	n/a	117.55	R															35.148	R	24.581	R
SVOCs																						
1,2,4-Trichlorobenzene	70	3400	0.48	U	0.49	U													1.9	U	1.9	U
1,2-Dichlorobenzene	600	2600	0.95	U	0.98	U													3.8	U	3.8	U
1,2-Diphenylhydrazine	n/a	n/a	0.48	U	0.49	U													1.9	U	1.9	U
1,3-Dichlorobenzene	n/a	830	0.95	U	0.98	U													3.8	U	3.8	U
1,4-Dichlorobenzene	75	8200	0.95	U	0.98	U													3.8	U	3.8	U
1-Methylnaphthalene	30	n/a	0.48	U	0.49	U	0.49	U	0.48	U									**41**		**32.4**	
2,4,5-Trichlorophenol	n/a	n/a	0.48	U	0.49	U													1.9	U	1.9	U
2,4,6-Trichlorophenol	n/a	n/a	0.48	U	0.49	U													1.9	U	1.9	U
2,4-Dichlorophenol	n/a	n/a	0.48	U	0.49	U													1.9	U	1.9	U
2,4-Dimethylphenol	n/a	n/a	1	U	1.1	U													4.2	U	4.2	U
2,4-Dinitrophenol	n/a	n/a	9.5	U	9.8	U													38	U	38	U
2,4-Dinitrotoluene	n/a	n/a	0.48	U	0.49	U													1.9	U	1.9	U
2,6-Dinitrotoluene	n/a	n/a	0.48	U	0.49	U													1.9	U	1.9	U
2-Chloronaphthalene	n/a	n/a	0.48	U	0.49	U													1.9	U	1.9	U
2-Chlorophenol	n/a	1100	0.48	U	0.49	U													1.9	U	1.9	U
2-Methylnaphthalene	30	3300	0.54	U	0.56	U	0.56	U	0.55	U									11.3	J	9.8	J
2-Nitroaniline	n/a	n/a	0.48	U	0.49	U													1.9	U	1.9	U
2-Nitrophenol	n/a	n/a	0.51	U	0.53	U													2.1	U	2.1	U
3,3'-Dichlorobenzidine	n/a	n/a	0.95	U	0.98	U													3.8	U	3.8	U
3-Nitroaniline	n/a	n/a	0.48	U	0.49	U													1.9	U	1.9	U
4,6-Dinitro-2-methylphenol	n/a	n/a	1.9	U	2	U													7.6	U	7.6	U
4-Bromophenyl phenyl ether	n/a	n/a	0.48	U	0.49	U													1.9	U	1.9	U
4-Chloro-3-methylphenol	n/a	n/a	0.48	U	0.49	U													1.9	U	1.9	U
4-Chloroaniline	n/a	n/a	0.48	U	0.49	U													1.9	U	1.9	U
4-Chlorophenyl phenyl ether	n/a	n/a	0.48	U	0.49	U													1.9	U	1.9	U
4-Methylphenol	n/a	n/a	0.51	U	0.53	U													2.1	U	2.1	U
4-Nitroaniline	n/a	n/a	0.48	U	0.49	U													1.9	U	1.9	U
4-Nitrophenol	n/a	n/a	4.8	U	4.9	U													19	U	19	U
Acenaphthene	n/a	n/a	0.48	U	0.49	U	0.49	U	0.48	U									1.9	U	1.9	U
Acenaphthylene	n/a	n/a	0.48	U	0.49	U	0.49	U	0.48	U									1.9	U	1.9	U
Aniline	n/a	n/a	0.5	U	0.51	U													2	U	2	U
Anthracene	n/a	n/a	0.48	U	0.49	U	0.49	U	0.48	U									1.9	U	1.9	U

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02	
		Collection Date:	1/25/2011		1/25/2011		4/7/2011		4/7/2011		7/11/2011		7/11/2011		12/12/2012		12/12/2012		3/6/2013		6/26/2013	
		SampleID:	MW27-02-012511		MW27-DUP01-012511		MW27-02-040711		MW27-DUP01-040711		MW27-02-071111		MW27-DUP01-071111		SD27-MW02-12122012		SD27-MW02-DUP 01		MW27-02-030613		MW27-02-062613	
		QCType:	N		FD		N		FD		N		FD		N		FD		N		N	
Radiochemistry																						
Alpha, gross	15	n/a																				
Beta, gross	50	n/a																				
SVOCs																						
1,2,4-Trichlorobenzene	70	3400	0.48	U	0.48	U																
1,2-Dichlorobenzene	600	2600	0.96	U	0.96	U																
1,2-Diphenylhydrazine	n/a	n/a	0.48	U	0.48	U																
1,3-Dichlorobenzene	n/a	830	0.96	U	0.96	U																
1,4-Dichlorobenzene	75	8200	0.96	U	0.96	U																
1-Methylnaphthalene	30	n/a	12.5		14.4		10.2		10.8		11.8		11.2									
2,4,5-Trichlorophenol	n/a	n/a	0.48	U	0.48	U																
2,4,6-Trichlorophenol	n/a	n/a	0.48	U	0.48	U																
2,4-Dichlorophenol	n/a	n/a	0.48	U	0.48	U																
2,4-Dimethylphenol	n/a	n/a	1.1	U	1.1	U																
2,4-Dinitrophenol	n/a	n/a	9.6	U	9.6	U																
2,4-Dinitrotoluene	n/a	n/a	0.48	U	0.48	U																
2,6-Dinitrotoluene	n/a	n/a	0.48	U	0.48	U																
2-Chloronaphthalene	n/a	n/a	0.48	U	0.48	U																
2-Chlorophenol	n/a	1100	0.48	U	0.48	U																
2-Methylnaphthalene	30	3300	0.69	J	0.74	J	0.55	U	0.54	U	0.55	U	0.55	U								
2-Nitroaniline	n/a	n/a	0.48	U	0.48	U																
2-Nitrophenol	n/a	n/a	0.52	U	0.52	U																
3,3'-Dichlorobenzidine	n/a	n/a	0.96	U	0.96	U																
3-Nitroaniline	n/a	n/a	0.48	U	0.48	U																
4,6-Dinitro-2-methylphenol	n/a	n/a	1.9	U	1.9	U																
4-Bromophenyl phenyl ether	n/a	n/a	0.48	U	0.48	U																
4-Chloro-3-methylphenol	n/a	n/a	0.48	U	0.48	U																
4-Chloroaniline	n/a	n/a	0.48	U	0.48	U																
4-Chlorophenyl phenyl ether	n/a	n/a	0.48	U	0.48	U																
4-Methylphenol	n/a	n/a	0.52	U	0.52	U																
4-Nitroaniline	n/a	n/a	0.48	U	0.48	U																
4-Nitrophenol	n/a	n/a	4.8	U	4.8	U																
Acenaphthene	n/a	n/a	0.48	U	0.48	U	0.48	U	0.48	U	0.49	U	0.49	U								
Acenaphthylene	n/a	n/a	0.48	U	0.48	U	0.48	U	0.48	U	0.49	U	0.49	U								
Aniline	n/a	n/a	0.5	U	0.5	U																
Anthracene	n/a	n/a	0.48	U	0.48	U	0.48	U	0.48	U	0.49	U	0.49	U								

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW02		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW04	
		Collection Date:	8/28/2013		11/10/2010		1/25/2011		4/6/2011		7/12/2011		12/13/2012		3/7/2013		6/26/2013		8/28/2013		11/10/2010	
		SampleID:	MW27-02-082013		SD27-TTMW-03		MW27-03-012511		MW27-03-040611		MW27-03-071211		SD27-MW03-13122012		MW27-03-030713		MW27-03-062613		MW27-03-082013		SD27-TTMW-04	
		QCType:	N		N		N		N		N		N		N		N		N		N	
Radiochemistry																						
Alpha, gross	15	n/a			-10.17	R															54.732	R
Beta, gross	50	n/a			50.1	R															-21.55	R
SVOCs																						
1,2,4-Trichlorobenzene	70	3400			0.48	U	0.49	U													0.48	U
1,2-Dichlorobenzene	600	2600			0.95	U	0.98	U													0.95	U
1,2-Diphenylhydrazine	n/a	n/a			0.48	U	0.49	U													0.48	U
1,3-Dichlorobenzene	n/a	830			0.95	U	0.98	U													0.95	U
1,4-Dichlorobenzene	75	8200			0.95	U	0.98	U													0.95	U
1-Methylnaphthalene	30	n/a			2	J	1.7	J	2.7	J	0.48	U									11	
2,4,5-Trichlorophenol	n/a	n/a			0.48	U	0.49	U													0.48	U
2,4,6-Trichlorophenol	n/a	n/a			0.48	U	0.49	U													0.48	U
2,4-Dichlorophenol	n/a	n/a			0.48	U	0.49	U													0.48	U
2,4-Dimethylphenol	n/a	n/a			1	U	1.1	U													1	U
2,4-Dinitrophenol	n/a	n/a			9.5	U	9.8	U													9.5	U
2,4-Dinitrotoluene	n/a	n/a			0.48	U	0.49	U													0.48	U
2,6-Dinitrotoluene	n/a	n/a			0.48	U	0.49	U													0.48	U
2-Chloronaphthalene	n/a	n/a			0.48	U	0.49	U													0.48	U
2-Chlorophenol	n/a	1100			0.48	U	0.49	U													0.48	U
2-Methylnaphthalene	30	3300			0.54	U	0.56	U	0.54	U	0.55	U									1.6	J
2-Nitroaniline	n/a	n/a			0.48	U	0.49	U													0.48	U
2-Nitrophenol	n/a	n/a			0.51	U	0.53	U													0.51	U
3,3'-Dichlorobenzidine	n/a	n/a			0.95	U	0.98	U													0.95	U
3-Nitroaniline	n/a	n/a			0.48	U	0.49	U													0.48	U
4,6-Dinitro-2-methylphenol	n/a	n/a			1.9	U	2	U													1.9	U
4-Bromophenyl phenyl ether	n/a	n/a			0.48	U	0.49	U													0.48	U
4-Chloro-3-methylphenol	n/a	n/a			0.48	U	0.49	U													0.48	U
4-Chloroaniline	n/a	n/a			0.48	U	0.49	U													0.48	U
4-Chlorophenyl phenyl ether	n/a	n/a			0.48	U	0.49	U													0.48	U
4-Methylphenol	n/a	n/a			0.51	U	0.53	U													0.51	U
4-Nitroaniline	n/a	n/a			0.48	U	0.49	U													0.48	U
4-Nitrophenol	n/a	n/a			4.8	U	4.9	U													4.8	U
Acenaphthene	n/a	n/a			0.48	U	0.49	U	0.48	U	0.48	U									0.48	U
Acenaphthylene	n/a	n/a			0.48	U	0.49	U	0.48	U	0.48	U									0.48	U
Aniline	n/a	n/a			0.5	U	0.51	U													0.5	U
Anthracene	n/a	n/a			0.48	U	0.49	U	0.48	U	0.48	U									0.48	U

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW05		SD27-MW05	
		Collection Date:	1/25/2011		4/6/2011		7/11/2011		12/12/2012		3/7/2013		6/26/2013		8/28/2013		11/11/2010		1/25/2011	
		SampleID:	MW27-04-012511		MW27-04-040611		MW27-04-071111		SD27-MW04-12122012		MW27-04-030713		MW27-04-062613		MW27-04-082013		SD27-TTMW-05		MW27-05-012511	
		QCType:	N		N		N		N		N		N		N		N		N	
Radiochemistry																				
Alpha, gross	15	n/a															24.592	R		
Beta, gross	50	n/a															119.2	R		
SVOCs																				
1,2,4-Trichlorobenzene	70	3400	0.49	U													2	U	0.48	U
1,2-Dichlorobenzene	600	2600	0.97	U													4	U	0.95	U
1,2-Diphenylhydrazine	n/a	n/a	0.49	U													2	U	0.48	U
1,3-Dichlorobenzene	n/a	830	0.97	U													4	U	0.95	U
1,4-Dichlorobenzene	75	8200	0.97	U													4	U	0.95	U
1-Methylnaphthalene	30	n/a	2.2	J	0.49	U	2	J									24.7		14.1	
2,4,5-Trichlorophenol	n/a	n/a	0.49	U													2	U	0.48	U
2,4,6-Trichlorophenol	n/a	n/a	0.49	U													2	U	0.48	U
2,4-Dichlorophenol	n/a	n/a	0.49	U													2	U	0.48	U
2,4-Dimethylphenol	n/a	n/a	1.1	U													4.5	J	7.2	
2,4-Dinitrophenol	n/a	n/a	9.7	U													40	U	9.5	U
2,4-Dinitrotoluene	n/a	n/a	0.49	U													2	U	0.48	U
2,6-Dinitrotoluene	n/a	n/a	0.49	U													2	U	0.48	U
2-Chloronaphthalene	n/a	n/a	0.49	U													2	U	0.48	U
2-Chlorophenol	n/a	1100	0.49	U													2	U	0.48	U
2-Methylnaphthalene	30	3300	0.55	U	0.55	U	0.56	U									26.7		13.9	
2-Nitroaniline	n/a	n/a	0.49	U													2	U	0.48	U
2-Nitrophenol	n/a	n/a	0.52	U													2.2	U	0.51	U
3,3'-Dichlorobenzidine	n/a	n/a	0.97	U													4	U	0.95	U
3-Nitroaniline	n/a	n/a	0.49	U													2	U	0.48	U
4,6-Dinitro-2-methylphenol	n/a	n/a	1.9	U													8	U	1.9	U
4-Bromophenyl phenyl ether	n/a	n/a	0.49	U													2	U	0.48	U
4-Chloro-3-methylphenol	n/a	n/a	0.49	U													2	U	0.48	U
4-Chloroaniline	n/a	n/a	0.49	U													2	U	0.48	U
4-Chlorophenyl phenyl ether	n/a	n/a	0.49	U													2	U	0.48	U
4-Methylphenol	n/a	n/a	0.52	U													5.5	J	5.6	
4-Nitroaniline	n/a	n/a	0.49	U													2	U	0.48	U
4-Nitrophenol	n/a	n/a	4.9	U													20	U	4.8	U
Acenaphthene	n/a	n/a	0.49	U	0.49	U	0.49	U									2	U	0.48	U
Acenaphthylene	n/a	n/a	0.49	U	0.49	U	0.49	U									2	U	0.48	U
Aniline	n/a	n/a	0.5	U													2.1	U	0.5	U
Anthracene	n/a	n/a	0.49	U	0.49	U	0.49	U									2	U	0.48	U

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05	
		Collection Date:	4/7/2011		7/11/2011		12/11/2012		3/7/2013		3/7/2013		6/26/2013		6/26/2013		8/28/2013		8/28/2013	
		SampleID:	MW27-05-040711		MW27-05-071111		SD27-MW05-11122012		MW27-05-030713		MW27-DUP01-030713		MW27-05-062613		MW27-DUP01-062613		MW27-05-082013		MW27-DUP01-082013	
		QCType:	N		N		N		N		FD		N		FD		N		FD	
Radiochemistry																				
Alpha, gross	15	n/a																		
Beta, gross	50	n/a																		
SVOCs																				
1,2,4-Trichlorobenzene	70	3400																		
1,2-Dichlorobenzene	600	2600																		
1,2-Diphenylhydrazine	n/a	n/a																		
1,3-Dichlorobenzene	n/a	830																		
1,4-Dichlorobenzene	75	8200																		
1-Methylnaphthalene	30	n/a	14		11.3															
2,4,5-Trichlorophenol	n/a	n/a																		
2,4,6-Trichlorophenol	n/a	n/a																		
2,4-Dichlorophenol	n/a	n/a																		
2,4-Dimethylphenol	n/a	n/a																		
2,4-Dinitrophenol	n/a	n/a																		
2,4-Dinitrotoluene	n/a	n/a																		
2,6-Dinitrotoluene	n/a	n/a																		
2-Chloronaphthalene	n/a	n/a																		
2-Chlorophenol	n/a	1100																		
2-Methylnaphthalene	30	3300	13		10.7															
2-Nitroaniline	n/a	n/a																		
2-Nitrophenol	n/a	n/a																		
3,3'-Dichlorobenzidine	n/a	n/a																		
3-Nitroaniline	n/a	n/a																		
4,6-Dinitro-2-methylphenol	n/a	n/a																		
4-Bromophenyl phenyl ether	n/a	n/a																		
4-Chloro-3-methylphenol	n/a	n/a																		
4-Chloroaniline	n/a	n/a																		
4-Chlorophenyl phenyl ether	n/a	n/a																		
4-Methylphenol	n/a	n/a																		
4-Nitroaniline	n/a	n/a																		
4-Nitrophenol	n/a	n/a																		
Acenaphthene	n/a	n/a	0.5	U	0.48	U														
Acenaphthylene	n/a	n/a	0.5	U	0.48	U														
Aniline	n/a	n/a																		
Anthracene	n/a	n/a	0.5	U	0.48	U														

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW02		SD27-MW02	
		Collection Date:	11/11/2010		1/25/2011		4/7/2011		7/11/2011		12/13/2012		3/6/2013		6/26/2013		8/28/2013		11/10/2010		11/10/2010	
		SampleID:	SD27-TTMW-01		MW27-01-012511		MW27-01-040711		MW27-01-071111		SD27-MW01-13122012		MW27-01-030613		MW27-01-062613		MW27-01-082013		SD27-TTMW-02		SD27-TTMW-02-FD	
		QCType:	N		N		N		N		N		N		N		N		N		FD	
SVOCs																						
Benzidine	n/a	n/a	4.5	U	4.6	U													18	U	18	U
Benzo(a)anthracene	n/a	n/a	0.48	U	0.49	U	0.49	U	0.48	U									1.9	U	1.9	U
Benzo(a)pyrene	0.2	n/a	0.48	U	0.49	U	0.49	U	0.48	U									1.9	U	1.9	U
Benzo(b)fluoranthene	n/a	n/a	0.48	U	0.49	U	0.49	U	0.48	U									1.9	U	1.9	U
Benzo(ghi)perylene	n/a	n/a	0.48	U	0.49	U	0.49	U	0.48	U									1.9	U	1.9	U
Benzo(k)fluoranthene	n/a	n/a	0.48	U	0.49	U	0.49	U	0.48	U									1.9	U	1.9	U
Benzoic acid	n/a	n/a	9.5	U	9.8	U													38	U	38	U
Benzyl alcohol	n/a	n/a	0.95	U	0.98	U													3.8	U	3.8	U
Bis(2-chloroethoxy)methane	n/a	n/a	0.48	U	0.49	U													1.9	U	1.9	U
Bis(2-chloroethyl)ether	n/a	100	0.51	U	0.53	U													2.1	U	2.1	U
Bis(2-chloroisopropyl)ether	n/a	510	0.51	U	0.53	U													2.1	U	2.1	U
Bis(2-ethylhexyl)phthalate	6	n/a	1	U	1.1	U													4.2	U	4.2	U
Butyl benzyl phthalate	n/a	n/a	1	U	1.1	U													4.2	U	4.2	U
Carbazole	n/a	n/a	0.48	U	0.49	U													1.9	U	1.9	U
Chrysene	n/a	n/a	0.48	U	0.49	U	0.49	U	0.48	U									1.9	U	1.9	U
Dibenz(a,h)anthracene	n/a	n/a	0.5	U	0.51	U	0.51	U	0.5	U									2	U	2	U
Dibenzofuran	n/a	n/a	0.48	U	0.49	U													1.9	U	1.9	U
Diethyl phthalate	n/a	n/a	1	U	1.1	U													4.2	U	4.2	U
Dimethyl phthalate	n/a	n/a	0.94	U	0.97	U													3.8	U	3.8	U
Di-n-butyl phthalate	n/a	n/a	1.9	J	0.85	U													3.3	U	3.3	U
Di-n-octyl phthalate	n/a	n/a	1	U	1.1	U													4.2	U	4.2	U
Fluoranthene	n/a	n/a	0.48	U	0.49	U	0.49	U	0.48	U									1.9	U	1.9	U
Fluorene	n/a	n/a	0.48	U	0.49	U	0.49	U	0.48	U									1.9	U	1.9	U
Hexachlorobenzene	1	1	0.53	U	0.55	U													2.1	U	2.1	U
Hexachlorobutadiene	n/a	3.3	0.95	U	0.98	U													3.8	U	3.8	U
Hexachlorocyclopentadiene	50	50	1.8	U	1.9	U													7.2	U	7.2	U
Hexachloroethane	n/a	38	0.95	U	0.98	U													3.8	U	3.8	U
Indeno(1,2,3-cd)pyrene	n/a	n/a	0.48	U	0.49	U	0.49	U	0.48	U									1.9	U	1.9	U
Isophorone	n/a	n/a	0.48	U	0.49	U													1.9	U	1.9	U
M,P-Cresol	n/a	n/a	1	U	1.1	U													4.2	U	4.2	U
Naphthalene	30	150	0.76	U	0.78	U	0.78	U	0.77	U									7.7	J	6.2	J
Nitrobenzene	n/a	2000	0.56	U	0.58	U													2.2	U	2.2	U
N-Nitrosodimethylamine	n/a	n/a	2.3	U	2.4	U													9.1	U	9.1	U
N-Nitroso-di-n-propylamine	n/a	n/a	0.48	U	0.49	U													1.9	U	1.9	U
N-Nitrosodiphenylamine	n/a	n/a	0.95	U	0.98	U													3.8	U	3.8	U

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02	
		Collection Date:	1/25/2011		1/25/2011		4/7/2011		4/7/2011		7/11/2011		7/11/2011		12/12/2012		12/12/2012		3/6/2013		6/26/2013	
		SampleID:	MW27-02-012511		MW27-DUP01-012511		MW27-02-040711		MW27-DUP01-040711		MW27-02-071111		MW27-DUP01-071111		SD27-MW02-12122012		SD27-MW02-DUP 01		MW27-02-030613		MW27-02-062613	
		QCType:	N		FD		N		FD		N		FD		N		FD		N		N	
SVOCs																						
Benzidine	n/a	n/a	4.5	U	4.5	U																
Benzo(a)anthracene	n/a	n/a	0.48	U	0.48	U	0.48	U	0.48	U	0.49	U	0.49	U								
Benzo(a)pyrene	0.2	n/a	0.48	U	0.48	U	0.48	U	0.48	U	0.49	U	0.49	U								
Benzo(b)fluoranthene	n/a	n/a	0.48	U	0.48	U	0.48	U	0.48	U	0.49	U	0.49	U								
Benzo(ghi)perylene	n/a	n/a	0.48	U	0.48	U	0.48	U	0.48	U	0.49	U	0.49	U								
Benzo(k)fluoranthene	n/a	n/a	0.48	U	0.48	U	0.48	U	0.48	U	0.49	U	0.49	U								
Benzoic acid	n/a	n/a	9.6	U	9.6	U																
Benzyl alcohol	n/a	n/a	0.96	U	0.96	U																
Bis(2-chloroethoxy)methane	n/a	n/a	0.48	U	0.48	U																
Bis(2-chloroethyl)ether	n/a	100	0.52	U	0.52	U																
Bis(2-chloroisopropyl)ether	n/a	510	0.52	U	0.52	U																
Bis(2-ethylhexyl)phthalate	6	n/a	1.1	U	1.1	U																
Butyl benzyl phthalate	n/a	n/a	1.1	U	1.1	U																
Carbazole	n/a	n/a	0.48	U	0.48	U																
Chrysene	n/a	n/a	0.48	U	0.48	U	0.48	U	0.48	U	0.49	U	0.49	U								
Dibenz(a,h)anthracene	n/a	n/a	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U								
Dibenzofuran	n/a	n/a	0.48	U	0.48	U																
Diethyl phthalate	n/a	n/a	1.1	U	1.1	U																
Dimethyl phthalate	n/a	n/a	0.95	U	0.95	U																
Di-n-butyl phthalate	n/a	n/a	0.84	U	0.84	U																
Di-n-octyl phthalate	n/a	n/a	1.1	U	1.1	U																
Fluoranthene	n/a	n/a	0.48	U	0.48	U	0.48	U	0.48	U	0.49	U	0.49	U								
Fluorene	n/a	n/a	0.48	U	0.48	U	0.48	U	0.48	U	0.49	U	0.49	U								
Hexachlorobenzene	1	1	0.54	U	0.54	U																
Hexachlorobutadiene	n/a	3.3	0.96	U	0.96	U																
Hexachlorocyclopentadiene	50	50	1.8	U	1.8	U																
Hexachloroethane	n/a	38	0.96	U	0.96	U																
Indeno(1,2,3-cd)pyrene	n/a	n/a	0.48	U	0.48	U	0.48	U	0.48	U	0.49	U	0.49	U								
Isophorone	n/a	n/a	0.48	U	0.48	U																
M,P-Cresol	n/a	n/a	1.1	U	1.1	U																
Naphthalene	30	150	0.9	J	0.95	J	0.77	U	0.76	U	0.78	U	0.78	U								
Nitrobenzene	n/a	2000	0.57	U	0.57	U																
N-Nitrosodimethylamine	n/a	n/a	2.3	U	2.3	U																
N-Nitroso-di-n-propylamine	n/a	n/a	0.48	U	0.48	U																
N-Nitrosodiphenylamine	n/a	n/a	0.96	U	0.96	U																

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW02		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW04	
		Collection Date:	8/28/2013		11/10/2010		1/25/2011		4/6/2011		7/12/2011		12/13/2012		3/7/2013		6/26/2013		8/28/2013		11/10/2010	
		SampleID:	MW27-02-082013		SD27-TTMW-03		MW27-03-012511		MW27-03-040611		MW27-03-071211		SD27-MW03-13122012		MW27-03-030713		MW27-03-062613		MW27-03-082013		SD27-TTMW-04	
		QCType:	N		N		N		N		N		N		N		N		N		N	
SVOCs																						
Benzidine	n/a	n/a			4.5	U	4.6	U													4.5	U
Benzo(a)anthracene	n/a	n/a			0.48	U	0.49	U	0.48	U	0.48	U									0.48	U
Benzo(a)pyrene	0.2	n/a			0.48	U	0.49	U	0.48	U	0.48	U									0.48	U
Benzo(b)fluoranthene	n/a	n/a			0.48	U	0.49	U	0.48	U	0.48	U									0.48	U
Benzo(ghi)perylene	n/a	n/a			0.48	U	0.49	U	0.48	U	0.48	U									0.48	U
Benzo(k)fluoranthene	n/a	n/a			0.48	U	0.49	U	0.48	U	0.48	U									0.48	U
Benzoic acid	n/a	n/a			9.5	U	9.8	U													9.5	U
Benzyl alcohol	n/a	n/a			0.95	U	0.98	U													0.95	U
Bis(2-chloroethoxy)methane	n/a	n/a			0.48	U	0.49	U													0.48	U
Bis(2-chloroethyl)ether	n/a	100			0.51	U	0.53	U													0.51	U
Bis(2-chloroisopropyl)ether	n/a	510			0.51	U	0.53	U													0.51	U
Bis(2-ethylhexyl)phthalate	6	n/a			1	U	1.1	U													1	U
Butyl benzyl phthalate	n/a	n/a			1	U	1.1	U													1	U
Carbazole	n/a	n/a			0.48	U	0.49	U													0.48	U
Chrysene	n/a	n/a			0.48	U	0.49	U	0.48	U	0.48	U									0.48	U
Dibenz(a,h)anthracene	n/a	n/a			0.5	U	0.51	U	0.5	U	0.5	U									0.5	U
Dibenzofuran	n/a	n/a			0.48	U	0.49	U													0.48	U
Diethyl phthalate	n/a	n/a			1	U	1.1	U													1	U
Dimethyl phthalate	n/a	n/a			0.94	U	0.97	U													0.94	U
Di-n-butyl phthalate	n/a	n/a			0.83	U	0.85	U													0.83	U
Di-n-octyl phthalate	n/a	n/a			1	U	1.1	U													1	U
Fluoranthene	n/a	n/a			0.48	U	0.49	U	0.48	U	0.48	U									0.48	U
Fluorene	n/a	n/a			0.48	U	0.49	U	0.48	U	0.48	U									0.48	U
Hexachlorobenzene	1	1			0.53	U	0.55	U													0.53	U
Hexachlorobutadiene	n/a	3.3			0.95	U	0.98	U													0.95	U
Hexachlorocyclopentadiene	50	50			1.8	U	1.9	U													1.8	U
Hexachloroethane	n/a	38			0.95	U	0.98	U													0.95	U
Indeno(1,2,3-cd)pyrene	n/a	n/a			0.48	U	0.49	U	0.48	U	0.48	U									0.48	U
Isophorone	n/a	n/a			0.48	U	0.49	U													0.48	U
M,P-Cresol	n/a	n/a			1	U	1.1	U													1	U
Naphthalene	30	150			0.76	U	0.78	U	0.76	U	0.77	U									0.76	U
Nitrobenzene	n/a	2000			0.56	U	0.58	U													0.56	U
N-Nitrosodimethylamine	n/a	n/a			2.3	U	2.4	U													2.3	U
N-Nitroso-di-n-propylamine	n/a	n/a			0.48	U	0.49	U													0.48	U
N-Nitrosodiphenylamine	n/a	n/a			0.95	U	0.98	U													0.95	U

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW05		SD27-MW05	
		Collection Date:	1/25/2011		4/6/2011		7/11/2011		12/12/2012		3/7/2013		6/26/2013		8/28/2013		11/11/2010		1/25/2011	
		SampleID:	MW27-04-012511		MW27-04-040611		MW27-04-071111		SD27-MW04-12122012		MW27-04-030713		MW27-04-062613		MW27-04-082013		SD27-TTMW-05		MW27-05-012511	
		QCType:	N		N		N		N		N		N		N		N		N	
SVOCs																				
Benzidine	n/a	n/a	4.6	U													19	U	4.5	U
Benzo(a)anthracene	n/a	n/a	0.49	U	0.49	U	0.49	U									2	U	0.48	U
Benzo(a)pyrene	0.2	n/a	0.49	U	0.49	U	0.49	U									2	U	0.48	U
Benzo(b)fluoranthene	n/a	n/a	0.49	U	0.49	U	0.49	U									2	U	0.48	U
Benzo(ghi)perylene	n/a	n/a	0.49	U	0.49	U	0.49	U									2	U	0.48	U
Benzo(k)fluoranthene	n/a	n/a	0.49	U	0.49	U	0.49	U									2	U	0.48	U
Benzoic acid	n/a	n/a	9.7	U													40	U	9.5	U
Benzyl alcohol	n/a	n/a	0.97	U													4	U	0.95	U
Bis(2-chloroethoxy)methane	n/a	n/a	0.49	U													2	U	0.48	U
Bis(2-chloroethyl)ether	n/a	100	0.52	U													2.2	U	0.51	U
Bis(2-chloroisopropyl)ether	n/a	510	0.52	U													2.2	U	0.51	U
Bis(2-ethylhexyl)phthalate	6	n/a	1.1	U													4.4	U	1	U
Butyl benzyl phthalate	n/a	n/a	1.1	U													4.4	U	1	U
Carbazole	n/a	n/a	0.49	U													2	U	0.48	U
Chrysene	n/a	n/a	0.49	U	0.49	U	0.49	U									2	U	0.48	U
Dibenz(a,h)anthracene	n/a	n/a	0.5	U	0.5	U	0.51	U									2.1	U	0.5	U
Dibenzofuran	n/a	n/a	0.49	U													2	U	0.48	U
Diethyl phthalate	n/a	n/a	1.1	U													4.4	U	1	U
Dimethyl phthalate	n/a	n/a	0.96	U													4	U	0.94	U
Di-n-butyl phthalate	n/a	n/a	0.84	U													3.5	U	0.84	J
Di-n-octyl phthalate	n/a	n/a	1.1	U													4.4	U	1	U
Fluoranthene	n/a	n/a	0.49	U	0.49	U	0.49	U									2	U	0.48	U
Fluorene	n/a	n/a	0.49	U	0.49	U	0.49	U									2	U	0.48	U
Hexachlorobenzene	1	1	0.54	U													2.2	U	0.53	U
Hexachlorobutadiene	n/a	3.3	0.97	U													4	U	0.95	U
Hexachlorocyclopentadiene	50	50	1.8	U													7.6	U	1.8	U
Hexachloroethane	n/a	38	0.97	U													4	U	0.95	U
Indeno(1,2,3-cd)pyrene	n/a	n/a	0.49	U	0.49	U	0.49	U									2	U	0.48	U
Isophorone	n/a	n/a	0.49	U													2	U	0.48	U
M,P-Cresol	n/a	n/a	1.1	U													4.4	U	7.1	
Naphthalene	30	150	0.78	U	0.78	U	0.78	U									**60**		27	
Nitrobenzene	n/a	2000	0.57	U													2.4	U	0.56	U
N-Nitrosodimethylamine	n/a	n/a	2.3	U													9.6	U	2.3	U
N-Nitroso-di-n-propylamine	n/a	n/a	0.49	U													2	U	0.48	U
N-Nitrosodiphenylamine	n/a	n/a	0.97	U													4	U	0.95	U

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05	
		Collection Date:	4/7/2011		7/11/2011		12/11/2012		3/7/2013		3/7/2013		6/26/2013		6/26/2013		8/28/2013		8/28/2013	
		SampleID:	MW27-05-040711		MW27-05-071111		SD27-MW05-11122012		MW27-05-030713		MW27-DUP01-030713		MW27-05-062613		MW27-DUP01-062613		MW27-05-082013		MW27-DUP01-082013	
		QCType:	N		N		N		N		FD		N		FD		N		FD	
SVOCs																				
Benzidine	n/a	n/a																		
Benzo(a)anthracene	n/a	n/a	0.5	U	0.48	U														
Benzo(a)pyrene	0.2	n/a	0.5	U	0.48	U														
Benzo(b)fluoranthene	n/a	n/a	0.5	U	0.48	U														
Benzo(ghi)perylene	n/a	n/a	0.5	U	0.48	U														
Benzo(k)fluoranthene	n/a	n/a	0.5	U	0.48	U														
Benzoic acid	n/a	n/a																		
Benzyl alcohol	n/a	n/a																		
Bis(2-chloroethoxy)methane	n/a	n/a																		
Bis(2-chloroethyl)ether	n/a	100																		
Bis(2-chloroisopropyl)ether	n/a	510																		
Bis(2-ethylhexyl)phthalate	6	n/a																		
Butyl benzyl phthalate	n/a	n/a																		
Carbazole	n/a	n/a																		
Chrysene	n/a	n/a	0.5	U	0.48	U														
Dibenz(a,h)anthracene	n/a	n/a	0.52	U	0.5	U														
Dibenzofuran	n/a	n/a																		
Diethyl phthalate	n/a	n/a																		
Dimethyl phthalate	n/a	n/a																		
Di-n-butyl phthalate	n/a	n/a																		
Di-n-octyl phthalate	n/a	n/a																		
Fluoranthene	n/a	n/a	0.5	U	0.48	U														
Fluorene	n/a	n/a	0.5	U	0.48	U														
Hexachlorobenzene	1	1																		
Hexachlorobutadiene	n/a	3.3																		
Hexachlorocyclopentadiene	50	50																		
Hexachloroethane	n/a	38																		
Indeno(1,2,3-cd)pyrene	n/a	n/a	0.5	U	0.48	U														
Isophorone	n/a	n/a																		
M,P-Cresol	n/a	n/a																		
Naphthalene	30	150	22.2		18.6															
Nitrobenzene	n/a	2000																		
N-Nitrosodimethylamine	n/a	n/a																		
N-Nitroso-di-n-propylamine	n/a	n/a																		
N-Nitrosodiphenylamine	n/a	n/a																		

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW02		SD27-MW02	
		Collection Date:	11/11/2010		1/25/2011		4/7/2011		7/11/2011		12/13/2012		3/6/2013		6/26/2013		8/28/2013		11/10/2010		11/10/2010	
		SampleID:	SD27-TTMW-01		MW27-01-012511		MW27-01-040711		MW27-01-071111		SD27-MW01-13122012		MW27-01-030613		MW27-01-062613		MW27-01-082013		SD27-TTMW-02		SD27-TTMW-02-FD	
		QCType:	N		N		N		N		N		N		N		N		N		FD	
SVOCs																						
Pentachlorophenol	1	n/a	5.1	U	5.3	U													21	U	21	U
Phenanthrene	n/a	n/a	0.48	U	0.49	U	0.49	U	0.48	U									1.9	U	1.9	U
Phenol	5	n/a	0.48	U	0.49	U													1.9	U	1.9	U
Pyrene	n/a	n/a	0.48	U	0.49	U	0.49	U	0.48	U									1.9	U	1.9	U
Pyridine	n/a	n/a	1.5	U	1.6	U													6.1	U	6.1	U
VOCs																						
1,1,1,2-Tetrachloroethane	n/a	33	0.2	U	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.4	UJ	0.4	UJ
1,1,1-Trichloroethane	60	3100	0.2	U	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.4	UJ	0.4	UJ
1,1,2,2-Tetrachloroethane	10	30	0.23	U	0.23	U	0.23	U	0.23	U	1	U	1	U	1	U	1	U	0.46	UJ	0.46	UJ
1,1,2-Trichloro-1,2,2-trifluoroethane	n/a	1500	0.47	U	0.47	U	0.47	U	0.47	U	1	U	1	U	1	U	1	U	0.94	UJ	0.94	UJ
1,1,2-Trichloroethane	5	41	0.22	U	0.22	U	0.22	U	0.22	U	1	U	1	U	1	U	1	U	0.44	UJ	0.44	UJ
1,1-Dichloroethane	25	2200	0.25	U	0.25	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U	0.5	UJ	0.5	UJ
1,1-Dichloroethene	5	190	0.23	U	0.23	U	0.23	U	0.23	U	1	U	1	U	1	U	1	U	0.46	UJ	0.46	UJ
1,1-Dichloropropene	n/a	n/a	0.28	U	0.28	U	0.28	U	0.28	U	1	U	1	U	1	U	1	U	0.56	UJ	0.56	UJ
1,2,3-Trichlorobenzene	n/a	n/a	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U	1	U	1	UJ	1	UJ
1,2,3-Trichloropropane	n/a	290	0.3	U	0.3	U	0.3	U	0.3	U	2	U	2	U	2	U	2	U	0.6	UJ	0.6	UJ
1,2,4-Trichlorobenzene	70	3400	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U	1	U	1	UJ	1	UJ
1,2,4-Trimethylbenzene	n/a	24	0.27	U	0.27	U	0.27	U	0.27	U	2	U	2	U	2	U	2	U	168	J	190	J
1,2-Dibromo-3-chloropropane	0.2	33	0.5	U	0.5	U	0.5	U	0.5	U	2	U	2	U	2	U	2	U	1	UJ	1	UJ
1,2-Dibromoethane	0.05	3.6	0.37	U	0.37	U	0.37	U	0.37	U	1	U	1	U	1	U	1	U	0.74	UJ	0.74	UJ
1,2-Dichlorobenzene	600	2600	0.25	U	0.25	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U	0.5	UJ	0.5	UJ
1,2-Dichloroethane	5	23	0.2	U	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.4	UJ	0.4	UJ
1,2-Dichloropropane	5	35	0.25	U	0.25	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U	0.5	UJ	0.5	UJ
1,3,5-Trimethylbenzene	n/a	25	0.21	U	0.21	U	0.21	U	0.21	U	2	U	2	U	2	U	2	U	50.6	J	56.7	J
1,3-Dichlorobenzene	n/a	830	0.2	U	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.4	UJ	0.4	UJ
1,3-Dichloropropane	n/a	n/a	0.2	U	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.4	UJ	0.4	UJ
1,4-Dichlorobenzene	75	8200	0.23	U	0.23	U	0.23	U	0.23	U	1	U	1	U	1	U	1	U	0.46	UJ	0.46	UJ
1-Chlorohexane	n/a	n/a	0.25	U	0.25	U	0.25	U	0.25	U	2	U	2	U	2	U	2	U	0.5	UJ	0.5	UJ
2,2-Dichloropropane	n/a	n/a	0.44	U	0.44	U	0.44	U	0.44	U	1	U	1	U	1	U	1	U	0.88	UJ	0.88	UJ
2-Butanone	n/a	440000	2	U	2	U	2	U	2	U	5	U	5	U	5	U	5	U	4	UJ	4	UJ
2-Chloroethyl vinyl ether	n/a	n/a	1.2	UJ	1.2	U	1.2	UJ	1.2	UJ	5	U	5	UJ	5	U	5	U	2.4	UJ	2.4	UJ
2-Chlorotoluene	n/a	n/a	0.22	U	0.22	U	0.22	U	0.22	U	1	U	1	U	1	U	1	U	0.44	UJ	0.44	UJ
2-Hexanone	n/a	n/a	4	U	4	U	4	U	4	U	10	U	10	U	10	U	10	U	8	UJ	8	UJ
4-Chlorotoluene	n/a	n/a	0.2	U	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.4	UJ	0.4	UJ
4-Methyl-2-pentanone	n/a	14000	2	U	2	U	2	U	2	U	5	U	5	U	5	U	5	U	4	UJ	4	UJ

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02	
		Collection Date:	1/25/2011		1/25/2011		4/7/2011		4/7/2011		7/11/2011		7/11/2011		12/12/2012		12/12/2012		3/6/2013		6/26/2013	
		SampleID:	MW27-02-012511		MW27-DUP01-012511		MW27-02-040711		MW27-DUP01-040711		MW27-02-071111		MW27-DUP01-071111		SD27-MW02-12122012		SD27-MW02-DUP 01		MW27-02-030613		MW27-02-062613	
		QCType:	N		FD		N		FD		N		FD		N		FD		N		N	
SVOCs																						
Pentachlorophenol	1	n/a	5.2	U	5.2	U																
Phenanthrene	n/a	n/a	0.48	U	0.48	U	0.48	U	0.48	U	0.49	U	0.49	U								
Phenol	5	n/a	0.48	U	0.48	U																
Pyrene	n/a	n/a	0.48	U	0.48	U	0.48	U	0.48	U	0.49	U	0.49	U								
Pyridine	n/a	n/a	1.5	U	1.5	U																
VOCs																						
1,1,1,2-Tetrachloroethane	n/a	33	0.4	U	0.4	U	0.4	U	0.4	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U
1,1,1-Trichloroethane	60	3100	0.4	U	0.4	U	0.4	U	0.4	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U
1,1,2,2-Tetrachloroethane	10	30	0.46	U	0.46	U	0.46	U	0.46	U	0.23	U	0.23	U	1	U	1	U	1	U	1	U
1,1,2-Trichloro-1,2,2-trifluoroethane	n/a	1500	0.94	U	0.94	U	0.94	U	0.94	U	0.47	U	0.47	U	1	U	1	U	1	U	1	U
1,1,2-Trichloroethane	5	41	0.44	U	0.44	U	0.44	U	0.44	U	0.22	U	0.22	U	1	U	1	U	1	U	1	U
1,1-Dichloroethane	25	2200	0.5	U	0.5	U	0.5	U	0.5	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U
1,1-Dichloroethene	5	190	0.46	U	0.46	U	0.46	U	0.46	U	0.23	U	0.23	U	1	U	1	U	1	U	1	U
1,1-Dichloropropene	n/a	n/a	0.56	U	0.56	U	0.56	U	0.56	U	0.28	U	0.28	U	1	U	1	U	1	U	1	U
1,2,3-Trichlorobenzene	n/a	n/a	1	U	1	U	1	U	1	U	0.5	U	0.5	U	1	U	1	U	1	U	1	U
1,2,3-Trichloropropane	n/a	290	0.6	U	0.6	U	0.6	U	0.6	U	0.3	U	0.3	U	2	U	2	U	2	U	2	U
1,2,4-Trichlorobenzene	70	3400	1	U	1	U	1	U	1	U	0.5	U	0.5	U	1	U	1	U	1	U	1	U
1,2,4-Trimethylbenzene	n/a	24	101		97		81.8		79.3		87.1		89.4		2	U	2	U	2	U	1.5	J
1,2-Dibromo-3-chloropropane	0.2	33	1	U	1	U	1	U	1	U	0.5	U	0.5	U	2	U	2	U	2	U	2	U
1,2-Dibromoethane	0.05	3.6	0.74	U	0.74	U	0.74	U	0.74	U	0.37	U	0.37	U	1	U	1	U	1	U	1	U
1,2-Dichlorobenzene	600	2600	0.5	U	0.5	U	0.5	U	0.5	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U
1,2-Dichloroethane	5	23	0.4	U	0.4	U	0.4	U	0.4	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U
1,2-Dichloropropane	5	35	0.5	U	0.5	U	0.5	U	0.5	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U
1,3,5-Trimethylbenzene	n/a	25	41		40.2		22.3		22.7		30.1		30.9		5.3		4.7		4.4		5	
1,3-Dichlorobenzene	n/a	830	0.4	U	0.4	U	0.4	U	0.4	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U
1,3-Dichloropropane	n/a	n/a	0.4	U	0.4	U	0.4	U	0.4	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U
1,4-Dichlorobenzene	75	8200	0.46	U	0.46	U	0.46	U	0.46	U	0.23	U	0.23	U	1	U	1	U	1	U	1	U
1-Chlorohexane	n/a	n/a	0.5	U	0.5	U	0.5	U	0.5	U	0.25	U	0.25	U	2	U	2	U	2	U	2	U
2,2-Dichloropropane	n/a	n/a	0.88	U	0.88	U	0.88	U	0.88	U	0.44	U	0.44	U	1	U	1	U	1	U	1	U
2-Butanone	n/a	440000	4	U	4	U	4	U	4	U	2	U	2	U	5	U	5	U	5	U	5	U
2-Chloroethyl vinyl ether	n/a	n/a	2.4	U	2.4	U	2.4	U	2.4	U	1.2	U	1.2	U	5	U	5	U	5	UJ	5	U
2-Chlorotoluene	n/a	n/a	0.44	U	0.44	U	0.44	U	0.44	U	0.22	U	0.22	U	1	U	1	U	1	U	1	U
2-Hexanone	n/a	n/a	8	U	8	U	8	U	8	U	4	U	4	U	10	U	10	U	10	U	10	U
4-Chlorotoluene	n/a	n/a	0.4	U	0.4	U	0.4	U	0.4	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U
4-Methyl-2-pentanone	n/a	14000	4	U	4	U	4	U	4	U	2	U	2	U	5	U	5	U	5	U	5	U

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW02		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW04	
		Collection Date:	8/28/2013		11/10/2010		1/25/2011		4/6/2011		7/12/2011		12/13/2012		3/7/2013		6/26/2013		8/28/2013		11/10/2010	
		SampleID:	MW27-02-082013		SD27-TTMW-03		MW27-03-012511		MW27-03-040611		MW27-03-071211		SD27-MW03-13122012		MW27-03-030713		MW27-03-062613		MW27-03-082013		SD27-TTMW-04	
		QCType:	N		N		N		N		N		N		N		N		N		N	
SVOCs																						
Pentachlorophenol	1	n/a			5.1	U	5.3	U													5.1	U
Phenanthrene	n/a	n/a			0.48	U	0.49	U	0.48	U	0.48	U									0.48	U
Phenol	5	n/a			0.48	U	0.49	U													0.48	U
Pyrene	n/a	n/a			0.48	U	0.49	U	0.48	U	0.48	U									0.48	U
Pyridine	n/a	n/a			1.5	U	1.6	U													1.5	U
VOCs																						
1,1,1,2-Tetrachloroethane	n/a	33	1	U	0.2	UJ	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.2	UJ
1,1,1-Trichloroethane	60	3100	1	U	0.2	UJ	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.2	UJ
1,1,2,2-Tetrachloroethane	10	30	1	U	0.23	UJ	0.23	U	0.23	U	0.23	U	1	U	1	U	1	U	1	U	0.23	UJ
1,1,2-Trichloro-1,2,2-trifluoroethane	n/a	1500	1	U	0.47	UJ	0.47	U	0.47	U	0.47	U	1	U	1	U	1	U	1	U	0.47	UJ
1,1,2-Trichloroethane	5	41	1	U	0.22	UJ	0.22	U	0.22	U	0.22	U	1	U	1	U	1	U	1	U	0.22	UJ
1,1-Dichloroethane	25	2200	1	U	0.25	UJ	0.25	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U	0.25	UJ
1,1-Dichloroethene	5	190	1	U	0.23	UJ	0.23	U	0.23	U	0.23	U	1	U	1	U	1	U	1	U	0.23	UJ
1,1-Dichloropropene	n/a	n/a	1	U	0.28	UJ	0.28	U	0.28	U	0.28	U	1	U	1	U	1	U	1	U	0.28	UJ
1,2,3-Trichlorobenzene	n/a	n/a	1	U	0.5	UJ	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U	1	U	0.5	UJ
1,2,3-Trichloropropane	n/a	290	2	U	0.3	UJ	0.3	U	0.3	U	0.3	U	2	U	2	U	2	U	2	U	0.3	UJ
1,2,4-Trichlorobenzene	70	3400	1	U	0.5	UJ	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U	1	U	0.5	UJ
1,2,4-Trimethylbenzene	n/a	24	1.5	J	2	J	0.27	U	0.27	U	0.27	U	2	U	2	U	2	U	2	U	4.2	J
1,2-Dibromo-3-chloropropane	0.2	33	2	U	0.5	UJ	0.5	U	0.5	U	0.5	U	2	U	2	U	2	U	2	U	0.5	UJ
1,2-Dibromoethane	0.05	3.6	1	U	0.37	UJ	0.37	U	0.37	U	0.37	U	1	U	1	U	1	U	1	U	0.37	UJ
1,2-Dichlorobenzene	600	2600	1	U	0.25	UJ	0.25	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U	0.25	UJ
1,2-Dichloroethane	5	23	1	U	0.2	UJ	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.2	UJ
1,2-Dichloropropane	5	35	1	U	0.25	UJ	0.25	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U	0.25	UJ
1,3,5-Trimethylbenzene	n/a	25	5.3		3.5	J	2.1		3.9		1.5	J	2	U	0.28	J	2	U	2	U	1.1	J
1,3-Dichlorobenzene	n/a	830	1	U	0.2	UJ	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.2	UJ
1,3-Dichloropropane	n/a	n/a	1	U	0.2	UJ	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.2	UJ
1,4-Dichlorobenzene	75	8200	1	U	0.23	UJ	0.23	U	0.23	U	0.23	U	1	U	1	U	1	U	1	U	0.23	UJ
1-Chlorohexane	n/a	n/a	2	U	0.25	UJ	0.25	U	0.25	U	0.25	U	2	U	2	U	2	U	2	U	0.25	UJ
2,2-Dichloropropane	n/a	n/a	1	U	0.44	UJ	0.44	U	0.44	U	0.44	U	1	U	1	U	1	U	1	U	0.44	UJ
2-Butanone	n/a	440000	5	U	2	UJ	2	U	2	U	2	U	5	U	5	U	5	U	5	U	2	UJ
2-Chloroethyl vinyl ether	n/a	n/a	5	U	1.2	UJ	1.2	U	1.2	U	1.2	U	5	U	5	UJ	5	U	5	U	1.2	UJ
2-Chlorotoluene	n/a	n/a	1	U	0.22	UJ	0.22	U	0.22	U	0.22	U	1	U	1	U	1	U	1	U	0.22	UJ
2-Hexanone	n/a	n/a	10	U	4	UJ	4	U	4	U	4	U	10	U	10	U	10	U	10	U	4	UJ
4-Chlorotoluene	n/a	n/a	1	U	0.2	UJ	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.2	UJ
4-Methyl-2-pentanone	n/a	14000	5	U	2	UJ	2	U	2	U	2	U	5	U	5	U	5	U	5	U	2	UJ

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW05		SD27-MW05	
		Collection Date:	1/25/2011		4/6/2011		7/11/2011		12/12/2012		3/7/2013		6/26/2013		8/28/2013		11/11/2010		1/25/2011	
		SampleID:	MW27-04-012511		MW27-04-040611		MW27-04-071111		SD27-MW04-12122012		MW27-04-030713		MW27-04-062613		MW27-04-082013		SD27-TTMW-05		MW27-05-012511	
		QCType:	N		N		N		N		N		N		N		N		N	
SVOCs																				
Pentachlorophenol	1	n/a	5.2	U													22	U	5.1	U
Phenanthrene	n/a	n/a	0.49	U	0.49	U	0.49	U									2	U	0.48	U
Phenol	5	n/a	0.49	U													2	U	**18.1**	
Pyrene	n/a	n/a	0.49	U	0.49	U	0.49	U									2	U	0.48	U
Pyridine	n/a	n/a	1.6	U													6.4	U	1.5	U
VOCs																				
1,1,1,2-Tetrachloroethane	n/a	33	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	2	UJ	2	U
1,1,1-Trichloroethane	60	3100	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	2	UJ	2	U
1,1,2,2-Tetrachloroethane	10	30	0.23	U	0.23	U	0.23	U	1	U	1	U	1	U	1	U	2.3	UJ	2.3	U
1,1,2-Trichloro-1,2,2-trifluoroethane	n/a	1500	0.47	U	0.47	U	0.47	U	1	U	1	U	1	U	1	U	4.7	UJ	4.7	U
1,1,2-Trichloroethane	5	41	0.22	U	0.22	U	0.22	U	1	U	1	U	1	U	1	U	2.2	UJ	2.2	U
1,1-Dichloroethane	25	2200	0.25	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U	2.5	UJ	2.5	U
1,1-Dichloroethene	5	190	0.23	U	0.23	U	0.23	U	1	U	1	U	1	U	1	U	2.3	UJ	2.3	U
1,1-Dichloropropene	n/a	n/a	0.28	U	0.28	U	0.28	U	1	U	1	U	1	U	1	U	2.8	UJ	2.8	U
1,2,3-Trichlorobenzene	n/a	n/a	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U	1	U	5	UJ	5	U
1,2,3-Trichloropropane	n/a	290	0.3	U	0.3	U	0.3	U	2	U	2	U	2	U	2	U	3	UJ	3	U
1,2,4-Trichlorobenzene	70	3400	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U	1	U	5	UJ	5	U
1,2,4-Trimethylbenzene	n/a	24	2.8		0.33	J	2.9		2	U	2	U	2	U	2	U	223	J	255	
1,2-Dibromo-3-chloropropane	0.2	33	0.5	U	0.5	U	0.5	U	2	U	2	U	2	U	2	U	5	UJ	5	U
1,2-Dibromoethane	0.05	3.6	0.37	U	0.37	U	0.37	U	1	U	1	U	1	U	1	U	3.7	UJ	3.7	U
1,2-Dichlorobenzene	600	2600	0.25	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U	2.5	UJ	2.5	U
1,2-Dichloroethane	5	23	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	2	UJ	2	U
1,2-Dichloropropane	5	35	0.25	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U	2.5	UJ	2.5	U
1,3,5-Trimethylbenzene	n/a	25	0.97	J	0.21	U	0.83	J	2	U	2	U	2	U	2	U	53.5	J	91.6	
1,3-Dichlorobenzene	n/a	830	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	2	UJ	2	U
1,3-Dichloropropane	n/a	n/a	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	2	UJ	2	U
1,4-Dichlorobenzene	75	8200	0.23	U	0.23	U	0.23	U	1	U	1	U	1	U	1	U	2.3	UJ	2.3	U
1-Chlorohexane	n/a	n/a	0.25	U	0.25	U	0.25	U	2	U	2	U	2	U	2	U	2.5	UJ	2.5	U
2,2-Dichloropropane	n/a	n/a	0.44	U	0.44	U	0.44	U	1	U	1	U	1	U	1	U	4.4	UJ	4.4	U
2-Butanone	n/a	440000	2	U	2	U	2	U	5	U	5	U	5	U	5	U	20	UJ	20	U
2-Chloroethyl vinyl ether	n/a	n/a	1.2	U	1.2	U	1.2	U	5	UJ	5	UJ	5	U	5	UJ	12	UJ	12	U
2-Chlorotoluene	n/a	n/a	0.22	U	0.22	U	0.22	U	1	U	1	U	1	U	1	U	2.2	UJ	2.2	U
2-Hexanone	n/a	n/a	4	U	4	U	4	U	10	U	10	U	10	U	10	U	40	UJ	40	U
4-Chlorotoluene	n/a	n/a	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	2	UJ	2	U
4-Methyl-2-pentanone	n/a	14000	2	U	2	U	2	U	5	U	5	U	5	U	5	U	20	UJ	20	U

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05	
		Collection Date:	4/7/2011		7/11/2011		12/11/2012		3/7/2013		3/7/2013		6/26/2013		6/26/2013		8/28/2013		8/28/2013	
		SampleID:	MW27-05-040711		MW27-05-071111		SD27-MW05-11122012		MW27-05-030713		MW27-DUP01-030713		MW27-05-062613		MW27-DUP01-062613		MW27-05-082013		MW27-DUP01-082013	
		QCType:	N		N		N		N		FD		N		FD		N		FD	
SVOCs																				
Pentachlorophenol	1	n/a																		
Phenanthrene	n/a	n/a	0.5	U	0.48	U														
Phenol	5	n/a																		
Pyrene	n/a	n/a	0.5	U	0.48	U														
Pyridine	n/a	n/a																		
VOCs																				
1,1,1,2-Tetrachloroethane	n/a	33	2	U	1	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
1,1,1-Trichloroethane	60	3100	2	U	1	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
1,1,2,2-Tetrachloroethane	10	30	2.3	U	1.2	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
1,1,2-Trichloro-1,2,2-trifluoroethane	n/a	1500	4.7	U	2.4	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
1,1,2-Trichloroethane	5	41	2.2	U	1.1	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
1,1-Dichloroethane	25	2200	2.5	U	1.3	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
1,1-Dichloroethene	5	190	2.3	U	1.2	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
1,1-Dichloropropene	n/a	n/a	2.8	U	1.4	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
1,2,3-Trichlorobenzene	n/a	n/a	5	U	2.5	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
1,2,3-Trichloropropane	n/a	290	3	U	1.5	U	2	U	10	U	4	U	10	U	50	U	10	U	10	U
1,2,4-Trichlorobenzene	70	3400	5	U	2.5	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
1,2,4-Trimethylbenzene	n/a	24	227		87.5		40.8		244		242		194	J	372	J	213		220	
1,2-Dibromo-3-chloropropane	0.2	33	5	U	2.5	U	2	U	10	U	4	U	10	U	50	U	10	U	10	U
1,2-Dibromoethane	0.05	3.6	3.7	U	1.9	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
1,2-Dichlorobenzene	600	2600	2.5	U	1.3	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
1,2-Dichloroethane	5	23	2	U	1	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
1,2-Dichloropropane	5	35	2.5	U	1.3	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
1,3,5-Trimethylbenzene	n/a	25	61.1		26.4		12.4		64.2		55.6		51.5	J	94.9	J	52.8		54.8	
1,3-Dichlorobenzene	n/a	830	2	U	1	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
1,3-Dichloropropane	n/a	n/a	2	U	1	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
1,4-Dichlorobenzene	75	8200	2.3	U	1.2	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
1-Chlorohexane	n/a	n/a	2.5	U	1.3	U	2	U	10	U	4	U	10	U	50	U	10	U	10	U
2,2-Dichloropropane	n/a	n/a	4.4	U	2.2	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
2-Butanone	n/a	440000	20	U	10	U	5	U	25	U	10	U	25	U	130	U	25	U	25	U
2-Chloroethyl vinyl ether	n/a	n/a	12	U	6	U	5	U	25	UJ	10	UJ	50	U	130	U	25	UJ	25	UJ
2-Chlorotoluene	n/a	n/a	2.2	U	1.1	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
2-Hexanone	n/a	n/a	40	U	20	U	10	U	50	U	20	U	50	U	250	U	50	U	50	U
4-Chlorotoluene	n/a	n/a	2	U	1	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
4-Methyl-2-pentanone	n/a	14000	20	U	10	U	5	U	25	U	10	U	25	U	130	U	25	U	25	U

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW02		SD27-MW02	
		Collection Date:	11/11/2010		1/25/2011		4/7/2011		7/11/2011		12/13/2012		3/6/2013		6/26/2013		8/28/2013		11/10/2010		11/10/2010	
		SampleID:	SD27-TTMW-01		MW27-01-012511		MW27-01-040711		MW27-01-071111		SD27-MW01-13122012		MW27-01-030613		MW27-01-062613		MW27-01-082013		SD27-TTMW-02		SD27-TTMW-02-FD	
		QCType:	N		N		N		N		N		N		N		N		N		FD	
VOCs																						
Acetone	n/a	220000	10	UJ	10	U	10	U	10	U	25	U	25	U	25	U	25	U	24.6	J	25.8	J
Acetonitrile	n/a	42000	5	U	5	U	5	U	5	U	20	U	20	U	20	U	20	U	10	UJ	10	UJ
Acrolein	n/a	4	5	U	5	U	5	U	5	U	20	U	20	U	20	U	20	U	10	UJ	10	UJ
Acrylonitrile	n/a	85	3	U	3	U	3	U	3	U	10	U	10	U	10	U	10	U	6	UJ	6	UJ
Allyl chloride (3-Chloropopene)	n/a	n/a	0.3	U	0.3	U	0.3	U	0.3	U	2	U	2	U	2	U	2	U	0.6	UJ	0.6	UJ
Benzene	5	14	0.2	U	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	**6.4**	**J**	**6.7**	**J**
Benzyl Chloride	n/a	30	0.5	U	0.5	U	0.5	U	0.5	U	2	U	2	U	2	U	2	U	1	UJ	1	UJ
Bromobenzene	n/a	n/a	0.25	U	0.25	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U	0.5	UJ	0.5	UJ
Bromochloromethane	n/a	n/a	0.22	U	0.22	U	0.22	U	0.22	U	1	U	1	U	1	U	1	U	0.44	UJ	0.44	UJ
Bromodichloromethane	81	21	0.2	U	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.4	UJ	0.4	UJ
Bromoform	81	0.083	0.2	U	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.4	UJ	0.4	UJ
Bromomethane	n/a	20	0.5	U	0.5	U	0.5	U	0.5	U	2	U	2	U	2	U	2	U	1	UJ	1	UJ
Carbon disulfide	n/a	560	0.5	U	0.5	U	0.5	U	0.5	U	2	U	2	U	2	U	2	U	1	UJ	1	UJ
Carbon tetrachloride	5	5	0.25	U	0.25	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U	0.5	UJ	0.5	UJ
Chlorobenzene	100	390	0.2	U	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.4	UJ	0.4	UJ
Chloroethane	n/a	28000	0.5	U	0.5	U	0.5	U	0.5	U	2	U	2	U	2	U	2	U	1	UJ	1	UJ
Chloroform	81	80	0.22	U	0.22	U	0.22	U	0.22	U	1	U	1	U	1	U	1	U	3.1	J	3.4	J
Chloromethane	n/a	67	0.5	U	0.5	U	0.5	U	0.5	U	2	U	2	U	2	UJ	2	U	1	UJ	1	UJ
Cis-1,2-dichloroethene	70	210	0.26	U	0.26	U	0.26	U	0.26	U	1	U	1	U	1	U	1	U	0.52	UJ	0.52	UJ
Cis-1,3-dichloropropene	n/a	n/a	0.2	U	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.4	UJ	0.4	UJ
cis-1,4-Dichloro-2-butene	n/a	n/a	1	U	1	U	1	U	1	UJ	10	U	10	U	10	UJ	10	U	2	UJ	2	UJ
Cymene	n/a	n/a	0.21	U	0.21	U	0.21	U	0.21	U	1	U	1	U	1	U	1	U	30.7	J	32.5	J
Dibromochloromethane	82	32	0.2	U	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.4	UJ	0.4	UJ
Dibromomethane	n/a	990	0.25	U	0.25	U	0.25	U	0.25	U	2	U	2	U	2	U	2	U	0.5	UJ	0.5	UJ
Dichlorodifluoromethane	n/a	14	0.5	U	0.5	U	0.5	U	0.5	U	2	U	2	U	2	UJ	2	U	1	UJ	1	UJ
Ether, tert-butyl methyl	n/a	120000	0.34	U	0.34	U	0.34	U	0.34	U	1	U	1	U	1	U	1	U	0.68	UJ	0.68	UJ
Ethyl Methacrylate	n/a	9100	1	U	1	U	1	U	1	U	5	U	5	U	5	U	5	U	2	UJ	2	UJ
Ethylbenzene	700	700	0.2	U	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	168	J	140	J
Hexachlorobutadiene	n/a	3.3	0.8	U	0.8	U	0.8	U	0.8	U	2	U	2	U	2	U	2	U	1.6	UJ	1.6	UJ
Hexane	n/a	2.9	0.59	U	0.59	U	0.59	U	0.59	U	2	U	2	U	2	U	2	U	1.2	UJ	1.2	UJ
Iodomethane	n/a	n/a	0.2	U	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.4	UJ	0.4	UJ
Isopropylbenzene	n/a	8.4	0.2	U	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	48.7	J	53.2	J
m,p-Xylene	620	22000	0.32	U	0.32	U	0.32	U	0.32	U	2	U	2	U	2	U	2	U	147	J	182	J
Methacrylonitrile	n/a	69	5	U	5	U	5	U	5	U	20	U	20	U	20	U	20	U	10	UJ	10	UJ
Methyl methacrylate	n/a	51000	1	U	1	U	1	U	1	U	5	U	5	U	5	U	5	U	2	UJ	2	UJ

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02	
		Collection Date:	1/25/2011		1/25/2011		4/7/2011		4/7/2011		7/11/2011		7/11/2011		12/12/2012		12/12/2012		3/6/2013		6/26/2013	
		SampleID:	MW27-02-012511		MW27-DUP01-012511		MW27-02-040711		MW27-DUP01-040711		MW27-02-071111		MW27-DUP01-071111		SD27-MW02-12122012		SD27-MW02-DUP 01		MW27-02-030613		MW27-02-062613	
		QCType:	N		FD		N		FD		N		FD		N		FD		N		N	
VOCs																						
Acetone	n/a	220000	20	U	20	U	20	U	20	U	10	U	10	U	25	U	25	U	25	U	25	U
Acetonitrile	n/a	42000	10	U	10	U	10	U	10	U	5	U	5	U	20	U	20	U	20	U	20	U
Acrolein	n/a	4	10	U	10	U	10	U	10	U	5	U	5	U	20	U	20	U	20	U	20	U
Acrylonitrile	n/a	85	6	U	6	U	6	U	6	U	3	U	3	U	10	U	10	U	10	U	10	U
Allyl chloride (3-Chloropopene)	n/a	n/a	0.6	U	0.6	U	0.6	U	0.6	U	0.3	U	0.3	U	2	U	2	U	2	U	2	U
Benzene	5	14	**9.6**		**8.9**		**7.1**		**7.5**		**9.9**		**11.1**		3.8		3.6		4.5		**5.9**	
Benzyl Chloride	n/a	30	1	U	1	U	1	U	1	U	0.5	U	0.5	U	2	U	2	U	2	U	2	U
Bromobenzene	n/a	n/a	0.5	U	0.5	U	0.5	U	0.5	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U
Bromochloromethane	n/a	n/a	0.44	U	0.44	U	0.44	U	0.44	U	0.22	U	0.22	U	1	U	1	U	1	U	1	U
Bromodichloromethane	81	21	0.4	U	0.4	U	0.4	U	0.4	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U
Bromoform	81	0.083	0.4	U	0.4	U	0.4	U	0.4	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U
Bromomethane	n/a	20	1	U	1	U	1	U	1	U	0.5	U	0.5	U	2	U	2	U	2	U	2	U
Carbon disulfide	n/a	560	1	U	1	U	1	U	1	U	0.5	U	0.5	U	2	U	2	U	2	U	2	U
Carbon tetrachloride	5	5	0.5	U	0.5	U	0.5	U	0.5	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U
Chlorobenzene	100	390	0.4	U	0.4	U	0.4	U	0.4	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U
Chloroethane	n/a	28000	1	U	1	U	1	U	1	U	0.5	U	0.5	U	2	U	2	U	2	U	2	U
Chloroform	81	80	0.44	U	0.44	U	0.44	U	0.44	U	0.56	J	0.49	J	1	U	1	U	0.41	J	0.47	J
Chloromethane	n/a	67	1	U	1	U	1	U	1	U	0.5	U	0.5	U	2	U	2	U	2	U	2	UJ
Cis-1,2-dichloroethene	70	210	0.52	U	0.52	U	0.52	U	0.52	U	0.26	U	0.26	U	1	U	1	U	1	U	1	U
Cis-1,3-dichloropropene	n/a	n/a	0.4	U	0.4	U	0.4	U	0.4	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U
cis-1,4-Dichloro-2-butene	n/a	n/a	2	U	2	U	2	U	2	U	1	UJ	1	UJ	10	U	10	U	10	U	10	UJ
Cymene	n/a	n/a	15.8		15.2		8.6		8.7		7.7	J	7.9	J	0.4	J	0.38	J	0.3	J	1	
Dibromochloromethane	82	32	0.4	U	0.4	U	0.4	U	0.4	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U
Dibromomethane	n/a	990	0.5	U	0.5	U	0.5	U	0.5	U	0.25	U	0.25	U	2	U	2	U	2	U	2	U
Dichlorodifluoromethane	n/a	14	1	U	1	U	1	U	1	U	0.5	U	0.5	U	2	U	2	U	2	U	2	UJ
Ether, tert-butyl methyl	n/a	120000	0.68	U	0.68	U	0.68	U	0.68	U	0.34	U	0.34	U	1	U	1	U	1	U	1	U
Ethyl Methacrylate	n/a	9100	2	U	2	U	2	U	2	U	1	U	1	U	5	U	5	U	5	U	5	U
Ethylbenzene	700	700	122		130		117		114		92.9		91.9		0.4	J	1	U	1	U	1.5	
Hexachlorobutadiene	n/a	3.3	1.6	U	1.6	U	1.6	U	1.6	U	0.8	U	0.8	U	2	U	2	U	2	U	2	U
Hexane	n/a	2.9	1.2	U	1.2	U	1.2	U	1.2	U	0.59	U	0.59	U	2	U	2	U	2	U	2	U
Iodomethane	n/a	n/a	0.4	U	0.4	U	0.4	U	0.4	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U
Isopropylbenzene	n/a	8.4	31.8		31.1		22.8		22.9		29	J	30	J	12.1		10.8		9		12.2	
m,p-Xylene	620	22000	23.8		21		1.1	J	0.97	J	5.2		4.5		2	U	2	U	2	U	0.38	J
Methacrylonitrile	n/a	69	10	U	10	U	10	U	10	U	5	U	5	U	20	U	20	U	20	U	20	U
Methyl methacrylate	n/a	51000	2	U	2	U	2	U	2	U	1.5	J	1.7	J	5	U	5	U	5	U	5	U

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW02		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW04	
		Collection Date:	8/28/2013		11/10/2010		1/25/2011		4/6/2011		7/12/2011		12/13/2012		3/7/2013		6/26/2013		8/28/2013		11/10/2010	
		SampleID:	MW27-02-082013		SD27-TTMW-03		MW27-03-012511		MW27-03-040611		MW27-03-071211		SD27-MW03-13122012		MW27-03-030713		MW27-03-062613		MW27-03-082013		SD27-TTMW-04	
		QCType:	N		N		N		N		N		N		N		N		N		N	
VOCs																						
Acetone	n/a	220000	25	U	43.6	J	10	U	10	U	10	U	25	U	25	U	25	U	25	U	10	UJ
Acetonitrile	n/a	42000	20	U	5	UJ	5	U	5	U	5	U	20	U	20	U	20	U	20	U	5	UJ
Acrolein	n/a	4	20	U	5	UJ	5	U	5	U	5	U	20	U	20	U	20	U	20	U	5	UJ
Acrylonitrile	n/a	85	10	U	3	UJ	3	U	3	U	3	U	10	U	10	U	10	U	10	U	3	UJ
Allyl chloride (3-Chloropopene)	n/a	n/a	2	U	0.3	UJ	0.3	U	0.3	U	0.3	U	2	U	2	U	2	U	2	U	0.3	UJ
Benzene	5	14	3.7		0.46	J	0.88	J	1.4		0.2	U	1	U	1	U	1	U	1	U	0.34	J
Benzyl Chloride	n/a	30	2	U	0.5	UJ	0.5	U	0.5	U	0.5	U	2	U	2	U	2	U	2	U	0.5	UJ
Bromobenzene	n/a	n/a	1	U	0.25	UJ	0.25	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U	0.25	UJ
Bromochloromethane	n/a	n/a	1	U	0.22	UJ	0.22	U	0.22	U	0.22	U	1	U	1	U	1	U	1	U	0.22	UJ
Bromodichloromethane	81	21	1	U	0.2	UJ	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.2	UJ
Bromoform	81	0.083	1	U	0.2	UJ	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.2	UJ
Bromomethane	n/a	20	2	U	0.5	UJ	0.5	U	0.5	U	0.5	U	2	U	2	U	2	U	2	U	0.5	UJ
Carbon disulfide	n/a	560	2	U	0.5	UJ	0.5	U	0.5	U	0.5	U	2	U	2	U	2	U	2	U	0.5	UJ
Carbon tetrachloride	5	5	1	U	0.25	UJ	0.25	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U	0.25	UJ
Chlorobenzene	100	390	1	U	0.2	UJ	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.2	UJ
Chloroethane	n/a	28000	2	U	0.5	UJ	0.5	U	0.5	U	0.5	U	2	U	2	U	2	U	2	U	0.5	UJ
Chloroform	81	80	0.45	J	0.22	UJ	0.22	U	0.22	U	0.22	U	1	U	1	U	1	U	1	U	0.22	UJ
Chloromethane	n/a	67	2	U	0.5	UJ	0.5	U	0.5	U	0.5	U	2	U	2	U	2	UJ	2	U	0.5	UJ
Cis-1,2-dichloroethene	70	210	1	U	0.26	UJ	0.26	U	0.26	U	0.26	U	1	U	1	U	1	U	1	U	0.26	UJ
Cis-1,3-dichloropropene	n/a	n/a	1	U	0.2	UJ	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.2	UJ
cis-1,4-Dichloro-2-butene	n/a	n/a	10	U	1	UJ	1	U	1	U	1	UJ	10	U	10	U	10	UJ	10	U	1	UJ
Cymene	n/a	n/a	1.1		0.79	J	0.21	U	0.21	U	0.21	U	1	U	1	U	1	U	1	U	0.6	J
Dibromochloromethane	82	32	1	U	0.2	UJ	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.2	UJ
Dibromomethane	n/a	990	2	U	0.25	UJ	0.25	U	0.25	U	0.25	U	2	U	2	U	2	U	2	U	0.25	UJ
Dichlorodifluoromethane	n/a	14	2	U	0.5	UJ	0.5	U	0.5	U	0.5	U	2	U	2	U	2	UJ	2	U	0.5	UJ
Ether, tert-butyl methyl	n/a	120000	1	U	0.34	UJ	0.34	U	0.34	U	0.34	U	1	U	1	U	1	U	1	U	0.34	UJ
Ethyl Methacrylate	n/a	9100	5	U	1	UJ	1	U	1	U	1	U	5	U	5	U	5	U	5	U	1	UJ
Ethylbenzene	700	700	4.6		0.2	UJ	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	2.7	J
Hexachlorobutadiene	n/a	3.3	2	U	0.8	UJ	0.8	U	0.8	U	0.8	U	2	U	2	U	2	U	2	U	0.8	UJ
Hexane	n/a	2.9	2	U	0.59	UJ	0.59	U	0.59	U	0.59	U	2	U	2	U	2	U	2	U	0.59	UJ
Iodomethane	n/a	n/a	1	U	0.2	UJ	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.2	UJ
Isopropylbenzene	n/a	8.4	10.6		2	J	5.8		5.1		0.69	J	0.28	J	0.33	J	1	U	0.28	J	15.1	J
m,p-Xylene	620	22000	1.2	J	0.32	UJ	0.32	U	0.32	U	0.32	U	2	U	2	U	2	U	2	U	0.32	UJ
Methacrylonitrile	n/a	69	20	U	5	UJ	5	U	5	U	5	U	20	U	20	U	20	U	20	U	5	UJ
Methyl methacrylate	n/a	51000	5	U	1	UJ	1	U	1	U	1	U	5	U	5	U	5	U	5	U	1	UJ

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW05		SD27-MW05	
		Collection Date:	1/25/2011		4/6/2011		7/11/2011		12/12/2012		3/7/2013		6/26/2013		8/28/2013		11/11/2010		1/25/2011	
		SampleID:	MW27-04-012511		MW27-04-040611		MW27-04-071111		SD27-MW04-12122012		MW27-04-030713		MW27-04-062613		MW27-04-082013		SD27-TTMW-05		MW27-05-012511	
		QCType:	N		N		N		N		N		N		N		N		N	
VOCs																				
Acetone	n/a	220000	10	U	10	U	10	U	25	U	25	U	25	U	25	U	100	UJ	100	U
Acetonitrile	n/a	42000	5	U	5	U	5	U	20	U	20	U	20	U	20	U	50	UJ	50	U
Acrolein	n/a	4	5	U	5	U	5	U	20	UJ	20	U	20	U	20	U	50	UJ	50	U
Acrylonitrile	n/a	85	3	U	3	U	3	U	10	U	10	U	10	U	10	U	30	UJ	30	U
Allyl chloride (3-Chloropopene)	n/a	n/a	0.3	U	0.3	U	0.3	U	2	U	2	U	2	U	2	U	3	UJ	3	U
Benzene	5	14	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	**371**	**J**	**776**	
Benzyl Chloride	n/a	30	0.5	U	0.5	U	0.5	U	2	U	2	U	2	U	2	U	5	UJ	5	U
Bromobenzene	n/a	n/a	0.25	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U	2.5	UJ	2.5	U
Bromochloromethane	n/a	n/a	0.22	U	0.22	U	0.22	U	1	U	1	U	1	U	1	U	2.2	UJ	2.2	U
Bromodichloromethane	81	21	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	2	UJ	2	U
Bromoform	81	0.083	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	2	UJ	2	U
Bromomethane	n/a	20	0.5	U	0.5	U	0.5	U	2	U	2	U	2	U	2	U	5	UJ	5	U
Carbon disulfide	n/a	560	0.5	U	0.5	U	0.5	U	2	U	2	U	2	U	2	U	5	UJ	5	U
Carbon tetrachloride	5	5	0.25	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U	2.5	UJ	2.5	U
Chlorobenzene	100	390	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	2	UJ	2	U
Chloroethane	n/a	28000	0.5	U	0.5	U	0.5	U	2	U	2	U	2	U	2	U	5	UJ	5	U
Chloroform	81	80	0.22	U	0.22	U	0.22	U	1	U	1	U	1	U	1	U	2.2	UJ	2.2	U
Chloromethane	n/a	67	0.5	U	0.5	U	0.5	U	2	U	2	U	2	UJ	2	U	5	UJ	5	U
Cis-1,2-dichloroethene	70	210	0.26	U	0.26	U	0.26	U	1	U	1	U	1	U	1	U	2.6	UJ	2.6	U
Cis-1,3-dichloropropene	n/a	n/a	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	2	UJ	2	U
cis-1,4-Dichloro-2-butene	n/a	n/a	1	U	1	U	1	UJ	10	U	10	U	10	UJ	10	UJ	10	UJ	10	U
Cymene	n/a	n/a	0.3	J	0.21	U	0.29	J	1	U	1	U	1	U	1	U	6.4	J	8.4	J
Dibromochloromethane	82	32	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	2	UJ	2	U
Dibromomethane	n/a	990	0.25	U	0.25	U	0.25	U	2	U	2	U	2	U	2	U	2.5	UJ	2.5	U
Dichlorodifluoromethane	n/a	14	0.5	U	0.5	U	0.5	U	2	U	2	U	2	UJ	2	U	5	UJ	5	U
Ether, tert-butyl methyl	n/a	120000	0.34	U	0.34	U	0.34	U	1	U	1	U	1	U	1	U	3.4	UJ	3.4	U
Ethyl Methacrylate	n/a	9100	1	U	1	U	1	U	5	U	5	U	5	U	5	U	10	UJ	10	U
Ethylbenzene	700	700	1.5		0.2	U	2.5		1.6		1	U	0.39	J	1	U	504	J	41	
Hexachlorobutadiene	n/a	3.3	0.8	U	0.8	U	0.8	U	2	U	2	U	2	U	2	U	8	UJ	8	U
Hexane	n/a	2.9	0.59	U	0.59	U	0.59	U	2	U	2	U	2	U	2	U	5.9	UJ	5.9	U
Iodomethane	n/a	n/a	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	2	UJ	2	U
Isopropylbenzene	n/a	8.4	4.1		0.5	J	11.5	J	11.2		3.6		4		1.1		51.8	J	9.1	J
m,p-Xylene	620	22000	0.32	U	0.32	U	0.32	U	2	U	2	U	2	U	2	U	145	J	221	
Methacrylonitrile	n/a	69	5	U	5	U	5	U	20	U	20	U	20	U	20	U	50	UJ	50	U
Methyl methacrylate	n/a	51000	1	U	1	U	1	J	5	U	5	U	5	U	5	U	10	UJ	10	U

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05	
		Collection Date:	4/7/2011		7/11/2011		12/11/2012		3/7/2013		3/7/2013		6/26/2013		6/26/2013		8/28/2013		8/28/2013	
		SampleID:	MW27-05-040711		MW27-05-071111		SD27-MW05-11122012		MW27-05-030713		MW27-DUP01-030713		MW27-05-062613		MW27-DUP01-062613		MW27-05-082013		MW27-DUP01-082013	
		QCType:	N		N		N		N		FD		N		FD		N		FD	
VOCs																				
Acetone	n/a	220000	100	U	50	U	25	U	130	U	50	U	130	U	630	U	130	U	130	U
Acetonitrile	n/a	42000	50	U	25	U	20	U	100	U	40	U	100	U	500	U	100	U	100	U
Acrolein	n/a	4	50	U	25	U	20	U	100	U	40	U	100	U	500	U	100	U	100	U
Acrylonitrile	n/a	85	30	U	15	U	10	U	50	U	20	U	50	U	250	U	50	U	50	U
Allyl chloride (3-Chloropopene)	n/a	n/a	3	U	1.5	U	2	U	10	U	4	U	10	U	50	U	10	U	10	U
Benzene	5	14	**550**		**217**		**152**		**426**		**516**		**537**	**J**	**736**	**J**	**461**		**443**	
Benzyl Chloride	n/a	30	5	U	2.5	U	2	U	10	U	4	U	10	U	50	U	10	U	10	U
Bromobenzene	n/a	n/a	2.5	U	1.3	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
Bromochloromethane	n/a	n/a	2.2	U	1.1	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
Bromodichloromethane	81	21	2	U	1	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
Bromoform	81	0.083	2	U	1	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
Bromomethane	n/a	20	5	U	2.5	U	2	U	10	U	4	U	10	U	50	U	10	U	10	U
Carbon disulfide	n/a	560	5	U	2.5	U	1.4	J	10	U	1.3	J	10	U	50	U	2.9	J	2.5	J
Carbon tetrachloride	5	5	2.5	U	1.3	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
Chlorobenzene	100	390	2	U	1	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
Chloroethane	n/a	28000	5	U	2.5	U	2	U	10	U	4	U	10	U	50	U	10	U	10	U
Chloroform	81	80	2.2	U	1.1	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
Chloromethane	n/a	67	5	U	2.5	U	2	U	10	U	4	U	10	UJ	50	UJ	10	U	10	U
Cis-1,2-dichloroethene	70	210	2.6	U	1.3	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
Cis-1,3-dichloropropene	n/a	n/a	2	U	1	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
cis-1,4-Dichloro-2-butene	n/a	n/a	10	U	5	UJ	10	U	50	U	20	U	100	UJ	250	UJ	50	U	50	U
Cymene	n/a	n/a	6.6	J	3.8	J	1.4		5.8		5.5		5.3	J	9	J	5.3		5.2	
Dibromochloromethane	82	32	2	U	1	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
Dibromomethane	n/a	990	2.5	U	1.3	U	2	U	10	U	4	U	10	U	50	U	10	U	10	U
Dichlorodifluoromethane	n/a	14	5	U	2.5	U	2	U	10	U	4	U	10	UJ	50	UJ	10	U	10	U
Ether, tert-butyl methyl	n/a	120000	3.4	U	1.7	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
Ethyl Methacrylate	n/a	9100	10	U	5	U	5	U	25	U	10	U	25	U	130	U	25	U	25	U
Ethylbenzene	700	700	15.1		107		105		480		568		656	J	**895**	**J**	499		469	
Hexachlorobutadiene	n/a	3.3	8	U	4	U	2	U	10	U	4	U	10	U	50	U	10	U	10	U
Hexane	n/a	2.9	5.9	U	3	U	2	U	10	U	4	U	10	U	50	U	10	U	10	U
Iodomethane	n/a	n/a	2	U	1	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
Isopropylbenzene	n/a	8.4	2	U	15.9	J	10.7		49.5		47.2		46.5	J	76.5	J	49.7		50.5	
m,p-Xylene	620	22000	94.2		7.2	J	6.7		47.1		42.1		69.8	J	100	J	54		56.5	
Methacrylonitrile	n/a	69	50	U	25	U	20	U	100	U	40	U	100	U	500	U	100	U	100	U
Methyl methacrylate	n/a	51000	10	U	5	U	5	U	25	U	10	U	25	U	130	U	25	U	25	U

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW01		SD27-MW02		SD27-MW02	
		Collection Date:	11/11/2010		1/25/2011		4/7/2011		7/11/2011		12/13/2012		3/6/2013		6/26/2013		8/28/2013		11/10/2010		11/10/2010	
		SampleID:	SD27-TTMW-01		MW27-01-012511		MW27-01-040711		MW27-01-071111		SD27-MW01-13122012		MW27-01-030613		MW27-01-062613		MW27-01-082013		SD27-TTMW-02		SD27-TTMW-02-FD	
		QCType:	N		N		N		N		N		N		N		N		N		FD	
VOCs																						
Methylene chloride	5	580	2	U	2	U	2	U	2	U	4	J	5	U	5	U	5	U	4	UJ	4	UJ
Naphthalene	30	150	1	U	1	U	1	U	1	U	5	U	5	U	5	U	5	U	5.4	J	6.6	J
n-Butylbenzene	n/a	260	0.26	UJ	0.26	U	0.26	U	0.26	U	1	U	1	U	1	U	1	U	3.9	J	4.2	J
n-Propylbenzene	n/a	320	0.2	U	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	57	J	64.2	J
o-Xylene	620	33000	0.2	U	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	74.5	J	90.4	J
Pentachloroethane	n/a	n/a	2	U	2	U	2	U	2	U	10	U	10	U	10	U	10	UJ	4	UJ	4	UJ
Propane Nitrile (Propionitrile)	n/a	n/a	5	U	5	U	5	U	5	U	20	U	20	U	20	U	20	U	10	UJ	10	UJ
sec-Butylbenzene	n/a	250	0.22	U	0.22	U	0.22	U	0.22	U	1	U	1	U	1	U	1	U	20	J	21	J
Styrene	100	8900	0.2	U	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.4	UJ	0.4	UJ
tert-Butylbenzene	n/a	290	0.27	U	0.27	U	0.27	U	0.27	U	1	U	1	U	1	U	1	U	0.54	UJ	0.54	UJ
Tetrachloroethene	5	11	0.25	U	0.25	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U	0.5	UJ	0.5	UJ
Toluene	750	1500	0.2	U	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	4.5	J	5.8	J
Trans-1,2-dichloroethene	100	180	0.35	U	0.35	U	0.35	U	0.35	U	1	U	1	U	1	U	1	U	0.7	UJ	0.7	UJ
Trans-1,3-dichloropropene	n/a	n/a	0.2	U	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.4	UJ	0.4	UJ
trans-1,4-Dichloro-2-butene	n/a	n/a	2	U	2	U	2	U	2	U	10	U	10	U	10	UJ	10	U	4	UJ	4	UJ
Trichloroethene	5	5	0.26	U	0.26	U	0.26	U	0.26	U	1	U	1	U	1	U	1	U	0.52	UJ	0.52	UJ
Trichlorofluoromethane	n/a	180	0.5	UJ	0.5	U	0.5	U	0.5	U	2	U	2	U	2	UJ	2	U	1	UJ	1	UJ
Vinyl acetate	n/a	9600	2	U	2	U	2	U	2	U	10	U	10	UJ	10	U	10	U	4	UJ	4	UJ
Vinyl chloride	1	2.5	0.22	U	0.22	U	0.22	U	0.22	U	1	U	1	U	1	U	1	U	0.44	UJ	0.44	UJ

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02		SD27-MW02	
		Collection Date:	1/25/2011		1/25/2011		4/7/2011		4/7/2011		7/11/2011		7/11/2011		12/12/2012		12/12/2012		3/6/2013		6/26/2013	
		SampleID:	MW27-02-012511		MW27-DUP01-012511		MW27-02-040711		MW27-DUP01-040711		MW27-02-071111		MW27-DUP01-071111		SD27-MW02-12122012		SD27-MW02-DUP 01		MW27-02-030613		MW27-02-062613	
		QCType:	N		FD		N		FD		N		FD		N		FD		N		N	
VOCs																						
Methylene chloride	5	580	4	U	4	U	**7.1**	**J**	**7.2**	**J**	2	U	2	U	5	U	5	U	5	U	5	U
Naphthalene	30	150	2.3	J	2.6	J	2	U	2	U	1	U	1	U	5	U	5	U	5	U	5	U
n-Butylbenzene	n/a	260	2.4		2.1		1.7	J	1.7	J	1.6		1.5		0.25	J	1	U	1	U	1	U
n-Propylbenzene	n/a	320	36.4		35.2		23.6		24.1		32.1		33.9		15.5		14.1		12.7		16	
o-Xylene	620	33000	7.3		6.6		3.5		3.5		13.6		12		1	U	1	U	1	U	1	U
Pentachloroethane	n/a	n/a	4	U	4	U	4	U	4	U	2	U	2	U	10	U	10	U	10	U	10	U
Propane Nitrile (Propionitrile)	n/a	n/a	10	U	10	U	10	U	10	U	5	U	5	U	20	U	20	U	20	U	20	U
sec-Butylbenzene	n/a	250	11.8		11		7.4		7.5		10.6		11.3		5.2		4.5		3.9		6.2	
Styrene	100	8900	0.4	U	0.4	U	0.4	U	0.4	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U
tert-Butylbenzene	n/a	290	0.86	J	0.98	J	0.54	U	0.55	J	0.87	J	0.84	J	0.51	J	1	U	0.3	J	0.59	J
Tetrachloroethene	5	11	0.5	U	0.5	U	0.5	U	0.5	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U
Toluene	750	1500	0.4	U	0.4	U	0.4	U	0.4	U	0.61	J	0.54	J	1	U	1	U	1	U	0.49	U
Trans-1,2-dichloroethene	100	180	0.7	U	0.7	U	0.7	U	0.7	U	0.35	U	0.35	U	1	U	1	U	1	U	1	U
Trans-1,3-dichloropropene	n/a	n/a	0.4	U	0.4	U	0.4	U	0.4	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U
trans-1,4-Dichloro-2-butene	n/a	n/a	4	U	4	U	4	U	4	U	2	U	2	U	10	U	10	U	10	U	10	UJ
Trichloroethene	5	5	0.52	U	0.52	U	0.52	U	0.52	U	1.9		1.8		1	U	1	U	1	U	1	U
Trichlorofluoromethane	n/a	180	1	U	1	U	1	U	1	U	0.5	U	0.5	U	2	U	2	U	2	U	2	UJ
Vinyl acetate	n/a	9600	4	U	4	U	4	U	4	U	2	U	2	U	10	U	10	U	10	UJ	10	U
Vinyl chloride	1	2.5	0.44	U	0.44	U	0.44	U	0.44	U	0.22	U	0.22	U	1	U	1	U	1	U	1	U

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW02		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW03		SD27-MW04	
		Collection Date:	8/28/2013		11/10/2010		1/25/2011		4/6/2011		7/12/2011		12/13/2012		3/7/2013		6/26/2013		8/28/2013		11/10/2010	
		SampleID:	MW27-02-082013		SD27-TTMW-03		MW27-03-012511		MW27-03-040611		MW27-03-071211		SD27-MW03-13122012		MW27-03-030713		MW27-03-062613		MW27-03-082013		SD27-TTMW-04	
		QCType:	N		N		N		N		N		N		N		N		N		N	
VOCs																						
Methylene chloride	5	580	5	U	2	UJ	2	U	2	U	2	U	5	U	5	U	5	U	5	U	2	UJ
Naphthalene	30	150	5	U	1	UJ	1	U	1	U	1	U	5	U	5	U	5	U	5	U	1	UJ
n-Butylbenzene	n/a	260	0.24	J	0.26	UJ	0.26	U	0.26	U	0.26	U	1	U	1	U	1	U	1	U	0.26	UJ
n-Propylbenzene	n/a	320	14.6		1.1	J	2.8		3.6		0.2	U	1	U	0.27	J	1	U	1	U	11.5	J
o-Xylene	620	33000	0.53	J	0.2	UJ	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.27	J
Pentachloroethane	n/a	n/a	10	UJ	2	UJ	2	U	2	U	2	U	10	U	10	U	10	U	10	UJ	2	UJ
Propane Nitrile (Propionitrile)	n/a	n/a	20	U	5	UJ	5	U	5	U	5	U	20	U	20	U	20	U	20	U	5	UJ
sec-Butylbenzene	n/a	250	4.9		2.1	J	2.5		1.8		0.31	J	1	U	1	U	1	U	1	U	6.8	J
Styrene	100	8900	1	U	0.2	UJ	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.2	UJ
tert-Butylbenzene	n/a	290	0.42	J	0.39	J	0.44	J	0.27	U	0.27	U	1	U	1	U	1	U	1	U	0.27	UJ
Tetrachloroethene	5	11	1	U	0.25	UJ	0.25	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U	0.25	UJ
Toluene	750	1500	1	U	0.2	UJ	0.2	U	0.2	U	0.2	U	1	U	1	U	0.32	U	1	U	0.2	UJ
Trans-1,2-dichloroethene	100	180	1	U	0.35	UJ	0.35	U	0.35	U	0.35	U	1	U	1	U	1	U	1	U	0.35	UJ
Trans-1,3-dichloropropene	n/a	n/a	1	U	0.2	UJ	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	0.2	UJ
trans-1,4-Dichloro-2-butene	n/a	n/a	10	U	2	UJ	2	U	2	U	2	U	10	U	10	U	10	UJ	10	U	2	UJ
Trichloroethene	5	5	1	U	0.26	UJ	0.26	U	0.26	U	0.26	U	1	U	1	U	1	U	1	U	0.26	UJ
Trichlorofluoromethane	n/a	180	2	U	0.5	UJ	0.5	U	0.5	U	0.5	U	2	U	2	U	2	UJ	2	U	0.5	UJ
Vinyl acetate	n/a	9600	10	U	2	UJ	2	U	2	U	2	U	10	U	10	UJ	10	U	10	U	2	UJ
Vinyl chloride	1	2.5	1	U	0.22	UJ	0.22	U	0.22	U	0.22	U	1	U	1	U	1	U	1	U	0.22	UJ

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW04		SD27-MW05		SD27-MW05	
		Collection Date:	1/25/2011		4/6/2011		7/11/2011		12/12/2012		3/7/2013		6/26/2013		8/28/2013		11/11/2010		1/25/2011	
		SampleID:	MW27-04-012511		MW27-04-040611		MW27-04-071111		SD27-MW04-12122012		MW27-04-030713		MW27-04-062613		MW27-04-082013		SD27-TTMW-05		MW27-05-012511	
		QCType:	N		N		N		N		N		N		N		N		N	
VOCs																				
Methylene chloride	5	580	2	U	2	U	2	U	5	U	5	U	5	U	5	U	20	UJ	20	U
Naphthalene	30	150	1	U	1	U	1	U	5	U	5	U	5	U	5	U	**57.4**	**J**	**48.5**	**J**
n-Butylbenzene	n/a	260	0.26	U	0.26	U	0.26	U	1	U	1	U	1	U	1	U	2.6	UJ	2.6	U
n-Propylbenzene	n/a	320	2.3		0.25	J	6.9		12.1		3.7		3.9		0.72	J	50.1	J	4.3	J
o-Xylene	620	33000	0.2	U	0.2	U	0.2	U	0.22	J	1	U	1	U	1	U	332	J	376	
Pentachloroethane	n/a	n/a	2	U	2	U	2	U	10	U	10	U	10	U	10	UJ	20	UJ	20	U
Propane Nitrile (Propionitrile)	n/a	n/a	5	U	5	U	5	U	20	U	20	U	20	U	20	U	50	UJ	50	U
sec-Butylbenzene	n/a	250	2.5		0.35	J	5.2		7.9		3.1		3		0.76	J	7.8	J	3	J
Styrene	100	8900	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	2	UJ	2	U
tert-Butylbenzene	n/a	290	0.28	J	0.27	U	0.44	J	0.63	J	0.41	J	0.32	J	1	U	2.7	UJ	2.7	U
Tetrachloroethene	5	11	0.25	U	0.25	U	0.25	U	1	U	1	U	1	U	1	U	2.5	UJ	2.5	U
Toluene	750	1500	0.2	U	0.2	U	0.2	U	1	U	1	U	0.36	U	1	U	279	J	104	
Trans-1,2-dichloroethene	100	180	0.35	U	0.35	U	0.35	U	1	U	1	U	1	U	1	U	3.5	UJ	3.5	U
Trans-1,3-dichloropropene	n/a	n/a	0.2	U	0.2	U	0.2	U	1	U	1	U	1	U	1	U	2	UJ	2	U
trans-1,4-Dichloro-2-butene	n/a	n/a	2	U	2	U	2	U	10	U	10	U	10	UJ	10	UJ	20	UJ	20	U
Trichloroethene	5	5	0.26	U	0.26	U	0.26	U	1	U	1	U	1	U	1	U	2.6	UJ	2.6	U
Trichlorofluoromethane	n/a	180	0.5	U	0.5	U	0.5	U	2	U	2	U	2	UJ	2	U	5	UJ	5	U
Vinyl acetate	n/a	9600	2	U	2	U	2	U	10	U	10	UJ	10	U	10	U	20	UJ	20	U
Vinyl chloride	1	2.5	0.22	U	0.22	U	0.22	U	1	U	1	U	1	U	1	U	2.2	UJ	2.2	U

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

		Well:	SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05		SD27-MW05	
		Collection Date:	4/7/2011		7/11/2011		12/11/2012		3/7/2013		3/7/2013		6/26/2013		6/26/2013		8/28/2013		8/28/2013	
		SampleID:	MW27-05-040711		MW27-05-071111		SD27-MW05-11122012		MW27-05-030713		MW27-DUP01-030713		MW27-05-062613		MW27-DUP01-062613		MW27-05-082013		MW27-DUP01-082013	
		QCType:	N		N		N		N		FD		N		FD		N		FD	
VOCs																				
Methylene chloride	5	580	**27.6**	**J**	**11.7**	**J**	5	U	**61.3**	**J**	**12.2**	**J**	25	U	130	U	25	U	25	U
Naphthalene	30	150	**34.3**	**J**	19.1	J	5.8		21.9	J	25.6		17.9	J	**38**	**J**	9.8	J	11	J
n-Butylbenzene	n/a	260	2.6	U	1.3	U	1	U	1	J	0.74	J	5	U	25	U	5	U	5	U
n-Propylbenzene	n/a	320	2	U	10.8		9.2		52.4		49.3		45	J	90.7	J	52.8		54.3	
o-Xylene	620	33000	329		103		47.4		220		258		323		366		249		258	
Pentachloroethane	n/a	n/a	20	U	10	U	10	U	50	U	20	U	50	U	250	U	50	UJ	50	UJ
Propane Nitrile (Propionitrile)	n/a	n/a	50	U	25	U	20	U	100	U	40	U	100	U	500	U	100	U	100	U
sec-Butylbenzene	n/a	250	2.2	U	4.4	J	2.4		9.4		8.2		11.5	J	13.6	J	8.1		8.4	
Styrene	100	8900	2	U	1	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
tert-Butylbenzene	n/a	290	2.7	U	1.4	U	1	U	5	U	0.95	J	5	U	25	U	5	U	5	U
Tetrachloroethene	5	11	2.5	U	1.3	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
Toluene	750	1500	104		33.9		28.1		102		98.8		160	J	292	J	189		190	
Trans-1,2-dichloroethene	100	180	3.5	U	1.8	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
Trans-1,3-dichloropropene	n/a	n/a	2	U	1	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
trans-1,4-Dichloro-2-butene	n/a	n/a	20	U	10	U	10	U	50	U	20	U	100	UJ	250	UJ	50	U	50	U
Trichloroethene	5	5	2.6	U	1.3	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U
Trichlorofluoromethane	n/a	180	5	U	2.5	U	2	U	10	U	4	U	10	UJ	50	UJ	10	U	10	U
Vinyl acetate	n/a	9600	20	U	10	U	10	U	50	UJ	20	UJ	50	U	250	U	50	U	50	U
Vinyl chloride	1	2.5	2.2	U	1.1	U	1	U	5	U	2	U	5	U	25	U	5	U	5	U

Table 4-4. Analytical Results for Groundwater at SD-27 (2010 - 2013)
Holloman AFB, Alamogorodo, NM

Notes:

All units are microgram per liter, except: TDS is milligrams per liter, and Radiochemistry is picocuries per liter.

(1) Screening Value (SV) is the lower of the New Mexico Environment Department, Water Quality Control Commission (NMWQCC), STANDARDS FOR GROUND WATER (NMAC 20.6.2.3103) and EPA MCLs (April 2012). For inorganics, if HAFB Background (NMED, 2012a) is greater than NMWQCC and EPA criteria, then the background value is used as the SV. For TPH, the NMED GW-1 standard for Kerosene and Jet Fuel are used (NMED, 2012b).

(2) Vapor Intrusion (VI) SV for volatile chemicals is the $1e^{-5}$ risk level value listed in EPA OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance), Table 2b, November 2002. For TPH, the NMED GW-2 standard for kerosene and jet fuel is used (NMED, 2012b).

Bold red indicates > SV

Highlighted indicates > VI SV

Not analyzed.

n/a = not applicable

U = Analyte not detected above reporting detection limit shown.

J = Estimated quantity.

B = (Inorganic parameters) Analyte detected between method detection limit and reporting limit; quantity estimated.

R = Rejected

NM - normal sample (parent), FD - field duplicate sample.

Reference: (TetraTech, 2013)

Table 4-5
Areas and Volumes of Contaminated Media for Pathways of Concern
SD-27, Holloman Air Force Base

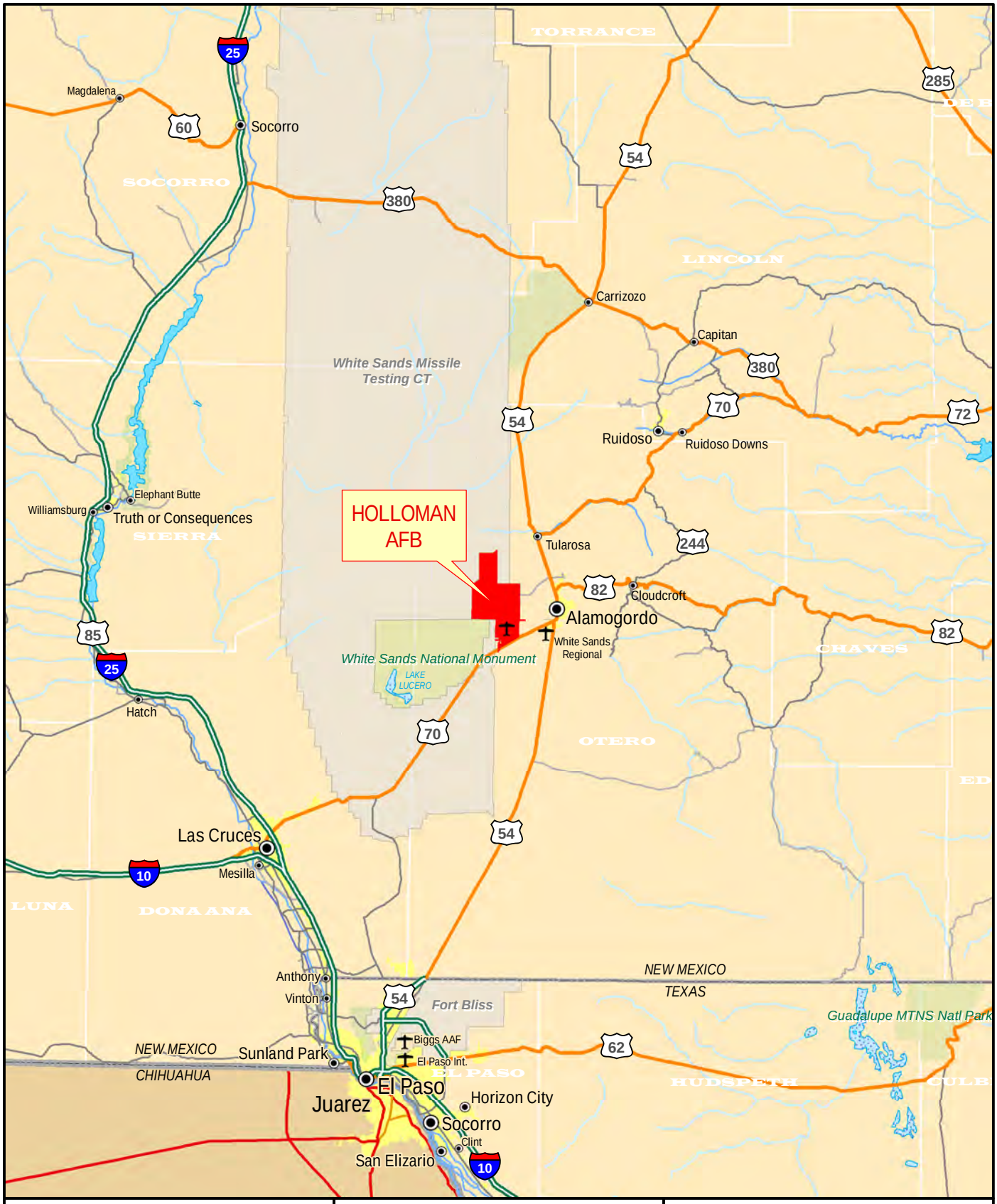
Media and Pathway of Concern	Sample Locations	Chemicals of Concern[a]	Area, Approximate (feet^2)[b]	Thickness, Range / Average (feet)	Contaminated Media Volume[c] (yd^3)
Soil, direct contact	DPTs: 02, 08, 09, 10, 11, 12, 18, 19, 22, 28; Soil Borings: SB27-02, SB27-03; 94-27-01R.	1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; acrolien; benzene; ethylbenzene; xylenes; TPH(C10-C28), arsenic, chromium	6,000	4 - 14 / 11	2,800
Soil, vapor intrusion	DPTs: 01, 02, 03, 04, 05, 08, 09, 10, 11, 12, 17, 18, 19, 20, 22, 24, 25, 28, 29, 31; Soil Borings: SB27-02, SB27-03; 94-27-01R.	1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; acrolein, benzene, carbon disulfide, chloroform, ethylbenzene, hexane, isopropylbenzene, m,p-xylene, n-butylbenzene, n-propylbenzene, naphthalene, o-xylene, toluene, and trichloroethane.	18,300	4 - 14 / 6	4,500
Groundwater, vapor intrusion	Wells: MW-02, -04, -05; Samples: GW27-02, GW27-03.	1,2-dichloroethane; 1,2,4-TMB; 1,3,5-TMB; benzene; ethylbenzene; isopropylbenzene; n-propylbenzene; toluene, and TCE	18,300	4 - 14 / 7	5,050
Estimated Totals, All Media			**18,300**	**4 - 14**	**5,050**

[a] Chemicals of concern exceed SSLs for soil and SLs for groundwater.

[b] Soil vapor intrusion contamination area overlaps and exceeds area of direct contact contamination by approximately 9,300 feet^2. Groundwater contamination area overlies and exceeds soil contamination area by approximately 3,000 feet^2.

[c] Includes 15 percent expansion; does not include clean overburden. Reference: (TetraTech, 2012)

FIGURES



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Accelerated Corrective Measures Work Plan Addendum
Revised: 01/18/2012
Map Source: Holloman AFB
NAD83, State Plane - New Mexico Central, FIPS 3002, US Feet

TETRA TECH
OAK RIDGE, TN

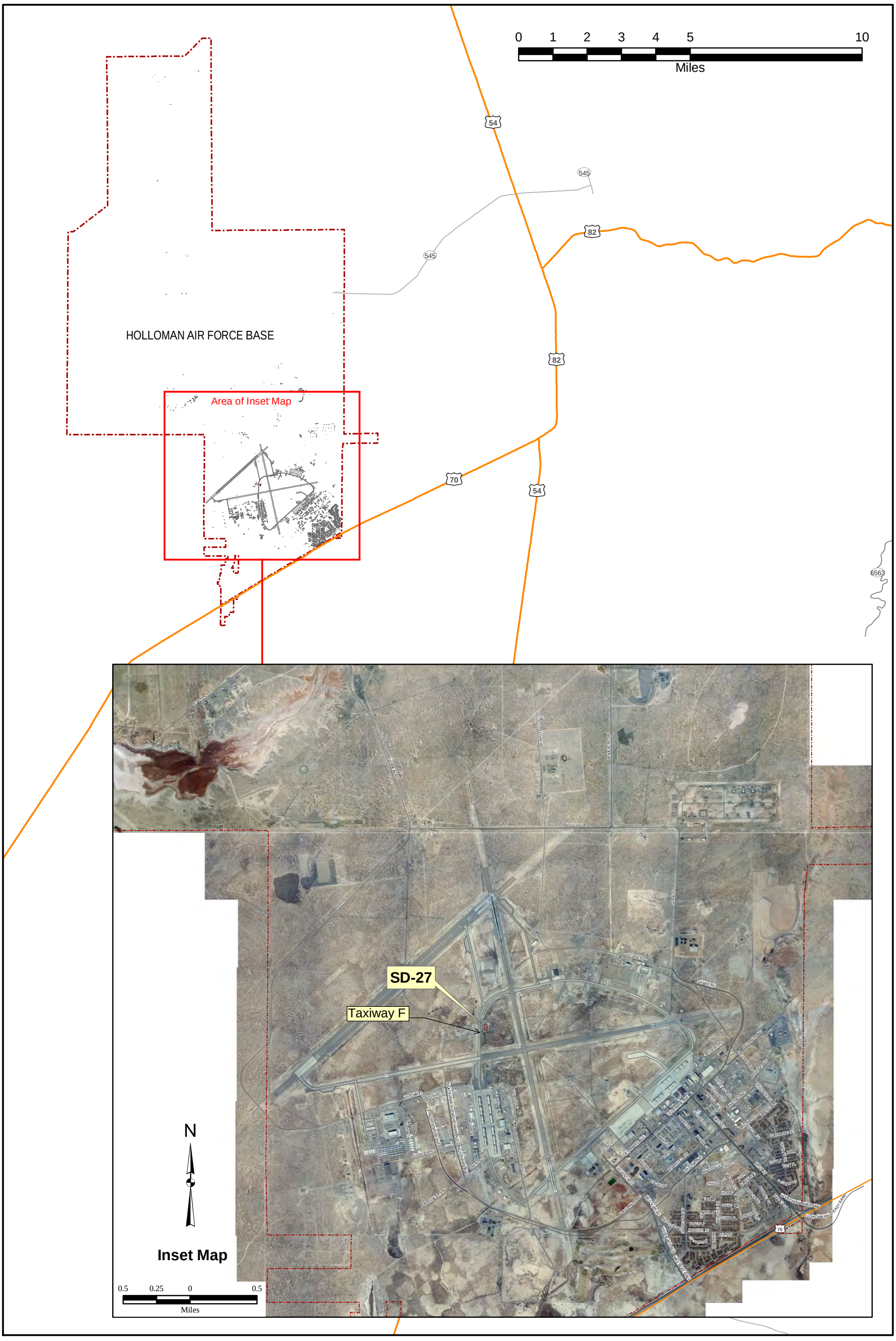
N

0 10 20 40
Miles

FIGURE 1-1

HOLLOMAN AIR FORCE BASE
INSTALLATION LOCATION
ALAMOGORDO, NEW MEXICO

Reference: (TetraTech, 2012)



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Accelerated Corrective Measures Work Plan Addendum
Revised: 01/18/2012
Map Source: Holloman AFB
NAD83, State Plane - New Mexico Central, FIPS 3002, US Feet

TETRA TECH
OAK RIDGE, TN

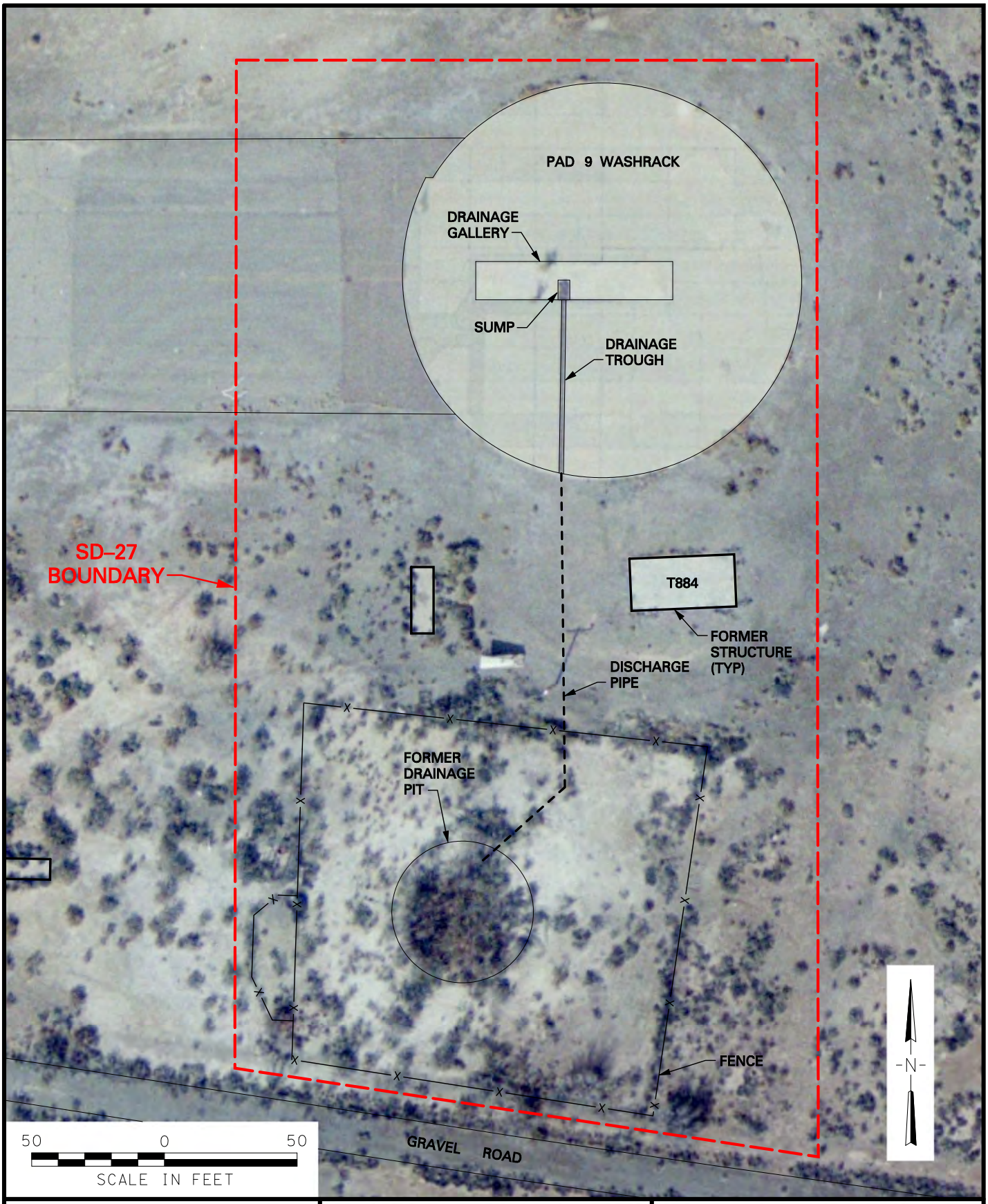
LEGEND

- HIGHWAY
- AIRFIELD
- BASE BOUNDARY
- SD-27 SITE

FIGURE 1-2

SD-27 LOCATION
AT HOLLOMAN AIR FORCE BASE

Reference: (TetraTech, 2012)



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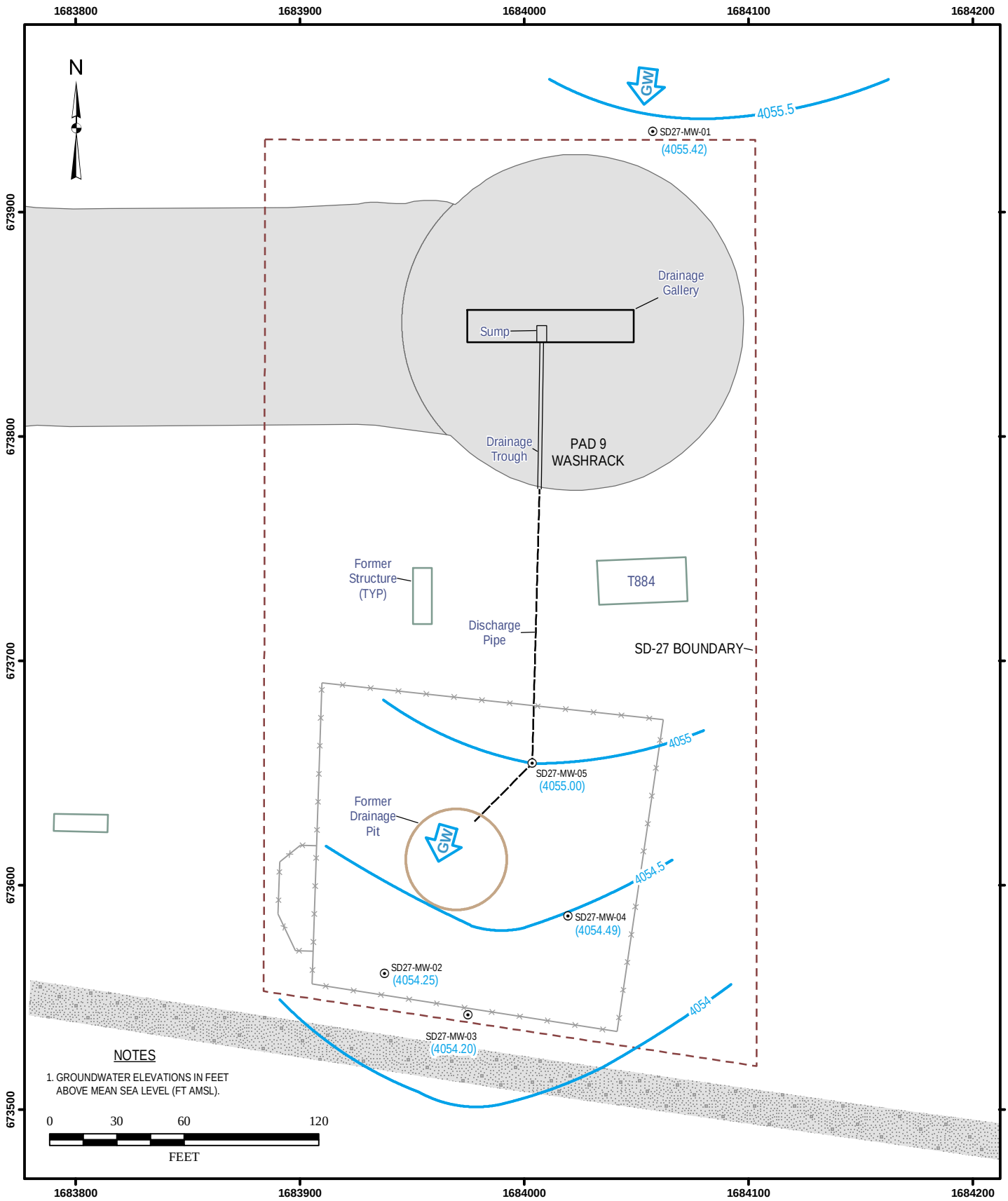
DATE: 1-19-2012
SOURCE: Holloman Air Force Base

ACCELERATED CORRECTIVE MEASURES WORK PLAN ADDENDUM
HOLLOMAN AIR FORCE BASE
ALAMOGORDO, NEW MEXICO

TETRA TECH

FIGURE 1-3
SD-27 SITE FEATURES

Reference: (TetraTech, 2012)



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Accelerated Corrective Measures Work Plan Addendum
Revised: 01/18/2012
Map Source: Holloman AFB
NAD83, State Plane - New Mexico Central, FIPS 3002, US Feet

TETRA TECH
OAK RIDGE, TN

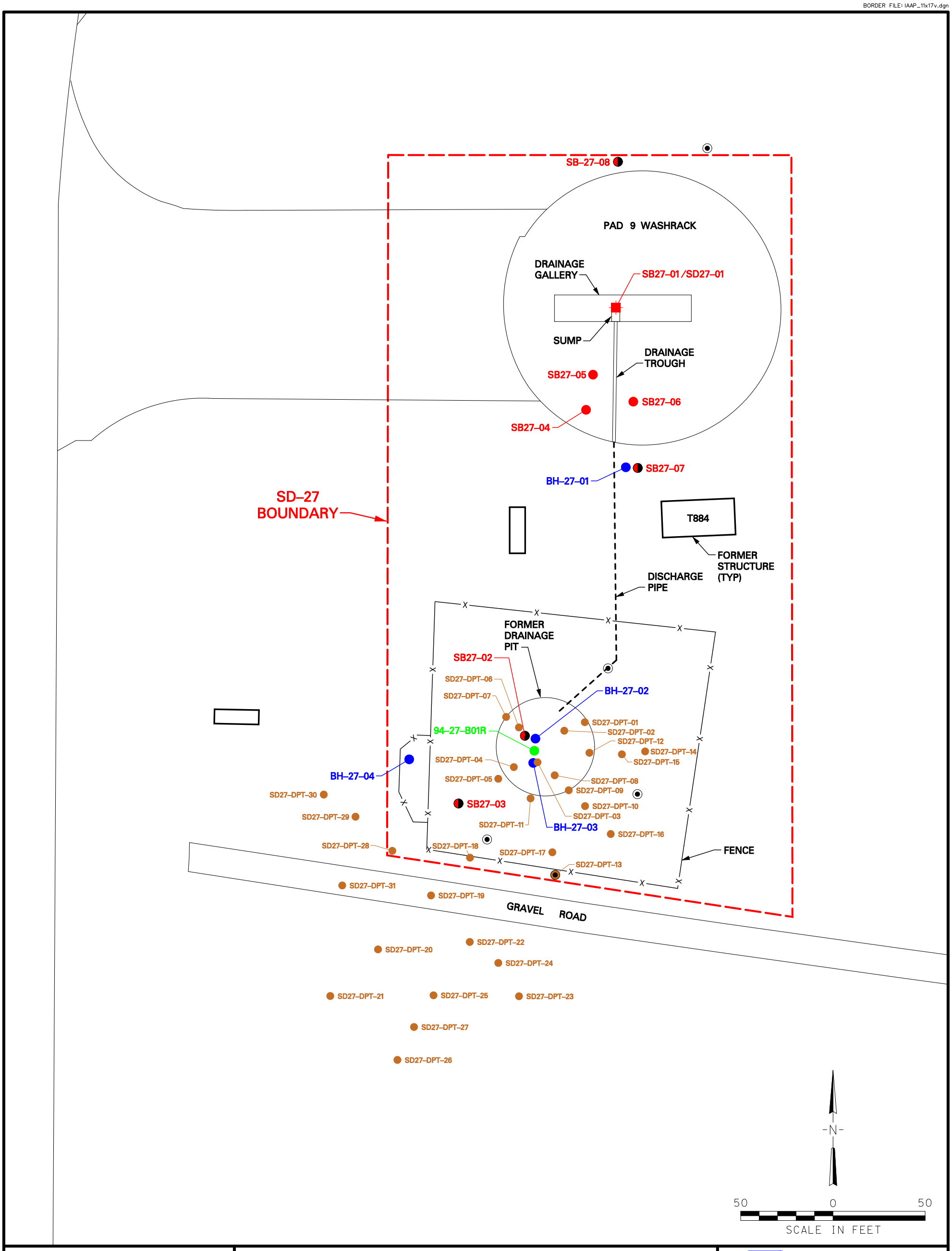
LEGEND

- MONITORING WELL
- GROUNDWATER CONTOUR
- CHAIN-LINK FENCE
- AIRFIELD SURFACE
- ROAD/PARKING (Gravel)

FIGURE 2-1
GROUNDWATER POTENTIOMETRIC SURFACE AT SD-27 (JANUARY, 2011)

Reference: (TetraTech, 2012)

BORDER FILE: IAAP_11x17v.dgn



CAD FILENAME: N:\Projects\Holloman_GIS_CADD\CAD\sites\SD-27\HSD27-018.dgn
DATE: 1-19-2012
SOURCE: Holloman Air Force Base

ALL COORDINATES ARE ON THE NEW MEXICO STATE PLANE, CENTRAL ZONE IN FEET BASED ON NAD83 ADJUSTMENT OF 1996. THE VERTICAL CONTROL REFERENCE DATUM IS NAVD88.

ACCELERATED CORRECTIVE MEASURES WORK PLAN ADDENDUM
HOLLOMAN AIR FORCE BASE
ALAMOGORDO, NEW MEXICO

LEGEND

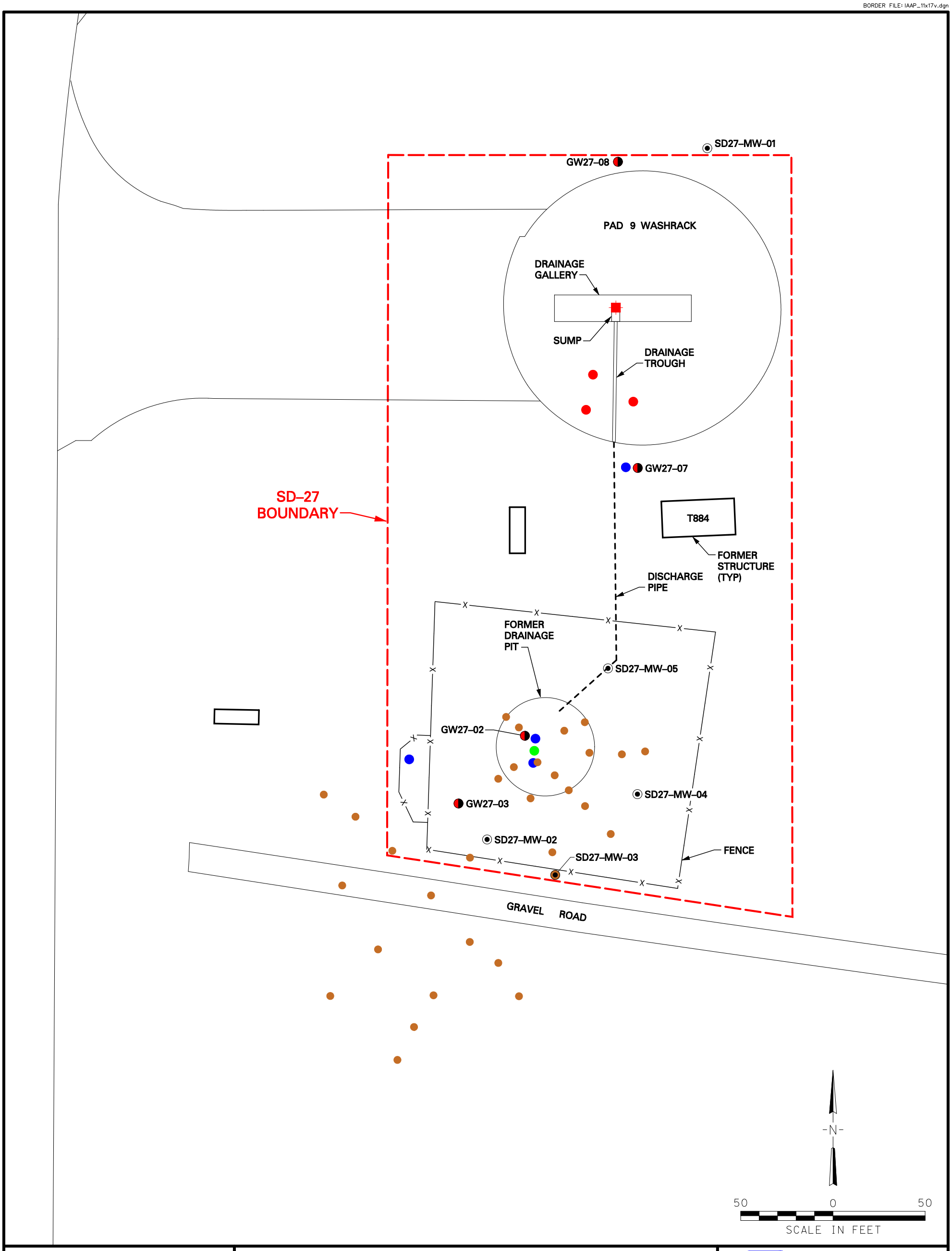
- PA/SI SOIL BORING (1993)
- PHASE II RI SOIL BORING (1994)
- SUPPLEMENTAL RFI SOIL BORING (2006)
- SUPPLEMENTAL RFI SOIL BORING WITH TEMPORARY GROUNDWATER SAMPLING POINT (2006)
- SUPPLEMENTAL RFI SEDIMENT/ SOIL BORING (2006)
- ACM DPT SOIL BORING (NOVEMBER 2010/MARCH 2011)
- ACM MONITORING WELL (NOVEMBER 2010)
- ACM DPT SOIL BORING/MONITORING WELL

TETRA TECH

FIGURE 3-1
SAMPLE LOCATIONS AT SD-27

Reference: (TetraTech, 2012)

BORDER FILE: IAAP_11x17v.dgn



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DATE: 1-19-2012
SOURCE: Holloman Air Force Base

ALL COORDINATES ARE ON THE NEW MEXICO STATE PLANE , CENTRAL ZONE IN FEET BASED ON NAD83 ADJUSTMENT OF 1996. THE VERTICAL CONTROL REFERENCE DATUM IS NAVD88.

ACCELERATED CORRECTIVE MEASURES WORK PLAN ADDENDUM
HOLLOMAN AIR FORCE BASE
ALAMOGORDO, NEW MEXICO

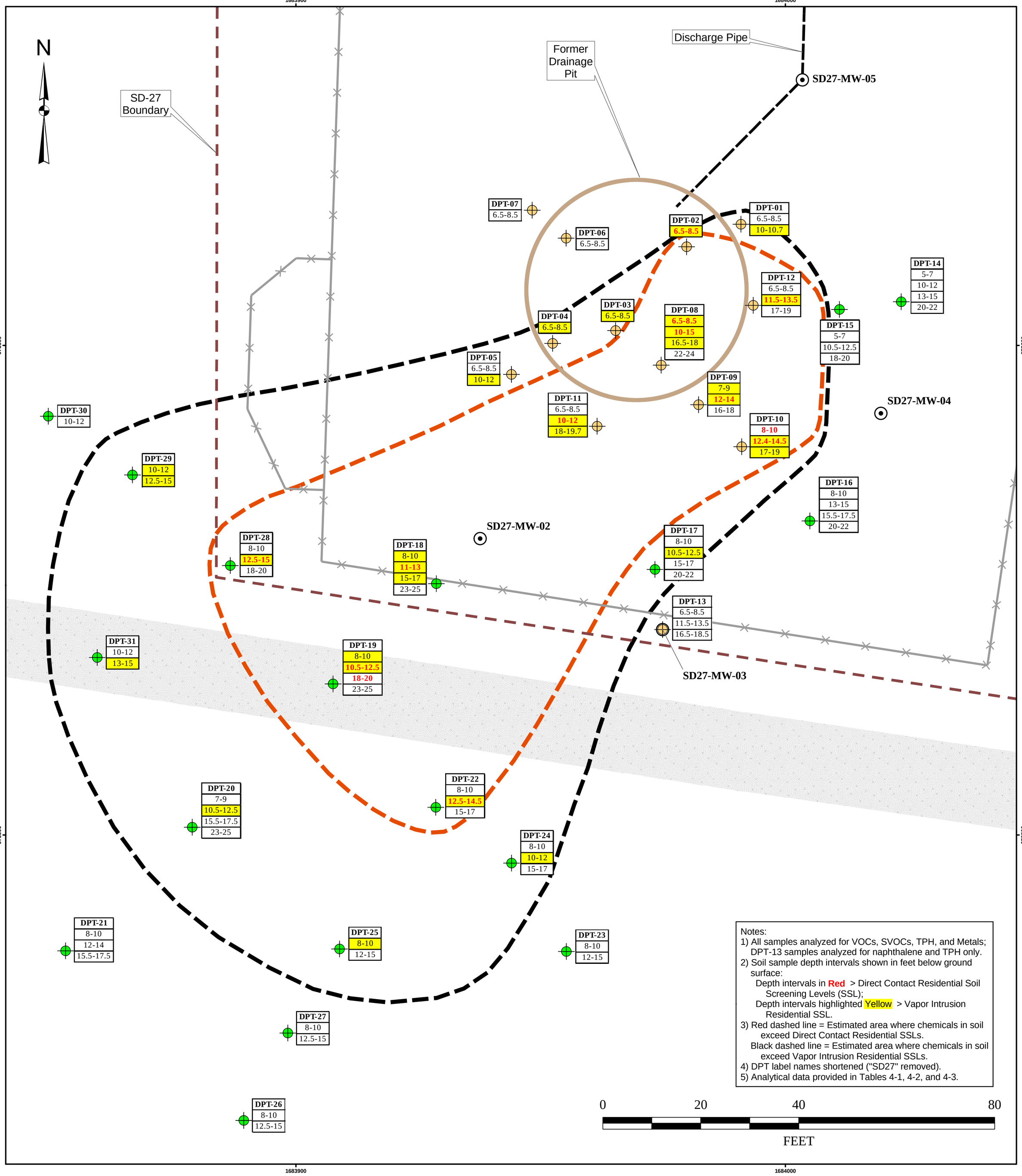
LEGEND

- PA/SI SOIL BORING
- PHASE II RI SOIL BORING
- SUPPLEMENTAL RFI SOIL BORING
- SUPPLEMENTAL RFI SOIL BORING WITH TEMPORARY GROUNDWATER SAMPLING POINT
- SUPPLEMENTAL RFI SEDIMENT/ SOIL BORING
- ACM DPT SOIL BORING (NOVEMBER 2010/MARCH 2011)
- ACM MONITORING WELL (NOVEMBER 2010)
- ACM DPT SOIL BORING/MONITORING WELL

TETRA TECH

FIGURE 3-2
GROUNDWATER SAMPLE LOCATIONS AT SD-27

Reference: (TetraTech, 2012)



Notes:
1) All samples analyzed for VOCs, SVOCs, TPH, and Metals; DPT-13 samples analyzed for naphthalene and TPH only.
2) Soil sample depth intervals shown in feet below ground surface:
   Depth intervals in **Red** > Direct Contact Residential Soil Screening Levels (SSL);
   Depth intervals highlighted Yellow > Vapor Intrusion Residential SSL.
3) Red dashed line = Estimated area where chemicals in soil exceed Direct Contact Residential SSLs.
   Black dashed line = Estimated area where chemicals in soil exceed Vapor Intrusion Residential SSLs.
4) DPT label names shortened ("SD27" removed).
5) Analytical data provided in Tables 4-1, 4-2, and 4-3.

File: K:\GIS\Holloman\SD-27_ACM WorkPlan\Fig4-1_SD-27 SL Exc-Contam.mxd
Accelerated Corrective Measures Work Plan Addendum
Revised: 01/20/2012
Map Source: Holloman AFB
State Plane Coordinate System, NAD83, NM Central, US Feet

TETRA TECH
OAK RIDGE, TN

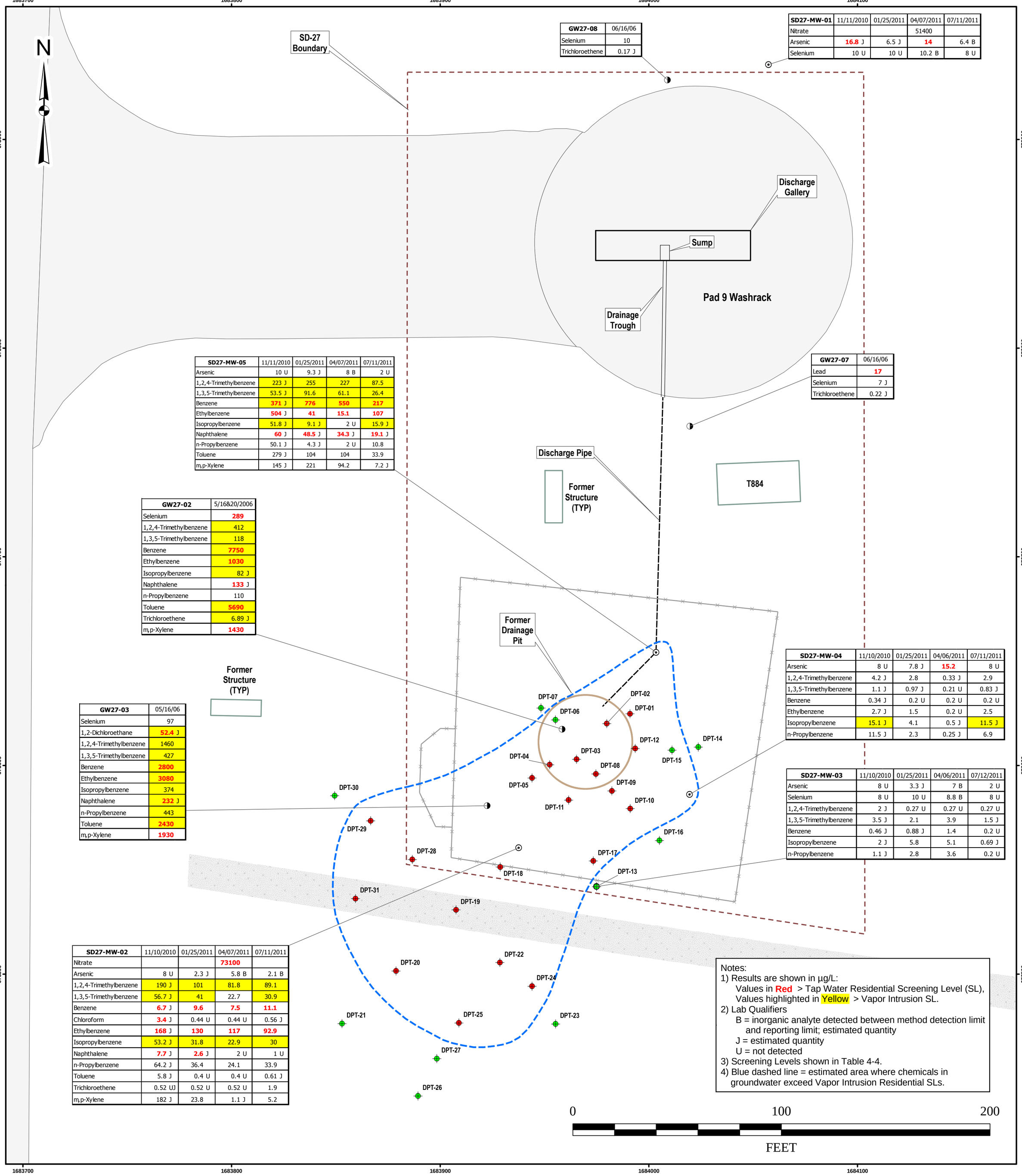
LEGEND

SOIL BORING (DPT)
Sample Date:
- Nov 2010
- Mar 2011
- MONITORING WELL
- CHAIN-LINK FENCE
- ROAD/PARKING (Gravel)
- > Direct Contact Residential SSLs
- > Vapor Intrusion Residential SSLs

FIGURE 4-1

SOIL SAMPLES EXCEEDING RESIDENTIAL SOIL SCREENING LEVELS

Reference: (TetraTech, 2012)



GW27-08	06/16/06
Selenium	10
Trichloroethene	0.17 J

SD27-MW-01	11/11/2010	01/25/2011	04/07/2011	07/11/2011
Nitrate			51400	
Arsenic	**16.8** J	6.5 J	**14**	6.4 B
Selenium	10 U	10 U	10.2 B	8 U

SD27-MW-05	11/11/2010	01/25/2011	04/07/2011	07/11/2011
Arsenic	10 U	9.3 J	8 B	2 U
1,2,4-Trimethylbenzene	223 J	255	227	87.5
1,3,5-Trimethylbenzene	53.5 J	91.6	61.1	26.4
Benzene	**371** J	**776**	**550**	**217**
Ethylbenzene	**504** J	**41**	**15.1**	**107**
Isopropylbenzene	51.8 J	9.1 J	2 U	15.9 J
Naphthalene	**60** J	**48.5** J	**34.3** J	**19.1** J
n-Propylbenzene	50.1 J	4.3 J	2 U	10.8
Toluene	279 J	104	104	33.9
m,p-Xylene	145 J	221	94.2	7.2 J

GW27-07	06/16/06
Lead	**17**
Selenium	7 J
Trichloroethene	0.22 J

GW27-02	5/16&20/2006
Selenium	**289**
1,2,4-Trimethylbenzene	412
1,3,5-Trimethylbenzene	118
Benzene	**7750**
Ethylbenzene	**1030**
Isopropylbenzene	82 J
Naphthalene	**133** J
n-Propylbenzene	110
Toluene	**5690**
Trichloroethene	6.89 J
m,p-Xylene	**1430**

SD27-MW-04	11/10/2010	01/25/2011	04/06/2011	07/11/2011
Arsenic	8 U	7.8 J	**15.2**	8 U
1,2,4-Trimethylbenzene	4.2 J	2.8	0.33 J	2.9
1,3,5-Trimethylbenzene	1.1 J	0.97 J	0.21 U	0.83 J
Benzene	0.34 J	0.2 U	0.2 U	0.2 U
Ethylbenzene	2.7 J	1.5	0.2 U	2.5
Isopropylbenzene	15.1 J	4.1	0.5 J	11.5 J
n-Propylbenzene	11.5 J	2.3	0.25 J	6.9

GW27-03	05/16/06
Selenium	97
1,2-Dichloroethane	**52.4** J
1,2,4-Trimethylbenzene	1460
1,3,5-Trimethylbenzene	427
Benzene	**2800**
Ethylbenzene	**3080**
Isopropylbenzene	374
Naphthalene	**232** J
n-Propylbenzene	443
Toluene	**2430**
m,p-Xylene	**1930**

SD27-MW-03	11/10/2010	01/25/2011	04/06/2011	07/12/2011
Arsenic	8 U	3.3 J	7 B	2 U
Selenium	8 U	10 U	8.8 B	8 U
1,2,4-Trimethylbenzene	2 J	0.27 U	0.27 U	0.27 U
1,3,5-Trimethylbenzene	3.5 J	2.1	3.9	1.5 J
Benzene	0.46 J	0.88 J	1.4	0.2 U
Isopropylbenzene	2 J	5.8	5.1	0.69 J
n-Propylbenzene	1.1 J	2.8	3.6	0.2 U

SD27-MW-02	11/10/2010	01/25/2011	04/07/2011	07/11/2011
Nitrate			**73100**	
Arsenic	8 U	2.3 J	5.8 B	2.1 B
1,2,4-Trimethylbenzene	190 J	101	81.8	89.1
1,3,5-Trimethylbenzene	56.7 J	41	22.7	30.9
Benzene	**6.7** J	**9.6**	**7.5**	**11.1**
Chloroform	**3.4** J	0.44 U	0.44 U	0.56 J
Ethylbenzene	**168** J	**130**	**117**	**92.9**
Isopropylbenzene	53.2 J	31.8	22.9	30
Naphthalene	**7.7** J	**2.6** J	2 U	1 U
n-Propylbenzene	64.2 J	36.4	24.1	33.9
Toluene	5.8 J	0.4 U	0.4 U	0.61 J
Trichloroethene	0.52 UJ	0.52 U	0.52 U	1.9
m,p-Xylene	182 J	23.8	1.1 J	5.2

Notes:
1) Results are shown in µg/L:
Values in **Red** > Tap Water Residential Screening Level (SL),
Values highlighted in Yellow > Vapor Intrusion SL.
2) Lab Qualifiers
B = inorganic analyte detected between method detection limit and reporting limit; estimated quantity
J = estimated quantity
U = not detected
3) Screening Levels shown in Table 4-4.
4) Blue dashed line = estimated area where chemicals in groundwater exceed Vapor Intrusion Residential SLs.

File: K:\GIS\Holloman\SD-27_ACM WorkPlan\Fig4-2_SD-27 GW Exc-Contam.mxd
Accelerated Corrective Measures Work Plan Addendum
Revised: 01/20/2012
Map Source: Holloman AFB
State Plane Coordinate System, NAD83, NM Central, US Feet

TETRA TECH
OAK RIDGE, TN

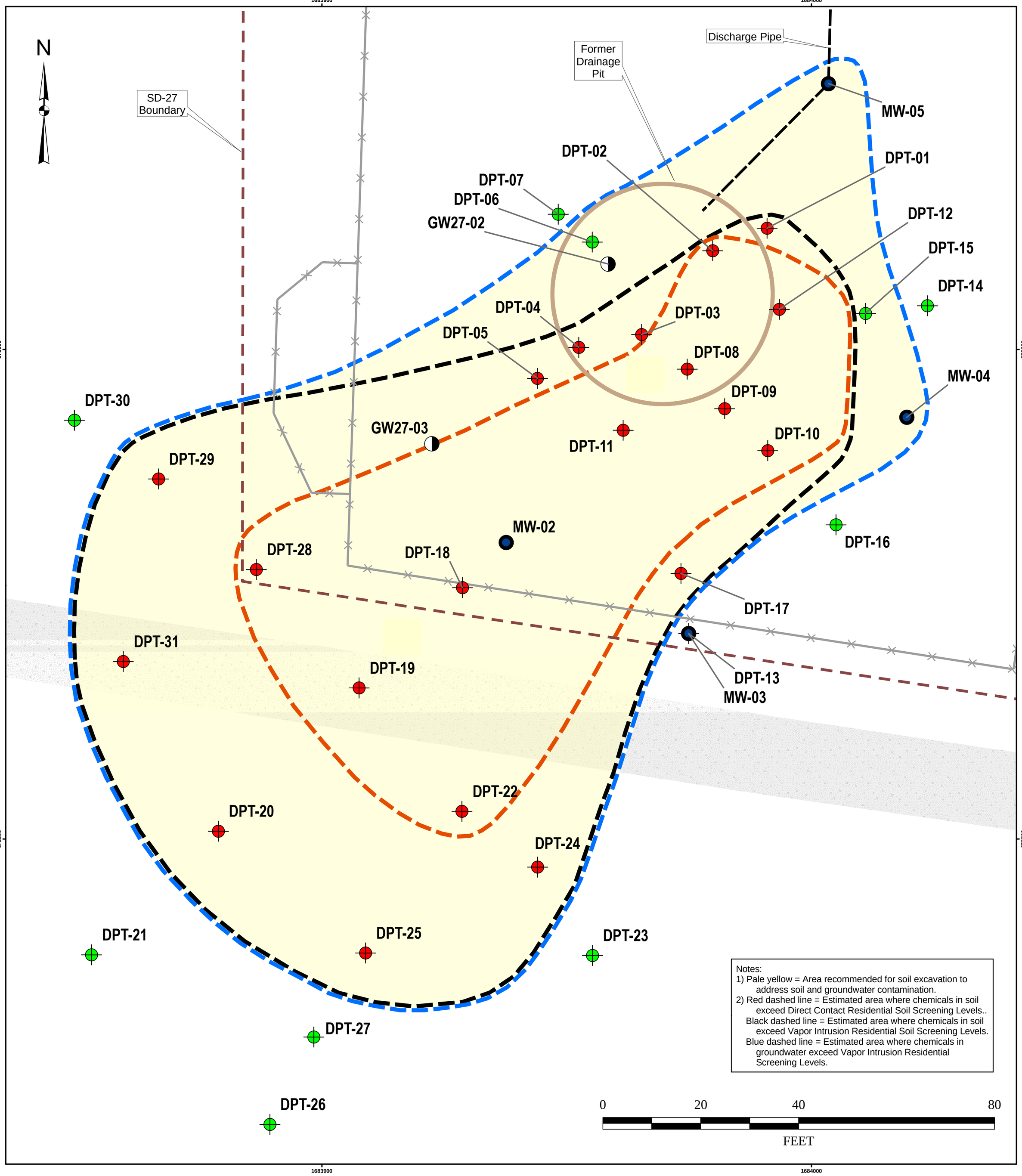
LEGEND

SOIL BORING (DPT)
- > Vapor Intrusion SSL
- < Vapor Intrusion SSL
- MONITORING WELL
- Suppl RFI Boring - Temp GW
- CHAIN-LINK FENCE
- AIRFIELD SURFACE
- ROAD/PARKING (Gravel)
- > Vapor Intrusion GW Residential SLs

FIGURE 4-2

CHEMICALS IN GROUNDWATER EXCEEDING RESIDENTIAL SCREENING LEVELS

Reference: (TetraTech, 2012)



File: K:\GIS\Holloman\SD-27_ACM WorkPlan
Fig4-3_SD-27 SL-GW Contam.mxd
Accelerated Corrective Measures Work Plan Addendum
Revised: 01/20/2012
Map Source: Holloman AFB
State Plane Coordinate System, NAD83, NM Central, US Feet

TETRA TECH
OAK RIDGE, TN

LEGEND

- Soil Excavation Area
- > Direct Contact Residential SSLs
- > Vapor Intrusion Residential SSLs
- > Vapor Intrusion GW Residential SLs
- ROAD/PARKING (Gravel)
- CHAIN-LINK FENCE
- Proposed LTM Well

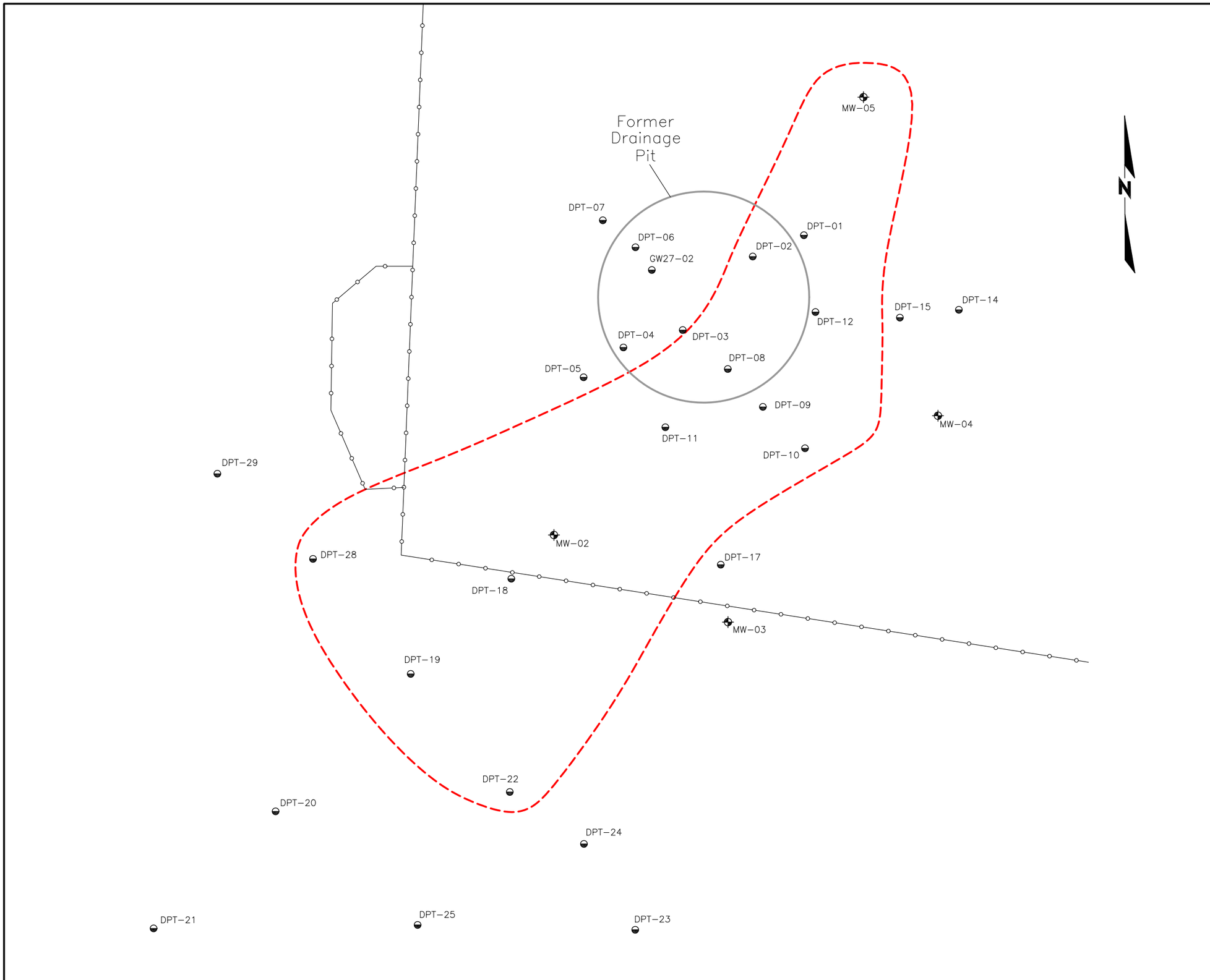
SOIL BORING (DPT)

- > Vapor Intrusion SSL
- < Vapor Intrusion SSL
- MONITORING WELL
- Suppl RFI Boring - Temp GW

FIGURE 4-3

COMBINED AREAS THAT EXCEED CLEANUP LEVELS FOR SOIL AND GROUNDWATER

Reference: (TetraTech, 2012)



LEGEND

- Monitoring Well Location
- Direct-Push Soil Boring Location
- ISCO Treatment Area

0 10 20

1 INCH = 20 FEET (APPROXIMATE)

NOTES:

1.) Base map provided by URS.

2.) Scale is approximate.

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SITE MAP
ISCO REMEDIATION PROGRAM
Site SD-27
Holloman Air Force Base
Otero County, New Mexico

DRAWN BY: TE	DATE: 5/28/2014	Figure 4-4
CHECKED BY: SH	PROPOSAL NO: 901213	

File: K:\GIS\Holloman\\SD-27_ACM WorkPlan\
Fig5-1_SD-27 RouteMap.mxd
Supplemental RFI Report Addendum
Revised: 01/24/2012
Map Source: Holloman AFB

ALL COORDINATES PROJECTED IN NEW MEXICO STATE PLANE, CENTRAL ZONE FIPS 3002 IN FEET, AND THE HORIZONTAL DATUM IS NAD83 ADJUSTMENT OF 1996. THE VERTICAL REFERENCE DATUM IS NAVD88.

LEGEND

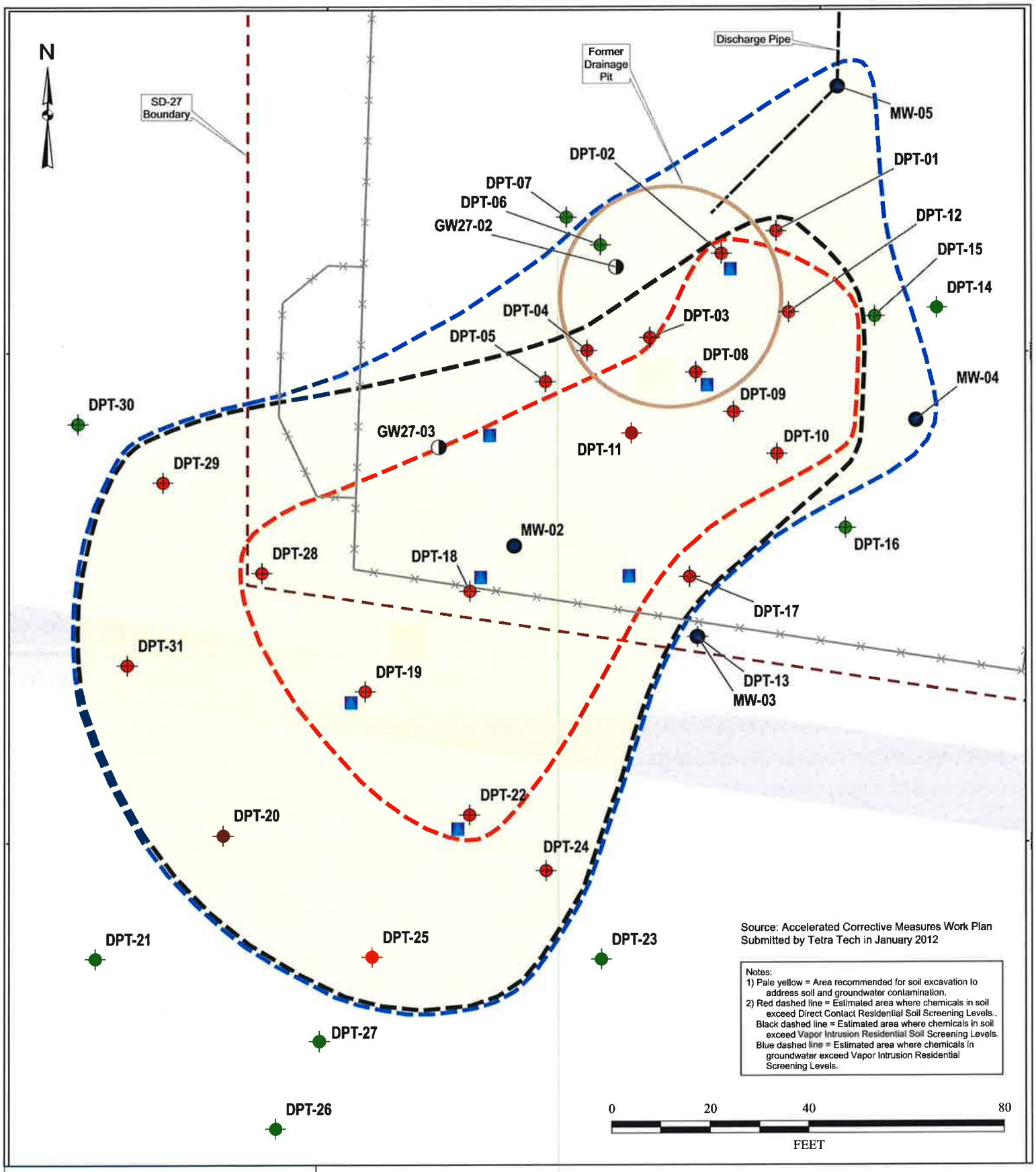
- SITE BOUNDARIES
- AIRFIELD
- BASE BOUNDARY

N

Reference: (TetraTech, 2012)

TETRA TECH
OAK RIDGE, TN

FIGURE 5-1
ROUTE MAP
SD-27



Source: Accelerated Corrective Measures Work Plan Submitted by Tetra Tech in January 2012

Notes:
1) Pale yellow = Area recommended for soil excavation to address soil and groundwater contamination.
2) Red dashed line = Estimated area where chemicals in soil exceed Direct Contact Residential Soil Screening Levels.
Black dashed line = Estimated area where chemicals in soil exceed Vapor Intrusion Residential Soil Screening Levels.
Blue dashed line = Estimated area where chemicals in groundwater exceed Vapor Intrusion Residential Screening Levels.

LEGEND

- Soil Excavation Area
- > Direct Contact Residential SSLs
- > Vapor Intrusion Residential SSLs
- > Vapor Intrusion GW Residential SLs
- ROAD/PARKING (Gravel)
- CHAIN-LINK FENCE
- Proposed Baseline Soil Samples
- Proposed Baseline Groundwater Samples

SOIL BORING (DPT)
- > Vapor Intrusion SSL
- < Vapor Intrusion SSL
- MONITORING WELL
- Suppl RFI Boring - Temp GW

Baseline and Performance Soil and Groundwater Sample Locations

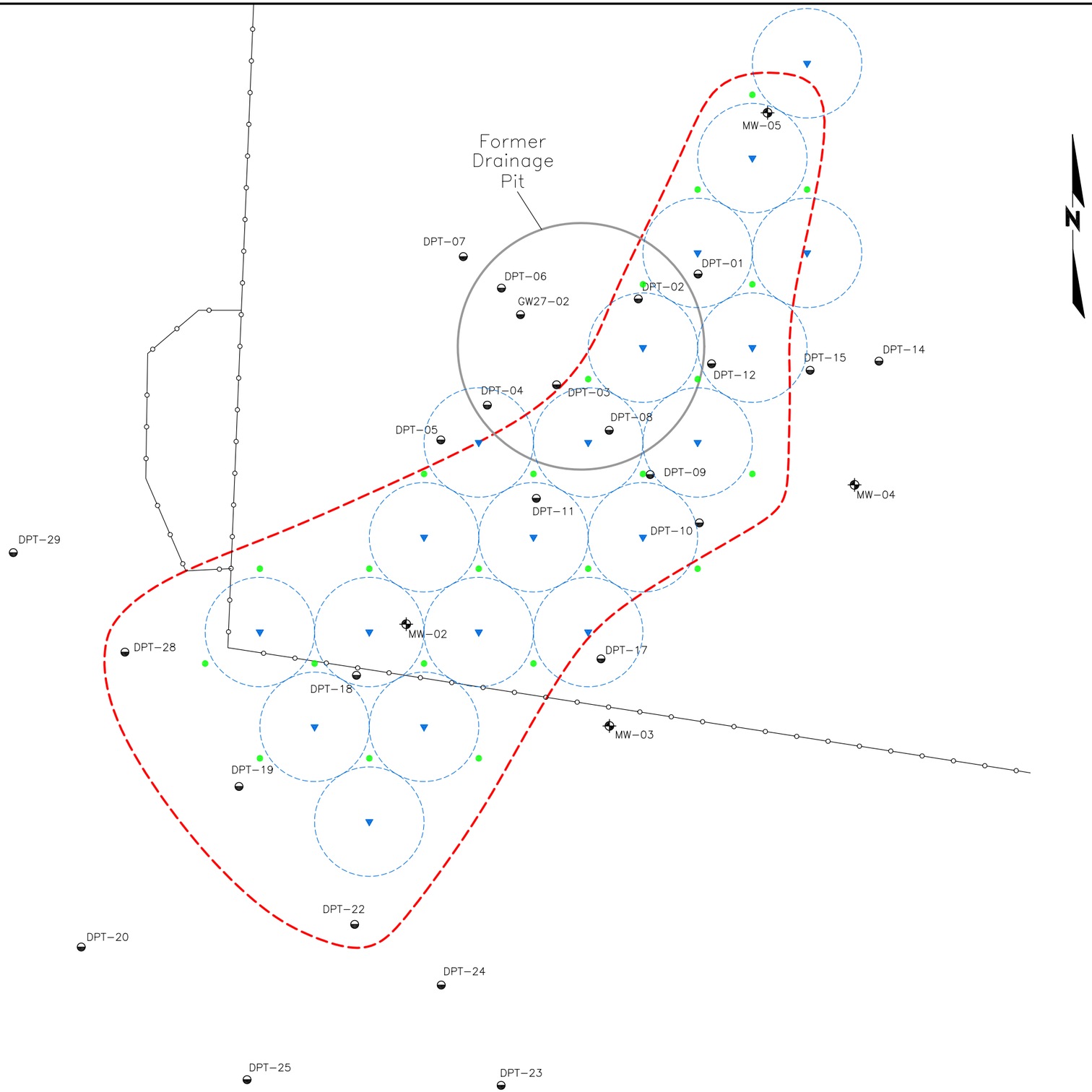
SD027 Pad 9 Drainage Pit

Holloman Air Force Base, New Mexico

URS

Figure 5-2

P:\WRES\PM\23446536_NM AZ PBR\Holloman AFB\5_0_Technical\5_2_Drawings_Maps\baseline sampling locations.dwg



LEGEND

- Monitoring Well Location
- Direct-Push Soil Boring Location
- ISCO Treatment Area
- Conceptual Second Event Injection Location
- First Event Injection Location
- Radius of Influence (10-feet)

0 10 20

1 INCH = 20 FEET (APPROXIMATE)

NOTES:

1.) Base map provided by URS.

2.) Scale is approximate.

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CONCENPTUAL First EVENT INJECTION LOCATION MAP
ISCO REMEDIATION PROGRAM
Site SD-27
Holloman Air Force Base
Otero County, New Mexico

DRAWN BY: TE	DATE: 5/29/2014	Figure 5-3
CHECKED BY: SH	PROPOSAL NO: 901213	