



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE NEW MEXICO



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New Mexico Environment Department
Attn: Mr. John Kieling, Chief
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2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6063

Re: **Final Class 3 Permit Modification Request, Statement of Basis for Corrective Action Complete at: AOC-J (SS-13), AOC-PRI-A (OT-32), AOC-UST-221 (TU503), AOC-UST-901 (TU506), AOC-UST-298 (TU508), and AOC-UST-7003 (TU518)**
EPA ID# NM6572124422; HWB-HAFB-12-001, HWB-HAFB-12-017, and HWB-HAFB-16-008
Holloman Air Force Base, Alamogordo, NM
Contract No. FA8903-13-C-0008

Dear Mr. Kieling,

Holloman Air Force Base (AFB) is pleased to submit the attached *Final Class 3 Permit Modification Request* for the Holloman AFB RCRA Hazardous Waste Facility Permit (#NM6572124422), including statements of basis for Corrective Action Complete (CAC) status at the following six (6) Areas of Concern (AOC): AOC-J (SS-13), AOC-PRI-A (OT-32), AOC-UST-221 (TU503), AOC-UST-901 (TU506), AOC-UST-298 (TU508), and AOC-UST-7003 (TU518). The *Permit Modification Request* is also provided on the enclosed CD, with native and PDF files.

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 regarding this submittal, please contact me at (575) 572-6675 or by email at adam.kusmak@us.af.mil.

Sincerely,

Digitally signed by
KUSMAK.ADAM.M.1263331806
DN: c=US, o=U.S. Government,
ou=DoD, ou=PKI, ou=USAF,
cn=KUSMAK.ADAM.M.1263331806
Date: 2016.07.28 13:05:04 -06'00'

ADAM M. KUSMAK, GS-13, USAF

Attachment(s): *Final Class 3 Permit Modification*. Hard copy and CD.



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

cc: Mr. Dave Strasser, NMED HWB (w/Atch)
Mr. Cornelius Amindyas, NMED HWB (w/o Atch)
Mr. Chuck Hendrickson, USEPA (w/CD)
Mr. David Griffin, HAFB (w/Atch)
Mr. Charles Schick, HAFB (w/Atch)
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Mr. Wayne Bittner, Kirtland AFB (w/CD)

FINAL

CLASS 3 PERMIT MODIFICATION REQUEST

**Statement of Basis for Corrective Action Complete at:
AOC-J (SS-13), AOC-PRI-A (OT-32), AOC-UST-221 (TU503),
AOC-UST-901 (TU506), AOC-UST-298 (TU508), and AOC-UST-
7003 (TU518)**

Holloman Air Force Base, New Mexico

Prepared for
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Contract No.: FA8903-13-C-0008

URS
URS Group, Inc.
Greenwood Village, Colorado

July 2016

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- III. NMED Partial Approval Letter for Accelerated Corrective Measures Completion Report, Sites OT-32 and RW-42 (*approves site OT-32*)
- IV. NMED Approval Letter for Final Interim Measures Report, Group 3 Former Underground Storage Tank Sites: AOC-UST-221 (TU503), AOC-UST-298 (TU508), AOC-UST-901 (TU506), and AOC-UST-7003 (TU518)

List of Acronyms

µg/L	micrograms per liter
±	plus or minus
AAF	Army Air Field
ACM	Accelerated Corrective Measures
AFB	Air Force Base
AOC	Area of Concern
bgs	below ground surface
CAC	Corrective Action Complete
CFR	Code of Federal Regulations
COPC	chemical of potential concern
CY	cubic yard
DCE	dichloroethene
DPT	direct push technology
DRMO	Defense Reutilization Management Office
DRO	diesel range organics
ERP	Environmental Restoration Program
ERPIMS	Environmental Resources Program Information Management System
Final IM Report	<i>The Final Interim Measures Report, Group 3 Former UST Sites: AOC-UST-221 (TU503), AOC-UST-298 (TU508), AOC-UST-901 (TU506), and AOC-UST-7003 (TU518) (URS 2016)</i>
ft	feet
GRO	gasoline range organics
HSWA	Hazardous and Solid Waste Amendments of 1984
IM	Interim Measures
IRP	Installation Restoration Program
MCL	maximum contaminant level
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMWQCC	New Mexico Water Quality Control Commission
NOD	Notice of Disapproval
PAH	polynuclear aromatic hydrocarbon
pCi/g	picocuries per gram
PCS	petroleum-contaminated soil
PRI	Primate Research Institute
RATSCAT	National Radar Test Facility
RCRA	Resource Conservation and Recovery Act

List of Acronyms

RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
SSL	soil screening level
SWMU	Solid Waste Management Unit
TDS	Total Dissolved Solids
TOX	total organic halogens
TPH	total petroleum hydrocarbon
USAF	United States Air Force
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VCM	Voluntary Corrective Measures
VOC	volatile organic compound

CLASS 3 PERMIT MODIFICATION REQUEST

A. Introduction

The United States Air Force (USAF) and Holloman Air Force Base (AFB) (Permittee) are requesting a Class 3 Permit Modification for the following sites that have achieved Corrective Action Complete (CAC) without Controls status from the New Mexico Environment Department (NMED) in accordance with the New Mexico Hazardous Waste Act (Section 74-4-1 *et seq.*, New Mexico Statutes Annotated 1978, as amended, 1992) and the New Mexico Hazardous Waste Management Regulations 20.4.1 New Mexico Administrative Code (NMAC):

Permit Modification Request Section D Subsection	AOC	Permit Site Name	ERP Site Name	Description/Name
1	AOC-J	SS-13	SS-13	Herbicide Sodium Arsenite Spill Area
2	AOC-PRI-A	OT-32	OT-32	Primate Research Lab Sewer Line
3	AOC-UST-221	TU/US-C503	TU503	Building 221 UST
4	AOC-UST-901	TU/US-C506	TU506	Building 901 UST
5	AOC-UST-298	TU/US-C508	TU508	Building 298 UST
6	AOC-UST-7003	TU/US-C518	TU518	National Radar Test Facility UST

AOC = Area of Concern

ERP = Environmental Restoration Program

USAF = United States Air Force

UST = underground storage tank

These six Areas of Concern (AOCs) are listed in the Permittee's Resource Conservation and Recovery Act (RCRA) Part B Hazardous Waste Facility Permit No. NM6572124422 (NMED 2004) pursuant to 40 Code of Federal Regulations (CFR) 270.42(c) of the Hazardous and Solid Waste Amendments of 1984 (HSWA).

The Permittee requests NMED initiate a modification of Holloman AFB's RCRA Hazardous Waste Facility Permit (NMED 2004) to adjust the content of the two corrective action tables (Tables A and B of Appendix 4-A). The tables in Appendix 4-A list the status of AOCs/Solid Waste Management Units (SWMUs) at the Base, and that appendix content is as follows:

- **Table A** – List of AOCs/SWMUs Requiring Corrective Action (corrective action may be necessary to characterize and/or remediate past releases of hazardous wastes or hazardous constituents)
- **Table B** – List of AOCs/SWMUs Not Currently Requiring Corrective Action (corrective action has been completed, and further corrective action is not currently required; no controls are required)
- **Table C** – List of AOCs/SWMUs Not Currently Requiring Corrective Action (corrective action has been completed, and further corrective action is not currently required; institutional controls are required)

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The proposed modification would move six AOCs that have been granted CAC without Controls status from Appendix 4-A Table A to Table B.

A facility description (**Section B**), general history of investigation at Holloman AFB (**Section C**), and descriptions for each AOC (**Section D**) are provided below.

B. Facility Description

Holloman AFB is located in south central New Mexico, in the north-central part of Otero County, approximately 75 miles north-northeast of El Paso, Texas. Holloman AFB has a population of approximately 3,500 and occupies approximately 59,830 acres in the northeast quarter of Section 1, Township 17 South, Range 8 East (**Figure I-1 in Attachment I**). The United States Army's White Sands Missile Range testing facilities and White Sands National Monument occupy additional land extending north and west from the Base. Private and publicly-owned lands border the remainder of Holloman AFB. The major highway servicing Holloman AFB is Highway 70, which runs southwest from the town of Alamogordo and separates Holloman AFB from publicly-owned lands to the south. Alamogordo, which has a population of approximately 35,000, is located approximately 7 miles northeast of the Base.

Holloman AFB was first established in 1942 as Alamogordo Army Air Field (AAF). From 1942 through 1945, Alamogordo AAF served as the training grounds for over 20 different flight groups, flying primarily B-17s, B-24s, and B-29s. After World War II, most operations had ceased at the Base. In 1947, Air Material Command announced the air field would be its primary site for the testing and development of un-manned aircraft, guided missiles, and other research programs. On January 13, 1948, the Alamogordo installation was renamed Holloman AFB, in honor of the late Col. George V. Holloman, a pioneer in guided missile research. In 1968, the 49th Tactical Fighter Wing arrived at Holloman AFB and has remained since. Today, Holloman AFB also serves as a training location for the German Air Force's Tactical Training Center Operations command installation.

C. History of Investigation

Investigation and remediation of SWMUs and AOCs at Holloman AFB is conducted under both the Air Force Environmental Restoration Program (ERP) and the RCRA Corrective Action Program. The ERP, formerly called the Installation Restoration Program (IRP), was initiated in 1983 and the RCRA Facility Assessment (RFA) was conducted in 1987. An HSWA permit was issued to Holloman AFB by the United States Environmental Protection Agency (USEPA) in 1991 and became effective on September 25, 1991. It was reissued by the NMED on February 24, 2004. In January 1996, NMED received authorization from the USEPA for corrective action under the HSWA and became the administrative authority for this action. The HSWA portion of the Holloman AFB RCRA Hazardous Waste Facility Permit (NMED 2004) identified sites at the Base requiring a Remedial Investigation (RI)/RCRA Facility Investigation (RFI). RFI activities were conducted in two phases. The Phase I RFI was conducted between 1987 and 1992, and Phase II of the RFI was conducted between 1992 and 1995. A total of 236 potential SWMUs and 29 AOCs were investigated.

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Section D of this document briefly describes the location and history of each AOC included in this Permit Modification Request. Detailed descriptions of the investigative results for each AOC appear in the original investigative reports and/or administrative records. References for these sources are provided in **Section E**.

D. AOC Descriptions

The following subsections describe the location, history, and land use conditions for each AOC. A summary of relevant information from previous investigations and a basis for CAC without Controls determination for the sites are also presented in this section. A Base location map and site maps showing the location of each AOC are presented in **Attachment I**.

1. SITE SS-13 (AOC-J), HERBICIDE SODIUM ARSENITE SPILL AREA

Location – SS-13

SS-13, Herbicide Sodium Arsenite Spill Area, is also identified as AOC-J. The *Accelerated Corrective Measures (ACM) Completion Report for Site SS-13* (North Wind, Inc. 2011) identified the location of this site as in the Civil Engineering complex yard, next to the Defense Reutilization Management Office (DRMO). A site map is presented as **Figure I-2** in **Attachment I**.

History / Current and Anticipated Future Land Use – SS-13

SS-13 was originally used to store sodium arsenite, and in 1979, an estimated 2 to 30 gallons of sodium arsenite were released within an earthen storage area (i.e., depression) at the site. The site was a 2-foot deep depression used to store sodium arsenite, a weed killer used to sterilize runway areas. Approximately 83 30-gallon containers of sodium arsenite were stored at this location in 1979. In August 1979, one of the cans was found empty with a hole in the bottom. It was assumed that approximately 30 gallons of sodium arsenite were released at the site. All containers of sodium arsenite not needed at Holloman AFB were removed from this site.

At the spill site, two soil borings and one monitoring well were installed and sampled during the Phase II IRP investigation (Dames & Moore 1987). Soil and groundwater samples were analyzed for arsenic. The Phase II IRP results identified arsenic in groundwater at 0.01 milligrams per liter (mg/L), and extraction procedure-toxicity analysis of five soil samples reported a maximum arsenic concentration of 0.04 mg/L in the extract. The depression was backfilled and capped with asphalt in the early 1990s (North Wind, Inc. 2011). The site is currently used as a storage area.

Evaluation of Relevant Information – SS-13

The site was not considered sufficiently characterized as required in the Base's RCRA Hazardous Waste Facility Permit (NMED 2004). Therefore, additional characterization and potential remediation of the release were required. In brief, three shallow groundwater monitoring wells (MW01, MW02, and MW04S) and one deep groundwater monitoring well (MW04D) were installed and sampled for total arsenic in February 2009. The total arsenic detected in 2009 at MW01, MW02, MW04S, and MW04D was 0.0125, 0.0508, 0.0294, and

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0.0342 mg/L, respectively. For a detailed history and description of the site and activities conducted as part of the ACM, refer to the ACM Report (North Wind, Inc. 2011).

The ACM Completion Report (North Wind, Inc. 2011) was submitted to NMED in 2011, but was disapproved by NMED in a letter dated October 1, 2013 (NMED 2013) on the basis of:

- Detection of arsenic in monitoring wells at SS-13 in exceedance of the approved basewide background level for total arsenic in groundwater of 0.01 mg/L (derived from the USEPA maximum contaminant level [MCL]).
- Lack of figures depicting locations of soil borings and monitoring wells, potentiometric surface map, and contaminant isoconcentration map of arsenic in groundwater.

In the October 1, 2013 letter, NMED disapproved the 2011 ACM Completion Report and required Holloman AFB to “present sufficient evidence to demonstrate to NMED that these elevated arsenic values should be considered as representative of background conditions, and not anthropogenic in origin” (NMED 2013).

The existing site data from 2009, supplemented with additional data collected in 2015, were evaluated in the *Evaluation of Arsenic in Groundwater at SS-13 (AOC-J)* (URS 2015a) to better understand past and current site conditions. In July 2015, more than 6 years after the prior sampling event, groundwater sampling was conducted at SS-13 to assess current site conditions. Groundwater samples were collected from the site’s four monitoring wells (MW01, MW02, MW04S, and MW04D) and submitted for laboratory analysis of total and dissolved arsenic, and Total Dissolved Solids (TDS). Note, in the 2009 sampling event, only total arsenic samples were collected from groundwater. Prior to sampling, groundwater levels were measured at all SS-13 monitoring wells to assess the site’s potentiometric surface and determine groundwater flow direction.

Based on an evaluation of available data, the current concentrations of arsenic found in groundwater (total and dissolved) at SS-13 are considered to be representative of naturally-occurring conditions and do not present a risk to human health. This conclusion is based on the following:

- A site-specific background level for arsenic in groundwater at SS-13 is proposed as 0.021 mg/L. This is derived from well S10-MW4, an upgradient well used as part of the Holloman AFB *Basewide Background Study Report* (NationView|Bhate 2011).
 - Concentrations of arsenic in shallow SS-13 monitoring wells are all below 0.021 mg/L, and therefore, are likely to be representative of natural background conditions.
 - The arsenic concentrations found in MW04D (0.037 mg/L) are above this proposed background level of 0.021 mg/L. However, MW04D has a TDS concentration of 29,000 mg/L, nearly three times the TDS threshold of 10,000 mg/L above which the New Mexico Water Quality Control Commission (NMWQCC) human health standards no longer apply.

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- All four of the site monitoring wells contain dissolved arsenic concentrations below the NMWQCC standard of 0.1 mg/L, and therefore, an additional human health risk assessment is not necessary.
- Concentrations of total arsenic measured in the shallow SS-13 monitoring wells in July 2015 are approximately 41 to 76 percent lower than 2009 measurements, likely due to changes in sampling methodology. However, if earlier arsenic concentrations were attributable to the sodium arsenite spill, they've since attenuated.
- Due to aquifer properties, ingestion of groundwater is not a likely exposure pathway, and therefore, the use of MCLs in determining cleanup goals is not appropriate.

Based on the current evaluation, it was recommended that site SS-13 be considered for CAC without Controls status. NMED approved the *Evaluation of Arsenic in Groundwater at SS-13 (AOC-J)* (URS 2015a) report in a January 19, 2016 letter (NMED 2016a) (**Attachment II**) confirming CAC without Controls status for SS-13.

Therefore, a Class 3 modification to the Holloman AFB RCRA Hazardous Waste Facility Permit (NMED 2004) pursuant to 40 CFR 270.42(c) is warranted for SS-13 (AOC-J) to move the site from Table A (AOCs/SWMUs Requiring Corrective Action) to Table B (CAC without Controls).

Basis of Determination – SS-13

SS-13 (AOC-J) was proposed for CAC without Controls status based upon Criterion #5 listed in Appendix 4-B of the Holloman AFB RCRA Hazardous Waste Facility Permit (NMED 2004) which states:

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

This criterion was accomplished by conducting field activities during the ACM investigation to delineate the extent of contamination, and conducting additional field activities that meet the requirements outlined in the NMED correspondence dated October 1, 2013. The approval letter from NMED dated January 19, 2016 (NMED 2016a) for the *Evaluation of Arsenic in Groundwater at SS-13 (AOC-J)* (URS 2015a) that confirms CAC without Controls status is provided in **Attachment II**.

2. SITE OT-32 (AOC-PRI-A), PRIMATE RESEARCH LAB SEWER LINE

Location – OT-32

OT-32, Primate Research Lab Sewer Line, is also identified as AOC-PRI-A. The *ACM Completion Report, Sites OT-32 and RW-42* (Bhate 2012) identified the location of OT-32 as along the waste discharge sewer line of the former Primate Research Institute (PRI). The former location of the PRI (Buildings 1200 through 1208) was on Douglas Road, near the intersection with Vandergrift Road, approximately 2 miles north of the Main Base Area. A site map is presented as **Figure I-3** in **Attachment I**.

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History / Current and Anticipated Future Land Use – OT-32

It was reported that approximately 3,000 to 4,000 feet (ft) of sewer line leading from the former PRI were suspected of being corroded, with certain portions thought to be totally collapsed during the early 1960s until the late 1970s. In 1981, a segment of the sewer line from the former Primate Research Lab was repaired. During the period when the sewer lines were badly corroded/collapsed, small quantities of carbon-14, iodine-125, tritium tracers, and solvents may have entered the lines at the research center and are suspected to have leaked into the subsurface at the collapsed section. Based on interviews conducted by Bhate personnel in 2006 with Charles Price, Jr., Manager of the Holloman AFB Utilities Group, another sewer line collapse occurred in the early 1990s. This collapsed segment of sewer line was located along the main north-south line approximately 500 to 1,000 ft south of the sewer line that connects with the former Primate Research Area. It was reported (during the 2006 interviews) that a 20 ft long by 40 ft wide by 16 ft deep pit, which received sewage waste for 1 year prior to the sewer line being repaired, was dug in the early 1990s. The quantities of solvents and radioactive tracers used by the former Primate Research Area were reportedly small; however, no specific information was available concerning the amounts of these that could have entered the shallow groundwater (CH2M Hill 1983, Bhate 2012).

An IRP Records Search was conducted for OT-32 by CH2M Hill in 1982 (CH2M Hill 1983). The site was not considered to present a significant risk and further investigation of the site was not recommended at that time.

A Phase II, Stage 1 investigation was conducted at OT-32 in September 1984 by Dames & Moore (1987). Four soil borings (32B-1 through 32B-4) were drilled along the sewer line approximately 1.5 miles southwest of where the corroded/collapsed sewer line was identified during the IRP Records Search. Eight soil samples were collected and analyzed for oil and grease, total organic halogens (TOX), tritium, and carbon-14. The majority of the samples were below the detection limits for these parameters. Carbon-14 was detected in only one sample at a concentration of 240 plus or minus (\pm) 194 picocuries per gram (pCi/g).

Based on the site description and location presented in the IRP Phase II – Confirmation/Quantification Stage 1 Report (Dames & Moore 1987), the Phase II investigation for OT-32 was conducted at the wrong location. The Records Search and interviews conducted by Bhate personnel in 2006 with Charles Price, Jr., Manager of the Holloman AFB Utilities Group, indicate that the segment of corroded/collapsed sewer line (OT-32) was actually located approximately 0.25 mile southwest of the former PRI (Buildings 1200 through 1208). Misidentification of the source area (corroded/collapsed sewer line) would explain the lack of significant data from the Phase II investigation.

In 2007, 12 soil borings were drilled along 2,600 ft of the sewer line and completed as temporary groundwater monitoring wells. The temporary wells were surveyed to evaluate hydraulic conditions at the site, and sampled for laboratory analysis. Results of the 2007 groundwater monitoring investigation indicated one elevated concentration of 1,1-dichloroethene (DCE) in well TMW09 at 18 micrograms per liter ($\mu\text{g/L}$). All other analytes were below the applicable groundwater standards. The groundwater flow direction illustrated in the ACM Completion Report (Bhate 2012) indicated groundwater flow to the south.

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Evaluation of Relevant Information – OT-32

The ACM Completion Report (Bhate 2012) was submitted to NMED in 2012, but disapproved by NMED in a Notice of Disapproval (NOD) letter dated September 18, 2014 (NMED 2014). The NOD addressed deficient issues at both OT-32 and RW-42. For OT-32, the NOD was on the basis of:

- Detection of 1,1-DCE in monitoring well OT32-TMW09 (TMW09) at 18 µg/L in 2007, in exceedance of the NMWQCC groundwater standard of 5 µg/L, and
- Questionable groundwater flow direction as depicted in the ACM Completion Report.

In 2015, URS evaluated the data available for the site and provided a Letter Work Plan (February 5, 2015) to NMED that described supplemental groundwater monitoring, and included analytical results from October 2014 and revised potentiometric maps. URS collected the additional quarter of groundwater data stipulated in NMED's Second Response to the NOD letter dated March 3, 2015 (NMED 2015a).

The October 2014 sampling event documented in the Letter Work Plan (February 5, 2015) represents the first quarterly sampling event, conducted prior to NMED's approval of the Letter Work Plan as an attempt to meet NMED's timeline. The second sampling event was conducted in July 2015, with analytical results documented in the October 20, 2015 *Letter Report for OT-32 (AOC-PRI-A)* (URS 2015b). In conjunction with the 2014 and 2015 groundwater sampling events, new water-level measurements from the 12 site monitoring wells were also collected and updated potentiometric surface maps were created for the site (URS 2015).

The *Letter Report for OT-32 (AOC-PRI-A)* (URS 2015b) includes analytical results for TMW09 from 2007, 2014, and 2015, as well as updated potentiometric surface maps addressing the additional site monitoring activities required by NMED. Based on an evaluation of available data:

- The extent of 1,1-DCE is localized, attenuating, and approaching the relevant NMWQCC standard, and
- Groundwater flows to the southwest, consistent with the flow direction observed at other locations in this area of Holloman AFB.

As indicated in the 2014 NOD, following receipt of the letter report, "NMED will make a decision regarding the need for future site characterization activities." In a February 22, 2016 Partial Approval Letter (NMED 2016b) for the ACM Completion Report (Bhate 2012), NMED gave partial approval of the ACM Completion Report indicating that OT-32 has been satisfactorily addressed and that the site is suitable for a finding of CAC without Controls (**Attachment III**).

Therefore, a Class 3 modification to the Holloman AFB RCRA Hazardous Waste Facility Permit (NMED 2004) pursuant to 40 CFR 270.42(c) is warranted for OT-32 (AOC-PRI-A) to move the site from Table A (AOCs/SWMUs Requiring Corrective Action) to Table B (CAC without Controls).

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Note: In the September 30, 2005 Holloman AFB RCRA Hazardous Waste Permit (NMED 2004) Appendix 4-A, OT-32 is listed in Table A as Serial No. 69, AOC-PRI-A, ERP Site ID OT-32, Primate Research Lab Sewer Line. However, in the March 2013 Appendix 4-A, AOC-PRI-A is listed in Table B as OT-35 Primate Research Lab Sewer Line with an associated comment of “EPA listed the site in 1988 as a SWMU with no further action required.” This listing in the March 2013 Appendix 4-A, Table B may have been due to an administrative error. For OT-32 (AOC-PRI-A), Table B should be modified to replace the reference to “OT-35” with “OT-32” and the comment should be revised to “Site CACd in February 2016” or otherwise modified as appropriate to reflect the site name and status per NMED’s partial approval of the ACM Completion Report (Bhate 2012).

Basis of Determination – OT-32

OT-32 (AOC-PRI-A) was proposed for CAC without Controls status based upon Criterion #5 listed in Appendix 4-B of the Holloman AFB RCRA Hazardous Waste Permit (NMED 2004) which states:

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

This criterion was accomplished by conducting field activities during the ACM investigation to delineate the extent of contamination and by conducting additional field activities that meet the requirements outlined in the NMED correspondence dated September 18, 2014 (NMED 2014). The approval for OT-32 is included in the partial approval letter from NMED dated February 22, 2016 (NMED 2016b) for the ACM Completion Report (Bhate 2012) (based on the *Letter Report for OT-32 [AOC-PRI-A]* [URS 2015b]) and confirms CAC without Controls Status. A copy of this letter is provided in **Attachment III**.

3. SITE TU503 (AOC-UST-221), BUILDING 221 UST

Location – TU503

TU503, Building 221 underground storage tank (UST), is also identified as AOC-UST-221. The *Final Interim Measures (IM) Report, Group 3 Former UST Sites: AOC-UST-221 (TU503), AOC-UST-298 (TU508), AOC-UST-901 (TU506), and AOC-UST-7003 (TU518)* (Final IM Report) (URS 2016) identified the location of TU503 as at Building 221 (Communications, network maintenance) in the southeastern portion of Holloman AFB, approximately 1,500 ft southeast of the Holloman AFB airfield Controlled Area. Building 221 is the only structure present at this site. It is of slab-on-grade construction, and provides office and equipment space for telecommunications contractors. A site map is presented as **Figure I-2** in **Attachment I**.

History / Current and Anticipated Future Land Use – TU503

Records for former UST site TU503 indicate that the UST associated with Building 221 was removed in 1991 (Shaw 2013a). Closure records indicate that the UST was a steel tank with a capacity of 300 gallons (URS 2009). The tank had been in service for an estimated 5 years and had been used for diesel fuel storage prior to closure. There was no known internal or external

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tank protection, and the associated piping was bare steel. The records show that soil directly beneath the tank had a total petroleum hydrocarbon (TPH) concentration of 1,470 milligrams per kilogram (mg/kg) prior to soil removal. As part of the UST removal effort, soil directly beneath the tank was also removed. The analytical results for the soil left in place indicated that the TPH concentration was 141.35 mg/kg (i.e., below the current NMED screening level of 1,000 mg/kg). However, in a November 1992 letter to Holloman AFB, NMED indicated that it would still be necessary to determine the lateral extent of contaminated soils (Shaw 2013a).

During the Voluntary Corrective Measures (VCM) conducted in 2012 (Shaw 2012a), approximately 42 cubic yards (CY) of soil were excavated from the site between 7 and 11 ft below ground surface (bgs). Additionally, a 2 ft wide by 24 ft long by 11 ft deep trench was excavated to delineate the contamination based on visual evidence. The contamination extended 18 ft laterally, which was confirmed by soil samples. A total of 13 soil samples were collected from various depth intervals down to the water table (approximately 9 ft bgs) at locations surrounding the former UST at Building 221. Screening criteria for TPH-diesel range organics (DRO) were exceeded in 11 of 13 samples, including samples from the wall and floor of the excavation. Delineation of TPH-DRO contamination was not completed to the east, west, and south. Benzo(a)pyrene was detected above screening levels in one soil sample at a depth of 9 to 10 ft bgs near the former UST location (Shaw 2013a).

Three monitoring wells were installed as part of the VCM, one upgradient and two downgradient of the former UST location. Six soil samples were collected from boreholes during well installation activities, and did not indicate the presence of any analytes above the applicable screening or regulatory levels. Groundwater samples were collected from only two of the three wells since downgradient well TU503-MW01 did not yield sufficient groundwater for sampling. Upgradient monitoring well TU503-MW02 had a TDS value greater than 10,000 mg/L, and no further analyses were performed since Shaw believed that NMWQCC groundwater standards were not applicable to individual monitoring wells containing TDS concentrations above 10,000 mg/L. Sample results for downgradient well TU503-MW03 were compared to the NMWQCC standards, but none of the parameters analyzed exceeded those groundwater standards (Shaw 2013a).

Evaluation of Relevant Information – TU503

Investigative and remedial objectives of the 2014-2015 IM (as described in URS 2016) at TU503 focused on delineation and remediation of TPH and polynuclear aromatic hydrocarbon (PAH) screening level exceedances in soil near the former UST location, as well as characterization of any groundwater impacts resulting from the UST release and historic site operations.

Investigative work at TU503 included the drilling of 14 soil borings, installation of six temporary monitoring wells and one monitoring well, soil and groundwater sampling, and water level measurements. Remedial actions in the impacted area included soil excavation and confirmation soil sampling.

TU503 currently has four permanent groundwater monitoring wells (TU503-MW01, -MW02, -MW03, and -MW04) that show no evidence of groundwater contamination related to the former UST, and petroleum-contaminated soil (PCS) has been excavated to the maximum

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extent practicable. The Final IM Report (URS 2016) further describes the field activities and remedial actions that have occurred since the initiation of IM at TU503.

Based on the Final IM Report (URS 2016):

- The source area for petroleum hydrocarbons has been removed by excavation, and confirmation soil sampling indicates that PCS remains only in areas inaccessible to excavation within the vadose zone (i.e., beneath Building 221 and associated subsurface utilities).
 - Despite exceedances of the TPH screening levels, the only chemical of potential concern (COPC) present in soil above residential soil screening levels (SSLs) is benzo(a)pyrene, which does not present unacceptable vapor intrusion risk due to its low volatility and the slab-on-grade construction of Building 221. Furthermore, benzo(a)pyrene was not detected in groundwater at concentrations in excess of NMWQCC standard.
 - PCS is limited in extent beneath the building, as soil samples on the opposite side of the building from the excavated area were non-detect for benzo(a)pyrene.
 - The remaining benzo(a)pyrene in soil at TU503 is found only at concentrations less than 1 mg/kg, and is expected to naturally attenuate.
- There are currently no groundwater sample locations with analytical results exceeding applicable groundwater standards.
 - The area containing impacted groundwater near the former TU503-TMW10 has been excavated, and TU503-MW04 (installed within the excavated area, in close proximity to the former temporary monitoring well) contains no elevated concentrations of any petroleum hydrocarbons, including benzo(a)pyrene.
 - Groundwater within the former source area has been sampled twice since remedial excavation was performed (TU503-MW04, May and November 2015), and no COPCs exceed the applicable standards.
 - Elevated metals concentrations identified in site groundwater are not attributable to the former UST or related historical site operations, and are presumably naturally occurring.
 - Total metals analysis may be greatly influenced by suspended particulates within the sample aliquot, and any particulates contained within the preserved sample bottles are artifacts of the natural soil. Dissolved metals analysis shows a distinct difference from total metals analysis and the NMWQCC groundwater standards are based on the dissolved fraction.

Based on the current evaluation, it was recommended that TU503 be considered for CAC without Controls status. NMED approved the Final IM Report (URS 2016) in a June 9, 2016 letter (NMED 2016c) (**Attachment IV**) confirming CAC without Controls status for TU503.

Therefore, a Class 3 modification to the Holloman AFB RCRA Hazardous Waste Facility Permit (NMED 2004) pursuant to 40 CFR 270.42(c) is warranted for TU503 (AOC-UST-221) to move the site from Table A (AOCs/SWMUs Requiring Corrective Action) to Table B (CAC without Controls).

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Basis of Determination – TU503

TU503 (AOC-UST-221) was proposed for CAC without Controls status based upon Criterion #5 listed in Appendix 4-B of the Holloman AFB RCRA Hazardous Waste Facility Permit (NMED 2004) which states:

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

This criterion was accomplished by analyzing historical data, collecting additional data, and excavating accessible PCS. The approval letter from NMED dated June 9, 2016 (NMED 2016c) for the Final IM Report (URS 2016) that confirms CAC without Controls status is provided in **Attachment IV**.

4. SITE TU506 (AOC-UST-901), BUILDING 901 UST

Location – TU506

TU506, Building 901 UST, is also identified as AOC-UST-901. The Final IM Report (URS 2016) identified the location of TU506 as at Building 901 (49th Materiel Management Group repair hangar) on the southwestern portion of Holloman AFB, directly adjacent to the airfield Controlled Area and connected to the main airfield by Taxiway L. Only Building 901 is present at this site. It is of slab-on-grade construction, and provides hangar space for equipment receiving, repair, and redeployment to active service. A site map is presented as **Figure I-4** in **Attachment I**.

History / Current and Anticipated Future Land Use – TU506

Records for former UST site TU506 at Building 901 indicate that the associated UST was closed in 1991. Closure records indicate the UST was a bare steel tank with a capacity of 250 gallons. The tank had been in service for 31 years, was used for diesel fuel or used oil storage, and was in poor condition, exhibiting severe corrosion at the time of closure (URS 2009). There was no known internal or external tank protection, and the associated piping was bare steel. Soil contamination was noted during closure; a soil sample taken below the tank had a TPH concentration of 14,000 mg/kg. There are no records to show that soil remediation was performed at that time.

During the 2012 VCM, five soil samples were collected from depths near the water table (approximately 8 ft bgs), at locations surrounding the former UST north of Building 901. No parameters were detected that exceeded NMED residential SSLs. TPH was not detected above the 1,000 mg/kg SSL in any of the soil samples, and no removal actions were conducted (Shaw 2013b).

Three monitoring wells were installed as part of the VCM, one slightly upgradient and two cross-gradient of the former UST location. Seven soil samples were collected from boreholes during well installation activities, and did not indicate the presence of any analytes above the applicable screening or regulatory levels. Iron and manganese were detected above NMWQCC standards in

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a groundwater sample collected from upgradient well TU506-MW01, but not outside the range of expected background concentrations as published in the *Final Basewide Background Study Report* (NationView|Bhate 2011). TPH-gasoline range organics (GRO) and TPH-DRO were detected in the same monitoring well at concentrations greater than the former NMED screening levels (Shaw 2013b). NMED has since discontinued TPH screening levels for groundwater (NMED 2015b).

Evaluation of Relevant Information – TU506

Investigative objectives of the 2014-2015 IM (as described in URS 2016) at TU506 focused on characterizing dissolved-phase TPH exceedances in groundwater recorded during the 2012 VCM investigation down- or cross-gradient of the former UST location.

Investigative work at TU506 included drilling, installation, and development of two monitoring wells (TU506-MW04 and -MW05); and subsequent groundwater sampling and water level gauging within the monitoring well network. Additional sampling work at TU506 was predicated by a minor exceedance of the benzo(a)pyrene MCL in TU506-MW05 during the November 2014 groundwater sampling event. Two subsequent sampling events during 2015 did not detect any contaminant concentrations above the applicable groundwater standards. No direct-push soil borings, soil sampling, or temporary monitoring well installation was performed at this site.

TU506 currently has five permanent groundwater monitoring wells (TU506-MW01, -MW02, -MW03, -MW04, and -MW05) that show no evidence of groundwater contamination related to the former UST. Based on these results and the previous RFI (Shaw 2012b), no excavation or other remedial work was necessary at TU506.

Based on the Final IM Report (URS 2016):

- The 2012 RFI (Shaw 2013b) identified no petroleum hydrocarbon constituents in soil above SSLs in the potential source area.
- The 2012 RFI (Shaw 2013b) concluded that only TPH-DRO was present above groundwater standards and NMED has since discontinued the use of dissolved TPH as a screening tool for groundwater contamination (NMED 2015).
- Groundwater analytical results from November 2014 indicated that only benzo(a)pyrene was present above the MCL in upgradient well TU506-MW05.
 - Two subsequent rounds of groundwater sampling resulted in no exceedances of benzo(a)pyrene detected.
 - No other potential COPCs have been identified at TU506.
 - Groundwater from the only monitoring well that displayed an exceedance of standards has been sampled twice since the previous exceedance of benzo(a)pyrene (TU506-MW05, June and November 2015), and no COPCs exceed the applicable standards.
- Elevated metals concentrations identified in site groundwater are not attributable to the former UST or related historical site operations, and are presumably naturally occurring.

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- Total metals analysis may be greatly influenced by suspended particulates within the sample aliquot, and any particulates contained within the preserved sample bottles are artifacts of the natural soil. Dissolved metals analysis shows a distinct difference from total metals analysis and the NMWQCC groundwater standards are based on the dissolved fraction.

Based on the current evaluation, it was recommended that TU506 be considered for CAC without Controls status. NMED approved the Final IM Report (URS 2016) in a June 9, 2016 letter (NMED 2016c) (**Attachment IV**) confirming CAC without Controls status for TU506.

Therefore, a Class 3 modification to the Holloman AFB RCRA Hazardous Waste Facility Permit (NMED 2004) pursuant to 40 CFR 270.42(c) is warranted for TU506 (AOC-UST-901) to move the site from Table A (AOCs/SWMUs Requiring Corrective Action) to Table B (CAC without Controls).

Basis of Determination – TU506

TU506 (AOC-UST-901) was proposed for CAC without Controls status based upon Criterion #5 listed in Appendix 4-B of the Holloman AFB RCRA Hazardous Waste Facility Permit (NMED 2004) which states:

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

This criterion was accomplished by analyzing historical data and collecting additional data. The approval letter from NMED dated June 9, 2016 (NMED 2016c), for the Final IM Report (URS 2016) that confirms CAC without Controls status is provided in **Attachment IV**.

5. SITE TU508 (AOC-UST-298), BUILDING 298 UST

Location – TU508

TU508, Building 298 UST, is also identified as AOC-UST-298. The Final IM Report (URS 2016) identified the location of TU508 as between Building 294 and former Building 298 (German Air Force, flight operations) on the southeastern portion of Holloman AFB, within the Holloman AFB airfield Controlled Area. Building 294 and several other buildings are present in the vicinity of this site. Building 294 is of slab-on-grade construction, and provides office and hangar space for the German Air Force’s desert training flight operations. A site map is presented as **Figure I-2** in **Attachment I**.

History / Current and Anticipated Future Land Use – TU508

Records for former UST site TU508 at former Building 298 indicate that three USTs were removed in 1996. Closure records indicate that the three USTs were each constructed of fiberglass reinforced plastic (URS 2009). Two of the tanks had a capacity of 5,000 gallons each; one held jet fuel (JP4/8) and the other held gasoline. A third tank had a capacity of 3,000 gallons and held diesel fuel. There was no internal or external tank protection, and the associated piping

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was also fiberglass reinforced plastic. The tanks were removed by excavation, cut into 3 ft by 5 ft pieces, and transported off site for disposal. Records also show that soil samples were collected from the excavation walls and floor, and from the resultant soil stockpile following soil removal. Analytical results for the soil samples indicated the presence of TPH-DRO in excess of 1,000 mg/kg from a depth of 4.5 to 6.0 ft bgs and from within the soil stockpile. An additional 600 CYs of soil were excavated from the former UST pit, resulting in soil concentrations of TPH-DRO below 1,000 mg/kg in the remaining soils (URS 2009).

During the 2012 VCM, five soil samples were collected from depths near the water table (approximately 8 ft bgs from the base of the former UST pit). TPH results showed no exceedances of the NMED residential SSLs in soil samples collected from the former UST area. The concentration of arsenic exceeded NMED residential SSLs in one soil sample (Shaw 2013c).

Three monitoring wells were installed as part of the VCM, one slightly upgradient and two downgradient of the former UST location. Six soil samples were collected from boreholes during well installation activities, and did not indicate the presence of any petroleum-hydrocarbon-related analytes above the applicable screening or regulatory levels. Concentrations of arsenic and cobalt exceeded the NMED residential SSL in three samples at two of the wells (TU508-MW01 and -MW02). Analytical results from groundwater samples collected from these three monitoring wells indicated the presence of various chlorinated volatile organic compounds (VOCs) above the applicable groundwater standards, but no elevated arsenic or cobalt. Four existing monitoring wells located in the vicinity of former Building 298 (and associated with a separate ERP site, SS-18 [AOC-H], Chromic Acid Spill Area) were added to the sampling program to further investigate the presence of chlorinated solvents not normally associated with petroleum hydrocarbons (i.e., gasoline, diesel fuel, and JP 4/8). The analytical results for the four SS-18 monitoring wells indicated the presence of various chlorinated VOCs associated with adjacent and overlapping ERP Site SS-18 at concentrations greater than groundwater standards, both upgradient and further downgradient of the site of the Building 298 former USTs (Shaw 2013c).

The investigation and remediation of chlorinated VOC groundwater contamination at SS-18 is being conducted separately from the TU508 site (URS 2015c).

A background value for arsenic of 3.7 mg/kg has been established for soil at Holloman AFB (NMED 2011). The arsenic concentrations exceeding standards in soil at TU508 range from 3.9 to 4.6 mg/kg (Shaw 2013c). This is slightly above the background value, but not outside the range of expected background concentrations as published in the *Final Basewide Background Study Report* (NationView|Bhate 2011), and presumably naturally occurring.

However, the cobalt result (68.7 mg/kg) is an order of magnitude above the accepted background value for Holloman AFB (7.7 mg/kg). The elevated cobalt concentration was contained in a sample collected from a depth of 0 to 2 ft bgs in fill material at downgradient well boring TU508-MW01 and cannot be explained by natural processes. However, it is unlikely that this single detection of cobalt is associated with the former USTs at Building 298 (Shaw 2013c).

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Evaluation of Relevant Information – TU508

Investigative objectives of the 2014-2015 IM (as described in URS 2016) at TU508 focused on characterizing petroleum hydrocarbon exceedances within the investigation area. Site work included drilling and installation of four new monitoring wells. Additionally, a 10 ft by 10 ft area was excavated to address the cobalt exceedance detected in soil recorded in the *Draft RFI Report, Building 298 (TU/US-C508) Group 3 UST Site* (Shaw 2013c).

TU508 currently has seven groundwater monitoring wells (TU508-MW01, -MW02, -MW03, -MW04, -MW05, -MW06, and -MW07) that show no evidence of petroleum contamination in groundwater related to the former UST. Water levels and groundwater samples have also been collected from monitoring wells associated with adjacent and overlapping site SS-18 to assist in the overall environmental assessment at TU508.

Based on the *Final IM Report* (URS 2016):

- The area of elevated cobalt in soil has been removed by excavation, and confirmation soil sampling indicates no cobalt remains in the subsurface above the residential SSL.
- There are currently no groundwater sample locations for TU508 with UST-related COPC concentrations exceeding applicable groundwater standards.
 - Benzene previously detected slightly above the MCL in two site monitoring wells has dissipated as of November 2015.
 - Chlorinated solvents present at TU508 in excess of the MCL and/or NMWQCC groundwater standards are being addressed separately, under corrective actions for ERP site SS-18.
- Elevated metals concentrations identified in site groundwater are not attributable to the former UST or related historical site operations, and are presumably naturally occurring.
 - Total metals analysis may be greatly influenced by suspended particulates within the sample aliquot, and any particulates contained within the preserved sample bottles are artifacts of the natural soil. Dissolved metals analysis shows a distinct difference from total metals analysis and the NMWQCC groundwater standards are based on the dissolved fraction.

Based on the current evaluation, it was recommended that TU508 be considered for CAC without Controls status. NMED approved the *Final IM Report* (URS 2016) in a June 9, 2016 letter (NMED 2016c) (**Attachment IV**) confirming CAC without Controls status for TU508.

Therefore, a Class 3 modification to the Holloman AFB RCRA Hazardous Waste Facility Permit (NMED 2004) pursuant to 40 CFR 270.42(c) is warranted for TU508 (AOC-UST-298) to move the site from Table A (AOCs/SWMUs Requiring Corrective Action) to Table B (CAC without Controls).

In NMED's June 9, 2016 approval letter (NMED 2016c), the *Final IM Report* (URS 2016) was approved with the following comment: "Monitoring wells installed at AOC-UST-298 (TU508) shall be retained for additional monitoring and corrective action associated with the adjacent and

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overlapping site SS-018 (AOC-H), which is undergoing corrective action.” Therefore, site monitoring wells associated with TU508 will be retained for additional monitoring or corrective actions associated with adjacent and overlapping site SS-18.

Basis of Determination – TU508

TU508 (AOC-UST-298) was proposed for CAC without Controls status based upon Criterion #5 listed in Appendix 4-B of the Holloman AFB RCRA Hazardous Waste Facility Permit (NMED 2004) which states:

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

This criterion was accomplished by analyzing historical data, collecting additional data, and excavating cobalt-impacted soil. The approval letter from NMED dated June 9, 2016 (NMED 2016c), for the Final IM Report (URS 2016) that confirms CAC without Controls status is provided in **Attachment IV**.

6. SITE TU518 (AOC-UST-7003), NATIONAL RADAR TEST FACILITY UST

Location – TU518

TU518, National Radar Test Facility (or RATSCAT), is also identified as AOC-UST-7003. The Final IM Report (URS 2016) identified the location of TU518 as between Buildings 7003 and 7004 (former RATSCAT) approximately 8 miles west of the main cantonment of Holloman AFB, within the White Sands dune field. Buildings 7003 and 7004, as well as several other buildings, are present at this site; however, the former test facility is now closed and unoccupied. Buildings 7003 and 7004 are the backup generator and wastewater treatment system for the former RATSCAT facility, respectively. Neither building is designed to be occupied, as they provide equipment space for the (now disused) backup generator, associated switchgear, and wastewater treatment facility. A site map is presented as **Figure I-5** in **Attachment I**.

History / Current and Anticipated Future Land Use – TU518

Records for former UST site TU518 at Building 7003 indicate that the associated UST was removed from the National Radar Testing Facility in 2008 (URS 2009). During excavation, PCS was evident from the top of the excavation down toward the UST, indicating that the contamination was likely due to repeated overfills. Sample results showed TPH concentrations of up to 21,000 mg/kg in the soil. According to Base personnel, NMED was on site during tank removal and verified that the tank was in sound condition and that the contamination was likely due to overfilling. The removal project was not funded for remediation; therefore, the excavation was filled with clean soil without removing all contamination (URS 2009).

During the 2012 VCM, soil excavation was performed to remove PAH-impacted soil, but it also exposed additional petroleum-impacted soil. Approximately 45.5 CYs of soil were removed for off-site disposal from an excavation 16 ft long by 13 ft wide by 7 to 9 ft deep. Confirmation soil

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samples were collected from the excavation walls and floor. Petroleum-related contaminants were detected in the soil samples at concentrations that exceeded NMED residential SSLs. The parameters exceeding the SSLs were TPH-DRO (in one floor sample) and several PAHs (in two side wall samples) (Shaw 2013d).

Although groundwater was not investigated due to direct push technology (DPT) refusal, historical analytical results indicated that TDS concentrations were likely in excess of 10,000 mg/L, and therefore, the groundwater might be considered non-potable as indicated in NMAC 20.6.2 (Shaw 2013d).

Evaluation of Relevant Information – TU518

Investigative and remedial objectives of the 2014-2015 IM (as described in URS 2016) at TU518 focused on delineation and remediation of TPH and PAH exceedances in soil near the former UST location, as well as characterization of potential groundwater impacts resulting from the UST release and other historic site operations. Investigative work at TU518 included drilling one soil boring, installing five new monitoring wells (TU518-MW04, -MW05, -MW06, -MW07 and -MW08), sampling soil and groundwater, and measuring water levels. Remedial actions in the impacted area included two soil excavation and confirmation soil sampling events within the excavations.

TU518 currently has five functional groundwater monitoring wells (TU518-MW04, -MW05, -MW06, -MW07, and -MW08) that show no evidence of groundwater contamination related to the former UST. Monitoring wells TU518-MW01, -MW02, and -MW03 were drilled by Shaw in 2012 as part of the VCM and RFI; however, the boreholes did not yield water by the time refusal was encountered at 8 ft bgs, and the borings were never completed as monitoring wells (Shaw 2013d). These “wells” were entered into the USAF’s Environmental Resources Program Information Management System (ERPIMS) database, and therefore, the more recent well identifiers start at “MW04.”

Based on the Final IM Report (URS 2016):

- The source area for petroleum hydrocarbons has been removed by excavation, and confirmation soil sampling indicates no PCS remains in the subsurface at concentrations greater than screening levels.
- There are no groundwater sample locations with analytical results exceeding applicable groundwater standards, including TU518-MW08 (installed within the excavated source area).
 - Groundwater within the former source area has been sampled twice since remedial excavation was performed (TU518-MW08, May and November 2015), and no COPCs exceed the applicable standards.
- Elevated metals concentrations identified in site groundwater are not attributable to the former UST or related historical site operations, and are presumably naturally occurring.
 - Total metals analysis may be greatly influenced by suspended particulates within the sample aliquot, and any particulates contained within the preserved sample bottles are artifacts of the natural soil. Dissolved metals analysis shows a distinct difference from

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total metals analysis and the NMWQCC groundwater standards are based on the dissolved fraction.

Based on the current evaluation, it was recommended that TU518 be considered for CAC without Controls status. NMED approved the Final IM Report (URS 2016) in a June 9, 2016 letter (NMED 2016c) (**Attachment IV**) confirming CAC without Controls status for TU518.

Therefore, a Class 3 modification to the Holloman AFB RCRA Hazardous Waste Facility Permit (NMED 2004) pursuant to 40 CFR 270.42(c) is warranted for TU518 (AOC-UST-7003) to move the site from Table A (AOCs/SWMUs Requiring Corrective Action) to Table B (CAC without Controls).

Basis of Determination – TU518

TU518 (AOC-UST-7003) was proposed for CAC without Controls status based upon Criterion #5 listed in Appendix 4-B of the Holloman AFB RCRA Hazardous Waste Permit (NMED 2004) which states:

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

This criterion was accomplished by analyzing historical data, collecting additional data, and excavating PCS. The approval letter from NMED dated June 9, 2016 (NMED 2016c), for the Final IM Report (URS 2016) that confirms CAC without Controls status is provided in **Attachment IV**.

E. Permit Modification Request Petition Process

The general procedures followed by NMED for RCRA Hazardous Waste Facility Permit modifications are described below.

Holloman AFB has initiated the permit modification process by preparing this Class 3 Permit Modification Request to address the proposed change in status from Corrective Action Required (CAR) to CAC for six sites. If approved, NMED will initiate a RCRA Class 3 permit modification to Holloman AFB’s RCRA Hazardous Waste Facility Permit No. NM6572124422.

Holloman AFB will publish a public notice (Notification of a Request for Modification of Existing RCRA Permit). In the public notice, Holloman AFB will announce its intent to apply to NMED for modification of its existing RCRA Hazardous Waste Facility Permit. NMED has already concurred that the sites addressed have undergone the necessary remediation and investigation to qualify for CAC and may now undergo the public review process. The purpose of the notification is to inform the public of Holloman AFB’s intent and offer the public a chance to review and comment on the proposed actions.

A 60-day public comment period will be initiated with posting of the public notice described above. Only comments and/or requests received on or before the end of the public comment period will be considered. Comments will be directed to:

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Agency Contact: Mr. John Kieling, Hazardous Waste Bureau Chief
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303
(505) 476-6035
Ref: HAFB CAC Proposals

(This agency contact information will be updated at the time of the public notice, as needed.)

Hard copies of the Holloman AFB CAC proposals will be available for public review in the Alamogordo Public Library, 920 Oregon Avenue, Alamogordo, NM throughout the 60-day comment period. Documents may also be made available at the NMED Santa Fe office listed above.

A public meeting will be held during the public comment period in the Sergeant Willie Estrada Memorial Civic Center, 801 East First Street, Alamogordo, NM or alternate location to be described in the public notice.

Holloman AFB will also provide a point of contact for the public comment period. Inquiries from the public may be addressed to the 49th Wing Public Affairs Office at 490 First Street, Building 29, Suite 1500, Holloman AFB, NM 88330 or (575) 572-7381 or Adam Kusmak Chief, Holloman AFB Installation Management Flight.

(This contact information will be updated at the time of the public notice, as needed.)

After the 60-day public comment period, NMED will review the comments (if any). If no comments are received during the public comment period, NMED will create a public notice of the permit status change. If comments are received, then NMED may hold a public meeting to resolve potential issues raised in comments prior to issuing the permit modification.

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F. References

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- NMED. 2013. Disapproval Letter for Accelerated Corrective Measures Completion Report for Site SS-13, December 2011, Holloman Air Force Base. October 1.
- NMED. 2014. Disapproval Letter for Accelerated Corrective Measures Completion Report, Sites OT-32 and RW-42, September 2012, Holloman Air Force Base. September 18.
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- NMED. 2015b. Risk Assessment Guidance for Site Investigations and Remediation. New Mexico Environment Department. Santa Fe, New Mexico. July.
- NMED. 2016a. Approval Letter for Evaluation of Arsenic in Groundwater at SS-13 (AOC-J), Holloman Air Force Base, New Mexico, November 2015. EPA ID # NM6572124422, HWB-HAFB-12-001. January 19.
- NMED. 2016b. Partial Approval Letter for Accelerated Corrective Measures Completion Report, Sites OT-32 and RW-42, September 2012, Holloman Air Force Base, EPA ID # NM6572124422, HWB-HAFB-12-017. February 22.

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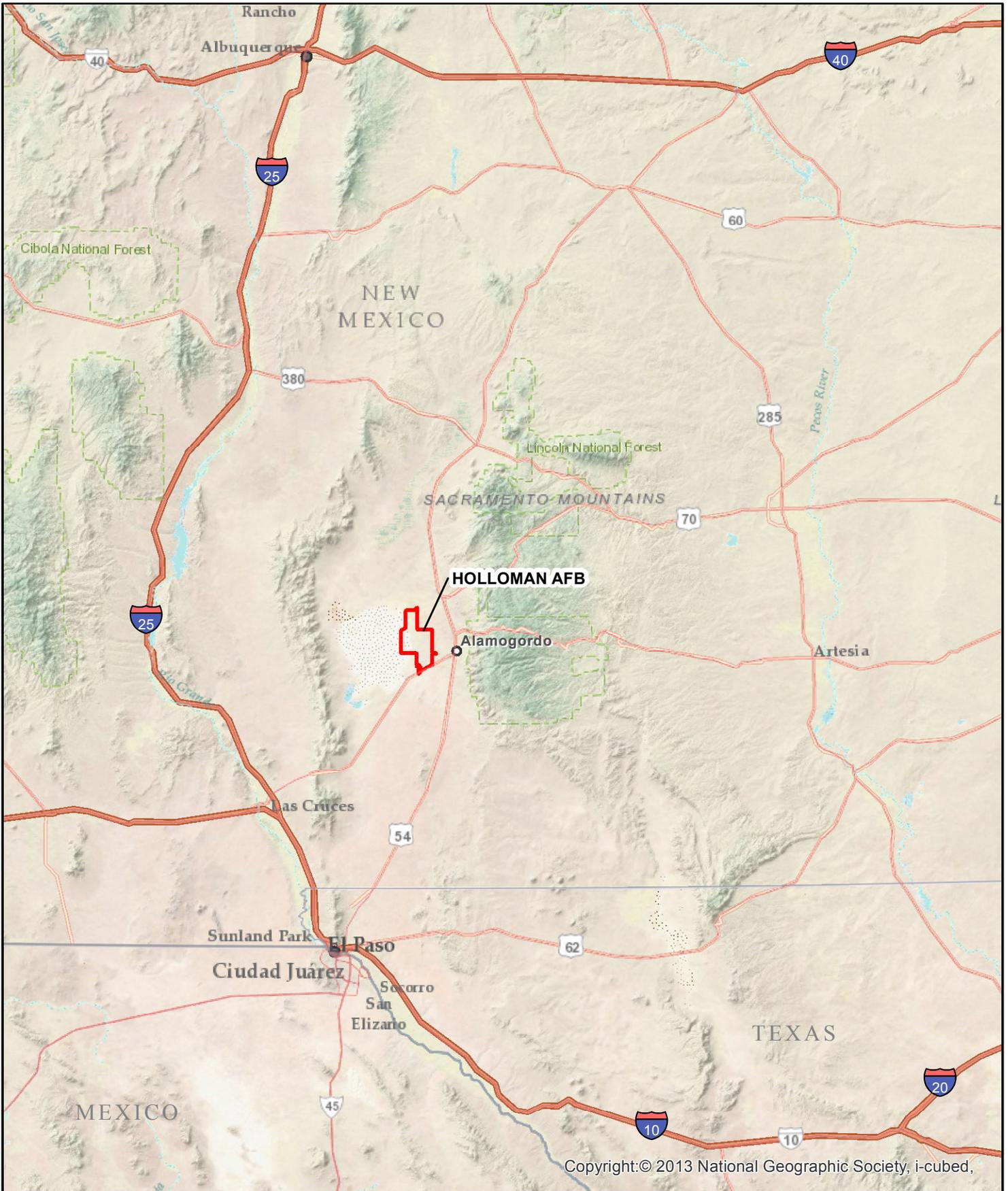
CLASS 3 PERMIT MODIFICATION REQUEST

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CLASS 3 PERMIT MODIFICATION REQUEST

Attachment I Maps and Figures

Figure I-1	Base Location Map
Figure I-2	Site Map, SS-13, TU503, and TU508
Figure I-3	Site Map, OT-32
Figure I-4	Site Map, TU506
Figure I-5	Site Map, TU518



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0 100,000 200,000

Scale in Feet

1 in = 175,000 feet

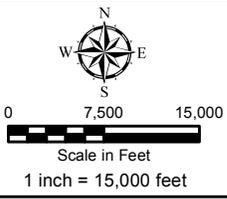
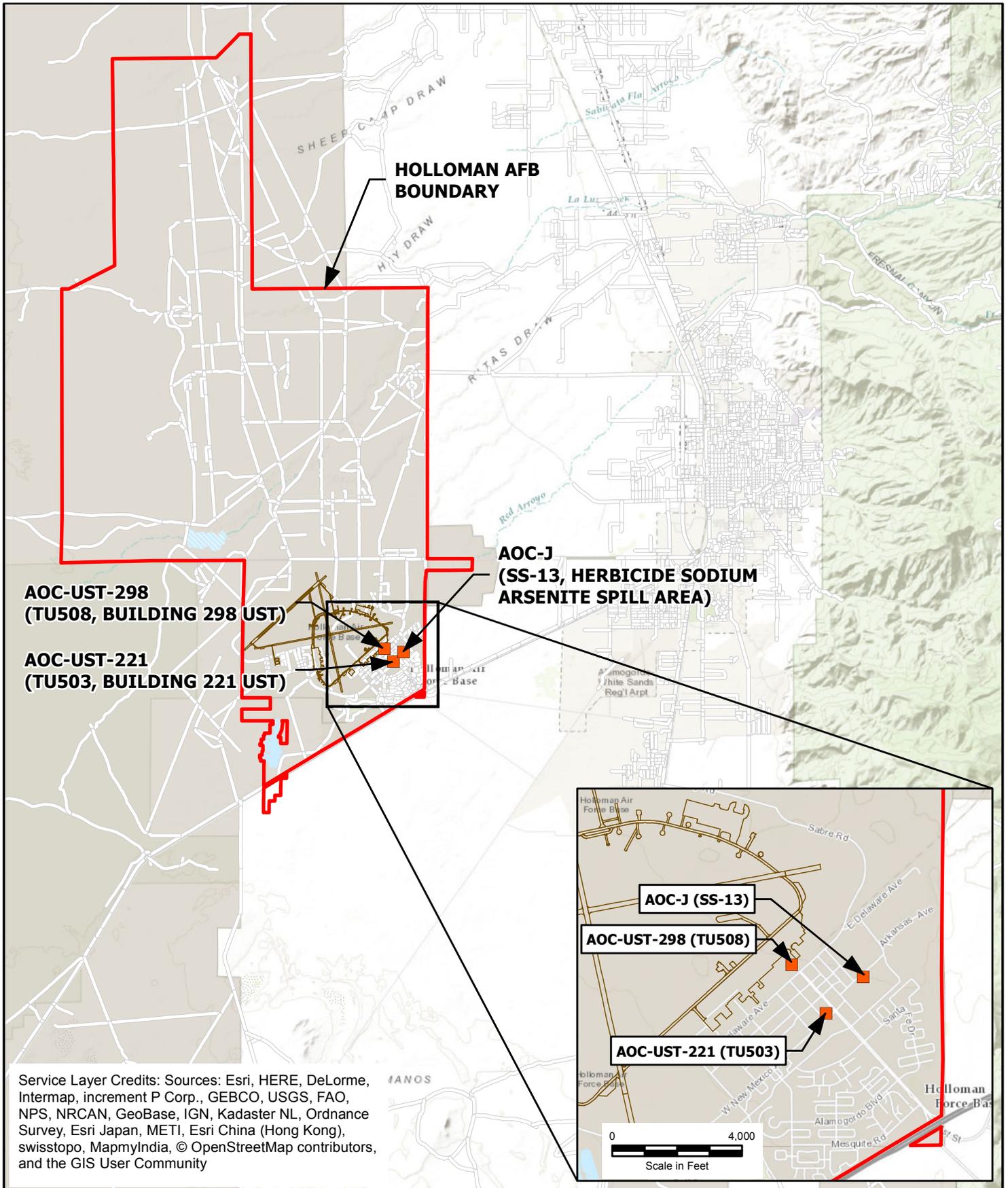


Designed	SF
Drawn	LED
Checked	RLH
Peer Review	MEH
Project Manager	BGP
Project Number	60425210.23446543

Figure I-1
Base Location Map

Holloman Air Force Base
USAF

July 5, 2016



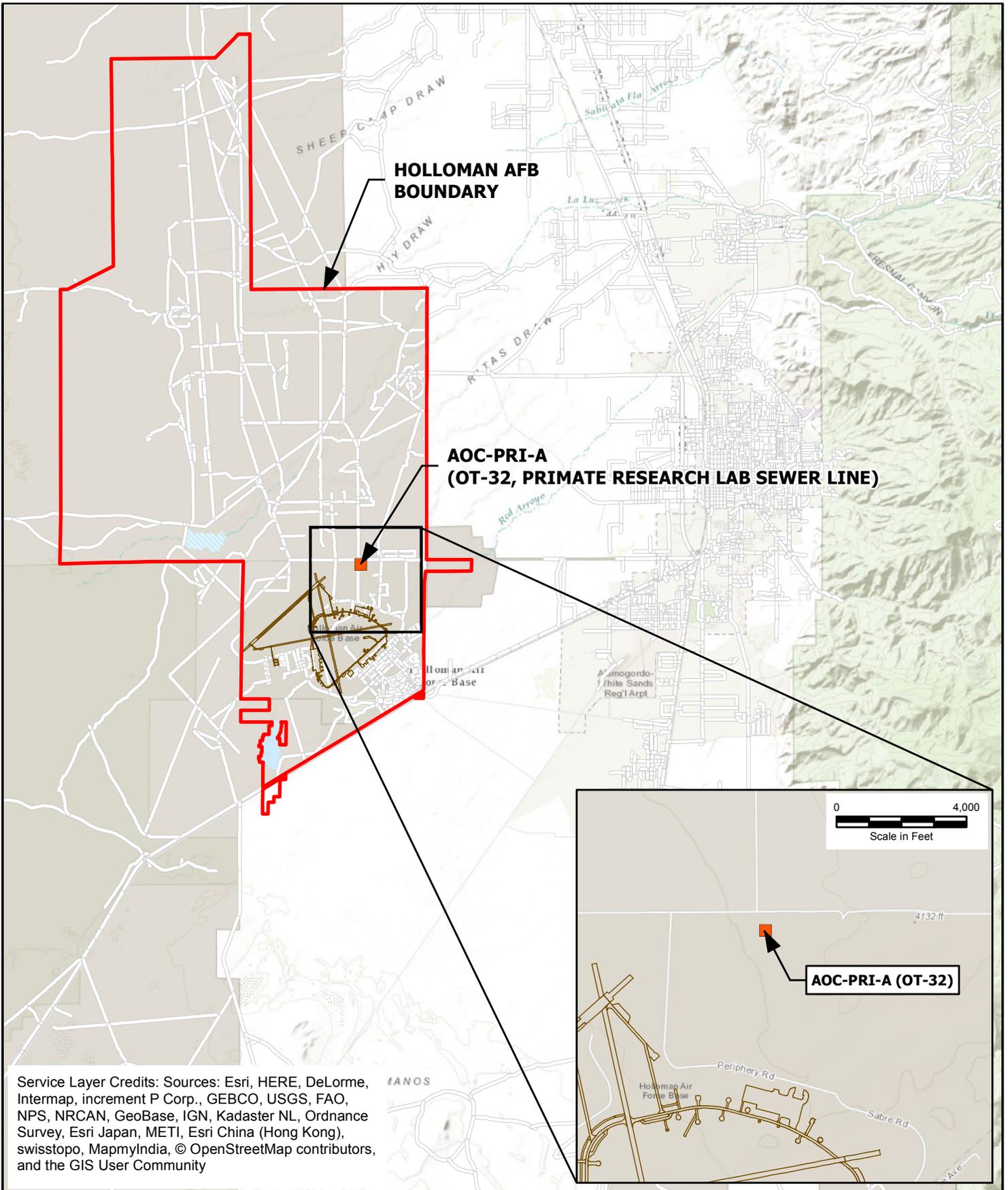
Designed	JDM
Drawn	LED
Checked	TD
Peer Review	TD
Project Manager	BGP
Project Number	60425210.23446543

Figure I-2
Site Map
SS-13, TU503, and TU508

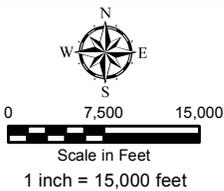
Holloman Air Force Base
USAF

DRAFT

July 12, 2016



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Designed	JDM
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Checked	TD
Peer Review	TD
Project Manager	BGP
Project Number	60425210.23446543

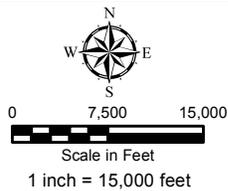
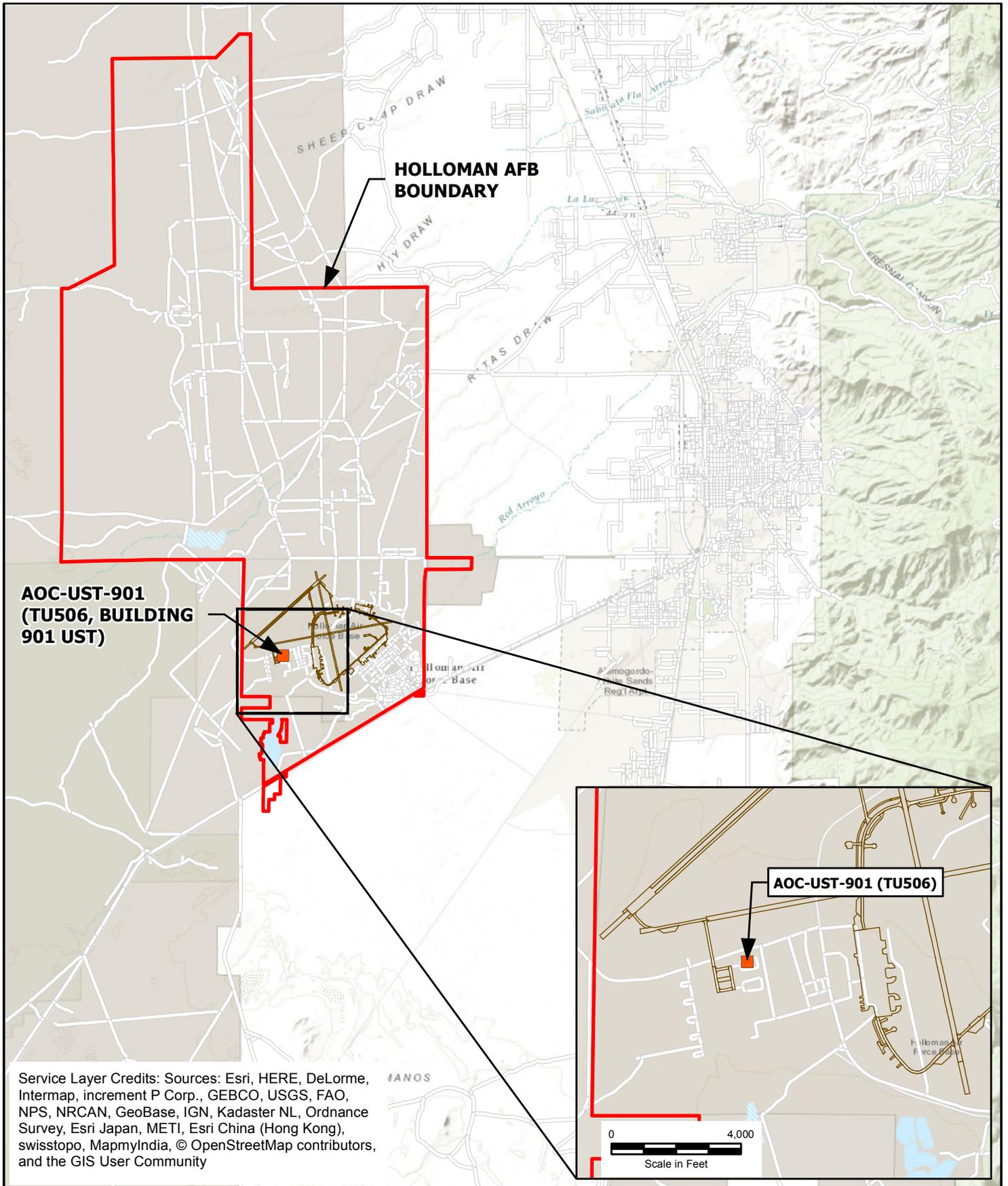
Figure I-3
Site Map
OT-32

Holloman Air Force Base

DRAFT

USAF

July 12, 2016



Designed	JDM
Drawn	LED
Checked	TD
Peer Review	TD
Project Manager	BGP
Project Number	60425210.23446543

Figure I-4
Site Map
TU506

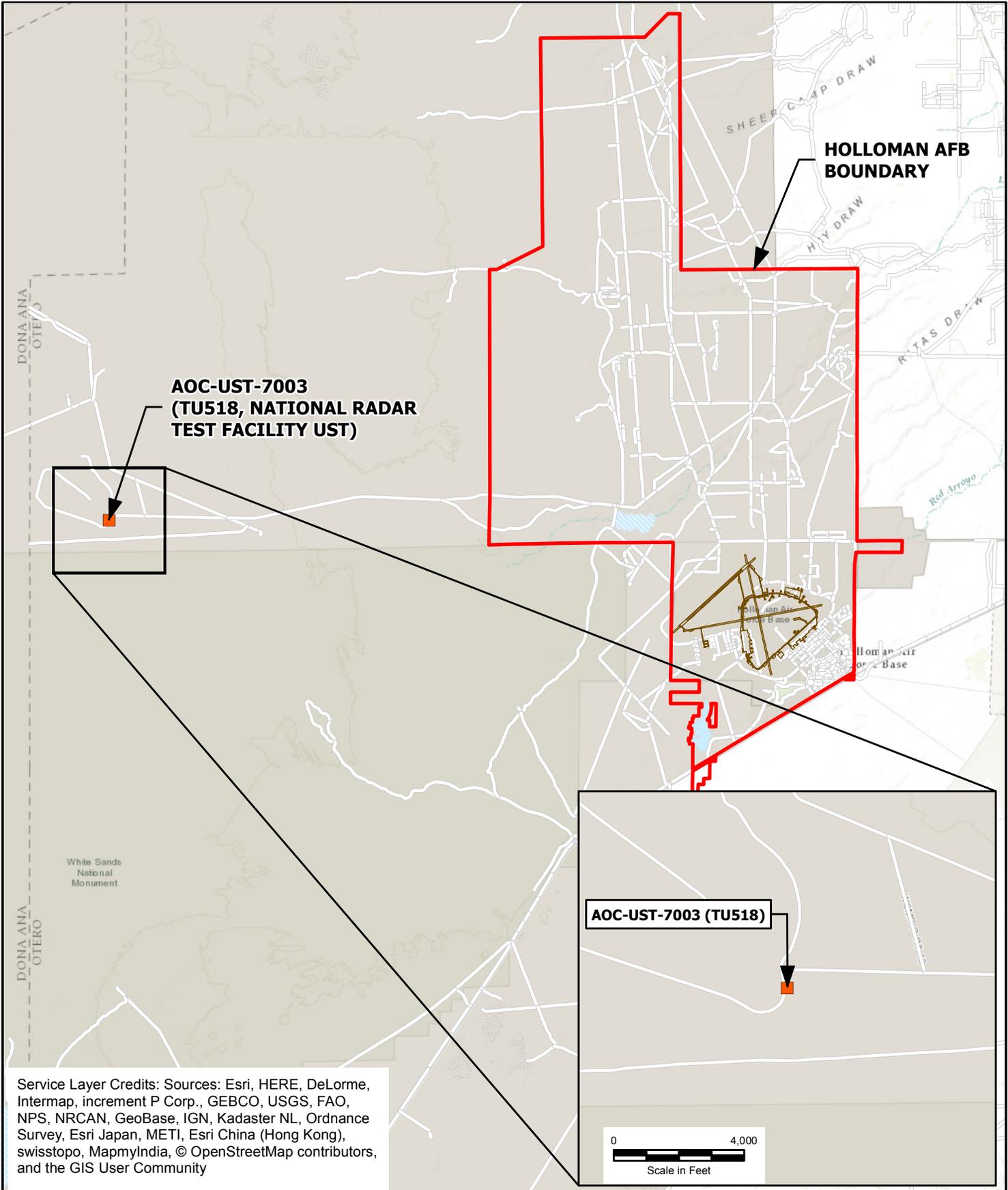
Holloman Air Force Base

DRAFT

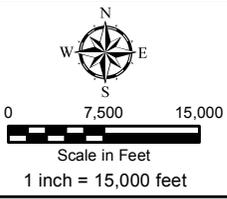
USAF

July 12, 2016

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Designed	JDM
Drawn	LED
Checked	TD
Peer Review	TD
Project Manager	BGP
Project Number	60425210.23446543

Figure I-5
Site Map
TU518

Holloman Air Force Base

DRAFT **USAF** July 12, 2016

CLASS 3 PERMIT MODIFICATION REQUEST

Attachment II

NMED Approval Letter for Evaluation of Arsenic in Groundwater at SS-13 (AOC-J)



SUSANA MARTINEZ
Governor
JOHN A. SANCHEZ
Lieutenant Governor

NEW MEXICO ENVIRONMENT DEPARTMENT

2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Phone (505) 476-6000 Fax (505) 476-6030
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RYAN FLYNN
Cabinet Secretary
BUTCH TONGATE
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

January 19, 2016

DeAnna M. Rothhaupt
Chief, Holloman AFB Environmental
49th CES/CEIE
550 Tabosa Avenue
Holloman AFB, NM 88330

**RE: APPROVAL
EVALUATION OF ARSENIC IN GROUNDWATER AT SS-13 (AOC-J),
HOLLOMAN AIR FORCE BASE, NEW MEXICO, NOVEMBER 2015
HOLLOMAN AIR FORCE BASE, EPA ID# NM6572124422
HWB-HAFB-12-001**

Dear Ms. Rothhaupt:

The New Mexico Environment Department (NMED) has reviewed the Holloman Air Force Base (Permittee) document: *Evaluation of Groundwater at SS-13 (AOC-J), Holloman Air Force Base, New Mexico, November 2015*, which was received on November 13, 2015. The subject groundwater characterization report is approved.

The Permittee may request a Class 3 modification to change the status of SS-13 (AOC-J) from Corrective Action Required to Corrective Action Complete in accordance with 40 C.F.R. §270.42(c). The Class 3 permit modification (PMR) process includes requirements for public notice and for providing opportunity for public comment that are mandatory. NMED's preliminary determination that corrective action is complete is subject to NMED's reservation of rights in the event that new information or unknown conditions are discovered. As part of the PMR process, new information may become available during the public comment period that conditions at a given site are not protective of human health or the environment. NMED reserves all rights to withdraw its preliminary decision that corrective action is complete, if new information indicates that further corrective action is needed to protect human health or the environment.

Ms. Rothhaupt
January 19, 2016
Page 2

If you have any questions regarding this letter, please contact Mr. Brian Salem of my staff at (505) 222-9576.

Sincerely,



John E. Kieling
Chief
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
B. Salem, NMED HWB
C. Amindyas, NMED HWB
D. Strasser, NMED HWB
C. Schick, HAFB
C. Hendrickson, EPA Region 6 (6PD-F)
L. King, EPA Region 6 (6PD-F)

File: HAFB 2016 and Reading
HWB-HAFB-12-001

CLASS 3 PERMIT MODIFICATION REQUEST

Attachment III

**NMED Partial Approval Letter for Accelerated Corrective
Measures Completion Report, Sites OT-32 and RW-42
*(approves site OT-32)***



SUSANA MARTINEZ
Governor
JOHN A. SANCHEZ
Lieutenant Governor

NEW MEXICO ENVIRONMENT DEPARTMENT

2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Phone (505) 476-6000 Fax (505) 476-6030
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RYAN FLYNN
Cabinet Secretary
BUTCH TONGATE
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

February 22, 2016

Ms. DeAnna Rothhaupt
Chief, Holloman AFB Environmental
49 CES/CEIE
550 Tabosa Avenue
Holloman AFB, NM 88330-8261

**RE: PARTIAL APPROVAL
ACCELERATED CORRECTIVE MEASURES COMPLETION REPORT, SITES
OT-32 AND RW-42, SEPTEMBER 2012
HOLLOMAN AIR FORCE BASE, EPA ID # NM6572124422
HWB-HAFB-12-017**

Dear Ms. Rothhaupt:

On September 18, 2014 the New Mexico Environment Department (NMED) issued a Notice of Disapproval (NOD) to Holloman Air Force Base (the Permittee) for the Accelerated Corrective Measures Completion Report (the ACM Report) for sites OT-32 (Area of Concern [AOC] PRI-A) and RW-42 (Solid Waste Management Unit [SWMU] 111), dated September 2012. The NOD addressed deficient issues at both OT-32 and RW-42. Since the issuance of the NOD, the Permittee has elected to separate the reporting of the remedial actions at these sites.

On December 5, 2014 and March 3, 2015 the NMED approved the Permittee's proposals for additional site monitoring and reporting activities at site OT-32 and stipulated that a separate work plan for investigative activities at site RW-42 be submitted. In a letter dated October 13, 2015 the NMED approved a request for an extension of the deadline to submit the report for site OT-32 and the work plan for site RW-42 until November 25, 2015. The Permittee submitted the *Letter Report for OT-32* (Letter Report), dated November 2, 2015, addressing the additional site monitoring activities required by NMED. However, the required work plan for site RW-42 has not been submitted to date. Therefore, this letter provides a partial approval of the ACM Report as only site OT-32 has been satisfactorily addressed.

Regarding site OT-32, the rationale for the September 18, 2014 NOD was based upon the detection of 1,1-dichloroethene (1,1-DCE) in monitoring well OT32-TMW09 (TMW09) at 18 micrograms per liter ($\mu\text{g/L}$) in 2007, that exceeded the New Mexico Water Quality Control Commission (NMWQCC) ground water standard of 5 $\mu\text{g/L}$ and the questionable ground water flow direction as depicted in the ACM Report. The NOD required that the Permittee conduct two additional quarters of ground water sampling from TMW09 for volatile organic compounds (VOCs) and total dissolved solids and that the potentiometric surface map of the site be revised based upon additional ground water level measurements. The NOD further stated that the NMED would make a decision regarding the need for further site characterization upon review of the results.

The November 2, 2015 Letter Report provides the results of ground water sampling conducted in October 2014 and July 2015. In addition to samples being collected from TMW09, samples were collected from wells TMW08 and TMW10, located approximately 200 feet upgradient and downgradient of TMW09, for VOCs. This sampling confirmed that elevated levels of 1,1-DCE are limited to TMW09. Potentiometric surface data collected during this period confirmed the direction of ground water flow. The analytical results from 2014 and 2015 indicate that 1,1-DCE was still present in TMW09 at 12 $\mu\text{g/L}$ and 7.5 $\mu\text{g/L}$, respectively. This shows that the concentration of 1,1-DCE has decreased by approximately 58 percent since 2007. In the July 2007 sampling event for TMW09, the total dissolved solids (TDS) concentration in ground water was 13,000 milligrams per liter (mg/L) and in the July 2015 sampling event it was 14,000 mg/L. This is greater than the NMWQCC threshold for potable water (10,000 mg/L) and thus, the ground water is designated as unfit for human consumption. NMED notes that, as per 20.6.2.3101 NM Administrative Code, the NMWQCC standards for maximum allowable concentrations of contaminants are to be applied to ground water with TDS at a concentration of 10,000 mg/L or less.

Based on these data, NMED finds that the extent of 1,1-DCE is localized, attenuating, and approaching the relevant NMWQCC standard. Although 1,1-DCE was detected above NMWQCC standards in TMW09, the elevated TDS concentration indicates that the underlying ground water is not a potential water supply. In addition, site OT-32 is located in a remote, vacant portion of the facility with no pathway for VOC vapor inhalation. Therefore, the NMED finds that site OT-32 (AOC-PRI-A) is suitable for a finding of Corrective Action Complete.

The Permittee may request a Class 3 permit modification for Corrective Action Complete for AOC-PRI-A in accordance with 40 C.F.R. §270.42(c). The Class 3 modification process includes requirements for public notice and for providing opportunity for public comment that are mandatory. NMED's preliminary determination that corrective action is complete is subject to NMED's reservation of rights for new information or unknown conditions. As part of this process, new information may become available during the public comment period that a given site is not protective of human health or the environment. NMED reserves all rights to withdraw its preliminary decision that corrective action is complete, if new information indicates that further corrective action is needed to protect human health or the environment.

Ms. Rothhaupt
February 22, 2016
Page 3 of 3

It should be noted that AOC-PRI-A, the Primate Research Lab Sewer Line, is incorrectly listed on Table B of Permit Appendix IV-A, *Summary of Solid Waste Management Units and Areas of Concern With Corrective Action Complete Without Controls*, with the comment that "EPA listed the site in 1988 as a SWMU with no further action required". It is apparent that the EPA had no knowledge of the 1,1-DCE ground water contamination in monitoring well TWW09 in 1988. Upon approval of the Class 3 permit modification, this AOC will remain on the aforementioned Table B. Should the permit modification request be denied, this AOC will be moved to Table A of Permit Appendix IV-A, *Summary of Solid Waste Management Units and Areas of Concern Requiring Corrective Action*.

If you have any questions regarding this matter, please contact Mr. David Strasser of my staff at (505) 222-9526.

Sincerely,



John E. Kieling
Chief

Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
C. Amindyas, NMED HWB
D. Strasser, NMED HWB
C. Schick, HAFB
C. Hendrickson, EPA-Region 6 (6PD-N)
L. King, EPA-Region 6 (6PD-N)

File: HAFB 2016 and Reading
HAFB-12-017

CLASS 3 PERMIT MODIFICATION REQUEST

Attachment IV

**NMED Approval Letter for Final Interim Measures Report,
Group 3 Former Underground Storage Tank Sites: AOC-UST-221
(TU503), AOC-UST-298 (TU508), AOC-UST-901 (TU506), and
AOC-UST-7003 (TU518)**



SUSANA MARTINEZ
Governor
JOHN A. SANCHEZ
Lieutenant Governor

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RYAN FLYNN
Cabinet Secretary
BUTCH TONGATE
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

June 9, 2016

DeAnna Rothhaupt
Chief, Holloman AFB Environmental
49th CES/CEIE
550 Tabosa Avenue
Holloman AFB, NM 88330

**RE: APPROVAL
FINAL INTERIM MEASURES REPORT, GROUP 3 FORMER UNDERGROUND
STORAGE TANK SITES: AOC-UST-221 (TU503), AOC-UST-298 (TU508), AOC-
UST-901 (TU506) AND AOC-UST-7003 (TU518), HOLLOWAN AIR FORCE
BASE, NEW MEXICO, MAY 2016
HOLLOWAN AFB, EPA ID# NM6572124422
HWB-HAFB-16-008**

Dear Ms. Rothhaupt:

The New Mexico Environment Department (NMED) has reviewed the document: *Final Interim Measures Report, Group 3 Former Underground Storage Tank Sites: AOC-UST-221 (TU503), AOC-UST-298 (TU508), AOC-UST-901 (TU506) and AOC-UST-7003 (TU518), Holloman Air Force Base, New Mexico, April 2016* which was received on May 17, 2016. The subject report is hereby approved with the following comment:

Monitoring wells installed at AOC-UST-298 (TU508) shall be retained for additional monitoring and corrective action associated with the adjacent and overlapping site SS-018 (AOC-H), which is undergoing corrective action.

The Permittee may request a Class 3 permit modification for Corrective Action Complete for AOC-UST-221 (TU503), AOC-UST-298 (TU508), AOC-UST-901 (TU506) and AOC-UST-7003 (TU518) in accordance with 40 C.F.R. §270.42(c). The Class 3 permit modification

Ms. Rothhaupt
June 9, 2016
Page 2

process includes requirements for public notice and for providing opportunity for public comment that are mandatory. NMED's preliminary determination that corrective action is complete is subject to NMED's reservation of rights based on new information or unknown conditions. As part of the permit modification process, new information may become available during the public comment period that a given site is not protective of human health or the environment. NMED reserves all rights to withdraw its preliminary decision that corrective action is complete, if new information indicates that further corrective action is needed to protect human health or the environment.

If you have any questions regarding this letter, please contact Mr. Brian Salem of my staff at (505) 222-9576.

Sincerely,



John E. Kieling
Chief
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
B. Salem, NMED HWB
C. Amindyas, NMED HWB
D. Strasser, NMED HWB
C. Schick, HAFB
L. King, EPA, Region 6 (6PD-F)
C. Hendrickson, EPA, Region 6 (6PD-F)

File: HAFB 2016 and Reading
HWB-HAFB-16-008