

FACT SHEET/STATEMENT OF BASIS

**Request for Corrective Action Complete Status
for
Two Solid Waste Management Units**

**Holloman Air Force Base
New Mexico**

RCRA Permit No. NM6572124422

February 24, 2023

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ATTACHMENT

Draft Permit - Modified Tables, Permit Appendix 4-A, Summary of Solid Waste Management Units/Areas of Concern, Table A, Table B, and Table C

ACRONYMS AND ABBREVIATIONS

AAF	Army Air Field
ACM	Accelerated Corrective Measures
AFB	Air Force Base
AOC	Area of Concern
bgs	Below ground surface
Bhate	Bhate Environmental Associates, Inc.
CA	Corrective Action
CAC	Corrective Action Complete
CFR	Code of Federal Regulations
DRMO	Defense Reutilization Management Office
DRO	Diesel-range organic
EPA	Environmental Protection Agency
ERP	Environmental Restoration Program
°F	Degrees Fahrenheit
ft	Feet or foot
FS/SOB	Fact Sheet/Statement of Basis
GRO	Gasoline-range organic
HAFB	Holloman Air Force Base
HI	Hazard Index
HSWA	Hazardous and Solid Waste Amendments
IM	Interim measure
IRP	Installation Restoration Program
JP-4	Jet Fuel (Formula 4)
LNAPL	Light non-aqueous phase liquid
LTM	Long term monitoring
MCL	Maximum contaminant level
MDL	Method detection limit
µg/m ³	Micrograms per cubic meter
µg/g	Micrograms per gram
µg/kg	Micrograms per kilogram
µg/L	Micrograms per liter
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter

NCS	Nitrate Characterization Study (Basewide)
ND	Non-detect or not detected
NFA	No further action
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMGWQ	New Mexico Groundwater Quality
NMSA	New Mexico Statutes Annotated
NMWQCC	New Mexico Water Quality Control Commission
NOD	Notice of Disapproval
PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorinated biphenyl
pCi/g	Picocuries per gram
PCS	Petroleum-contaminated soil
PID	Photoionization detector
PMR	Permit modification request
ppm	Parts per million
PSTB	Petroleum Storage Tank Bureau
RAR	Release Assessment Report
RBSL	Risk-based screening level
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
SI	Site Investigation
SLERA	Screening level ecological risk assessment
SSL	Soil Screening Level
SVE	Soil vapor extraction
SVOC	Semi-volatile organic compounds
SWMU	Solid Waste Management Unit
TAL	Target Analyte List
TCE	Trichloroethylene
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total dissolved solids
TPH	Total petroleum hydrocarbon
TRPH	Total recoverable petroleum hydrocarbons
USAF	United States Air Force
UST	Underground storage tank
UTL	Upper tolerance limit

VCM
VOC

Voluntary Corrective Measures
Volatile organic compound

**STATEMENT OF BASIS FOR APPROVAL OF
CORRECTIVE ACTION COMPLETE STATUS
FOR TWO SOLID WASTE MANAGEMENT UNITS
RCRA PERMIT NO. NM6572124422
HOLLOMAN AIR FORCE BASE
NEW MEXICO**

INTRODUCTION

Under authority of the New Mexico Hazardous Waste Act (Section 74-4-1 et seq., NMSA 1978, as amended, 1992) and the New Mexico Hazardous Waste Management Regulations (20.4.1 NMAC), incorporating the Resource Conservation and Recovery Act [RCRA] implementing regulations at 40 Code of Federal Regulations 260 through 272), the New Mexico Environment Department (NMED) can approve or deny hazardous waste permits, closure plans, permit modifications, and amendments. Under this authority, NMED intends to approve, pending public input into this decision, a Class 3 permit modification request (PMR) received from the United States Air Force Holloman Air Force Base (Permittee or HAFB) for the Hazardous Waste Permit (Permit) pursuant to 20.4.1.900 NMAC (incorporating 40 CFR § 270.42(c)).

If approved, the proposed permit modifications would grant Corrective Action Complete (CAC) Without Controls status for Solid Waste Management Unit (SWMU) 111 and modify Part 4 of the Permit to move this SWMU from Part 4, Appendix 4-A, Table A (Summary of Solid Waste Management Units and Areas of Concern Requiring Corrective Action) to Appendix 4-A, Table B (Summary of Solid Waste Management Units and Areas of Concern with Corrective Action Complete Without Controls). The proposed permit modifications would also grant CAC With Controls status for SWMU 229 and move this site from Table A to Table C (Summary of Solid Waste Management Units and Areas of Concern with Corrective Action Complete With Controls).

Proposed changes to Tables A, B, and C are shown in redline/strike-out in the tables provided in the Attachment to this Fact Sheet/Statement of Basis (FS/SOB).

The sites addressed have been under investigation since the 1980s. Based on the information collected, NMED has concurred that the two sites qualify for CAC, either with or without controls, since the available data for the sites indicate that any remaining contaminants do not pose an unacceptable level of risk under current and projected future land use. Therefore, NMED intends, pending public input, to approve the permit modification requests.

A. FACILITY DESCRIPTION

HAFB is in south central New Mexico, in the north-central portion of Otero County, approximately 75 miles north-northeast of El Paso, Texas (see **Figure A.1**). HAFB occupies approximately 59,830 acres west of the City Alamogordo. The U.S. 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 HAFB. The major highway servicing HAFB is U.S. Highway 70, which runs southwest from the town of Alamogordo and separates HAFB from publicly-owned lands to the south. Alamogordo, which has a population of approximately 31,000, is located approximately 7 miles east of the base (AECOM 2018).

HAFB was first established in 1942 as Alamogordo Army Air Field (AAF). From 1942 through 1945, 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 Materiel 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 Air Force Base. In 1968, the 49th Tactical Fighter Wing arrived at HAFB and has remained, under various iterations, since. Today, HAFB also serves as the location of the German Air Force Tactical Training Center (AECOM 2018).

The Permittee is located at the following address: Department of the Air Force, Headquarters, 49th Wing, Holloman Air Force Base, New Mexico, 88330-8458. The Permittee's primary contact for the action is Mr. Adam Kusmak, Chief, Installation Management Flight, 49 CES/CEI, 550 Tabosa Avenue, Holloman AFB, NM 88330.

B. HISTORY OF ENVIRONMENTAL COMPLIANCE

Investigation and remediation of SWMUs and AOCs at HAFB is conducted under the Holloman Air Force Base RCRA Permit. A Hazardous and Solid Waste Amendments (HSWA) permit was issued to HAFB by the United States Environmental Protection Agency (EPA) in 1991 and became effective on September 25, 1991. It was reissued by NMED on February 24, 2004. A Permit renewal application was submitted to NMED on February 26, 2015 and is currently under review after Open Detonation Unit closure activities were completed in 2022. Initially, a total of 265 sites were identified and investigated during the assessment process and listed on Table A. Currently, 25 sites remain on Table A. The remaining sites have achieved CAC status and were transferred to Table B or Table C.

Section F below briefly describes the location, history, evaluation of relevant information, and the basis for determination for each SWMU/AOC proposed for CAC. More detailed descriptions of the investigative activities for each SWMU/AOC can be found in the accompanying references found in Section G, which are included in the Administrative Record.

C. ADMINISTRATIVE RECORD

The Administrative Record for this proposed action consists of the Class 3 PMR, this FS/SOB, the Public Notice, the draft Permit, consisting of revised Tables A, B and C, and supporting documentation received and issued by NMED for each site. The complete Administrative

Record may be reviewed at the following location during the public comment period with prior appointment:

NMED – Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6313
Telephone: (505) 476-6000
Monday-Friday: 8:00 am – 5:00 pm

A copy of the FS/SOB; the Public Notice; the November 2004 Permit that contains Appendix 4A; Tables A, B, and C; the Class 3 PMR dated March 24, 2022; and the revised Permit Tables A through C are also available electronically on the NMED website at: <https://www.env.nm.gov/hazardous-waste/hafb/> under No Further Action/Corrective Action Complete.

To obtain a copy of the Administrative Record or a portion thereof, in addition to further information, please contact Naomi Gonzalez at (505) 476-6000 at the address given above. NMED will provide copies, or portions thereof, of the administrative record at a cost to the requestor.

D. PUBLIC PARTICIPATION

The Permittee issued a public notice for the proposed PMRs on February 7, 2022 for corrective action complete status without controls for SWMU 111 (RW042) and for corrective action complete status with controls for SWMU 229 (SS059/SS054). This began a 60-day public comment period on the PMR, which continued until April 7, 2022.

Persons who wished to comment on the proposed modifications or request a public hearing had an opportunity to submit written and/or electronic mail (e-mail) comment(s) during this period. Additionally, a public meeting was held on March 14, 2022, in Alamogordo, in accordance with NMAC 20.4.1.901, as part of the 60-day public comment period on the PMR required by the regulations at 40 CFR §270.42(c)(5). There were no attendees at the public meeting and no comments were received during the comment period.

NMED issued a public notice on **February 24, 2023**, to announce the beginning of a 60-day comment period that will end at **5:00 p.m. MDT, April 25, 2023**. Any person who wishes to comment on this action or request a public hearing should submit written or e-mailed comment(s) with the commenter's name and address to the physical or e-mail address below. Only comments and/or requests received on or before **5:00 p.m. MDT, April 25, 2023** will be considered.

Dave Cobrain, Program Manager
Hazardous Waste Bureau - New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6313

Or via e-mail: dave.cobrain@env.nm.gov

Ref: Proposals for CAC for 2 Sites at HAFB (dated March 2022).

Written comments must be based on the administrative record. Documents in the administrative record need not be re-submitted if expressly referenced by the commenter. Requests for a public hearing shall provide: (1) a clear and concise factual statement of the nature and scope of the interest of the person requesting the hearing; (2) the name and address of all persons whom the requestor represents; (3) a statement of any objections to the proposed action, including specific references; and (4) a statement of the issues which such persons propose to raise for consideration at the hearing. Written comments and requests for Public Hearing must be filed with Mr. Dave Cobrain on or before **5:00 p.m. MDT, April 25, 2023**. NMED will provide a minimum thirty (30) day notice of a public hearing, if scheduled.

All comments submitted will be considered in formulating a final decision and may cause the draft permit to be modified. NMED will respond in writing to the comments. This response will specify which provisions, if any, of the draft permit have been changed in the final decision and the reasons for the changes. All persons who have submitted written comments or who requested notification of the final decision will be notified of the decision by mail. These responses also will be posted on NMED website.

After consideration of all written public comments received, NMED may issue a final permit. NMED will make the final decision publicly available and will notify the Applicants by certified mail. All persons that submitted written comments, requested a hearing, or requested notification of the final decision will be notified of the decision by first class mail. NMED's decision will constitute a final agency decision and may be appealed as provided by the HWA (Chapter 74, Article 4 NMSA 1978).

For additional information from NMED, or to request a public hearing, contact the following:

Dave Cobrain, Program Manager
NMED – Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6313
E-mail: dave.cobrain@env.nm.gov
Telephone: (505) 476-6055

E. NEXT STEPS

NMED will notify the Permittee and each person on the public comment mailing list of the final decision. The final decision will become effective 30 days after service of the decision, unless a later date is specified or review is requested in accordance with NMAC 20.4.1.901.

Arrangements for Persons with Disabilities

Any person with a disability requiring assistance or auxiliary aid to participate in this process should contact Sadie Valdez by 10 days prior to the end of the public comment period at the

following address: New Mexico Environment Department, P.O. Box 5469, 1190 St. Francis Drive, Santa Fe, New Mexico, 87502-6110, (505) 469-0299. TDD or TDY users please access Ms. Valdez' number via the New Mexico Relay Network at 1 (800) 659-8331.

Non-Discrimination Statement

NMED does not discriminate on the basis of race, color, national origin, disability, age, or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, you may contact:

Kathryn Becker, Non-Discrimination Coordinator
New Mexico Environment Department
1190 St. Francis Dr., Suite N4050
P.O. Box 5469
Santa Fe, NM 87502
(505) 827-2855
NMED.NDC@env.nm.gov

If you believe that you have been discriminated against with respect to a NMED program or activity, you may contact the Non-Discrimination Coordinator identified above or visit our website at <https://www.env.nm.gov/non-employee-discrimination-complaint-page/> to learn how and where to file a complaint of discrimination.

F. DESCRIPTION OF SWMUS AND AOCs PROPOSED FOR CAC

The following subsections describe the location, history, and land use conditions for each SWMU/AOC. A summary of relevant information from previous investigations and a basis for the CAC with or without controls determination for the sites are also presented in this section.

F.1 SWMU 111 (RW042) RADIOACTIVE WASTE DISPOSAL AREA

F.1.1 Location/Unit Description

SWMU 111 (RW042), Radioactive Waste Disposal Area Site was initially called Site 42 Radioactive Waste Burial Site in the Remedial Investigation Report (Radian, 1992), and has been referred to as RW-42 in previous reports (Bhate, 2012), and as RW042 in more recent reports (URS, 2016a; URS, 2018a). SWMU 111 is located in a remote area approximately 6.5 miles north of the main base. The site is located east of Range Road 9 and south of Hay Draw in the undeveloped northeastern area of HAFB at latitude 32.9515432° N, and longitude -106.142017° W. The land surrounding SWMU 111 is primarily vacant rangeland. There are no other facilities located on, or in the immediate vicinity of the site and no construction activities are planned at or near the site. The nearest occupied residence is Mesa Verde Ranch, which is located approximately 3.8 miles southeast of SWMU 111. Access is restricted because due to it being part of HAFB. There are currently no plans for HAFB to expand operations in the area occupied by SWMU 111, and the current and anticipated future land use of SWMU 111 is classified as industrial (URS, 2018a). The location of SWMU 111 is depicted in Figure F.1.1.

F.1.2 History/Current and Anticipated Future Land Use

SWMU 111 consisted of a buried concrete cylinder/vault containing radioactive waste surrounded by a three-strand barbed wire fence (80 feet [ft] x 60 ft x 4 ft) with a three-strand barbed wire gate on a moveable fence post. The site was created in the 1950s by the U.S. Air Force to bury radioactive waste in accordance with Air Force Technical Order TO-00-110A-1. The purported buried concrete cylinder/vault was thought to contain unknown quantities of suspected radioactive wastes, including research animal carcasses containing low-level radioactivity and contaminated laboratory and pharmaceutical supplies (e.g., lab gowns, gloves, syringes, etc.). A letter from Capt. F. R. Sprester (1977) reported that former Air Force personnel present during the internment operation described the waste disposal site as a concrete cylinder approximately 10 ft in length and 5.5 ft in diameter with an internal opening 8 ft long and 1.5 ft in diameter. These dimensions were consistent with the specifications in Technical Order TO-00-110A-1. The letter from Capt. Sprester also stated that the cylinder was reportedly buried at a depth of 2 to 4 ft below ground surface (bgs) beneath the concrete surface monument present at the site (Radian, 1992).

F.1.3 Evaluation of Relevant Information

A review of historical site documents (Andreoli, 1980; Cordts, 1990; Morahan, 1991; Radian, 1992; and Bhate, 2012) indicates periodic radiological surveys were conducted at SWMU 111 between 1976 and 1990. Reported measurements were within the range of background radiation levels. Surface soil samples were collected by HAFB staff in February 1990 (Cordts 1990).

In 2007, an investigation was performed to support corrective action at SWMU 111 that included drilling and sampling four soil borings (RW42-DP01 through -DP04), approximately 5 ft from the concrete pad marking the location of the purported buried concrete cylinder, and installation of three groundwater monitoring wells (RW42-MW01 through -MW03) outside of the fenced site perimeter (Bhate 2012). The location of the monitoring wells and soil borings are depicted in Figure F.1.2.

Four groundwater samples were collected, including one duplicate, from monitoring wells RW42-MW01, -MW02, and -MW03, and analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), target analyte list (TAL) dissolved metals, total dissolved solids (TDS), and tritium. Groundwater at all three wells contained TDS concentrations greater than 13,000 milligrams per liter (mg/L) which is greater than the WQCC TDS limit of 10,000 mg/L. The NM WQCC standards apply to groundwater with TDS concentrations of 10,000 mg/L or less. There is no anthropogenic source at SWMU 111 that would contribute to TDS concentrations in groundwater. Dissolved manganese in groundwater occurred at concentrations ranging from 48 to 240 micrograms per liter ($\mu\text{g/L}$). Dissolved manganese in groundwater samples obtained from monitoring well RW42-MW03 exceeded the New Mexico Water Quality Control Commission (NMWQCC) groundwater quality standard of 200 $\mu\text{g/L}$ and the HAFB background 95 percent upper tolerance limit (95% UTL) (NMED 2012) for dissolved manganese (118 $\mu\text{g/L}$) (Bhate 2012).

Fourteen soil samples, including two field duplicates, were collected using direct push technology soil borings (RW42-DP01 through -DP04) and analyzed for VOCs, SVOCs, total petroleum hydrocarbons (TPH) - gasoline range organics (GRO) (C6-C10), TPH- diesel range organics (DRO) (C10-C22), and TPH- oil range organics (ORO) (> C22-C36), target analyte list (TAL) metals, and tritium. None of the soil constituents exceeded the then-applicable NMED or USEPA soil screening levels. HAFB recommended a No Further Action (NFA) (Bhate 2012).

NMED disapproved the NFA recommendation for SWMU 111 because the site was a solid waste landfill and is a SWMU with suspected animal carcasses containing low-level radioactivity, pharmaceutical and medical compounds and supplies, some of which may be hazardous, and/or other types of waste that are subject to corrective action and long-term post-closure monitoring and controls. NMED requested characterization of the waste reportedly contained in the buried cylinder, and based on the results, proper disposal of the waste and cylinder or closure as a landfill. NMED also requested that HAFB submit a work plan for removal of the waste or complete a Corrective Measures Evaluation (CME) (NMED 2014).

An Interim Measures (IM) Work Plan (URS 2016a) and a companion Decommissioning Plan (URS 2016b) were submitted to NMED in 2016. The IM Work Plan was approved with modification by the NMED Hazardous Waste Bureau (HWB) in February 2017 (NMED 2017a).

Additional investigation under the Interim Measures scope of work included performing surface radiological screening; excavating around the purported concrete cylinder; radiologically screening the subsurface soils and other materials excavated; collecting and analyzing soil, concrete, swipe, and groundwater samples; and installing a replacement groundwater monitoring well (URS 2018a).

As part of the Interim Measures scope of work, exploratory excavation was conducted in November 2016. Below the surface monument, four solid, monolithic concrete cylinders (approximately 21 inches in diameter and height and estimated to weigh 600 pounds each) were found stacked on top of one another in the subsurface at SWMU 111, rather than a single concrete cylinder as described in the available historical information. External field measurements of alpha, beta, and gamma radiation on the surface of the concrete cylinders were consistent with ambient background. Laboratory analyses of a piece of broken concrete from Cylinder 4 also found naturally occurring radionuclides at activities less than HAFB or regional (Myrick et al. 1981) soil background values.

A gamma walkover survey was conducted for surface soils inside and up to 50 ft outside the fence at SWMU 111. Measured radiation levels were internally consistent and representative of ambient background conditions. Field screening measurements of alpha, beta, and gamma radiation in excavation sidewall soils adjacent to the concrete cylinders were similar to those found in the surface soils and the subsurface soils from the boring for replacement well RW42-MW03R and representative of ambient background conditions (URS 2018a).

Laboratory analyses of site soils from the excavation sidewalls around the cylinders and an adjacent boring in a background area at replacement monitoring well RW42-MW03R detected radionuclides at activities consistent with ambient HAFB and regional soil background (URS 2018a). In two soil samples, Ra-226 was found at activities above its approved HAFB background value of 1.35 picocuries per gram (pCi/g) and its derived concentration guideline level (DCGL) of 1.95 pCi/g; however, the Ra-226 activities are consistent with regional New Mexico Ra-226 background soil activities (0.72 to 2.7 pCi/g). U-238 (1.29 pCi/g) in one sample also exceeded its approved HAFB background value (0.75 pCi/g) and DCGL (1.25 pCi/g) but was consistent with regional New Mexico U-238 background soil activities (0.53 to 1.5 pCi/g) (Myrick et al. 1981).

Groundwater samples from monitoring wells RW42-MW01 and RW42-MW02 were analyzed for total (unfiltered) radiological analysis, VOCs, SVOCs, and metals. VOCs and SVOCs were not detected in groundwater. Detected dissolved metals concentrations did not exceed the NMWQCC standards or USEPA MCLs. Several total metals constituents were detected above background at Site RW042; aluminum, arsenic, and beryllium exceeded NMWQCC standards or USEPA MCLs. The highest total metals concentrations were found in upgradient monitoring well

RW42 MW01, which suggests the total metals are naturally occurring and not related to SWMU 111. Aluminum and iron were the only dissolved metals found in groundwater above their respective background values. The elevated total metals concentrations were likely due to high concentrations of suspended particulates in the samples, which had greater than 999 nephelometric turbidity unit (NTU) turbidity readings. The total metals detected are either sorbed to, or comprise the entirety of, the particulates (URS 2018a).

Laboratory analyses of site groundwater only detected naturally occurring radionuclides lead (Pb)-210, Ra-226, Ra-228, Th-228, Th-230, and Th-232 at activities above approved HAFB background values. Combined Ra-226+Ra-228 is the only radionuclide with a NMWQCC standard or USEPA MCL. Ra-226+Ra-228 did not exceed the NMWQCC groundwater protection standard (30 pCi/L) but did exceed the USEPA drinking water MCL (5 pCi/L) at monitoring wells RW42 MW-01. However, the highest Ra-226+Ra-228 activity occurred at upgradient well RW42-MW-01, which suggests that this constituent is naturally occurring and is not related to past site operations. The elevated total radionuclide concentrations in groundwater are likely due to high concentrations of suspended particulates in the samples given that sample turbidity was greater than 999 NTUs (URS 2018a).

A qualitative risk evaluation was conducted based on site characterization data from the Interim Measures evaluation. Based on the current and future land uses for SWMU 111, receptors evaluated for potential exposure to media included current/future on-site worker, future on-site construction worker, and the future potential resident. Soil samples collected from the interval 0 to 10 ft below ground surface were not impacted by either RCRA constituents or radionuclides; therefore, the direct soil contact pathway was determined to be incomplete (URS 2018a).

Groundwater is approximately 40 ft below ground surface and is not affected by any RCRA or radioactive constituents related to past site operations. Naturally occurring TDS concentrations are above the 10,000 mg/L NMWQCC threshold; therefore, groundwater is not a potential water supply. The groundwater ingestion pathway was determined to be incomplete.

No VOC sources were identified in soils or groundwater. Consequently, no complete vapor intrusion exposure pathways exist for the current/future on-site worker or hypothetical future resident at the site (URS 2018a).

NMED directed the Permittee to conduct further investigation of the cylinders, using above-ground radiography, such that the cylinders could be removed for off-site disposal (NMED 2018). In response, HAFB submitted radiographic imaging (neutron radiography conducted on September 11, 2018). Based on review of the radiographs (side views and top views), it was determined the images were inconclusive as to the contents, although indiscernible objects were visibly embedded in the concrete cylinders. HAFB recommended the concrete cylinders be removed from the site and shipped to Alaron Nuclear Services (Wampum, PA) for additional destructive characterization, with subsequent shipment of the waste to a permitted disposal facility (URS 2019a). NMED approved the response and directed HAFB to submit a written

notification to NMED within 30 days of the final waste acceptance of the concrete cylinders or their contents (NMED 2019).

Following destructive testing at Alaron Nuclear Services, the waste contained in the cylinders was determined to be exempt waste containing cobalt-60, which does not require a permitted low-level radioactive waste facility for disposal. The wastes were concentrated and repackaged into a single 15-gallon drum that was shipped from Alaron to US Ecology (Grand View, ID) under a re-issued Waste Export Permit. The US Ecology facility is permitted to manage nuclear wastes exempted from Federal Regulation by the Nuclear Regulatory Commission. The waste container was received at US Ecology on 4 January 2021 (URS 2021a).

F.1.4 Basis for Determination

SWMU 111 (RW042) has been determined to be suitable for Corrective Action Complete Without Controls status. The SWMU has been characterized or remediated in accordance with current applicable state and/or federal regulations, and the available data indicate that contaminants present do not pose an unacceptable level of risk to human health or ecological receptors under the current or anticipated future land use.

F.2 SWMU 229 (SS059/SS054), T-38 TEST CELL FUEL SPILL SITE

F.2.1 Location/Unit Description

SWMU 229 (SS059, SS524), T-38 Test Cell Fuel Spill Site, is located at the T-38 Test Cell (Buildings 638 and 639) on the southeast side of the HAFB airfield, directly across Taxiway A from the Main Ramp area. The land use in this area is classified as industrial. No buildings or structures are present at the site other than those associated with the T-38 Test Cell. Due to the location of those buildings and structures within the HAFB airfield Controlled Area, future land use at the site is not expected to change (URS2021b).

The land surrounding HAFB consists of residential areas starting 5 miles to the east and northeast (City of Alamogordo), rangeland to the south, White Sands National Monument four miles to the west, and White Sands Missile Range to the north and west. The desert terrain immediately surrounding HAFB has limited development. The Mesa Verde Ranch operates along the eastern border but there are no residential communities or industrial operations located adjacent to the Base. HAFB is an active military installation and is expected to remain active for the foreseeable future. No transfer of military property to the public is anticipated, and public access to the Base is restricted (Foster Wheeler 2002). Future land use is not expected to differ significantly from current land use as a military air base. The location of SWMU 229 is depicted in Figure F.2.

F.2.2 History/Current and Anticipated Future Land Use

The Test Cell and adjacent concrete and asphalt power check pad have been used to test T-38 aircraft engines since the 1970s. The concrete pad on the Site was previously used as an F-4

trim pad from 1966 to 1977, as well as an F-4 engine test cell from approximately 1973 to 1977 (ACC 1993, 1995).

Petroleum hydrocarbons (JP-4) were released to the subsurface from a buried fuel line and migrated over time to impact soil and groundwater across the rest of the site. The leak was first identified in 1991 and was associated with underground fuel lines connecting the Test Cell to a 5,000-gallon aboveground storage tank (AST). Over the past 20-plus years, estimates of the initial spill volume have varied and been reported as 1.8 million gallons, 485,000 gallons (EBASCO 1994), and 1 million gallons (URS 2009). All investigations at the site began after a 2,000-gallon AST inventory deficiency was discovered. After discovery of the leak, all underground fuel lines at the Site were replaced with aboveground lines (EBASCO 1994). The AST and aboveground lines remain in service and are currently evident at the site, although the fuel contents are currently Jet A rather than JP-4 (URS 2016c). Although historically the site reached an extent of approximately 10 acres, the source area is limited to a much smaller portion of the overall site. The current and anticipated future land use of SWMU 229 is classified as industrial.

F.2.3 Evaluation of Relevant Information

SWMU 229 has been the subject of various investigations and remedial actions since the initial RCRA Facility Investigation identified light non-aqueous phase liquid (LNAPL) in monitoring wells in 1993 (ACC 1993). A Corrective Measures Study was conducted by Woodward-Clyde in 1994 (EBASCO 1994). Remediation was conducted by various contractors from 1993 to 2001 (URS 2016c). The site was remediated via Accelerated Correction Measures or Voluntary Corrective Measures (VCM) by NationView from 2001 through 2014 (NationView 2013, 2015). The remediation activities and results from 1993 to 2001 are summarized as follows (Bhate 2012):

- November 1993: High-vacuum dual phase extraction (HVDPE) tested in November 1993 by IT Corp. This short pilot test removed about 350 gallons “JP-4,” about 1/3 with vapor phase, 2/3 as phase separated hydrocarbons (PSH).
- In December 1994, EBASCO estimated the remaining LNAPL volume to be 448,000 to 485,000 gallons.
- January – March 15, 1995: Interim Remedial Action HVDPE system (11 extraction wells, thermal oxidizer, water treatment plant, infiltration gallery for reinjection) operated for 560 hours; designed, constructed and operated by IT Corp.
- March 31, 1995: Groundwater Technology Inc. took over operation of the interim remedial system.
- October 11, 1995: Foster Wheeler took over operation of the interim system.
- December 1995: Interim remedial system removed an estimated cumulative 57,600 gallons.
- June 1996: Full-scale HVDPE system completed (133 extraction wells).
- July 1996 – Feb 15, 1997: Full scale HVDPE removed 17,200 gallons (recovery was hampered by declining VOC concentration making it difficult to keep the thermal oxidizer operating).

- February 1997: Foster Wheeler estimated the remaining LNAPL volume to be 390,000 to 430,000 gallons.
- 1997, 1999: Pilot studies to improve functioning of the full-scale HVDPE system.
- 1998: Extraction of groundwater terminated, switch to enhanced vacuum skimming. Soil Vapor Extraction applied to all 133 wells, skimming on 22 of those wells. Thermal oxidizer switched to dual fuel operation using natural gas from new pipeline to the site, in addition to JP-4.
- March 1999: Gallegos et al. reports that an estimated 225,000 gallons had been recovered.
- 2001: Full-scale system shut down.

From approximately 2004 to 2013, voluntary corrective measures (VCM), which included the excavation of soil down into the saturated zone, removal of the majority of petroleum contaminated soil (PCS) and LNAPL at the T-38 Test Cell buildings. PCS under the T-38 Test Cell and small areas along the Taxiway A boundary containing PCS were not excavated because airfield operations could not be suspended for long enough to allow excavation and rebuild (NationView 2013, 2015). The PCS remaining at the site is located in areas with limited access due to utility corridors and structures restricting any further soil excavation. PCS was fully delineated at the site by 2016 (URS 2016c).

In 2011, an LNAPL interceptor trench was installed surrounding the downgradient side of the T-38 Test Cell concrete and asphalt pad to allow LNAPL capture by groundwater table depression and free-phase skimming (NationView 2013, 2015). The trench system consisted of the trench itself, 14 LNAPL skimming wells, five monitoring/observation wells, and one groundwater extraction well. The groundwater extraction well was disconnected in July 2015 to allow observation of the natural water and LNAPL levels in the area (URS 2016c). The PCS excavation area, LNAPL interceptor trench, and monitoring well locations are depicted in Figure F.2.2.

LNAPL was previously removed through the use of pneumatic skimmer pumps installed in several wells located within and surrounding the trench, and through occasional hand-bailing (URS 2016c). A review of available historical disposal records indicated that a total of only 85.97 gallons (73.34 gallons in 2014) of LNAPL were removed from the site through a combination of LNAPL skimming and hand-bailing from approximately 12 wells adjacent to the interceptor trench during the VCM. Measurements from July 2015 indicated that LNAPL remained at measurable thicknesses up to 0.40 foot at the former extraction well EXT-7 (URS 2016c).

In 2015, URS estimated the remaining LNAPL volume at no more than approximately 28,000 gallons at SWMU 229 (URS 2016c). The in-place volume of LNAPL was re-evaluated using the LNAPL Distribution and Recovery Model (LDRM), which resulted in a significantly lower estimate of 7,700 gallons (URS 2017). An additional reassessment was conducted using total petroleum hydrocarbon concentrations from soil samples reported on in IM Progress Report #2 (URS 2018b), which estimated a similar amount of LNAPL remaining at the site as the LDRM method.

The extent of PCS, LNAPL, and dissolved phase petroleum hydrocarbon contamination was characterized and delineated. LNAPL existed solely in the inaccessible subsurface beneath the active T-38 Test Cell facilities (inaccessible because it cannot be excavated). The dissolved phase plume, as identified by elevated concentrations of benzene, toluene, ethylbenzene, total xylenes (BTEX), phenols, and polynuclear aromatic hydrocarbons (PAHs) in groundwater samples, was limited to the inaccessible T-38 Test Cell area and approximately 300 to 750 feet west and southwest (downgradient) of the interceptor trench (MW40 and MW50). Petroleum hydrocarbon-impacted soil was limited to two areas: 1) above Industrial/Occupational Soil Screening Levels (SSLs) in the inaccessible area beneath the T-38 Test Cell facilities, and 2) above Residential SSLs at the western edge of the 2009 excavation. URS concluded that the vast majority of the LNAPL at the site had been remediated, the residual LNAPL was not migrating due to low transmissivity, and that LNAPL had likely reached the practical limits of recoverability (URS 2016c).

Various hydraulic pilot tests were conducted at the site between August 2017 and June 2018. The tests included aquifer testing by slug and pumping tests in the LNAPL interceptor trench and extraction wells, baildown testing of LNAPL, long-term passive LNAPL skimming, vacuum enhanced skimming, and vacuum recovery (URS 2018b). The tests demonstrated that aquifer transmissivity and recoverability of remaining LNAPL at SS059 is very low and that any vacuum-based technology will have limited effectiveness at removing LNAPL from the subsurface. A qualitative risk evaluation and site assessment using previous data was performed (URS 2018b). The comprehensive review of information supported the conclusions that the risk to receptors at the SWMU 229 is limited and is mainly tied to the potential for petroleum hydrocarbon vapor intrusion. Vapor intrusion was concluded to have several mitigating factors, including 1) the concentration of contaminated vapor is higher in deep zones compared to shallow and medium zones, 2) potential receptors are limited because the site is located within the Controlled Area of HAFB airfield and only occasionally staffed, and 3) the facilities are used for jet engine testing, generating fuel and exhaust vapors that overshadow soil vapor migration (URS 2018b).

The interim measures were completed, and the long-term monitoring (LTM) plan was submitted to the NMED in February 2019 and approved with modifications on August 5, 2019 (URS 2019c). Semi-annual groundwater monitoring events and quarterly LNAPL gauging events were conducted in accordance with the approved LTM Work Plan. Groundwater sampling results, soil vapor sampling results and LNAPL gauging and recovery results during the 2019 LTM period were generally consistent with those previously reported in the interim measures period (URS 2017, 2018b, 2019, 2021b). Dissolved-phase constituents of concern (COCs) included BTEX, total PAHs, TPH, and total phenols, and the dissolved-phase plume is generally stable and has been fully delineated to include the areas adjacent to the T-38 Test Cell asphalt and concrete pad and to the unexcavated area within the utility corridor surrounding MW10 (URS 2021b).

LNAPL thicknesses were recorded at the site during January, March, April, June, and October 2019. Measurable LNAPL was present at 0.05 feet (0.6 inches) thick in MW3 in April 2019 but

was not present in other site monitoring wells during 2019 monitoring events (URS 2021b). Total LNAPL removed from the site via deployed passive skimmers varied from 0 milliliter (mL) in April 2019 to 25 mL in March 2019. Well EXT 9 generated the most LNAPL removed during this period, with a total of 35 mL. Fixed gas measurements were used to update the estimate of natural source zone depletion (NSZD) at the Site. Using data collected from November 2016 through October 2019, it was inferred that hydrocarbon mass biological degradation is occurring at the site (URS 2021b).

The qualitative risk evaluation was updated to include a quantitative evaluation (URS 2021b). Since the facility remains in active use for jet engine testing, and there are no plans to change this land use, the risk evaluation addresses two potential human receptors: 1) current on-site worker; and 2) future on-site construction worker. Potentially complete exposure pathways include inhalation of indoor air vapors (on-site worker), ingestion/dermal contact with surface soils (on-site worker), and ingestion/dermal contact with shallow (less than [$<$]10 feet deep) soils or groundwater for the construction worker scenario. Groundwater at the site is of low quality (TDS greater than [$>$]10,000 mg/L) and is not considered potable under NMWQCC or EPA criteria, rendering groundwater ingestion an incomplete pathway.

Cumulative risks were determined for these receptors and pathways in accordance with 2017 soil screening guidance (NMED 2017b). The total HI for the on-site worker (0.1) is below the non-cancer hazard threshold of 1. The total HI for the construction worker (1.3) is slightly greater than the non-cancer threshold of 1. The total excess lifetime cancer risks for the on-site worker ($6E-06$) and construction worker ($4E-06$) are below the threshold of $1E-05$ (URS 2021b).

HAFB will control potential construction worker risk related to subsurface chemical exposures to impacted soils or groundwater at SWMU 229 through the excavation permitting process. All ground disturbing activities at HAFB require that those executing the work (contractors and/or Air Force personnel) complete a Base Civil Engineering Work Clearance Request (Dig Permit), Air Force Form #103. Subsection F of Form 103 includes "Environmental" clearance through the Civil Engineering/Environmental Management (49 CES/CEV) Squadron, which fall under the IM Flight (URS 2021b). HAFB has committed, through the IM Flight Chief to include a 'hold point' on any requests for ground-disturbing activities in the area of SWMU 229 (URS 2021b). The hold point will be used to evaluate potential risks to Site workers based on the location and nature of the proposed work. Potential future worker exposures and risks will be managed on a project-specific basis and will include additional worker health and safety controls to limit risks, as needed. Controls may include use of alternate locations, limitations on work hours, changes in scope or methods, and/or prescribed use of personal protective equipment (PPE) to control risks to acceptable levels. Dig permits in the SS059 area will not be issued until all potential worker risk issues have been resolved (URS 2021b).

F.2.4 Basis for Determination

SWMU 229 (SS059, SS524), T-38 Test Cell Fuel Spill Site has been determined to be suitable for Corrective Action Complete with Controls status. The SWMU has been characterized in

accordance with the current applicable state and federal regulations. Risk screening evaluation indicates that, with adequate controls, the contaminants present do not pose an unacceptable level of risk to human health under an industrial land use scenario. The controls include limiting site use to only industrial land use until VOC concentrations in soil and groundwater are demonstrated to be protective of a resident exposed to indoor air via vapor intrusion from groundwater. Controls also include continuing long-term groundwater and vapor-phase monitoring activities on an annual basis, and controlling risk to potential future construction workers through the HAFB excavation permitting process. In accordance with the LTM Work Plan (URS 2019c), quarterly water level gauging and operation and maintenance (O&M) will continue. Fixed gas measurements and groundwater sampling will continue on an annual basis. Long-term monitoring activities include annual evaluation of the groundwater plumes, LNAPL distribution, NSZD, and risk under current uses over time (URS 2019c).

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FIGURES

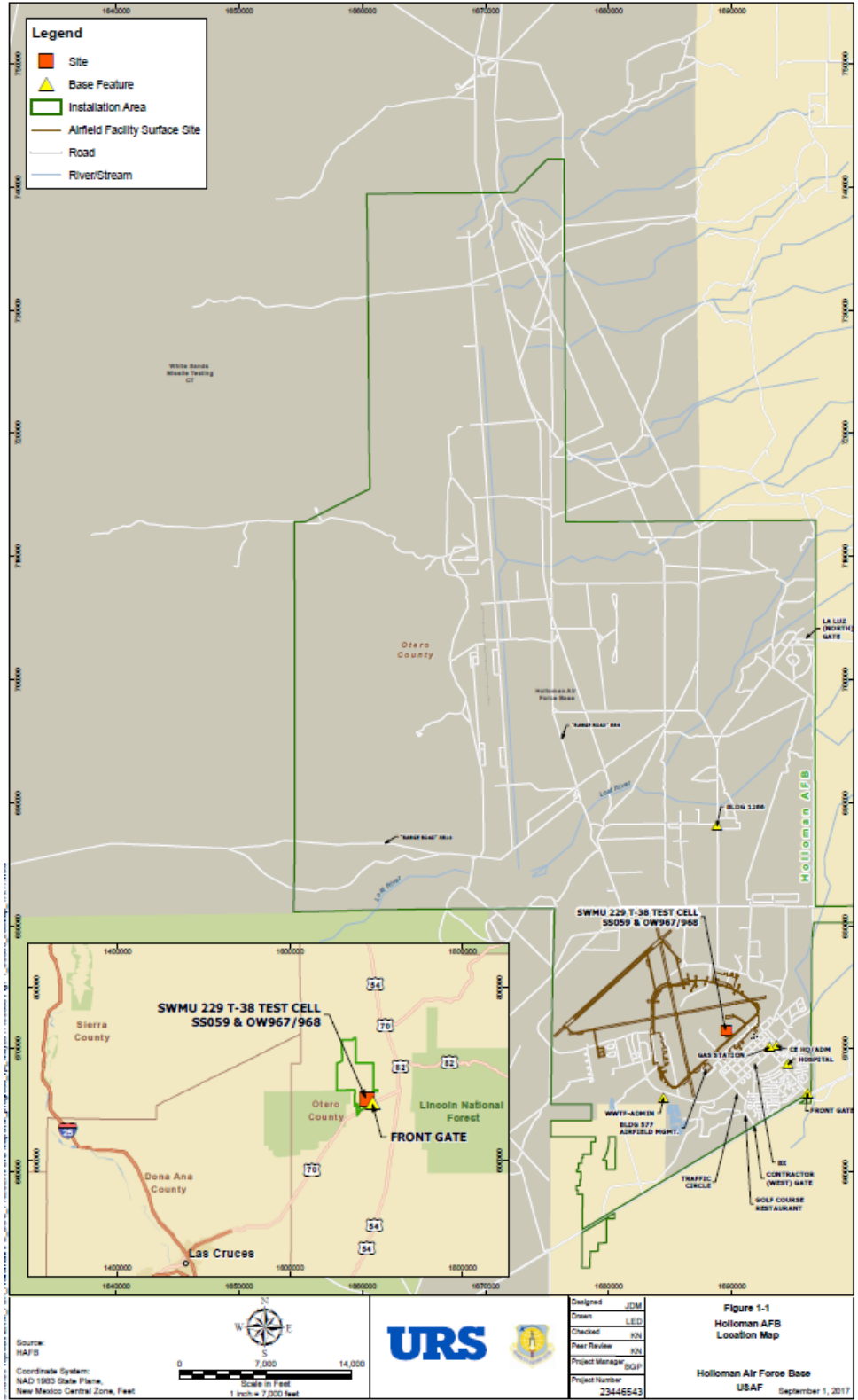


Figure A.1: Facility Location Map, Holloman Air Force Base (URS, 2021b).

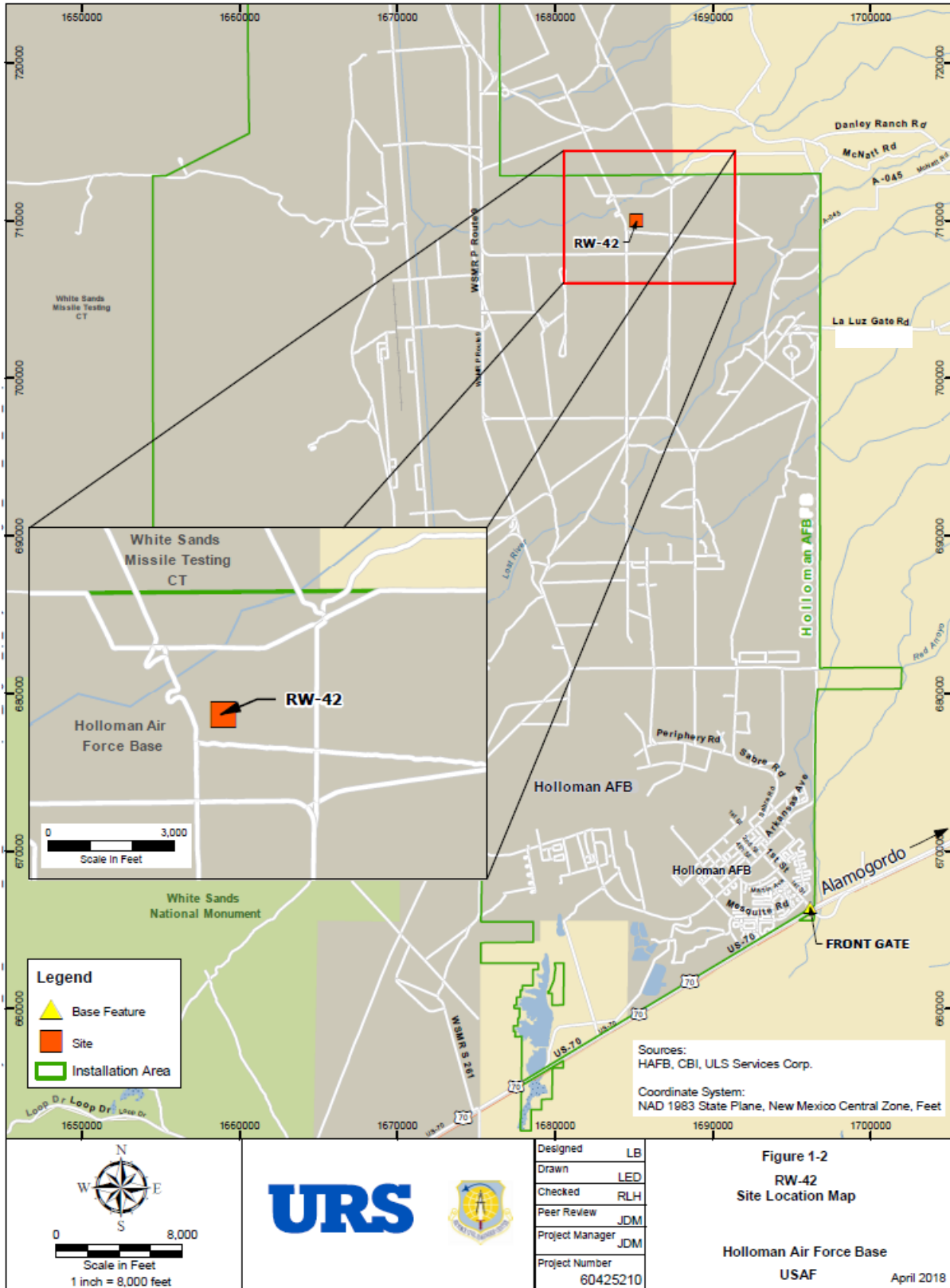


Figure F1.1: SWMU 111 RW042 Radioactive Waste Disposal Location (URS, 2018a).

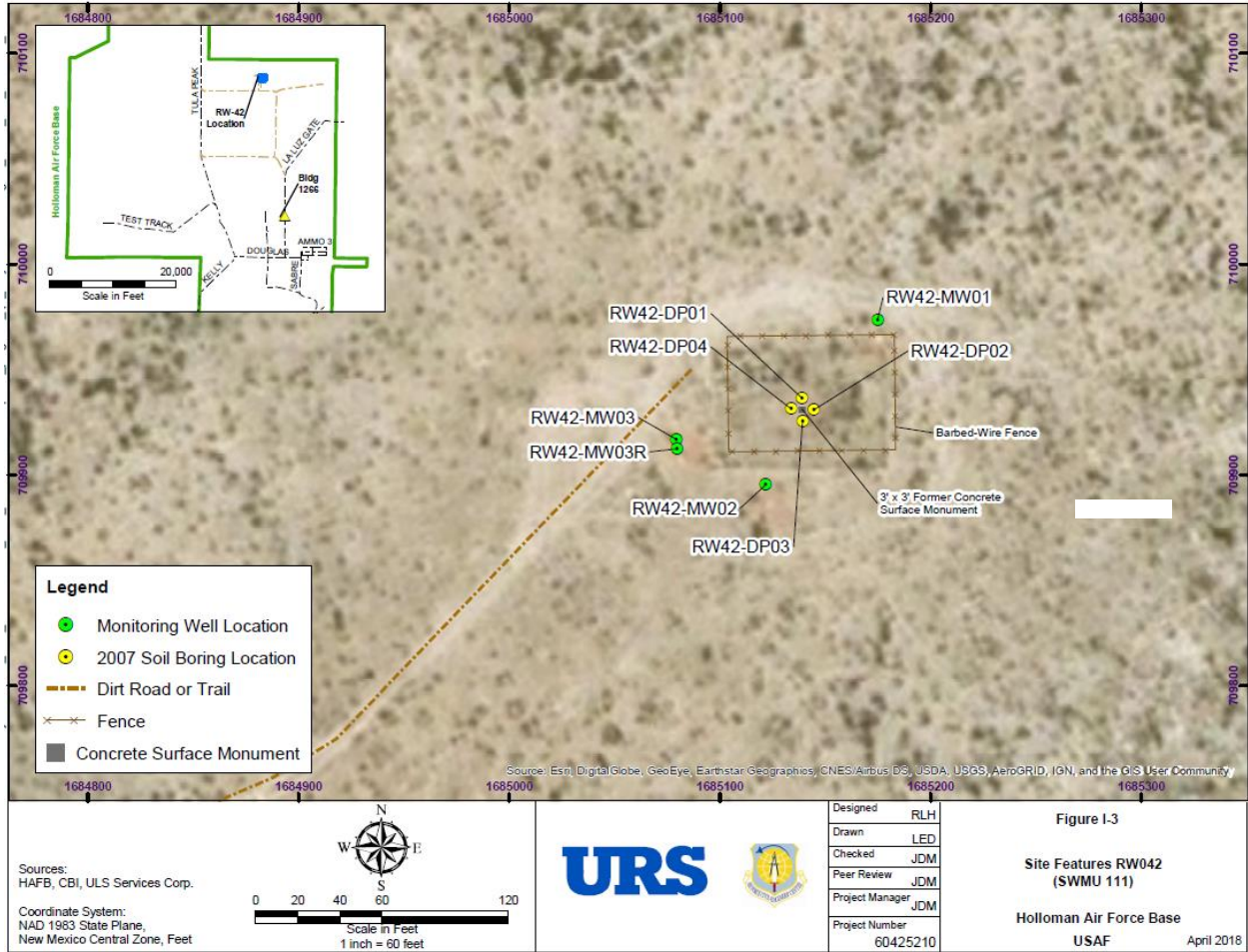


Figure F.1.2: SWMU 111 Groundwater Monitoring Wells and Soil Borings (URS, 2018a).

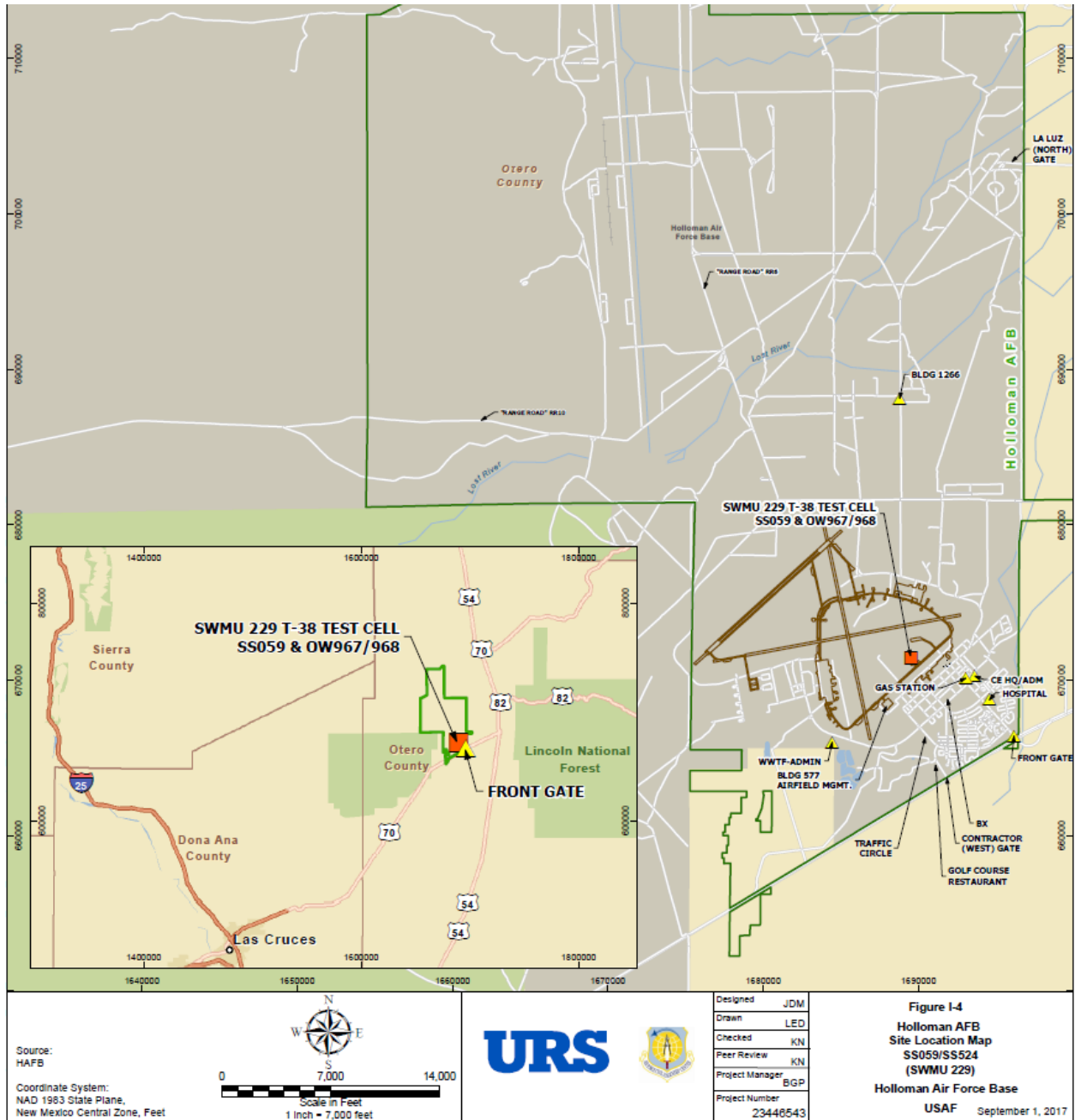


Figure F.2.1: SWMU 229 Site Location Map (URS 2021b).

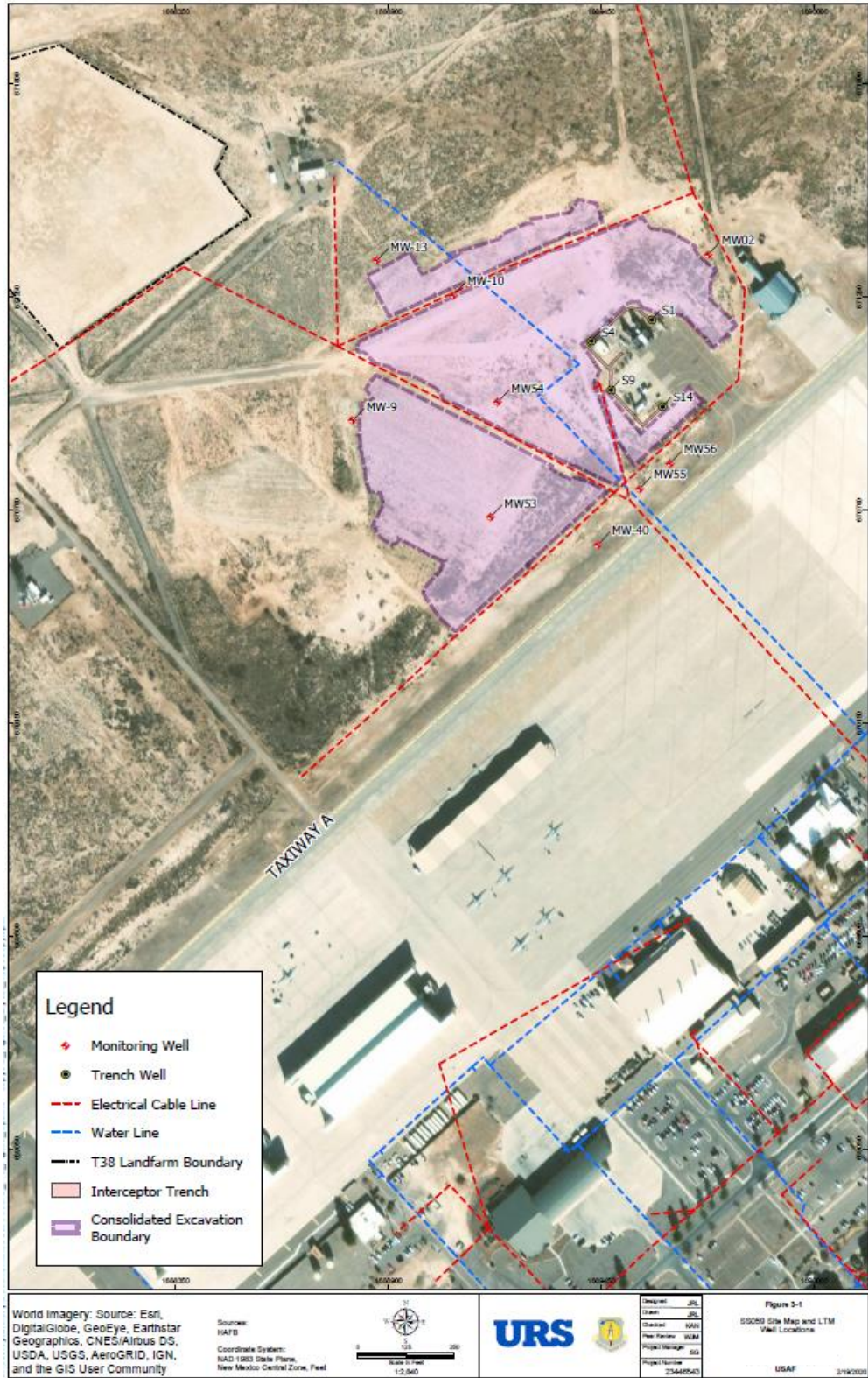


Figure F.2.2: SWMU 229 Excavation Area and Monitoring Well Locations (URS 2021b).

ATTACHMENT

DRAFT PERMIT

**MODIFIED TABLES
PERMIT APPENDIX 4-A
SUMMARY OF SOLID WASTE MANAGEMENT UNITS/
AREAS OF CONCERN**

TABLE A

(Summary of SWMUs/AOCs Requiring Corrective Action)

TABLE B

(Summary of SWMUs/AOCs With Corrective Action Complete Without Controls)

TABLE C

(Summary of SWMUs/AOCs With Corrective Action Complete With Controls)

APPENDIX 4-A
TABLE A
SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN REQUIRING
CORRECTIVE ACTION

SERIAL NO.	SWMU	ERP SITE ID	UNIT NAME
1	82	SD008	Building 131 Washrack
2	104	LF029	Former Army Landfill
3	111	RW042	Radioactive Waste Disposal Area
4	177	SS039	Building 1176 Sumps
5	179	SS039	Discharge Box
6	181	SS039	Building 1176 Drainage Trough
7	229	SS059	T-38 Test Cell Fuel Spill Site
8	AOC-1001	SS061	Building 1001 Fuel Spill Site
9	AOC-Q	SS017	BX Gas Station Fuel Line Leaks
10	AOC-RR	N/A	Buried RR Cars
11	AOC-W	TU912	Building 301 Concrete UST
12	AOC-X	SS074	Remotely Piloted Aircraft FSST Washrack
13	AOC-Y	XU853a	EOD 50-pound Range

TOTAL OF CORRECTIVE ACTION SITES = ~~13~~-11 [i.e., ~~7~~ 5 SWMUs + 6 AOCs].

APPENDIX IV-A

TABLE B

**SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN WITH
CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS**

SWMU/AOC	DESCRIPTION	COMMENT
1	Building 55 Oil/Water Separator	Site NFAd in February 2001
2	Building 121 Oil/Water Separator	Site NFAd in February 2001
3	Building 130 Oil/Water Separator	Site NFAd in February 2001
4	Building 131 Oil/Water Separator	Site CACd in May 2017
5	Building 137 Oil/Water Separator	Site NFAd in February 2001
6	Building 193 Oil/Water Separator	Site NFAd in February 2001
7	Building 198 Oil/Water Separator	Site NFAd in February 2001
8	Building 231 Oil/Water Separator	Site CACd in May 2017
9	Building 282 Oil/Water Separator	Site NFAd in February 2001
10	Building 283 Oil/Water Separator	Site NFAd in February 2001
11	Building 300 Oil/Water Separator	Site NFAd in February 2001
12	Building 304 Oil/Water Separator	Site NFAd in February 2001
13	Building 304A Oil/Water Separator	Site NFAd in February 2001
14	Building 306 Oil/Water Separator	Site NFAd in February 2001
15	Building 309 Oil/Water Separator	Site NFAd in February 2001
16	Building 315 Oil/Water Separator	Site NFAd in February 2001
17	Building 316 Oil/Water Separator	Site NFAd in February 2001
18	Building 500 Oil/Water Separator	Site NFAd in February 2001
21	Building 702 Oil/Water Separator	Site NFAd in February 2001
22	Building 704 Oil/Water Separator	Site NFAd in February 2001
23	Building 800 Oil/Water Separator	Site NFAd in February 2001
24	Building 801 Oil/Water Separator	Site NFAd in February 2001
25	Building 805 Oil/Water Separator	Site NFAd in February 2001
26	Building 809 Oil/Water Separator	Site NFAd in February 2001
27	Building 810 Oil/Water Separator	Site NFAd in February 2001
28	Building 822 Oil/Water Separator	Site NFAd in February 2001
29	Building 827 Oil/Water Separator	Site NFAd in February 2001
30	Building 830 Oil/Water Separator	Site NFAd in February 2001
31	Building 855 Oil/Water Separator	Site NFAd in February 2001
32	Building 868 Oil/Water Separator	Site NFAd in February 2001
33	Building 869 Oil/Water Separator	Site NFAd in February 2001
34	Building 902 Oil/Water Separator	Site NFAd in February 2001
35	Building 903 Oil/Water Separator	Site NFAd in February 2001
36	Building 1000 Oil/Water Separator	Site NFAd in February 2001
37	Building 1080 Oil/Water Separator	Site NFAd in February 2001
38	Building 1080A Oil/Water Separator	Site NFAd in February 2001
39	Building 1092 Oil/Water Separator	Site CACd in March 2013

**APPENDIX IV-A
TABLE B CONTINUED
SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN WITH
CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS**

SWMU/AOC	DESCRIPTION	COMMENT
40	Building 1166 Oil/Water Separator	Site NFAd in February 2001
41	Building 1266 Oil/Water Separator	Site NFAd in February 2001
42	Building 1 Waste Accumulation Area	Site NFAd in February 2001
43	Building 55 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
44	Building 121 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
45	Building 195 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
46	Building 198 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
47	Building 280 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
48	Building 282 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
49	Building 300 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
50	Building 301 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
51	Building 308 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
52	Building 500 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
53	Building 638 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
54	Building 702 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
55	Building 702A Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
56	Building 807 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
57	Building 809 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
58	Building 822 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
59	Building 837 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.

TABLE B CONTINUED
SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN WITH
CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS

SWMU/AOC	DESCRIPTION	COMMENT
60	Building 844 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
61	Building 851 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
62	Building 855 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
63	Building 867 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
64	Building 869 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
65	Building 901 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
66	Building 901 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
67	Building 909 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
68	Building 910 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
69	Building 807 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
70	Building 1119 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
71	Building 1778A Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
72	Building 11778A Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
73	Building 1266 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
74	Building 7005 Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
76	DRMO Non-Hazardous Waste Drain	EPA listed the site in 1988 as a SWMU with no further action required.
77	RATSCAT Waste Accumulation Area	EPA listed the site in 1988 as a SWMU with no further action required.
78	Trim pad 3 WAA	EPA listed the site in 1988 as a SWMU with no further action required.
79	Building 21 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
80	Building 55 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.

**APPENDIX IV-A
TABLE B CONTINUED
SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN WITH
CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS**

SWMU/AOC	DESCRIPTION	COMMENT
81	Building 121 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
83	Building 134 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
84	Building 137 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
85	Building 283 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
86	Building 304A Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
87	Building 306 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
88	Building 309 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
89	Building 703 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
90	Building 801 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
91	Building 816 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
92	Building 822 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
93	Building 827 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
94	Building 830 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
95	Building 902 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
96	Building 1080 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
97	Building 1119 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
98	Building 1116 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
99	Building 1266 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.
100	Pad 9 Wash Rack	EPA listed the site in 1988 as a SWMU with no further action required.

**APPENDIX IV-A
TABLE B CONTINUED
SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN WITH
CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS**

SWMU/AOC	DESCRIPTION	COMMENT
102	Acid Trailer Burial Site	EPA listed the site in 1988 as a SWMU with no further action required.
103	Causeway Rubble Disposal Area	EPA listed the site in 1988 as a SWMU with no further action required.
105	LF-19 Golf Course Landfill	Site CACd in March 2013
106	Main Base Landfill	Site NFAd in November 2005
107	Main Base Substation PCB Disposal Area	EPA listed the site in 1988 as a SWMU with no further action required.
108	LF-23 MOBSS Landfill Disposal Trench	Site CACd in March 2013
110	POL Rubble Disposal Area	EPA listed the site in 1988 as a SWMU with no further action required.
111	RW042	Radioactive Waste Disposal Area
112	RATSCAT Disposal Area	EPA listed the site in 1988 as a SWMU with no further action required.
113A	OT-20 Sludge Disposal Trench	Site CACd in May 2017
113B	DP-030/SD-033 Grease Trap Disposal Pits and Cooking Grease Disposal Trenches	Site CACd in April 2022
114	OT-03 TEL Disposal Site	Site CACd in May 2017
115	LF-22 West Area Landfill #1 PCB Disposal Area	Site CACd in March 2013
116	LF-21 West Area Landfill #2	Site CACd in March 2013
117	Wire Spool Disposal Area	EPA listed the site in 1988 as a SWMU with no further action required.
118	OT-16 Building 21 Pesticide Holding Tank	Site CACd in May 2017
119	Building 121 Waste Oil Tank	Site NFAd in February 2001
120	Building 309 Waste Oil Tank	Site NFAd in February 2001
121	Building 316 Waste Oil Tank	Site NFAd in February 2001
124	Building 752 Waste Oil Tank	Site NFAd in February 2001
125	Building 868 Waste Oil Tank	Site NFAd in February 2001
126	Building 1000 Waste Oil Tank	Site NFAd in February 2001
127	Building 1092 Waste Oil Tank	Site CACd in March 2013
128	Building 1166 Waste Oil Tank	Site NFAd in February 2001
129	Building 1191 and 1192 Spill Tanks	Site NFAd in February 2001
130	SS-46 Taxiway 4 Tank 28 Underground Waste Tank	Site CACd in March 2013
131	Waste Oil Bowsers	Site NFAd in February 2001
132	OT-16 Building 21 Entomology Leach Field	Site CACd in May 2017

**APPENDIX IV-A
TABLE B CONTINUED
SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN WITH
CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS**

SWMU/AOC	DESCRIPTION	COMMENT
133	Building 703 Wash Rack Discharge Pit	Site NFAd in February 2001
134	Buildings 902-925 Drainage Ditch	Site NFAd in February 2001
135	Building 1092 O/W Separator Drainage Pit (FT-31)	Site CACd in March 2013
136	Building 1119 Washrack Drainage Area	Site NFAd in November 2005
137	Building 1166 Test Track Drain Field (OT-38)	Site CACd in September 2018
138	Building 1166 Oil/Water Sep Drainage Pit	Site NFAd in February 2001
139	SWMU 139 Lake Holloman	Site NFAd in November 2005
140	SWMU 140 Lake Stinky	Site NFAd in November 2005
141	SD027 Pad 9 Drainage Pit	Site CACd in April 2022
142	Wastewater Influent Chamber	Site NFAd in February 2001
143	Bar Screen	Site NFAd in February 2001
144	Comminutor	Site NFAd in February 2001
145	Grit Chamber	Site NFAd in February 2001
146	Parshall Flume Wet Well	Site NFAd in February 2001
147	Splitter Box	Site NFAd in February 2001
148	Sewage Lagoon A	Closed June 30, 2000
149	Sewage Lagoon B	Closed June 30, 2000
150	Sewage Lagoon C	Closed June 30, 2000
151	Sewage Lagoon D	Closed June 30, 2000
152	Sewage Lagoon E	Closed June 30, 2000
153	Sewage Lagoon F	Closed June 30, 2000
154	Sewage Lagoon G	Closed June 30, 2000
155	Sludge Drying Beds	Site NFAd in February 2001
156	Imhoff Tanks (5)	Site NFAd in February 2001
157	ABLE 51 PCB Storage Area	Site NFAd in February 2001
158	PCB Storage Bunker	Site NFAd in February 2001
159	Building 500 Pb Storage Shelves	Site NFAd in February 2001
160	Building 500 NiCd Battery Storage Area	Site NFAd in February 2001
161	Building 844 Battery Storage Area	Site NFAd in February 2001
162	DRMO Scrap Metal Storage Area	EPA called this site a SWMU in 1988 but did not require corrective action ¹ .
163	DRMO Wood Pile	EPA called this site a SWMU in 1988 but did not require corrective action ¹ .
164	Building 1080 Pond	Site NFAd in February 2001

**APPENDIX IV-A
TABLE B CONTINUED
SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN WITH
CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS**

SWMU/AOC	DESCRIPTION	COMMENT
165	Building 1176 Pond (SS-39)	Site CACd in September 2018
166	SD-25 MOBSS Drainage Lagoon	Site NFAd in November 2005
167	Test Shed Launch Area Collection Basin	EPA identified it in 1988 as a SWMU without requiring further corrective action
169	Burn Kettle	EPA identified it in 1988 as a SWMU without requiring further corrective action
170	Fire Department Training Area 1 (FT-31)	Site CACd in March 2013
171	Fire Department Training Area 2 (FT-31)	Site NFAd in February 2001
173	Building 198 Sand Trap	EPA listed this as a SWMU in the 1988 RFA Report
174	Building 231 Hobby Shop Silver Recovery Unit	EPA listed this as a SWMU in the 1988 RFA Report
176	Building 844 Sand Trap	EPA listed this as a SWMU in the 1988 RFA Report
178	Building 1191 Fuel Runoff Pits	Site NFAd in February 2001
180	Building 301 Outdoor Drainage Flume	Site NFAd in February 2001
182	Building Floor Drains	Site NFAd in February 2001
183	Base Sewer System	Site CACd in May 2017
184	Wastewater Re-circulation Line	Site NFAd in February 2001
185	Building 332 Silver Recovery Unit	EPA identified this site as a SWMU in 1988
186	Hospital Silver Recovery Unit	EPA identified this site as a SWMU in 1988
187	West Area Silver Recovery Unit	EPA identified this site as a SWMU in 1988
188	Building 161 Acid Neutralization Unit	EPA identified this site as a SWMU in 1988
189	Building 232 Recycling Area	EPA identified this site as a SWMU in 1988
190	Building 500 Battery Neutralization Unit	EPA identified this site as a SWMU in 1988

**APPENDIX IV-A
TABLE B CONTINUED
SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN WITH
CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS**

SWMU/AOC	DESCRIPTION	COMMENT
191	Building 855 Concrete Pad	EPA identified this site as a SWMU in 1988
192	Coco Block House Disposal Well	EPA identified this site as a SWMU in 1988
193	Trash Dumpster	EPA identified this site as a SWMU in 1988
194-228	SWMUs no longer exist or could not be located	EPA identified this site as a SWMU in 1988
212	Former north Area Wash Rack	Site NFAd in February 2001
230	Building 828 Fuel Spill Site	Site NFAd in February 2001
231	Incinerator/Landfill	Site NFAd in February 2001
AOC-1	DP-64 Chemical Agent Site	Site CACd in May 2017
AOC-2	Sewage Drainage Pit NE of Building 864	Site CACd in March 2013
AOC-3	DP-63 Ammunition Yard Disposal Pit	Site CACd in May 2017
AOC-838	SS-72 TCE in Groundwater Upgradient of LF-21	Site CACd in May 2017
AOC-823	SS823 Building 823 TPH in Soil	Site CACd in April 2022
AOC-851	TS851 Former Skeet Range	Site CACd in April 2022
AOC-859	TS859 (SR859a) Former Skeet Range 2	Site CACd in April 2022
AOC-862	TS862 (TS862a) Jeep Target Area Skeet Range	Site CACd in April 2022
AOC-1088	SS-73 TCE in Groundwater Upgradient of SS-61	Site CACd in May 2017
AOC-1197	TU904 Building 1194 Septic System	Site CACd in April 2022
AOC-A	OT-16 Building 21 Pesticide Rinse Spill Area	Site CACd in May 2017
AOC-B	SS-65 Building 807 Test Cell Spill Area	Site CACd in May 2017
AOC-BBMS	Bare Base Mobility Squadron Spill Area	EPA called the site in the 1988 RFA but did not require corrective action ¹ .
AOC-C	SS-66 Building 835 Spills	Site CACd in May 2017
AOC-D	SD-26 Building 882 Spills	EPA called the site in the 1988 RFA but did not require corrective action ¹ .
AOC-E	SS-67 Buildings 903-909 Sand Blast Residues	Site CACd in May 2017
AOC-F	Asphalt Tank Spill Area (SS-68)	Site CACd in March 2013

APPENDIX IV-A
TABLE B CONTINUED
SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN WITH
CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS

SWMU/AOC	DESCRIPTION	COMMENT
AOC-FST837	Building 837 Fuel Spill Site	Site NFA November 2005
AOC-G	Atlas Substation PCB Spill	EPA called the site in the 1988 RFA but did not require corrective action ¹ .
AOC-I	SS-69 Fighter Wing Flight Line Spill	Site CACd in May 2017
AOC-J	Herbicide Sodium Arsenite Spill Area (SS-13)	Site CACd in September 2018
AOC-K	SS-12 Northeast Fuel Line Spill #1	Site CACd in May 2017
AOC-L	Early Missile Test Site (OT-37)	Site CACd in September 2018
AOC-M	RW-70 Building 18 Product Storage Tank	Site CACd in May 2017
AOC-N	SS-48 Building 137 Military Gas Tank Leak	Site CACd in March 2013
AOC-O	OT-45 Building 296 Old AGE Refueling Station	Site CACd in May 2017
AOC-P	OT-44 Building 301 Fuel Tank Leak	Site CACd in March 2013
AOC-R	JP-4 Fuel Line Spill Site (SS-06)	Site CACd in March 2013
AOC-RD	DP-62 Rita's Draw Disposal Pit	Site NFAd November 2005
AOC-S	Leaking Underground Storage Tank (BHUST)	Site CACd in March 2013
AOC-T	SS002/5 POL Storage Tank Spill Sites 1 and 2	Site CACd in April 2022
AOC-U	Lost River Basin	Site CACd in May 2017
AOC-UST-221	Building 221 UST (TU/US-C503)	Site CACd in September 2018
AOC-UST-300	Building 300 UST	Site CACd in May 2017
AOC-UST-301	Building 301 UST	Site CACd in May 2017
AOC-UST-684	Building 684 UST	Site CACd in May 2017
AOC-UST-882	Building 882 UST	Site CACd in May 2017
AOC-UST-889	TU515 Building 889 UST	Site CACd in April 2022
AOC-UST-898	Building 898 UST	Site CACd in May 2017
AOC-UST-901	Building 901 UST (TU/US-C506)	Site CACd in September 2018
AOC-UST-1097	Building 1097 UST (TU/US-C505)	Site CACd in September 2018
AOC-UST-1113	Building 1113 UST	Site CACd in May 2017
AOC-UST-1272	Building 1272 UST	Site CACd in May 2017
AOC-UST-2395	Building 2395 UST	Site CACd in May 2017
AOC-UST-7003	National Radar Test Facility UST (TU/US-C518)	Site CACd in September 2018
AOC-V	SS-57 Officer's Club	Site CACd in March 2013

**APPENDIX IV-A
TABLE B CONTINUED
SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN WITH
CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS**

SWMU/AOC	DESCRIPTION	COMMENT
AOC-PRI-A	OT-32 Primate Research Lab Sewer Line	Site CACd in September 2018
AOC-PRI-5	Primate Research Lab Borehole Disposal Site	EPA called the site in the 1988 RFA but did not require corrective action ¹ .
AOC-PRI-1	Primate Research Institute (PRI) Building 1264: Waste Accumulation Area	EPA called the site in the 1988 RFA but did not require corrective action ¹ .
AOC-PRI-2	PRI Building 1264 Solvent Burn Area (OT-35)	Site CACd in March 2013
AOC-PRI-3	PRI Building 1264: Biological Incinerator	EPA called the site in the 1988 RFA but did not require corrective action ¹ .
AOC-PRI-4	PRI Building 1264: Quarantine Area	EPA called the site in the 1988 RFA but did not require corrective action ¹ .
AOC-PRI-5	PRI Building 1264 Solvent Burn Area (OT-35)	Site CACd in March 2013

1. Unit underwent Corrective Action, was approved for No Further Action (NFA), and is limited by Institutional Controls

HOLLOMAN AIR FORCE BASE OPERATING AND CLOSED HAZARDOUS WASTE MANAGEMENT UNITS

OPERATING/CLOSED UNIT	DESCRIPTION	COMMENT
20,000-Pound Open Detonation (OD) Treatment Unit/SWMU 168	The OD Unit	Permitted in 1997 and is currently undergoing closure.
Container Storage Unit (CSU)/SWMU 75	Hazardous Waste Management Unit	Closure of the CSU was approved on January 5, 2015. The Corrective Action Permit Part 4 remains in effect.
300-Pound Open Burn (OB) Unit. This site was listed in the 1988 RFA Report as SWMU 72	The OB Unit	The OB Unit was under Interim status from 1965 to 1979. HAFB conducted risk-based closure as per approved Work Plan of 1997. NMED approved Closure of this site on February 3, 1997.

APPENDIX IV-A

TABLE C

**SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN WITH
CORRECTIVE ACTION COMPLETE WITH CONTROLS**

SWMU/AOC	Control(s) Needed
SWMU 19, Building 638 Oil/Water Separator	Because groundwater contamination is present beneath this SWMU, additional groundwater monitoring and corrective action activities must be conducted in association with ongoing activities at overlapping site SWMU 229 (Former T-38 Test Cell Fuel Spill).
SWMU 20, Building 639 Oil/Water Separator	Because groundwater contamination is present beneath this SWMU, additional groundwater monitoring and corrective action activities must be conducted in association with ongoing activities at overlapping site SWMU 229 (Former T-38 Test Cell Fuel Spill).
SWMU 101, LF010, Building 121 Landfill	Land use controls to prevent future residential use. Maintain the integrity and effectiveness of the cover, including making repairs to the cover as necessary to correct effects of settling, subsidence or erosion. The integrity of the cover shall not be compromised without prior approval from NMED.
SWMU 109, LF010, Old Main Base Landfill	Land use controls to prevent future residential use. Maintain the integrity and effectiveness of the cover, including making repairs to the cover as necessary to correct effects of settling, subsidence or erosion. The integrity of the cover shall not be compromised without prior approval from NMED.
SWMU 122	TU521 Building 702 Waste Oil Tank Site still in use. Site must be assessed when use is terminated.
SWMU 123	TU521 Building 704 Waste Oil Tank Site still in use. Site must be assessed when use is terminated.
SWMU 197, OT014, Former Entomology Shop	Land use controls to prevent future residential use. Engineering controls may be discontinued.

**APPENDIX IV-A
TABLE C CONTINUED
SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN WITH
CORRECTIVE ACTION COMPLETE WITH CONTROLS**

SWMU/AOC	Control(s) Needed
SWMU 229, SS059/SS054, T-38 Test Cell Fuel Spill	Limit site use to only industrial land use until VOC concentrations in soil and groundwater are demonstrated to be protective of a resident exposed to indoor air via vapor intrusion from groundwater. Control risk to potential future construction workers through the HAFB excavation permitting process. Long-term monitoring activities including quarterly water level gauging and O&M, annual fixed gas measurements and groundwater sampling, annual evaluation of the groundwater plumes, LNAPL distribution, NSZD, and risk under current uses over time.
AOC-4, West POL Fuel Spill Site	Land use controls to prevent future residential use. Upon abandonment of the West POL Yard, or its discontinued use, all remaining contaminated soil shall be removed and an investigation conducted to confirm adequate site remediation.
AOC-298, TU/US-C508, Building 298 UST	Because groundwater contamination is present beneath this AOC, additional groundwater monitoring and corrective action activities must be conducted in association with ongoing activities at overlapping site AOC-H (SS018 VOC Spill Site). All monitoring wells associated with this AOC will be retained for additional monitoring or corrective action activities at AOC-H.
AOC-H, SS018, VOC Spill Site	Land use controls to prevent future residential use until VOC concentrations in groundwater are demonstrated to be protective of a resident exposed to groundwater and indoor air via vapor intrusion from groundwater.