FACT SHEET/STATEMENT OF BASIS

Notice of Intent to Approve a Class 3 Permit Modification to Grant Corrective Action Complete Status for Five Solid Waste Management Units Listed in the RCRA Hazardous Waste Permit

United States Department of Army
White Sands Missile Range
RCRA Permit Number NM2750211235

April 2021

Fact Sheet / Statement of Basis

Notice of Intent to Approve a Class 3 Permit Modification to Grant Corrective Action Complete Status for Five Solid Waste Management Units Listed in the RCRA Hazardous Waste Permit

Under the authority of the New Mexico Hazardous Waste Act (Section 74-4-1 et seq., New Mexico Statutes Annotated (NMSA) 1978, as amended, 1992) and the New Mexico Hazardous Waste Management Regulations (20.4.1 [New Mexico Administrative Code] NMAC), the New Mexico Environment Department (NMED) intends to approve, pending public input into this decision, a Class 3 permit modification request (PMR) received from the United States Department of Army White Sands Missile Range (the Permittee) to the Facility RCRA Hazardous Waste Permit (Permit), pursuant to 20.4.1.900 and 901 NMAC (incorporating 40 CFR 270.42(c)).

If approved, the proposed modifications would grant Corrective Action Complete (CAC) status for five Solid Waste Management Units (SWMUs) listed in the Permit. Currently, Permit Appendix 4 Table 4-1 lists SWMUs and Areas of Concern (AOCs) where corrective action is required to characterize and remediate, as necessary, past releases of hazardous wastes or hazardous constituents. If this modification is approved by NMED, SWMU 116 (Rhodes Canyon Subgrade Asphalt Tanks), SWMU 125 (Veterinary Clinic Incinerator), SWMU 126 (McAfee Clinic Incinerator), SWMU 137 (Paint Shop Sump) and SWMU 162 (Stallion Range Center Former Firefighter Training Area) will be transferred from Appendix 4, Table 4-1 to Appendix 4, Table 4-3 that lists SWMUs and AOCs with the status of Corrective Action Complete Without Controls.

SWMU 153 (Vandal Burial Site) was also included in the July 2019 *Petition to Perform Class 3 Permit Modification to Change the Status of Solid Waste Management Units 137, 153, and 162 to Corrective Action Complete Without Controls* (ECC, 2019); however, SWMU 153 did not qualify for a corrective action complete without controls status. SWMU 153 is located in the Hazardous Training Area (HTA) adjacent to the Open Burn/Open Detonation (OB/OD) Area that consists of SWMUs 55 (Burn Pan), 56 (Open Detonation Pit), and 56A (Open Detonation Pit) which are hazardous waste management units (HWMUs) that have not been closed. The boundaries of SWMU 153 and SWMU 55 significantly overlap and as a result, there have been discrepancies with defining the SWMU boundaries. The Permittee's February 11, 2015 response to NMED's December 12, 2014 *Approval with Modifications letter for the Revised RCRA Facility Investigation Report, Former Vandal Burial Site* states that "[t]he boundaries of the geophysical survey conducted during the Phase I RFI indicate an overlap of SWMU 153 with the burn pan [(SWMU 55)]. In order to maintain historical SWMU boundaries, SWMU 153 has been modified to depict SWMU 55 within its boundary" (WSMR, 2015). Furthermore, groundwater contamination has not been addressed at the site and the Permittee will address the perchlorate and RDX groundwater plumes in future investigations and post-closure care phases for the OB/OD Area which includes SWMU 153. Therefore, SWMU 153 does not qualify for a CAC determination.

1. Facility Description

White Sands Missile Range (WSMR or Facility) is a United States Army Installation Management Command (IMCOM) Installation established in 1945. WSMR is the largest land area military installation in the United States, encompassing approximately 3,200 square miles of land in Doña Ana, Socorro, Lincoln, Otero, and Sierra Counties in south-central New Mexico. The installation is approximately 99 miles long (north to south) and 25 to 40 miles wide (east to west). WSMR was established on July 9, 1945, as White Sands Proving Ground (the name was changed in 1958) to be the nation's testing range for newly developed missile weapons. WSMR is located within the Tularosa Basin of south-central New Mexico, and portions of WSMR extend west into the Jornada del Muerto Basin. The headquarters (Main Post) area of WSMR is located at the southwestern corner of the installation, approximately 27 miles east-northeast of Las Cruces, New Mexico, and 45 miles north of El Paso, Texas. The main entrance to WSMR is on U.S. Highway 70, east from Interstate 25 at Exit 6. The Stallion Range Center is located along the northwestern border of WSMR, approximately 118 miles north of the Main Post along Highway 525/WSMR P Route 7. The active Stallion Range Center operates as a technical support center for the monitoring and evaluation of long-range missile tests.

2. History of Investigation

The Permit requires investigation and cleanup, as necessary, of SWMUs and AOCs listed in RCRA Permit Appendix 4, Table 4-1. Section 8 of this fact sheet briefly describes the location, history, evaluation of relevant information, and the basis for determination for each of the SWMUs proposed for corrective action complete. More detailed descriptions of the SWMUs can be found in the permit modification request submitted by the Permittee and the references listed at the end of this fact sheet, which constitute the administrative record for this action.

The following sites are the subject of the proposed permit modifications:

Corrective Action Complete without Controls	
SWMU	**Description in Permit**
116	Rhodes Canyon Subgrade Asphalt Tanks
125	Veterinary Clinic Incinerator
126	McAfee Clinic Incinerator
137	Paint Shop Sump
162	Stallion Range Center Firefighter Training Area

3. Administrative Record

The Administrative Record for this proposed action consists of the Fact Sheet/Statement of Basis, the Public Notice, and the Facility RCRA Permit that contains Appendix 4, and the following Class 3 Permit Modification Requests (PMR): *Corrective Action Complete without*

Controls Petition SWMU 116, Rhodes Canyon Subgrade Asphalt Tanks, dated December 2018, *Corrective Action Complete without Controls Petition for SWMU 125, Veterinary Clinic Incinerator, and SWMU 126, McAfee Clinic Incinerator (WSMR-77), October 2016* (EA, 2016), dated October 31, 2016 and *Petition to Perform Class 3 Permit Modification to Change the Status of Solid Waste Management Units 137, 153, and 162 Corrective Action Required to Corrective Action Complete Without Controls, July 2019* (ECC, 2019), dated July 25, 2019.

The Administrative Record may be reviewed at the following location during the public comment period:

NMED – Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6313
Phone: (505) 476-6000
Monday - Friday from 8:00 a.m. to 5:00 p.m.

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

4. Public Participation

A public meeting was held by the Permittee at the Thomas Branigan Memorial Public Library in Las Cruces, NM on November 16, 2016, in accordance with 20.4.1.900 NMAC as part of the Permittee's 60-day public comment period on the PMR required by the regulations at 40 CFR §270.42(c)(5). NMED did not receive any comments from the public during the comment period provided by the Permittee.

NMED issued a public notice on April 2, 2021 to announce the beginning of a 60-day comment period that will end at 5:00 p.m. **June 1, 2021**. Any person who wishes to comment on this action or request a public hearing should submit written or electronic mail (e-mail) comments with the commenter's name and address to the physical or e-mail address listed below. Only comments or requests received on or before 5:00 p.m. **June 1, 2021**will be considered.

Written comments may be sent to:

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@state.nm.us

Ref: WSMR Class 3 Permit Modification Request

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 Dave Cobrain on or before 5:00 p.m. **June 1, 2021**. NMED will provide a 30-day notice of a public hearing, if scheduled. The final decision will become effective 30 days after issuance of the decision unless an alternate date is specified.

5. Next Steps

After consideration of all public comments received, NMED will issue a final decision that will approve, modify, or deny the request. If NMED modifies or denies the request, NMED will provide written justification for the decision to the Permittee by mail. NMED will make the final decision publicly available and will notify the Permittee and each person who submitted written comments of the final decision. The final decision will constitute a final agency decision and may be appealed as provided in the Hazardous Waste Act.

6. Contact Person for Additional Information

For additional information, contact the following individual:

Dave Cobrain, Program Manager
Hazardous Waste Bureau - New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6313
Telephone: (505) 476-6000
Fax: (505) 476-6030
e-mail: dave.cobrain@state.nm.us

7. Arrangements for Persons with Disabilities

Any person with a disability requiring assistance or auxiliary aid to participate in this process should contact Ms. Stephanie Sloman no less than 15 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) 827-9769. TDD or TDY users please access Ms. Sloman's number via the New Mexico Relay Network at 1 (800) 659-8331.

8. Descriptions of SWMUs Proposed for CAC without Controls

8.A SWMU 116, Rhodes Canyon Subgrade Asphalt Tanks

SWMU 116 is located approximately 60 miles north of the WSMR Main Post near the intersections of Range Road 6 and Range Road 7, within the secured WSMR mid-range area and is not accessible to the public.

8.A.i History

The dates of operation and information regarding the tank contents or use is not presented in historical documents regarding the subgrade tanks. During the RCRA Facility Assessment (RFA) in 1988 three steel tanks were found partially exposed above the ground surface. Each tank was estimated to be 2,500 gallons and possibly used for fuel or oil storage. The center tank appeared to be in poor condition. The tanks were empty and not in use at the time of the RFA; however, a hydrocarbon odor was observed. The tanks and some soils were removed in 1994. There is no record of the amount of soil removed or whether confirmation samples were collected.

8.A.ii Evaluation of Investigation Results

In 2013 the Permittee conducted a RCRA Facility Investigation which included excavation of three test pits and advancement of twelve direct push technology (DPT) borings. The soil borings were advanced at locations based on the test pit soil sample analytical. Soil samples from each boring were collected were shipped to an analytical laboratory and analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH) diesel range organics (DRO), TPH-oil range organics (ORO), TPH-gasoline range organics (GRO), and target analyte list metals. Analytical soil sampling results identified TPH-DRO and TPH-ORO concentrations were present in soil from a depth of 5 feet below ground surface (bgs) to a depth of approximately 28 feet bgs, with a maximum concentration of 42,300 milligrams per kilogram (mg/kg) TPH-DRO at a depth of 15 to 16 feet bgs in boring 116-BH05. Based on the results, the Permittee developed an Accelerated Corrective Action (ACA) work plan for soil removal.

Soil removal began at the northeastern edge of the SWMU near boring 116-BH12 and continued south. Visibly stained soil was removed and placed in staged roll-off bins. Soil excavation was guided by visible staining, odors, PID headspace readings, and PetroFlag sample results. Excavation continued at the site until PetroFlag sampling results showed TPH-DRO concentrations along the sidewalls and floor of the excavation were less than 500 parts per million (equivalent to 500 mg/kg). The final extent of the excavation was 73 feet long by 24 feet wide; the excavation depth ranged from 4 feet bgs at the south end of the excavation to 30.5 feet at the north end. Confirmation soil samples were collected along the floor and sidewalls of the excavation for analytical testing. Sampling confirmed that the TPH-DRO, TPH-

GRO, and TPH-ORO were less than the corresponding NM RSSLs. NMED approved the ACA report in a letter dated September 12, 2017.

8.A.iii Basis of Determination

Based on the available data included in the ACA for SWMU 137, this site does not pose an unacceptable risk to human health or the environment. SWMU 116 meets the requirements for corrective action complete without controls.

8.B SWMU 125, Veterinary Clinic Incinerator

SWMU 125, the Veterinary Clinic Incinerator, is located approximately 50 feet south of Building T-1834 (the Veterinary Clinic) in the southeast portion of the WSMR Main Post at the end of Navajo Street. The incinerator was mounted outside the building on a concrete slab and the incinerator has since been removed.

8.B.i History

SWMU 125 was a Stamco gas-fired incinerator that measured 3 feet by 5 feet by 2 feet high. The incinerator was mounted outside on a concrete slab south of the Veterinary Clinic (Building T-1834). "Red bag" waste (e.g., medical waste) and "sharps" (e.g., needles, blades, or glass) generated at the clinic were incinerated and the residue and ash from the incinerator was placed in bags and disposed of in the Sanitary Landfill (SWMU 86) on the WSMR Main Post. No hazardous wastes were managed within this unit, and no history of a release at the site has been documented. The incinerator removal date is not known and currently, only the concrete slab is present at the site.

8.B.ii Evaluation of Investigation Results

SWMU 125 was first identified in the *RCRA Facility Assessment PR/VSI Report* (RFA, A.T. Kearney, Inc., 1988) which provided a summary of the operational history of the incinerator and noted that hazardous wastes were not managed within the unit. There is no historical record of past releases based on available documentation and a visual site inspection completed by the Permittee did not observe evidence of a release. At the time of the RFA, the incinerator at SWMU 125 was still in place but had not been used in 2 years; the incinerator has since been removed and only the concrete slab is currently present at the site.

In July 2012 the revised RCRA Facility Investigation (RFI) Work Plan was approved by NMED and implemented to collect soil samples from five soil boring locations surrounding the concrete pad at SWMU 125 (Shaw, 2013) to provide additional analytical data to fill the gaps in the existing data set. NMED also required additional site use history and directed WSMR to include analysis for dioxin and furans. Each soil sample was analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, dioxins, and furans. During the RFI, analytical results for VOCs, SVOCs, and metals were compared against NMED human health

risk-based residential soil screening levels (SSLs) (NMED, 2012a), or the EPA regional screening levels (RSLs) (EPA, 2012) when RSSLs was not available. Analytical results were also evaluated in comparison to the contemporaneous NMED SSLs (NMED, 2015) and EPA RSLs (EPA, 2015) during preparation of the CAC petition. Based on the risk screening, there are no exceedances of the SSLs or RSLs for VOCs, SVOCs, and metals for any of the samples from SWMU 125. The analytical results for dioxins and furans were also analyzed and screened from the surface soil samples as required by NMED's June 1, 2012 Approval with modifications for the RFI work plan (NMED, 2012c). Dioxin-like compounds, polychlorodibenzodioxins (PCDDs) and polychlorodibenzofurans (PCDFs), were evaluated in the revised RFI (Shaw, 2013a) in accordance with procedures provided by the EPA and the World Health Organization (EPA 1989, 1994, and 2008; WHO, 1998). PCDDs and PCDFs consist of a family of approximately 75 and 135 congeners, respectively. The concentration of each congener reported in the revised RFI was evaluated based on its concentration relative to that of TCDD by calculating a toxic equivalence quotient (TEQ). The TEQ was calculated by multiplying the analytical result of each congener by a toxic equivalence factor (TEF) and then summing the TEQ results to compare it to the EPA RSL for TCDD. The calculated TEQ results for the five surface soil samples from SWMU 125 were all less than the TCDD TEQ residential RSL of 4.8E-06 milligrams per kilogram (mg/kg) (EPA, 2015). NMED approved the RFI report in a letter dated February 17, 2014.

8.B.iii Basis of Determination

Based on the data screening completed in the RFI for SWMU 125, this site does not pose an unacceptable risk to human health or the environment. In addition, the incinerator has been removed which eliminates any potential for a new release from SWMU 125. SWMU 125 meets the requirements for corrective action complete without controls.

8.C SWMU 126, McAfee Clinic Incinerator

SWMU 126, the McAfee Clinic Incinerator, is located inside of the McAfee Clinic in Building 530 in the northwestern portion of the WSMR Main Post south of Rock Island Avenue. The incinerator in Building 530 has since been decommissioned and is no longer in operation.

8.C.i History

SWMU 126 is a double-hearth incinerator that was used to dispose of clinical waste generated at both the McAfee Clinic and Veterinary Clinic. The incinerator is located inside Building 530 and double doors on the south side of the building mark the exterior access point of the unit. The residue and ash from the incineration process was placed in bags and disposed of in SWMU 86 which is located on the Main Post. Hazardous wastes were not managed within this unit, and there is no documentation of a historical release at this site. The incinerator was decommissioned in 1988 and is no longer operational.

8.C.ii Evaluation of Investigation Results

SWMU 126 was first identified in the RFA which noted that hazardous wastes were not managed within the unit. There was no record of past releases based on available documentation and a visual site inspection. SWMU 126 was still in use when the RFA was conducted but was decommissioned in 1988. The incinerator remains onsite but is no longer operational.

In July 2012 a revised RFI Work Plan was approved and implemented to collect confirmation samples to define the extent of contamination from SWMU 126 and provide additional analytical data. WSMR was also directed to include additional historical information and analysis for dioxins and furans. Soil samples were collected from three soil boring locations and the roof of Building 530 was investigated. All soil samples collected at SWMU 126 were analyzed for VOCs, SVOCs, RCRA metals, dioxins, and furans.

The roof of Building 530 was investigated to verify whether residual contamination from the smoke and ash was present near the stack/outlet of the incinerator and to determine the direction that storm water would drain from the roof in the vicinity of the stack to the ground. No ash or residual smoke impact was observed on the roof around the exhaust vent stacks and the roof catchment was found to have a single central drain. A surface soil sample, 126-BH03, was collected at the discharge point of a storm water drain that conveyed runoff from the roof catchment adjacent to the stack/outlet of the incinerator.

Analytical results for VOCs, SVOCs, and metals were compared against NMED SSLs and the EPA RSLs when the SSL was not available. Based on the risk screening, there are no exceedances of the SSLs for VOCs, SVOCs, and metals at SWMU 126. Analytical results for dioxins and furans in the surface soil samples were also screened and dioxin-like compounds, PCDDs and PCDFs, were evaluated according to procedures discussed in Section 8.A.ii above. The calculated TEQ results for the surface soil samples at two sample locations, 126-BH01-1 and 126-BH02-1, did not exceed the TCDD TEQ EPA RSL (4.8E-06 mg/kg). However, sample 126-BH03-1 collected from the storm water discharge point had reported a calculated TEQ result of that exceeded the EPA RSL. The Permittee collected an additional confirmation soil sample (126-BH03-2) from the same storm water discharge point and depth interval (0 to 0.333 ft bgs) using the same sample collection methods and analyzed the sample for dioxins and furans only. The TEQ result from 126-BH03-02 did not exceed the EPA RSL. During a quality review, an error was observed in the conversion process from picogram per gram (pg/g) to mg/kg in the TEQ calculations for the initial samples and the recalculated values were all less than the EPA RSL for TCDD. NMED approved the RFI report in a letter dated February 17, 2014.

8.C.iii Basis of Determination

Based on the data screening completed in the RFI for SWMU 126, the site does not pose an unacceptable risk to human health or the environment. In addition, the incinerator is no longer

in use and has been decommissioned which eliminates any potential for a release from SWMU 126. SWMU 126 meets the requirements for corrective action complete without controls.

8.D SWMU 137, Paint Shop Sump

SWMU 137, the Paint Shop Sump, is located outside the northeastern end of Building 1742 on the WSMR Main Post. The Paint Shop Sump has been removed and the drain hole from Building 1742 to the sump has been plugged and abandoned.

8.D.i History

The Paint Shop Sump, SWMU 137, was made of concrete covered by a square metal cover and was flush with the surrounding asphalt-covered ground surface and located outside the northeastern end of Building 1742. Operations in Building 1742 began in 1968 and both the paint shop and sump were still in operation during the Phase I RCRA Facility Investigation (RFI) in 1991 (IT Corporation, 1992); however, the paint shop was no longer in use during the subsurface soil investigation in 2012. The base janitorial services administrative office currently occupies Building 1742. Wastewater generated from the paint spray booth was discharged by gravity flow into the concrete sump along with sludge which was removed periodically and disposed of as hazardous waste at an unknown frequency. A drain line from the sump was connected to the wastewater main line/service line which transferred the wastewater to the Sewage Treatment Plant (STP). The drain hole from Building 1742 to the sump has since been plugged and the sump has been removed. Although the adjoining asphalt parking lot was in poor condition and there are numerous indications of minor paint spills, there have been no reports or history of a specific release from this unit.

8.D.ii Evaluation of Investigation Results

A Phase I RFI was conducted in 1991 to investigate the potential release of lead, mercury, and other constituents associated with paint as outlined in the RFI Work Plan (IT Corporation, 1992). The Phase I RFI conducted visual inspections of the paint shop sump and the asphalt parking lot, performed a “low-point” soil vapor survey (SVS) for samples from 5 to 7 feet bgs, collected a composite surface water sample and composite sludge sample from the sump. These samples were analyzed for VOCs, SVOCs, total metals, Toxicity Characteristic Leaching Procedure (TCLP) organic compounds and metals. The Permittee also collected soil samples from 5 and 10-foot depth intervals from two soil borings located on the northwestern and northeastern corners of the sump, which were analyzed for VOCs, SVOCs, and total metals. Based on the results of the Phase I RFI, the sludge sample from the paint shop sump (2,000 mg/kg) was the only sample that contained a contaminant that exceeded the EPA RSSL for lead (400 mg/kg). Results from the other samples (i.e., SVOCs, water sample, and soil borings) did not exceed any of the screening levels and none of the analytical data indicated any evidence of a significant release occurring in the vicinity of the sump. The paint shop sump was still in use during the Phase I RFI, and the report recommended that further activity under the RFI be discontinued until a change in conditions at the active unit was reported.

A subsurface investigation was conducted in 2012 to determine if a release had occurred to the subsurface and/or near surface soil during the operational period of the paint shop sump that could affect human health and the environment. All boring, sampling, decontamination, video surveying, and abandonment were performed in accordance with an NMED-approved 2011 Work Plan (Shaw, 2011). The video survey was conducted to determine the exact path, location, and extent of the drain lines exiting the paint shop sump. Based on the results of the video survey, a DPT was used to advance three soil borings (137-BH04, 137-BH05, and 137-BH06) to 10 feet bgs for lithologic description and soil sample collection. Soil samples were collected from borings 137-BH04 and 137-BH05 from immediately below the approximate location of the pipeline and from boring 137-BH06 directly beneath the sump. The soil samples were analyzed for target analyte list (TAL) metals, VOCs, SVOCs, total petroleum hydrocarbons (TPH)-gasoline range organics (GRO), TPH-diesel range organics (DRO), and polychlorinated biphenyls (PCBs). A debris sample was also collected from the bottom of the sump and analyzed for the same parameters as the soil samples. Analytical results from all of the borings did not identify any exceedances of NMED SSLs. However, the sump debris sample WSMR56-SUMP-0 contained concentrations of arsenic (7.38 mg/kg) and lead (3,230 mg/kg) that exceeded NMED SSLs (3.90 mg/kg and 400 mg/kg, respectively). Paint residue remaining in the sump was the possible source of the detected lead levels in the debris. Based upon the video survey, no sludge was present in the sump drain line.

Additional investigation activities were directed in June 2013 Disapproval letter for the *Final Subsurface Soil Investigation Report* (NMED, 2013) which included the investigation and abandonment of the sump drain line, installation of two additional soil borings along the main sewer line, and removal of the sump. No evidence of leaks or soil staining was observed, and no odors or field screening evidence of volatile organic compound (VOCs) were detected in the soils immediately beneath the sump drain line. One waste characterization sample was collected from the sump demolition debris and analyzed for TCLP VOCs, SVOCs, and metals. Five confirmation soil samples (137-CS01 through 137-CS05) were collected from the soils adjacent to the former sump, one from each sidewall and one from the floor. Two soil borings, 137-BH07 and 137-BH-08, were installed immediately adjacent to the main wastewater line. All samples were analyzed for TAL metals, VOCs, SVOCs, TPH-GRO, TPH-DRO, and PCBs. Detected contaminant concentrations did not exceed the NMED SSLs (NMED, 2012a). The sump excavation was subsequently filled with concrete and all investigation derived waste was managed in accordance with Permit requirements.

A human health risk assessment was performed to evaluate potential cumulative risk in accordance with Section 5.4 (Human Health and Ecological Risk Assessments) of the Permit. Thirteen chemicals were detected at concentrations that exceeded 0.1 of their corresponding SSLs and nine chemicals were not detected and were not further evaluated (Shaw, 2014). The remaining four chemicals (metals) iron, arsenic, manganese, and thallium were evaluated in accordance with the NMED Guidance document (NMED, 2012a). Based on this approach, the human health risk assessment results indicated that corrective action is complete for this site.

An ecological risk assessment was not conducted because potential exposure pathways do not exist for soil sites without viable ecological habitat as stated Appendix B (Ecological Site Exclusion Criteria Checklist and Decision Tree) of NMED's Risk Assessment Guidance (NMED, 2012a) and the Exclusion Criteria Decision Tree. Therefore, an ecological risk assessment was not conducted. NMED approved the Final RFI report in a letter dated August 5, 2014.

8.D.iii Basis of Determination

Based on the data provided in the Final RFI for SWMU 137, the site does not pose an unacceptable risk to human health or the environment. The Paint Shop is no longer in use at Building 1742, the sump has been demolished and all drain lines exiting the building and sump have been capped and abandoned which eliminates any potential for a release from SWMU 137. SWMU 137 meets the requirements for corrective action complete without controls.

8.E SWMU 162, Stallion Range Center Former Firefighter Training Area

SWMU 162, the Stallion Range Center Former Firefighter Training Area (SRC FFTA), is located approximately ½-mile south of the Stallion Range Center (SRC). The SRC is located along the northwestern border of WSMR, approximately 118 miles north of the Main Post along Highway 525/WSMR P Route 7. While the SRC is active, the SRC FFTA has not been used since sometime prior to the late 1980s.

8.E.i History

The SRC FFTA is located south of the SRC approximately half a mile south of WSMR P Route 7. The SRC is located along the northwestern border of WSMR, approximately 118 miles north of the Main Post along Highway 525/WSMR P Route 7. The SRC operates as a technical support center for the monitoring and evaluation of long-range missile tests. According to the *FY 2008 Compliance-Related Cleanup Installation Action Plan* (USAEC, 2008), the FFTA is no longer in operation and was cleaned up in the late 1980s. Based on interviews with WSMR personnel conducted in February 2009, the FFTA was in use prior to the 1980s but WSMR personnel familiar with the area did not know when activities first began. The location of the FFTA was also determined based on interviews with WSMR personnel and confirmed through visual inspection of the area based on differences in the vegetation within the FFTA compared to the surrounding areas. The FFTA consisted of an area approximately 200 feet by 50 feet adjacent to a dirt road and southwest of a drainage where firefighter training occurred. Firefighter training activities included setting small controlled fires using a flammable liquid (i.e., diesel and/or gasoline) as fuel. No structures were present at the FFTA and no further details regarding the training activities were available. Five monitoring wells, SRM-01 though SRM-05, are present northeast of the FFTA and in the vicinity of the SRC sewage lagoons and desalinization pond. These five monitoring wells are sampled regularly as part of the Groundwater and Effluent Sampling Wastewater Discharge Program associated with the SRC.

8.E.ii Evaluation of Investigation Results

The initial investigation of the FFTA was conducted in January 2010 to characterize subsurface conditions and evaluate whether historical operations resulted in impacts to soil and/or groundwater beneath the site (ARCADIS, 2011). The initial field activities included collecting soil samples from eight borings (SB-001 through SB-008) within the FFTA and three background soil borings (BG-001 through BG-003) located outside the FFTA. Soil samples were collected at four depth intervals (i.e., 0.5 to 1-foot bgs, 4 to 5 feet bgs, 9 to 10 feet bgs, 14 to 15 feet bgs) from each of the borings. The investigation soil samples were analyzed for TPH-GRO, TPH-DRO, VOCs, polynuclear aromatic hydrocarbon (PAHs), and RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). Background soil samples were analyzed for metals only. Additional soil samples were subsequently collected from two additional soil borings (SB-009 and SB-010) in April 2010 to delineate TPH-DRO detected during the initial investigation.

Based on the results from the January and April 2010 sampling events, the only constituents that exceeded the NMED SSLs were arsenic and DRO. Boring SB-006 was the only sample location wherre NMED SSL exceedances for arsenic and TPH-DRO were detected in soil samples. The SB-006 sample from the 0.5 to 1-foot bgs interval was the only interval where arsenic was detected at a concentration above the calculated site-specific background value (95 percent upper tolerance limit [UTL] of 3.0 mg/kg). DRO was detected in three soil sample locations but all detected concentrations were less than the NMED SSL. Arsenic was detected in all of the soil samples, including the background sample locations, and all of the detections exceeded the NMED DAF 20 SSL. The soil sample concentrations reported for VOCs and Polycyclic Aromatic Hydrocarbons (PAHs) also did not exceed the corresponding NMED SSLs or DAF 20 SSLs. Therefore, the lateral and vertical extents of contamination in shallow soils evaluated in the investigations demonstrate that there were no significant impacts to surface soils at the site.

Exploratory trenching was performed around sample location SB-006 based on NMED's January 2011 Disapproval comments for the RFI Work Plan (NMED, 2011). Samples from SB-006 reported DRO and arsenic concentrations exceeding the SSLs and debris in the subsurface was identified by ground penetrating radar (GPR) used for utility clearance. Three exploratory trenches were excavated surrounding SB-006 with a final dimension of 16 feet by 8 feet and varying from 2 feet to 10 feet in depth. Trench boundaries were expanded based on field observations of staining, odors, or encountering debris such as plastic trash, a section of pipe, cardboard and an oil filter. Grout from the 2010 soil sampling activities was encountered between 0.5 to 1-foot bgs. Trenches that did not contain debris were backfilled and not sampled. Approximately 60 cubic yards of impacted soil and debris were removed from the exploratory trench at SB-006 and shipped off-site for disposal. Confirmation samples collected from the floor and side walls of the excavation indicated that the extent of the excavation had adequately removed all impacted soils from the area and concentrations of constituents of concern were less than the SSLs; therefore, a risk assessment was not warranted for the site.

NMED approved the associated RFI Report and stated that residual contamination at the site met residential risk levels (NMED, 2012c).

The results of the RFI did not indicate that groundwater was impacted by the affected soils. Groundwater at the site is approximately 190 feet bgs and surface water infiltration depths in the area are estimated to be negligible due to low annual precipitation and very high evapotranspiration rates. The evapotranspiration extinction depth (maximum depth at which it occurs) near WSMR was estimated to be around 15 feet bgs (Burns and Hart, 1988). Although arsenic was the only constituent detected in the soils that exceeded the DAF 20 screening level, it is documented as a naturally occurring constituent throughout the region (Welch, Lico, and Hughes, 1988). Therefore, arsenic concentrations found in groundwater would be considered naturally occurring and not attributed to the arsenic found at the surface. Based on the soil and groundwater results, NMED did not require further corrective action at SWMU 162 (NMED, 2012b). NMED approved the Revised RFI report in a letter dated January 25, 2012.

8.E.iii Basis of Determination

Based on the data and the exploratory trench activities at sample location SB-006 completed in the revised RFI for SWMU 162, the soils from this site have been removed and do not pose an unacceptable risk to human health or the environment. In addition, the site is no longer operational and does not pose a potential risk for a release from SWMU 162. SWMU 162 meets the requirements for corrective action complete without controls.

9. References

ARCADIS. 2011. *Revised RCRA Facility Investigation Report for the Stallion Range Center Former Firefighter Training Area (SWMU 162)*. June.

A. T. Kearney, Inc. 1988. *RCRA Facility Assessment PR/VSI Report.* White Sands Missile Range, New Mexico.

Burns, A.W., and D.L. Hart, Jr. 1988. Simulated water-level declines caused by ground-water withdrawals near Holloman Air Force Base, Otero County, New Mexico. U.S. Geological Survey Water-Resources Investigations Report 86-4324. 44 p.

Chicago Brick and Mortar (CB&I). 2019. *Corrective Action Complete Without Controls Petition SWMU 116, Rhodes Canyon Subgrade Asphalt Tanks.* December.

EA Engineering, Science, and Technology, Inc., PBC (EA). 2016. *Corrective Action Complete without Controls Petition for SWMU 125, Veterinary Clinic Incinerator, and SWMU 126, McAfee Clinic Incinerator (WSMR-77)*. October.

EA. 2017. *Accelerated Corrective Action Report, SWMU 116, Rhodes Subgrade Asphalt Tanks*

(WSMR-75). February.

Environmental Chemical Corporation (ECC). 2019. *Petition to Perform Class 3 Permit Modification to Change the Status of Solid Waste Management Units 137, 153, and 162 to Corrective Action Complete Without Controls.* July.

IT Corporation, 1992. *Final RCRA Facility Investigation (RFI) Report, Appendix II, III, and IV Sites, White Sands Missile Range, New Mexico, Volume 1.* Contract No. DACA87-90-D-0015. U.S. Army Corps of Engineers, Huntsville District.

NMED 2011. *Notice of Disapproval (NOD) RCRA Facility Investigation Report for the Stallion Range Center Former Firefighter Training Area CCWS-04, SWMU 162.* January.

New Mexico Environment Department (NMED). 2012a. *Risk Assessment Guidance for Site Investigations and Remediation*. February.

NMED. 2012b. *Approval with Modifications, Revised RCRA Facility Investigation Report for the Stallion Range Center Former Firefighter Training Area, June 2011, White Sands Misslie Range, New Mexico,* USEPA ID No. NM2750211235. January 25.

NMED. 2012c. *Approval with Modifications, RCRA Facility Investigation Work Plan, SWMU 125, Veterinary Clinic and SWMU 126, McAffee Clinic Incinerators (WSMR-77), October 2011, White Sands Missile Range, New Mexico*. USEPA ID No. NM2750211235. June.

NMED. 2013. *Disapproval, Final Subsurface Soil Investigation Report, SWMU 137, Paint Shop Sump (WSMR-56), April 2012, White Sands Missile Range, New Mexico. USEPA ID No. NM2750211235*. June.

NMED. 2014. *Approval with Modifications, Revised RCRA Facility Investigation Report, SWMU 153, Former Vandal Burial Site, May 2014, White Sands Missile Range, New Mexico.* USEPA ID No. NM2750211235. December.

NMED. 2015. *Risk Assessment Guidance or Site Investigations and Remediation*. July.

NMED. 2017. *RE: Approval, Accelerated Corrective Action Report, SWMU 116, Rhodes Subgrade Asphalt Tanks (WSMR-75), September 2017, White Sands Missile Range, New Mexico.* USEPA ID No. NM2750211235. September.

Shaw Environmental (Shaw). 2010. *Final RCRA Facility Investigation Work Plan SWMU 125, Veterinary Clinic and SWMU 126, McAfee Clinic Incinerators (WSMR-77).* December.

Shaw. 2011. *Revised Final RCRA Facility Investigation Work Plan SWMU 125, Veterinary Clinic and SWMU 126, McAfee Clinic Incinerators (WSMR-77).* October.

Shaw. 2013. *Final RCRA Facility Investigation Report, SWMU 125, Veterinary Clinic and SWMU 126, McAfee Clinic Incinerators, White Sands Missile Range, New Mexico*.

Shaw. 2014. *Second Revision Subsurface Soil Investigation Report SWMU 137, Paint Shop Sump*. April.

U.S. Army Environmental Command (USAEC), 2008. FY 2008 Compliance-Related Cleanup Installation Action Plan, White Sands Missile Range. November.

U. S. Environmental Protection Agency (EPA). 1989. *Update to the Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Dibenzofurans (CDDs and CDFs), Part II*. U.S. Environmental Protection Agency, Risk Assessment Forum, Washington, D.C. March.

U. S. Environmental Protection Agency (EPA). 1994. *Estimating Exposure to Dioxin-Like Compounds*, External Review Draft, U.S. Environmental Protection Agency, Office of Research and Development. EPA/600/6-88/005Ca. June.

U. S. Environmental Protection Agency (EPA). 2008. *Framework for Application of the Toxicity Equivalence Methodology for Polychlorinated Dioxins, Furans, and Biphenyls in Ecological Risk Assessment*. EPA 100/R-08/004.

U. S. Environmental Protection Agency (EPA). 2012. *United States Environmental Protection Agency Regions 3, 6, and 9. Regional Screening Levels for Chemical Contaminants at Superfund Sites*. November.

U. S. Environmental Protection Agency (EPA). 2015. *United States Environmental Protection Agency Regions 3, 6, and 9. Regional Screening Levels for Chemical Contaminants at Superfund Sites*. November.

Welch, A.H., M.S. Lico, and J.L. Hughes. 1988. *Arsenic in ground water of the western United States: Ground Water*, v. 26. p. 333-347.

WSMR (White Sands Missile Range). 2015. *WSMR Response to December 12, 2014 Approval with Modification, Revised RCRA Facility Investigation Report SWMU 153 Former Vandal Burial Site, (EPA Identification Number NM2750211235), WSMR-13-003*. February.

White Sands Technical Services, LLC (WTS). 2006. *Phase III RFI Report, Main Post Multiple Sites SWMUs 8–17, 21, 22, 80, 140, and 156 (IRP Sites WSMRs 30–33, 36, 57, 60, 73, 74, 79, and 84),* Submitted to U.S. Army White Sands Missile Range, Directorate of Public Works-Environment

Division. White Sands, New Mexico.

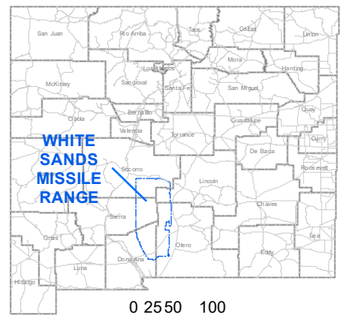
World Health Organization (WHO). 1998. *Toxic Equivalency Factors (TEFs) for Dioxin-Like Compounds for Humans and Wildlife*. Summary of WHO Meeting Held in Stockholm, Sweden on June 15–18. World Health Organization, International Programme on Chemical Safety.

FIGURES

SWMU 116, Rhodes Subgrade Asphalt Tanks

Main Post

MAP INDEX



0 35,000 70,000 Feet

1 inch equals 70,000 feet

N

LEGEND

WSMR Installation Boundary

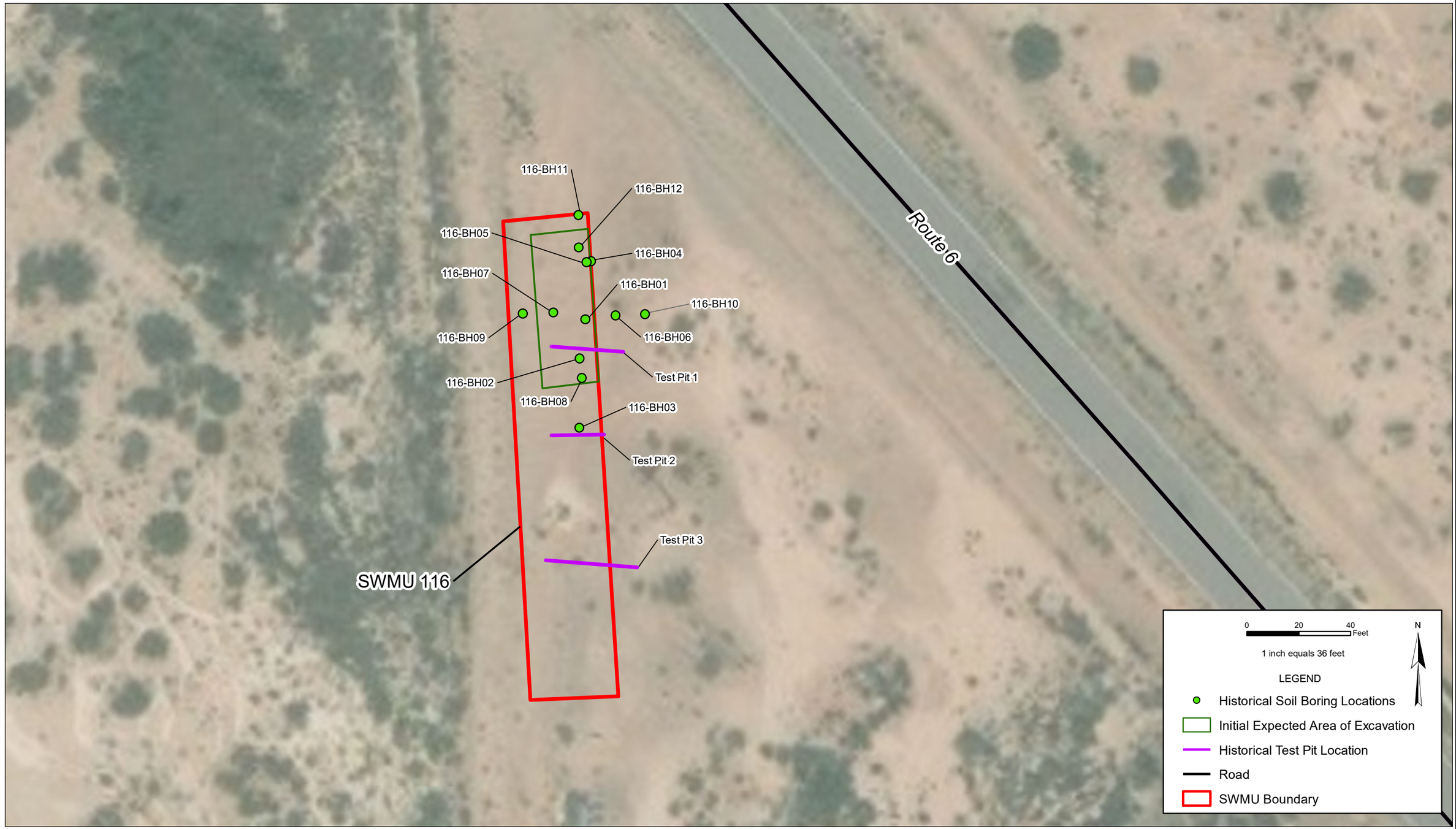
Main Post

Acronym(s) and Abbreviation(s):
SWMU = Solid Waste Management Unit
WSMR = White Sands Missile Range

Note(s):
1. Imagery Source: ESRI Street Map online mapping service.
2. Site features presented are based on available information from the WSMR geodatabase.

FIGURE 1
SITE LOCATION AT WHITE SANDS MISSILE RANGE
CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS PETITION
SWMU 116, RHODES SUBGRADE ASPHALT TANKS
WHITE SANDS MISSILE RANGE, NEW MEXICO

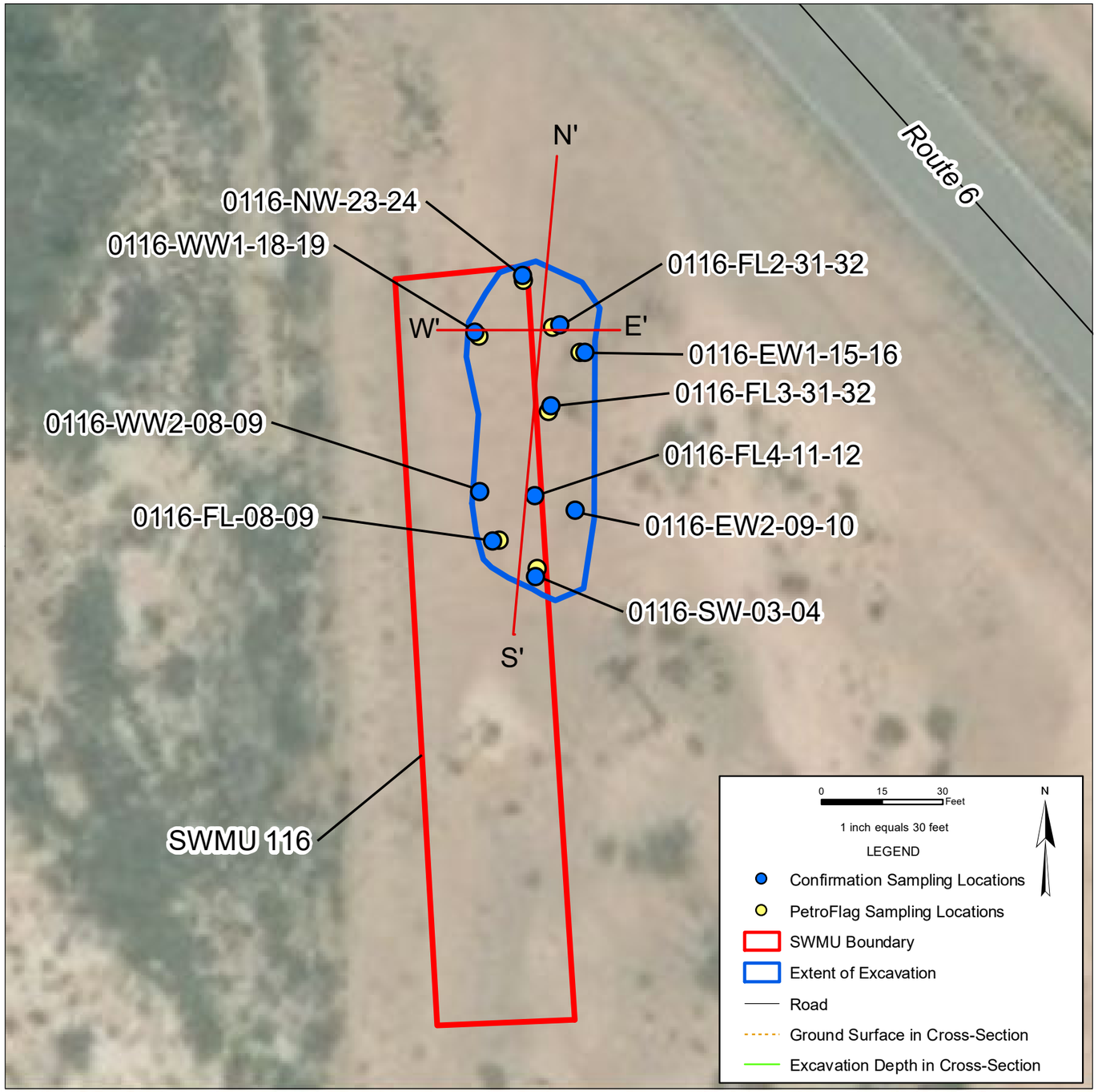
\\abqfpp01\Arcinfo\Av_Proj\WSMR\MapFiles\CLIN09A_SWMU116\ACA_report\SWMU_116_Figure_3_Historical_Soil_Boring_LocationMap.mxd tarrowoo 3/27/2018 11:27:58 AM

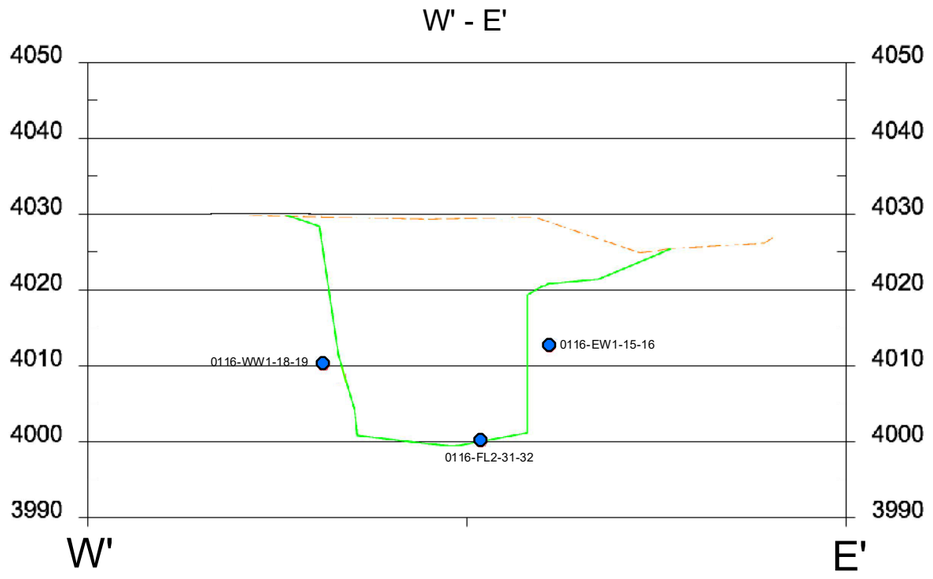


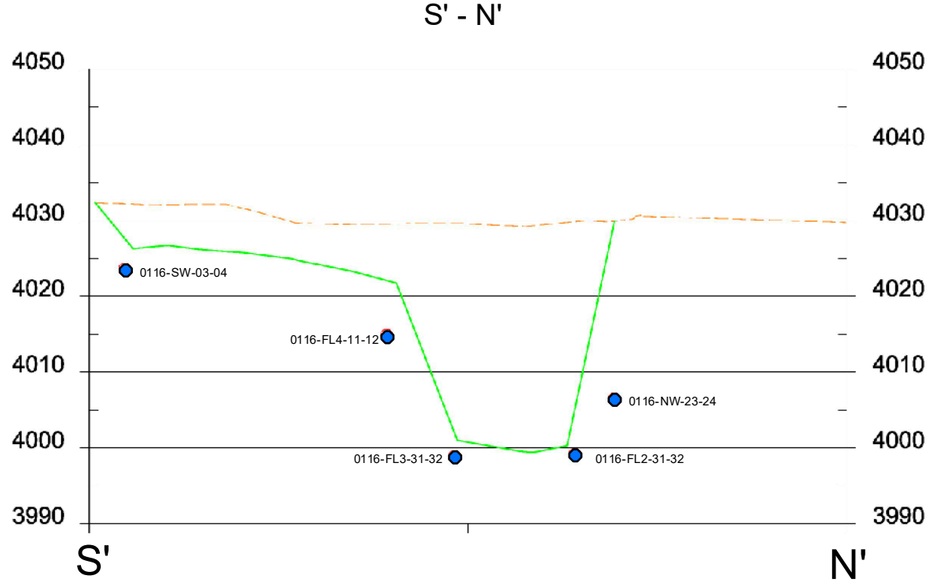
Acronym(s) and Abbreviation(s):
SWMU = Solid Waste Management Unit
WSMR = White Sands Missile Range

Note(s):
1. Imagery Source: ESRI Street Map online mapping service.
2. Site features presented are based on available information from the WSMR geodatabase.

FIGURE 3
LOCATIONS OF HISTORICAL SOIL BORINGS AND TEST PITS
CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS PETITION
SWMU 116, RHODES SUBGRADE ASPHALT TANKS
WHITE SANDS MISSILE RANGE, NEW MEXICO



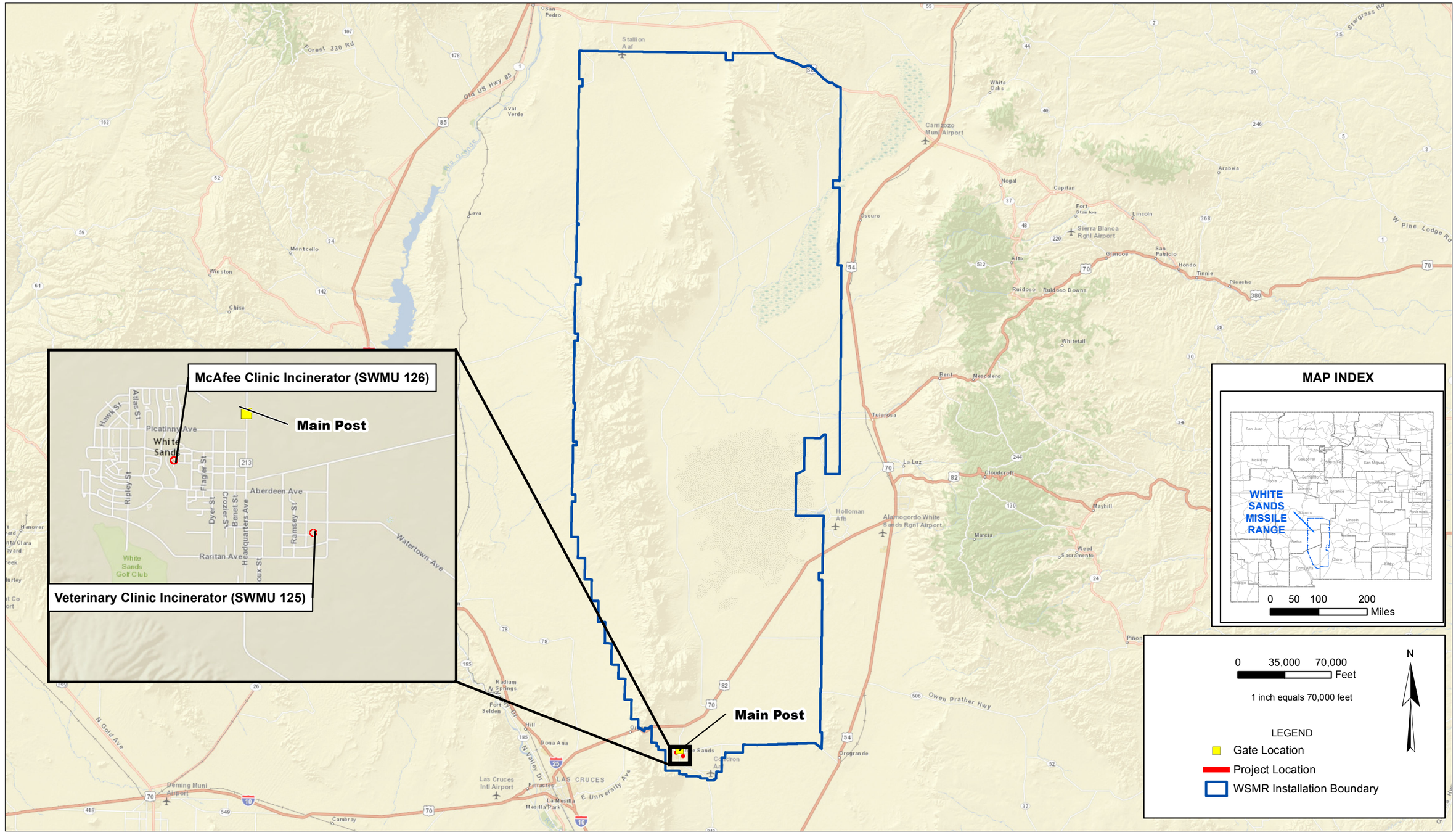




Acronym(s) and Abbreviation(s):
SWMU = Solid Waste Management Unit
WSMR = White Sands Missile Range

Note(s):
1. Imagery Source: ESRI Street Map online mapping service.
2. Site features presented are based on available information from the WSMR geodatabase.
3. Cross-sections not to scale, elevations are shown in feet above mean sea level.

FIGURE 6
CROSS-SECTIONS OF EXCAVATION
CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS PETITION
SWMU 116, RHODES SUBGRADE ASPHALT TANKS
WHITE SANDS MISSILE RANGE, NEW MEXICO



Acronym(s) and Abbreviation(s):
SWMU = Solid Waste Management Unit
WSMR = White Sands Missile Range

Note(s):
1. Imagery Source: ESRI Street Map online mapping service.
2. Site features presented are based on available information from the White Sands Missile Range geodatabase.

FIGURE 1
FACILITY LOCATION MAP
CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS PETITION FOR THE VETERINARY CLINIC (SWMU 125) AND MCAFEE CLINIC (SWMU 126) INCINERATORS
WHITE SANDS MISSILE RANGE, NEW MEXICO

\\ROSWELL\Arcinfo\Av_Proj\WSMR\MapFiles\CLIN-0008\Figure_2_Site_Location_Map_SWMU-125.mxd tarrowoo 3/3/2016 4:24:10 PM

Acronym(s) and Abbreviation(s):
RCRA = Resource Conservation and Recovery Act
SWMU = Solid Waste Management Unit

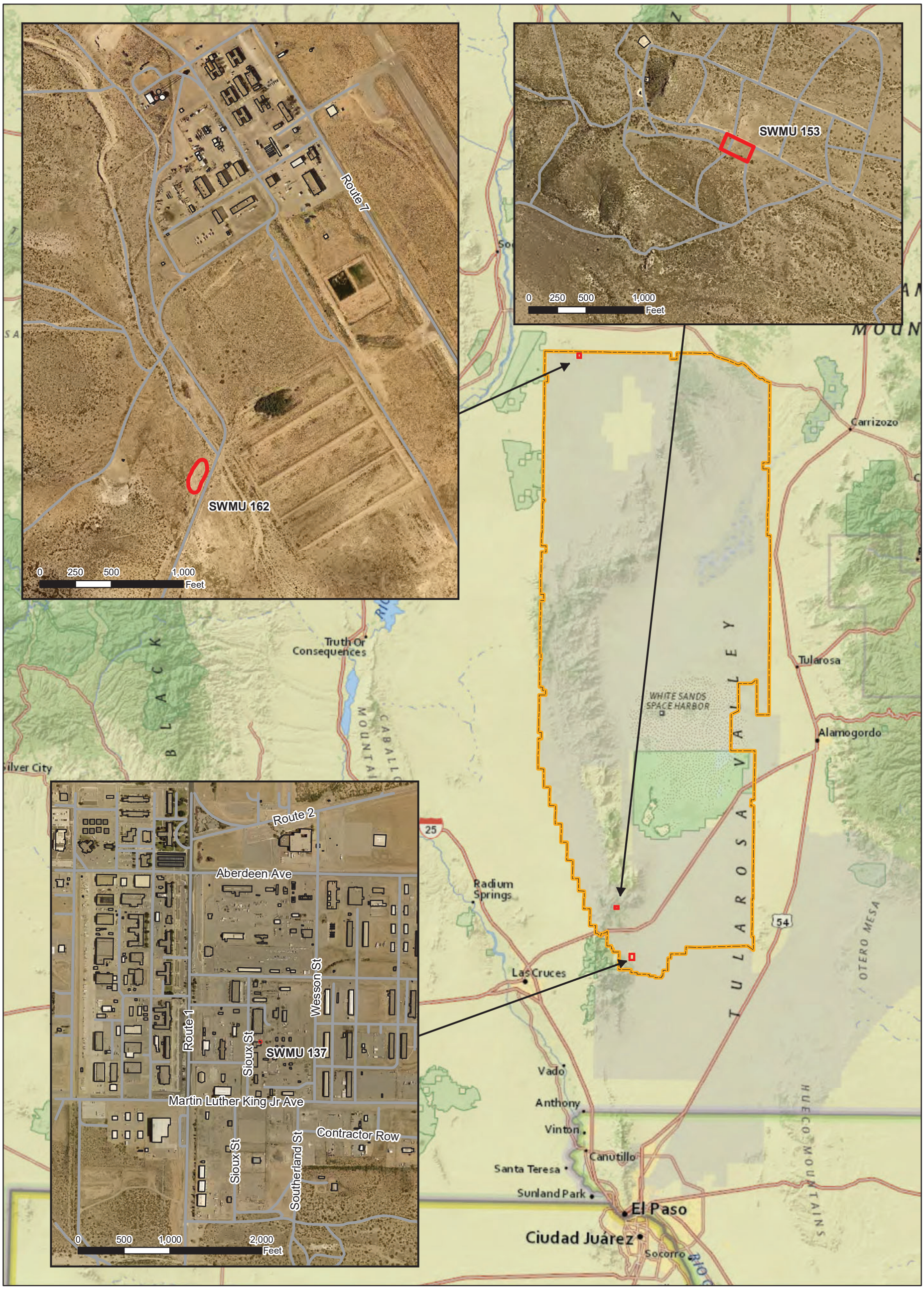
Note(s):
1. Imagery Source: ESRI Street Map online mapping service and ©2016 Google™ with modifications from CH2M.
2. Site features presented are based on available information from the White Sands Missile Range geodatabase.
3. The distribution of sample locations shown on this figure are based on those presented in the Final RCRA Facility Investigation (Shaw, 2013a).

FIGURE 2
SITE LOCATION MAP FOR SWMU 125
CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS PETITION FOR THE VETERINARY CLINIC (SWMU 125) AND MCAFEE CLINIC (SWMU 126) INCINERATORS
WHITE SANDS MISSILE RANGE, NEW MEXICO

Acronym(s) and Abbreviation(s):
RCRA = Resource Conservation and Recovery Act
SWMU = Solid Waste Management Unit

Note(s):
1. Imagery Source: ESRI Street Map online mapping service and ©2016 Google™ with modifications from CH2M.
2. Site features presented are based on available information from the White Sands Missile Range geodatabase.
3. The distribution of sample locations shown on this figure are based on those presented in the Final RCRA Facility Investigation (Shaw, 2013a).

FIGURE 3
SITE LOCATION MAP FOR SWMU 126
CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS PETITION FOR THE VETERINARY CLINIC (SWMU 125) AND MCAFEE CLINIC (SWMU 126) INCINERATORS
WHITE SANDS MISSILE RANGE, NEW MEXICO



LEGEND:

- WSMR Installation Boundary
- Site Boundary
- Building
- Road

NOTES:

1. Background aerial imagery and building, road, and site boundary data layers were provided by WSMR.
2. Main basemap source: ESRI National Geographic World Map.

N W E S

0 5 10 20 Miles

ECCI leidos

WHITE SANDS MISSILE RANGE
NEW MEXICO

SWMU 137, SWMU 153,
AND SWMU 162
SITE LOCATION

FIGURE: 1-1 | DATE: 11/5/2018

PROJECT: \WSMR\Projects\CAC_Petition_WSMR-56-58_CCWS-04\Figure_1-1_WSMR_Site_Location_11x17.mxd

LEGEND:

- Site Boundary
- Building

NOTES:

1. Background aerial imagery and building, road, and site boundary data layers were provided by WSMR.

N
W E
S

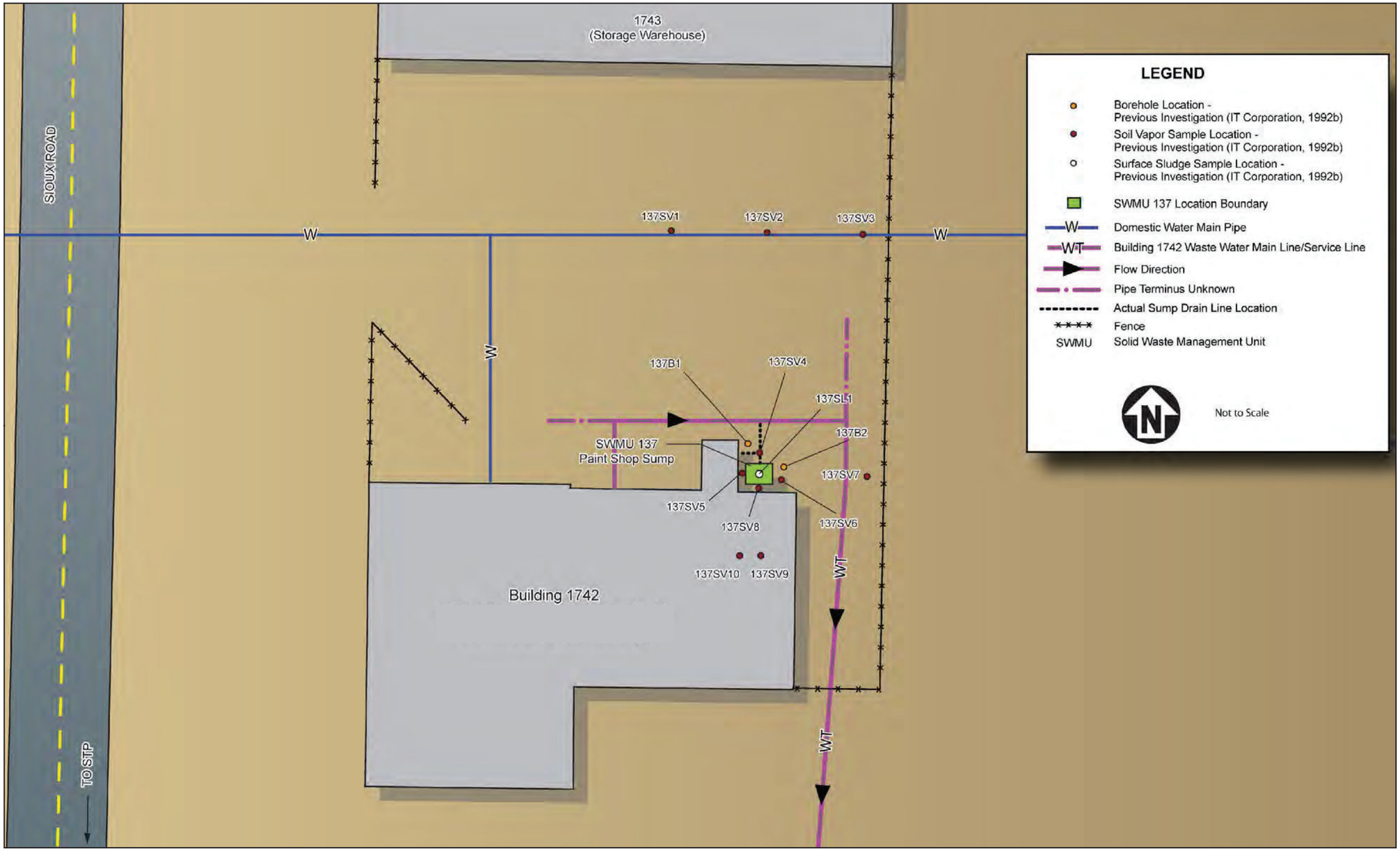
0 250 500 1,000
Feet
Meters
0 50 100 200

WHITE SANDS MISSILE RANGE
NEW MEXICO

SITE LOCATION FOR
PAINT SHOP SUMP
SWMU 137

FIGURE: 2-1	DATE: 11/5/2018

PROJECT: \WSMR\Projects\CAC_Petition_WSMR-56-58_CCWS-04\Figure_2-1_WSMR_56_Site_Location.mxd



NOTES:

1. Adapted from Figure 2-6 of the Subsurface Soil Investigation Report, SWMU 137, Paint Shop Sump (April 2014).

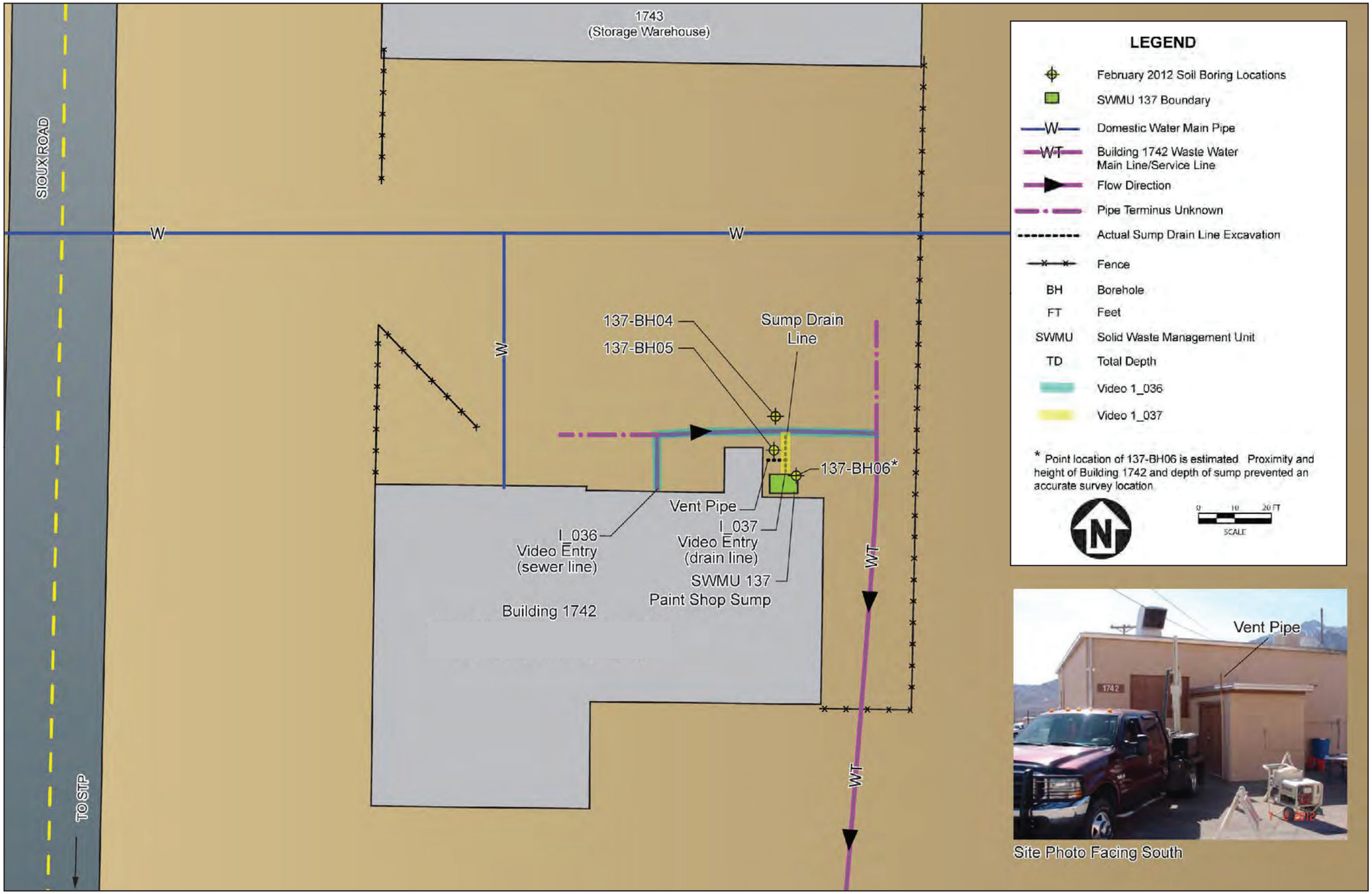
ECC leidos

WHITE SANDS MISSILE RANGE
NEW MEXICO

SWMU 137
PREVIOUS INVESTIGATION
SAMPLING LOCATIONS

FIGURE: 2-2 | DATE: 11/5/2018

PROJECT: \WSMR\Projects\CAC_Petition_WSMR-56-58_CCWS-04\Figure_2-2_WSMR_56_Previous_Samples.mxd



Site Photo Facing South

NOTES:

1. Adapted from Figure 2-3 of the Subsurface Soil Investigation Report, SWMU 137, Paint Shop Sump (April 2014).

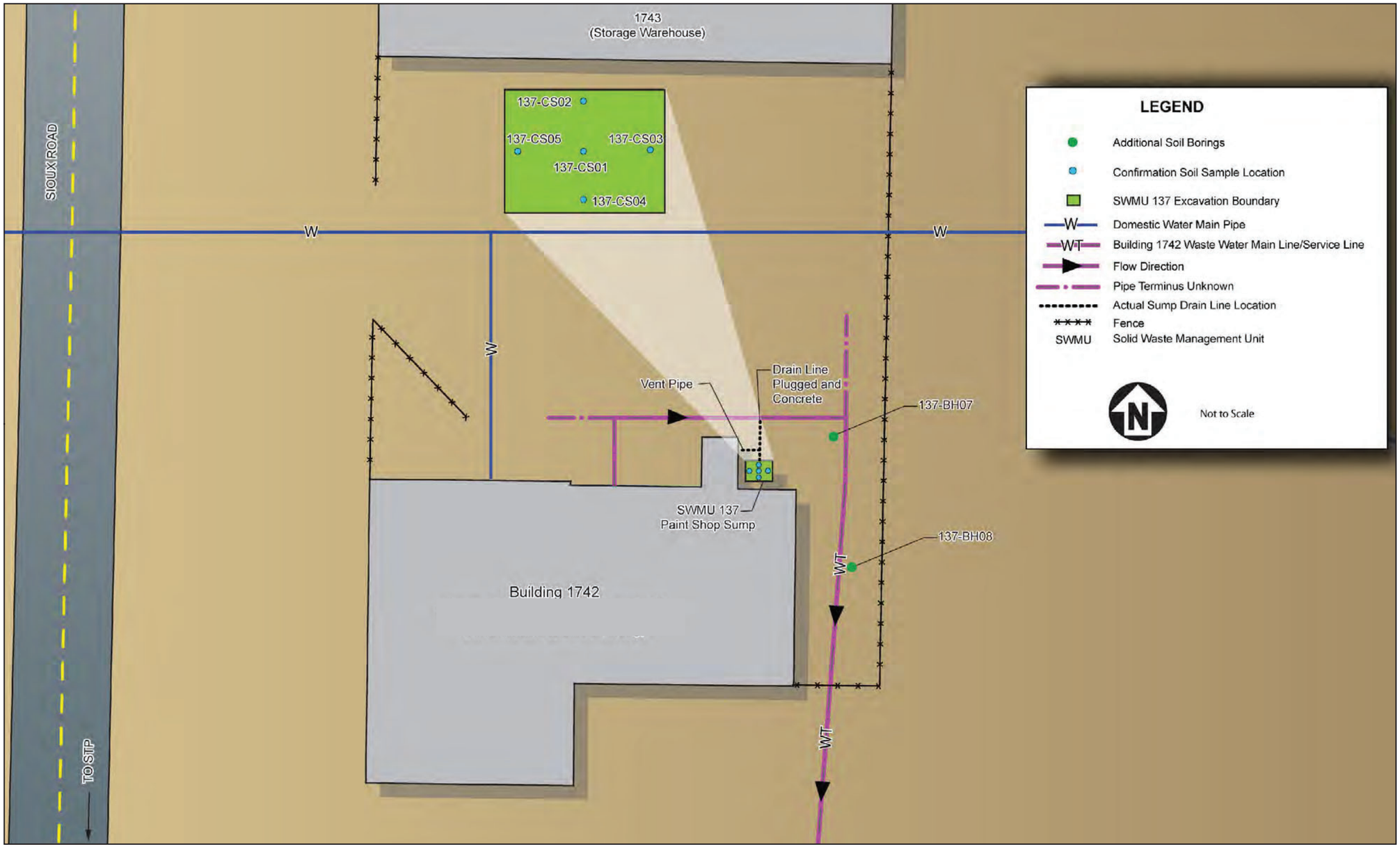
ECC leidos

WHITE SANDS MISSILE RANGE
NEW MEXICO

SWMU 137
SCHEMATIC OF SUBSURFACE
AND BOREHOLE LOCATIONS

FIGURE: 2-3 | DATE: 11/5/2018

PROJECT: \WSMR\Projects\CAC_Petition_WSMR-56-58_CCWS-04\Figure_2-3_WSMR_56_Subsurface_and_Borehole_Locations.mxd



NOTES:

1. Adapted from Figure 3-1 of the Subsurface Soil Investigation Report, SWMU 137, Paint Shop Sump (April 2014).

ECC leidos

WHITE SANDS MISSILE RANGE
NEW MEXICO

SWMU 137
ADDITIONAL INVESTIGATION
ACTIVITIES

FIGURE: 2-4 | DATE: 11/5/2018

PROJECT: \WSMR\Projects\CAC_Petition_WSMR-56-58_CCWS-04\Figure_2-4_WSMR_56_Additional_Activities.mxd

LEGEND:

Site Boundary

NOTES:

1. Background aerial imagery and building, road, and site boundary data layers were provided by WSMR.

N
W
E
S

0 25 50 100 Feet

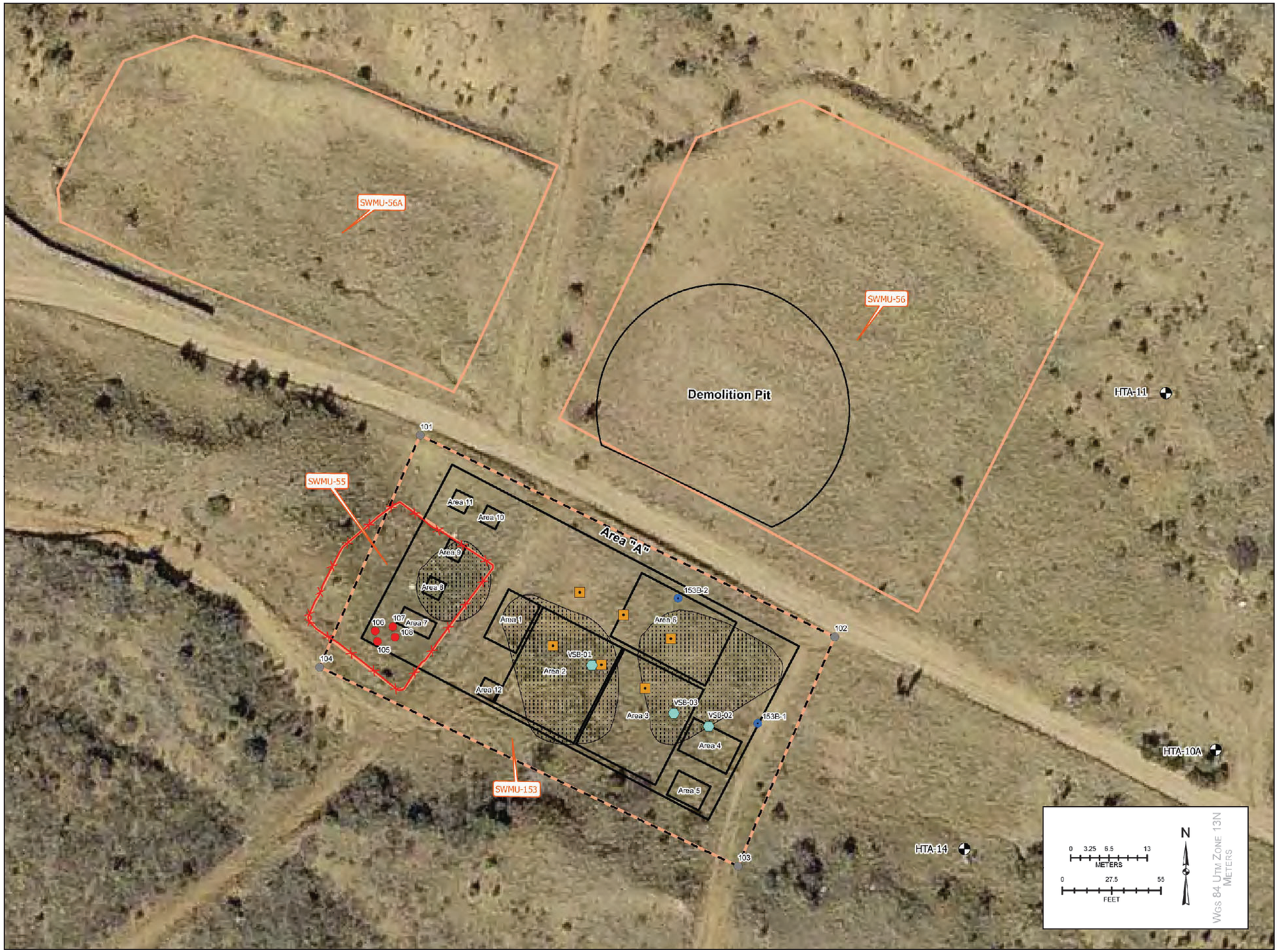
0 10 20 40 Meters

WHITE SANDS MISSILE RANGE
NEW MEXICO

SITE LOCATION FOR FORMER VANDAL BURIAL SITE SWMU 153

FIGURE: 3-1	DATE: 11/5/2018

PROJECT: \WSMR\Projects\CAC_Petition_WSMR-56-58_CCWS-04\Figure_3-1_WSMR_58_Site_Location.mxd



LEGEND

- Burn Pad Corners
- IT Geophysical Grid Corners
- Soil Boring 153 B-1, B-2 (IT-1992) Approximate Location
- Soil Sample - VSB 01-03 (MEVATEC-March 2001) Approximate Location
- Soil Sample (Dow Environmental-December 1994) Approximate Location
- Groundwater Monitoring Well Location
- Solid Waste Management Unit Limit
- Disposal Cells interpreted from Geophysical Inv. (IT-1992)
- IT Geophysical Testing Grid
- Removal Action Areas/Cells (DOW 1996)
- Fence with Warning Signs

NOTES:

1. Adapted from Figure 2-1 of the RCRA Facility Investigation Report, SWMU 153, Former Vandal Burial Site (January 2015).

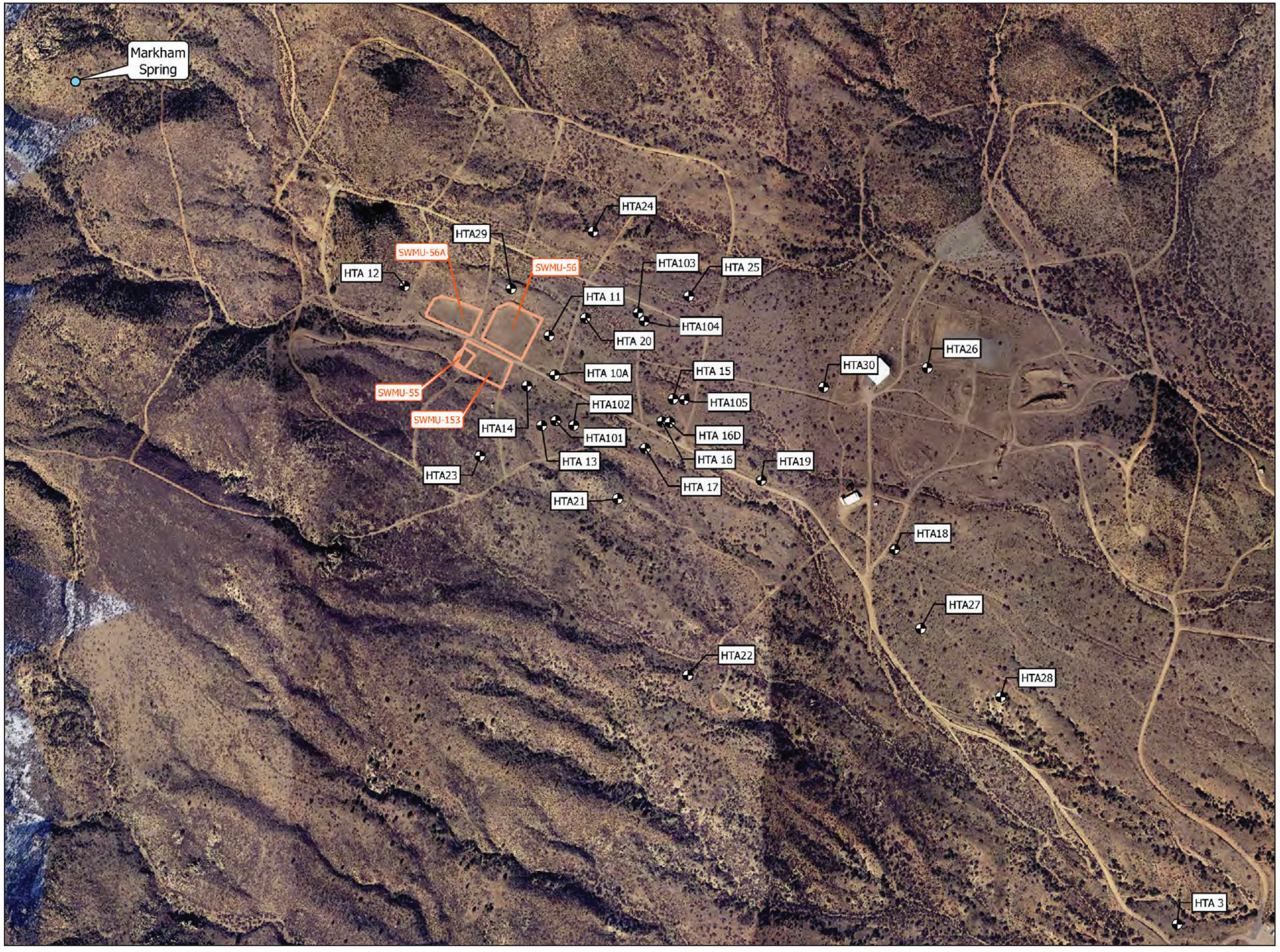
HTA = Hazardous Test Area
RCRA = Resource Conservation and Recovery Act
RFI= RCRA Facilities Investigation
SWMU= Solid Waste Management Unit
WSMR= White Sands Missile Range

WHITE SANDS MISSILE RANGE
NEW MEXICO

SWMU 153
PREVIOUS SAMPLING LOCATIONS
FORMER VANDAL BURIAL SITE

FIGURE: 3-2 | DATE: 11/5/2018

PROJECT: \WSMR\Projects\CAC_Petition_WSMR-56-58_CCWS-04\Figure_3-2_WSMR_58_Previous_Sample_Locations_11x17.mxd



LEGEND

- Groundwater Monitoring Well Location
- SMWU Boundary
- Spring

N

0 100 200 Meters

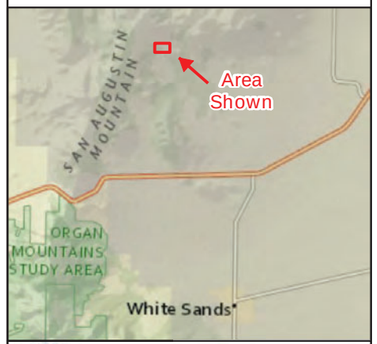
0 250 500 Feet

WGS 84 UTM ZONE 13N METERS

NOTES:

1. Adapted from Figure 2-2 of the RCRA Facility Investigation Report, SWMU 153, Former Vandal Burial Site (January 2015).

HTA = Hazardous Test Area
RCRA = Resource Conservation and Recovey Act
RFI = RCRA Facilities Investigation
SWMU = Solid Waste Management Unit
WSMR = White Sands Missile Range



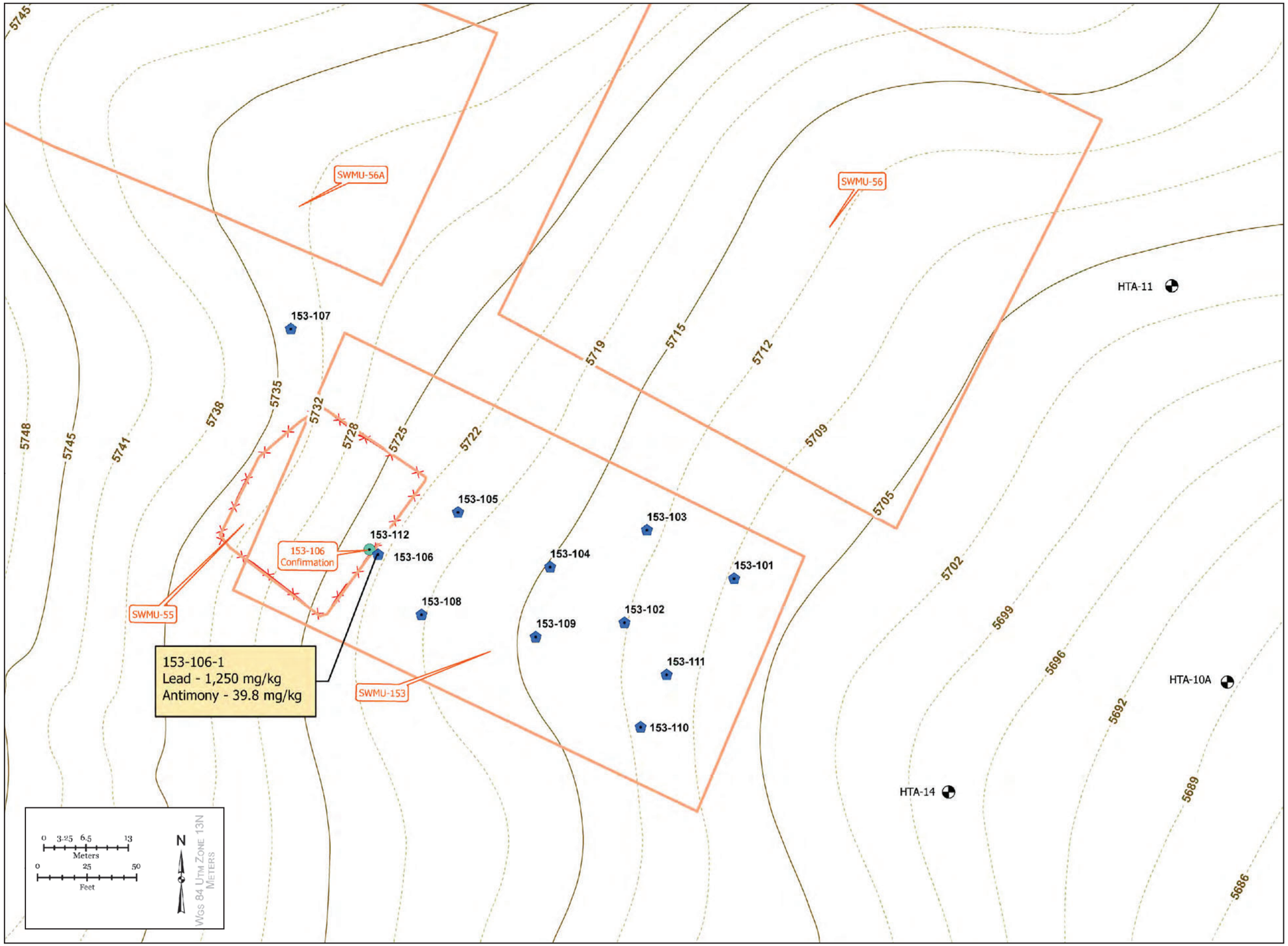
ECC leidos

WHITE SANDS MISSILE RANGE
NEW MEXICO

SWMU 153
MONITORING WELL LOCATIONS
FORMER VANDAL BURIAL SITE

FIGURE: 3-3 | DATE: 11/5/2018

PROJECT: \WSMR\Projects\CAC_Petition_WSMR-56-58_CCWS-04\Figure_3-3_WSMR_58_MW_Locations_11x17.mxd



LEGEND

- 2012 SWMU-153 Sampled locations
- 2014 Boring Location
- Groundwater Monitoring Well Location
- Solid Waste Management Unit Limit

Elevation Contours (FT)

- Major Interval
- Minor Interval
- Fence with Warning Signs

NOTES:

1. Adapted from Figure 3-1 of the RCRA Facility Investigation Report, SWMU 153, Former Vandal Burial Site (January 2015).
2. NMED Residential SSLs:
   Lead = 400 mg/kg
   Antimony = 31.3 mg/kg

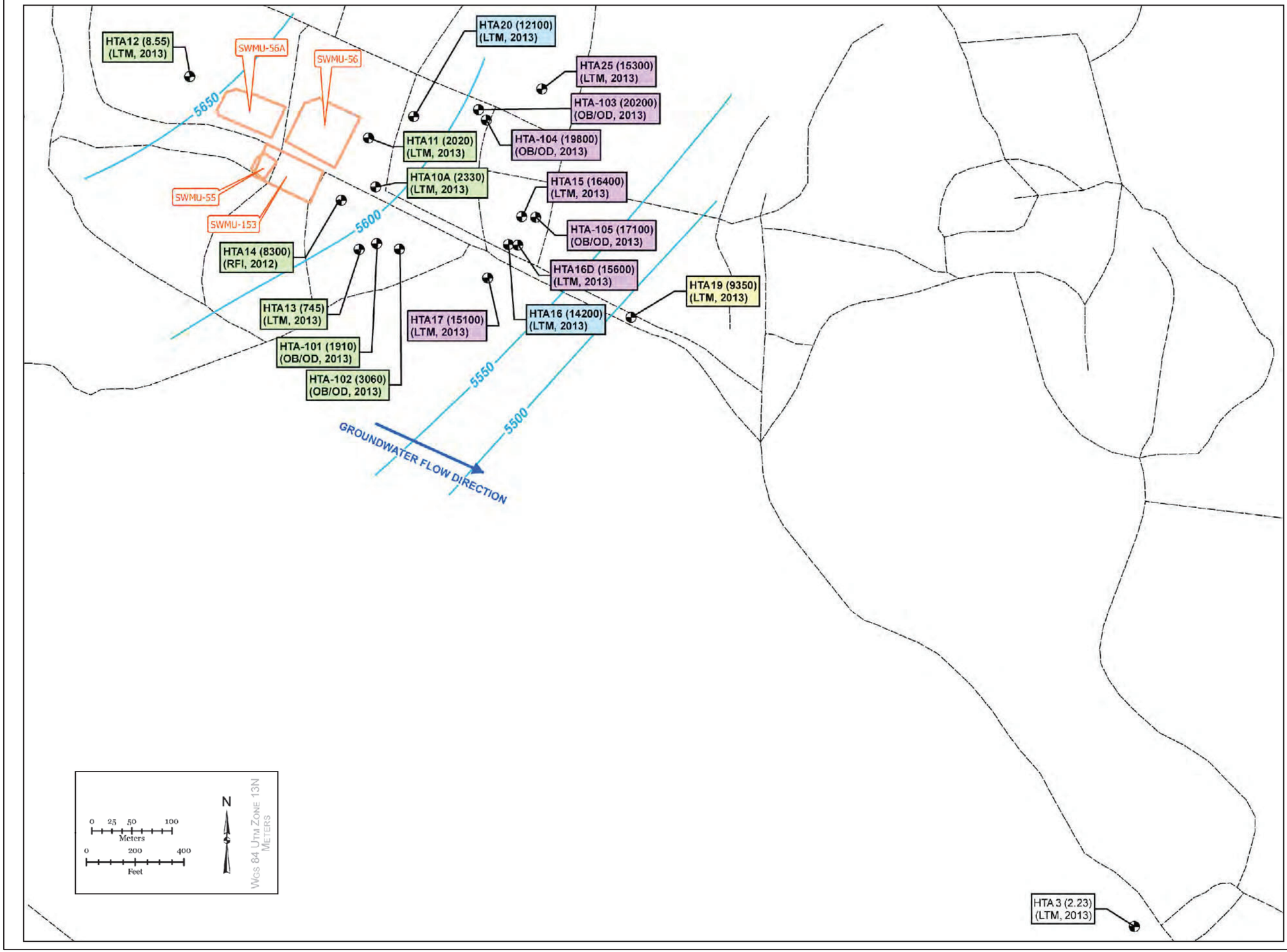
HTA = Hazardous Test Area
RCRA = Resource Conservation and Recovey Act
RFI = RCRA Facilities Investigation
SWMU = Solid Waste Management Unit
WSMR = White Sands Missile Range

WHITE SANDS MISSILE RANGE
NEW MEXICO

SWMU 153
SOIL ANALYTICAL RESULTS
EXCEEDING NMED RESIDENTIAL SSLs
FORMER VANDAL BURIAL SITE

FIGURE: 3-4 | DATE: 11/5/2018

PROJECT: \WSMR\Projects\CAC_Petition_WSMR-56-58_CCWS-04\Figure_3-4_WSMR_58_Soil_Analytical_Results_11x17.mxd



LEGEND

- Groundwater Monitoring/LTM Well Location
- Solid Waste Management Unit Limit
- Potentiometric Surface
- Dirt Road
- HTA12 (12.4) (0 - 5,000 µg/L)
- HTA19 (9550) (5,000 - 10,000 µg/L)
- HTA20 (14100) (10,000 - 15,000 µg/L)
- HTA17 (15700) (15,000 - 20,000 µg/L)

NOTES:

1. Adapted from Figure 6-1 of the RCRA Facility Investigation Report, SWMU 153, Former Vandal Burial Site (January 2015).

AMSL = Above Mean Sea Level
HTA = Hazardous Test Area
LTM = Long Term Monitoring
ND = Non Detect
OB/OD = Open Burn/Open Detonation
RCRA = Resource Conservation and Recovery Act
RFI = RCRA Facility Investigation
SWMU = Solid Waste Management Unit
WSMR = White Sands Missile Range
µg/L = Micrograms per liter
RCRA Permit Standard = 4.0 µ/L

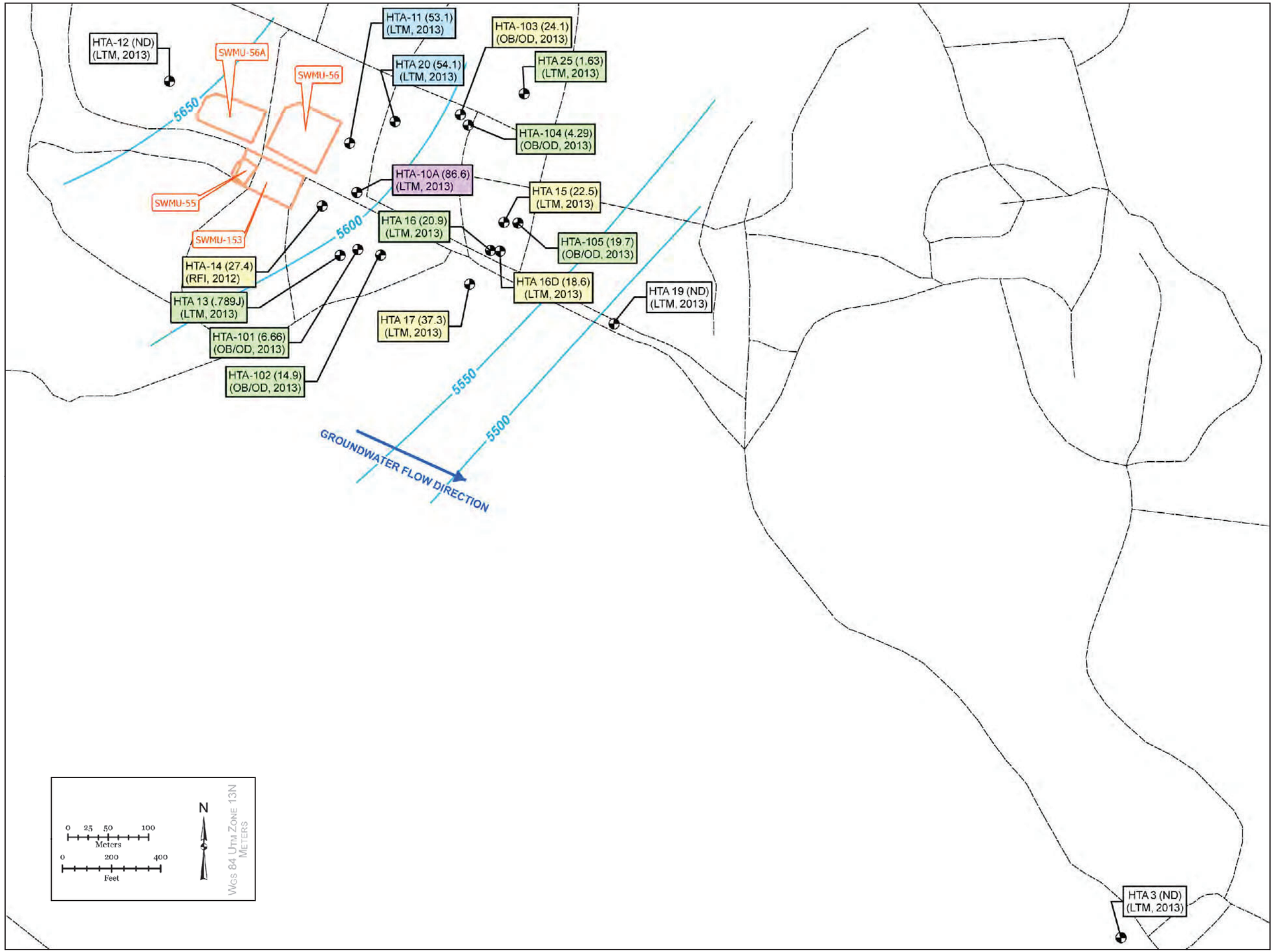
ECC leidos

WHITE SANDS MISSILE RANGE
NEW MEXICO

SWMU 153
PERCHLORATE IN GROUNDWATER
FORMER VANDAL BURIAL SITE

FIGURE: 3-5	DATE: 11/5/2018

PROJECT: \WSMR\Projects\CAC_Petition_WSMR-56-58_CCWS-04\Figure_3-5_WSMR_58_Perchlorate_in_GW_11x17.mxd



LEGEND

- Groundwater Monitoring/LTM Well Location
- Solid Waste Management Unit Limit
- Potentiometric Surface
- Dirt Road

HTA12 (0)	(0 - .61 µg/L)
HTA25 (1.7)	(.61 - 20 µg/L)
HTA17 (36.6)	(20 - 40 µg/L)
HTA20 (59.4)	(40 - 60 µg/L)
HTA10A (97.5)	(60 - 100 µg/L)

NOTES:

1. Adapted from Figure 6-2 of the RCRA Facility Investigation Report, SWMU 153, Former Vandal Burial Site (January 2015).

AMSL = Above Mean Sea Level
HTA = Hazardous Test Area
LTM = Long Term Monitoring
ND = Non Detect
OB/OD = Open Burn/Open Detonation
RCRA = Resource Conservation and Recovery Act
RFI = RCRA Facility Investigation
SWMU = Solid Waste Management Unit
WSMR = White Sands Missile Range
µg/L = Micrograms per liter
RCRA Permit Standard = 4.0 µ/L

WHITE SANDS MISSILE RANGE
NEW MEXICO

SWMU 153
RDX IN GROUNDWATER
FORMER VANDAL BURIAL SITE

FIGURE: 3-6 | DATE: 11/5/2018

PROJECT: \WSMR\Projects\CAC_Petition_WSMR-56-58_CCWS-04\Figure_3-6_WSMR_58_RDX_in_GW_11x17.mxd

LEGEND

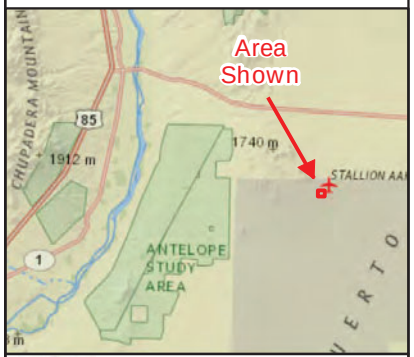
- BACKGROUND SOIL BORING LOCATION
- SOIL BORING LOCATION
- APPROXIMATE LOCATION OF FIBER OPTIC LINE
- SWMU162
- DIRT ROAD
- DRAINAGE
- GRAVEL PATH

N

0 50 100 Feet

NOTES:

1. Adapted from Figure 4 of the Revised RCRA Facility Investigation Report for the Stallion Range Center Former Firefighter Training Area (June 2011).
2. Base map information provided by Zia, October 2008.



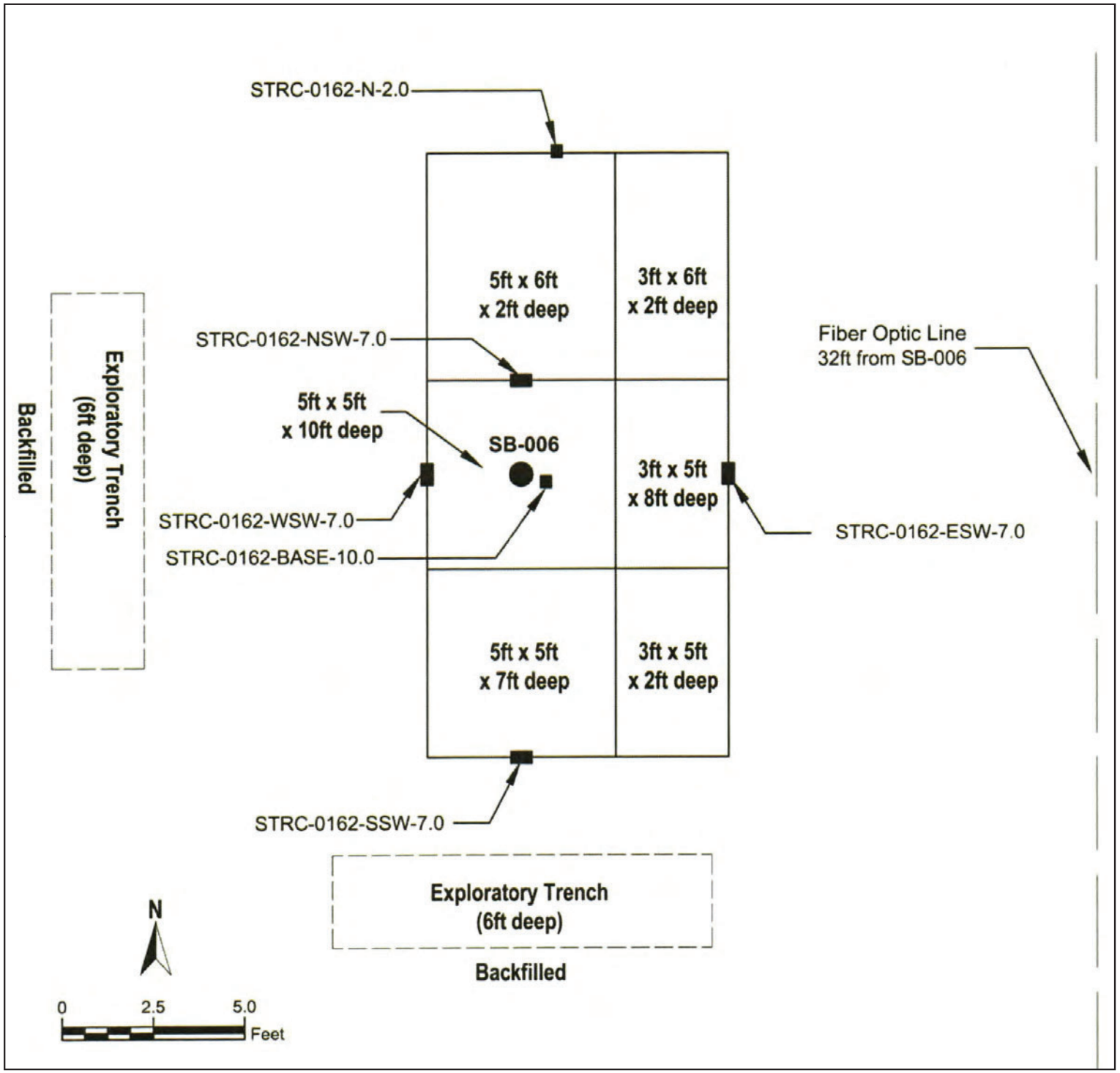
ECC leidos

WHITE SANDS MISSILE RANGE
NEW MEXICO

SOIL BORING LOCATIONS
FOR STALLION
RANGE CENTER FORMER FFTA
SWMU 162

FIGURE: 4-2 | DATE: 11/5/2018

PROJECT: \\WSMR\Projects\CAC_Petition_WSMR-56-58_CCWS-04\Figure_4-2_WSMR_66_Soil_Boring_Locations.mxd



LEGEND:

CONFIRMATION SAMPLE

NOTES:

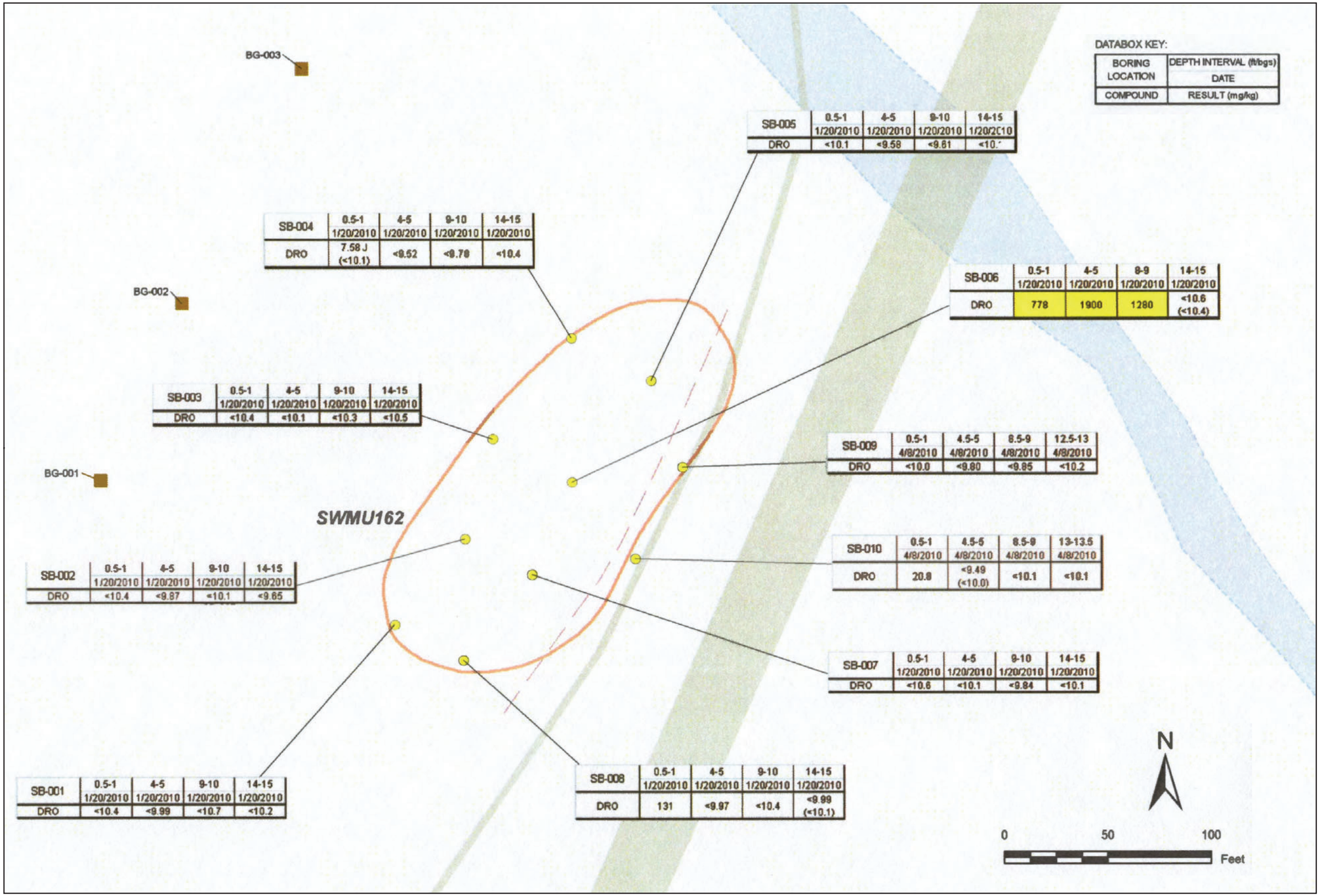
1. Adapted from Figure 5 of the Revised RCRA Facility Investigation Report for the Stallion Range Center Former Firefighter Training Area (June 2011).
2. This figure was drafted based on Zia description.

WHITE SANDS MISSILE RANGE
NEW MEXICO

EXTENT OF EXCAVATION AT LOCATION SB-006, STALLION RANGE CENTER FORMER FFTA SWMU 162

FIGURE: 4-3 | DATE: 11/5/2018

PROJECT: \\WSMR\Projects\CAC_Petition_WSMR-56-58_CCWS-04\Figure_4-3_WSMR_66_Extent_of_Excavation.mxd



LEGEND:

- BACKGROUND SAMPLE LOCATION
- SOIL BORING LOCATION
- APPROXIMATE LOCATION OF FIBER OPTIC LINE
- DIRT ROAD
- DRAINAGE
- SWMU162
- GRAVEL PATH

NOTES:

1. Adapted from Figure 6 of the Revised RCRA Facility Investigation Report for the Stallion Range Center Former Firefighter Training Area (June 2011).
2. Base map provided by Zia, and rectified to December 2008 satellite image.
3. The screening criteria for DRO is taken from the October 2006 NMED TPH screening guidelines.
4. Yellow highlight indicates the reported result exceeds the published SSLS.
5. Brackets indicate that the result shown is from a duplicate field sample.

DRO: Diesel Range Organics
NMED: New Mexico Environment Department
TPH: Total Petroleum Hydrocarbon
SSL: Soil Screening Level
J: Indicates an estimated value
<: Sample result was not detected at laboratory reporting limit shown
ft/bgs: Feet below ground surface
mg/kg: Milligram per Kilogram

ECC leidos

WHITE SANDS MISSILE RANGE
NEW MEXICO

TPH-DRO CONCENTRATIONS IN SOILS
STALLION RANGE CENTER
FORMER FFTA
SWMU 162

FIGURE: 4-4 | DATE: 11/5/2018

PROJECT: \WSMR\Projects\CAC_Petition_WSMR-56-58_CCWS-04\Figure_4-4_WSMR_66_TPH-DRO_in_Soils_11x17.mxd

DATABOX KEY:

BORING LOCATION	DEPTH INTERVAL (ft/bgs)
	DATE
COMPOUND	RESULT (mg/kg)

USEPA: United States Environmental Protection Agency
NMED: New Mexico Environment Department
DAF: Dilution Attenuation Factor
SSL: Soil Screening Level
RSL: Risk Screening Level
J: Indicates an estimated value
<: Sample result was not detected at laboratory reporting limit shown
ft/bgs: Feet below ground surface
mg/kg: Milligram per Kilogram

BG-003

BG-002

BG-001

SB-009

SB-010

SWMU162

SB-004	0.5-1 1/20/2010	4-5 1/20/2010	9-10 1/20/2010	14-15 1/20/2010
2-Methylnaphthalene	<0.00997 (<0.0106)	<0.00987	<0.00981	<0.0102
Anthracene	<0.00997 (<0.0106)	<0.00987	<0.00981	<0.0102
Benzo(g,h,i)Perylene	<0.00997 (<0.0106)	<0.00987	<0.00981	<0.0102
Chrysene	<0.00997 (<0.0106)	<0.00987	<0.00981	<0.0102
Fluoranthene	<0.00997 (<0.0106)	<0.00987	<0.00981	<0.0102
Phenanthrene	<0.00997 (<0.0106)	<0.00987	<0.00981	<0.0102
Pyrene	<0.00997 (<0.0106)	<0.00987	<0.00981	<0.0102

SB-005	0.5-1 1/20/2010	4-5 1/20/2010	9-10 1/20/2010	14-15 1/20/2010
2-Methylnaphthalene	<0.0105	<0.00990	<0.0102	<0.00956
Anthracene	<0.0105	<0.00990	<0.0102	<0.00956
Benzo(g,h,i)Perylene	<0.0105	<0.00990	<0.0102	<0.00956
Chrysene	<0.0105	<0.00990	<0.0102	<0.00956
Fluoranthene	<0.0105	<0.00990	<0.0102	<0.00956
Phenanthrene	<0.0105	<0.00990	<0.0102	<0.00956
Pyrene	<0.0105	<0.00990	<0.0102	<0.00956

SB-003	0.5-1 1/20/2010	4-5 1/20/2010	9-10 1/20/2010	14-15 1/20/2010
2-Methylnaphthalene	<0.0103	<0.00978	<0.0103	<0.0106
Anthracene	<0.0103	<0.00978	<0.0103	<0.0106
Benzo(g,h,i)Perylene	<0.0103	<0.00978	<0.0103	<0.0106
Chrysene	<0.0103	<0.00978	<0.0103	<0.0106
Fluoranthene	<0.0103	<0.00978	<0.0103	<0.0106
Phenanthrene	<0.0103	<0.00978	<0.0103	<0.0106
Pyrene	<0.0103	<0.00978	<0.0103	<0.0106

SB-006	0.5-1 1/20/2010	4-5 1/20/2010	9-9 1/20/2010	14-15 1/20/2010
2-Methylnaphthalene	0.0123	<0.0102	<0.00997	<0.00995 (<0.0100)
Anthracene	0.0173	0.0328	<0.00997	<0.00995 (<0.0100)
Benzo(g,h,i)Perylene	<0.102	0.0781 J	<0.0997	<0.00995 (<0.0100)
Chrysene	<0.0102	<0.0102	<0.0997	<0.00995 (<0.0100)
Fluoranthene	0.00720 J	<0.0102	<0.00997	<0.00995 (<0.0100)
Phenanthrene	0.00912 J	<0.0102	<0.00997	<0.00995 (<0.0100)
Pyrene	0.0152	0.0197	<0.00997	<0.00995 (<0.0100)

SB-002	0.5-1 1/20/2010	4-5 1/20/2010	9-10 1/20/2010	14-15 1/20/2010
2-Methylnaphthalene	<0.0103	<0.0103	<0.0102	<0.00998
Anthracene	<0.0103	<0.0103	<0.0102	<0.00998
Benzo(g,h,i)Perylene	<0.0103	<0.0103	<0.0102	<0.00998
Chrysene	<0.0103	<0.0103	<0.0102	<0.00998
Fluoranthene	<0.0103	<0.0103	<0.0102	<0.00998
Phenanthrene	<0.0103	<0.0103	<0.0102	<0.00998
Pyrene	<0.0103	<0.0103	<0.0102	<0.00998

SB-007	0.5-1 1/20/2010	4-5 1/20/2010	9-10 1/20/2010	14-15 1/20/2010
2-Methylnaphthalene	<0.0105	<0.00990	<0.0102	<0.0102
Anthracene	<0.0105	<0.00990	<0.0102	<0.0102
Benzo(g,h,i)Perylene	<0.0105	<0.00990	<0.0102	<0.0102
Chrysene	<0.0105	<0.00990	<0.0102	<0.0102
Fluoranthene	<0.0105	<0.00990	<0.0102	<0.0102
Phenanthrene	<0.0105	<0.00990	<0.0102	<0.0102
Pyrene	<0.0105	<0.00990	<0.0102	<0.0102

SB-001	0.5-1 1/20/2010	4-5 1/20/2010	9-10 1/20/2010	14-15 1/20/2010
2-Methylnaphthalene	<0.0103	<0.0101	<0.0107	<0.0103
Anthracene	<0.0103	<0.0101	<0.0107	<0.0103
Benzo(g,h,i)Perylene	<0.0103	<0.0101	<0.0107	<0.0103
Chrysene	<0.0103	0.0153	<0.0107	<0.0103
Fluoranthene	<0.0103	<0.0101	<0.0107	<0.0103
Phenanthrene	<0.0103	<0.0101	<0.0107	<0.0103
Pyrene	<0.0103	<0.0101	<0.0107	<0.0103

SB-008	0.5-1 1/20/2010	4-5 1/20/2010	9-10 1/20/2010	14-15 1/20/2010
2-Methylnaphthalene	<0.0103	<0.0103	<0.0104	<0.0102 (<0.00970)
Anthracene	0.0150	<0.0103	<0.0104	<0.0102 (<0.00970)
Benzo(g,h,i)Perylene	0.00530 J	<0.0103	<0.0104	<0.0102 (<0.00970)
Chrysene	<0.0103	<0.0103	<0.0104	<0.0102 (<0.00970)
Fluoranthene	<0.0103	<0.0103	<0.0104	<0.0102 (<0.00970)
Phenanthrene	<0.0103	<0.0103	<0.0104	<0.0102 (<0.00970)
Pyrene	<0.0103	<0.0103	<0.0104	<0.0102 (<0.00970)

N

0 50 100 Feet

LEGEND:

- BACKGROUND SAMPLE LOCATION
- SOIL BORING LOCATION
- APPROXIMATE LOCATION OF FIBER OPTIC LINE
- DIRT ROAD
- DRAINAGE
- SWMU162
- GRAVEL PATH

NOTES:

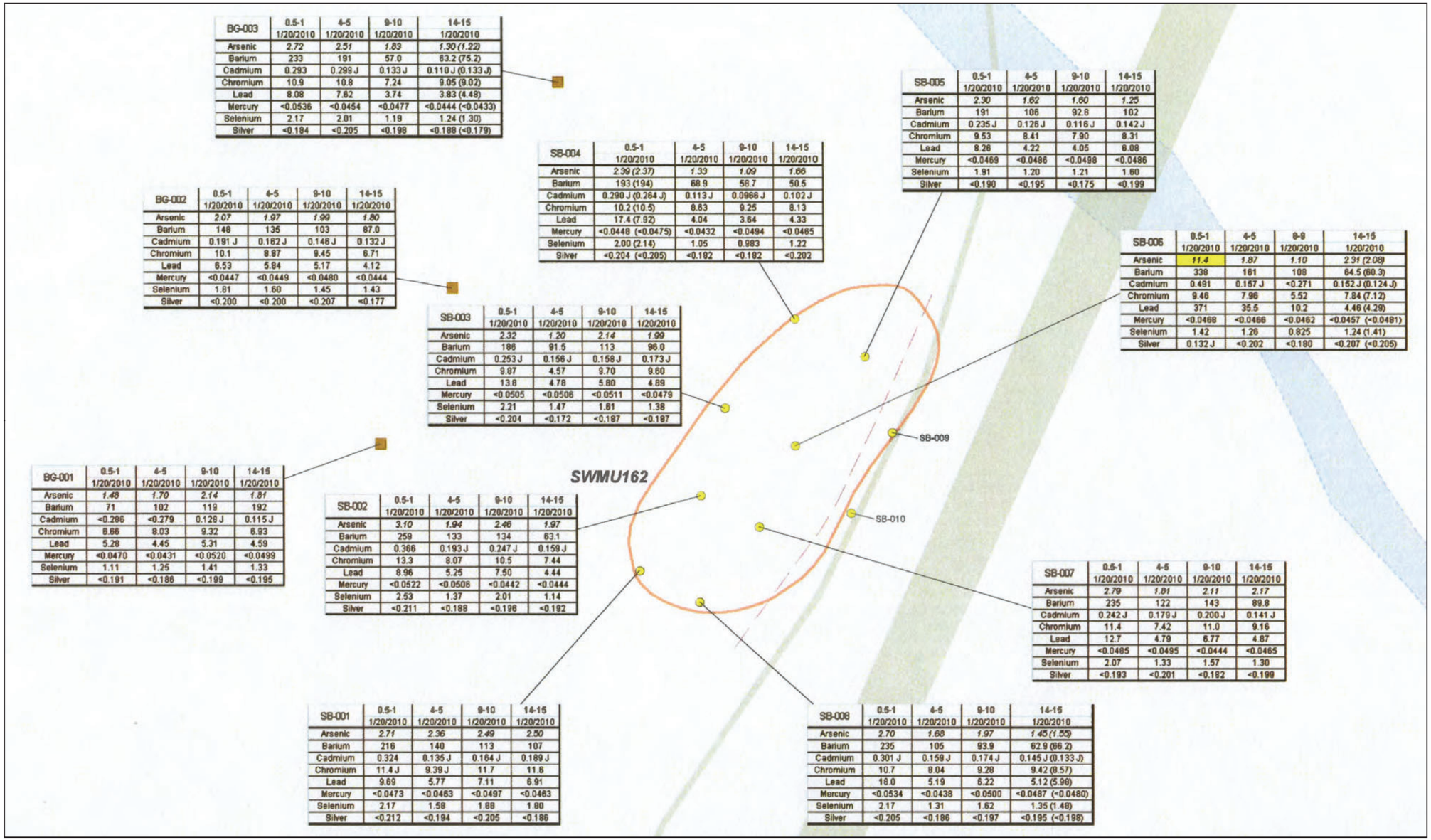
1. Adapted from Figure 7 of the Revised RCRA Facility Investigation Report for the Stallion Range Center Former Firefighter Training Area (June 2011).
2. Base map provided by Zia, and rectified to December 2008 satellite image.
3. The screening criteria includes the residential SSL and the DAF20 SSL. The residential SSL is the lower of the NMED SSL (Dec 2009) or the USEPA RSL (2009).
4. Yellow highlight indicates the reported result exceeds the published SSLS.
5. Italics indicates the reported result exceeds the NMED DAF 20 screening value.
6. Brackets indicate that the result shown is from a duplicate field sample.
7. Only those PAH compounds reported at concentrations above the reporting limit in at least one sample are shown. All other PAH compounds were below the reporting limit in all samples.

WHITE SANDS MISSILE RANGE
NEW MEXICO

PAH CONCENTRATIONS IN SOILS
STALLION RANGE CENTER
FORMER FFTA
SWMU 162

FIGURE: 4-5 | DATE: 11/5/2018

PROJECT: \WSMR\Projects\CAC_Petition_WSMR-56-58_CCWS-04\Figure_4-5_WSMR_66_PAH_in_Soils_11x17.mxd



BG-003	0.5-1 1/20/2010	4-5 1/20/2010	9-10 1/20/2010	14-15 1/20/2010
Arsenic	2.72	2.51	1.83	1.30 (1.22)
Barium	233	191	57.0	63.2 (75.2)
Cadmium	0.293	0.299 J	0.133 J	0.110 J (0.133 J)
Chromium	10.9	10.8	7.24	9.05 (9.02)
Lead	8.08	7.82	3.74	3.83 (4.48)
Mercury	<0.0536	<0.0454	<0.0477	<0.0444 (<0.0433)
Selenium	2.17	2.01	1.19	1.24 (1.30)
Silver	<0.184	<0.205	<0.198	<0.188 (<0.179)

BG-002	0.5-1 1/20/2010	4-5 1/20/2010	9-10 1/20/2010	14-15 1/20/2010
Arsenic	2.07	1.97	1.99	1.80
Barium	148	135	103	87.0
Cadmium	0.191 J	0.162 J	0.148 J	0.132 J
Chromium	10.1	8.87	9.45	6.71
Lead	6.53	5.84	5.17	4.12
Mercury	<0.0447	<0.0449	<0.0480	<0.0444
Selenium	1.81	1.60	1.45	1.43
Silver	<0.200	<0.200	<0.207	<0.177

BG-001	0.5-1 1/20/2010	4-5 1/20/2010	9-10 1/20/2010	14-15 1/20/2010
Arsenic	1.48	1.70	2.14	1.81
Barium	71	102	119	192
Cadmium	<0.266	<0.279	0.128 J	0.115 J
Chromium	8.66	8.03	9.32	6.93
Lead	5.28	4.45	5.31	4.59
Mercury	<0.0470	<0.0431	<0.0520	<0.0499
Selenium	1.11	1.25	1.41	1.33
Silver	<0.191	<0.186	<0.199	<0.195

SB-004	0.5-1 1/20/2010	4-5 1/20/2010	9-10 1/20/2010	14-15 1/20/2010
Arsenic	2.39 (2.37)	1.33	1.09	1.66
Barium	193 (194)	68.9	58.7	50.5
Cadmium	0.290 J (0.264 J)	0.113 J	0.0968 J	0.102 J
Chromium	10.2 (10.5)	8.63	9.25	8.13
Lead	17.4 (7.92)	4.04	3.64	4.33
Mercury	<0.0448 (<0.0475)	<0.0432	<0.0494	<0.0465
Selenium	2.00 (2.14)	1.05	0.983	1.22
Silver	<0.204 (<0.205)	<0.182	<0.182	<0.202

SB-003	0.5-1 1/20/2010	4-5 1/20/2010	9-10 1/20/2010	14-15 1/20/2010
Arsenic	2.32	1.20	2.14	1.99
Barium	186	91.5	113	96.0
Cadmium	0.253 J	0.156 J	0.158 J	0.173 J
Chromium	9.87	4.57	9.70	9.60
Lead	13.8	4.78	5.80	4.89
Mercury	<0.0505	<0.0506	<0.0511	<0.0479
Selenium	2.21	1.47	1.61	1.38
Silver	<0.204	<0.172	<0.187	<0.187

SB-002	0.5-1 1/20/2010	4-5 1/20/2010	9-10 1/20/2010	14-15 1/20/2010
Arsenic	3.10	1.94	2.46	1.97
Barium	259	133	134	63.1
Cadmium	0.366	0.193 J	0.247 J	0.159 J
Chromium	13.3	8.07	10.5	7.44
Lead	8.96	5.25	7.50	4.44
Mercury	<0.0522	<0.0506	<0.0442	<0.0444
Selenium	2.53	1.37	2.01	1.14
Silver	<0.211	<0.188	<0.196	<0.192

SB-001	0.5-1 1/20/2010	4-5 1/20/2010	9-10 1/20/2010	14-15 1/20/2010
Arsenic	2.71	2.36	2.49	2.50
Barium	216	140	113	107
Cadmium	0.324	0.135 J	0.164 J	0.189 J
Chromium	11.4 J	9.39 J	11.7	11.6
Lead	9.69	5.77	7.11	6.91
Mercury	<0.0473	<0.0483	<0.0497	<0.0483
Selenium	2.17	1.58	1.88	1.80
Silver	<0.212	<0.194	<0.205	<0.186

SB-005	0.5-1 1/20/2010	4-5 1/20/2010	9-10 1/20/2010	14-15 1/20/2010
Arsenic	2.30	1.62	1.60	1.25
Barium	191	106	92.8	102
Cadmium	0.235 J	0.126 J	0.116 J	0.142 J
Chromium	9.53	8.41	7.90	8.31
Lead	8.26	4.22	4.05	6.08
Mercury	<0.0469	<0.0486	<0.0498	<0.0486
Selenium	1.91	1.20	1.21	1.60
Silver	<0.190	<0.195	<0.175	<0.199

SB-006	0.5-1 1/20/2010	4-5 1/20/2010	9-9 1/20/2010	14-15 1/20/2010
Arsenic	11.4	1.87	1.10	2.31 (2.08)
Barium	338	161	108	64.5 (60.3)
Cadmium	0.491	0.157 J	<0.271	0.152 J (0.124 J)
Chromium	9.46	7.96	5.52	7.84 (7.12)
Lead	371	35.5	10.2	4.46 (4.29)
Mercury	<0.0468	<0.0466	<0.0462	<0.0457 (<0.0481)
Selenium	1.42	1.26	0.825	1.24 (1.41)
Silver	0.132 J	<0.202	<0.180	<0.207 (<0.205)

SB-007	0.5-1 1/20/2010	4-5 1/20/2010	9-10 1/20/2010	14-15 1/20/2010
Arsenic	2.79	1.81	2.11	2.17
Barium	235	122	143	89.8
Cadmium	0.242 J	0.179 J	0.200 J	0.141 J
Chromium	11.4	7.42	11.0	9.16
Lead	12.7	4.79	6.77	4.87
Mercury	<0.0485	<0.0495	<0.0444	<0.0465
Selenium	2.07	1.33	1.57	1.30
Silver	<0.193	<0.201	<0.182	<0.199

SB-008	0.5-1 1/20/2010	4-5 1/20/2010	9-10 1/20/2010	14-15 1/20/2010
Arsenic	2.70	1.68	1.97	1.45 (1.55)
Barium	235	105	93.9	62.9 (66.2)
Cadmium	0.301 J	0.159 J	0.174 J	0.145 J (0.133 J)
Chromium	10.7	8.04	9.28	9.42 (8.57)
Lead	18.0	5.19	6.22	5.12 (5.96)
Mercury	<0.0534	<0.0438	<0.0500	<0.0487 (<0.0480)
Selenium	2.17	1.31	1.62	1.35 (1.48)
Silver	<0.205	<0.186	<0.197	<0.195 (<0.198)

LEGEND:

- BACKGROUND SAMPLE LOCATION
- SOIL BORING LOCATION
- APPROXIMATE LOCATION OF FIBER OPTIC LINE
- DIRT ROAD
- DRAINAGE
- SWMU162
- GRAVEL PATH

NOTES:

1. Adapted from Figure 8 of the Revised RCRA Facility Investigation Report for the Stallion Range Center Former Firefighter Training Area (June 2011).
2. Base map provided by Zia, and rectified to Dec 2008 satellite image.
3. The screening criteria includes the residential SSL and the DAF20 SSL. The residential SSL is the lower of the NMED SSL (Dec 2009) or the USEPA RSL (2009).
4. Yellow highlight indicates the reported result exceeds the published SSLS.
5. Italics indicates the reported result exceeds the NMED DAF 20 screening value.
6. Brackets indicate that the result shown is from a duplicate field sample.

ADDITIONAL NOTES:
USEPA: United States Environmental Protection Agency
NMED: New Mexico Environment Department
DAF: Dilution Attenuation Factor
SSL: Soil Screening Level
RSL: Risk Screening Level
J: Indicates an estimated value
<: Sample result was not detected at laboratory reporting limit shown
ft/bgs: Feet below ground surface
mg/kg: Milligram per Kilogram

DATABOX KEY:

BORING LOCATION	DEPTH INTERVAL (ft/bgs)
	DATE
COMPOUND	RESULT (mg/kg)

N

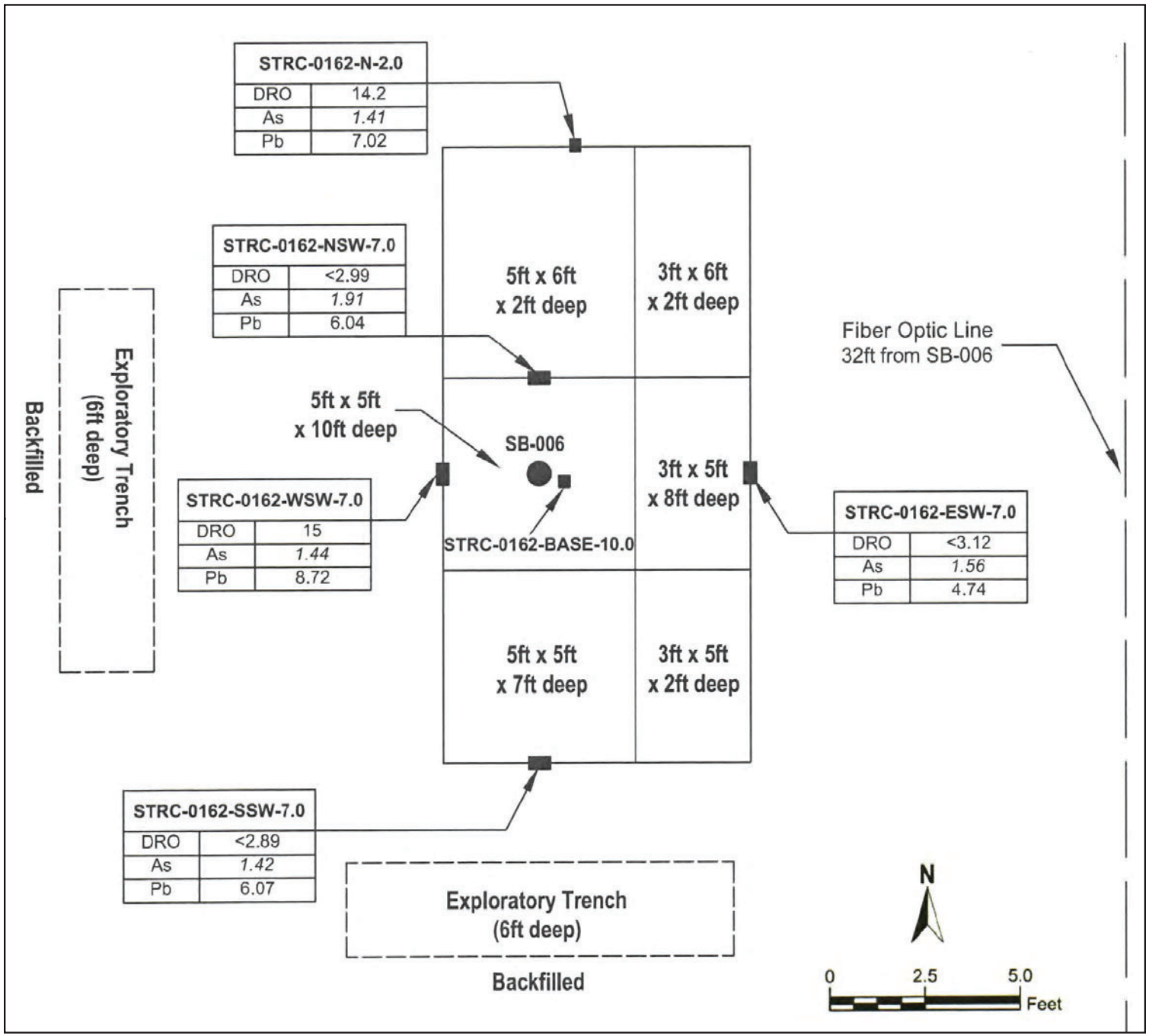
0 50 100 Feet

WHITE SANDS MISSILE RANGE
NEW MEXICO

METALS CONCENTRATIONS IN SOILS
STALLION RANGE CENTER
FORMER FFTA
SWMU 162

FIGURE: 4-6 | DATE: 11/5/2018

PROJECT: \WSMR\Projects\CAC_Petition_WSMR-56-58_CCWS-04\Figure_4-6_WSMR_66_Metals_in_Soils_11x17.mxd



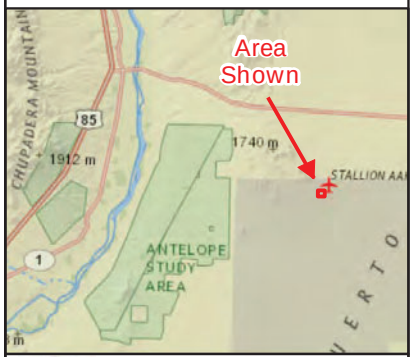
LEGEND:

CONFIRMATION SAMPLE

NOTES:

1. Adapted from Figure 9 of the Revised RCRA Facility Investigation Report for the Stallion Range Center Former Firefighter Training Area (June 2011).
2. Base map was drafted based on Zia description.
3. All samples were taken on 3/18/2011.
4. All reported results are in mg/kg.
5. Italics indicates the reported result exceeds the NMED DAF 20 screening value.
6. All PAH compounds were below detection limits for all samples.

ft: Feet
mg/kg: Milligram per Kilogram
NMED: New Mexico Environment Department
PAH: Polycyclic Aromatic Hydrocarbons
DAF: Dilution Attenuation Factor
DRO: Diesel Range Organics
As: Arsenic
Pb: Lead



WHITE SANDS MISSILE RANGE
NEW MEXICO

RESULTS OF SOIL CONFIRMATION SAMPLES, STALLION RANGE CENTER FORMER FFTA SWMU 162

FIGURE: 4-7 | DATE: 11/5/2018

PROJECT: \WSMR\Projects\CAC_Petition_WSMR-56-58_CCWS-04\Figure_4-7_WSMR_66_Results_of_Soil_Conf_Samples.mxd

TABLES

4APPENDIX 4
SWMU, AOC, AND HAZARDOUS WASTE MANAGEMENT UNIT TABLES

TABLE 4-1
SOLID WASTE MANAGEMENT UNITS (SWMUs) & AREAS OF CONCERN (AOCs) REQUIRING CORRECTIVE ACTION

UNIT ID NUMBER	UNIT DESCRIPTION	COMMENTS
SWMU 1	Floor Drain System for Building 1621	
SWMU 2	Bleach and Fixer Collection Containers	
SWMU 3	Bleach and Fixer Collection Containers	
SWMU 4	Bleach and Fixer Collection Containers	
SWMU 5	Bleach and Fixer Collection Containers	
SWMU 6	Bleach and Fixer Collection Containers	
SWMU 7	Silver Recovery Unit Tailing Tank	
SWMU 8	Waste Oil Tank & Sump at Building 1794	SWMUs 8 & 9 were combined into SWMU 8, Also identified as WSMR-36
SWMU 10	Wash Pad, Drains, & Sump at Building 1778	SWMUs 10 & 11 were combined into SWMU 10, Also identified as WSMR-74
SWMU 12	Wash Ramp, Drains, Sump, & Oil/Waste Separator @ Building 1778	SWMUs 12 & 13 were combined into SWMU 12, Also identified as WSMR-60
SWMU 14	Used Battery Accumulation Area at Main Post	SWMUs 14 & 15 were combined into SWMU 14, Also identified as WSMR-33
SWMU 16	Heavy Equipment Wash Pad & Drain at Building 1736	Also identified as WSMR-79
SWMU 17	Waste Underground Injection Pipe	Also identified as WSMR-73
SWMU 19	Steam Wash Pad & Oil/water Separator @ Building 1753	SWMUs 19 & 20 were combined into SWMU 9, Also identified as WSMR-80
SWMU 21	Main Post Former Fire Fighting Training Area & Pit	Also identified as WSMR-31
SWMU 22	Main Post Former Fire Fighting Training Area Waste Pile	Also identified as WSMR-32
SWMU 23	Hazardous Waste Tank at HELSTF	
SWMU 24	Hazardous Waste Tank at HELSTF	
SWMU 25	Hazardous Waste Tank at HELSTF	
SWMU 26	Vapor Recovery Unit @ HELSTF	
SWMU 27	Sanitary Treatment Impoundment at HELSTF	SWMUs 27, 28, 29, & 30 were combined into SWMU 27, Also identified as WSMR-44

SWMU 31	Chemical Waste Tank	Also identified as WSMR-43
SWMU 32	Chemical Waste Tank	Also identified as WSMR-43
SWMU 33	Fluorspar Tank	Also identified as WSMR-49
SWMU 34	Fluorspar Tank	Also identified as WSMR-49
SWMU 35	Ethylene Glycol Tank at HELSTF	Also identified as WSMR-50
SWMU 36	Ethylene Glycol Tank at HELSTF	Also identified as WSMR-50
SWMU 37	Waste Oil Accumulation Area at Building 26121 at HELSTF	
SWMU 40	Waste Oil Accumulation Drum	
SWMU 47	Former North Oscura Peak Landfill	Also identified as WSMR-71
SWMU 48	Former North Oscura Peak Landfills	SWMUs 48 & 49 were combined into SWMU 48, Also identified as WSMR-71
SWMU 62	Former STP Imhoff Tank	Also identified as WSMR-59
SWMU 63	Former Main Post Landfill 1A	Also identified as WSMR-39
SWMU 64	Former Main Post Landfill 2A	Also identified as WSMR-40
SWMU 66	Main Post Sewage Treatment Plant Subsurface Influent Line	Also identified as WSMR-17
SWMU 67	Main Post Sewage Treatment Plant (STP) Bar Screen and Grinder	Also identified as WSMR-17
SWMU 68	North Primary Clarifiers at the STP	SWMUs 68 through 78 were combined into SWMU 68, Also identified as WSMR-17
SWMU 69	South Primary Clarifiers at the STP	Also identified as WSMR-17
SWMU 79	Sludge Beds at the STP	Also identified as WSMR-29
SWMU 80	STP Sludge Waste Pile Main Post	Also identified as WSMR-30
SWMU 81	Boiler at the STP	
SWMU 84	Effluent Pipeline at the STP	
SWMU 85	STP Discharge at Playa Lake	Also identified as WSMR-42
SWMU 86	Sanitary Landfill at the Main Post	Also identified as WSMR-81
SWMU 87	Construction Landfill	Also identified as WSMR-82
SWMU 102	Burn Pan	
SWMU 103	Scrap Metal Yard	
SWMU 107	Storage Tank at Temperature Test Facility (TTF)	Also identified as WSMR-35
SWMU 108	Vapor Extraction Well at TTF	Also identified as WSMR-41
SWMU 109	Drum Storage Area (Splash Pan) at TTF	
SWMU 110	Methylene Chloride Catchment System at TTF	
SWMU 111	Methylene Chloride Separation System at TTF	
SWMU 112	Methylene Chloride Separation System at TTF	
SWMU 113	Salt Water Evaporation Tanks at TTF	

~~SWMU 116~~	~~Rhodes Subgrade Asphalt Tanks~~	~~SWMUs 116, 117, & 118 were combined into SWMU 116, Also identified as WSMR-75~~
SWMU 119	Stallion Range Landfill	Also identified as WSMR-70
SWMU 120	Former Stallion Center Landfill	Also identified as WSMR-70
SWMU 121	Stallion Asphalt Tank	Also identified as WSMR-67
SWMU 122	Stallion Asphalt Tank	Also identified as WSMR-67
SWMU 123	Stallion Asphalt Tank	Also identified as WSMR-67
SWMU 124	Waste Oil Storage Tank @ Stallion	
~~SWMU 125~~	~~Veterinary Clinic @ McAffee Clinic Incinerators~~	~~Also identified as WSMR-77~~
~~SWMU 126~~	~~Veterinary Clinic @ McAffee Clinic Incinerators~~	
SWMU 127	Autoclave at McAffee Clinic	
SWMU 128	Silver Recovery System Tailing Tank	
SWMU 129	Cyanide Treatment Unit at Building 1512	
SWMU 130	Former Spent Developer Storage Tank / Acetic Acid Spill Containment Tank	
SWMU 131	Former Spent Developer Storage Tank / Acetic Acid Spill Containment Tank	
SWMU 132	OrograndeWaste Stabilization Pond	Ft. Bliss operated SWMU, Also identified as WSMR-76
SWMU 133	NOMTS Machine Shop Accumulation Area	
SWMU 134	NOMTS Outdoor Accumulation Area	
SWMU 135	Paint Shop Accumulation Area	
SWMU 136	Paint Shop Spray Booth	
~~SWMU 137~~	~~Paint Shop Sump~~	~~Also identified as WSMR-56,~~
SWMU 138	Waste Accumulation Area @ RATSCAT	
SWMU 140	LC-37 Paint Dump	Also identified as WSMR-84
SWMU 141	Equipment Storage Area	Also identified as WSMR-83
SWMU 143	HELSTF Storage Yard Chromium Spill Site	Also identified as WSMR-54
SWMU 144	HELSTF Laser System Test Center Wastewater Discharge Pond	Also identified as WSMR-47
SWMU 145	HELSTF Test Cell Lagoons	Also identified as WSMR-53
SWMU 146	HELSTF STP Dry Pond	Also identified as WSMR-45
SWMU 147	Decontamination Pad & Underground Holding Tank	Also identified as WSMR-78
SWMU 148	Former MAR Waste Stabilization Pond	Also identified as WSMR-83
SWMU 149	Maintenance Building Septic System	Also identified as WSMR-46
SWMU 150	MAR Dump Site	
SWMU 151	Trailer Area Septic System	Also identified as WSMR-46
SWMU 152	Property and Supply Building Septic System	Also identified as WSMR-46

SWMU 153	Vandal Burial Site	Also identified as WSMR-58
SWMU 154	HELSTF Systematic Diesel Spill Site	Also identified as WSMR-55
SWMU 156	Former Golf Course Pesticide Storage Shed @ Building T-1348	Also identified as WSMR-57
SWMU 157	Former Oscura Range Center Landfill-A	Also identified as WSMR-05
SWMU 159	Former Oscura Range Center Landfill-C	Also identified as WSMR-05
~~SWMU 162~~	~~Stallion Range Center Former Fire Fighting Training Area~~	~~Also identified as WSMR-66~~
SWMU 163	Abandoned Disposal Trench @ New Commissary	Also identified as WSMR-72
SWMU 164	AMRAD Facility	
SWMU 165	LC-34 Contaminated Soils @ Buildings 23104 & 23106	
SWMU 166	Denver	
SWMU 167	Malpais	
SWMU 168	Lance Missile Impact @ White Sands National Monument	
SWMU 197	HELSTF Technical Support Area	
SWMU 198	LC-38 Diesel Fuel Oil Release	
SWMU 199	Hardin Ranch First Site	
SWMU 200	Hardin Ranch Second Site	
SWMU 201	RAM (Facility 6002) Site	
SWMU 202	Dead Horse Instrumentation Site	
SWMU 203	Oscura (Facility 31795) Communication Site	
SWMU 204	Harriet (Facility 34600) Instrumentation Site	
SWMU 205	SE-70 (Facility S-31427) Instrumentation Site	
SWMU 206	Atom (Facility S-33151) First Site	
SWMU 207	Atom (Facility S-33151) Second Site	
SWMU 208	SE-50 (Facility 29055) Instrumentation Site	
SWMU 209	EC-50 (Facility29085) Instrumentation Site	
SWMU 210	Minnow (Facility S-31132) Instrumentation Site	
SWMU 211	Cowan Instrumentation Site	
SWMU 212	NM-70 (Facility S-31620) Instrumentation Site	
SWMU 213	Gran Jean (Facility S-34050) Instrumentation Site	

SWMU 214	NE-50 (Facility 29090) Instrumentation Site	
SWMU 215	Missile Graveyard	
SWMU 216	UST at Timing Station, Building 20710, LC-32 (Uncle Site)	
SWMU 217	AAFES Gas Station at Building 270	
SWMU 218	LC-38-Building 23626	1,764-gallon steel UST
SWMU 219	Main Post POL	AST Release Site
AOC A	Sink & Drain System @ Building 1621	
AOC B	Battery Accumulation Area @ North Oscura	
AOC D	Drum Storage Area @ STP	
AOC E	Pesticide Storage Area	
AOC G	Brine (MeCl) Storage Tank	
AOC H, I, J, K, & L	Methylene Chloride Tanks (five tanks)	
AOC P	Chemistry Laboratory Drains at Building 1530	
AOC S	Septic Tanks with Leach Fields	Also identified as WSMR-69
AOC V	HELSTF Pressure Recovery System	
AOC W	Davies Tank	
AOC X	Stallion Range Desalinization/Sewage Lagoons	
AOC Y	Stormwater Drainage Ditches	From RFA* section 6.21, page 6-10
AOC Z	Abandoned Underground Storage Tank	From RFA* section 6.22, page 6-10
AOC AA	Alamogordo Bombing Range	Also identified as WSMR-003-R-01; Active Range, Deferred
AOC AB	Sewage Lagoon	Also identified as WSMR-004-R-01
AOC AC	Condron Field	Also identified as WSMR-005-R-01
AOC AD	Main Cantonment Area	Also identified as WSMR-006-R-01
AOC AE	Red Rio Bombing Range	Active Range, Deferred
AOC AF	Oscura Bombing Range	Active Range, Deferred
AOC AG	Main Post Skeet Range	Active Range, Deferred

* WSMR RCRA Facility Assessment PR/VSI Report, A.T. Kearney, Inc, August 1988

TABLE 4-2
SWMUs & AOCs
CORRECTIVE ACTION COMPLETE WITH CONTROLS

UNIT ID NUMBER	UNIT DESCRIPTION	COMMENTS

TABLE 4-3
SWMUs & AOCs
CORRECTIVE ACTION COMPLETE WITHOUT CONTROLS

UNIT ID NUMBER	UNIT DESCRIPTION	COMMENTS
SWMU 116	Rhodes Canyon Subgrade Asphalt Tanks	SWMUs 116, 117, & 118 were combined into SWMU 116, Also identified as WSMR-75
SWMU 125	Veterinary Clinic Incinerator	Also identified as WSMR-77
SWMU 126	McAffee Clinic Incinerator	
SWMU 137	Paint Shop Sump	Also identified as WSMR-56
SWMU 162	Stallion Range Center Former Firefighter Training Area	Also identified as WSMR-66
SWMU 219	Hawk Facility, Building 204548 at LC-38	3,000-gallon UST
SWMU 220	Rhodes Canyon Range Center POL Station, Building 30725-1 & 2)	
SWMU 139		No corresponding SWMU unit assigned to this number
AOC C	Areas Where heavy pesticides and/or herbicides were used	
AOC F	Methane Vent (Flare) at STP	
AOC M	Exploded / Unexploded Low Level Radioactive Ordnance	
AOC N	Process Spills at HELSTF	
AOC O	Miscellaneous Areas ID'd by Aerial Photos	
AOC Q	HELSTF Lab Drains	
AOC T	Collection Lines to the STP	

AOC U	Miscellaneous Spills	

TABLE 4-4
HAZARDOUS WASTE MANAGEMENT UNITS

UNIT ID NUMBER	UNIT DESCRIPTION	COMMENTS
SWMU 38	HELSTF Landfill	Also identified as WSMR-52, Closure required
SWMU 39	HELSTF Landfill	Also identified as WSMR-52, Closure required
SWMU 41	Oscura Munitions Landfill	Also identified as WSMR-03, Closure required
SWMU 42	Oscura Munitions Landfill	Also identified as WSMR-03, Closure required
SWMU 43	Oscura Munitions Landfill	Also identified as WSMR-03, Closure required
SWMU 44	Oscura Munitions Landfill	Also identified as WSMR-03, Closure required
SWMU 45	Oscura Munitions Landfill	Also identified as WSMR-03, Closure required
SWMU 46	Oscura Munitions Landfill	Also identified as WSMR-03, Closure required
SWMU 50	Red Rio North Landfill	Also identified as WSMR-02, SWMUs 50-54 were combined into SWMU 50, Closure required
SWMU 55	Open Burn Pit at the OB/OD	Post Closure Care Plan Required
SWMU 56	Open Detonation Pit at the OB/OD	Post Closure Care Plan Required
SWMU 56A	Open Detonation Pit at the OB/OD	Post Closure Care Plan Required
SWMU 57	Tula Peak Burial Sites	Also identified as WSMR-23, SWMUs 57-60 were combined into SWMU 57, Closure required
SWMU 61	Tula Peak Incinerator	Also identified as WSMR-24, Closure required
SWMU 65	Former Main Post Landfill #3 at Scrap Yard	Also identified as WSMR-61, Closure required
SWMU 82	Former STP Ditches	SWMUs 82 and 83 were combined into SWMU 82. Also identified as WSMR-62, Closure required

SWMU 88	Container Storage Area	Operating
SWMU 89	Former Acid Neutralization Unit at the Hazardous Waste Storage Facility	Also identified as WSMR-27, Closure required
SWMU 90	Evaporation Tank at Building 22895	Also identified as WSMR-37, Clean closure complete
SWMU 91	Hazardous Waste Landfill	Clean closure complete
SWMU 92A	Liquid Propellant Evaporation Neutralization Pits	Closure required, Also identified as WSMR-11
SWMU 92B	Liquid Propellant Evaporation – Neutralization Pit 2	Closure required, Also identified as WSMR-11
SWMU 93	Liquid Propellant Evaporation Neutralization Pits	Closure required, Also identified as WSMR-11
SWMU 94	Liquid Propellant Evaporation – Neutralization Pit 4	Closure required, Also identified as WSMR-11
SWMU 95	Liquid Propellant Evaporation Neutralization Pits	Closure required, Also identified as WSMR-11
SWMU 96	Liquid Propellant Evaporation Neutralization Pits	Closure required, Also identified as WSMR-11
SWMU 97	Liquid Propellant Evaporation Neutralization Pits	Closure required, Also identified as WSMR-11
SWMU 98	Liquid Propellant Evaporation Neutralization Pits	Closure required, Also identified as WSMR-11
SWMU 99	Liquid Propellant Evaporation Neutralization Pits	Closure required, Also identified as WSMR-11
SWMU 100	Liquid Propellant Evaporation Neutralization Pits	Closure required, Also identified as WSMR-11
SWMU 101	Acid Neutralization Pit	Closure required
SWMU 104	Temperature Test Facility	Also identified as WSMR-34, Clean closure complete
SWMU 105	New Evaporation Tank at TTF	Closure complete
SWMU 106	Discharge Pipe at TTF	Closure required
SWMU 114	Rhodes Canyon Landfill	Also identified as WSMR-14, Closure complete, Post-closure Plan is included in the approved CMI Report
SWMU 115	Rhodes Canyon Landfill	Also identified as WSMR-14, Closure complete. Post-closure care plan is included in the approved CMI Report
SWMU 142	HELSTF Cleaning Facility Sump	Also identified as WSMR-48, Closure required
SWMU 155	Red Rio South Landfill	Closure required

SWMU 158	Former Oscura Range Landfill	Also identified as WSMR-05, Clean closure complete
SWMU 160	Nuclear Effects Reactor Facility Pond #1	Also identified as WSMR-09, Clean closure complete
SWMU 161	Nuclear Effects Reactor Facility Pond #2	Also identified as WSMR-09, Clean closure complete

Table 8-2
SWMUs & AOCs Requiring Corrective Action
SWMUs and AOCs where Corrective Action is in Progress are listed in Appendix 4

Unit ID Number (SWMU & AOC#)	Unit Description	Work Plan Submittal Date
	SWMUs 167, 168 and AOC V	May 1, 2011 Release Assessment
AOC V	HELSTF Pressure Recovery System	
219	Main Post POL	May 15, 2010
132	Orogrande Waste Stabilization Pond	September 1, 2011
~~162~~	~~Stallion Range Center Former Fire Fighting Area~~	~~November 1, 2011~~
164	AMRAD Facility	January 1, 2011
165	LC - 34 Contaminated Soils @ Buildings 23104 & 23106	June 1, 2012
198	LC - 38 Diesel Fuel Oil Release	December 1, 2012
	SWMUs 40, 47, 48, 81, 102, 116	July 1, 2013 Release Assessment
40	Waste Oil Accumulation Drum	
81	Boiler at the STP	
102	Burn Pan	
~~116~~	~~Rhodes Subgrade Asphalt Tanks~~	
	SWMUs 107 - 113	May 1, 2013 Release Assessment
107	Storage Tank at Temperature Test Facility (TTF)	
108	Vapor Extraction Well at TTF	
109	Drum Storage Area (Splash Pan) at TTF	
110	Methylene Chloride Catchment System at TTF	
111	Methylene Chloride Separation System at TTF	
112	Methylene Chloride Separation System at TTF	
	SWMUs 121 - 131 and 133, 134	August 1, 2014 Release Assessment
121	Stallion Asphalt Tank	
122	Stallion Asphalt Tank	
123	Stallion Asphalt Tank	
124	Waste Oil Storage Tank @ Stallion	
~~125~~	~~Veterinary Clinic @ McAffee Clinic Incinderators~~	

~~126~~	~~Veterinary Clinic @ McAffee Clinic Incinderators~~	
127	Autoclave at McAffee Clinic	
128	Silver Recovery System Tailing Tank	
129	Cyanide Treatment Unit at Building 1512	
130	Former Spent Developer Storage Tank / Acetic Acid Spill Containment Tank	
131	Former Spent Developer Storage Tank / Acetic Acid Spill Containment Tank	
133	NOMTS Machine Shop Accumulation Area	
134	NOMTS Outdoor Accumulation Area	
	SWMUs 1 - 7 and 135	December 1, 2014
1	Floor Drain for Building 1621	
2	Bleach and Fixer Collection Containers	
3	Bleach and Fixer Collection Containers	
4	Bleach and Fixer Collection Containers	
5	Bleach and Fixer Collection Containers	December 1, 2014
6	Bleach and Fixer Collection Containers	
7	Silver Recovery Unit Tailing Tank	
135	Paint Shop Accumulation Area	
	SWMUs 136 - 138, 153, 163, 216 AOCs A, B, D, E, G, H - L, P, S, W - Z	July 1, 2015 Release Assessment
136	Paint Shop Spray Booth	
~~137~~	~~Paint Shop Sump~~	
138	Waste Accumulation Area @ RATSCAT	
153	Vandal Burial Site	
163	Abandoned Disposal Trench @ New Commissary	
AOC A	Sink & Drain System @ Building 1621	
AOC B	Battery accumulation Area @ North Oscura	
AOC D	Drum Storage Area @ STP	
AOC E	Pesticide Storage Area	
AOC G	Brine (MeCl) Storage Tank	
AOC H,I, J, K,L	Methylene Chloride Tanks (five tanks)	
AOC P	Chemistry Laboratory Drains at Building 1530	

AOC S	**Septic Tanks with Leach Fields**	
AOC W	**Davies Tank**	
AOC X	**Stallion Range Desalinization/Sewage Lagoons**	
AOC Y	**Storm Water Drainage Ditches**	
AOC Z	**Abandoned Underground Storage Tank**	
AOC AB	**Sewage Lagoon**	**October 1, 2015**
AOC AD	**Main Contonment Area**	**January 1, 2015**
218	**LC - 38 Building 23626**	**March 1, 2015**