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Historical Investigation Report for Threemile Canyon Aggregate Area

Prepared by the Environmental Programs Directorate

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EXECUTIVE SUMMARY

The Threemile Canyon Aggregate Area consists of sites within Technical Area 14 (TA-14), TA-15, TA-18, TA-36, and TA-67 at Los Alamos National Laboratory. This aggregate area also includes sites associated with former TA-12 that lie within the boundaries of TA-15 and TA-67. The Threemile Canyon Aggregate Area includes 40 sites, 10 of which have been previously investigated and/or remediated and have been approved for no further action. Four of the 40 sites have been deferred per Table IV-2 of the March 1, 2005, Compliance Order on Consent and the remaining 26 sites are under investigation. This historical investigation report provides site descriptions, summarizes previous investigations, and presents analytical results, if available, for the four deferred sites and the 26 sites under investigation. The background information and previous investigations discussed within this report form the basis for the proposed sampling design to complete site investigations as presented in the Threemile Canyon Aggregate Area investigation work plan.

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1.0 INTRODUCTION

Los Alamos National Laboratory (LANL or the Laboratory) is a multidisciplinary research facility owned by the U.S. Department of Energy (DOE) and managed by the Los Alamos National Security, LLC. The Laboratory is located in north-central New Mexico approximately 60 mi northeast of Albuquerque and 20 mi northwest of Santa Fe. The Laboratory site covers 40 mi^2 of the Pajarito Plateau, which consists of a series of fingerlike mesas separated by deep canyons containing perennial and intermittent streams running from west to east. Mesa tops range in elevation from approximately 6200 to 7800 ft above mean sea level (amsl). The Threemile Canyon Aggregate Area consists of sites within Technical Area 14 (TA-14), TA-15, TA-18, TA-36, and TA-67 at the Laboratory. The location of Threemile Canyon Aggregate Area with respect to the Laboratory is shown in Figure 1.0-1.

The Laboratory's Environmental Programs (EP) Directorate, formerly the Environmental Restoration Project, is participating in a national effort by DOE to clean up sites and facilities formerly involved in weapons research and development. The goal of the EP Directorate is to ensure that past operations do not threaten human or environmental health and safety in and around Los Alamos County, New Mexico. To achieve this goal, EP Directorate is currently investigating sites potentially contaminated by past Laboratory operations. The sites under investigation are designated as solid waste management units (SWMUs) and areas of concern (AOCs).

This historical investigation report (HIR) describes operational histories, previous investigations, and analytical data for SWMUs and AOCs. The SWMUs and AOCs addressed in this HIR are potentially contaminated with both hazardous and radioactive components. The New Mexico Environment Department (NMED), pursuant to the New Mexico Hazardous Waste Act, regulates cleanup of hazardous wastes and hazardous constituents. DOE regulates cleanup of radioactive contamination, pursuant to DOE Order 5400.5, "Radiation Protection of the Public and the Environment," and DOE Order 435.1, "Radioactive Waste Management." Information on radioactive materials and radionuclides, including the results of sampling and analysis of radioactive constituents, is voluntarily provided to NMED in accordance with DOE policy.

Corrective actions at the Laboratory are subject to the March 1, 2005, Compliance Order on Consent (the Consent Order). The purpose of this HIR is to provide supporting information for the activities necessary to complete site investigations as presented in the Threemile Canyon Aggregate Area investigation work plan (LANL 2008, 102243).

1.1 HIR Overview

The Threemile Canyon Aggregate Area includes 40 SWMUs and AOCs, 10 of which have been previously investigated and/or remediated and approved for no further action (NFA) and 4 of which have been deferred per Table IV-2 of the Consent Order. The remaining 26 sites require additional characterization. Of these 26 sites, 1 site is associated with TA-14, 11 sites are associated with TA-15, 4 sites are associated with TA-36, and 10 sites are associated with former TA-12, but are physically located within the boundaries of TA-67 and TA-15.

Table 1.1-1 provides a summary of the 40 sites within the Threemile Canyon Aggregate Area. For NFA sites, brief descriptions and the reference for the approval document are provided within this HIR only in Table 1.1-1.

For the remaining 4 deferred sites and the 26 sites under investigation, this HIR provides site descriptions, summarizes previous investigations, and presents analytical results in sections 2, 3, 4, and

5. Plate 1 shows the locations of the deferred sites and sites that are under investigation in the Threemile Canyon Aggregate Area and monitoring wells, surface water and stormwater runoff monitoring stations, canyon reaches, and springs.

Appendix A includes a list of acronyms, a metric conversion table, and a table for data-qualifier definitions. Appendix B presents screening-level and decision-level quality data from past investigations (included on CD).

1.2 Data Overview

Data evaluated in this report include historical data collected from 1994 to 1998 as part of Resource Conservation and Recovery Act (RCRA) facility investigations (RFIs) and other corrective actions. In the EP Directorate's database, all data records include a vintage code field denoting how and where samples were submitted for analyses. In the early years of the RFI, the samples were submitted to the Laboratory's Chemical Science and Technology (CST) Division and were either analyzed at a CST laboratory (on-site) or submitted to one of several off-site contract laboratories. Samples analyzed at a CST laboratory are identified by the vintage codes "CST Onsite." Samples submitted by CST Division to off-site laboratories are identified by the vintage code "CST Offsite" if validation was not performed, or "CSTROUT03" if validation was performed. From late 1995 until the present, samples have been submitted through the Sample Management Office (SMO) to off-site contract laboratories. These samples are identified by the vintage codes "AN95" if validation was not performed, or "SMO" if validation was performed. Vintage codes for data presented in this report are provided in Appendix B.

Analytical results presented in this HIR have been determined to be screening-level data. The data are used to determine areas of contamination and to direct sample collection and analyses proposed in the Threemile Canyon Aggregate Area Investigation Work Plan (LANL 2008, 102243). Inorganic chemical and radionuclide data from previous investigations presented in this report are compared with background values (BVs) and fallout values (FVs) (LANL 1998, 059730). Organic chemicals are presented if detected.

2.0 SITES ASSOCIATED WITH FORMER TA-12

Former TA-12 lies within the boundaries of TA-15 and TA-67 (Plate 1). Former TA-12, also known as L-Site, was constructed during World War II and used as an explosives testing facility. Activities at former TA-12 ceased in the early 1950s. An open area was used as the firing site where a number of shots were detonated, including one 70-kg charge (LANL 1996, 054086, p. 1-1).

In 1950, a radiation test bunker was constructed at former TA-12 for conducting radiation experiments on animals using a radioactive lanthanum-140 source. Because of these radiation experiments, a section of the perimeter became contaminated. In 1951, the Dynamic Experimentation Group began using the area, firing several shots per month (LANL 1994, 034755). By 1953, the entire site was vacated. In 1960, the structures were decontaminated, decommissioned, and intentionally burned (LANL 1996, 054086, p. 1-1). During the Vietnam War, a portion of the site was used by a Laboratory group for "Mortar Locator" experiments in which an acetylene gas gun was used. Former TA-12 is no longer used for Laboratory operations (LANL 1994, 034755, p. 1-8).

TA-67 was established in 1989 when the Laboratory redefined TA boundaries and serves as a buffer area. During this process, the majority of former TA-12 was incorporated inside the boundary of TA-67 and the remaining area was incorporated into TA-15. In 2000, the Cerro Grande fire moved through former TA-12, damaging or destroying vegetation and remaining surface debris (LANL 1994, 034755, p. 1-8).

2.1 Consolidated Unit 12-001(a)-99

Consolidated Unit 12-001(a)-99 consists of SWMUs 12-001(a), 12-001(b), and 12-002, and AOC C-12-005 (Figure 2.1-1). This consolidated unit is located along the northern edge of the Threemile Canyon Aggregate Area.

2.1.1 SWMU 12-001(a), Firing Pit Steel-Lined Chamber

SWMU 12-001(a) is a belowground, steel-lined firing pit and aboveground steel cover (structure 12-4) (Figure 2.1-1). The firing pit, which began operating in 1944, is located approximately 3200 ft east of the former TA-12 entrance (LANL 034755, p. 5-1-1). The steel structure is hexagonal and measures 10.5 ft on each side and is 11.5 ft deep. A steel cover, a large box filled with soil, measures 20 ft × 22 ft and is 5 ft high. The base of the cover is at ground level and has 1-ft-high × 7-ft-long openings on four sides. The cover has a 5-ft × 5-ft hole in the center used to lower explosives into the firing area. Recovery shots, which used uranium, were conducted in the pit. Activities at the firing pit ceased in 1953 but the pit remains intact (LANL 1996, 055073, p. 1).

2.1.1.1 Previous Investigations for SWMU 12-001(a)

In 1993, a radiation survey was conducted, outside structure 12-4 using a Geiger-Muller thin-window probe; no radionuclides were detected above background (Harris 1993, 055658, pp. 3–6; LANL 1994, 034755, p. 5-1-6). An internal survey of structure 12-4 was conducted in 1993; beta/gamma emitting radiation was detected above background. Small pieces of uranium and high explosives (HE) were observed in the firing pit (LANL 1994, 034755, pp. 5-1-6–5-1-7).

In 1995, RFI activities were performed at SWMU 12-001(a) (LANL 1996, 054086, p. 5-1). Two samples were collected from two locations at the bottom of the firing pit and two samples were collected from two locations in the surrounding area. Samples were submitted for analyses of inorganic chemicals, HE, and radionuclides (LANL 1996, 055073, pp. 2–6). The 1995 requested analyses are presented in Table 2.1-1.

In 1996, a voluntary corrective action (VCA) was conducted. During the VCA, all soil from within the firing pit was removed. No additional confirmatory samples were collected after soil removal (LANL 1996, 055073, pp.1–8; LANL 1996, 059535).

2.1.1.2 Analytical Data for SWMU 12-001(a)

Analytical data from the 1995 sampling event are presented in Tables 2.1-2 and 2.1-3. Sampling locations and results for inorganic chemicals detected above BVs and radionuclides detected or detected above BVs/FVs are shown in Figures 2.1-2 and 2.1-3. Uranium was detected above BV in two samples. No HE was detected. Uranium-238 was detected above BV in one sample.

2.1.2 SWMU 12-001(b), Firing Pit

SWMU 12-001(b) is a firing pit located approximately 175 ft east of SWMU 12-001(a) on the north side of Redondo Road (Figure 2.1-1). The open pit measured 21 ft × 17 ft × 3 ft and was used in 1945 for calorimetric experiments. Following World War II, the pit was used to fire HE shots using lead and uranium. This site ceased operations in the 1950s (LANL 1994, 034755, p. 5-1-5).

2.1.2.1 Previous Investigations for SWMU 12-001(b)

in 1993, a radiological survey conducted detected beta/gamma radionuclides at approximately twice background in the open firing pit (LANL 1994, 034755, p. 5-1-6; LANL 1997, 055675, p. 1). Small fragments of uranium and pink material were observed in the open firing pit. Field HE spot-tests were conducted and fragments of pink material tested positive for RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine) and 2,4,6-trinitrotoluene (Harris 1993, 055658).

In 1995, RFI activities were performed at SWMU 12-001(b) (LANL 1996, 054086, p. 5-1). Four soil samples were collected from three locations and analyzed for inorganic chemicals, HE, and radionuclides (LANL 1996, 054086, p. 5-1; LANL 1997, 055675, pp. 2–4). The 1995 requested analyses are presented in Table 2.1-4.

2.1.2.2 Analytical Data for SWMU 12-001(b)

Analytical data from the 1995 sampling event are presented in Tables 2.1-5 and 2.1-6. Sampling locations and results for inorganic chemicals detected above BVs and radionuclides detected or detected above BVs/FVs are shown in Figures 2.1-2 and 2.1-3. Copper was detected above BV in one sample. Uranium was detected above BV in four samples. No HE was detected. Uranium-235 was detected above BV in two samples. Uranium-238 was detected above BV in three samples.

2.1.3 SWMU 12-002, Potential Soil Contamination

SWMU 12-002 is a small area approximately 3 ft^2, that was used once to burn scrap HE (Figure 2.1-1). The site is located in the roadbed just east of structure 12-4. In 1962, a can containing approximately 0.5 lb of HE was discovered during a property survey and burned to destroy the HE (Anderson 1962, 004860; LANL 1994, 034755, p. 6-3). The area immediately surrounding SWMU 12-002 is cross contaminated from many years of uncontained explosives testing that occurred in a nearby open firing pit, now designated as SWMU 12-001(b). It is likely that contamination associated with the one-time burning event will be indistinguishable from contamination associated with SWMU 12-001(b) (LANL 1994, 034755, p. 6-3). The location of SWMU 12-002 now lies beneath the asphalt pavement of Redondo Road.

2.1.3.1 Previous Investigations for SWMU 12-002

No sampling has been conducted at this SWMU.

2.1.4 AOC C-12-005, Former Junction Box

AOC C-12-005 is the location of a former junction box (structure 12-6) used to support experiments for the firing sites at SWMUs 12-001(a) and 12-001(b) (Figure 2.1-1). The former junction box was located approximately 25 ft west of the steel-lined firing pit, SWMU 12-001(a), and measured 3 ft × 3 ft × 4 ft high. A soil berm surrounded three sides of the former junction box. The former junction box served as a relay between former control building 12-2 and the two firing sites. The former junction box housed diagnostic equipment, signal cables, and electrical power equipment. Approximately 750 ft of detonation wire connected the former junction box to building 12-2. The former junction box, constructed in 1945, was not used after 1953 and was intentionally burned in 1960 (LANL 1994, 034755, p. 5-1-5).

2.1.4.1 Previous Investigations for AOC C-12-005

A 1959 inspection determined the former junction box was free of radioactive and HE contamination (Blackwell 1959, 005773; LANL 1994, 034755, p. 5.2-2).

In 1995, RFI activities were performed at AOC C-12-005 (LANL 1996, 054086, p. 5-1-13). Two surface samples were collected from two locations and analyzed for uranium (LANL 1996, 054086 p. 5-15). The 1995 requested analyses are presented in Table 2.1-7.

2.1.4.2 Analytical Data for AOC C-12-005

Analytical data from the 1995 sampling event are presented in Table 2.1-8. Sampling locations and results for inorganic chemicals detected above BVs are shown in Figure 2.1-2. Uranium was detected above BV in two samples.

2.2 AOC 12-004(a), Radiation Test Facility

AOC 12-004(a) consists of the lanthanum radiation experiment site and surrounding area, including a drainage, used to conduct radiation experiments on animals (Figure 2.2-1) (LANL 1994, 034755, p. 5.2-1). The site contained the location of a former soil-bermed radiation shelter and three telephone poles. The shelter and poles were constructed in a line parallel to a drainage channel that flows southwest from Redondo Road into Threemile Canyon. The northernmost telephone pole was situated 30 ft south of Redondo Road in a drainage, and the second pole was situated 58 ft south of the first pole. The former radiation shelter and the third telephone pole were located 40 ft south of the second pole (LANL 1996, 054086, pp. 5-18–5-24).

Operations at the site consisted of deploying a lanthanum source from the former radiation shelter by raising it with a wire strung over the three telephone poles. The radiation source was stored in a lead container, or “pig,” at the base of the first pole and could be deployed at various heights by raising it inside of a guide tube attached to the pole. Test animal containers were located at various distances from the source. Different containers of various thicknesses and shapes were used to observe the effects of foreign elements. The site was constructed in March 1950 and experiments were conducted over a 3-wk period in the same year. At an unspecified date between 1962 and 1966, the lead “pig” and plastic guide pipe were removed (Blackwell 1962, 005011).

2.2.1 Previous Investigations for AOC 12-004(a)

A 1959 survey reported the former shelter and telephone pole closest to the road were contaminated with HE and strontium-90 (Blackwell 1959, 005773; LANL 1994, 034755, pp. 5-2-1–5-2-2).

A 1966 survey showed all former structures were contaminated with gamma- and beta-emitting radiation (Blackwell 1966, 005012; LANL 1994, 034755, pp. 5-2-1–5-2-2). The structures were subsequently decontaminated.

A 1993 radiation screening survey inside the former shelter showed a cardboard box with beta/gamma radioactivity at 10 times background levels. No other readings above instrument background were observed (LANL 1994, 034755, pp. 5-2-1–5-2-2).

In 1995, RFI activities were performed at AOC 12-004(a). Six surface soil samples were collected from six locations and analyzed for inorganic chemicals, HE, and radionuclides (LANL 1996, 054086, p. 5-20). The 1995 requested analyses are presented in Table 2.2-1.

2.2.2 Analytical Results for AOC 12-004(a)

Analytical data from the 1995 sampling event are presented in Table 2.2-2. Sampling locations and results for inorganic chemicals detected above BVs are shown in Figure 2.2-2. Mercury was detected above BV in one sample. Zinc was detected above BV in two samples. No HE was detected. No radionuclides were detected or detected above BVs/FVs.

2.3 AOC 12-004(b), Pipe

AOC 12-004(b) is a belowground aluminum pipe at the edge of Redondo Road about 78 ft north of a former radiation shelter (structure 12-8) (Figure 2.2-1). The pipe protrudes 8 in. aboveground without a cover. Its outer opening diameter measures 25.5 in. with an inner diameter of 20 in. The inside of the pipe is filled with soil and the length of the pipe is estimated at 3 ft. Remnant fragments of HE were observed at the site (Blackwell 1959, 005773).

2.3.1 Previous Investigations for AOC 12-004(b)

A 1993 radiation survey was conducted and detected no radiation above background levels (LANL 1994, 034755, p. 5-2-2).

In 1995, RFI activities were performed at AOC 12-004(b). Two samples were collected from one location and analyzed for inorganic chemicals, semivolatile organic compounds (SVOCs), HE, and radionuclides (LANL 1996, 054086, p. 5-25). The 1995 requested analyses are presented in Table 2.3.1.

2.3.2 Analytical Results for AOC 12-004(b)

Analytical data from the 1995 sampling event are presented in Table 2.3-2. Sampling locations and results for inorganic chemicals detected above BVs are shown in Figure 2.2-2. Lead and mercury were detected above BVs in one sample. No HE or SVOCs were detected. No radionuclides were detected or detected above BVs/FVs.

2.4 AOC C-12-001, Potential Soil Contamination Associated with Former Building

AOC C-12-001 is an area of potential soil contamination associated with the former trim building (building 12-1) for the former TA-12 firing sites (Figure 2.1-1). The trim building was built in 1944 and used to prepare HE for detonation. The building was 16 ft × 16 ft × 9 ft high and of wood-frame construction with soil on three sides and on top. HE was molded at S-Site (located at TA-16) and transported to former TA-12 for final preparation. Use of former TA-12 was discontinued in 1953 and the intentional burning of this area in 1960 destroyed building 12-1. Before the building was burned, a 1959 inspection report noted that building 12-1 was contaminated with HE. Some noncombustible debris was in place when the Operable Unit 1085 work plan was written, but has since been removed (LANL 1994, 034755).

2.4.1 Previous Investigations for AOC C-12-001

A 1959 inspection reported building 12-1 to be contaminated with HE (Blackwell 1959, 005773).

In 1995, RFI activities were performed at AOC C-12-001. One sample was collected from one location and analyzed for inorganic chemicals and radionuclides (LANL 1996, 054086, pp. 5-1–5-5). The 1995 requested analyses are presented in Table 2.4-1.

2.4.2 Analytical Results for AOC C-12-001

Data from the 1995 sampling event are presented in Table 2.4-2. The sampling location and results for inorganic chemicals detected above BVs are shown in Figure 2.1-2. Uranium was detected above BV in one sample. No radionuclides were detected or detected above BVs/FVs.

2.5 AOC C-12-002, Potential Soil Contamination Associated with Former Building

AOC C-12-002 is the area of potential soil contamination associated with the former control building (building 12-2) for the former TA-12 firing sites (Figure 2.1-1). It was built in 1945 of wood-frame construction and measured 8 ft × 8 ft × 8 ft, with soil on three sides and on top. The structure was located south of Redondo Road, about 3000 ft east of the former TA-12 entrance. Use of former TA-12 was discontinued in 1953. A 1959 survey showed that the building was contaminated with HE. The control building was destroyed in 1960 by intentional burning.

2.5.1 Previous Investigations for AOC C-12-002

A 1959 inspection reported building 12-2 to be contaminated with HE (Blackwell 1959, 005773).

In 1995, RFI activities were performed at AOC C-12-002. One sample was collected from one location and analyzed for uranium (LANL 1996, 054086, pp. 5-5–5-8). The 1995 requested analysis is presented in Table 2.5-1.

2.5.2 Analytical Results for AOC C-12-002

Data from the 1995 sampling event are presented in Table 2.5-2. The sampling location and results for inorganic chemicals detected above BVs are shown in Figure 2.1-2. Uranium was detected above BV in one sample.

2.6 AOC C-12-003, Potential Soil Contamination Associated with Former Building

AOC C-12-003 is the area of potential soil contamination associated with a former HE-storage magazine (building 12-3) for the former TA-12 firing sites (Figure 2.1-1). The magazine was built in 1944 of wood-frame construction and measured 6 ft × 6 ft × 7 ft, with soil on three sides and on top. The building was located north of Redondo Road, about 3000 ft east of the former TA-12 entrance. Use of former TA-12 was discontinued in 1953. A 1959 survey reported the building was contaminated with HE. In 1960, building 12-3 was destroyed by intentional burning.

2.6.1 Previous Investigations for AOC C-12-003

A 1959 inspection reported building 12-3 to be contaminated with HE (Blackwell 1959, 005773).

No sampling has been conducted at this AOC.

2.7 AOC C-12-004, Potential Soil Contamination Associated with Former Building

AOC C-12-004 is the area of potential soil contamination associated with a former generator building (building 12-5) for the former TA-12 firing sites (Figure 2.1-1). The generator building was of wood-frame construction and originally located next to a former junction box (structure 12-6) but was relocated 10 ft north of the former control building (building 12-2) in 1952. Use of generator building 12-5 was

discontinued in 1953. A survey conducted in 1959 determined that the generator building was free of radiation and HE contamination (Blackwell 1959, 005773). The building was destroyed in 1960 by intentional burning (LANL 1996, 054086, pp. 5-12–5.15).

2.7.1 Previous Investigations for AOC C-12-004

A 1959 survey showed that building 12-5 was free of radioactive and HE contamination (Blackwell 1959, 005773).

In 1995, RFI activities were conducted at AOC C-12-004. One sample was collected from one location and analyzed for SVOCs (LANL 1996, 054086, p. 5-12). The 1995 requested analyses are presented in Table 2.7-1.

2.7.2 Analytical Results for AOC C-12-004

No SVOCs were detected.

3.0 SITES ASSOCIATED WITH TA-14

TA-14 (Plate 1) was established during World War II and used by X Division to test explosives beginning in 1944 (LANL 1996, 054086, p. 1-1). This site was used primarily for close observation work on small explosive charges. Tests were conducted in open and closed firing chambers (LANL 1996, 054086, p. 1-1). Some of these tests used radioactive materials (LANL 1994, 034755). In 1994, experimental HE was subjected to performance testing. TA-14 remains active with scheduled tests at the firing area and bullet test facility (LANL 1994, 034755, p. 1-11). In May 2000, the Cerro Grande fire moved through this area, and surface structures were damaged or destroyed along with surface and over-story vegetation.

3.1 AOC C-14-006, Potential Soil Contamination Associated with Former Building

AOC C-14-006 is an area of potential soil contamination associated with an HE magazine, former building 14-9, located 60 ft northwest of the current HE magazine, building 14-22 (Figure 3.1-1). The former HE magazine was constructed of wood and measured 6 ft × 6 ft × 6 ft. A soil berm surrounded three sides of the former magazine and soil covered the top of the structure. The former magazine was built in 1945 and removed in 1952. The former magazine location is covered with loose fill, possibly resulting from leveling the berm that surrounded the magazine. An asphalt road that circled the magazine is still visible. The location of AOC C-14-006 was determined from a 1950 Laboratory photograph (LANL 1996, 054086, pp. 5-61–5-64).

3.1.1 Previous Investigations for AOC C-14-006

No sampling has been conducted at this AOC.

4.0 SITES ASSOCIATED WITH TA-15

TA-15 (Plate 1) was established in 1945 as a firing site area. Current activities at TA-15 consist of HE research, development, and testing, mainly through hydrodynamic testing and dynamic experimentation. Many large explosive tests have taken place with the concurrent scattering of large amounts of natural uranium or depleted uranium (DU) and to a lesser extent, beryllium and lead (LANL 1994, 040595).

4.1 SWMU 15-004(a), Firing Site C

SWMU 15-004(a), Firing Site C, is located near the center of TA-15 (Figure 4.1-1). SWMU 15-004(a) is deferred per Table IV-2 of the Consent Order (Table 1.1-1). Firing Site C began operations in 1944 and was used until 1948 or 1949. Concrete slabs [AOC 15-004(d)] were used as firing platforms at this site, but were removed in 1947.

Additional structures associated with Firing Site C included a former control building and a former x-unit, a structure that contained a firing voltage distribution system used for the remote detonation of test firings. The former control building was a wood-frame structure that measured 11 ft × 17 ft × 10 ft. It was located 0.5 mi to the northeast of Firing Site C, built in 1944 and removed in 1962. The x-unit was a steel caging embedded in concrete that measured 6 ft × 10 ft × 4 ft, built in 1947, ceased operating in 1948, and was removed in 1969.

The explosive tests at Firing Site C were conducted within 25 ft of the x-unit, which indicates the explosions were small (LANL 1993, 020946).

4.1.1 Previous Investigations for SWMU 15-004(a)

In 1991, one soil sample was collected from one location near the former x-unit site during the Sanitary Wastewater Systems Consolidation (SWSC) Project and analyzed for inorganic chemicals and radionuclides. The 1991 requested analyses are presented in Table 4.1-1.

In 1995, RFI activities were performed at SWMU 15-004(a). Fourteen samples from nine locations were analyzed for inorganic chemicals and radionuclides. The 1995 requested analyses are presented in Table 4.1-1.

4.1.2 Analytical Data for SWMU 15-004(a)

Analytical data from the 1991 sampling event are presented in Table 4.1-2. Sampling locations and results for inorganic chemicals detected above BVs are shown in Figure 4.1-2. Barium, copper, lead, and uranium were detected above BVs in one sample. Radionuclides were not detected or detected above BVs/FVs.

Analytical data from the 1995 sampling event are presented in Tables 4.1-2 and 4.1-3. Sampling locations and results for inorganic chemicals detected above BVs and radionuclides detected or detected above BVs/FVs are shown in Figures 4.1-2 and 4.1-3, respectively. Copper was detected above BV in five samples. Lead was detected above BV in seven samples. Mercury was detected above BV in one sample. Nickel was detected above BV in one sample. Uranium was detected above BV in 14 samples. Uranium-235 was detected or detected above BV in one sample. Europium-152 was detected in one sample.

4.2 AOC 15-004(d), Firing Platforms

AOC 15-004(d) consists of two former 12-ft × 12-ft × 2-ft concrete firing platforms (former structures 15-176 and 15-177) that were built in 1944 and removed in 1947 (Figure 4.1-1). The specific location of the platforms is not known. Engineering drawings show that the firing platforms were located at Firing Site R, which is collocated with Firing Site C [SWMU 15-004(a)] (LASL 1944, 072795; LASL 1948, 023958; LASL 1971, 024036). AOC 15-004(d) lies entirely within the boundaries of SWMU 15-004(a).

4.2.1 Previous Investigations for AOC 15-004(d)

The 1991 SWSC Project sampling event and the 1995 RFI activities conducted at SWMU 15-004(a) are applicable to AOC 15-004(d) and are summarized in section 4.1.1.

4.3 AOC 15-005(c), Container Storage Area (R-41)

AOC 15-005(c) consists of an outdoor container storage area located near a storage building (building 15-41) in the central portion of TA-15, near Firing Site C (Figure 4.1-1). The ground surface on the northern, western, and eastern sides of the building is unpaved, and an asphalt road runs along the southern side. The operational period of this site is not known (LANL 1993, 020946, p. 10-18).

4.3.1 Previous Investigations for AOC 15-005(c)

RFI activities were performed at AOC 15-005(c) in 1995 and reported in 1996. Four samples were collected from two locations and analyzed for inorganic chemicals. The 1995 requested analyses are presented in Table 4.3-1.

4.3.2 Analytical Results for AOC 15-005(c)

Data from the 1996 sampling event are presented in Table 4.3-2. Sampling locations and results for inorganic chemicals detected above BVs are shown in Figure 4.1-2. Cadmium was detected above BV in one sample. Uranium was detected above BV in four samples.

4.4 SWMU 15-006(b), Ector Firing Site

SWMU 15-006(b) is the Ector firing site, used for dynamic radiography of explosion-driven weapons components (Figure 4.4-1). SWMU 15-006(b) is deferred per Table IV-2 of the Consent Order (Table 1.1-1). This SWMU is located along the eastern side of TA-15. The firing site was originally established in 1973 and used periodically until 1982. The Ector radiography machine was constructed at this site, and the site has operated with this machine from the mid-1980s to the present. Structures associated with the firing site are the firing point chamber (structure 15-276), the multidiagnostic hydrotest building (building 15-306), and the blast-protection structure (structure 15-319). Materials used in the tests included uranium, beryllium, lead, and HE (LANL 1993, 020946, p. 6-9).

4.4.1 Previous Investigations for SWMU 15-006(b)

No sampling has been conducted at this SWMU.

4.5 Consolidated Unit 15-006(c)-99

Consolidated Unit 15-006(c)-99 consists of SWMUs 15-006(c) and 15-008(b) (Figure 4.5-1). This consolidated unit is located along the eastern side of TA-15.

4.5.1 SWMU 15-006(c), Firing Site R-44

SWMU 15-006(c) is Firing Site R-44, named for its control building (structure 15-44) and was the third most extensively used firing site at TA-15 (Figure 4.5-1). SWMU 15-006(c) is deferred per Table IV-2 of the Consent Order (Table 1.1-1). This firing site was originally constructed in 1951 and was used extensively from 1956 to 1978 for diagnostic tests of weapons components. The diagnostic capabilities of

this site differed from those of the Pulsed High-Energy Radiographic Machine Emitting X-rays (PHERMEX) and Ector firing sites, also located in TA-15. Once PHERMEX and Ector became operational, Firing Site R-44 was used only for small experiments. The last known use of Firing Site R-44 was in 1992. Materials used in the tests included uranium, beryllium, lead, and HE. This firing site is located on a flat, open area on a narrow mesa that overlooks Threemile Canyon. Debris from explosives tests has been scattered onto the slope and into the canyon (LANL 1993, 020946, p. 6-8).

4.5.1.1 Previous Investigations for SWMU 15-006(c)

In 1991, a surface radiological survey indicated elevated exposure rates associated with chunks of uranium. This survey was used to identify large pieces of uranium for removal (Schlapper 1991, 022533).

SWMU 15-006(c) was sampled during 1995 RFI activities. A total of 39 samples were collected from 23 locations and analyzed for inorganic chemicals, HE, and tritium. The requested analyses are presented in Table 4.5-1.

4.5.1.2 Analytical Data for SWMU 15-006(c)

Analytical data for the 1995 RFI activities are presented in Tables 4.5-2, 4.5-3, and 4.5-4. Sampling locations and results for inorganic chemicals detected above BVs, organic chemicals detected, and radionuclides detected or detected above BVs/FVs are shown in Figures 4.5-2, 4.5-3, and 4.5-4, respectively. Aluminum, arsenic, and calcium were detected above BVs in one sample. Antimony, cadmium, and mercury were detected above BVs in two samples. Nickel was detected above BV in four samples. Chromium was detected above BV in five samples. Silver was detected above BV in seven samples. Zinc was detected above BV in 11 samples. Beryllium was detected above BV in 26 samples. Lead was detected above BV in 28 samples. Copper was detected above BV in 31 samples. Uranium was detected above BV in 32 samples. HNX (1,3,5,7-tetranitro-1,3,5,7-tetrazocine) was detected in 21 samples. RDX was detected in eight samples. Tritium was detected in 29 samples.

4.5.2 SWMU 15-008(b), Surface Disposal Area Associated with Firing Site R-44

SWMU 15-008(b) is a surface disposal area located north of Firing Site R-44 [SWMU 15-006(c)] and extending along the edge of the mesa and downslope into Threemile Canyon (Figure 4.5-1). The surface disposal area potentially covers approximately 8.5 acres. Firing Site R-44 was built in 1951 for diagnostic tests of weapons components and used extensively until 1978, and sporadically until 1992 (LANL 1993, 020946, p. 6-8; LANL 1995, 050294, p. 4-73). Soil and debris from the firing site were disposed of at SWMU 15-008(b).

4.5.2.1 Previous Investigations for SWMU 15-008(b)

During 1995 RFI activities, 24 samples were collected from 18 locations and analyzed for inorganic chemicals, HE, and radionuclides. The requested analyses are presented in Table 4.5-5.

An expedited cleanup (EC) was performed during 2000 following the Cerro Grande fire. The EC activities included removing 20 yd^3 of firing site debris from the SWMU and surrounding area and emplacing erosion-control features (such as straw wattles, rock check dams, and silt fencing) (LANL 2001, 071342, pp. 22–23). No sampling was conducted as part of this EC.

4.5.2.2 Analytical Data for SWMU 15-008(b)

Analytical data for the 1994 RFI activities are presented in Tables 4.5-6 and 4.5-7. Sampling locations and results for inorganic chemicals detected above BVs and radionuclides detected or detected above BVs/FVs are shown in Figures 4.5-5 and 4.5-6, respectively. Arsenic, chromium, calcium, and nickel were detected above BVs in one sample. Cadmium and mercury were detected above BVs in two samples. Antimony and silver were detected above BVs in four samples. Zinc was detected above BV in 10 samples. Beryllium was detected above BV in 14 samples. Lead was detected above BV in 16 samples. Copper was detected above BV in 19 samples. Uranium was detected above BV in 21 samples. Cesium-137 was detected or detected above BV in one sample. Tritium was detected in seven samples. No HE was detected.

4.6 Consolidated Unit 15-006(d)-99

Consolidated Unit 15-006(d)-99, which consists of SWMU 15-006(d) and AOC 15-008(g) (Figure 4.6-1), is located in the northeast corner of TA-15.

4.6.1 SWMU 15-006(d), Firing Site R-45

SWMU 15-006(d) is Firing Site R-45, named for its control building (structure 15-45) (Figure 4.6-1). SWMU 15-006(d) is deferred per Table IV-2 of the Consent Order (Table 1.1-1). This firing site was constructed in 1951 and used until 1992. This site was the least used of the TA-15 firing sites. Firing Site R-45 had two firing points and was used for experiments involving small amounts of explosives, such as testing shock-wave phenomena and optical diagnostics. Materials used in the tests at this site include uranium, beryllium, lead, and HE (LANL 1996, 054977, pp. 5-94–5-97).

4.6.1.1 Previous Investigations for SWMU 15-006(d)

A surface radiological survey conducted in 1991 detected localized, elevated radiation at the surface of the camera building closest to the firing point (Schlapper 1991, 022533).

SWMU 15-006(d) was sampled during 1995 RFI activities. A total of 23 samples were collected from 17 locations and analyzed for inorganic chemicals and HE (LANL 1996, 054977, p. 5-97). The requested analyses are presented in Table 4.6-1.

4.6.1.2 Analytical Data for SWMU 15-006(d)

Analytical data for the 1995 RFI activities are presented in Table 4.6-2. Sampling locations and results for inorganic chemicals detected above BVs are shown in Figure 4.6-2. Sodium was detected above BV in one sample. Copper and lead were detected above BVs in three samples. Calcium was detected above BV in four samples. Uranium was detected above BV in 22 samples. No HE was detected.

4.6.2 AOC 15-008(g), Surface Disposal Associated with Firing Site R-45

AOC 15-008(g) is the location of a former pile of broken sandbags located at Firing Site R-45 [SWMU 15-006(d)] (Figure 4.6-1). These sandbags were used as shielding for the explosives tests carried out at the firing site (LANL 1996, 054977, p. 5-103). A 2008 site visit found the sandbags had been removed.

4.6.2.1 Previous Investigations for AOC 15-008(g)

As part of 1995 RFI activities, a radiological survey of the site was conducted, and one sample was collected from one location. The sample was submitted for analyses of inorganic chemicals and HE (LANL 1996, 054977, p. 5-104). The requested analyses are presented in Table 4.6-3.

4.6.2.2 Analytical Data for AOC 15-008(g)

Analytical data for the 1995 RFI activities are presented in Table 4.6-4. Sampling locations and results for inorganic chemicals detected above BVs are shown in Figure 4.6-2. Calcium was detected above BV in one sample. No HE was detected.

4.7 Consolidated Unit 15-007(c)-00

Consolidated Unit 15-007(c)-00 consists of SWMUs 15-007(c) and 15-007(d), both underground shafts dug into the tuff and used to conduct underground explosive tests (LANL 1990, 007512; LANL 1993, 020946, p. 5-9) (Figure 4.7-1). Each shaft is 6 ft in diameter and approximately 130 ft deep. The shaft openings are located within 20-ft × 20-ft concrete pads and are covered. Both shafts are located approximately 300 ft east of building 15-263, in the northeast corner of TA-15 near Firing Site R-45. Both shafts were constructed in 1972 and each was used for a single test (LANL 1993, 020946, pp. 5-9–5-12).

4.7.1 SWMU 15-007(c), Shaft

The SWMU 15-007(c) shaft (structure 15-264) was used to conduct a single test involving approximately 2 tons of HE (Figure 4.7-1). This test was designed to determine the ability of tuff to absorb the explosion. The explosion was confined to the bottom of the shaft that was filled with layers of magnetite, cement, sand grout, bentonite, sand, and gravel. HE was the only material used in the underground test (LANL 1993, 020946, p. 5-9). Pieces of 0.25-in.-diameter lead shot are present at the site, scattered on the concrete pad at the surface of the shaft. The source of this lead is probably the bags of lead shot used for instrument shielding during the experiment. Shot is also present on the soil next to three sides of the pad (LANL 1997, 056562, p. 1).

4.7.1.1 Previous Investigations for SWMU 15-007(c)

No sampling has been conducted at this SWMU.

4.7.2 SWMU 15-007(d), Shaft

The SWMU 15-007(d) shaft (structure 15-265) was used to conduct a single test involving HE, tritium, and beryllium (Figure 4.7-1). This test was confined to the bottom of the shaft that was in the same manner described for SWMU 15-007(c) (LANL 1993, 020946, p. 5-9).

4.7.2.1 Previous Investigations for SWMU 15-007(d)

No sampling has been conducted at this SWMU.

4.8 SWMU 15-009(b), Septic System

SWMU 15-009(b) is a septic system consisting of a tank (structure 15-61), seepage pit, associated drainlines, and former outfall (LANL 2003, 102118) located at Firing Site R-45 (Figure 4.6-1). The septic tank was constructed in 1951 of reinforced concrete with a 540-gal. capacity (LANL 1990, 007512).

This septic system received effluent from restroom facilities in the firing site control building 15-45 (LANL 1990, 007512). This septic tank discharged to an outfall. In the 1970s, a 4-ft-diameter × 50-ft-deep seepage pit was constructed to receive effluent from the tank, and the outfall was plugged (LANL 2003, 102118). From engineering schematics and site visits, the seepage pit and former outfall are assumed to be collocated.

4.8.1 Previous Investigations for SWMU 15-009(b)

No sampling has been conducted at this SWMU.

4.9 SWMU 15-009(c), Septic System

SWMU 15-009(c) is a septic system consisting of a tank (structure 15-62), associated drainlines, and outfall (LANL 2003, 102119) located at Firing Site R-44 (Figure 4.5-1). The septic tank was constructed in 1951 of reinforced concrete with a 540-gal. capacity (LANL 1990, 007512). The drainlines were constructed of cast iron and discharged to an outfall into the south fork of Threemile Canyon. The outfall is located approximately 25 ft downgradient of the tank (LANL 2003, 102119).

This septic system received effluent from restroom facilities in the firing site control building 15-44 (LANL 1994, 040595, p. 7). An engineering drawing shows that the outfall has been plugged (LANL 2003, 102119).

4.9.1 Previous Investigations for SWMU 15-009(c)

In 1998, interim action RFI activities were performed at SWMU 15-009(c). Nine samples were collected from four locations. Samples were submitted for analyses of inorganic chemicals and radionuclides. Samples collected and analyses requested are presented in Table 4.9-1.

4.9.2 Analytical Data for SWMU 15-009(c)

Analytical data from the 1998 interim action are presented in Table 4.9-2. Sampling location coordinates are not available for these samples and, therefore, are not shown in a figure. Beryllium was detected above BV in one sample. No radionuclides were detected or detected above BVs/FVs.

4.10 SWMU 15-009(h), Septic System

SWMU 15-009(h) is a septic system consisting of a tank (structure 15-282), associated drainlines, and a drain field (LANL 2003, 102117) at the Ector firing site on the east side of TA-15 (Figure 4.4-1). The septic tank was constructed in the late 1970s of reinforced concrete with a 905-gal. capacity (LANL 1990, 007512; LANL 1994, 040595, p. 8).

The septic tank flowed to a drain field and received effluent from restroom facilities in the Ector firing site control building 15-280 (LANL 1990, 007512). In the 1990s, the sanitary waste drainlines that served this septic system were rerouted to the SWSC plant and are currently active (LANL 2003, 102117).

4.10.1 Previous Investigations for SWMU 15-009(h)

No sampling has been conducted at this SWMU.

4.11 SWMU 15-010(b), Settling Tank

SWMU 15-010(b) is a settling tank (structure 15-147) (LANL 2004, 102120) located in the northwest corner of TA-15 near a shop building (building 15-8) (Figure 4.11-1). The tank was constructed in 1947 and originally designed to be a septic tank; however, subsequent engineering records confirm that the tank was also used as an HE settling tank. The tank is constructed of concrete and measures 5 ft × 5 ft × 5.5 ft with an approximate 900-gal. capacity (LANL 1990, 007512).

This tank served building 15-8, which housed HE-machining operations during the 1950s, and discharged to an outfall at the edge of Threemile Canyon (LANL 1993, 020946, p. 10-25).

4.11.1 Previous Investigations for SWMU 15-010(b)

In 1995, RFI activities were performed for SWMU 15-010(b). Four samples were collected from three locations and analyzed for HE. Samples collected and analyses requested are presented in Table 4.11-1.

4.11.2 Analytical Data for SWMU 15-010(b)

Analytical data from the RFI activities are presented in Table 4.11-2. Sampling locations and results for detected HE are shown in Figure 4.11-2. Amino-4,6-dinitrotoluene[2-] was detected in one sample.

4.12 AOC 15-014(h), Outfalls from Building 15-40

AOC 15-014(h) consists of three outfalls that served a laboratory and office (building 15-40), located in the northwest corner of TA-15 (Figure 4.12-1). All three outfalls daylight north of building 15-40 and discharge to Threemile Canyon (LANL 1990, 007512; LANL 1993, 020946, p. 10-22).

The western-most outfall is a former National Pollutant Discharge Elimination System- (NPDES-) permitted outfall that received industrial effluent (including wastes from a photographic laboratory) from building 15-40. This outfall consists of an 8-in.-diameter vitrified clay pipe (VCP) that daylights approximately 75 ft north of the northwest corner of building 15-40 (LANL 1990, 007512; LANL 1993, 020946, p. 10-22). Before the outfall was removed from the NPDES permit in 1994 (Dale 1998, 057524), all discharges to this outfall from building 15-40 ceased.

The middle outfall is a former NPDES-permitted outfall that received noncontact cooling water, roof runoff, and floor-drain effluent from building 15-40. The floor drains received water from drain valves in a potable water system. This outfall consists of an 8-in.-diameter VCP that daylights approximately 100 ft north of the northeast corner of building 15-40 (LANL 1990, 007512; LANL 1993, 020946, p. 10-22). Before the outfall was removed from the NPDES permit in 1990 (EPA 1990, 012454), all discharges to this outfall from building 15-40 ceased.

The easternmost outfall receives stormwater from yard drains and is located north and east of building 15-40. This outfall consists of a 12-in. corrugated metal pipe that daylights approximately 75 ft northeast of the northeast corner of building 15-40 (LANL 1990, 007512; LANL 1993, 020946, p. 10-22). From the outfall, an approximately 60-ft-long ditch connects to a 30-ft-long, 12-in. corrugated metal pipe that accommodates drainage beneath a security fence.

4.12.1 Previous Investigations for AOC 15-014(h)

In 1995, RFI activities were performed at AOC 15-014(h). Four samples were collected from two locations and analyzed for inorganic chemicals, SVOCs, and volatile organic compounds (VOCs). Samples collected and analyses requested are presented in Table 4.12-1.

4.12.2 Analytical Data for AOC 15-014(h)

Analytical data from the 1995 RFI are presented in Tables 4.12-2 and 4.12-3. Sampling locations and results for inorganic chemicals detected above BVs and detected organic chemicals are shown in Figures 4.12-2 and 4.12-3, respectively. Lead was detected above BV in one sample. Cadmium, mercury, and zinc were detected above BVs in two samples. Copper and silver were detected above BVs in three samples. Benzo(b)fluoranthene, fluoranthene, and pyrene were detected in one sample. Acetone and methylene chloride were detected in two samples.

5.0 SITES ASSOCIATED WITH TA-36

TA-36 (Plate 1) is located in a remote area of the Laboratory. Activities at TA-36 include the storage and assembly of prefabricated metal and explosives components, detonators, cables, and instrumentation for shots; and the detonation of these shots (LANL 1993, 015313, p. 2-5). None of the TA-36 sites within Threemile Canyon Aggregate Area are associated with firing site activities.

5.1 SWMU 36-002, Former Sump

SWMU 36-002 is a former sump (structure 36-49) located approximately 40 ft northwest of the controlled environment building (building 36-48) near the edge of Threemile Canyon (LASL 1965, 102122) (Figure 5.1-1). The sump consisted of a 4-ft-diameter × 4.5-ft-long section of corrugated metal pipe placed into an unlined 8-ft-deep excavation. The excavation and the interior of the pipe were filled with 3-in.-diameter rocks to a depth of approximately 2 ft belowgrade. The remainder of the excavation outside the pipe was backfilled to grade with soil, and the pipe was covered with a metal cover (LANL 1993, 015313, p. 5-13). The sump had an inlet pipe from building 36-48 that consisted of 4-in.-diameter VCP.

The sump was constructed in 1965 and received water from two sinks in building 36-48 (LANL 1993, 015313, p. 5-13). Building 36-48 was initially used for shot assembly and for controlled-temperature experiments. DU was cut, lapped, and polished in the building. One of the sinks connected to the sump had a chemical-resistant coating. The building was used infrequently (less than 10 times per year) (LANL 1993, 015313, p. 5-15). The sinks were disconnected from the sump, and the sump was removed (LANL 1993, 015313, p. 5-15; LANL 1995, 062839, p. 1-1).

5.1.1 Previous Investigations for SWMU 36-002

In 1994, Phase I RFI activities were performed at SWMU 36-002. The soil and rock in and around the sump was excavated and stockpiled on the site on a lined, bermed pad. Five samples were collected from five depths from within the excavation (LANL 1995, 062839, p. 1-6) and analyzed for inorganic chemicals, SVOCs, and VOCs. The requested analyses are presented in Table 5.1-1.

Based on the Phase I RFI results, the stockpiled material excavated during sampling was returned to the original sump excavation. The sump and part of the inlet pipe were removed and disposed of as construction debris (LANL 1995, 062839, p. 1-6).

5.1.2 Analytical Data for SWMU 36-002

Analytical data from the RFI activities are presented in Table 5.1-2. Sampling locations and results for inorganic chemicals detected above BVs are shown in Figure 5.1-2. Cadmium was detected above BV in one sample. Lead was detected above BV in two samples. Zinc was detected above BV in five samples. No organic chemicals were detected.

5.2 SWMU 36-003(a), Septic System

SWMU 36-003(a) is a septic system located approximately 115 ft east of building 36-1 (Figure 5.2-1). The septic system consists of a septic tank (structure 36-17), associated drainlines, a manhole (structure 36-38), a distribution box/drain field, and seepage pit (LASL 1965, 102122; LANL 2004, 102121). The septic tank is a single-chamber tank constructed of reinforced concrete with a 1160-gal. capacity. The drain field consists of four 200-ft-long perforated tile pipes spaced 10 ft apart. The drain field was replaced with the seepage pit in late 1973 or early 1974. Details of the seepage pit are not known, but other seepage pits constructed during the same period were typically 4 ft in diameter × 50 ft deep and filled with gravel.

This septic system was constructed in 1949 and received effluent from the restroom facilities in an office and laboratory building (building 36-1). In addition to sanitary wastes, spent photoprocessing chemicals from x-ray developing may have been discharged to the septic system (LANL 1993, 015313, pp. 5-24, 5-27). The main guard station at TA-36 (building 36-22) was later added to the septic system. In 1988, the guard station was disconnected from the septic tank (structure 36-17) and rerouted to an adjacent septic system. In 1992, the sanitary waste drainlines that previously served SWMU 36-003(a) were rerouted to the SWSC plant and are currently active (LANL 1993, 015313, pp. 5-22–5-23).

5.2.1 Previous Investigations for SWMU 36-003(a)

In 1994, RFI activities were performed at SWMU 36-003(a). Four sludge samples were collected from four locations in the septic tank. Twelve subsurface samples were collected from borings at six locations. A sample was collected from each boring at the soil/tuff interface and in the tuff 2 ft below the interface. The samples were analyzed for inorganic chemicals, SVOCs, and VOCs (LANL 1995, 053985, p. 1-15). The 1994 requested analyses are presented in Table 5.2-1.

In 1995, an EC was performed at SWMU 36-003(a). The cleanup involved excavating soil to expose the top of the tank, opening the tank and removing the contents, decontaminating the tank by steam cleaning, filling the tank with concrete, and placing backfill above the tank. The tank contents were disposed of as hazardous waste. Five confirmation subsurface samples were collected from four locations outside the tank walls, beneath the tank inlet, beneath the tank outlet, and below the bottom of the tank. These samples were submitted for analyses of inorganic chemicals and VOCs (LANL 1996, 054484, pp. 1–5). The 1995 requested analyses are presented in Table 5.2-1.

5.2.2 Analytical Data for SWMU 36-003(a)

Analytical data from the 1994 RFI activities are presented in Table 5.2-2. Sampling locations and results for inorganic chemicals detected above BVs are shown in Figure 5.2-2. Lead, mercury, and zinc were detected above BVs in one sample. Arsenic, nickel, and strontium were detected above BVs in two samples. Aluminum, barium, beryllium, calcium, chromium, copper, iron, magnesium, and vanadium were detected above BVs in three samples. No VOCs were detected.

Analytical data from the 1995 EC activities are presented in Tables 5.2-2 and 5.2-3. Sampling locations and results for inorganic chemicals detected above BVs and detected organic chemicals are shown in Figures 5.2-2 and 5.2-3, respectively. Chromium was detected above BV and strontium was detected in two samples. Acetone and methylene chloride were detected in three samples.

5.3 AOC 36-008, Surface Disposal Area Located Near Building 36-1

AOC 36-008 is a surface disposal area located on the south rim of Threemile Canyon behind an office and laboratory building (building 36-1) (Figure 5.1-1). The disposal area covers an estimated 1 to 2 acres and extends below the building over the steeply sloping edge of the canyon. The dates the site was used for disposal are not known, but the site appears to be associated with building 36-1, constructed in 1949. Materials disposed of at the site included laboratory glassware, metal cans, metal pipe, miscellaneous metal pieces, and other debris. This disposal area was revealed in June 2000 after the Cerro Grande fire burned the vegetation surrounding the site. As part of the emergency response actions associated with the fire, approximately 5 yd^3 of debris was collected from the site, segregated, and staged for disposal. Also, as part of the emergency response action, stormwater best management practices were implemented to prevent erosion. No previous environmental investigations have been conducted at AOC 36-008 (LANL 2000, 068656).

5.3.1 Previous Investigations for AOC 36-008

No sampling has been conducted at this AOC.

5.4 SWMU C-36-003, Outfall from Building 36-1

SWMU C-36-003 is a former NPDES-permitted outfall located on the south rim of Threemile Canyon, north of an office and laboratory building (building 36-1) (Figure 5.1-1). The outfall received effluent from a floor drain and spent photoprocessing chemicals from a sink in building 36-1. The outfall became operational shortly after building 36-1 was constructed in 1949. During its operation, the outfall discharged a steady stream of liquid that ran downstream for approximately 35 ft (LANL 1993, 015313, pp. 5-63–5-64). During a July 1994 sampling effort, it was found that the photoprocessing unit was no longer plumbed to the outfall; however, a floor drain in room 6 of building 36-1 was (LANL 1995, 053985, p. 1-16). This outfall was removed from the NPDES permit by 2001 (EPA 2001, 082282).

5.4.1 Previous Investigations for SWMU C-36-003

In 1994, RFI activities were performed at SWMU C-36-003. One surface sample and one water sample were collected from one location just below the outfall. Water from a source in building 36-1 was flushed through the drainline and outfall to provide water for sampling. Five surface samples were collected from five locations in the drainage channel below the outfall. The samples were analyzed for inorganic chemicals and SVOCs. The 1994 requested analyses are presented in Table 5.4-1.

5.4.2 Analytical Data for SWMU C-36-003

Analytical data from the RFI activities are presented in Table 5.4-2. Sampling locations and results for inorganic chemicals detected above BVs are shown in Figure 5.1-2. Manganese was detected above BV in one sample. Nickel was detected above BV in two samples. Calcium was detected above BV in three samples. Cadmium, chromium, copper, lead, silver, and zinc were detected above BVs in four samples. No SVOCs were detected.

6.0 REFERENCES AND MAP DATA SOURCES

6.1 References

The following list includes all documents cited in this report. Parenthetical information following each reference provides the author(s), publication date, and ER ID number. This information is also included in text citations. ER ID numbers are assigned by the Environmental Programs Directorate's Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the master reference set.

Copies of the master reference set are maintained at the NMED Hazardous Waste Bureau; the U.S. Department of Energy–Los Alamos Site Office; the U.S. Environmental Protection Agency, Region 6; and the Directorate. The set was developed to ensure that the administrative authority has all material needed to review this document, and it is updated with every document submitted to the administrative authority. Documents previously submitted to the administrative authority are not included.

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6.2 Map Data Sources

Legend Item	Data Source
2-ft elevation contour	Hypsography, 2-ft Contour Interval; LANL, Environmental Stewardship (ENV) Environmental Remediation and Surveillance Program; 1991.
10-ft elevation contour	Hypsography, 10-ft Contour Interval; LANL, ENV Environmental Remediation and Surveillance Program; 1991. Hypsography, 20-ft Contour Interval; LANL, ENV Environmental Remediation and Surveillance Program; 1991.

Legend Item	Data Source
100-ft elevation contour	Hypsography, 100-ft Contour Interval; LANL, ENV Environmental Remediation and Surveillance Program; 1991.
Threemile Canyon Aggregate Area	Aggregate Areas; LANL, ENV Environmental Remediation & Surveillance Program, ER2005-0496; 1:2,500 Scale Data; 22 September 2005.
LANL boundary	LANL Areas Used and Occupied; LANL, Site Planning & Project Initiation Group, Infrastructure Planning Division; 04 June 2008.
TA boundary	TA Boundaries; LANL, Site Planning & Project Initiation Group, Infrastructure Planning Division; 04 June 2008.
Fence	Security and Industrial Fences and Gates; LANL, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 04 March 2008.
Former Structure	Structures; LANL, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 20 March 2001.
Structure	Structures; LANL, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 04 March 2008.
Communication line	Communication Lines; LANL, KSL Site Support Services, Planning, Locating and Mapping Section; 08 August 2002; as published 04 March 2008.
Electric line	Primary Electric Grid; LANL, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 04 March 2008.
Gas line	Primary Gas Distribution Lines; LANL, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 04 March 2008.
Industrial waste line	Primary Industrial Waste Lines; LANL, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 04 March 2008.
Sewer line	Sewer Line System; LANL, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 04 March 2008.
Water line	Water Lines; LANL, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 04 March 2008.
Paved road	Paved Road Arcs; LANL, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 04 March 2008.
Unpaved road	Dirt Road Arcs; LANL, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 04 March 2008.
Primary paved road Secondary paved road	Road Centerlines for the County of Los Alamos; County of Los Alamos, Information Services; as published 03 December 2007.
SWMU or AOC Deferred SWMU or AOC Consolidated Unit	Potential Release Sites; LANL, Waste and Environmental Services Division, Environmental Data and Analysis Group, EP2008-0224; 1:2,500 Scale Data; 30 May 2008. Change control requests pending.
Sampling location	Point Feature Locations of the Environmental Restoration Project Database; LANL, Waste and Environmental Services Division, EP2008-0284; 28 May 2008.
Spring	Locations of Springs; LANL, Waste and Environmental Services Division in cooperation with NMED, DOE Oversight Bureau, EP2008-0138; 1:2,500 Scale Data; 17 March 2008.
Surface water and stormwater runoff monitoring station	Storm Water Runoff Monitoring Stations; ENV Water Quality & Hydrology Group; 19 October 2004. Unpublished 2008 data for 3M-SMA-3 acquired from Waste and Environmental Services Division.
Monitoring well	Penetrations; LANL, Environment and Remediation Support Services, EP2007-0442; 1:2,500 Scale Data; 16 July 2007. Unpublished 2008 survey data for well 3MAO-2 acquired from Waste and Environmental Services Division.
Canyon reach	Canyon Reaches; LANL, ENV Environmental Remediation and Surveillance Program, ER2002-0592; 1:24,000 Scale Data; Unknown publication date.

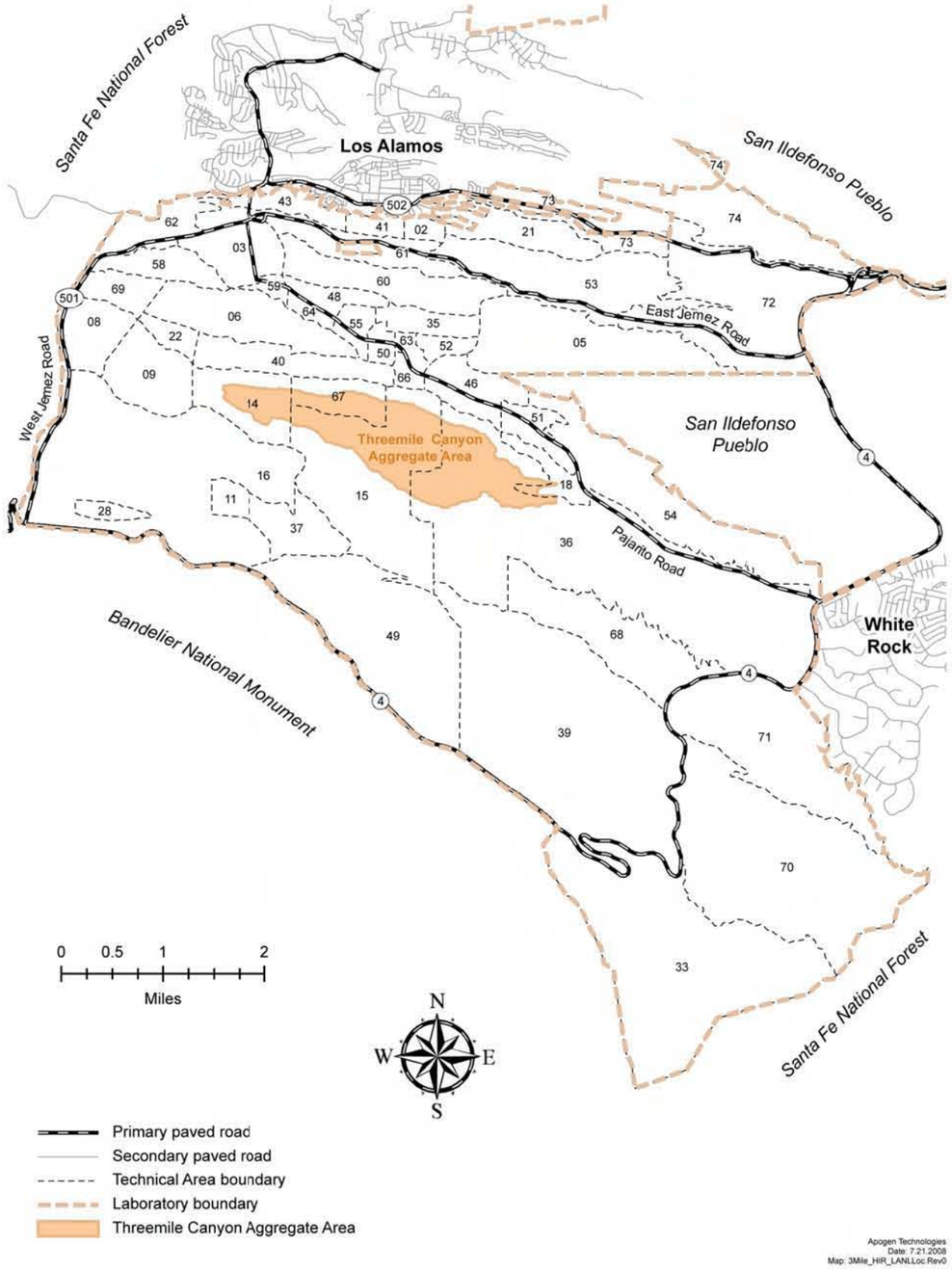

Figure 1.0-1 Threemile Canyon Aggregate Area

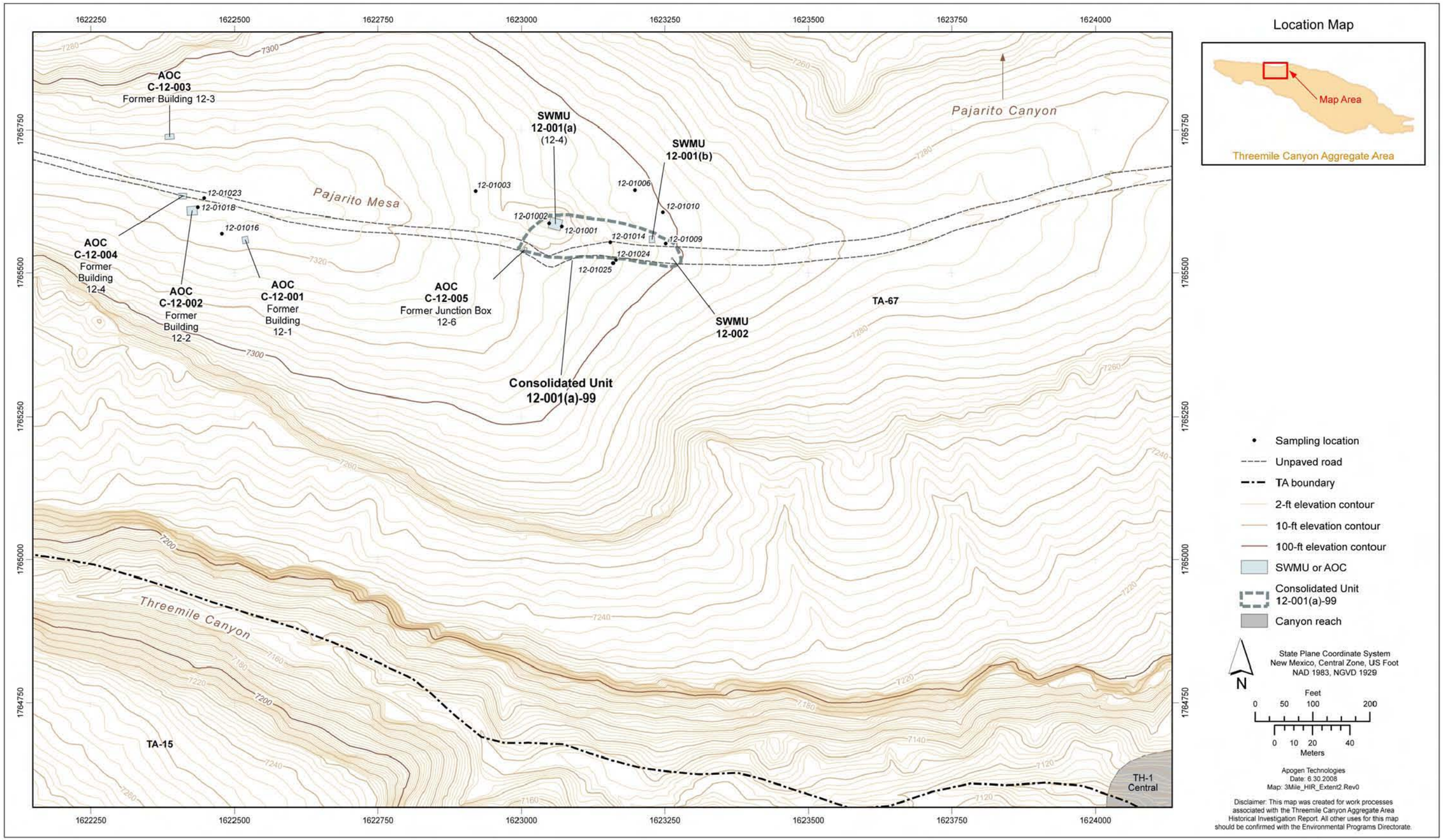

Figure 2.1-1 Site features of Consolidated Unit 12-001(a)-99 [SWMUs 12-001(a), 12-001(b), and 12-002, and AOC C-12-005] and AOCs C-12-001, C-12-002, C-12-003, and C-12-004

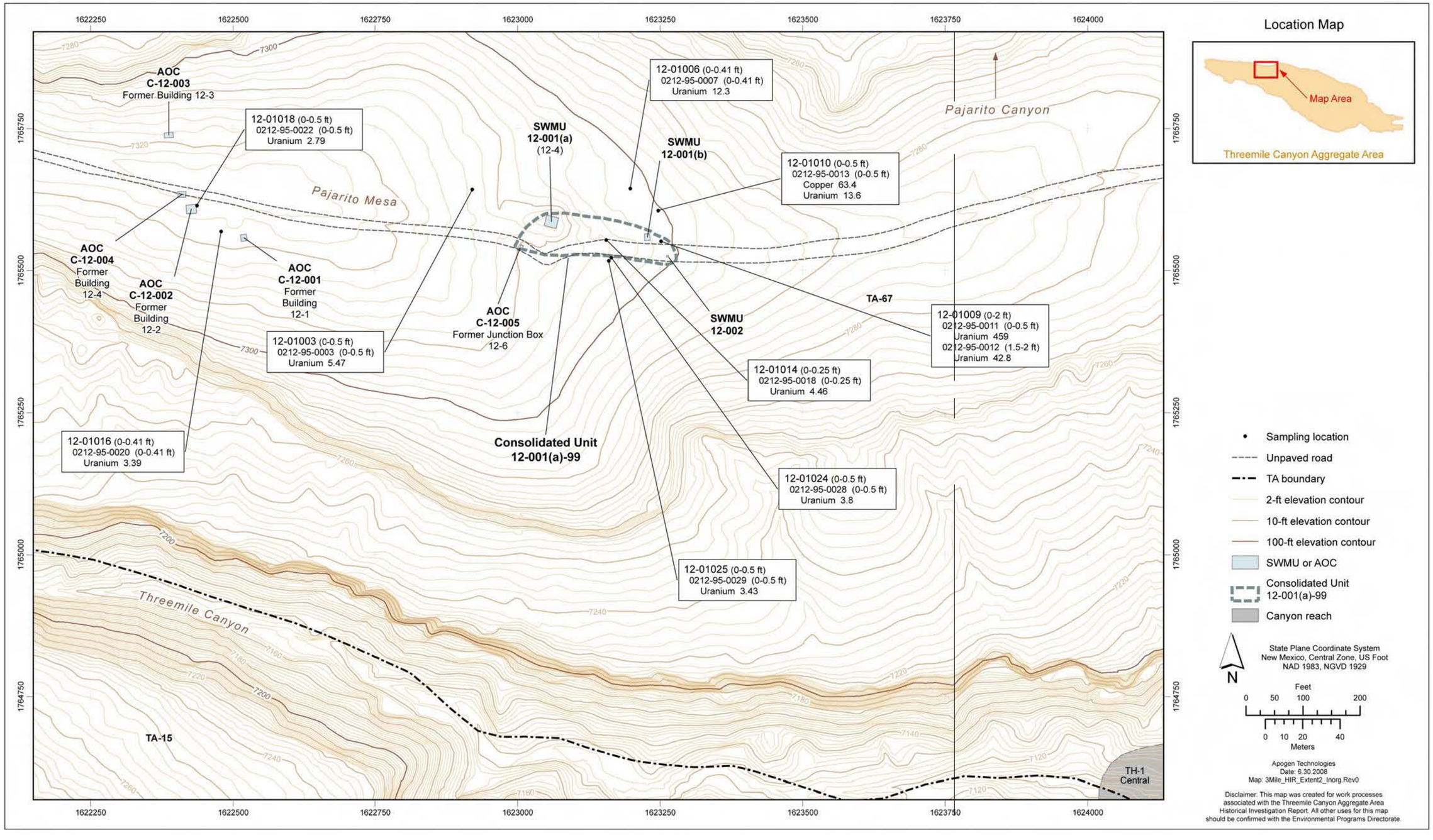

Figure 2.1-2 Inorganic chemicals detected above BVs at SWMUs 12-001(a) and 12-001(b) and AOCs C-12-001, C-12-002, and C-12-005

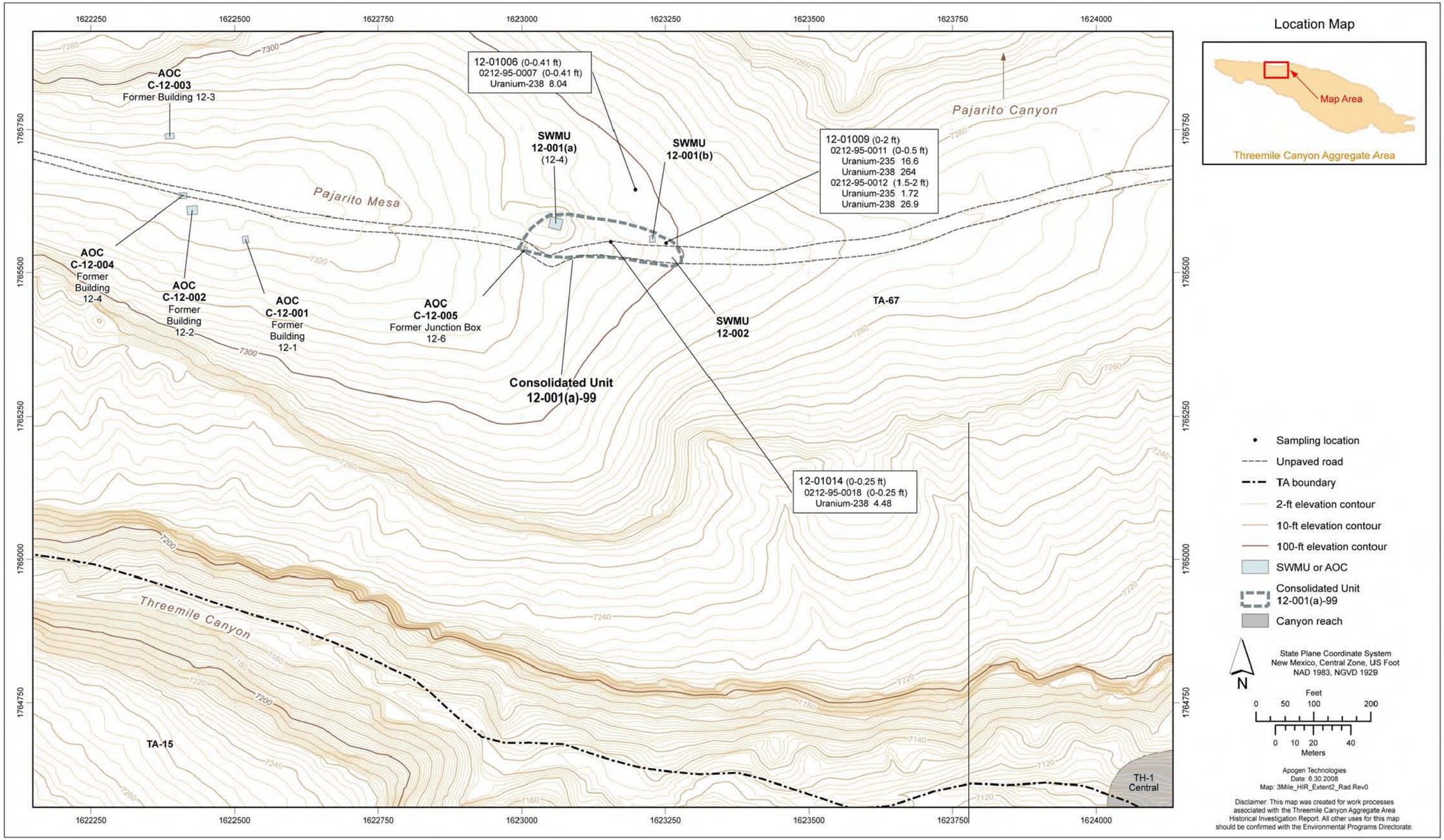

Figure 2.1-3 Radionuclides detected or detected above BVs/FVs at SWMUs 12-001(a) and 12-001(b)

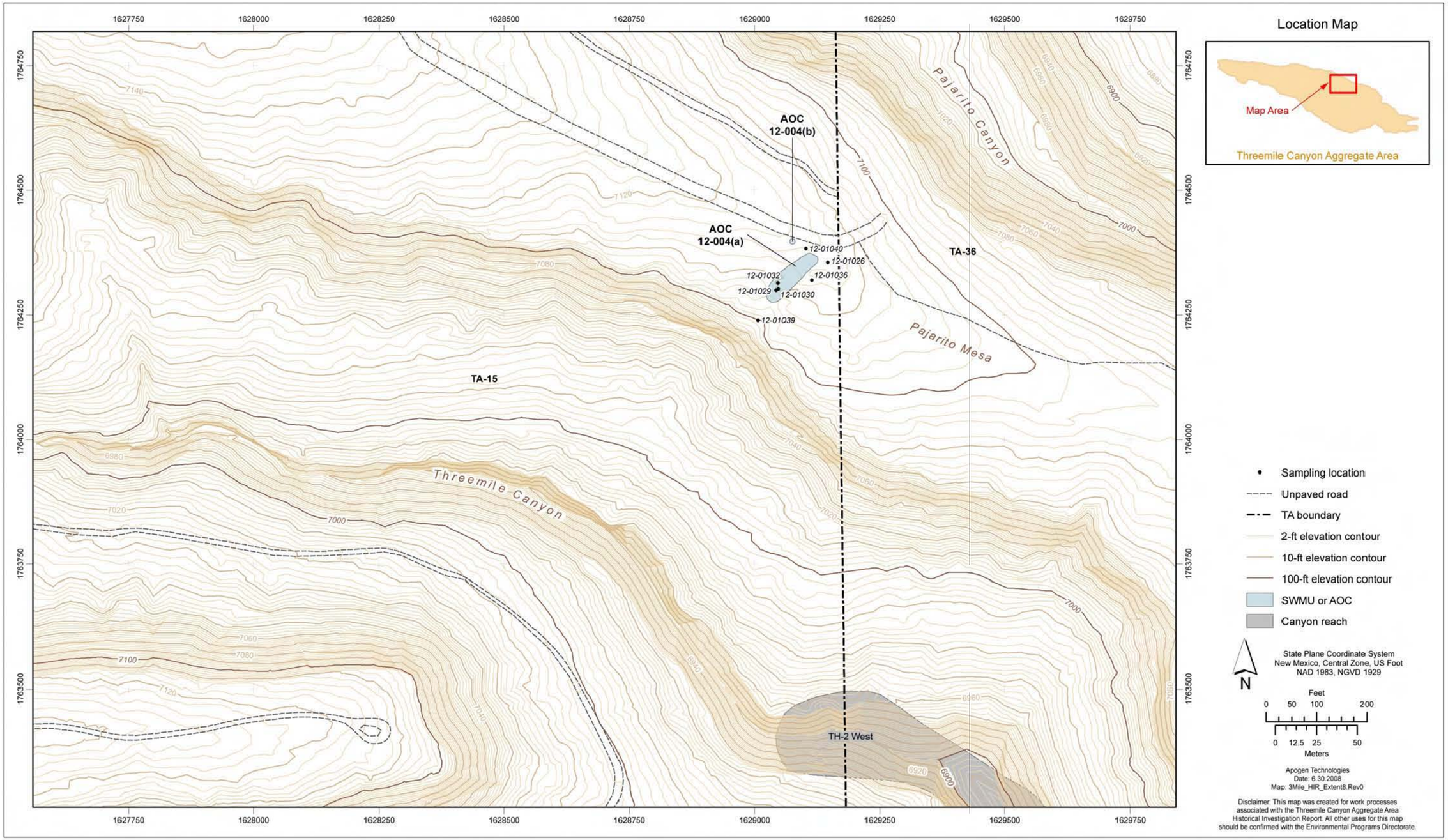

Figure 2.2-1 Site features of AOCs 12-004(a) and 12-004(b)

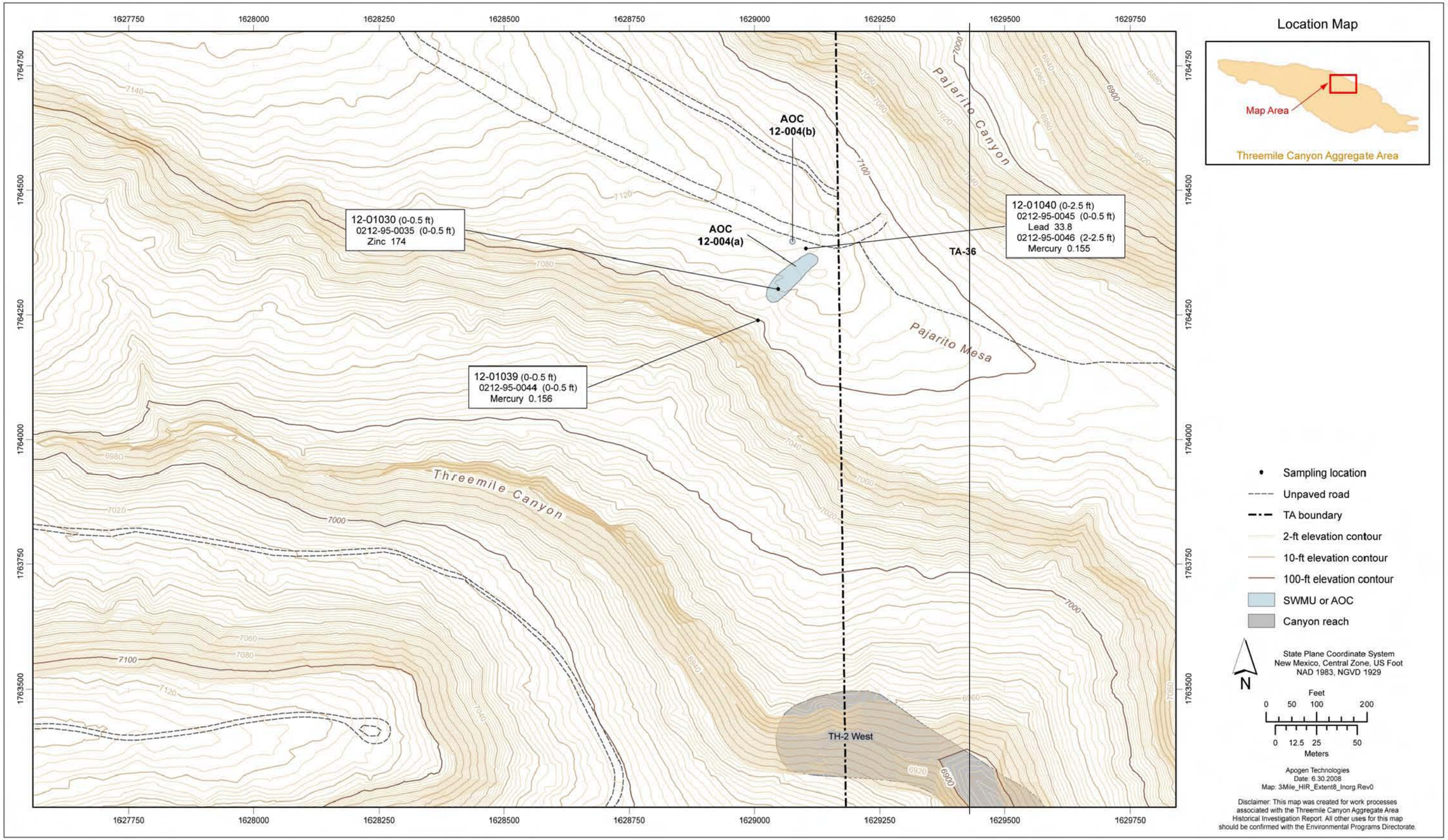

Figure 2.2-2 Inorganic chemicals detected above BVs at AOCs 12-004(a) and 12-004(b)

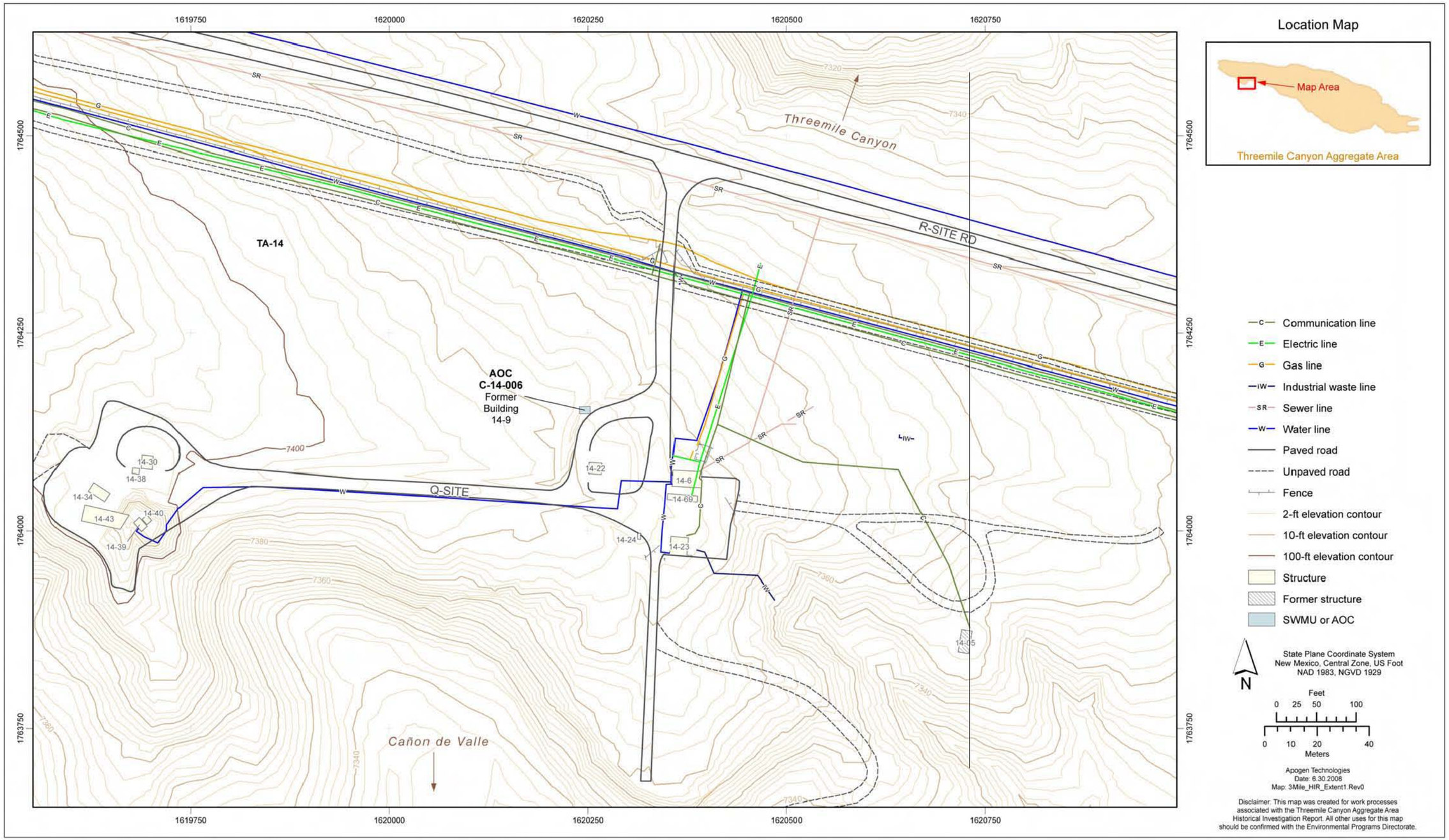

Figure 3.1-1 Site features of AOC C-14-006

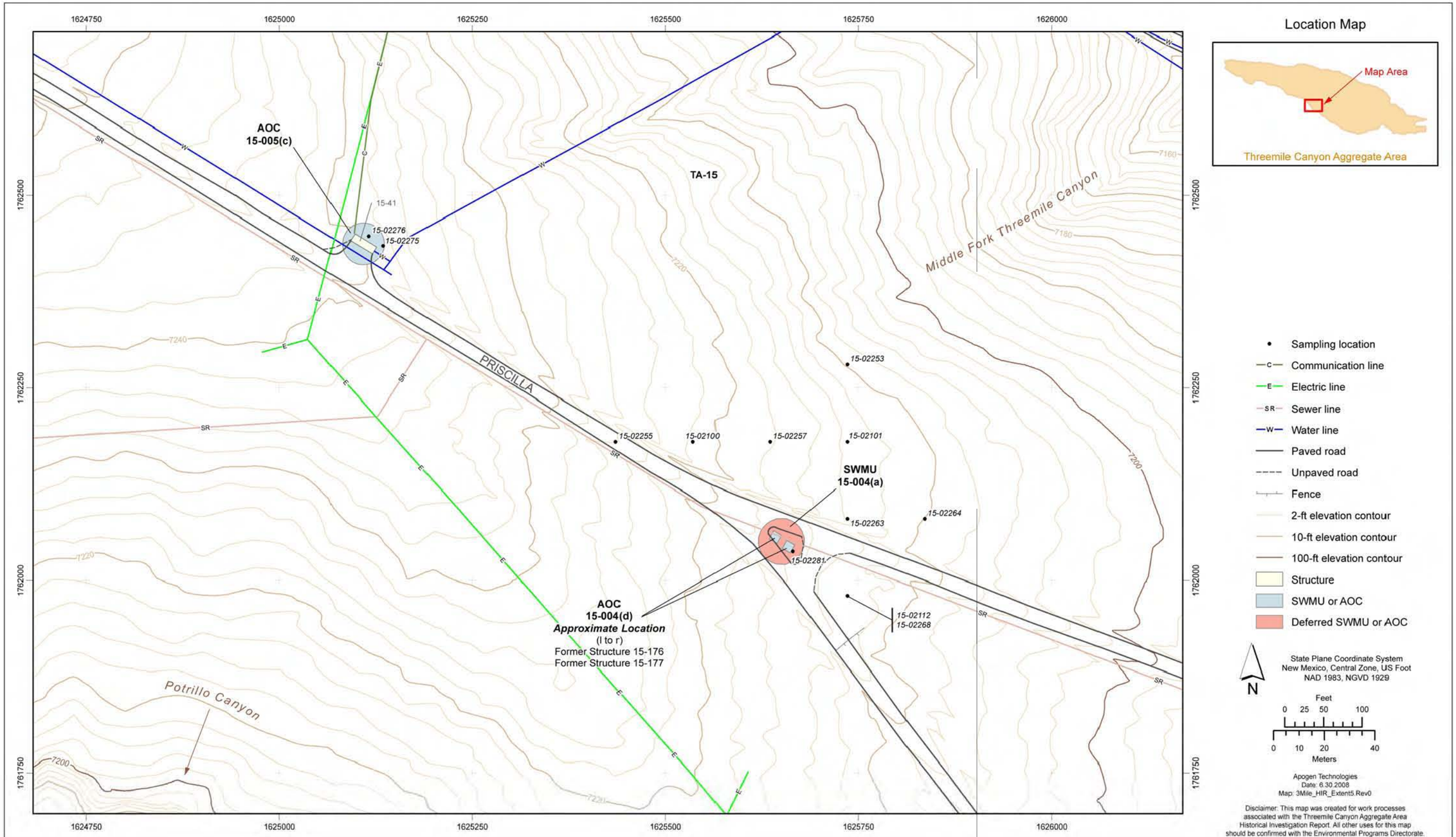

Figure 4.1-1 Site features of SWMU 15-004(a) and AOCs 15-004(d) and 15-005(c)

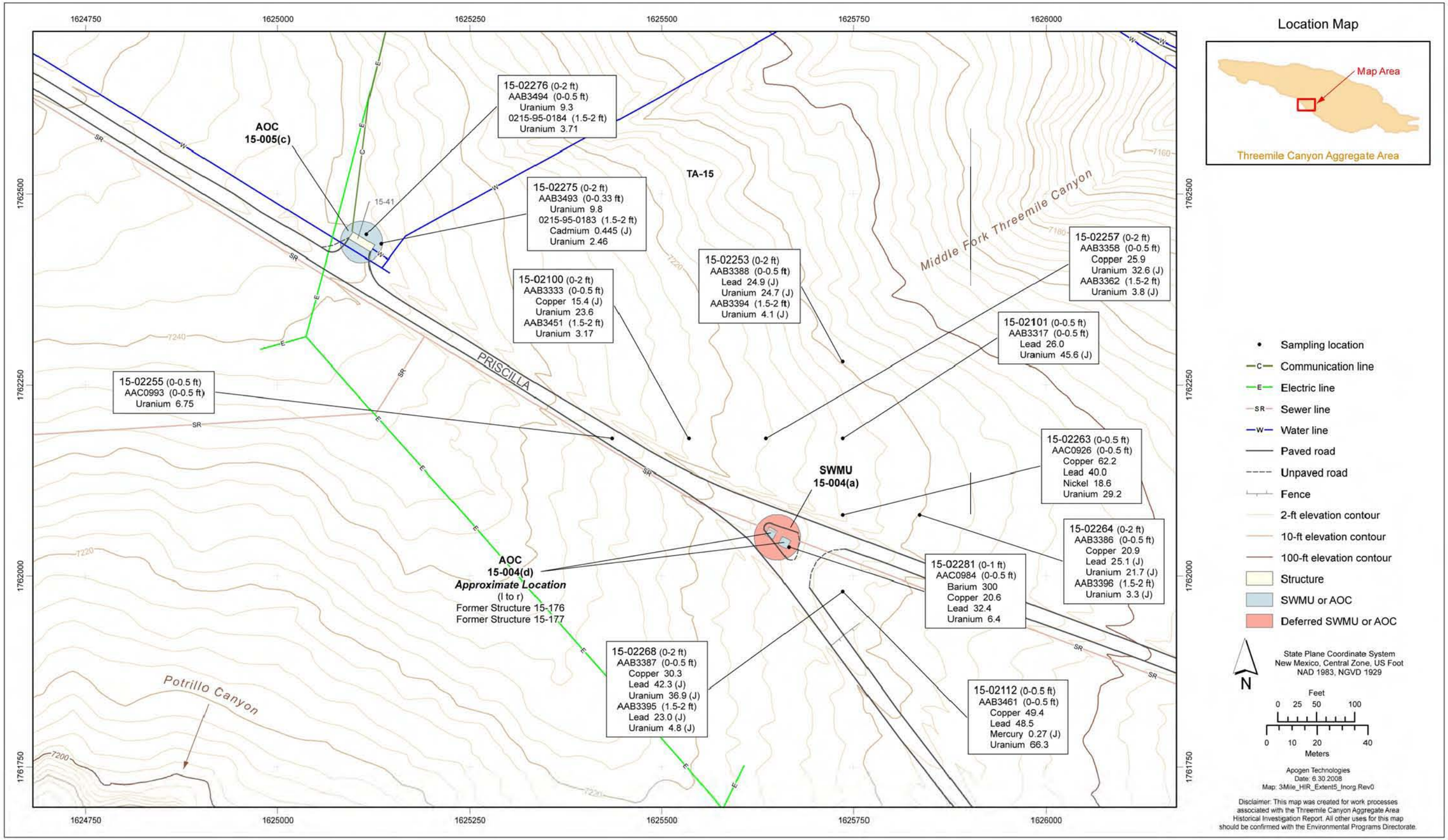

Figure 4.1-2 Inorganic chemicals detected above BVs at SWMU 15-004(a) and AOCs 15-004(d) and 15-005(c)

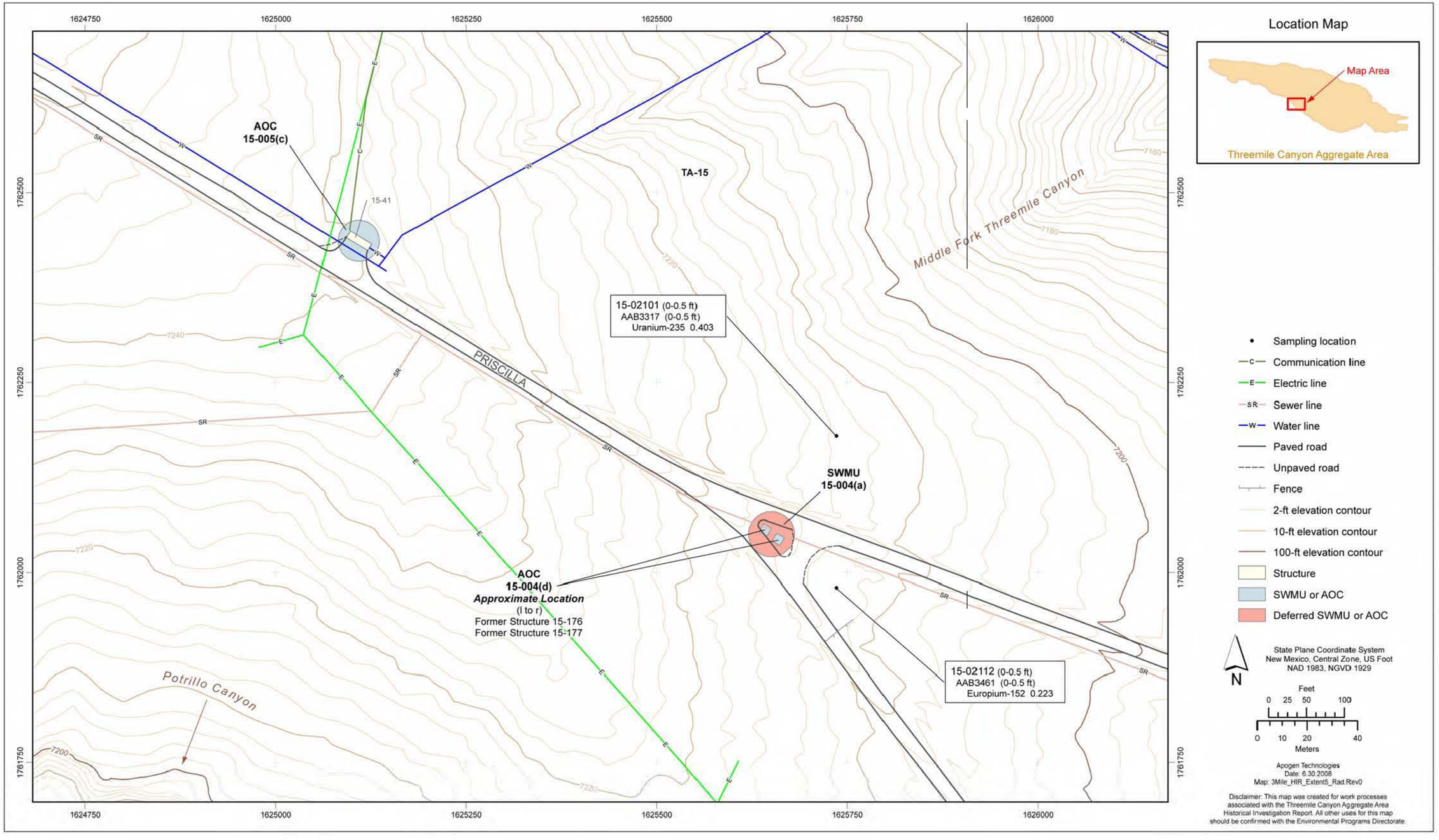

Figure 4.1-3 Radionuclides detected or detected above BVs/FVs at SWMU 15-004(a) and AOC 15-004(d)

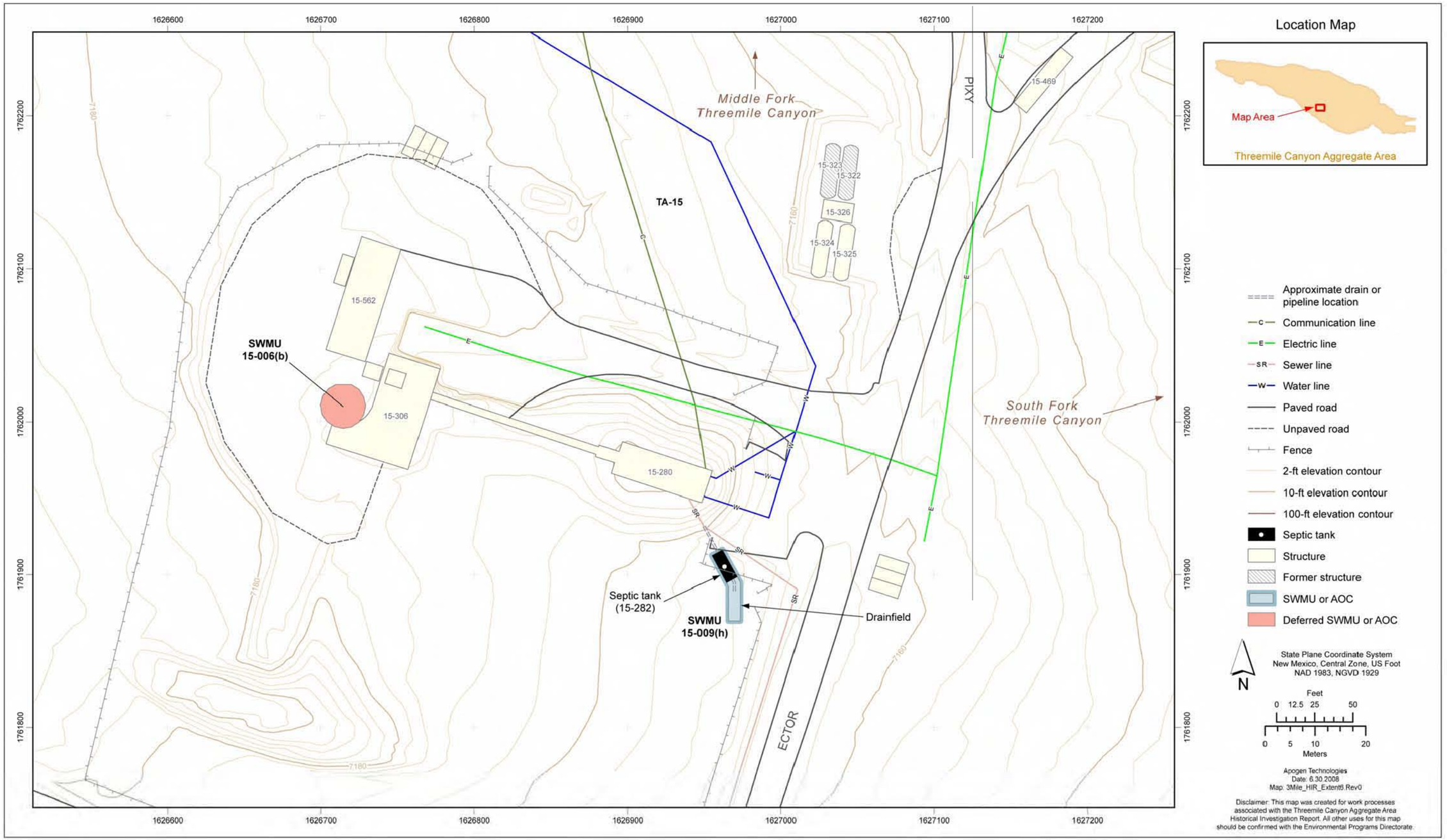

Figure 4.4-1 Site features of SWMUs 15-006(b) and 15-009(h)

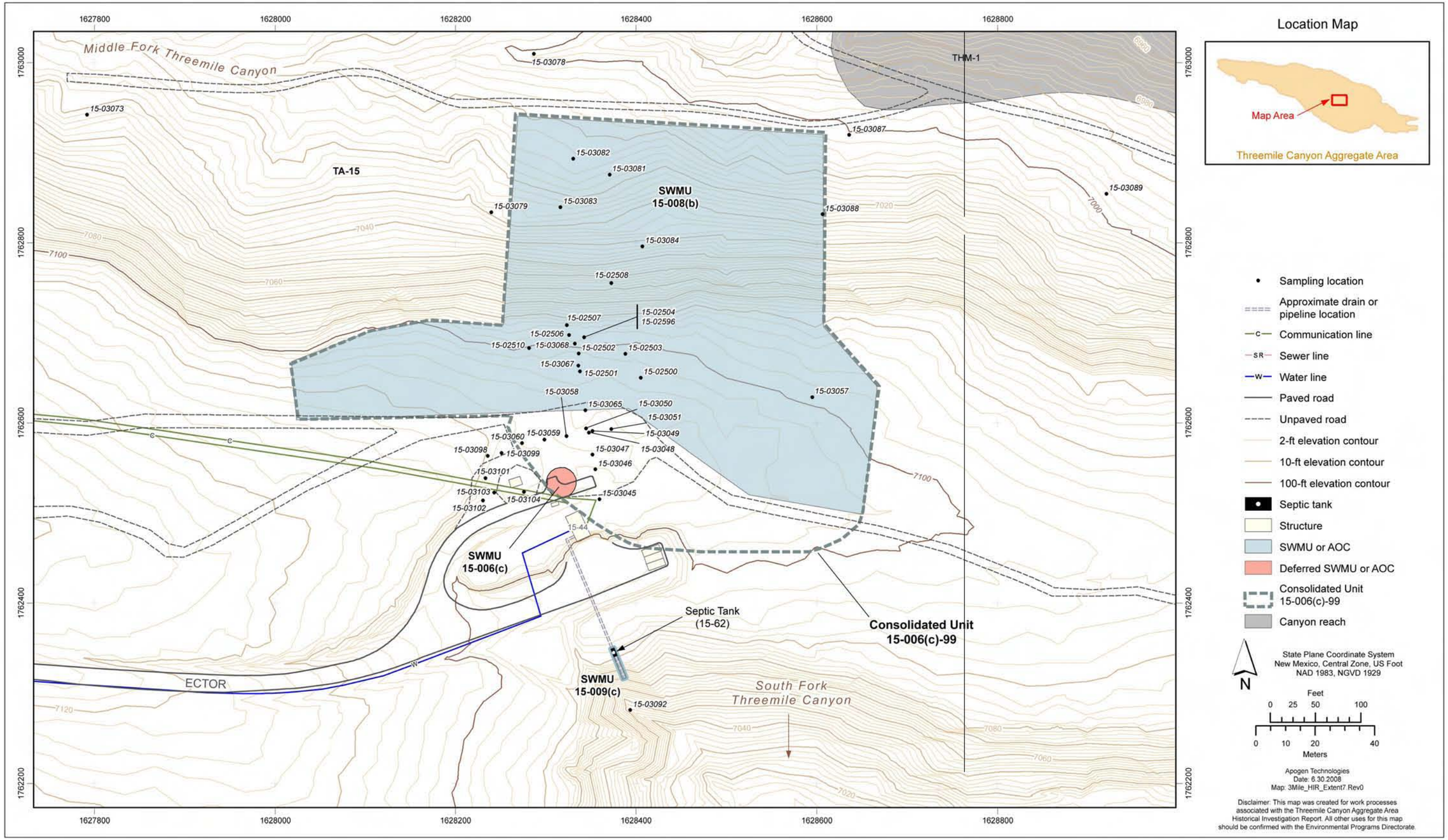

Figure 4.5-1 Site features of Consolidated Unit 15-006(c)-99 [SWMUs 15-006(c) and 15-008(b)] and SWMU 15-009(c)

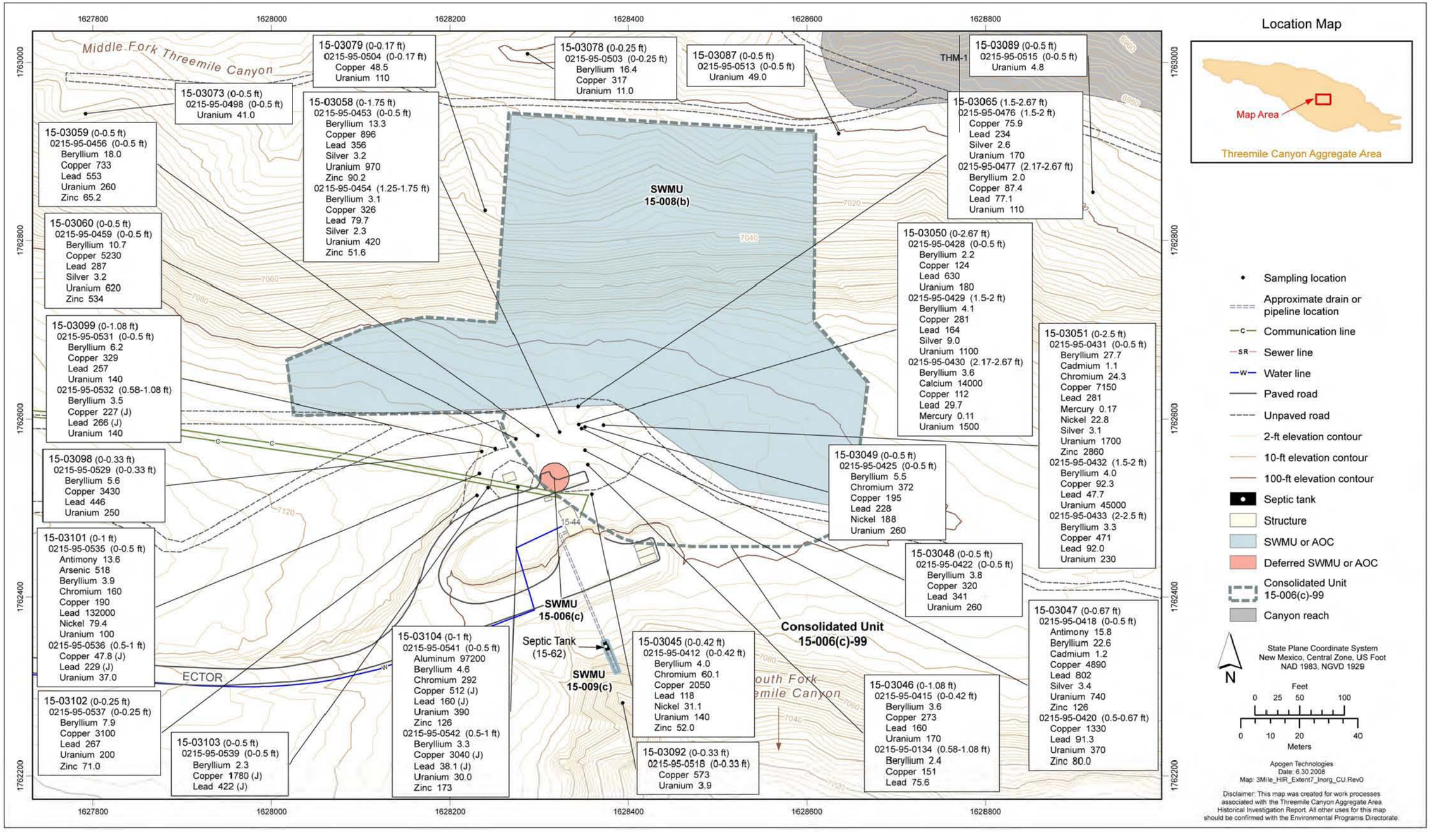

Figure 4.5-2 Inorganic chemicals detected above BVs at SWMU 15-006(c)

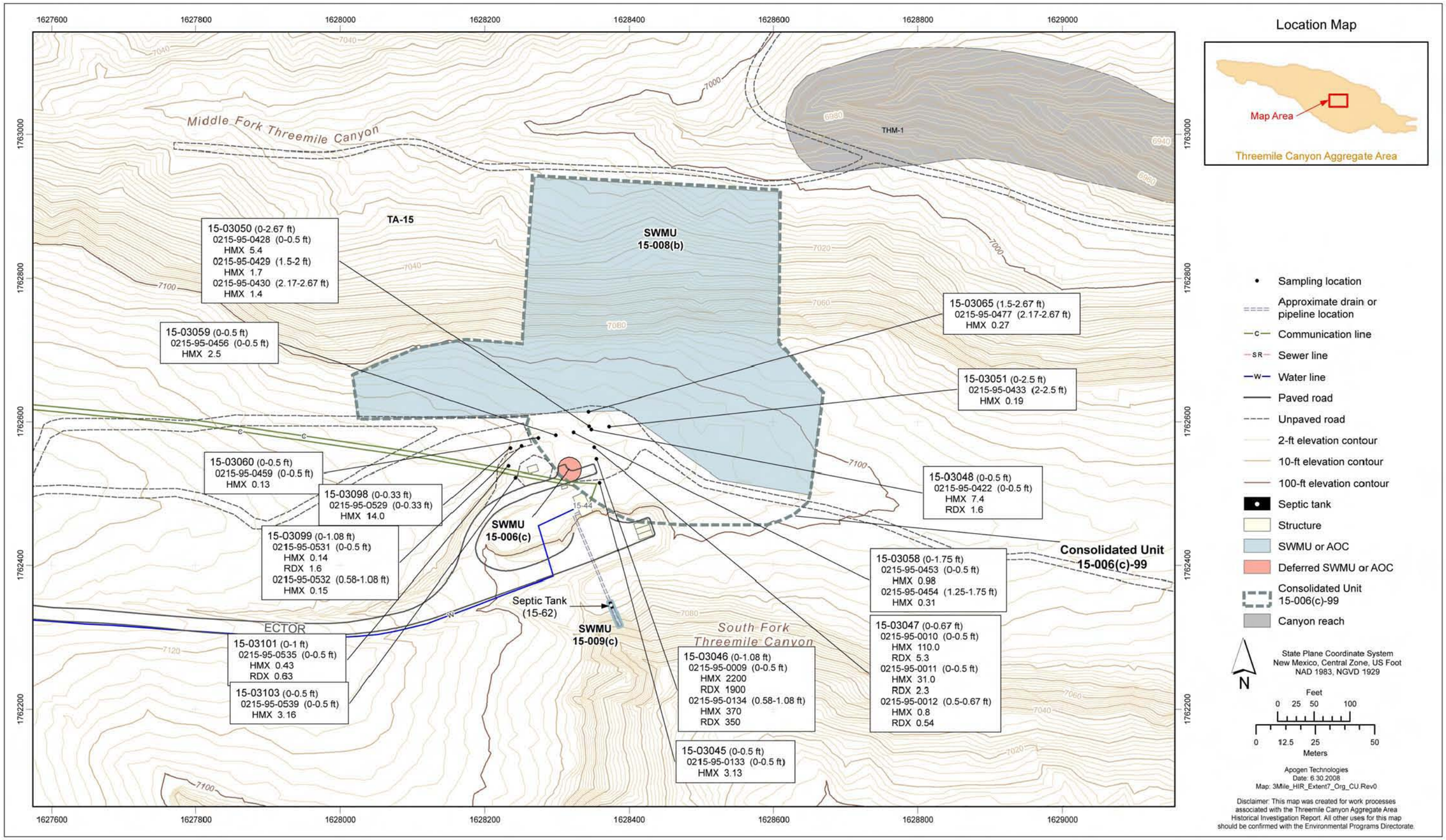

Figure 4.5-3 Organic chemicals detected at SWMU 15-006(c)

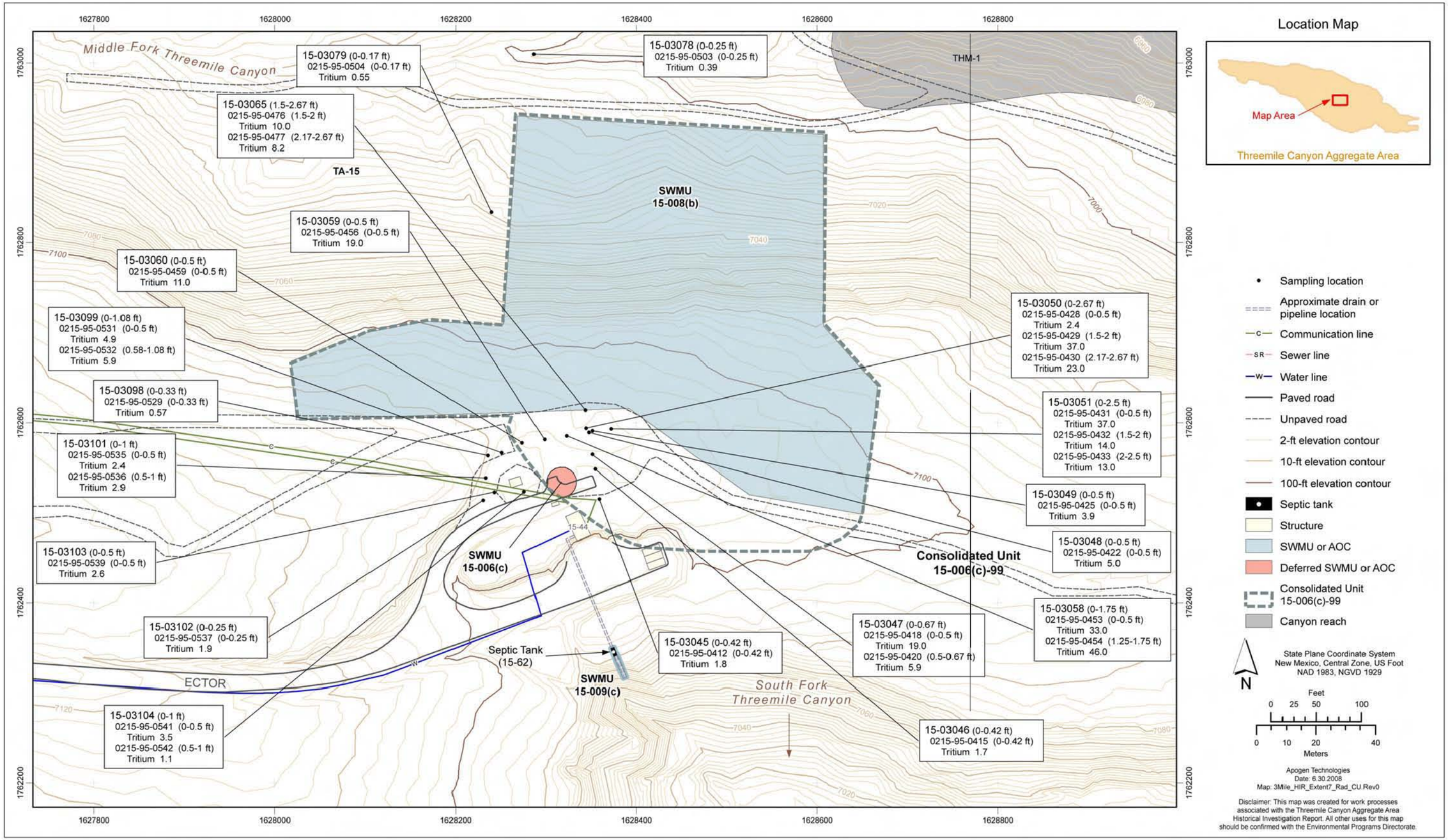

Figure 4.5-4 Radionuclides detected or detected above BVs/FVs at SWMU 15-006(c)

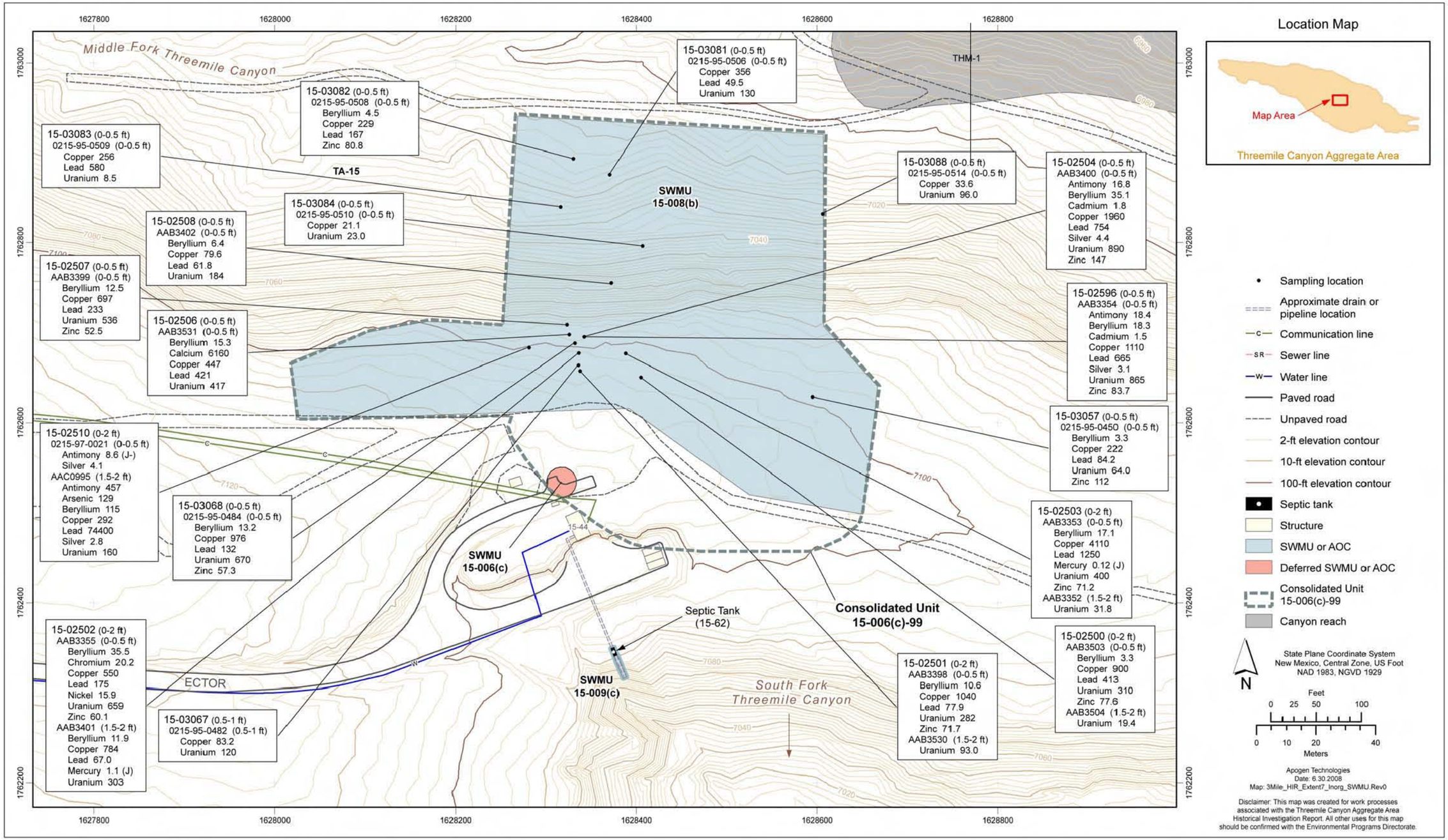

Figure 4.5-5 Inorganic chemicals detected above BVs at SWMU 15-008(b)

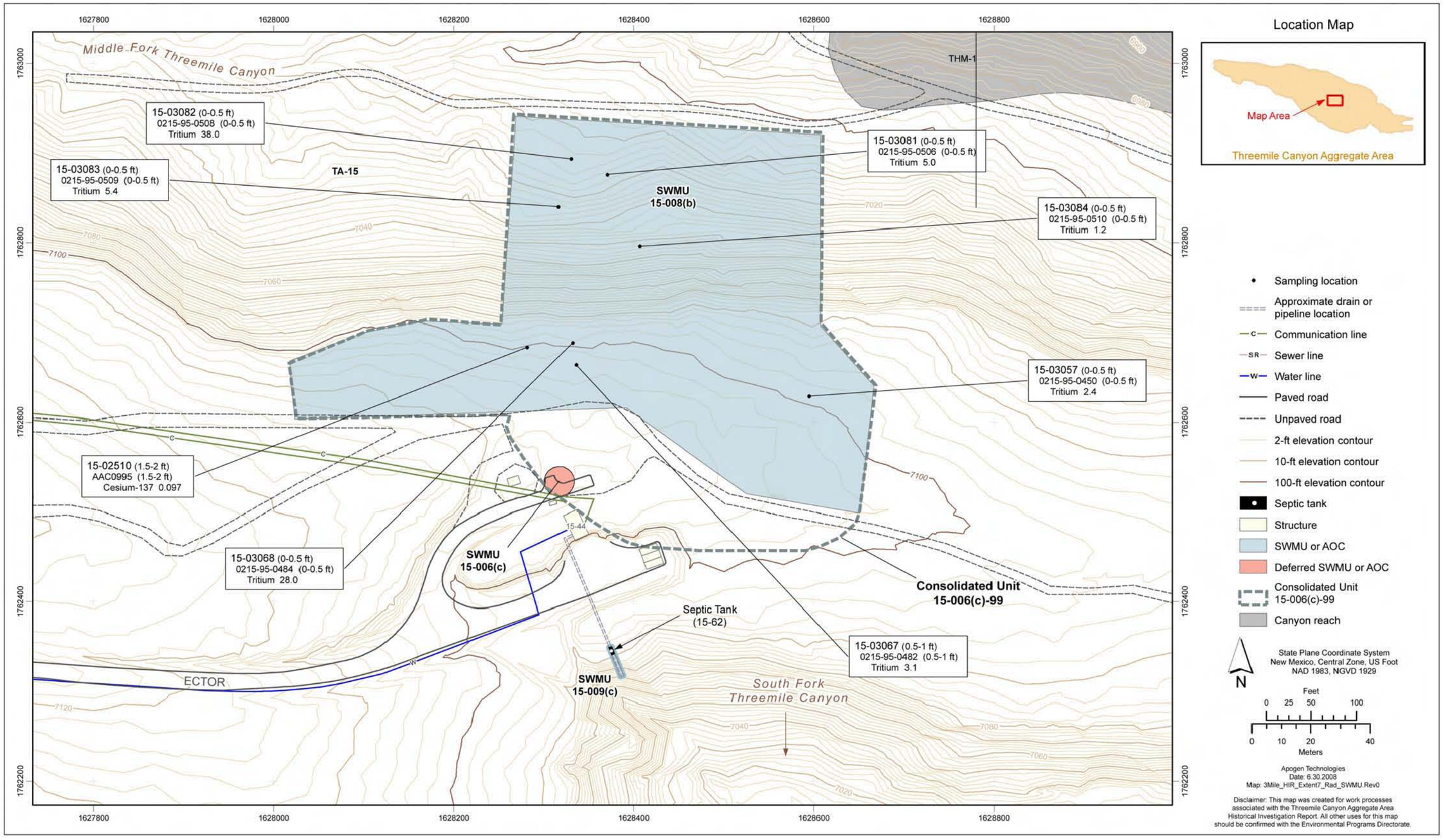

Figure 4.5-6 Radionuclides detected or detected above BVs/FVs at SWMU 15-008(b)

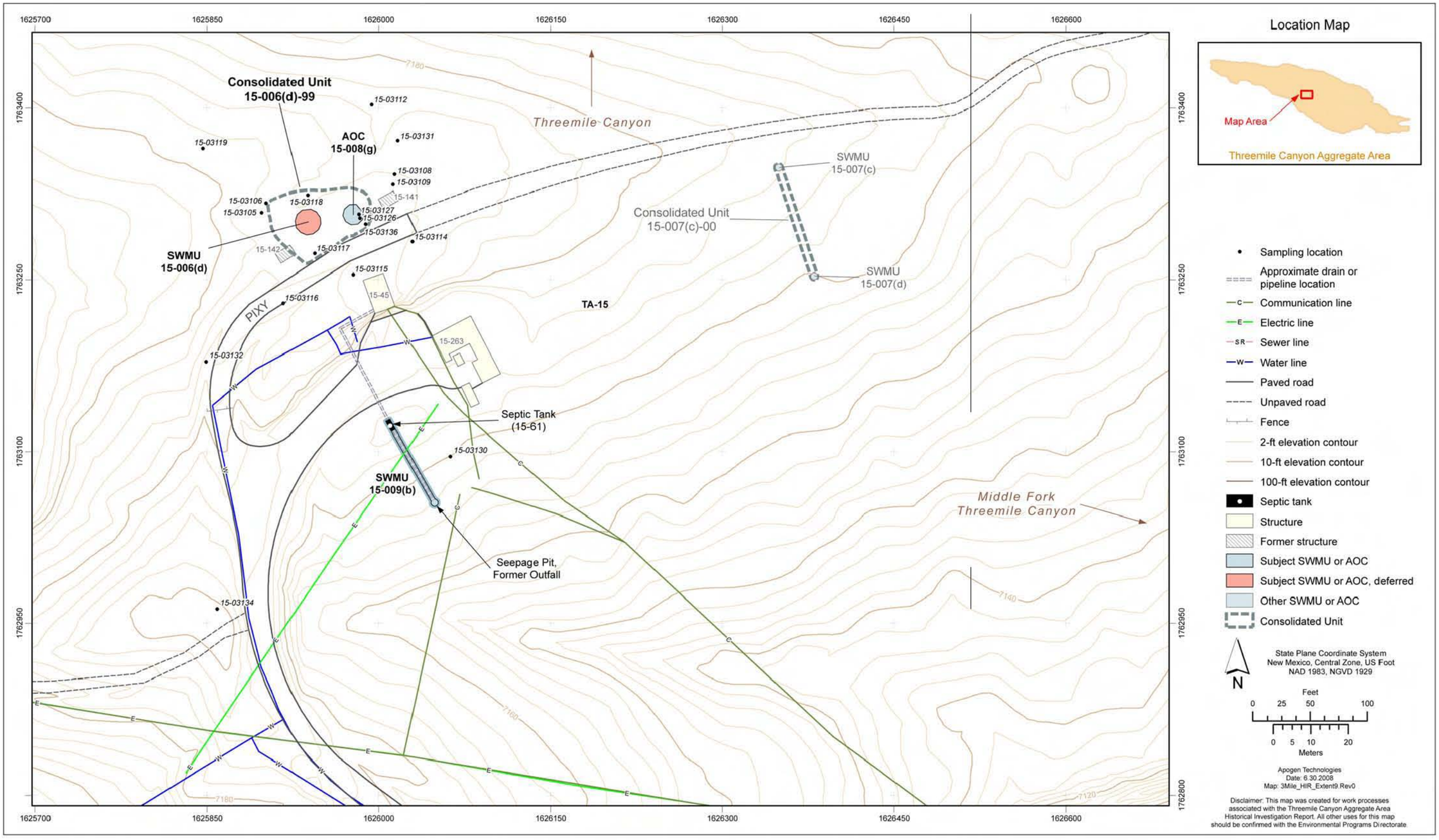

Figure 4.6-1 Site features of Consolidated Unit 15-006(d)-99 [SWMU 15-006(d) and AOC 15-008(g)] and SWMU 15-009(b)

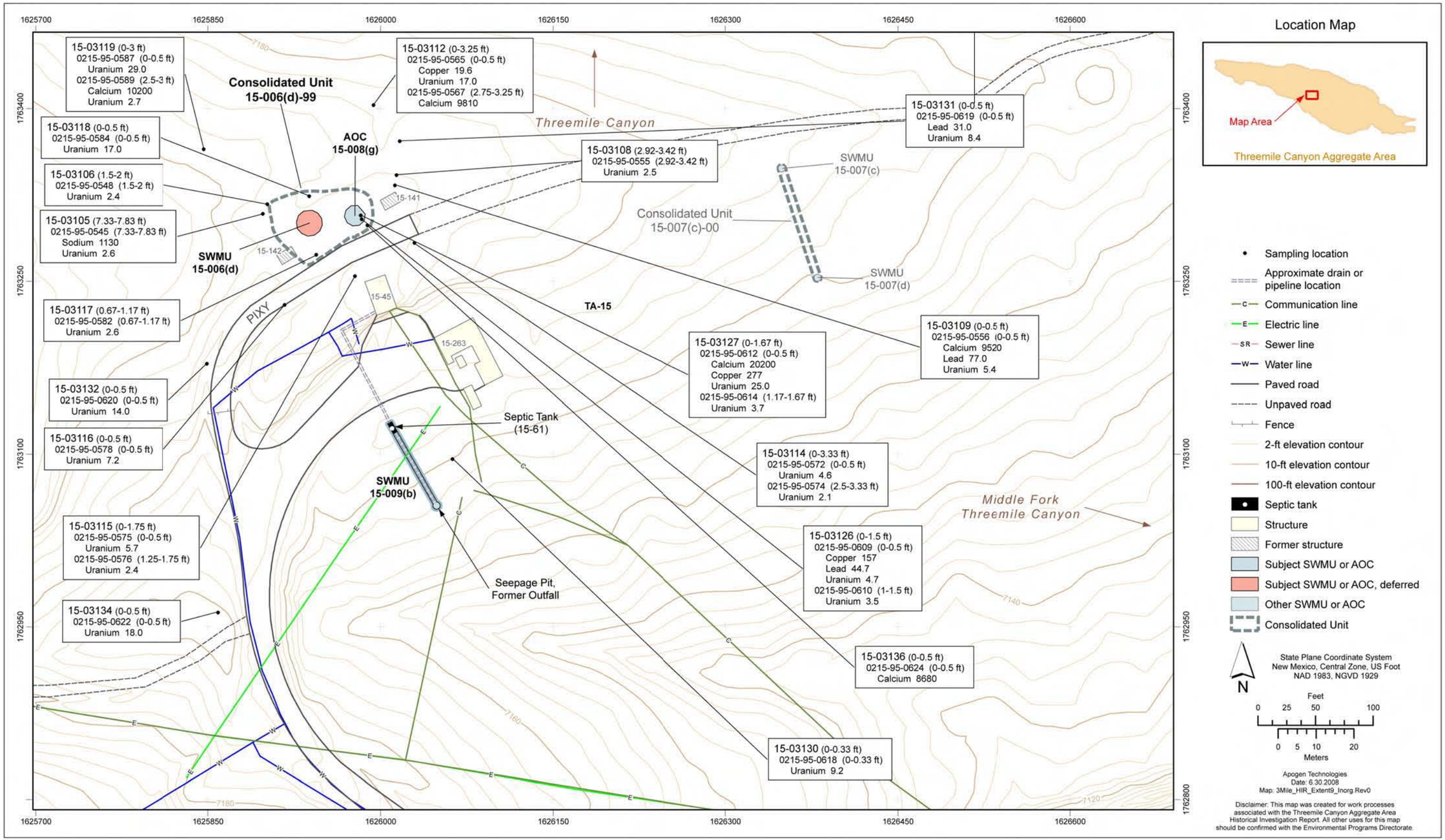

Figure 4.6-2 Inorganic chemicals detected above BVs at Consolidated Unit 15-006(d)-99 [SWMU 15-006(d) and AOC 15-008(g)]

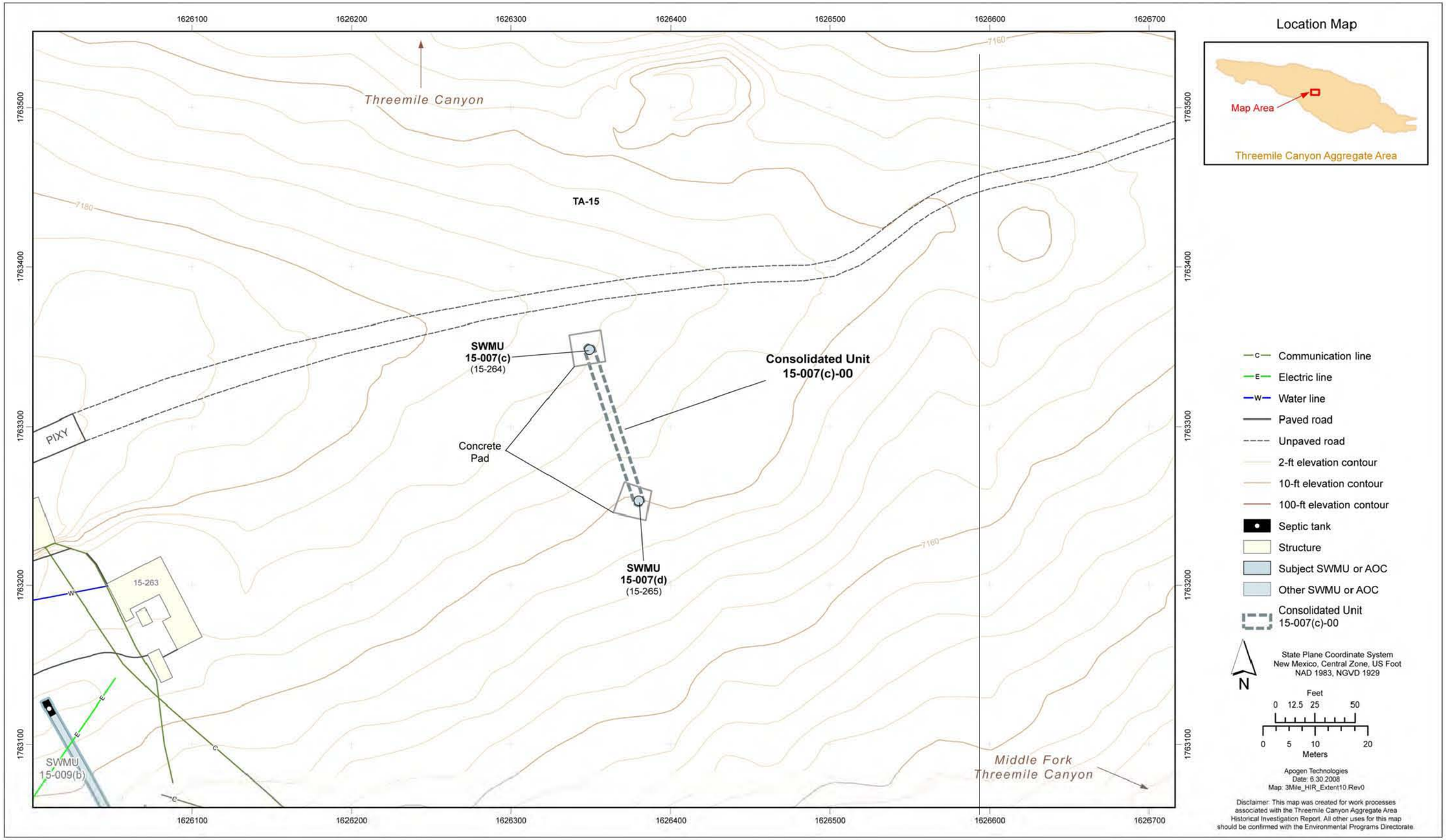

Figure 4.7-1 Site features ofr Consolidated Unit 15-007(c)-00 [SWMUs 15-007(c) and 15-007(d)]

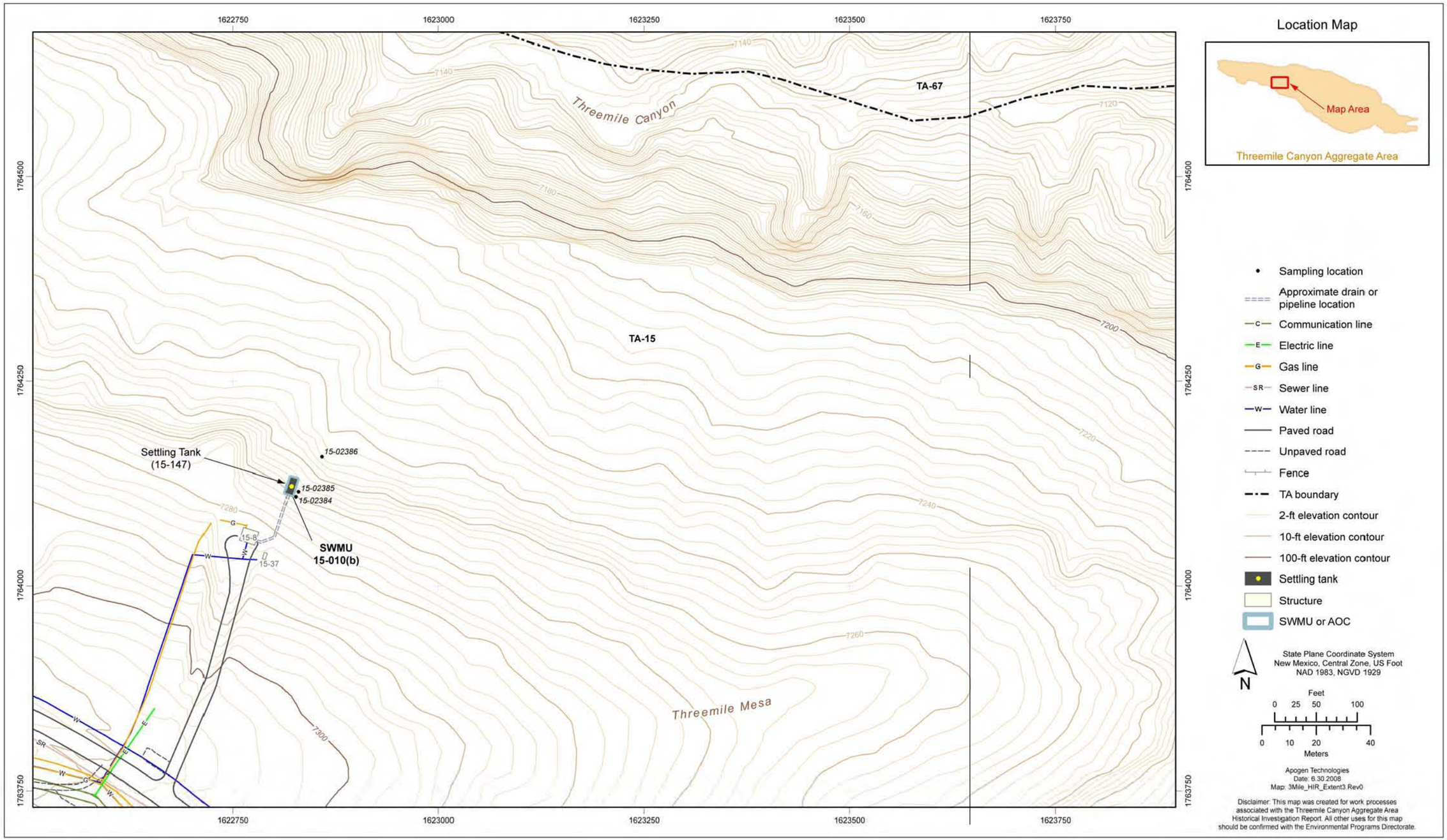

Figure 4.11-1 Site features of SWMU 15-010(b)

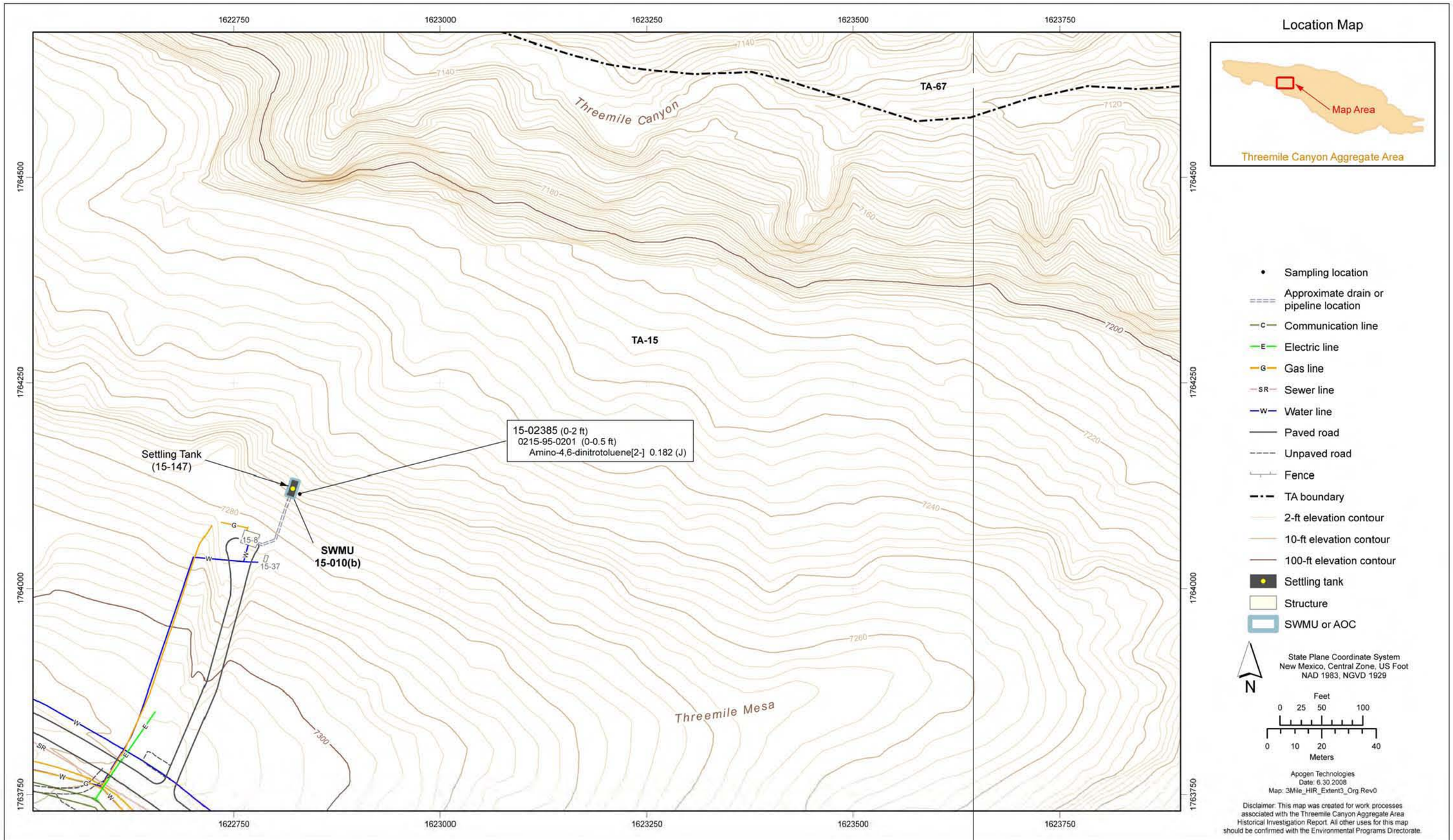

Figure 4.11-2 Organic chemicals detected at SWMU 15-010(b)

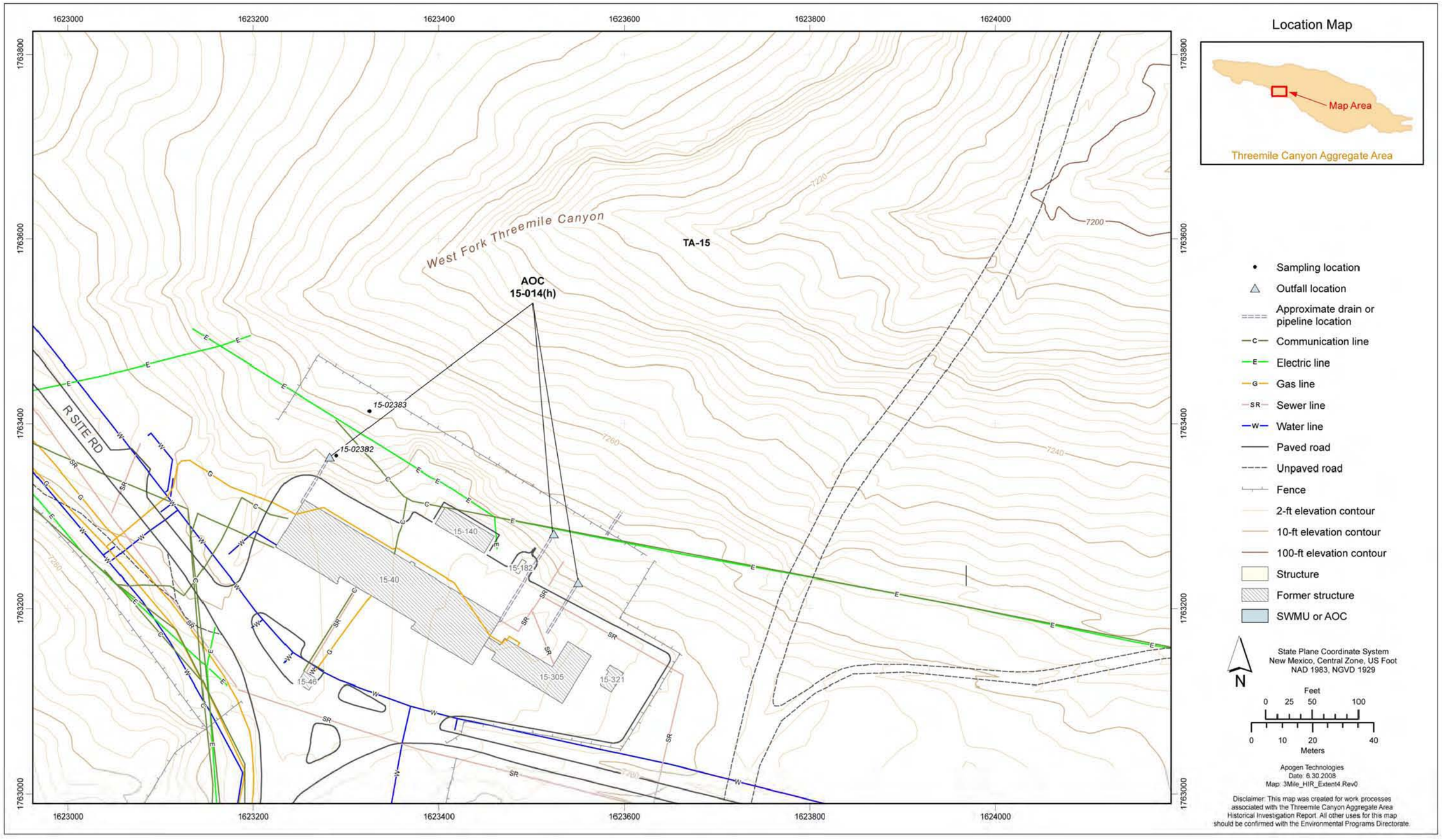

Figure 4.12-1 Site features of AOC 15-014(h)

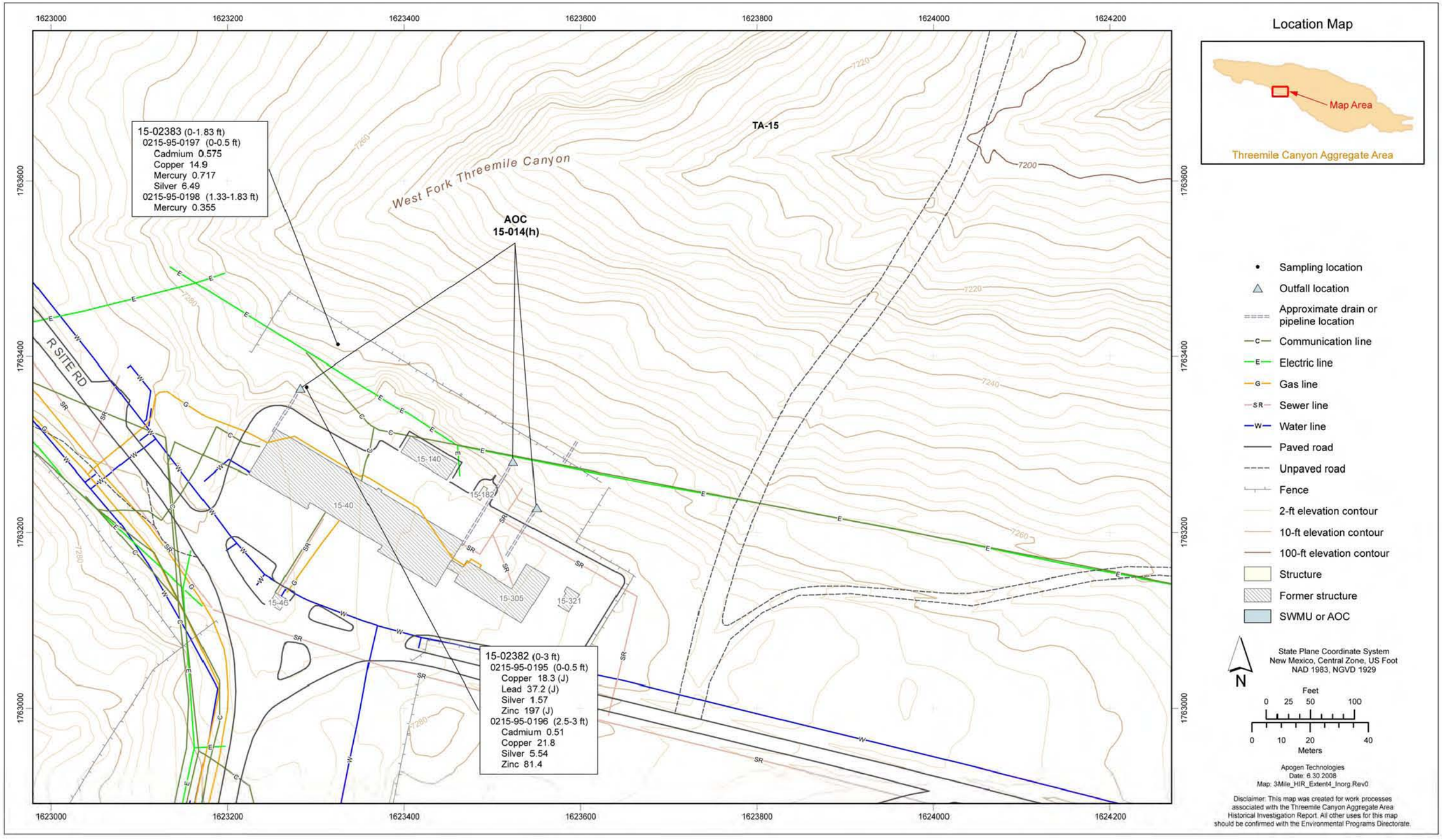

Figure 4.12-2 Inorganic chemicals detected above BVs at AOC 15-014(h)

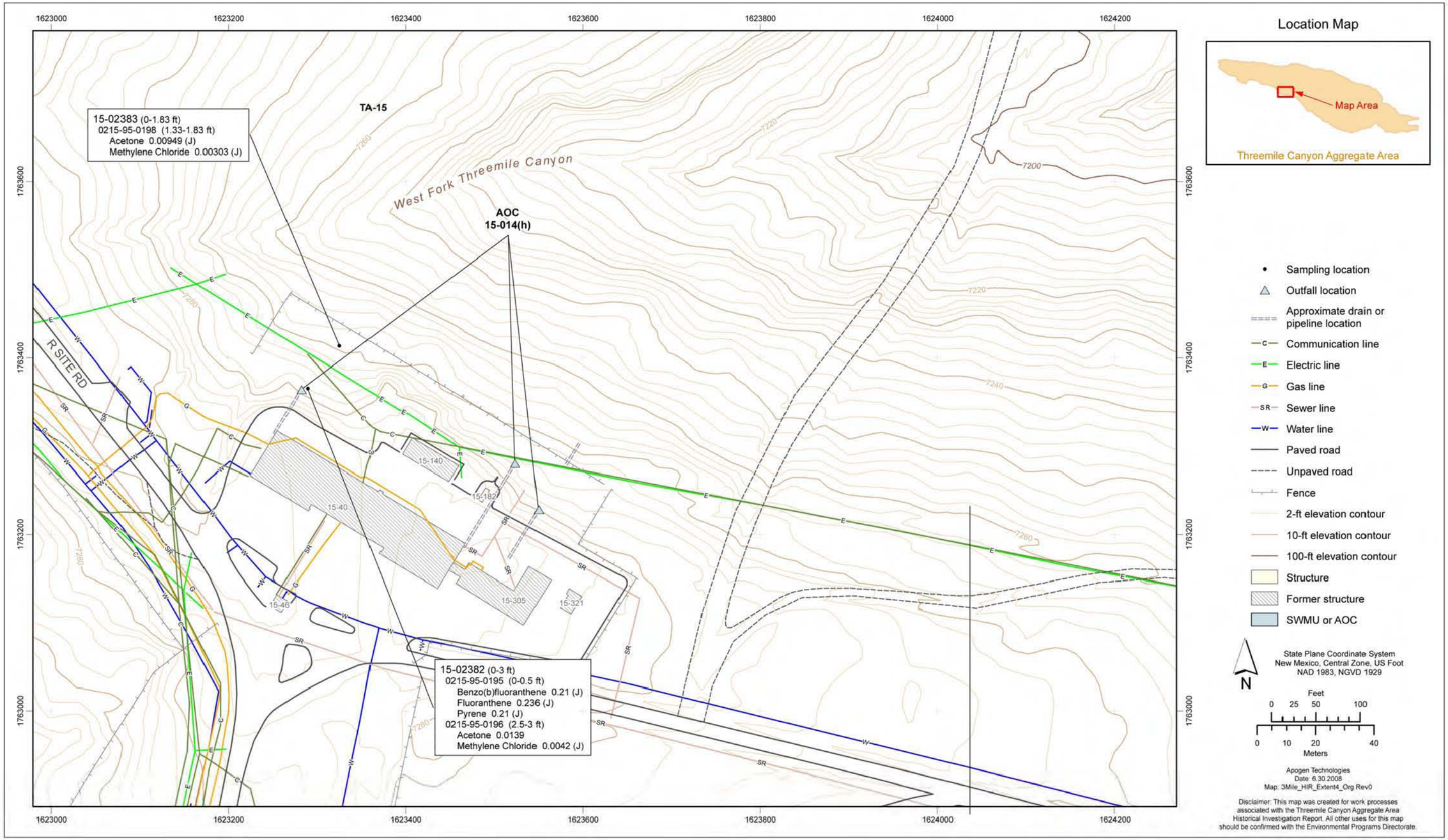

Figure 4.12-3 Organic chemicals detected at AOC 15-014(h)

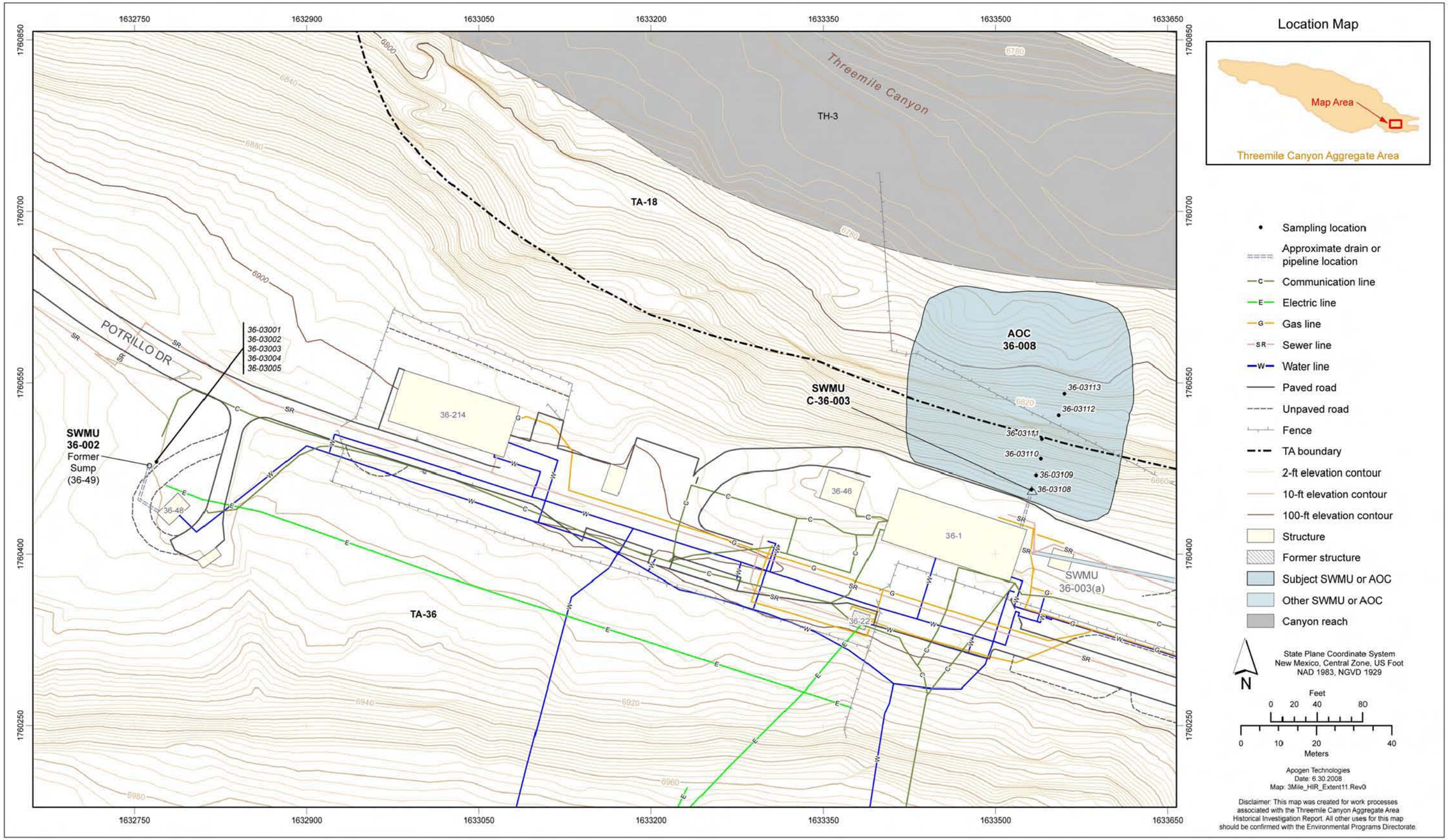

Figure 5.1-1 Site features of SWMUs 36-002 and C-36-003 and AOC 36-008

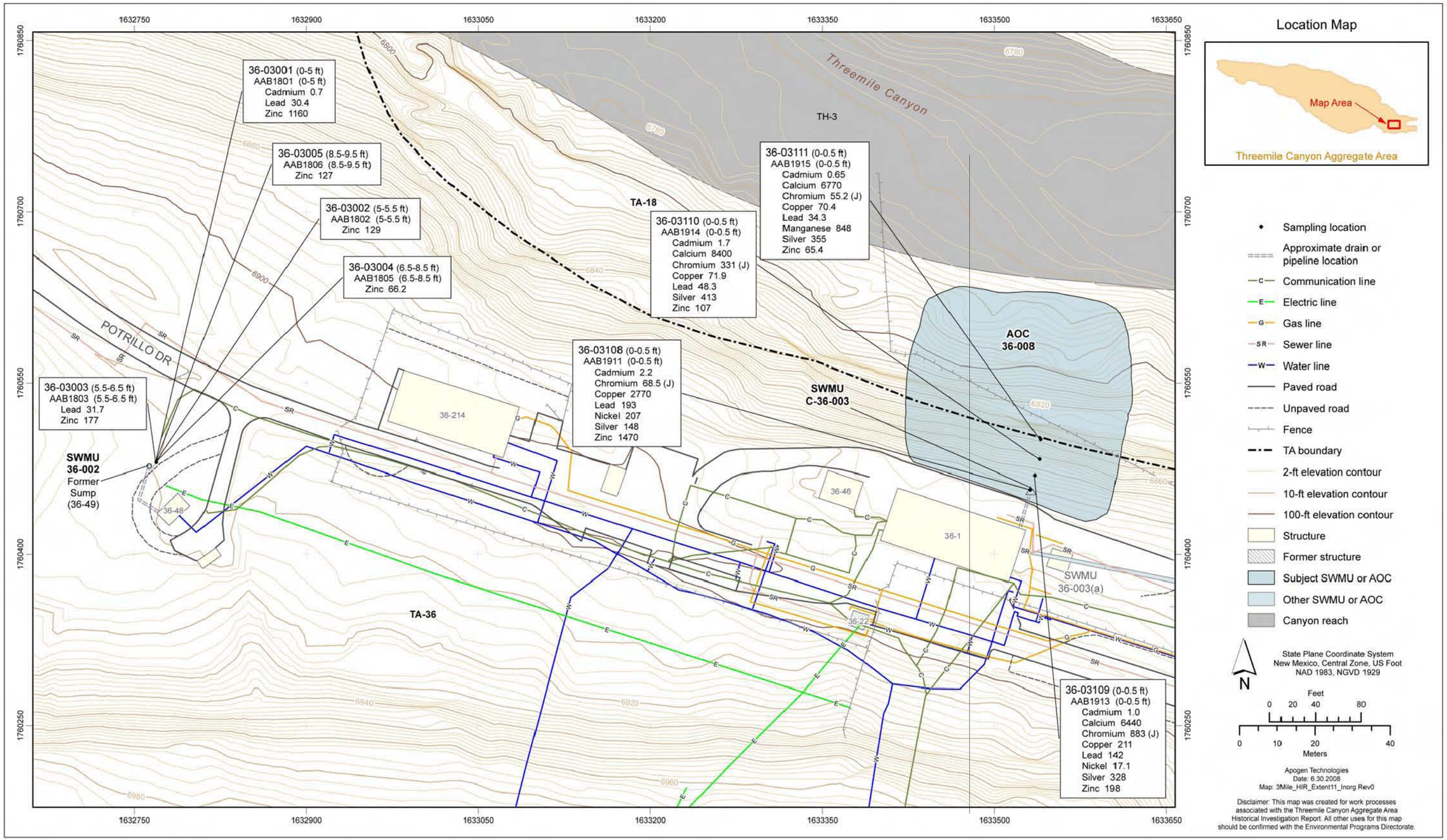

Figure 5.1-2 Inorganic chemicals detected above BVs at SWMUs 36-002 and C-36-003

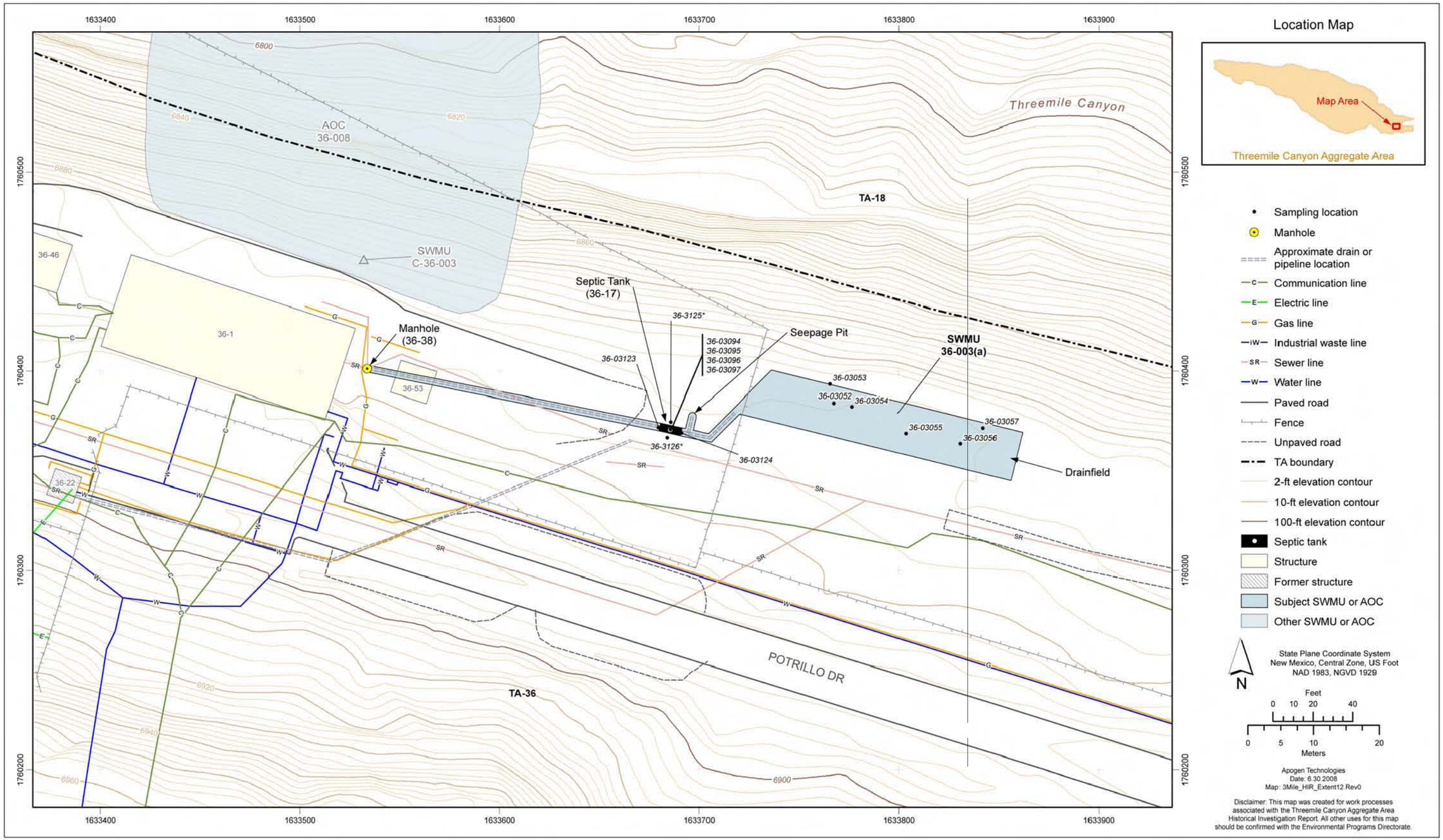

Figure 5.2-1 Site features of SWMU 36-003(a)

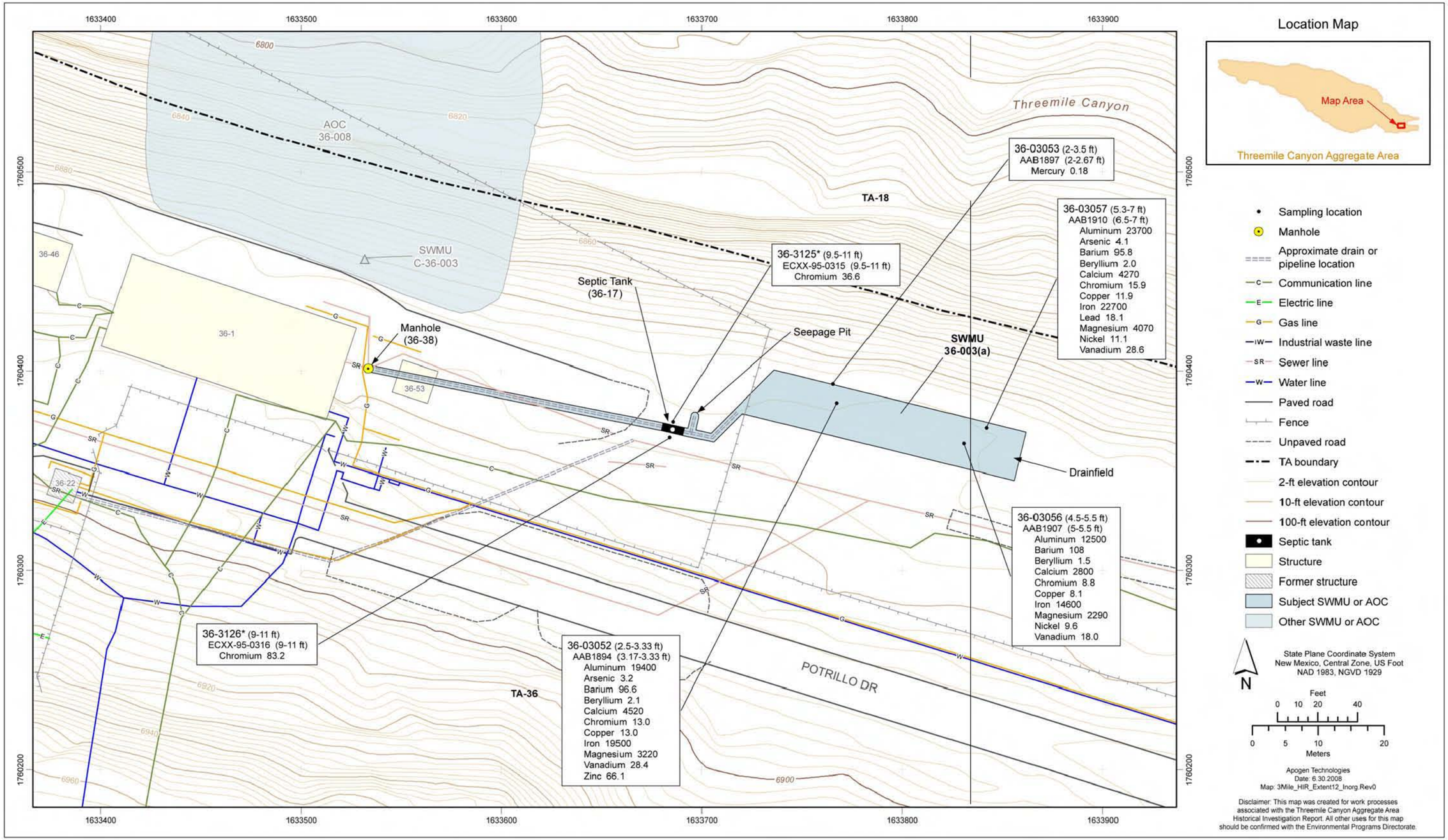

Figure 5.2-2 Inorganic chemicals detected above BVs at SWMU 36-003(a)

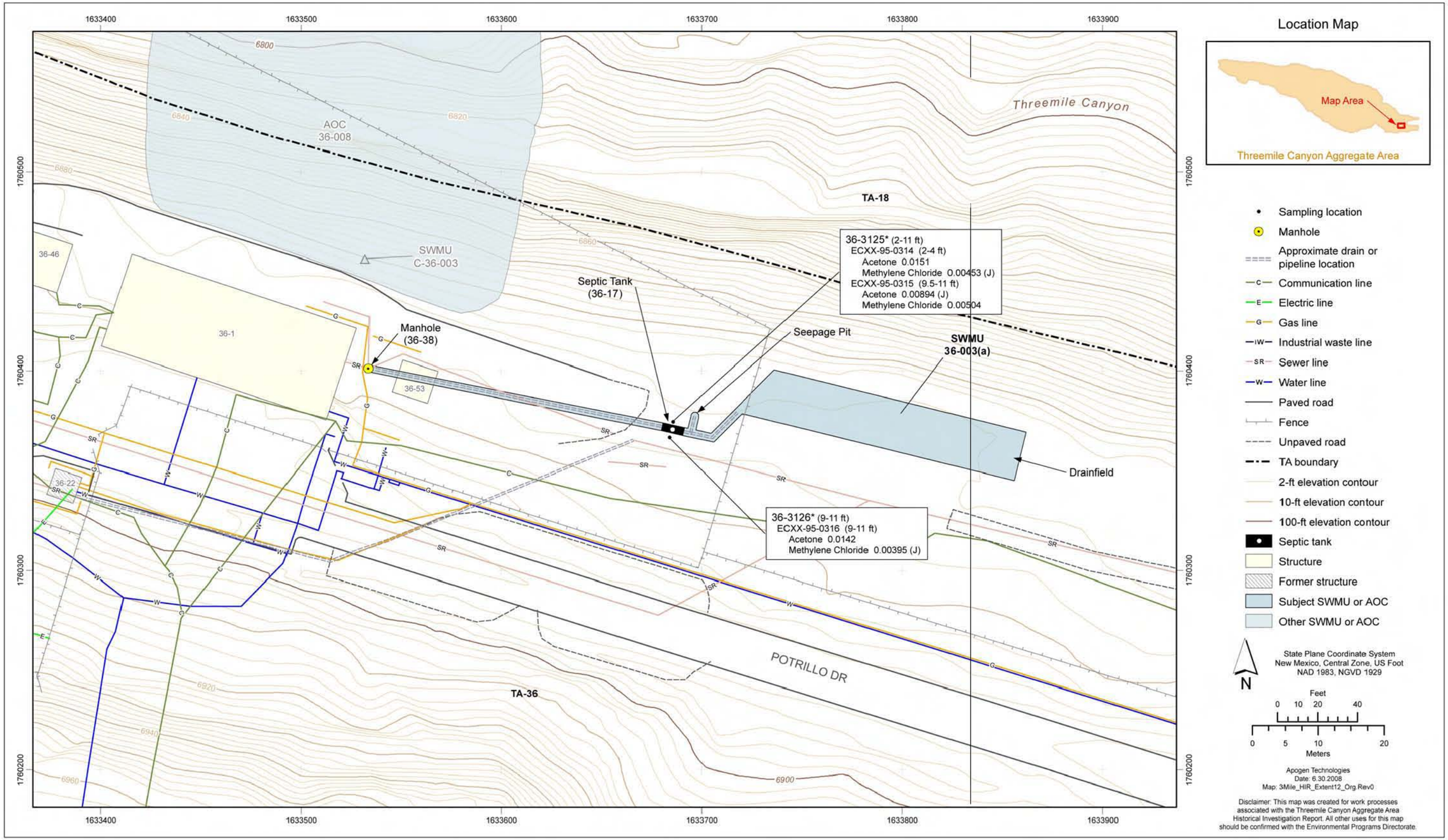

Figure 5.2-3 Organic chemicals detected at SWMU 36-003(a)

Table 1.1-1
SWMUs and AOCs within the Threemile Canyon Aggregate Area

Site ID Number	Subunit	Site Description	Site Status	Reference/HIR Location
TA-12				
Consolidated Unit 12-001(a)-99	SWMU 12-001(a)	Firing pit steel-lined chamber	Under investigation	HIR section 2.1.1
	SWMU 12-001(b)	Firing pit	Under investigation	HIR section 2.1.2
	SWMU 12-002	Potential soil contamination	Under investigation	HIR section 2.1.3
	AOC C-12-005	Former junction box	Under investigation	HIR section 2.1.4
AOC 12-003		A former gas cylinder storage area located on the southern side of the unimproved road and about one mile east of the firing pit (structure 12-4)	NFA approved 01/21/05	EPA 2005, 088464
AOC 12-004(a)		Radiation test facility	Under investigation	HIR section 2.2
AOC 12-004(b)		Pipe	Under investigation	HIR section 2.3
AOC C-12-001		Potential soil contamination associated with former building	Under investigation	HIR section 2.4
AOC C-12-002		Potential soil contamination associated with former building	Under investigation	HIR section 2.5
AOC C-12-003		Potential soil contamination associated with former building	Under investigation	HIR section 2.6
AOC C-12-004		Potential soil contamination associated with former building	Under investigation	HIR section 2.7
AOC C-12-006		A duplicate reporting of one of the elements of AOC 12-004(a)	NFA approved 01/21/05	EPA 2005, 088464
TA-14				
AOC C-14-006		Potential soil contamination associated with former building	Under investigation	HIR section 3.1
TA-15				
SWMU 15-004(a)		Firing site C	Deferred per Table IV-2 of the Consent Order	HIR section 4.1
AOC 15-004(d)		Firing platforms	Under investigation	HIR section 4.2
SWMU 15-004(e)		A manhole bunker for electric cables located 140 ft south and 115 ft east of the southwestern corner of building 15-41	NFA approved 01/21/05	EPA 2005, 088464
AOC 15-005(c)		Container storage area (R-41)	Under investigation	HIR section 4.3
SWMU 15-006(b)		Ector firing site	Deferred per Table IV-2 of the Consent Order	HIR section 4.4

Table 1.1-1 (continued)

Site ID Number	Subunit	Site Description	Site Status	Reference/HIR Location
Consolidated Unit 15-006(c)-99	SWMU 15-006(c)	Firing site R-44	Deferred per Table IV-2 of the Consent Order	HIR section 5.1
	SWMU 15-008(b)	Surface disposal area associated with firing site R-44	Under investigation	HIR section 4.5.2
Consolidated Unit 15-006(d)-99	SWMU 15-006(d)	Firing site R-45	Deferred per Table IV-2 of the Consent Order	HIR section 4.6.1
	AOC 15-008(g)	Surface disposal area associated with firing site R-45	Under investigation	HIR section 4.6.2
Consolidated Unit 15-007(c)-00	SWMU 15-007(c)	Shaft	Under investigation	HIR section 4.7.1
	SWMU 15-007(d)	Shaft	Under investigation	HIR section 4.7.2
SWMU 15-009(b)		Septic System	Under investigation	HIR section 4.8
SWMU 15-009(c)		Septic System	Under investigation	HIR section 4.9
AOC 15-009(d)		A building drain on the north side of R-40 (building 15-40)	NFA approved 01/21/05	EPA 2005, 088464
SWMU 15-009(h)		Septic System	Under investigation	HIR section 4.10
SWMU 15-010(b)		Settling tank	Under investigation	HIR section 4.11
AOC 15-014(f)		A drainline for cooling water from building 15-263 and an associated outfall draining into Threemile Canyon. The outfall discharged once-through cooling water only and was NPDES-permitted (04A121).	NFA approved 01/21/05	EPA 2005, 088464
AOC 15-014(h)		Outfalls from building 15-40	Under investigation	HIR section 4.12
SWMU 15-014(m)		An NPDES-permitted outfall that handled noncontact cooling water from building 15-306	Removed from Module VIII of the Hazardous Waste Facility Permit (HWFP), 12/23/98	NMED 1998, 063042
AOC C-15-003		A pile of black granular material located north of structure 15-45.	NFA approved 01/21/05	EPA 2005, 088464
AOC C-15-009		An underground butane storage tank (structure 15-48) located a few feet north and west of building 15-8.	NFA approved 01/21/05	EPA 2005, 088464

Table 1.1-1 (continued)

Site ID Number	Subunit	Site Description	Site Status	Reference/HIR Location
TA-18				
SWMU 18-007		An armored vehicle suspected to have been buried west of structure 18-32. Field investigations, including an extensive electromagnetic survey, and archival information were unable to verify the burial of the armored vehicle at the suspected locations.	Removed from Module VIII of the HWFP, 05/02/01	NMED 2001, 070010
TA-36				
SWMU 36-002		Former sump	Under investigation	HIR section 5.1
SWMU 36-003(a)		Septic system	Under investigation	HIR section 5.2
AOC 36-003(d)		A septic system that was first used in 1988 to serve building 36-1 and is comprised of a 1,000-gal. septic tank (structure 36-100) and associated leach field. The system was built to handle sanitary waste from transportable structures 36-81 and 36-84.	NFA approved 01/21/05	EPA 2005, 088464
AOC 36-008		Surface disposal area located near building 36-1	Under investigation	HIR section 5.3
SWMU C-36-003		Outfall from building 36-1	Under investigation	HIR section 5.4

Note: Shading denotes NFA approved.

Table 2.1-1
Samples Collected and Analyses Requested at SWMU 12-001(a)

Sample ID	Location ID	Depth (ft)	Media	Gamma Spectroscopy	HE	Isotopic Uranium	Metals	Uranium
0212-95-0001	12-01001	0.00–0.08	Soil	68714	-*	68714	-	68716
0212-95-0002	12-01002	0.00–0.06	Soil	68714	-	68714	-	68716
0212-95-0003	12-01003	0.00–0.50	Soil	69743	69881	69743	69591, 70012	69761
0212-95-0007	12-01006	0.00–0.41	Soil	69743	69881	69743	69591, 70012	69761

* - = Analyses not requested.

Table 2.1-2
Inorganic Chemicals above BVs at SWMU 12-001(a)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Thallium	Uranium
Soil BV				**0.83**	**0.73**	**1.82**
0212-95-0003	12-01003	0.00–0.50	Soil	0.971 (U)	0.971 (U)	5.47
0212-95-0007	12-01006	0.00–0.41	Soil	-*	0.952 (U)	12.3

Notes: All values in mg/kg. BVs are provided in LANL 1998, 059730.

* - = Not detected or not above BV.

Table 2.1-3
Radionuclides Detected or Detected above BVs/FVs at SWMU 12-001(a)

Sample ID	Location ID	Depth (ft)	Media	Uranium-238
Soil BV				**2.29**
0212-95-0007	12-01006	0.00–0.41	Soil	8.04

Notes: All values in pCi/g. BVs/FVs are provided in LANL 1998, 059730.

Table 2.1-4
Samples Collected and Analyses Requested at SWMU 12-001(b)

Sample ID	Location ID	Depth (ft)	Media	Gamma Spectroscopy	HE	Isotopic Uranium	Metals	Uranium
0212-95-0011	12-01009	0.00–0.50	Soil	69743	69881	69743	69704, 70012, 70754	69761
0212-95-0012	12-01009	1.50–2.00	Soil	69743	69881	69743	69704, 70012, 70754	69761
0212-95-0013	12-01010	0.00–0.50	Soil	69743	69881	69743	69704, 70012	69761
0212-95-0018	12-01014	0.00–0.25	Soil	69743	70436, 70703	69743	70012, 70317	69761

Table 2.1-5
Inorganic Chemicals above BVs at SWMU 12-001(b)

Sample ID	Location ID	Depth (ft)	Media	Copper	Thallium	Uranium
Soil BV				**14.7**	**0.73**	**1.82**
0212-95-0011	12-01009	0.00–0.50	Soil	-*	-	459
0212-95-0012	12-01009	1.50–2.00	Soil	-	0.917 (U)	42.8
0212-95-0013	12-01010	0.00–0.50	Soil	63.4	0.971 (U)	13.6
0212-95-0018	12-01014	0.00–0.25	Soil	-	0.962 (U)	4.46

Notes: All values in mg/kg. BVs are provided in LANL 1998, 059730.

* - = Not detected or not above BV.

Table 2.1-6
Radionuclides Detected or Detected above BVs/FVs at SWMU 12-001(b)

Sample ID	Location ID	Depth (ft)	Media	Uranium-235	Uranium-238
Soil BV				**0.2**	**2.29**
0212-95-0011	12-01009	0.00–0.50	Soil	16.6	264
0212-95-0012	12-01009	1.50–2.00	Soil	1.72	26.9
0212-95-0018	12-01014	0.00–0.25	Soil	-*	4.48

Notes: All values in pCi/g. BVs/FVs are provided in LANL 1998, 059730.
*- = Not detected or not above BV/FV.

Table 2.1-7
Samples Collected and Analyses Requested at AOC C-12-005

Sample ID	Location ID	Depth (ft)	Media	Uranium
0212-95-0028	12-01024	0.00–0.50	Soil	69304
0212-95-0029	12-01025	0.00–0.50	Soil	69304

Table 2.1-8
Inorganic Chemicals above BVs at AOC C-12-005

Sample ID	Location ID	Depth (ft)	Media	Uranium
Soil BV				**1.82**
0212-95-0028	12-01024	0.00–0.50	Soil	3.8
0212-95-0029	12-01025	0.00–0.50	Soil	3.43

Notes: All values in mg/kg. BVs are provided in LANL 1998, 059730.

Table 2.2-1
Samples Collected and Analyses Requested at AOC 12-004(a)

Sample ID	Location ID	Depth (ft)	Media	Gamma Spectroscopy	HE	Isotopic Uranium	Metals
0212-95-0030	12-01026	0.00–0.33	Soil	69743	70436	69743	69704, 70012, 70754
0212-95-0034	12-01029	0.00–0.50	Soil	69743	70436	69743	69704, 70012, 70754
0212-95-0035	12-01030	0.00–0.50	Soil	69743	70703	69743	69704, 70012, 70754
0212-95-0037	12-01032	0.00–0.50	Soil	69743	70703	69743	69704, 70012, 70754
0212-95-0041	12-01036	0.00–0.25	Soil	69743	70703	69743	69704, 70012, 70754
0212-95-0044	12-01039	0.00–0.50	Soil	69743	70703	69743	69704, 70012, 70754

Table 2.2-2
Inorganic Chemicals above BVs at AOC 12-004(a)

Sample ID	Location ID	Depth (ft)	Media	Cadmium	Mercury	Thallium	Zinc
Soil BV				**0.4**	**0.1**	**0.73**	**48.8**
0212-95-0030	12-01026	0.00–0.33	Soil	-*	-	0.926 (U)	-
0212-95-0034	12-01029	0.00–0.50	Soil	-	-	0.962 (U)	-
0212-95-0035	12-01030	0.00–0.50	Soil	-	-	0.971 (U)	174
0212-95-0037	12-01032	0.00–0.50	Soil	-	-	0.962 (U)	-
0212-95-0041	12-01036	0.00–0.25	Soil	0.472 (U)	-	0.943 (U)	-
0212-95-0044	12-01039	0.00–0.50	Soil	-	0.156	0.952 (U)	-

Notes: All values in mg/kg. BVs are provided in LANL 1998, 059730.

* - = Not detected above BV.

Table 2.3-1
Samples Collected and Analyses Requested at AOC 12-004(b)

Sample ID	Location ID	Depth (ft)	Media	Gamma Spectroscopy	HE	Isotopic Uranium	Metals	SVOCs
0212-95-0045	12-01040	0.00–0.50	Soil	69743	70703	69743	69704, 70012, 70754	69786
0212-95-0046	12-01040	2.00–2.50	Soil	69743	70703	69743	69704, 70012, 70754	69786

Table 2.3-2
Inorganic Chemicals above BVs at AOC 12-004(b)

Sample ID	Location ID	Depth (ft)	Media	Lead	Mercury	Thallium
Soil BV				**22.3**	**0.1**	**0.73**
0212-95-0045	12-01040	0.00–0.50	Soil	33.8	-*	0.962 (U)
0212-95-0046	12-01040	2.00–2.50	Soil	-	0.155	0.935 (U)

Notes: All values in mg/kg. BVs are provided in LANL 1998, 059730.

* - = Not detected above BV.

Table 2.4-1
Samples Collected and Analyses Requested at AOC C-12-001

Sample ID	Location ID	Depth (ft)	Media	Gamma Spectroscopy	Isotopic Uranium	Uranium
0212-95-0020	12-01016	0.00–0.41	Soil	69318	69318	69304

Table 2.4-2
Inorganic Chemicals above BVs at AOC C-12-001

Sample ID	Location ID	Depth (ft)	Media	Uranium
Soil BV				**1.82**
0212-95-0020	12-01016	0.00–0.41	Soil	3.39

Notes: All values in mg/kg. BVs are provided in LANL 1998, 059730.

Table 2.5-1
Samples Collected and Analyses Requested at AOC C-12-002

Sample ID	Location ID	Depth (ft)	Media	Uranium
0212-95-0022	12-01018	0.00–0.50	Soil	69304

Table 2.5-2
Inorganic Chemicals above BVs at AOC C-12-002

Sample ID	Location ID	Depth (ft)	Media	Uranium
Soil BV				**1.82**
0212-95-0022	12-01018	0.00–0.50	Soil	2.79

Notes: All values in mg/kg. BVs are provided in LANL 1998, 059730.

Table 2.7-1
Samples Collected and Analyses Requested at AOC C-12-004

Sample ID	Location ID	Depth (ft)	Media	SVOCs
0212-95-0027	12-01023	0.00–0.50	Soil	69895

Table 4.1-1
Samples Collected and Analyses Requested at SWMU 15-004(a)

Sample ID	Location ID	Depth (ft)	Media	Gamma Spectroscopy	Isotopic Uranium	Metals	Uranium
1991 Sampling							
AAC0984	15-02281	0.00–0.50	Soil	20383	-*	20347, 21018	20383
1995 Sampling							
AAB3333	15-02100	0.00–0.50	Soil	19511	-	18673	19511
AAB3451	15-02100	1.50–2.00	Soil	19509	-	18681	19509
AAB3317	15-02101	0.00–0.50	Soil	20106	20106	20293, 20984	20106
AAB3461	15-02112	0.00–0.50	Soil	19509	-	18681	19509
AAB3388	15-02253	0.00–0.50	Soil	-	-	18454, 18880	-
AAB3394	15-02253	1.50–2.00	Soil	-	18454, 18880	-	-
AAC0993	15-02255	0.00–0.50	Soil	-	20347, 21018	-	-
AAB3358	15-02257	0.00–0.50	Soil	-	18454, 18880	-	-
AAB3362	15-02257	1.50–2.00	Soil	-	18454, 18880	-	-
AAC0926	15-02263	0.00–0.50	Soil	-	20347, 21018	-	-
AAB3386	15-02264	0.00–0.50	Soil	-	18454, 18880	-	-
AAB3396	15-02264	1.50–2.00	Soil	-	18454, 18880	-	-
AAB3387	15-02268	0.00–0.50	Soil	-	18454, 18880	-	-
AAB3395	15-02268	1.50–2.00	Soil	-	18454, 18880	-	-

* - = Analyses not requested.

Table 4.1-2
Inorganic Chemicals above BVs at SWMU 15-004(a)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Cadmium	Barium	Copper	Lead	Mercury	Nickel	Thallium	Uranium
Soil BV				**0.83**	**0.4**	**295**	**14.7**	**22.3**	**0.1**	**15.4**	**0.73**	**1.82**
1991 Results												
AAC0984	15-02281	0.00–0.50	Soil	-[a]	-	300	20.6	32.4	-	-	1.1 (U)	6.4
1995 Results												
AAB3333	15-02100	0.00–0.50	Soil	-	-	-	15.4 (J)	-	-	-	-	23.6
AAB3451	15-02100	1.50–2.00	Soil	3.9 (U)	1 (U)	-	-	-	0.11 (U)	-	-	3.17
AAB3317	15-02101	0.00–0.50	Soil	-	-	NA[b]	NA	26	-	NA	NA	45.6 (J)
AAB3461	15-02112	0.00–0.50	Soil	3.8 (U)	0.96 (U)	-	49.4	48.5	0.27 (J)	-	-	66.3
AAB3388	15-02253	0.00–0.50	Soil	-	-	-	-	24.9 (J)	-	-	-	24.7 (J)
AAB3394	15-02253	1.50–2.00	Soil	-	-	-	-	-	-	-	-	4.1 (J)
AAC0993	15-02255	0.00–0.50	Soil	-	-	-	-	-	-	-	0.97 (U)	6.75
AAB3358	15-02257	0.00–0.50	Soil	-	-	-	25.9	-	-	-	-	32.6 (J)
AAB3362	15-02257	1.50–2.00	Soil	-	-	-	-	-	-	-	-	3.8 (J)
AAC0926	15-02263	0.00–0.50	Soil	-	-	-	62.2	40	-	18.6	0.86 (U)	29.2
AAB3386	15-02264	0.00–0.50	Soil	-	-	-	20.9	25.1 (J)	-	-	-	21.7 (J)
AAB3396	15-02264	1.50–2.00	Soil	-	-	-	-	-	-	-	4.9 (U)	3.3 (J)
AAB3387	15-02268	0.00–0.50	Soil	-	-	-	30.3	42.3 (J)	-	-	4.7 (U)	36.9 (J)
AAB3395	15-02268	1.50–2.00	Soil	-	-	-	-	23 (J)	-	-	-	4.8 (J)

Notes: All values in mg/kg. BVs are provided in LANL 1998, 059730.

[a] - = Not detected above BV.

[b] NA = Not analyzed.

Table 4.1-3
Radionuclides Detected or Detected above BVs/FVs at SWMU 15-004(a)

Sample ID	Location ID	Depth (ft)	Media	Europium-152	Uranium-235
Soil BV				**na**[a]	**0.2**
AAB3317	15-02101	0.00–0.50	Soil	-[b]	0.403
AAB3461	15-02112	0.00–0.50	Soil	0.223	-

Notes: All values in pCi/g. BVs/FVs are provided in LANL 1998, 059730.

[a] na = Not available.

[b] - = Not detected above BV/FV.

Table 4.3-1
Samples Collected and Analyses Requested at AOC 15-005(c)

Sample ID	Location ID	Depth (ft)	Media	Metals	Uranium
AAB3493	15-02275	0.00–0.33	Soil	18164, 18166, 20984	-*
0215-95-0183	15-02275	1.50–2.00	Soil	71206, 71524	70725
AAB3494	15-02276	0.00–0.50	Soil	18164, 18166, 20984	-
0215-95-0184	15-02276	1.50–2.00	Soil	71206, 71524	70725

* - = Analyses not requested.

Table 4.3-2
Inorganic Chemicals above BVs at AOC 15-005(c)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Cadmium	Thallium	Uranium
Soil BV				**0.83**	**0.4**	**0.73**	**1.82**
AAB3493	15-02275	0.00–0.33	Soil	NA[a]	NA	NA	9.8
0215-95-0183	15-02275	1.50–2.00	Soil	-[b]	0.445 (J)	-	2.46
AAB3494	15-02276	0.00–0.50	Soil	NA	NA	NA	9.3
0215-95-0184	15-02276	1.50–2.00	Soil	0.977 (U)	-	0.977 (U)	3.71

Notes: All values in mg/kg. BVs are provided in LANL 1998, 059730.

[a] NA = Not analyzed.

[b] - = Not detected above BV.

Table 4.5-1
Samples Collected and Analyses Requested at SWMU 15-006(c)

Sample ID	Location ID	Depth (ft)	Media	HE	Metals	Uranium	Tritium
0215-95-0412	15-03045	0.00–0.42	Soil	-*	6528783, 6528794, 6528811, 6528812, 6528813, 6528825	6528402	6528401
0215-95-0133	15-03045	0.00–0.50	Soil	6530014	-	-	-
0215-95-0415	15-03046	0.00–0.42	Soil	-	6528783, 6528811, 6528812, 6528813, 6528825, 6528863	6528402	6528401
0215-95-0009	15-03046	0.00–0.50	Soil	6528913	-	-	-
0215-95-0134	15-03046	0.58–1.08	Soil	6530014	6529862, 6529881, 6529952	6529824	-
0215-95-0010	15-03047	0.00–0.50	Soil	6528913	-	-	-
0215-95-0011	15-03047	0.00–0.50	Soil	6528913	-	-	-
0215-95-0418	15-03047	0.00–0.50	Soil	-	6528783, 6528811, 6528812, 6528813, 6528825, 6528863	6528402	6528401
0215-95-0012	15-03047	0.50–0.67	Soil	6528913	-	-	-
0215-95-0420	15-03047	0.50–0.67	Soil	-	6528783, 6528794, 6528811, 6528812, 6528813, 6528825	6528402	6528401
0215-95-0422	15-03048	0.00–0.50	Soil	6528748	6528349, 6528510, 6528511, 6528513, 6528515, 6528586	6528059	6528452
0215-95-0425	15-03049	0.00–0.50	Soil	6528748	6528349, 6528510, 6528511, 6528513, 6528515, 6528586	6528059	6528452

Table 4.5-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	HE	Metals	Uranium	Tritium
0215-95-0428	15-03050	0.00–0.50	Soil	6528740	6528168, 6528312, 6528351, 6528352, 6528353, 6528354	6527917	6527916
0215-95-0429	15-03050	1.50–2.00	Soil	6528740	6528168, 6528312, 6528351, 6528352, 6528353, 6528354	6527917	6527916
0215-95-0430	15-03050	2.17–2.67	Soil	6528748	6528349, 6528510, 6528511, 6528513, 6528515, 6528586	6528059	6528452
0215-95-0431	15-03051	0.00–0.50	Soil	6528740	6528168, 6528312, 6528351, 6528352, 6528353, 6528354	6527917	6527916
0215-95-0432	15-03051	1.50–2.00	Soil	6528748	6528349, 6528510, 6528511, 6528513, 6528515, 6528586	6528059	6528452
0215-95-0433	15-03051	2.00–2.50	Soil	6528748	6528349, 6528510, 6528511, 6528513, 6528515, 6528586	6528059	6528452
0215-95-0453	15-03058	0.00–0.50	Soil	6528748	6528349, 6528510, 6528511, 6528513, 6528515, 6528586	6528059	6528452
0215-95-0454	15-03058	1.25–1.75	Soil	6528748	6528349, 6528510, 6528511, 6528513, 6528515, 6528586	6528059	6528452

Table 4.5-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	HE	Metals	Uranium	Tritium
0215-95-0456	15-03059	0.00–0.50	Soil	6528748	6528349, 6528510, 6528511, 6528513, 6528515, 6528586	6528059	6528452
0215-95-0459	15-03060	0.00–0.50	Soil	6528748	6528349, 6528510, 6528511, 6528513, 6528515, 6528586	6528059	6528452
0215-95-0476	15-03065	1.50–2.00	Soil	6528748	6528349, 6528510, 6528511, 6528513, 6528515, 6528586	6528059	6528452
0215-95-0477	15-03065	2.17–2.67	Soil	6528748	6528517, 6528540, 6528541, 6528542, 6528543, 6528586	6528059	6528452
0215-95-0498	15-03073	0.00–0.50	Soil	6528157	6528150, 6528152, 6528285, 6528286, 6528287, 6528288	6527733	6527732
0215-95-0503	15-03078	0.00–0.25	Soil	6528157	6528150, 6528152, 6528285, 6528286, 6528287, 6528288	6527733	6527732
0215-95-0504	15-03079	0.00–0.17	Soil	6528157	6528150, 6528152, 6528285, 6528286, 6528287, 6528288	6527733	6527732
0215-95-0513	15-03087	0.00–0.50	Soil	6528157	6528150, 6528152, 6528285, 6528286, 6528287, 6528288	6527733	6527732

Table 4.5-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	HE	Metals	Uranium	Tritium
0215-95-0515	15-03089	0.00–0.50	Soil	6528157	6528150, 6528152, 6528285, 6528286, 6528287, 6528288	6527733	6527732
0215-95-0518	15-03092	0.00–0.33	Soil	6528740	6528168, 6528312, 6528351, 6528352, 6528353, 6528354	6527917	6527916
0215-95-0529	15-03098	0.00–0.33	Soil	6528748	6528349, 6528510, 6528511, 6528513, 6528515, 6528586	6528059	6528452
0215-95-0531	15-03099	0.00–0.50	Soil	6528748	6528349, 6528510, 6528511, 6528513, 6528515, 6528586	6528059	6528452
0215-95-0532	15-03099	0.58–1.08	Soil	6528869	6528520, 6528619, 6528620, 6528621, 6528631, 6528700	6527917	6527916
0215-95-0535	15-03101	0.00–0.50	Soil	6528748	6528517, 6528540, 6528541, 6528542, 6528543, 6528586	6528059	6528452
0215-95-0536	15-03101	0.50–1.00	Soil	6528869	6528520, 6528619, 6528620, 6528621, 6528631, 6528700	6527917	6527916
0215-95-0537	15-03102	0.00–0.25	Soil	6528748	6528349, 6528510, 6528511, 6528513, 6528515, 6528586	6528059	6528452

Table 4.5-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	HE	Metals	Uranium	Tritium
0215-95-0539	15-03103	0.00–0.50	Soil	6528869	6528520, 6528619, 6528620, 6528621, 6528631, 6528700	6527917	6527916
0215-95-0541	15-03104	0.00–0.50	Soil	6528869	6528520, 6528619, 6528620, 6528621, 6528631, 6528700	6527917	6527916
0215-95-0542	15-03104	0.50–1.00	Soil	6528869	6528520, 6528619, 6528620, 6528621, 6528631, 6528700	6527917	6527916

* - = Analyses not requested.

Table 4.5-2
Inorganic Chemicals above BVs at SWMU 15-006(c)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Beryllium	Cadmium	Calcium	Chromium	Copper	Lead	Mercury	Nickel	Silver	Thallium	Uranium	Zinc
Soil BV				**29200**	**0.83**	**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**14.7**	**22.3**	**0.1**	**15.4**	**1**	**0.73**	**1.82**	**48.8**
0215-95-0412	15-03045	0.00–0.42	Soil	-*	8.6 (U)	-	4	1.1 (U)	-	60.1	2050	118	-	31.1	2.1 (U)	1.1 (U)	140	52
0215-95-0415	15-03046	0.00–0.42	Soil	-	8.3 (U)	-	3.6	1 (U)	-	-	273	160	-	-	2.1 (U)	1 (U)	170	-
0215-95-0134	15-03046	0.58–1.08	Soil	-	8.5 (U)	-	2.4	1.1 (U)	-	-	151	75.65	0.11 (U)	-	2.1 (U)	-	-	-
0215-95-0418	15-03047	0.00–0.50	Soil	-	15.8	-	22.6	1.2	-	-	4890	802	-	-	3.4	1 (U)	740	126
0215-95-0420	15-03047	0.50–0.67	Soil	-	8.7 (U)	-	-	1.1 (U)	-	-	1330	91.3	-	-	2.2 (U)	1.1 (U)	370	80
0215-95-0422	15-03048	0.00–0.50	Soil	-	8.3 (U)	-	3.8	1 (U)	-	-	320	341	-	-	2.1 (U)	1 (U)	260	-
0215-95-0425	15-03049	0.00–0.50	Soil	-	8.3 (U)	-	5.5	1 (U)	-	372	195	228	-	188	2.1 (U)	1 (U)	260	-
0215-95-0428	15-03050	0.00–0.50	Soil	-	8.2 (U)	-	2.2	1 (U)	-	-	124	630	-	-	2 (U)	1 (U)	180	-
0215-95-0429	15-03050	1.50–2.00	Soil	-	8.5 (U)	-	4.1	1.1 (U)	-	-	281	164	-	-	9	1.1 (U)	1100	-
0215-95-0430	15-03050	2.17–2.67	Soil	-	9.7 (U)	-	3.6	1.2 (U)	14000	-	112	29.7	0.11	-	2.4 (U)	1.2 (U)	1500	-
0215-95-0431	15-03051	0.00–0.50	Soil	-	8.2 (U)	-	27.7	1.1	-	24.3	7150	281	0.17	22.8	3.1	1 (U)	1700	2860
0215-95-0432	15-03051	1.50–2.00	Soil	-	8.6 (U)	-	4	1.1 (U)	-	-	92.3	47.7	0.11 (U)	-	2.1 (U)	1.1 (U)	45000	-
0215-95-0433	15-03051	2.00–2.50	Soil	-	9.4 (U)	-	3.3	1.2 (U)	-	-	471	92	0.11 (U)	-	2.3 (U)	1.2 (U)	230	-
0215-95-0453	15-03058	0.00–0.50	Soil	-	8.4 (U)	-	13.3	1 (U)	-	-	896	356	-	-	3.2	1 (U)	970	90.2
0215-95-0454	15-03058	1.25–1.75	Soil	-	8.7 (U)	-	3.1	1.1 (U)	-	-	326	79.7	-	-	2.3	1.1 (U)	420	51.6
0215-95-0456	15-03059	0.00–0.50	Soil	-	9.5 (U)	-	18	1.2 (U)	-	-	733	553	0.11 (U)	-	2.4 (U)	1.2 (U)	260	65.2
0215-95-0459	15-03060	0.00–0.50	Soil	-	8.9 (U)	-	10.7	1.1 (U)	-	-	5230	287	-	-	3.2	1.1 (U)	620	534
0215-95-0476	15-03065	1.50–2.00	Soil	-	9.6 (U)	-	-	1.2 (U)	-	-	75.9	234	0.12 (U)	-	2.6	1.2 (U)	170	-
0215-95-0477	15-03065	2.17–2.67	Soil	-	9.3 (U)	-	2	1.2 (U)	-	-	87.4	77.1	0.12 (U)	-	2.3 (U)	-	110	-
0215-95-0498	15-03073	0.00–0.50	Soil	-	9.3 (U)	-	-	1.2 (U)	-	-	-	-	0.11 (U)	-	2.3 (U)	1.2 (U)	41	-
0215-95-0503	15-03078	0.00–0.25	Soil	-	9.4 (U)	-	16.4	1.2 (U)	-	-	317	-	0.11 (U)	-	2.3 (U)	1.2 (U)	11	-
0215-95-0504	15-03079	0.00–0.17	Soil	-	9.5 (U)	-	-	1.2 (U)	-	-	48.5	-	0.12 (U)	-	2.4 (U)	1.2 (U)	110	-
0215-95-0513	15-03087	0.00–0.50	Soil	-	9 (U)	-	-	1.1 (U)	-	-	-	-	0.11 (U)	-	2.3 (U)	1.1 (U)	49	-
0215-95-0515	15-03089	0.00–0.50	Soil	-	8.8 (U)	-	-	1.1 (U)	-	-	-	-	0.11 (U)	-	2.2 (U)	1.1 (U)	4.8	-

Table 4.5-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Beryllium	Cadmium	Calcium	Chromium	Copper	Lead	Mercury	Nickel	Silver	Thallium	Uranium	Zinc
Soil BV				**29200**	**0.83**	**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**14.7**	**22.3**	**0.1**	**15.4**	**1**	**0.73**	**1.82**	**48.8**
0215-95-0518	15-03092	0.00–0.33	Soil	-	8.2 (U)	-	-	1 (U)	-	-	573	-	-	-	2 (U)	1 (U)	3.9	-
0215-95-0529	15-03098	0.00–0.33	Soil	-	9 (U)	-	5.6	1.1 (U)	-	-	3430	446	0.11 (U)	-	2.3 (U)	1.1 (U)	250	-
0215-95-0531	15-03099	0.00–0.50	Soil	-	8.8 (U)	-	6.2	1.1 (U)	-	-	329	257	0.11 (U)	-	2.2 (U)	1.1 (U)	140	-
0215-95-0532	15-03099	0.58–1.08	Soil	-	8.8 (U)	-	3.5	1.1 (U)	-	-	227 (J)	266 (J)	0.11 (U)	-	2.2 (U)	1.1 (U)	140	-
0215-95-0535	15-03101	0.00–0.50	Soil	-	13.6	518	3.9	1.1 (U)	-	160	190	132000	0.11 (U)	79.4	2.2 (U)	4.4 (U)	100	-
0215-95-0536	15-03101	0.50–1.00	Soil	-	8.7 (U)	-	-	1.1 (U)	-	-	47.8 (J)	229 (J)	0.11 (U)	-	2.2 (U)	1.1 (U)	37	-
0215-95-0537	15-03102	0.00–0.25	Soil	-	8.5 (U)	-	7.9	1.1 (U)	-	-	3100	267	0.11 (U)	-	2.1 (U)	1.1 (U)	200	71
0215-95-0539	15-03103	0.00–0.50	Soil	-	9 (U)	-	2.3	1.1 (U)	-	-	1780 (J)	422 (J)	0.11 (U)	-	2.3 (U)	1.1 (U)	110 (U)	-
0215-95-0541	15-03104	0.00–0.50	Soil	97200	8.7 (U)	-	4.6	1.1 (U)	-	292	512 (J)	160 (J)	-	-	2.2 (U)	1.1 (U)	390	126
0215-95-0542	15-03104	0.50–1.00	Soil	-	9 (U)	-	3.3	1.1 (U)	-	-	3040 (J)	38.1 (J)	0.11 (U)	-	2.3 (U)	1.1 (U)	30	173

Notes: All values in mg/kg. BVs are provided in LANL 1998, 059730.

* - = Not detected or not above BV.

Table 4.5-3
Organic Chemicals Detected at SWMU 15-006(c)

Sample ID	Location ID	Depth (ft)	Media	HMX	RDX
0215-95-0133	15-03045	0.00–0.50	Soil	3.13	-*
0215-95-0009	15-03046	0.00–0.50	Soil	2200	1900
0215-95-0134	15-03046	0.58–1.08	Soil	370	350
0215-95-0010	15-03047	0.00–0.50	Soil	110	5.3
0215-95-0011	15-03047	0.00–0.50	Soil	31	2.3
0215-95-0012	15-03047	0.50–0.67	Soil	0.8	0.54
0215-95-0422	15-03048	0.00–0.50	Soil	7.4	1.6
0215-95-0428	15-03050	0.00–0.50	Soil	5.4	-
0215-95-0429	15-03050	1.50–2.00	Soil	1.7	-
0215-95-0430	15-03050	2.17–2.67	Soil	1.4	-
0215-95-0433	15-03051	2.00–2.50	Soil	0.19	-
0215-95-0453	15-03058	0.00–0.50	Soil	0.98	-
0215-95-0454	15-03058	1.25–1.75	Soil	0.31	-
0215-95-0456	15-03059	0.00–0.50	Soil	2.5	-
0215-95-0459	15-03060	0.00–0.50	Soil	0.13	-
0215-95-0477	15-03065	2.17–2.67	Soil	0.27	-
0215-95-0529	15-03098	0.00–0.33	Soil	14	-
0215-95-0531	15-03099	0.00–0.50	Soil	0.14	1.6
0215-95-0532	15-03099	0.58–1.08	Soil	0.15	-
0215-95-0535	15-03101	0.00–0.50	Soil	0.43	0.63
0215-95-0539	15-03103	0.00–0.50	Soil	3.16	-

Note: All values in mg/kg.

* - = Not detected.

Table 4.5-4
Radionuclides Detected or Detected above BVs/FVs at SWMU 15-006(c)

Sample ID	Location ID	Depth (ft)	Media	Tritium
Soil BV				**na***
0215-95-0412	15-03045	0.00–0.42	Soil	1.8
0215-95-0415	15-03046	0.00–0.42	Soil	1.7
0215-95-0418	15-03047	0.00–0.50	Soil	19
0215-95-0420	15-03047	0.50–0.67	Soil	5.9
0215-95-0422	15-03048	0.00–0.50	Soil	5
0215-95-0425	15-03049	0.00–0.50	Soil	3.9
0215-95-0428	15-03050	0.00–0.50	Soil	2.4
0215-95-0429	15-03050	1.50–2.00	Soil	37
0215-95-0430	15-03050	2.17–2.67	Soil	23
0215-95-0431	15-03051	0.00–0.50	Soil	37
0215-95-0432	15-03051	1.50–2.00	Soil	14
0215-95-0433	15-03051	2.00–2.50	Soil	13
0215-95-0453	15-03058	0.00–0.50	Soil	33
0215-95-0454	15-03058	1.25–1.75	Soil	46
0215-95-0456	15-03059	0.00–0.50	Soil	19
0215-95-0459	15-03060	0.00–0.50	Soil	11
0215-95-0476	15-03065	1.50–2.00	Soil	10
0215-95-0477	15-03065	2.17–2.67	Soil	8.2
0215-95-0503	15-03078	0.00–0.25	Soil	0.39
0215-95-0504	15-03079	0.00–0.17	Soil	0.55
0215-95-0529	15-03098	0.00–0.33	Soil	0.57
0215-95-0531	15-03099	0.00–0.50	Soil	4.9
0215-95-0532	15-03099	0.58–1.08	Soil	5.9
0215-95-0535	15-03101	0.00–0.50	Soil	2.4
0215-95-0536	15-03101	0.50–1.00	Soil	2.9
0215-95-0537	15-03102	0.00–0.25	Soil	1.9
0215-95-0539	15-03103	0.00–0.50	Soil	2.6
0215-95-0541	15-03104	0.00–0.50	Soil	3.5
0215-95-0542	15-03104	0.50–1.00	Soil	1.1

Notes: All values in pCi/g. BVs/FVs are provided in LANL 1998, 059730.

* na = Not available.

Table 4.5-5
Samples Collected and Analyses Requested at SWMU 15-008(b)

Sample ID	Location ID	Depth (ft)	Media	Gamma Spectroscopy	HE	Metals	Uranium	Tritium
AAB3503	15-02500	0.00–0.50	Soil	-*	-	18681, 20948	19509	-
AAB3504	15-02500	1.50–2.00	Soil	-	-	18681, 20948	19509	-
AAB3398	15-02501	0.00–0.50	Soil	-	-	18681, 20948	19509	-
AAB3530	15-02501	1.50–2.00	Soil	-	-	18681, 20948	19509	-
AAB3355	15-02502	0.00–0.50	Soil	-	18469	18681, 20948	19509	-
AAB3401	15-02502	1.50–2.00	Soil	-	-	18681, 20948	19509	-
AAB3353	15-02503	0.00–0.50	Soil	-	-	18681, 20948	19509	-
AAB3352	15-02503	1.50–2.00	Soil	-	-	18681, 20948	19509	-
AAB3400	15-02504	0.00–0.50	Soil	-	-	20562, 20948	20570	-
AAB3531	15-02506	0.00–0.50	Soil	-	-	20562, 20948	20570	-
AAB3399	15-02507	0.00–0.50	Soil	-	-	20562, 20948	20570	-
AAB3402	15-02508	0.00–0.50	Soil	-	-	20562, 20948	20570	-
0215-97-0021	15-02510	0.00–0.50	Soil	-	3358R	3359R	-	-
0215-97-0023	15-02510	0.83–1.17	Soil	-	3358R	3359R	-	-
AAC0995	15-02510	1.50–2.00	Soil	20383	-	20347, 20981, 21018	20383	-
AAB3354	15-02596	0.00–0.50	Soil	-	-	20562, 20948	20570	-
0215-95-0514	15-03088	0.00–0.50	Soil	-	6528157	6528150, 6528152, 6528285, 6528286, 6528287, 6528288	6527733	6527732
0215-95-0450	15-03057	0.00–0.50	Soil	-	6528748	6528349, 6528510, 6528511, 6528513, 6528515, 6528586	6528059	6528452

Table 4.5-5 (continued)

Sample ID	Location ID	Depth (ft)	Media	Gamma Spectroscopy	HE	Metals	Uranium	Tritium
0215-95-0482	15-03067	0.50–1.00	Soil	-	6528748	6528349, 6528510, 6528511, 6528513, 6528515, 6528586	6528059	6528452
0215-95-0484	15-03068	0.00–0.50	Soil	-	6528748	6528349, 6528510, 6528511, 6528513, 6528515, 6528586	6528059	6528452
0215-95-0506	15-03081	0.00–0.50	Soil	-	6528157	6528150, 6528152, 6528285, 6528286, 6528287, 6528288	6527733	6527732
0215-95-0508	15-03082	0.00–0.50	Soil	-	6528157	6528150, 6528152, 6528285, 6528286, 6528287, 6528288	6527733	6527732
0215-95-0509	15-03083	0.00–0.50	Soil	-	6528157	6528150, 6528152, 6528285, 6528286, 6528287, 6528288	6527733	6527732
0215-95-0510	15-03084	0.00–0.50	Soil	-	6528157	6528150, 6528152, 6528285, 6528286, 6528287, 6528288	6527733	6527732

* - = Analyses not requested.

Table 4.5-6
Inorganic Chemicals above BVs at SWMU 15-008(b)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Calcium	Copper	Lead	Mercury	Nickel	Silver	Thallium	Uranium	Zinc
Soil BV				**0.83**	**8.17**	**1.83**	**0.4**	**19.3**	**6120**	**14.7**	**22.3**	**0.1**	**15.4**	**1**	**0.73**	**1.82**	**48.8**
AAB3503	15-02500	0.00–0.50	Soil	4.5 (U)	-*	3.3	0.43 (U)	-	-	900	413	0.11 (U)	-	-	-	310	77.6
AAB3504	15-02500	1.50–2.00	Soil	3.9 (U)	-	-	0.43 (U)	-	-	-	-	0.11 (U)	-	-	-	19.4	-
AAB3398	15-02501	0.00–0.50	Soil	3.9 (U)	-	10.6	0.43 (U)	-	-	1040	77.9	0.11 (U)	-	-	-	282	71.7
AAB3530	15-02501	1.50–2.00	Soil	3.9 (U)	-	-	0.44 (U)	-	-	-	-	0.11 (U)	-	-	-	93	-
AAB3355	15-02502	0.00–0.50	Soil	3.7 (U)	-	35.5	0.41 (U)	20.2	-	550	175	-	15.9	-	-	659	60.1
AAB3401	15-02502	1.50–2.00	Soil	4 (U)	-	11.9	0.45 (U)	-	-	784	67	1.1 (J)	-	1.1 (U)	-	303	-
AAB3353	15-02503	0.00–0.50	Soil	8.6 (U)	-	17.1	0.59 (U)	-	-	4110	1250	0.12 (J)	-	-	-	400	71.2
AAB3352	15-02503	1.50–2.00	Soil	4 (U)	-	-	0.44 (U)	-	-	-	-	0.11 (U)	-	-	-	31.8	-
AAB3400	15-02504	0.00–0.50	Soil	16.8	-	35.1	1.8	-	-	1960	754	-	-	4.4	0.84 (U)	890	147
AAB3531	15-02506	0.00–0.50	Soil	4.4 (U)	-	15.3	-	-	6160	447	421	-	-	1.3 (U)	0.83 (U)	417	-
AAB3399	15-02507	0.00–0.50	Soil	2.8 (U)	-	12.5	-	-	-	697	233	-	-	-	0.84 (U)	536	52.5
AAB3402	15-02508	0.00–0.50	Soil	1.1 (U)	-	6.4	-	-	-	79.6	61.8	-	-	-	0.87 (U)	184	-
0215-97-0021	15-02510	0.00–0.50	Soil	8.6 (J-)	-	-	0.63 (U)	-	-	-	-	-	-	4.1	-	33.5 (U)	-
0215-97-0023	15-02510	0.83–1.17	Soil	7.1 (UJ)	-	-	0.62 (U)	-	-	-	-	-	-	1.8 (U)	-	26.8 (U)	-
AAC0995	15-02510	1.50–2.00	Soil	457	129	115	-	-	-	292	74400	-	-	2.8	0.84 (U)	160	-
AAB3354	15-02596	0.00–0.50	Soil	18.4	-	18.3	1.5	-	-	1110	665	-	-	3.1	0.84 (U)	865	83.7
0215-95-0450	15-03057	0.00–0.50	Soil	8.8 (U)	-	3.3	1.1 (U)	-	-	222	84.2	0.11 (U)	-	2.2 (U)	1.1 (U)	64	112
0215-95-0482	15-03067	0.50–1.00	Soil	9.5 (U)	-	-	1.2 (U)	-	-	83.2	-	0.11 (U)	-	2.4 (U)	1.2 (U)	120	-
0215-95-0484	15-03068	0.00–0.50	Soil	9.5 (U)	-	13.2	1.2 (U)	-	-	976	132	0.12 (U)	-	2.4 (U)	1.2 (U)	670	57.3
0215-95-0506	15-03081	0.00–0.50	Soil	8.9 (U)	-	-	1.1 (U)	-	-	356	49.5	0.11 (U)	-	2.2 (U)	1.1 (U)	130	-
0215-95-0508	15-03082	0.00–0.50	Soil	9.1 (U)	-	4.5	1.1 (U)	-	-	229	167	0.11 (U)	-	2.3 (U)	1.1 (U)	-	80.8
0215-95-0509	15-03083	0.00–0.50	Soil	8.8 (U)	-	-	1.1 (U)	-	-	256	580	-	-	2.2 (U)	1.1 (U)	8.5	-
0215-95-0510	15-03084	0.00–0.50	Soil	9.5 (U)	-	-	1.2 (U)	-	-	21.1	-	0.11 (U)	-	2.4 (U)	1.2 (U)	23	-
0215-95-0514	15-03088	0.00–0.50	Soil	9.8 (U)	-	-	1.2 (U)	-	-	33.6	-	0.12 (U)	-	2.4 (U)	1.2 (U)	96	-

Notes: All values in mg/kg. BVs are provided in LANL 1998, 059730.
* - = Not detected or not above BV.

Table 4.5-7
Radionuclides Detected or Detected above BVs/FVs at SWMU 15-008(b)

Sample ID	Location ID	Depth (ft)	Media	Cesium-137	Tritium
Soil BV				**1.65**	**na**[a]
AAC0995	15-02510	1.50–2.00	Soil	0.097	NA[b]
0215-95-0450	15-03057	0.00–0.50	Soil	NA	2.4
0215-95-0482	15-03067	0.50–1.00	Soil	NA	3.1
0215-95-0484	15-03068	0.00–0.50	Soil	NA	28
0215-95-0506	15-03081	0.00–0.50	Soil	NA	5
0215-95-0508	15-03082	0.00–0.50	Soil	NA	38
0215-95-0509	15-03083	0.00–0.50	Soil	NA	5.4
0215-95-0510	15-03084	0.00–0.50	Soil	NA	1.2

Notes: All values in pCi/g. BVs/FVs are provided in LANL 1998, 059730.
[a] na = Not available.
[b] NA = Not analyzed.

Table 4.6-1
Samples Collected and Analyses Requested at SWMU 15-006(d)

Sample ID	Location ID	Depth (ft)	Media	HE	Metals	Uranium
0215-95-0545	15-03105	7.33–7.83	Soil	6528219	6528110, 6528111, 6528112, 6528113, 6528136, 6528156	6527728
0215-95-0548	15-03106	1.50–2.00	Soil	6528219	6528110, 6528111, 6528112, 6528113, 6528136, 6528156	6527728
0215-95-0555	15-03108	2.92–3.42	Soil	6528219	6528148, 6528167, 6528261, 6528263, 6528264, 6528265	6527736
0215-95-0556	15-03109	0.00–0.50	Soil	6528219	6528148, 6528167, 6528261, 6528263, 6528264, 6528265	6527736
0215-95-0565	15-03112	0.00–0.50	Soil	6528219	6528148, 6528167, 6528261, 6528263, 6528264, 6528265	6527736

Table 4.6-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	HE	Metals	Uranium
0215-95-0567	15-03112	2.75–3.25	Soil	6528219	6528148, 6528167, 6528261, 6528263, 6528264, 6528265	6527736
0215-95-0572	15-03114	0.00–0.50	Soil	6528219	6528148, 6528167, 6528261, 6528263, 6528264, 6528265	6527736
0215-95-0574	15-03114	2.50–3.33	Soil	6528219	6528148, 6528167, 6528261, 6528263, 6528264, 6528265	6527736
0215-95-0574	15-03114	2.50–3.33	Soil	6528219	6528148, 6528167, 6528261, 6528263, 6528264, 6528265	6527736
0215-95-0575	15-03115	0.00–0.50	Soil	6528157	6528148, 6528167, 6528261, 6528263, 6528264, 6528265	6527736
0215-95-0576	15-03115	1.25–1.75	Soil	6528157	6528148, 6528167, 6528261, 6528263, 6528264, 6528265	6527736
0215-95-0578	15-03116	0.00–0.50	Soil	6528157	6528148, 6528167, 6528261, 6528263, 6528264, 6528265	6527736
0215-95-0582	15-03117	0.67–1.17	Soil	6528219	6528110, 6528111, 6528112, 6528113, 6528136, 6528156	6527728

Table 4.6-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	HE	Metals	Uranium
0215-95-0584	15-03118	0.00–0.50	Soil	6528219	6528110, 6528111, 6528112, 6528113, 6528136, 6528156	6527728
0215-95-0587	15-03119	0.00–0.50	Soil	6528157	6528148, 6528167, 6528261, 6528263, 6528264, 6528265	6527736
0215-95-0589	15-03119	2.50–3.00	Soil	6528157	6528148, 6528167, 6528261, 6528263, 6528264, 6528265	6527736
0215-95-0609	15-03126	0.00–0.50	Soil	6528219	6528110, 6528111, 6528112, 6528113, 6528136, 6528156	6527728
0215-95-0610	15-03126	1.00–1.50	Soil	6528219	6528110, 6528111, 6528112, 6528113, 6528136, 6528156	6527728
0215-95-0612	15-03127	0.00–0.50	Soil	6528219	6528110, 6528111, 6528112, 6528113, 6528136, 6528156	6527728
0215-95-0614	15-03127	1.17–1.67	Soil	6528219	6528110, 6528111, 6528112, 6528113, 6528136, 6528156	6527728
0215-95-0618	15-03130	0.00–0.33	Soil	6528219	6528110, 6528111, 6528112, 6528113, 6528136, 6528156	6527728

Table 4.6-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	HE	Metals	Uranium
0215-95-0619	15-03131	0.00–0.50	Soil	6528219	6528110, 6528111, 6528112, 6528113, 6528136, 6528156	6527728
0215-95-0620	15-03132	0.00–0.50	Soil	6528219	6528110, 6528111, 6528112, 6528113, 6528136, 6528156	6527728
0215-95-0622	15-03134	0.00–0.50	Soil	6528219	6528110, 6528111, 6528112, 6528113, 6528136, 6528156	6527728

Table 4.6-2
Inorganic Chemicals above BVs at SWMU 15-006(d)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Cadmium	Calcium	Copper	Lead	Mercury	Silver	Sodium	Thallium	Uranium
Soil BV				**0.83**	**0.4**	**6120**	**14.7**	**22.3**	**0.1**	**1**	**915**	**0.73**	**1.82**
0215-95-0545	15-03105	7.33–7.83	Soil	9.3 (U)	1.2 (U)	-*	-	-	0.12 (U)	2.3 (U)	1130	1.2 (U)	2.6
0215-95-0548	15-03106	1.50–2.00	Soil	8.6 (U)	1.1 (U)	-	-	-	-	2.2 (U)	-	1.1 (U)	2.4
0215-95-0555	15-03108	2.92–3.42	Soil	10 (U)	1.2 (U)	-	-	-	0.13 (U)	2.5 (U)	-	1.2 (U)	2.5
0215-95-0556	15-03109	0.00–0.50	Soil	8.3 (U)	1 (U)	9520	-	77	-	2.1 (U)	-	1 (U)	5.4
0215-95-0565	15-03112	0.00–0.50	Soil	9.4 (U)	1.2 (U)	-	19.6	-	0.11 (U)	2.4 (U)	-	1.2 (U)	17
0215-95-0567	15-03112	2.75–3.25	Soil	9 (U)	1.1 (U)	9810	-	-	0.11 (U)	2.3 (U)	-	1.1 (U)	-
0215-95-0572	15-03114	0.00–0.50	Soil	8.7 (U)	1.1 (U)	-	-	-	-	2.2 (U)	-	1.1 (U)	4.6
0215-95-0574	15-03114	2.50–3.33	Soil	9.2 (U)	1.2 (U)	-	-	-	0.11 (U)	2.3 (U)	-	1.2 (U)	2.1
0215-95-0575	15-03115	0.00–0.50	Soil	9.3 (U)	1.2 (U)	-	-	-	0.12 (U)	2.3 (U)	-	1.2 (U)	5.7
0215-95-0576	15-03115	1.25–1.75	Soil	9.4 (U)	1.2 (U)	-	-	-	0.12 (U)	2.3 (U)	-	1.2 (U)	2.4
0215-95-0578	15-03116	0.00–0.50	Soil	9 (U)	1.1 (U)	-	-	-	0.11 (U)	2.2 (U)	-	1.1 (U)	7.2
0215-95-0582	15-03117	0.67–1.17	Soil	9.9 (U)	1.2 (U)	-	-	-	0.12 (U)	2.5 (U)	-	1.2 (U)	2.6
0215-95-0584	15-03118	0.00–0.50	Soil	9.3 (U)	1.2 (U)	-	-	-	0.12 (U)	2.3 (U)	-	1.2 (U)	17
0215-95-0587	15-03119	0.00–0.50	Soil	9 (U)	1.1 (U)	-	-	-	0.11 (U)	2.3 (U)	-	1.1 (U)	29
0215-95-0589	15-03119	2.50–3.00	Soil	9.1 (U)	1.1 (U)	10200	-	-	0.11 (U)	2.3 (U)	-	1.1 (U)	2.7
0215-95-0609	15-03126	0.00–0.50	Soil	8.5 (U)	1.1 (U)	-	157	44.7	0.11 (U)	2.1 (U)	-	1.1 (U)	4.7
0215-95-0610	15-03126	1.00–1.50	Soil	9.4 (U)	1.2 (U)	-	-	-	0.12 (U)	2.4 (U)	-	1.2 (U)	3.5
0215-95-0612	15-03127	0.00–0.50	Soil	8.6 (U)	1.1 (U)	20200	277	-	0.11 (U)	2.1 (U)	-	1.1 (U)	25
0215-95-0614	15-03127	1.17–1.67	Soil	9.4 (U)	1.2 (U)	-	-	-	0.11 (U)	2.3 (U)	-	1.2 (U)	3.7
0215-95-0618	15-03130	0.00–0.33	Soil	8.9 (U)	1.1 (U)	-	-	-	0.11 (U)	2.2 (U)	-	1.1 (U)	9.2
0215-95-0619	15-03131	0.00–0.50	Soil	8.7 (U)	1.1 (U)	-	-	31	0.11 (U)	2.2 (U)	-	1.1 (U)	8.4
0215-95-0620	15-03132	0.00–0.50	Soil	8.8 (U)	1.1 (U)	-	-	-	0.11 (U)	2.2 (U)	-	1.1 (U)	14
0215-95-0622	15-03134	0.00–0.50	Soil	11 (U)	1.4 (U)	-	-	-	0.14 (U)	2.7 (U)	-	1.4 (U)	18

Notes: All values in mg/kg. BVs are provided in LANL 1998, 059730.

* - = Not detected or not above BV.

Table 4.6-3
Samples Collected and Analyses Requested at AOC 15-008(g)

Sample ID	Location ID	Depth (ft)	Media	HE	Metals	Uranium
0215-95-0624	15-03136	0.00–0.50	Soil	6528219	6528110, 6528111, 6528112, 6528113, 6528136, 6528156	6527728

Table 4.6-4
Inorganic Chemicals above BVs at AOC 15-008(g)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Cadmium	Calcium	Silver	Thallium
Soil BV				**0.83**	**0.4**	**6120**	**1**	**0.73**
0215-95-0624	15-03136	0.00–0.50	Soil	8.3 (U)	1 (U)	8680	2.1 (U)	1 (U)

Notes: All values in mg/kg. BVs are provided in LANL 1998, 059730.

Table 4.9-1
Samples Collected and Analyses Requested at SWMU 15-009(c)

Sample ID	Location ID	Depth (ft)	Media	Gamma Spectroscopy	Isotopic Uranium	Metals	Tritium
RE15-98-0029	15-03458	0.00–0.50	Soil	4662R	4662R	4660R	4662R
RE15-98-0030	15-03458	1.00–1.33	Soil	4662R	4662R	4660R	4662R
RE15-98-0031	15-03458	2.00–2.50	Soil	4662R	4662R	4660R	4662R
RE15-98-0032	15-03459	0.00–0.50	Soil	4662R	4662R	4660R	4662R
RE15-98-0033	15-03459	1.17–1.67	Soil	4662R	4662R	4660R	4662R
RE15-98-0034	15-03459	2.33–2.83	Soil	4662R	4662R	4660R	4662R
RE15-98-0035	15-03460	0.00–0.50	Soil	4662R	4662R	4660R	4662R
RE15-98-0036	15-03460	1.33–1.83	Soil	4662R	4662R	4660R	4662R
RE15-98-0037	15-03471	0.00–0.50	Soil	4662R	4662R	4660R	4662R

Note: No spatial data are available so the locations are not shown on a figure.

Table 4.9-2
Inorganic Chemicals above BVs at SWMU 15-009(c)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Beryllium	Cadmium	Mercury	Silver
Soil BV				**0.83**	**1.83**	**0.4**	**0.1**	**1**
RE15-98-0029	15-03458	0.00–0.50	Soil	10 (U)	-*	0.51 (U)	-	2 (U)
RE15-98-0030	15-03458	1.00–1.33	Soil	11 (U)	-	0.54 (U)	0.11 (U)	2.2 (U)
RE15-98-0031	15-03458	2.00–2.50	Soil	11 (U)	-	0.54 (U)	0.11 (U)	2.2 (U)
RE15-98-0032	15-03459	0.00–0.50	Soil	10 (U)	-	0.52 (U)	-	2.1 (U)
RE15-98-0033	15-03459	1.17–1.67	Soil	10 (U)	-	0.51 (U)	-	2 (U)
RE15-98-0034	15-03459	2.33–2.83	Soil	10 (U)	-	0.52 (U)	-	2.1 (U)
RE15-98-0035	15-03460	0.00–0.50	Soil	11 (U)	-	0.53 (U)	0.11 (U)	2.1 (U)
RE15-98-0036	15-03460	1.33–1.83	Soil	11 (U)	-	0.53 (U)	0.11 (U)	2.1 (U)
RE15-98-0037	15-03471	0.00–0.50	Soil	10 (U)	2.4	0.5 (U)	-	2 (U)

Notes: No spatial data are available so the locations are not shown on a figure. All values in mg/kg. BVs are provided in LANL 1998, 059730.

* - = Analyses not requested.

Table 4.11-1
Samples Collected and Analyses Requested at SWMU 15-010(b)

Sample ID	Location ID	Depth (ft)	Media	HE
0215-95-0199	15-02384	0.00–0.00	Sludge	71042
0215-95-0201	15-02385	0.00–0.50	Soil	71116
0215-95-0202	15-02385	1.67–2.00	Soil	71116
0215-95-0203	15-02386	0.00–0.50	Soil	71116

Table 4.11-2
Organic Chemicals Detected at SWMU 15-010(b)

Sample ID	Location ID	Depth (ft)	Media	Amino-4,6-dinitrotoluene[2-]
0215-95-0201	15-02385	0.00–0.50	Soil	0.182 (J)

Note: All values in mg/kg.

Table 4.12-1
Samples Collected and Analyses Requested at AOC 15-014(h)

Sample ID	Location ID	Depth (ft)	Media	Metals	SVOCs	VOCs
0215-95-0195	15-02382	0.00–0.50	Soil	71206, 71524	71478	-*
0215-95-0196	15-02382	2.50–3.00	Soil	71206, 71524	71478	71599
0215-95-0197	15-02383	0.00–0.50	Soil	71206, 71524	71478	-
0215-95-0198	15-02383	1.33–1.83	Soil	71206, 71524	71550	71599

* - = Analyses not requested.

Table 4.12-2
Inorganic Chemicals above BVs at AOC 15-014(h)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Cadmium	Copper	Lead	Mercury	Silver	Thallium	Zinc
Soil BV				**0.83**	**0.4**	**14.7**	**22.3**	**0.1**	**1**	**0.73**	**48.8**
0215-95-0195	15-02382	0.00–0.50	Soil	0.969 (U)	-*	18.3 (J)	37.2 (J)	-	1.57	0.969 (U)	197 (J)
0215-95-0196	15-02382	2.50–3.00	Soil	-	0.51	21.8	-	-	5.54	0.995 (U)	81.4
0215-95-0197	15-02383	0.00–0.50	Soil	-	0.575	14.9	-	0.717	6.49	-	-
0215-95-0198	15-02383	1.33–1.83	Soil	0.951 (U)	-	-	-	0.355	-	0.951 (U)	-

Notes: All values in mg/kg. BVs are provided in LANL 1998, 059730.

* - = Not detected or not above BV.

Table 4.12-3
Organic Chemicals Detected at AOC 15-014(h)

Sample ID	Location ID	Depth (ft)	Media	Acetone	Benzo(b)fluoranthene	Fluoranthene	Methylene Chloride	Pyrene
0215-95-0195	15-02382	0.00–0.50	Soil	NA[a]	0.21 (J)	0.236 (J)	NA	0.21 (J)
0215-95-0196	15-02382	2.50–3.00	Soil	0.0139	-[b]	-	0.0042 (J)	-
0215-95-0198	15-02383	1.33–1.83	Soil	0.00949 (J)	-	-	0.00303 (J)	-

Note: All values in mg/kg.

[a] NA = Not analyzed.

[b] - = Not detected.

Table 5.1-1
Samples Collected and Analyses Requested at SWMU 36-002

Sample ID	Location ID	Depth (ft)	Media	HE	Metals	SVOCs	VOCs
AAB1801	36-03001	0.00–5.00	Fill	19079	19081, 19082	19079	19079
AAB1802	36-03002	5.00–5.50	Fill	19079	19081, 19082	19079	19079
AAB1803	36-03003	5.50–6.50	Fill	19079	19081, 19082	19079	19079
AAB1805	36-03004	6.50–8.50	Fill	19079	19081, 19082	19079	19079
AAB1806	36-03005	8.50–9.50	Fill	19079	19081, 19082	19079	19079

Table 5.1-2
Inorganic Chemicals above BVs at SWMU 36-002

Sample ID	Location ID	Depth (ft)	Media	Antimony	Cadmium	Lead	Zinc
Soil BV				**0.83**	**0.4**	**22.3**	**48.8**
AAB1801	36-03001	0.00–5.00	Fill	5.2 (U)	0.7	30.4	1160
AAB1802	36-03002	5.00–5.50	Fill	5.2 (U)	0.52 (U)	-*	129
AAB1803	36-03003	5.50–6.50	Fill	5.2 (U)	0.52 (U)	31.7	177
AAB1805	36-03004	6.50–8.50	Fill	5.1 (U)	0.51 (U)	-	66.2
AAB1806	36-03005	8.50–9.50	Fill	5.2 (U)	0.52 (U)	-	127

Notes: All values in mg/kg. BVs are provided in LANL 1998, 059730.

* - = Not detected or not above BV.

Table 5.2-1
Samples Collected and Analyses Requested at SWMU 36-003(a)

Sample ID	Location ID	Depth (ft)	Media	Metals	SVOCs	VOCs
1994 RFI Sampling						
AAB1897	36-03053	2.00–2.67	Fill	20273	20204	20204
AAB1898	36-03053	2.75–3.50	Qbt2	20273	20204	20204
AAB1900	36-03054	1.83–2.67	Fill	20275	20211	20211
AAB1901	36-03054	2.67–3.17	Qbt2	20275	20211	20211
AAB1903	36-03055	1.83–2.50	Fill	20275	20211	20211
AAB1904	36-03055	2.50–3.33	Qbt2	20275	20211	20211
AAB1906	36-03056	4.50–5.00	Qbt2	20274	20249	20249
AAB1907	36-03056	5.00–5.50	Qbt2	20274	20249	20249
AAB1909	36-03057	5.30–6.00	Fill	20297	20281	20281
AAB1910	36-03057	6.50–7.00	Qbt2	20297	20281	20281
AAB1873	36-03094	0.00–0.00	Sludge	18191	18188	18188
AAB1874	36-03095	0.00–0.00	Sludge	18191	18188	18188
AAB1876	36-03096	0.00–0.00	Sludge	18191	18188	18188
AAB1877	36-03097	0.00–0.00	Sludge	18191	18188	18188
AAB1892	36-03052	2.50–3.17	Fill	20297	20281	20281
AAB1894	36-03052	3.17–3.33	Qbt2	20297	20281	20281
1995 Sampling						
ECXX-95-0310	36-03123	0.00–4.50	Soil	6527918, 6527922, 6527985, 6527986, 6527987, 6527988	-*	6527919
ECXX-95-0311	36-03124	0.00–4.50	Soil	6527918, 6527922, 6527985, 6527986, 6527987, 6527988	-	6527919
ECXX-95-0314	36-3125*	2.00–4.00	Soil	-	-	72392
ECXX-95-0315	36-3125*	9.50–11.00	Soil	72342, 72386	-	72392
ECXX-95-0316	36-3126*	9.00–11.00	Soil	72342, 72386	-	72392

*- = Analyses not requested.

Table 5.2-2
Inorganic Chemicals above BVs at SWMU 36-003(a)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron
Soil BV				**29200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**21500**
Qbt2 BV				**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**14500**
1994 RFI Results														
AAB1892	36-03052	2.50–3.17	Fill	-[a]	5.9 (U)	-	-	-	0.8 (U)	-	-	-	-	-
AAB1894	36-03052	3.17–3.33	Qbt2	19400	6.5 (U)	3.2	96.6	2.1	-	4520	13	4.1 (U)	13	19500
AAB1897	36-03053	2.00–2.67	Fill	-	4.5 (U)	-	-	-	-	-	-	-	-	-
AAB1898	36-03053	2.75–3.50	Qbt2	-	4.3 (U)	-	-	-	-	-	-	-	-	-
AAB1900	36-03054	1.83–2.67	Fill	-	4.7 (U)	-	-	-	-	-	-	-	-	-
AAB1901	36-03054	2.67–3.17	Qbt2	-	4.3 (U)	-	-	-	-	-	-	-	-	-
AAB1903	36-03055	1.83–2.50	Fill	-	4.8 (U)	-	-	-	-	-	-	-	-	-
AAB1904	36-03055	2.50–3.33	Qbt2	-	4.8 (U)	-	-	-	-	-	-	-	-	-
AAB1906	36-03056	4.50–5.00	Qbt2	-	4.3 (U)	-	-	-	-	-	-	-	4.7 (U)	-
AAB1907	36-03056	5.00–5.50	Qbt2	12500	4.7 (U)	-	108	1.5	-	2800	8.8	6.9 (U)	8.1	14600
AAB1909	36-03057	5.30–6.00	Fill	-	5.7 (U)	-	-	-	0.77 (U)	-	-	-	-	-
AAB1910	36-03057	6.50–7.00	Qbt2	23700	6.4 (U)	4.1	95.8	2	-	4270	15.9	5.3 (U)	11.9	22700
1995 Results														
ECXX-95-0310	36-03123	0.00–4.50	Soil	-	8.3 (U)	-	-	-	1 (U)	-	-	-	-	-
ECXX-95-0311	36-03124	0.00–4.50	Soil	-	8.3 (U)	-	-	-	1 (U)	-	-	-	-	-
ECXX-95-0315	36-3125*	9.50–11.00	Soil	-	-	-	-	-	-	-	36.6	-	-	-
ECXX-95-0316	36-3126*	9.00–11.00	Soil	-	-	-	-	-	-	-	83.2	-	-	-

Table 5.2-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Lead	Magnesium	Mercury	Nickel	Selenium	Silver	Strontium	Thallium	Vanadium	Zinc
Fill & Soil BV				**22.3**	**4610**	**0.1**	**15.4**	**1.52**	**1**	**na**[b]	**0.73**	**39.6**	**48.8**
Qbt2 BV				**11.2**	**1690**	**0.1**	**6.58**	**0.3**	**1**	**na**	**1.1**	**17**	**63.5**
1994 RFI Results													
AAB1892	36-03052	2.50–3.17	Fill	-	-	-	-	-	-	NA[c]	-	-	-
AAB1894	36-03052	3.17–3.33	Qbt2	-	3220	-	8.8 (U)	-	-	NA	-	28.4	66.1
AAB1897	36-03053	2.00–2.67	Fill	-	-	0.18	-	-	-	NA	-	-	-
AAB1898	36-03053	2.75–3.50	Qbt2	-	-	-	-	0.51 (U)	-	NA	-	-	-
AAB1900	36-03054	1.83–2.67	Fill	-	-	-	-	-	-	NA	-	-	-
AAB1901	36-03054	2.67–3.17	Qbt2	-	-	-	-	0.54 (U)	-	NA	-	-	-
AAB1903	36-03055	1.83–2.50	Fill	-	-	-	-	-	-	NA	-	-	-
AAB1904	36-03055	2.50–3.33	Qbt2	-	-	-	-	0.84 (U)	223 (U)	NA	-	-	-
AAB1906	36-03056	4.50–5.00	Qbt2	-	-	-	-	0.51 (U)	-	NA	-	-	-
AAB1907	36-03056	5.00–5.50	Qbt2	-	2290	-	9.6	0.56 (U)	-	NA	-	18	-
AAB1909	36-03057	5.30–6.00	Fill	-	-	-	-	-	-	NA	-	-	-
AAB1910	36-03057	6.50–7.00	Qbt2	18.1	4070	-	11.1	-	-	NA	-	28.6	-
1995 Results													
ECXX-95-0310	36-03123	0.00–4.50	Soil	-	-	-	-	-	2.1 (U)	5.1	1 (U)	-	-
ECXX-95-0311	36-03124	0.00–4.50	Soil	-	-	-	-	-	2.1 (U)	21	1 (U)	-	-
ECXX-95-0315	36-3125*	9.50–11.00	Soil	-	-	-	-	-	-	NA	0.964 (U)	-	-
ECXX-95-0316	36-3126*	9.00–11.00	Soil	-	-	-	-	-	-	NA	0.983 (U)	-	-

Notes: All values in mg/kg. BVs are provided in LANL 1998, 059730.

[a] - = Not detected or not above BV.

[b] na = Not available.

[c] NA = Not analyzed.

Table 5.2-3
Organic Chemicals Detected at SWMU 36-003(a)

Sample ID	Location ID	Depth (ft)	Media	Acetone	Methylene Chloride
ECXX-95-0314	36-3125*	2.00–4.00	Soil	0.0151	0.00453 (J)
ECXX-95-0315	36-3125*	9.50–11.00	Soil	0.00894 (J)	0.00504
ECXX-95-0316	36-3126*	9.00–11.00	Soil	0.0142	0.00395 (J)

Note: All values in mg/kg.

Table 5.4-1
Samples Collected and Analyses Requested at SWMU C-36-003

Sample ID	Location ID	Depth (ft)	Media	Metals	SVOCs
AAB1918	36-03108	0.00–0.00	Water	18302	18240
AAB1911	36-03108	0.00–0.50	Soil	19059	18210
AAB1913	36-03109	0.00–0.50	Soil	19059	18210
AAB1914	36-03110	0.00–0.50	Soil	19059	18210
AAB1915	36-03111	0.00–0.50	Soil	19059	18210
AAB1916	36-03112	0.00–0.50	Soil	-*	20301
AAB1917	36-03113	0.00–0.50	Soil	-	20301

* - = Analyses not requested.

Table 5.4-2
Inorganic Chemicals above BVs at SWMU C-36-003

Sample ID	Location ID	Depth (ft)	Media	Antimony	Cadmium	Calcium	Chromium	Copper	Lead	Manganese	Nickel	Silver	Zinc
Soil BV				**0.83**	**0.4**	**6120**	**19.3**	**14.7**	**22.3**	**671**	**15.4**	**1**	**48.8**
AAB1911	36-03108	0.00–0.50	Soil	5.8 (U)	2.2	-*	68.5 (J)	2770	193	-	207	148	1470
AAB1913	36-03109	0.00–0.50	Soil	5.5 (U)	1	6440	883 (J)	211	142	-	17.1	328	198
AAB1914	36-03110	0.00–0.50	Soil	6.8 (U)	1.7	8400	331 (J)	71.9	48.3	-	-	413	107
AAB1915	36-03111	0.00–0.50	Soil	6 (U)	0.65	6770	55.2 (J)	70.4	34.3	848	-	355	65.4

Notes: All values in mg/kg. BVs are provided in LANL 1998, 059730.

* - = Not detected or not above BV.

Appendix A

Acronyms and Abbreviations, Metric Conversion Table, and Data Qualifier Definitions

A-1.0 ACRONYMS AND ABBREVIATIONS

amsl	above mean sea level
AOC	area of concern
BV	background value
CST	Chemical Sciences and Technology
DOE	Department of Energy (U.S.)
DU	depleted uranium
EC	expedited cleanup
EP	Environmental Programs (Directorate)
ENV	Environmental Stewardship (Division)
FV	fallout value
HE	high explosives
HIR	historical investigation report
HMX	1,3,5,7-tetranitro-1,3,5,7-tetrazocine
HWFP	Hazardous Waste Facility Permit
LANL	Los Alamos National Laboratory
NFA	no further action
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
PHERMEX	Pulsed High-Energy Radiographic Machine Emitting X-rays [facility in DX Division]
RCRA	Resource Conservation and Recovery Act
RDX	research department explosive [also hexahydro-1,3,5-trinitro-1,3,5-triazine]
RFI	RCRA facility investigation
RPF	Records Processing Facility
SMO	Sample Management Office
SVOC	semivolatile organic compound
SWMU	solid waste management unit
SWSC	Sanitary Wastewater Systems Consolidation
TA	technical area
VCA	voluntary corrective action
VCP	vitrified clay pipe
VOC	volatile organic compound

A-2.0 METRIC CONVERSION TABLE

Multiply SI (Metric) Unit	by	To Obtain US Customary Unit
kilometers (km)	0.622	miles (mi)
kilometers (km)	3281	feet (ft)
meters (m)	3.281	feet (ft)
meters (m)	39.37	inches (in.)
centimeters (cm)	0.03281	feet (ft)
centimeters (cm)	0.394	inches (in.)
millimeters (mm)	0.0394	inches (in.)
micrometers or microns (µm)	0.0000394	inches (in.)
square kilometers (km^2)	0.3861	square miles (mi^2)
hectares (ha)	2.5	acres
square meters (m^2)	10.764	square feet (ft^2)
cubic meters (m^3)	35.31	cubic feet (ft^3)
kilograms (kg)	2.2046	pounds (lb)
grams (g)	0.0353	ounces (oz)
grams per cubic centimeter (g/cm^3)	62.422	pounds per cubic foot (lb/ft^3)
milligrams per kilogram (mg/kg)	1	parts per million (ppm)
micrograms per gram (µg/g)	1	parts per million (ppm)
liters (L)	0.26	gallons (gal.)
milligrams per liter (mg/L)	1	parts per million (ppm)
degrees Celsius (°C)	9/5 + 32	degrees Fahrenheit (°F)

A-3.0 DATA QUALIFIER DEFINITIONS

Data Qualifier	Definition
U	The analyte was analyzed for but not detected.
J	The analyte was positively identified, and the associated numerical value is estimated to be more uncertain than would normally be expected for that analysis.
J+	The analyte was positively identified, and the result is likely to be biased high.
J-	The analyte was positively identified, and the result is likely to be biased low.
UJ	The analyte was not positively identified in the sample, and the associated value is an estimate of the sample-specific detection or quantitation limit.
R	The data are rejected as a result of major problems with quality assurance/quality control (QA/QC) parameters.

Appendix B

Threemile Canyon Aggregate Area Analytical Data
(on CD included with this document)