2022 Annual Sampling Implementation Plan

NPDES Permit No. NM0030759

March 2023

Pajarito Watershed

Receiving Waters:
Pajarito Canyon, Starmer Canyon, Twomile Canyon, and Threemile Canyon

Volume 3

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119.0 2M-SMA-1

Associated Sites	03-010(a)
Receiving Water	Twomile Canyon
Drainage Area	19.35 acres
Landscape Characteristics	29% impervious, 71% pervious
Consent Order Site Status	SWMU 03-010(a): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the November 2017 field visit, the current SMA sampling location and boundary were agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

119.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, two baseline stormwater samples were collected in August 2011. Analytical results from these samples initiated corrective action.

Following the July 2012 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2012, 221595), corrective-action monitoring was initiated and stormwater samples were collected in July and September 2012. Analytical results from these samples initiated corrective action.

The Permittees submitted a request for alternative compliance for per permit Part I.E.3 in May 2015 for the Site (LANL 2015, 600418). No response has been received from EPA and stormwater monitoring has not occurred since 2012.

119.2 Site History

03-010(a) (11/27/2017)

SWMU 03-010(a) is surface disposal area and drainage that received waste generated from vacuum pumps repaired at the shop in building 03-0030 [AOC 03-001(e)] at TA-03. The surface disposal area received discharges of waste oil and mercury between 1950 and 1957. Former site workers estimated that between 150 and 200 lb of mercury was in the waste oil discharged to the drainage along with tritium and transuranics. The drainage encompasses an area approximately 40 ft long × 15 ft wide on a moderately steep slope southwest of building 03-0030 that discharges into Twomile Canyon. Waste oil from the vacuum repair shop in building 03-0030 was subsequently collected and stored in containers at AOC 03-001(e) located on the west side of the building until 1992.

For investigation activities refer to “Investigation Work Plan for Twomile Canyon Aggregate Area, Revision 1” (LANL 2010, 109520).

119.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 119.2-1.

Table 119.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
03-010(a)	Former vacuum repair shop outfall	Lead, mercury, tritium, transuranic elements

119.3 Consent Order Soil Data

Decision-level data for SWMU 03-010(a) consist of results from samples collected in 2005. Analytical results from those samples are presented in Figures 119.3-1 through 119.3-4.

The 2010 IWP (LANL 2010, 109520) concluded that the nature and extent of contamination have not been defined and further investigation is recommended, however, residual contamination associated with AOC 03-001(e) and SWMU 03-010(a) may be located beneath building 03-30. Therefore, it is proposed that further site characterization and investigation of AOC 03-001(e) and SWMU 03-010(a) be delayed until the demolition of building 03-30.

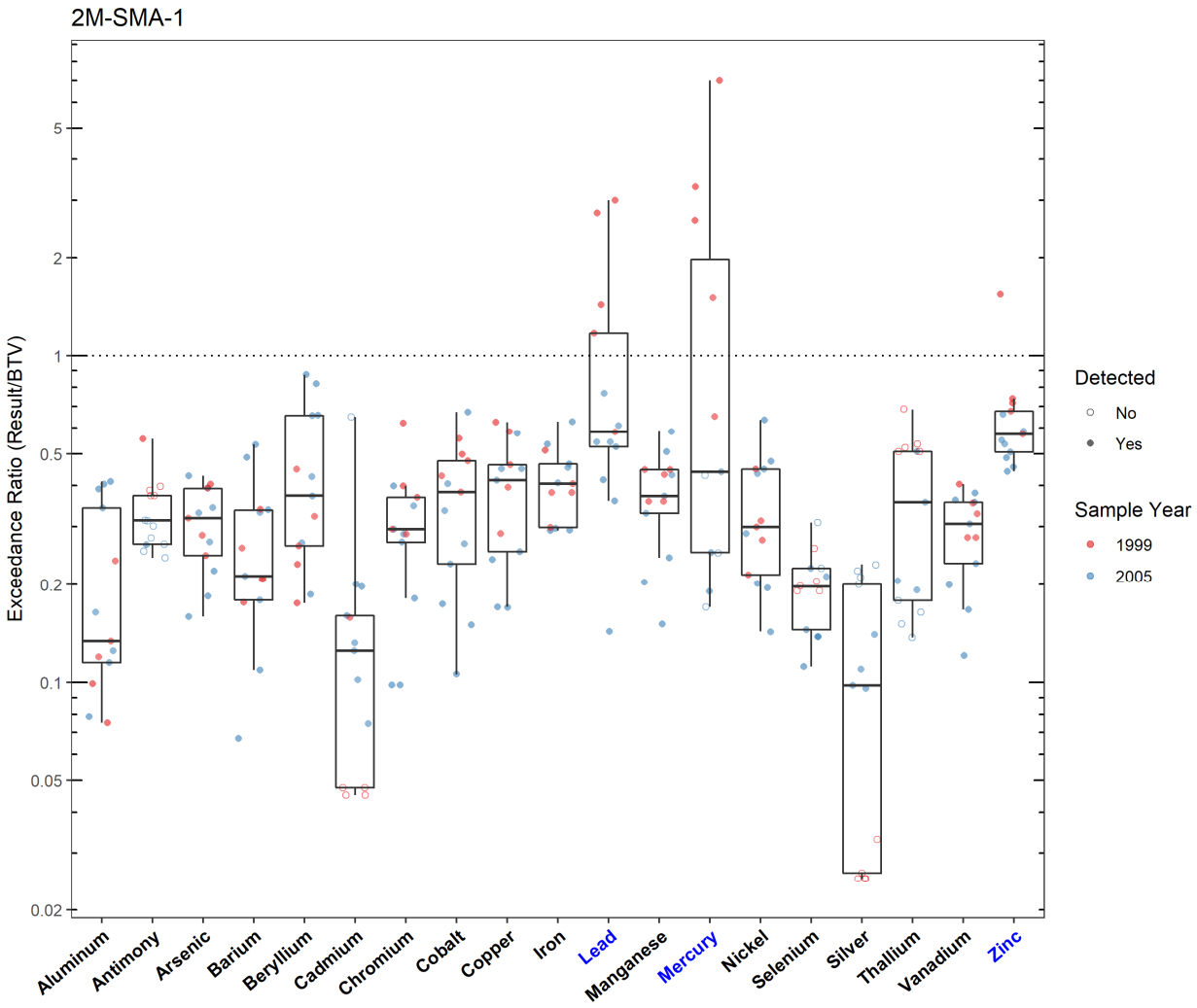

Figure 119.3-1 Inorganic Analytical Results from Soil Samples Associated with 2M-SMA-1

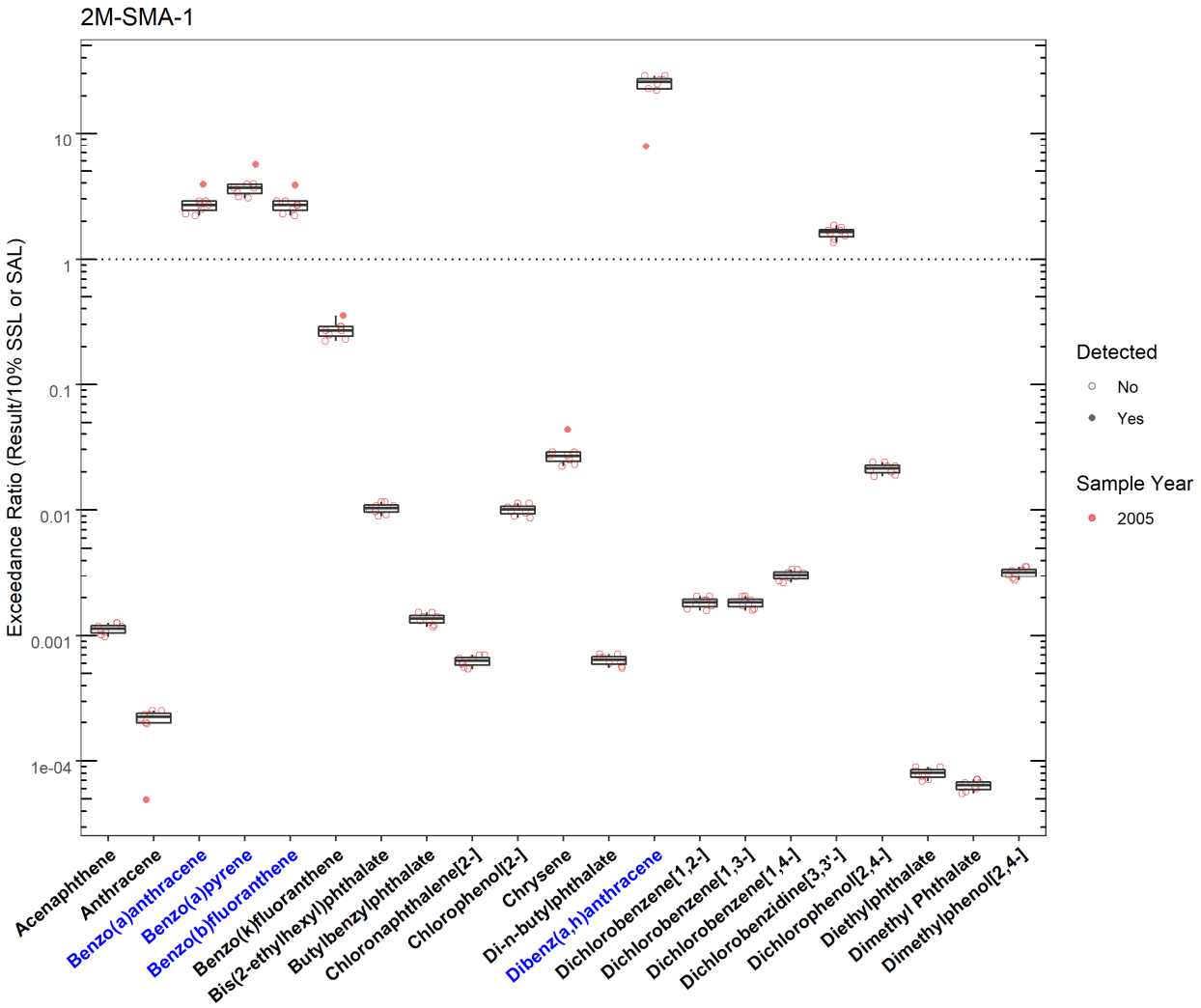

Figure 119.3-2 Organics Analytical Results from Soil Samples Assoicated with 2M-SMA-1 (Plot 1)

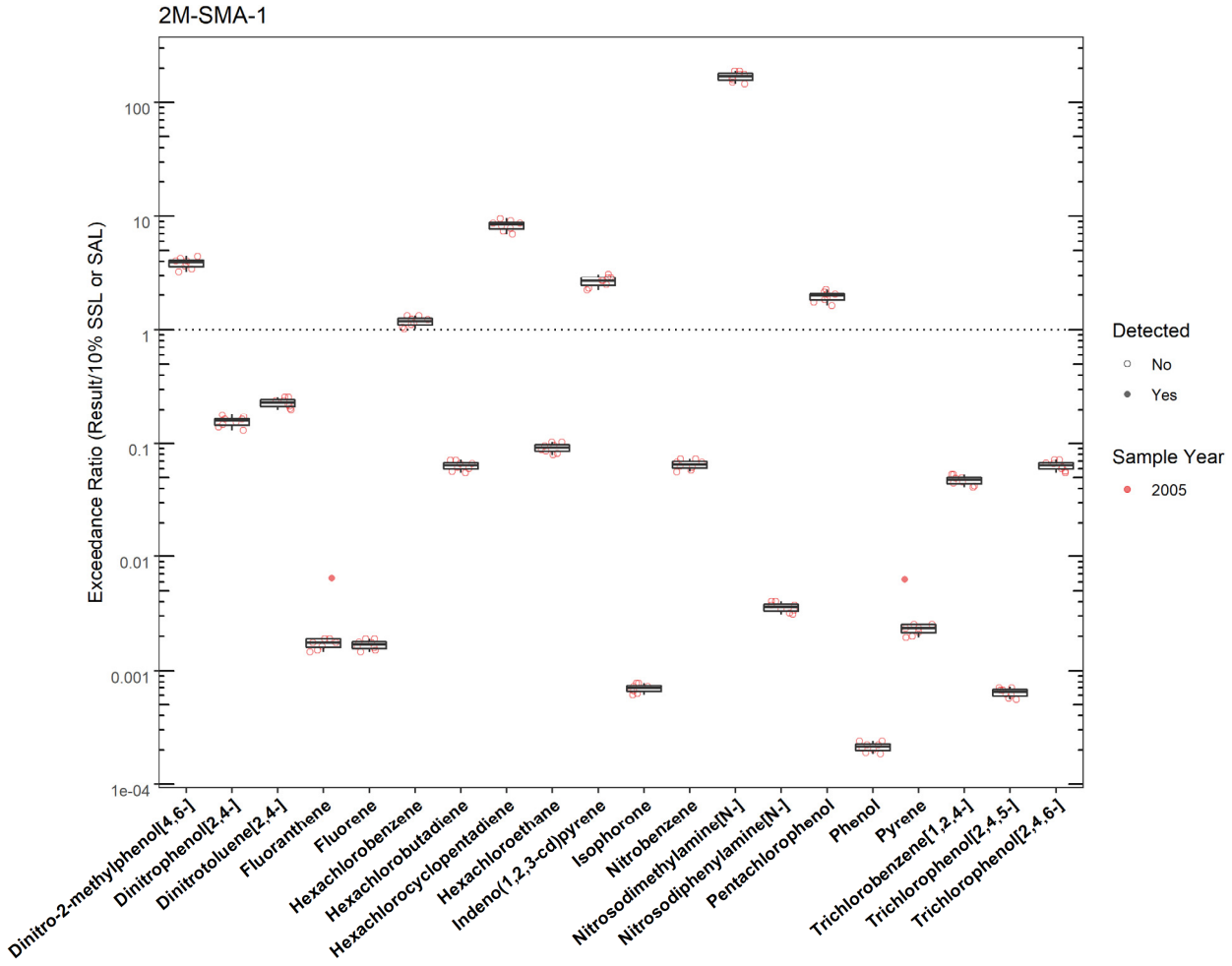

Figure 119.3-3 Organics Analytical Results from Soil Samples Associated with 2M-SMA-1 (Plot 2)

2M-SMA-1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	2M-SMA-1	56-55-3	Y	SSL_0.1	0.153	0.600	2005-05-26
Benzo(a)pyrene	2M-SMA-1	50-32-8	Y	SSL_0.1	0.112	0.630	2005-05-26
Benzo(b)fluoranthene	2M-SMA-1	205-99-2	Y	SSL_0.1	0.153	0.590	2005-05-26
Dibenz(a,h)anthracene	2M-SMA-1	53-70-3	Y	SSL_0.1	0.0153	0.120	2005-05-26
Lead	2M-SMA-1	Pb	Y	BTV	22.3	67.0	1999-12-17
Mercury	2M-SMA-1	Hg	Y	BTV	0.100	0.700	1999-12-17
Zinc	2M-SMA-1	Zn	Y	BTV	48.8	75.0	1999-12-17

Figure 119.3-4 Screening-Level Exceedances from Soil Samples Associated with 2M-SMA-1

119.4 Stormwater Evaluation

119.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Corrective action stormwater samples were collected in July and September 2012. Analytical results from these samples are presented in Figures 119.4-1 and 119.4-2.

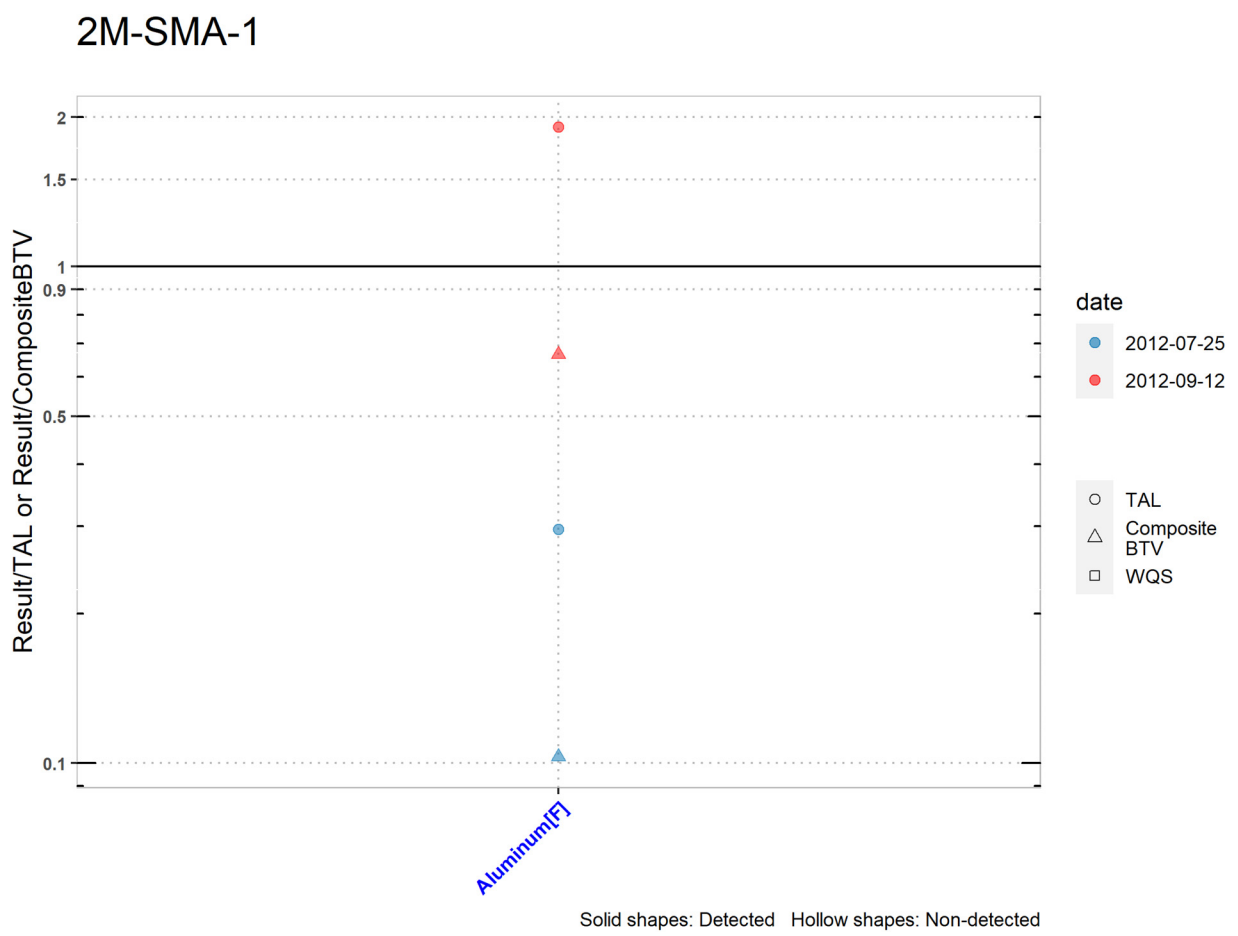

Figure 119.4-1 Analytical Results from Stormwater Samples, 2M-SMA-1 (Plot)

2M-SMA-1

	Aluminum [F]
MQL	2.5
ATAL	NA
MTAL	750
Composite_BTV	2150
unit	ug/L
2012-07-25 result	222
2012-07-25 dT	0.296
2012-07-25 dB	0.103
2012-09-12 result	1430
2012-09-12 dT	1.91
2012-09-12 dB	0.665
geo_mean/ATAL	NA
geo_mean/B	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
geo_mean/B=geo_mean/composite_BTV

Figure 119.4-2 Analytical Results from Stormwater Samples, 2M-SMA-1 (Table)

119.4.2 Assessment Unit and Stream Impairments

2M-SMA-1 drains to Twomile Canyon (Pajarito to headwaters), which has impairments for total aluminum, dissolved copper, PCBs, and adjusted gross alpha. The adjusted gross alpha impairment may be Site-related, based on Site history.

119.5 Site-Specific Demonstration

119.5.1 Soil Data Summary

All Site-related POCs that exceeded the applicable soil-screening value in soil data were previously monitored in stormwater.

119.5.2 Stormwater Data Summary

Dissolved aluminum exceeded TAL but not BTV.

119.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related POCs were analyzed for in past samples.

119.5.4 Sampling and Analysis Plan

Table 119.5-1 is the proposed SAP for 2M-SMA-1.

Table 119.5-1 Proposed SAP, 2M-SMA-1

Monitoring Constituent	Background for Monitoring
Tritium	Site history
DOC	Permit requirement
SSC	Permit requirement

120.0 2M-SMA-1.42

Associated Sites	06-001(a)
Receiving Water	Twomile Canyon
Drainage Area	0.04 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 06-001(a): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the December 2016 field visit, it was determined that the current sampling location is not representative because it is at the mouth of the outfall and not downgradient of any affected media. Therefore, the sampler will be moved outside the security fence to sample more of the potentially affected area.
2022 Permit Status	Active Monitoring

120.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, baseline stormwater samples were collected in August and September 2011. Analytical results from these samples initiated corrective action.

Following the July 2012 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2012, 221595), corrective-action monitoring was initiated and a stormwater sample was collected in July 2015. Analytical results from this sample initiated corrective action.

The Permittees submitted a request for alternative compliance for the Site per permit Part I.E.3 in February 2016 (LANL 2016, 601239). No response has been received from EPA and stormwater monitoring has not occurred since 2015.

The sampler move recommended in December 2016 was instituted but no samples were collected under the Administratively Continued Permit.

120.2 Site History

06-001(a) (11/27/2017)

SWMU 06-001(a) is an inactive septic system located north of former building 06-0003 at TA-06. The septic system served former buildings 06-0001 and 06-0003 and consists of an 840 gal. septic tank (structure 06-0040), inlet and outlet drainlines, and an associated outfall that discharged to Tributary A of Twomile Canyon. The septic tank is located approximately 100 ft north of former building 06-0003.

Former building 06-0001 was constructed in May 1944 and was originally used to develop analytical procedures for nonradioactive cobalt tracer shots. An engineering drawing shows the building as having two rooms, one identified as a carpenter shop and the other as a laboratory. The laboratory had an acid-resistant workbench and a lead-lined sink connected to the septic system. In the late 1950s, silver soldering may have been conducted in the carpenter shop. In the early 1980s, cable and boxed inert supplies were warehoused in former building 06-0001. The building was not used after the carpenter shop closed in the 1980s.

Former building 06-0003 was also constructed in 1944 and housed a restroom, darkroom, and laboratory with a lead-lined sink. The building was first used as a control bunker for explosives shots and was surrounded on three sides by an earthen berm. Explosion-proof fixtures were subsequently installed because diethyl ether was used in the analyses performed in the building. From 1945 to 1948, building 06-0003 housed offices, and from 1948 to the early 1950s, the building had a firing control panel and a bridgewire-testing laboratory to prepare cobalt tracers. In 1972, building 06-0003 was remodeled into a printed circuit shop, and was later used as a silk-screen facility until the mid-1980s. After the mid-1980s, the building was used for storage.

The septic system was decommissioned in 1986, and the outlet drainline from the septic tank (structure 06-0040) was plugged in 1988. During a reconnaissance site visit in 1992, the septic tank was located and found to be empty. Buildings 06-0001 and 06-0003 were demolished and removed in 2004. The septic system was left in place.

For investigation activities refer to "Investigation Work Plan for Twomile Canyon Aggregate Area, Revision 1" (LANL 2010, 109520).

120.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 120.2-1.

Table 120.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
06-001(a)	Septic system	Lead, silver, HE, cobalt

120.3 Consent Order Soil Data

Decision-level data are not available for SWMU 06-001(a).

120.4 Stormwater Evaluation

120.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected in the current location at the SMA.

120.4.2 Assessment Unit and Stream Impairments

2M-SMA-1.42 drains to Twomile Canyon (Pajarito to headwaters), which has impairments for total aluminum, dissolved copper, PCBs, and adjusted gross alpha. These impairments are not-likely to be Site-related, based on Site History.

120.5 Site-Specific Demonstration

120.5.1 Soil Data Summary

Decision-level data are not available for SWMU 06-001(a).

120.5.2 Stormwater Data Summary

No confirmation-monitoring data.

120.5.3 2022 Permit Status

The SMA is in active monitoring; a confirmation-monitoring sample has not been collected at the current location.

120.5.4 Sampling and Analysis Plan

Table 120.5-1 is the proposed SAP for 2M-SMA-1.42.

Table 120.5-1 Proposed SAP, 2M-SMA-1.42

Monitoring Constituent	Background for Monitoring
HE	Site history
Dissolved lead, silver, cobalt	Site history
DOC	Permit requirement
SSC	Permit requirement

121.0 2M-SMA-1.43

Associated Sites	22-014(a), 22-015(a)
Receiving Water	Twomile Canyon
Drainage Area	3.72 acres
Landscape Characteristics	49% impervious, 51% pervious
Consent Order Site Status	SWMU 22-014(a): In Progress SWMU 22-015(a): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the December 2016 field visit, it was determined that the current sampling location does not capture potential surface water runoff from the 22-014(a) drywell. Therefore, the current sampler location was moved.
2022 Permit Status	Active Monitoring

121.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in July 2013. Analytical results from this sample initiated corrective action.

The Permittees submitted a request for alternative compliance for the Sites per permit Part I.E.3 in May 2015 (LANL 2015, 600418). No response has been received from EPA and stormwater monitoring has not occurred since 2013.

The sampler move recommended in December 2016 was instituted and three investigative samples were collected under the Administratively Continued Permit, those samples will now be used as compliance samples for the 2022 IP.

121.2 Site History

22-014(a) (11/30/2017)

SWMU 22-014(a) consists of an active HE sump system located immediately south of building 22-0093 at TA-22. The sump system consists of a concrete sump measuring approximately 4 ft deep × 9 ft long × 3 ft wide containing an inset aluminum tank, an inlet drainline, and an inactive outlet drainline and seepage pit. The sump system has been operating since 1985 and receives rinse water from a washing facility for parts and clothing from explosives compacting operations in rooms C112 and C114 in building 22-93. Before 1995, the sump discharged approximately 100 gal. of wastewater each week through a drainline to a seepage pit located 150 ft south of the sump in the upper part of Tributary B of Twomile Canyon. The seepage pit is 4 ft diameter and 36 ft deep. In 1995, the outflow from the sump was capped leaving the sump outlet drainline and seepage pit inactive. Operations in building 22-0093 continue to discharge wastewater to the sump, where the effluent is retained and suspended HE solids settle out as sludge. The sump contents are periodically removed for disposal at approved facilities at TA-16. The sump is equipped with a level monitor and an alarm that are monitored remotely in a manager's office.

22-015(a) (6/8/2020)

SWMU 22-015(a) consists of two inactive seepage pits (Pits A and B), associated inlet drainlines, and a former NPDES-permitted outfall (EPA 128-128) located in an open grass-covered area east of building 22-0091 at TA-22. The 1990 SWMU Report describes SWMU 22-015(a) as industrial drainlines from building 22-0091 that discharged to two dry wells and then to an outfall southeast of the building. Engineering drawing ENG-C 44842 (pg. 8 of 120) shows the two inactive seepage pits (Pits A and B) each having an outside diameter of 4 ft and filled with crushed gravel with a central 4-in. polypropylene perforated pipe vented to the surface. Pit A is 26 ft deep and Pit B is 20 ft deep. The seepage pits were operated in series and served rooms B102, B107, B121, B123, B145, and B160 in building 22-0091, which housed printed circuit board etching operations. The seepage pits began operation shortly after building 22-0091 was occupied in 1985. From 1985 to 1987, treated waste from the etching operations was discharged through a 6-in.-diameter PVC drainpipe to the seepage pits. The effluent production rate exceeded the infiltration rate of liquid into the tuff beneath the seepage pits, causing the seepage pits to overflow. As a result, the inlet drainlines were disconnected from the seepage pits in 1987 and the pits became inactive. After inlet drainlines to the seepage pits were disconnected, effluent was discharged to an NPDES-permitted outfall (EPA 128-128) southeast of building 22-0091 for a few months before the drainlines were tied into the TA-16 WWTF. The former NPDES-permitted outfall is shown on the 2014 Orthographic GIS Layer and a 1988 site photograph of the outfall, and described in the TA-22 Wastewater Stream Characterization report. A transportainer (structure 22-0169) is currently located over a portion of the inlet drainline originating from the south side of building 22-0091.

For investigation activities for the Sites, refer to “Investigation Work Plan for Twomile Canyon Aggregate Area, Revision 1” (LANL 2010, 109520).

121.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 121.2-1.

Table 121.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
22-014(a)	Sump System	HE
22-015(a)	Drainlines and dry wells	Copper, iron, cyanide, organic chemicals

121.3 Consent Order Soil Data

Decision-level data are not available for SWMU 22-014(a).

Decision-level data for SWMU 22-015(a) consist of results from samples collected in 1996. Analytical results from those samples are presented in Figure 121.3-1.

The approved 2010 IWP (LANL 2010, 109520) concluded that the nature and extent of contamination are not defined and there are no decision-level data for other areas of the Site, including below drainlines and at the outfall.

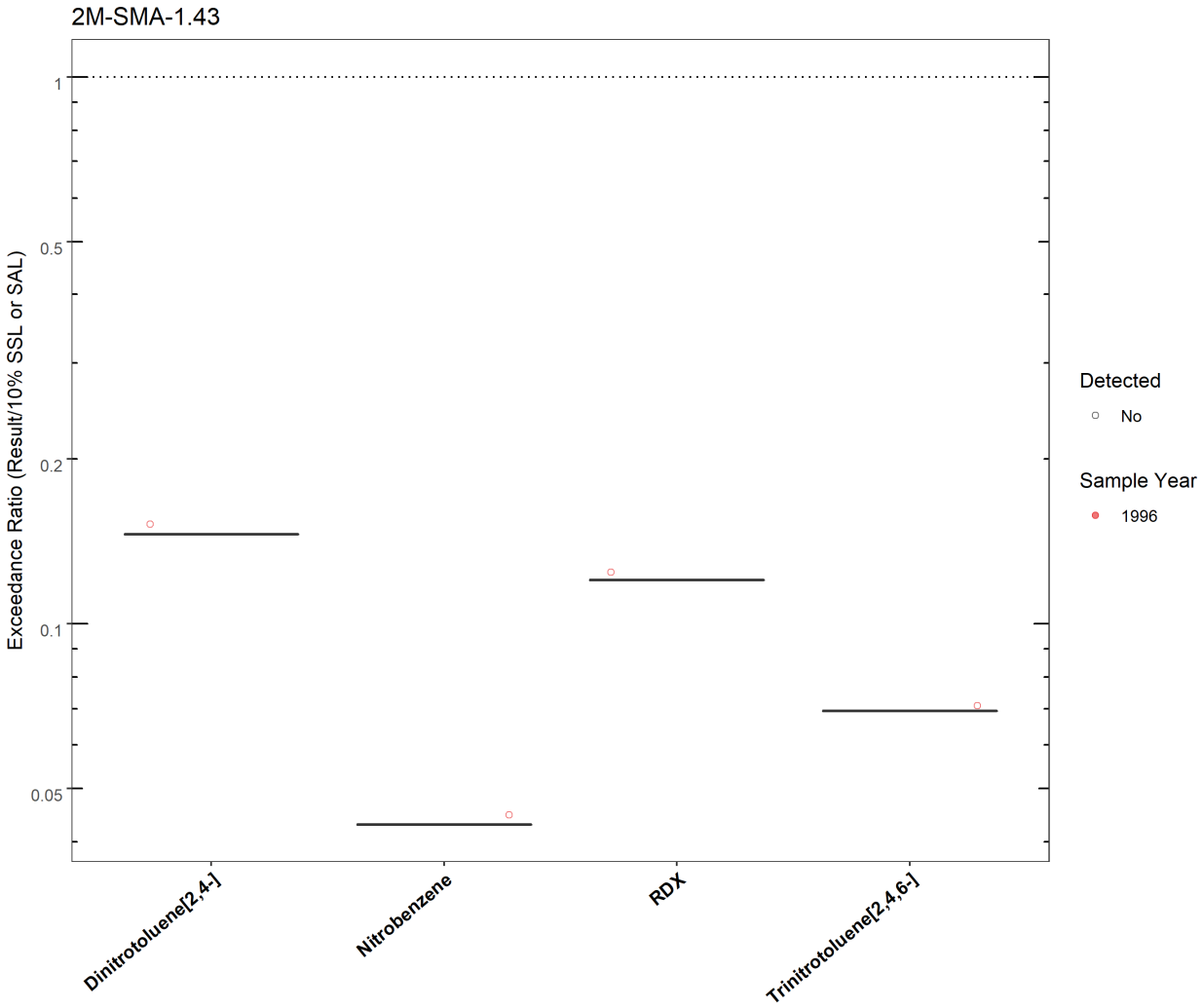

Figure 121.3-1 Organics Analytical Results from Soil Samples Associated with 2M-SMA-1.43

121.4 Stormwater Evaluation

121.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Samples were collected in June and July 2017 for investigative purposes under the Administratively Continued Permit at the SIP-recommended location. These samples are eligible as corrective-action stormwater samples for the 2022 Permit SSD. Analytical results from these samples are presented in Figures 121.4-1 through 121.4-4.

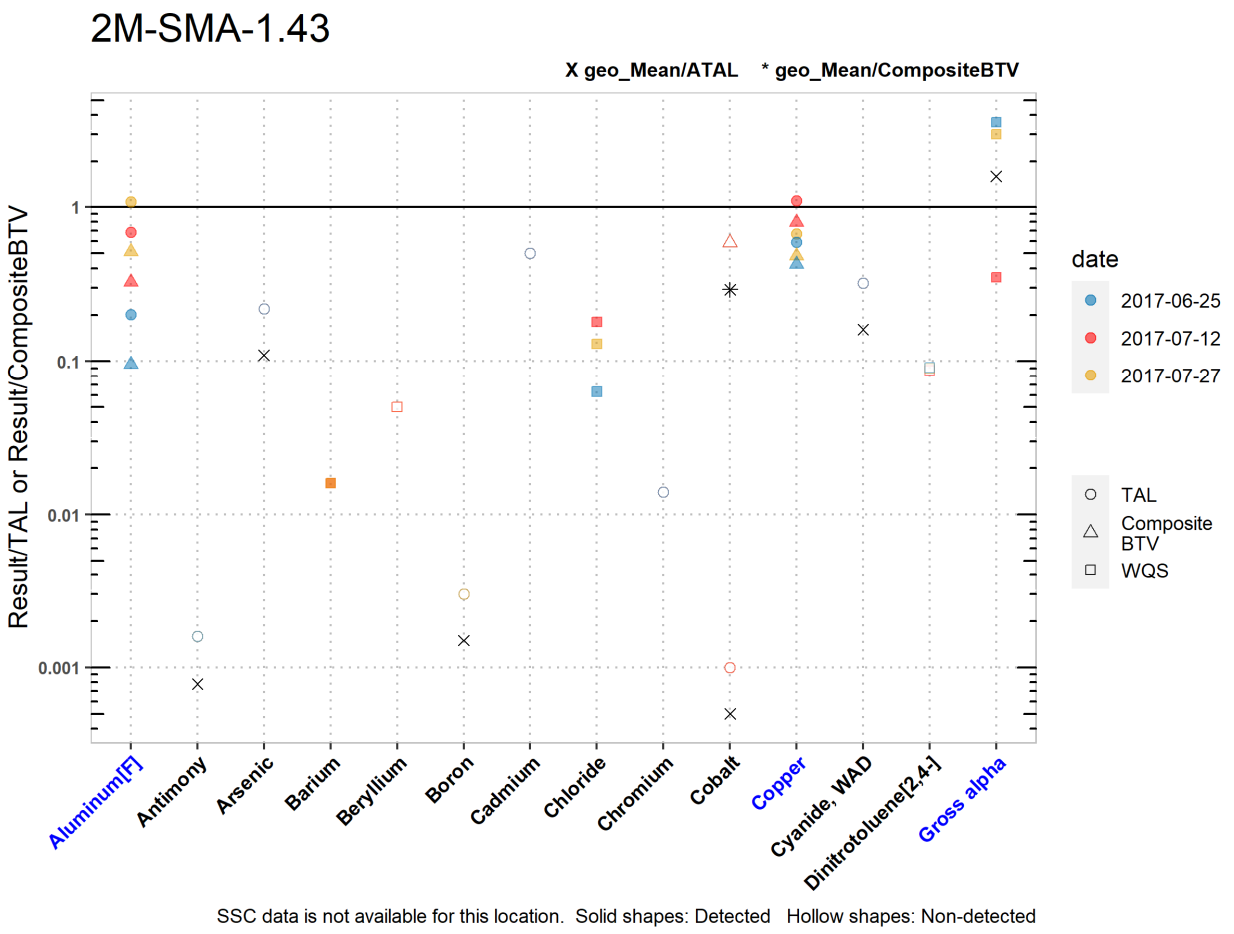

Figure 121.4-1 Analytical Results from Stormwater Samples, 2M-SMA-1.43 (Plot 1)

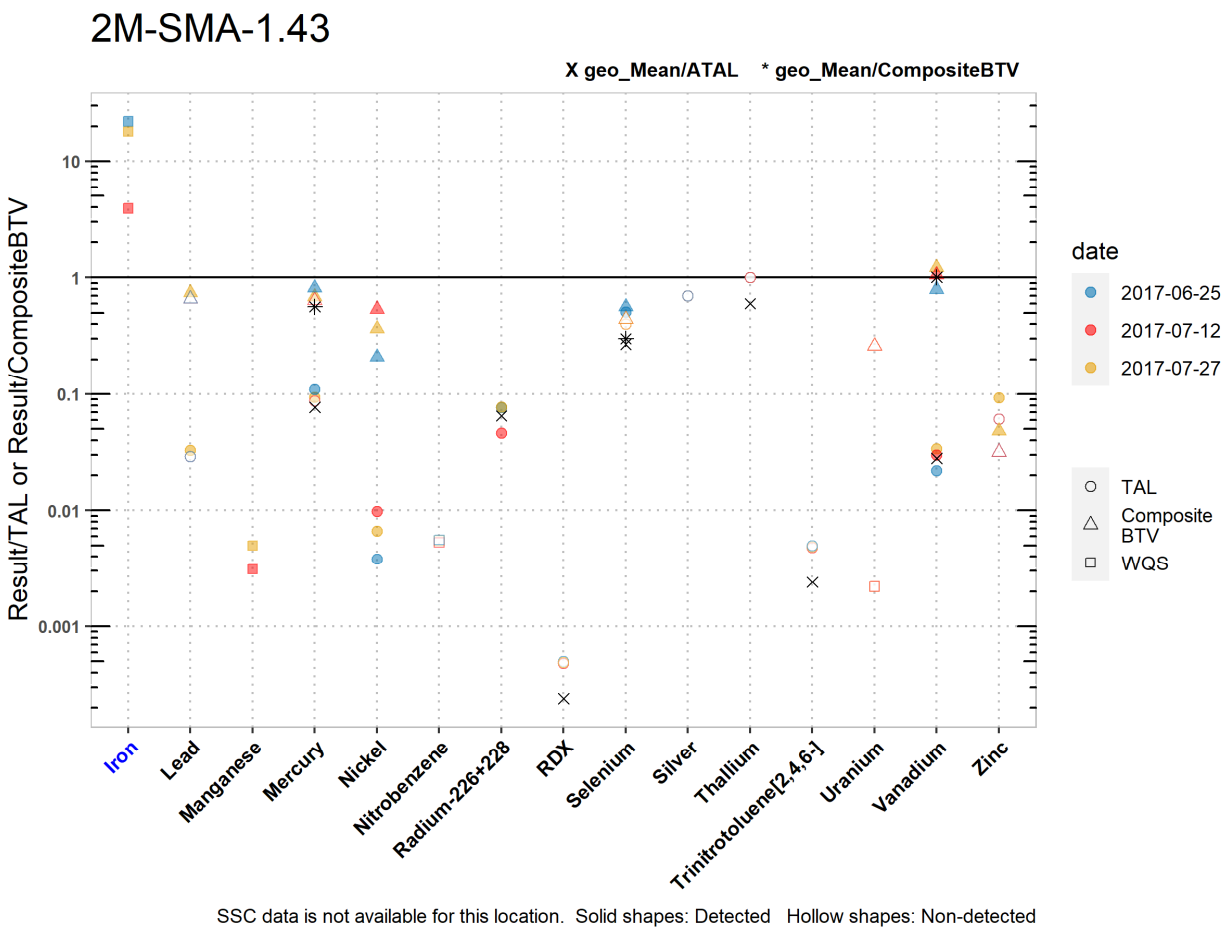

Figure 121.4-2 Analytical Results from Stormwater Samples, 2M-SMA-1.43 (Plot 2)

2M-SMA-1.43

	Aluminum [F]	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chloride	Chromium	Cobalt	Copper	Cyanide, WAD	Dinitrotoluene [2,4-]	Gross alpha
MQL	2.5	1	0.5	NA	NA	100	1	NA	10	50	0.5	10	NA	NA
ATAL	NA	640	9	NA	NA	5000	NA	NA	NA	1000	NA	5.2	NA	15
MTAL	750	NA	340	NA	NA	NA	0.595	NA	214	NA	4.35	22	NA	NA
Composite_BTV	1580	NA	NA	NA	NA	NA	NA	NA	NA	1.71	6.04	NA	NA	53.4
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L
2017-06-25 result	151	*1.00*	*2.00*	NA	NA	*15.0*	*0.300*	14600	*3.00*	*1.00*	2.58	*1.67*	*0.100*	53.5
2017-06-25 dT	0.201	NA	NA	NA	NA	NA	NA	0.063	NA	NA	0.593	NA	NA	3.6
2017-06-25 dB	0.0956	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.427	NA	NA	NA
2017-07-12 result	516	*1.00*	*2.00*	32.2	*0.200*	*15.0*	*0.300*	40500	*3.00*	*1.00*	4.80	*1.67*	*0.0952*	5.31
2017-07-12 dT	0.688	NA	NA	0.016	NA	NA	NA	0.18	NA	NA	1.10	NA	NA	0.35
2017-07-12 dB	0.327	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.795	NA	NA	NA
2017-07-27 result	810	*1.00*	*2.00*	31.7	*0.200*	*15.0*	*0.300*	29000	*3.00*	*1.00*	2.91	*1.67*	*0.0988*	45.2
2017-07-27 dT	1.08	NA	NA	0.016	NA	NA	NA	0.13	NA	NA	0.669	NA	NA	3.0
2017-07-27 dB	0.513	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.482	NA	NA	NA
geo_mean/ATAL	NA	0.00078	0.11	NA	NA	0.0015	NA	NA	NA	0.00050	NA	0.161	NA	1.6
geo_mean/B	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.292	NA	NA	NA	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
geo_mean/B=geo_mean/composite_BTV

Figure 121.4-3 Analytical Results from Stormwater Samples, 2M-SMA-1.43 (Table 1)

2M-SMA-1.43

	Iron	Lead	Manganese	Mercury	Nickel	Nitrobenzene	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Uranium	Vanadium	Zinc
MQL	NA	0.5	NA	0.005	0.5	NA	NA	NA	5	0.5	0.5	NA	NA	50	20
ATAL	NA	NA	NA	0.77	NA	NA	30	200	5	NA	0.47	20	NA	100	NA
MTAL	NA	17.2	NA	NA	170	NA	NA	NA	20	0.41	NA	NA	NA	NA	53.9
Composite_BTV	NA	0.759	NA	0.105	3.10	NA	7.27	NA	4.54	NA	NA	NA	0.258	2.79	104
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2017-06-25 result	22500	*0.500*	NA	0.0860	0.651	*0.100*	2.29	*0.100*	2.56	*0.300*	*0.600*	*0.100*	NA	2.22	*3.30*
2017-06-25 dT	22	NA	NA	0.11	0.00383	NA	0.0763	NA	0.51	NA	NA	NA	NA	0.022	NA
2017-06-25 dB	NA	NA	NA	0.819	0.210	NA	NA	NA	0.564	NA	NA	NA	NA	0.796	NA
2017-07-12 result	3880	*0.500*	3.37	*0.0670*	1.67	*0.0952*	1.39	*0.0952*	*2.00*	*0.300*	*0.600*	*0.0952*	*0.0670*	2.97	*3.30*
2017-07-12 dT	3.9	NA	0.0031	NA	0.00982	NA	0.0463	NA	NA	NA	NA	NA	NA	0.030	NA
2017-07-12 dB	NA	NA	NA	NA	0.539	NA	NA	NA	NA	NA	NA	NA	NA	1.06	NA
2017-07-27 result	18500	0.567	5.47	0.0720	1.13	*0.0988*	2.31	*0.0988*	*2.00*	*0.300*	*0.600*	*0.0988*	*0.0670*	3.39	5.01
2017-07-27 dT	18	0.0330	0.0050	0.094	0.00665	NA	0.0770	NA	NA	NA	NA	NA	NA	0.034	0.0929
2017-07-27 dB	NA	0.747	NA	0.686	0.365	NA	NA	NA	NA	NA	NA	NA	NA	1.22	0.0482
geo_mean/ATAL	NA	NA	NA	0.077	NA	NA	0.0648	0.00024	0.27	NA	0.6	0.0024	NA	0.028	NA
geo_mean/B	NA	NA	NA	0.564	NA	NA	NA	NA	0.301	NA	NA	NA	NA	1.01	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
geo_mean/B=geo_mean/composite_BTV

Figure 121.4-4 Analytical Results from Stormwater Samples, 2M-SMA-1.43 (Table 2)

121.4.2 Assessment Unit and Stream Impairments

2M-SMA-1.43 drains to Twomile Canyon (Pajarito to headwaters), which has impairments for total aluminum, dissolved copper, PCBs, and adjusted gross alpha. The dissolved copper and PCB impairments may be Site-related, based on Site history.

121.5 Site-Specific Demonstration

121.5.1 Soil Data Summary

No Site-related POCs analyzed exceeded the applicable soil-screening value in soil data.

121.5.2 Stormwater Data Summary

Filtered Aluminum and Copper exceeded the TAL but not the BTV. Gross alpha exceeded the TAL and there was no paired SSC result to confirm whether it was below BTVs. Monitoring for gross alpha is only required if the SMA drains to an assessment unit that is impaired for gross alpha. The assessment unit that 2M-SMA-1.43 drains to is not impaired for gross alpha and radionuclides are not a Site-related POC; therefore, it will not be added to the monitoring suite for analysis. Iron exceeded the WQS; however, there is no TAL in the Permit for iron. Only POCs with TALs are used in the SSD.

121.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related POCs were monitored for in previous samples.

121.5.4 Sampling and Analysis Plan

Table 121.5-1 is the proposed SAP for 2M-SMA-1.43.

Table 121.5-1 Proposed SAP, 2M-SMA-1.43

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment and Site history (organics)
SVOCs	Site history (organics)
DOC	Permit requirement
SSC	Permit requirement

122.0 2M-SMA-1.44

Associated Sites	06-001(b)
Receiving Water	Twomile Canyon
Drainage Area	0.23 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 06-001(b): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the December 2016 field visit, the current SMA sampling location and boundary was agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

122.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in August 2011. Analytical results from this sample initiated corrective action.

Following the July 2012 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2012, 221595), corrective-action monitoring was initiated and stormwater samples were collected in September 2013 and July 2014. Analytical results from these samples initiated corrective action.

Following the September 2015 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2015, 600909), the sampler was relocated to a more representative location, and corrective-action monitoring was initiated. Since that time stormwater flow has not been sufficient for full-volume sample collection and monitoring is ongoing until one confirmation sample is collected from this SMA.

122.2 Site History

06-001(b) (11/27/2017)

SWMU 06-001(b) is an inactive septic system located north of former buildings 06-06 at TA-06. The septic system served former building 06-06 and consists of a 960-gal.-capacity septic tank (structure 06-43), inlet and outlet drainlines, a distribution box, filter trench, and outfall that discharged to Tributary A of Twomile Canyon. The septic tank is located approximately 200 ft north of former building 06-06 and measures 5 ft × 9 ft × 5 ft 9 in. deep. Effluent from the septic tank discharged north to a distribution box and then to a filter trench consisting of two parallel trenches with perforated pipe surrounded by sand and covered with gravel. Overflow from the filter trench flowed north to the outfall. The septic system operated from 1945 to the 1980s. In 1989, the outlet drainline from the septic tank was cut and capped. Building 06-06 was demolished and removed in 2004; however, the septic tank, drainlines, distribution box, and filter trenches were left in place.

Former building 06-06 originally housed laboratory operations related to detonator assembly, an electronics work room, a chemistry laboratory, two darkrooms, restrooms, and a sink. The sink drain received rinsate containing copper, brass, and steel parts dipped in nitric acid to remove silver solder

flux and oxidized metals. Solvents were also used to degrease metal. Tin and lead soldering using paste and aqueous zinc/aluminum chloride fluxes was performed on electrical circuits. Manometric apparatuses containing liquid mercury were serviced. Ionizing radiation, in the form of electrically generated x-rays, was used through the 1950s to about 1965. By 1961, the darkrooms, assembly room, and a storage area had been converted to offices. In the 1970s, former building 06-06 was used as a cable shop, where acetone, alcohol, and dilute acids may have been used. In the early 1980s, former building 06-06 was used for printed circuit production.

The RFI work plan for OU 1111 and the 1997 RFI report state that plumbing in former buildings 06-05 and 06-08 was tied to SWMU 06-001(b). However, engineering drawings for these two buildings show no drains or points of discharge. In addition, an engineering drawing of the sanitary sewer system at TA-06 shows no waste lines coming from either building. Therefore, SWMU 06-001(b) did not receive any discharges from former buildings 06-05 and 06-08.

For investigation activities for the Sites refer to "Investigation Work Plan for Twomile Canyon Aggregate Area, Revision 1" (LANL 2010, 109520).

122.2.1 Known or Potential Use of Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 122.2-1.

Table 122.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
06-001(b)	Septic system	Metals, aluminum, copper, lead, mercury, silver, zinc, inorganic and organic chemicals, HE

122.3 Consent Order Soil Data

Decision-level data are not available for SWMU 06-001(b).

122.4 Stormwater Evaluation

122.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No data have been collected for the current monitoring stage and SMA sampler location.

122.4.2 Assessment Unit and Stream Impairments

2M-SMA-1.44 drains to Twomile Canyon (Pajarito to headwaters), which has impairments for total aluminum, dissolved copper, PCBs, and adjusted gross alpha. The aluminum, copper, and PCB impairments may be Site-related, based on Site history.

122.5 Site-Specific Demonstration

122.5.1 Soil Data Summary

No Consent Order data.

122.5.2 Stormwater Data Summary

A confirmation-monitoring sample has not been collected at the current location.

122.5.3 2022 Permit Status

The SMA is in active monitoring. A confirmation-monitoring sample has not been collected in this monitoring stage.

122.5.4 Sampling and Analysis Plan

Table 122.5-1 is the proposed SAP for 2M-SMA-1.44.

Table 122.5-1 Proposed SAP, 2M-SMA-1.44

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment and Site history (organics)
Dissolved copper	Impairment and Site history
SVOCs	Site history (organics)
HE	Site history
DOC	Permit requirement
SSC	Permit requirement

123.0 2M-SMA-1.45

Associated Sites	06-006
Receiving Water	Twomile Canyon
Drainage Area	1.98 acres
Landscape Characteristics	33% impervious, 67% pervious
Consent Order Site Status	SWMU 06-006: In Progress
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the December 2016 field visit, the current SMA sampling location and boundary was agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

123.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in September 2011. Analytical results from this sample initiated corrective action.

Following the August 2012 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2012, 225367), corrective-action monitoring was initiated and stormwater samples were collected in July and August 2015. Analytical results from these samples yielded no TAL exceedances.

The Permittees submitted a certification of the completion of corrective action for the Site per permit Part I.E.2(a) in October 2015 (LANL 2015, 600976). Stormwater monitoring has not occurred since 2015.

123.2 Site History

06-006 (11/27/2017)

SWMU 06-006 is a former container and equipment storage area located along the south and east sides of former building 06-06 at TA-06. The storage area consisted of a concrete pad and asphalt parking lot measuring approximately 300 ft × 20 ft, and was partially surrounded by a 4-ft berm. Waste containers and electrical equipment, including capacitors, were stored in this area from the late 1970s to the late 1980s. A November 1988 field survey verified that drums containing oil, capacitors and other equipment remained at the Site. Evidence of spills and leaks were observed at the Site in 1986 and 1988.

Former building 06-06 originally housed laboratory operations related to detonator assembly, an electronics work room, a chemistry laboratory, two darkrooms, restrooms, and a sink. In the 1970s, former building 06-06 was used as a cable shop, where acetone, alcohol, and dilute acids may have been used. In the early 1980s, former building 06-06 was used for printed circuit production. Building 06-06 was demolished and removed in 2004.

For investigation activities refer to “Investigation Work Plan for Twomile Canyon Aggregate Area, Revision 1” (LANL 2010, 109520).

123.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 123.2-1

Table 123.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
06-006	Storage area	PCBs

123.3 Consent Order Soil Data

Decision-level data are not available for SWMU 06-006.

123.4 Stormwater Evaluation

123.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Corrective action stormwater samples were collected in July and August 2015. Analytical results from these samples are presented in Figures 123.4-1 and 123.4-2.

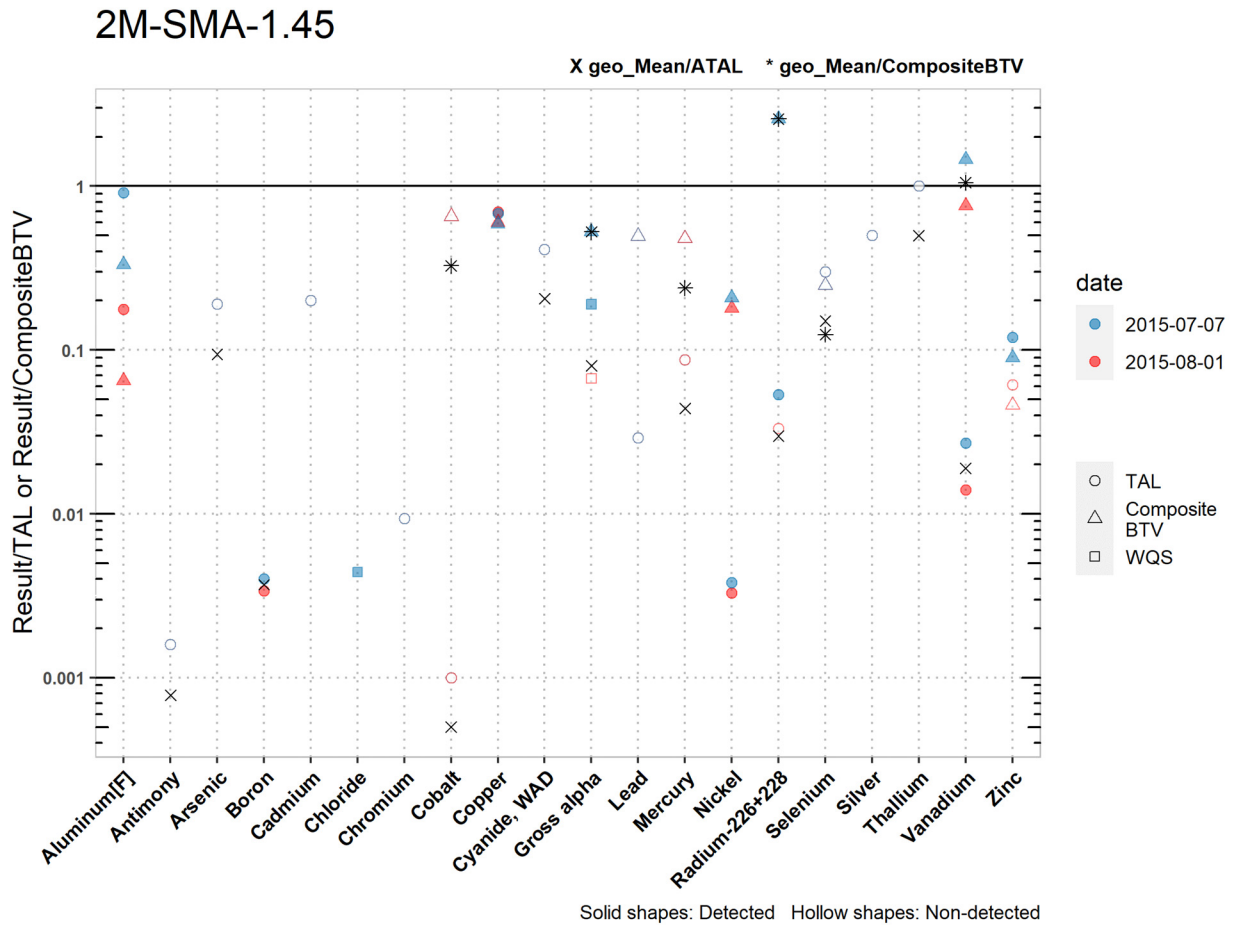

Figure 123.4-1 Analytical Results from Stormwater Samples, 2M-SMA-1.45 (Plot)

2M-SMA-1.45

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chloride	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Lead	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Vanadium	Zinc
MQL	2.5	1	0.5	100	1	NA	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	NA	1000	NA	5.2	15	NA	0.77	NA	30	5	NA	0.47	100	NA
MTAL	750	NA	340	NA	0.595	NA	214	NA	4.35	22	NA	17.2	NA	170	NA	20	0.41	NA	NA	53.9
Composite_BTV	2050	NA	NA	NA	NA	NA	NA	1.53	5.04	NA	54.7	1.01	0.140	3.10	6.22	6.06	NA	NA	1.83	71.8
unit	ug/L**	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L*	ug/L	ug/L	ug/L	pCi/L*	ug/L	ug/L	ug/L	ug/L	ug/L
2015-07-07 result	682	*1.00*	*1.70*	19.9	*0.110*	1020	*2.00*	*1.00*	2.96	*2.14*	2.88	*0.500*	*0.0670*	0.646	1.60	*1.50*	*0.200*	*0.450*	2.67	6.43
2015-07-07 dT	0.909	NA	NA	0.0040	NA	0.0044	NA	NA	0.680	NA	0.19	NA	NA	0.00380	0.0533	NA	NA	NA	0.027	0.119
2015-07-07 dB	0.333	NA	NA	NA	NA	NA	NA	NA	0.587	NA	0.527	NA	NA	0.208	2.57	NA	NA	NA	1.46	0.0896
2015-08-01 result	133	*1.00*	*1.70*	17.1	*0.110*	NA	*2.00*	*1.00*	3.03	*2.14*	*1.00*	*0.500*	*0.0670*	0.557	*1.00*	*1.50*	*0.200*	*0.450*	1.39	*3.30*
2015-08-01 dT	0.177	NA	NA	0.0034	NA	NA	NA	NA	0.697	NA	NA	NA	NA	0.00328	NA	NA	NA	NA	0.014	NA
2015-08-01 dB	0.0649	NA	NA	NA	NA	NA	NA	NA	0.601	NA	NA	NA	NA	0.180	NA	NA	NA	NA	0.760	NA
geo_mean/ATAL	NA	0.00078	0.094	0.0037	NA	NA	NA	0.00050	NA	0.206	0.080	NA	0.044	NA	0.0298	0.15	NA	0.5	0.019	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	NA	0.327	NA	NA	0.527	NA	0.239	NA	2.57	0.124	NA	NA	1.05	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV, geo_mean/B=geo_mean/composite_BTV
*SSC normalized unit is pCi/g **SSC normalized unit is mg/kg

Figure 123.4-2 Analytical Results from Stormwater Samples, 2M-SMA-1.45 (Table)

123.4.2 Assessment Unit and Stream Impairments

2M-SMA-1.45 drains to Twomile Canyon (Pajarito to headwaters), which has impairments for total aluminum, dissolved copper, PCBs, and adjusted gross alpha. The PCB impairment may be Site-related, based on Site history.

123.5 Site-Specific Demonstration

123.5.1 Soil Data Summary

No Consent Order data.

123.5.2 Stormwater Data Summary

No TAL exceedances. No stormwater data have been collected for PCBs; therefore, they will be added to the SAP.

123.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related constituents of concern were analyzed for in past samples.

123.5.4 Sampling and Analysis Plan

Table 123.5-1 is the proposed SAP for 2M-SMA-1.45.

Table 123.5-1 Proposed SAP, 2M-SMA-1.45

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment and Site history
DOC	Permit requirement
SSC	Permit requirement

124.0 2M-SMA-1.5

Associated Sites	22-014(b)
Receiving Water	Twomile Canyon
Drainage Area	0.01 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 22-014(b): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the December 2016 field visit, the current SMA sampling location and boundary was agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

124.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, baseline monitoring was initiated. To date, stormwater flow has not been sufficient for full-volume sample collection and monitoring is ongoing until one confirmation sample is collected from this SMA.

124.2 Site History

22-014(b) (6/8/2020)

SWMU 22-014(b) consists of an inactive explosives and contaminated waste sump system located on the northeast wall of building 22-34 at TA-22. The 1990 SWMU Report describes SWMU 22-014(b) as a sump and an HE settling basin, each measuring 4 ft × 2 ft × 3 ft, connected to drains in building 22-34 at TA-22. The 2014 Orthographic GIS Layer, as-constructed drawing ENG-C 7558 (pg. 68 of 71), and the Wastewater Stream Characterization for TA-22 report drawing (Figure 4) correctly describe and depict two concrete collection sumps, the inlet and outlet drainlines, and associated outfall on the north side of building 22-34. The eastern sump measures 8.5 ft long × 5.5 ft wide and was used as an HE settling basin where collected HE was periodically removed for disposal at the TA-16 Burning Ground. The western sump measures 6.5 ft long × 4.5 ft wide and was used to collect contaminated wastewater from operations in building 22-34. Use of the sumps likely began shortly after building 22-34 was completed in 1953 and served rooms 101 through 113. Building 22-34, currently used as a laser laboratory, previously housed a chemistry laboratory, an explosives laboratory, and a photographic laboratory. The 1988 site photograph and TA-22 Wastewater Stream Characterization report indicate effluent from the sumps drained to the north through an outlet drainline to an outfall located in a marshy area in the upper part of Tributary B of Twomile Canyon. The outlets on both sumps were plugged in 1994 when building 22-34 was converted to a laser laboratory.

For investigation activities refer to “Investigation Work Plan for Twomile Canyon Aggregate Area, Revision 1” (LANL 2010, 109520).

124.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 124.2-1.

Table 124.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
22-014(b)	Sump system	Silver, HE, inorganic and organic chemicals

124.3 Consent Order Soil Data

Consent Order investigations are not complete for SWMU 22-014(b). Limited data are available from 1996. Analytical results from that data are presented in Figure 124.3-1.

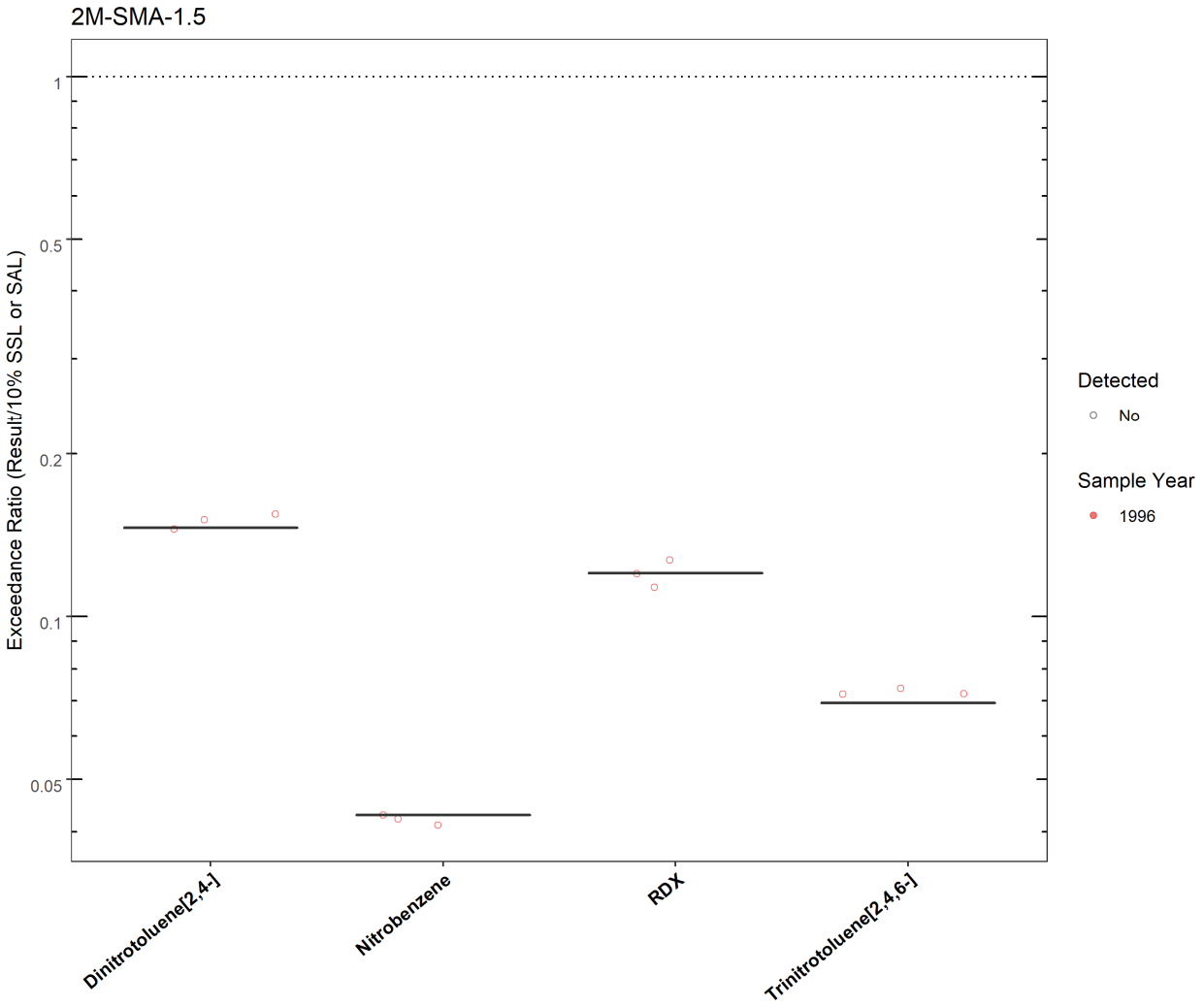

Figure 124.3-1 Organics Analytical Results from Soil Samples Associated with 2M-SMA-1.5

124.4 Stormwater Evaluation

124.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring data have been collected at the SMA.

124.4.2 Assessment Unit and Stream Impairments

2M-SMA-1.5 drains to Twomile Canyon (Pajarito to headwaters), which has impairments for total aluminum, dissolved copper, PCBs, and adjusted gross alpha. The total aluminum, dissolved copper and PCBs impairments may be Site-related, based on Site history.

124.5 Site-Specific Demonstration

124.5.1 Soil Data Summary

No Site-related POCs monitored for in-soil data exceeded the applicable screening values. HE from Site history did not exceed screening values; therefore, it will not be added to the SAP.

124.5.2 Stormwater Data Summary

No confirmation-monitoring data.

124.5.3 2022 Permit Status

The SMA is in active monitoring, a confirmation-monitoring sample has not been collected.

124.5.4 Sampling and Analysis Plan

Table 124.5-1 is the proposed SAP for 2M-SMA-1.5.

Table 124.5-1 Proposed SAP, 2M-SMA-1.5

Monitoring Constituent	Background for Monitoring
Dissolved metals	Impairment (copper) and Site history (inorganics)
Total aluminum, mercury, selenium, and iron	Impairment and Site history (inorganics)
Total PCBs	Impairment and Site history (organics)
SVOCs	Site history (organics)
DOC	Permit requirement
SSC	Permit requirement

125.0 2M-SMA-1.65

Associated Sites	40-005
Receiving Water	Twomile Canyon
Drainage Area	0.01 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 40-005: In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the November 2017 field visit, the current SMA sampling location and boundary were agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Long-Term Stewardship per Permit Part I.C.3.c criterion

125.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in August 2011. Analytical results from this sample initiated corrective action.

Following the July 2012 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2012, 221595), corrective-action monitoring was initiated and a stormwater sample was collected in September 2013. Confirmation monitoring is ongoing in attempt to collect a second sample.

125.2 Site History

40-005 (6/8/2020)

SWMU 40-005 is an inactive HE sump (structure 22-75) located at the northwest corner of building 40-41 (formerly building 22-41), associated inlet and outlet drainlines, and a former NPDES-permitted outfall [EPA 05A-154] at TA-40. Before it was incorporated into TA-40, building 40-41 and the sump were part of TA-22. The concrete sump was constructed in 1961 and measures 4 ft 6 in. × 6 ft 4 in. × 5 ft deep with an inset aluminum baffle tank. Building 40-41 was constructed in 1952. Explosive grinding operations were previously conducted in the building and wastewater from a single sink drain discharged to the sump. Originally, the sump discharged to a drainline to that flowed to Tributary B of Twomile Canyon. In 1994, the sump outlet port was capped, and in December 1995 the outfall was removed from the LANL NPDES permit. The sump was subsequently filled with concrete. Currently, building 40-41 is used for the preparation of explosive tests conducted at TA-40.

For investigation activities refer to “Investigation Work Plan for Twomile Canyon Aggregate Area, Revision 1” (LANL 2010, 109520).

125.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 125.2-1.

Table 125.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
40-005	Sump	HE, aluminum

125.3 Consent Order Soil Data

Decision-level data for SWMU 40-005 consist of results from samples collected in 1996. Analytical results from those samples are presented in Figure 125.3-1.The 2010 IWP (LANL 2010, 109520) concluded that the nature and extent of contamination have not been defined and further investigation is recommended.

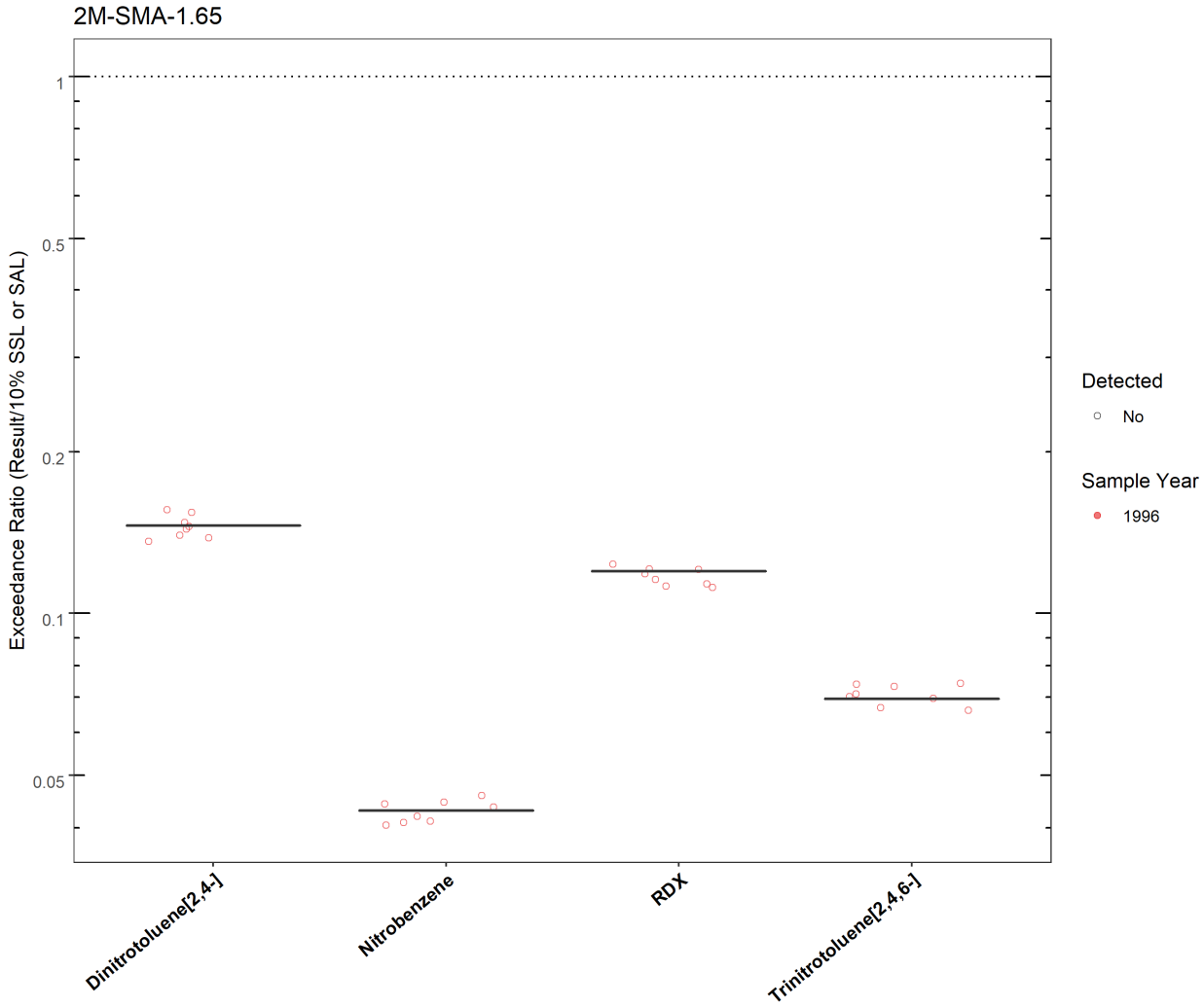

Figure 125.3-1 Organics Analytical Results from Soil Samples Associated with 2M-SMA-1.65

125.4 Stormwater Evaluation

125.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective action stormwater sample was collected in September 2013. Analytical results from that sample are presented in Figures 125.4-1 and 125.4-2.

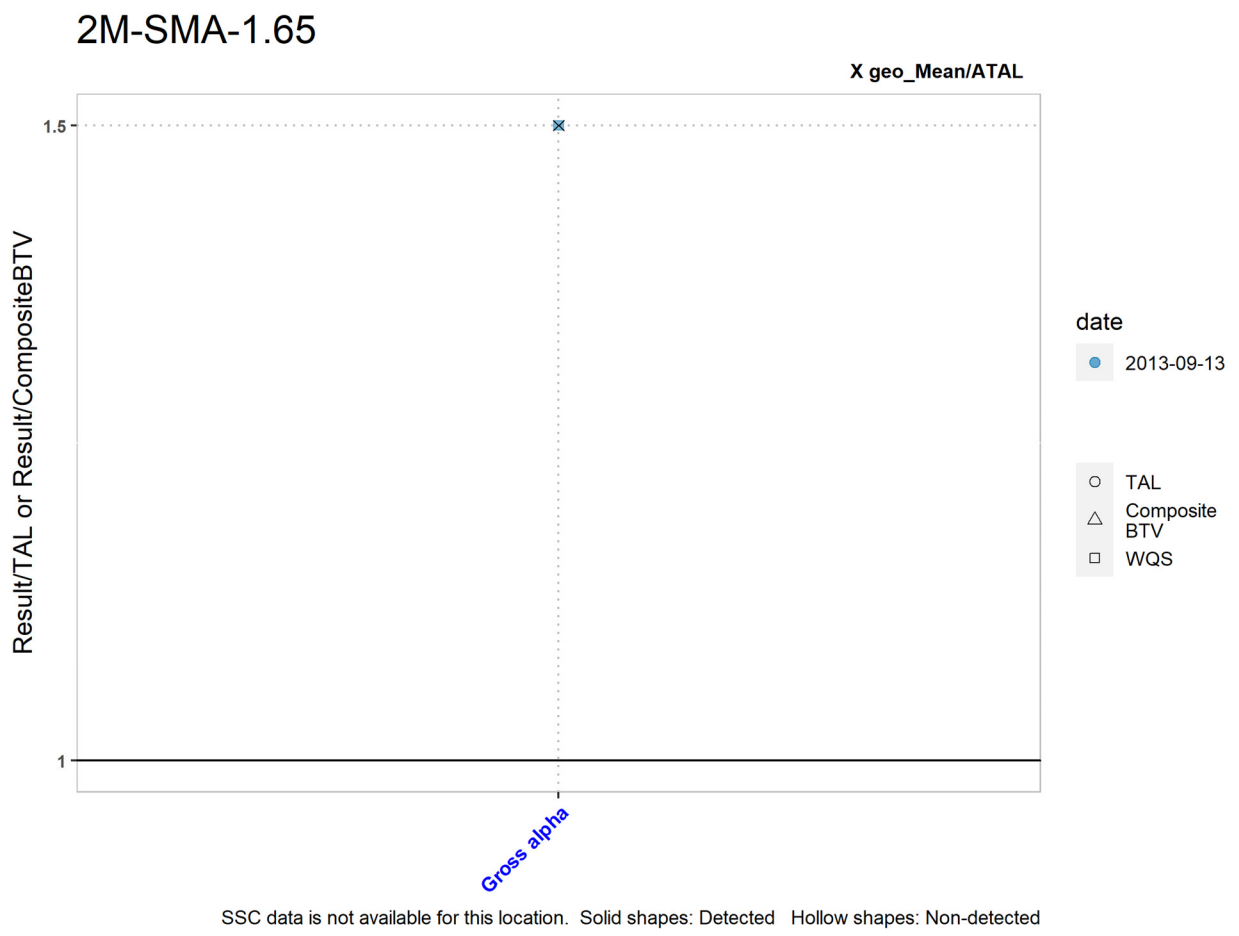

Figure 125.4-1 Analytical Results from Stormwater Sample, 2M-SMA-1.65 (Plot)

2M-SMA-1.65

	Gross alpha
MQL	NA
ATAL	15
MTAL	NA
Composite_BTV	57.2
unit	pCi/L
2013-09-13 result	22.6
2013-09-13 dT	1.5
2013-09-13 dB	NA
geo_mean/ATAL	1.5

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 125.4-2 Analytical Results from Stormwater Sample, 2M-SMA-1.65 (Table)

125.4.2 Assessment Unit and Stream Impairments

2M-SMA-1.65 drains to Twomile Canyon (Pajarito to headwaters), which has impairments for total aluminum, dissolved copper, PCBs, and adjusted gross alpha. The aluminum impairment may be Site-related based on Site history. The dissolved copper, PCBs, and adjusted gross alpha impairments are not likely to be Site-related, based on Site history.

125.5 Site-Specific Demonstration

125.5.1 Soil Data Summary

HE is a Site-related POC and did not exceed the applicable soil-screening value in soil data. When new soil data are available, this SMA will be rescreened.

125.5.2 Stormwater Data Summary

Gross alpha exceeded in 2013 stormwater data; there was no paired SSC result to confirm whether it was below BTVs.

125.5.3 2022 Permit Status

The SMA is eligible for long-term stewardship. Gross alpha was the sole TAL exceedance, and pursuant to Part I.C.3.c of the permit, this SMA has been screened into long-term stewardship, pending soil data.

126.0 2M-SMA-1.67

Associated Sites	06-003(h)
Receiving Water	Twomile Canyon
Drainage Area	0.07 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 06-003(h): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the December 2016 field visit, the current SMA sampling location and boundary was agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

126.1 2010 Administratively Continued Permit Summary

Following the April 2011 submittal of certification of baseline control installation to EPA, baseline monitoring was initiated. A stormwater sample was collected in September 2011. Analytical results from this sample yielded no TAL exceedances, but the HE sample was extracted or analyzed beyond the appropriate holding time and thus may have a low bias and potentially under report the concentration of HE in this sample. Baseline monitoring was reinitiated and is ongoing until at least one additional stormwater sample is collected from this SMA.

126.2 Site History

06-003(h) (11/27/2017)

SWMU 06-003(h) is a formerly used firing site located north of Twomile Mesa Road at TA-06. This Site was not identified in the 1990 SWMU Report and was first discussed in the OU 1111 RCRA, RFI work plan as part of MDA F. In describing MDA F, the RFI work plan states that defective explosive lenses manufactured for use in the Fat Man implosion weapon were destroyed in this area by detonation in 1945. Some of the lenses were described as consisting of the explosive Baratol, which contains barium and TNT. A former employee involved with the detonations described this firing site as being located in the general area between the larger MDA F disposal pit [SWMU 06-007(a)] and Twomile Mesa Road.

In 1993, the Laboratory requested the EPA add SWMU 06-003(h) to the Laboratory's HWFP as a separate site; EPA approved the request in 1994.

For investigation activities refer to "Investigation Work Plan for Twomile Canyon Aggregate Area, Revision 1" (LANL 2010, 109520).

126.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 126.2-1.

Table 126.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
06-003(h)	Firing site	Barium, copper, HE

126.3 Consent Order Soil Data

Decision-level data are not available for SWMU 06-003(h).

126.4 Stormwater Evaluation

126.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective action stormwater sample was collected in September 2011. Analytical results from that sample are presented in Figures 126.4-1 and 126.4-2.

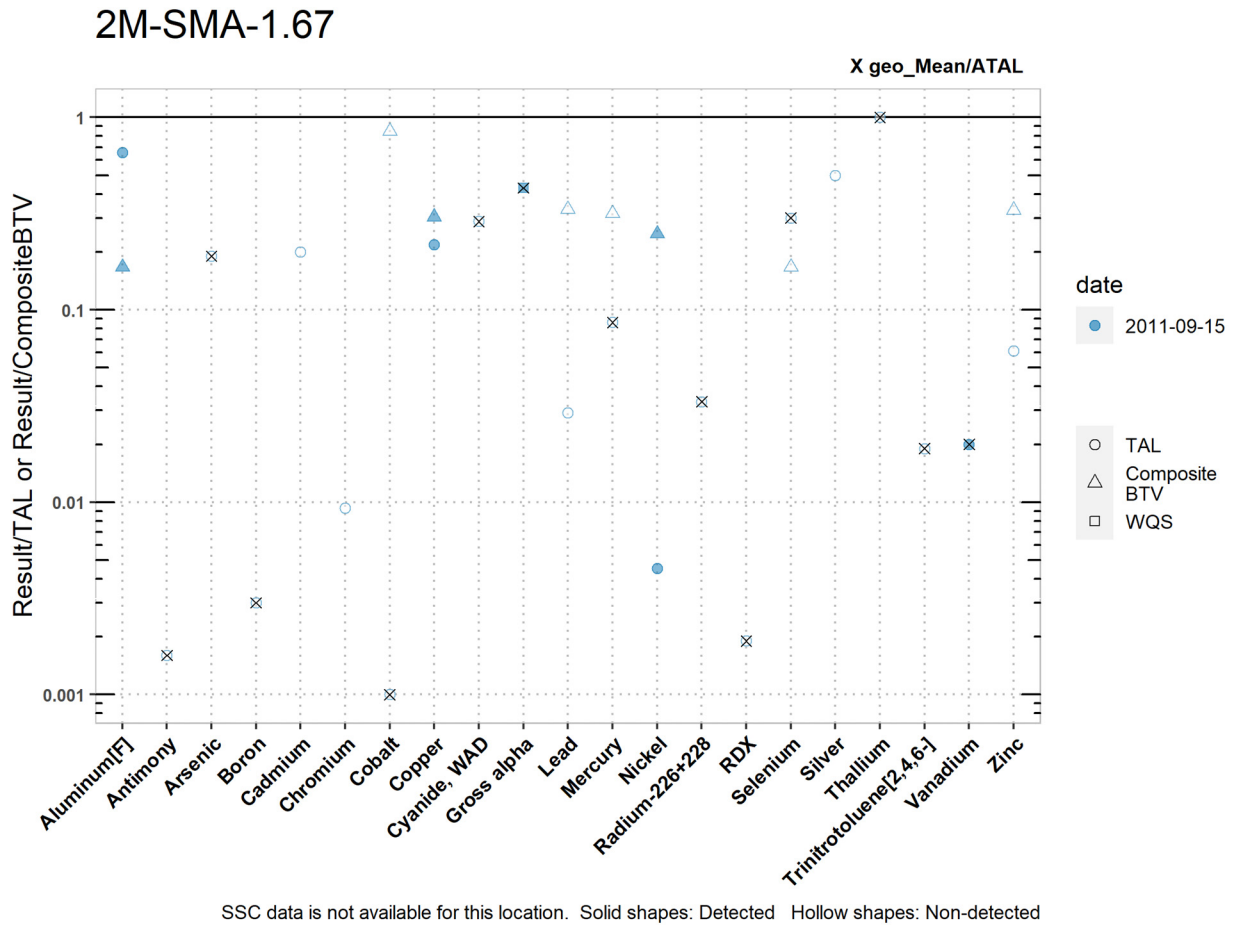

Figure 126.4-1 Analytical Results from Stormwater Sample, 2M-SMA-1.67 (Plot)

2M-SMA-1.67

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Lead	Mercury	Nickel	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
MQL	2.5	1	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	5.2	15	NA	0.77	NA	30	200	5	NA	0.47	20	100	NA
MTAL	750	NA	340	NA	0.595	214	NA	4.35	22	NA	17.2	NA	170	NA	NA	20	0.41	NA	NA	NA	53.9
Composite_BTV	2950	NA	NA	NA	NA	NA	1.18	3.12	NA	57.2	1.50	0.208	3.10	4.21	NA	8.98	NA	NA	NA	NA	10.0
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2011-09-15 result	493	*1.00*	*1.70*	*15.0*	*0.110*	*2.00*	*1.00*	0.950	*1.50*	6.41	*0.500*	*0.0660*	0.770	*1.00*	*0.380*	*1.50*	*0.200*	*0.450*	*0.380*	2.00	*3.30*
2011-09-15 dT	0.657	NA	NA	NA	NA	NA	NA	0.218	NA	0.43	NA	NA	0.00453	NA	NA	NA	NA	NA	NA	0.020	NA
2011-09-15 dB	0.167	NA	NA	NA	NA	NA	NA	0.304	NA	NA	NA	NA	0.248	NA	NA	NA	NA	NA	NA	NA	NA
geo_mean/ATAL	NA	0.0016	0.19	0.0030	NA	NA	0.0010	NA	0.288	0.43	NA	0.086	NA	0.0333	0.0019	0.30	NA	1	0.019	0.020	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 126.4-2 Analytical Results from Stormwater Sample, 2M-SMA-1.67 (Table)

126.4.2 Assessment Unit and Stream Impairments

2M-SMA-1.67 drains to Twomile Canyon (Pajarito to headwaters), which has impairments for total aluminum, dissolved copper, PCBs, and adjusted gross alpha. The copper impairment may be Site-related, based on Site history.

126.5 Site-Specific Demonstration

126.5.1 Soil Data Summary

No Consent Order data.

126.5.2 Stormwater Data Summary

No confirmation-monitoring data.

126.5.3 2022 Permit Status

The SMA is in active monitoring. A confirmation-monitoring sample has not been collected.

126.5.4 Sampling and Analysis Plan

Table 126.5-1 is the proposed SAP for 2M-SMA-1.67.

Table 126.5-1 Proposed SAP, 2M-SMA-1.67

Monitoring Constituent	Background for Monitoring
Dissolved copper(1) and barium (1)	Impairment and Site history
HE (1)	Site history
DOC (1)	Permit requirement
SSC (1)	Permit requirement

127.0 2M-SMA-1.7

Associated Sites	03-055(a)
Receiving Water	Twomile Canyon
Drainage Area	0.04 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 03-055(a): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the November 2017 field visit, the current SMA sampling location and boundary were agreed upon by all parties to be the best representation of stormwater discharge from the Site
2022 Permit Status	Active Monitoring

127.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, baseline stormwater samples were collected in August and September 2011. Analytical results from these samples initiated corrective action.

Following the August 2012 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2012, 225367), corrective-action monitoring was initiated and stormwater samples were collected in July and August 2014. Analytical results from these samples initiated corrective action.

The Permittees submitted a request for alternative compliance for the Site per permit Part I.E.3 in May 2015 (LANL 2015, 600418). No response has been received from EPA and stormwater monitoring has not occurred since 2014.

127.2 Site History

03-055(a) (11/27/2017)

SWMU 03-055(a) is an outfall located approximately 50 ft south of the Van de Graaff facility (building 03-16) at TA-03. Roof drains and one floor drain in generator room 68 discharged to the outfall at the edge of the mesa into Twomile Canyon. The outfall currently receives only stormwater from Van de Graaff Building roof drains. The Van de Graaff facility was constructed in 1952. The facility has been inactive since the late 1990s. Decontamination and decommissioning activities to remove radioactively contaminated equipment and fixtures from the interior of building 03-16 were implemented in 2005–2007.

For investigation activities refer to “Investigation Work Plan for Twomile Canyon Aggregate Area, Revision 1” (LANL 2010, 109520).

127.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 127.2-1.

Table 127.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
03-055(a)	Outfall from building 03-16	Organic chemicals, PAHs

127.3 Consent Order Soil Data

Decision-level data are not available for SWMU 03-055(a).

127.4 Stormwater Evaluation

127.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Corrective action stormwater samples were collected in July and August 2014. Analytical results from these samples are presented in Figure 127.3-1 and 127.3-2.

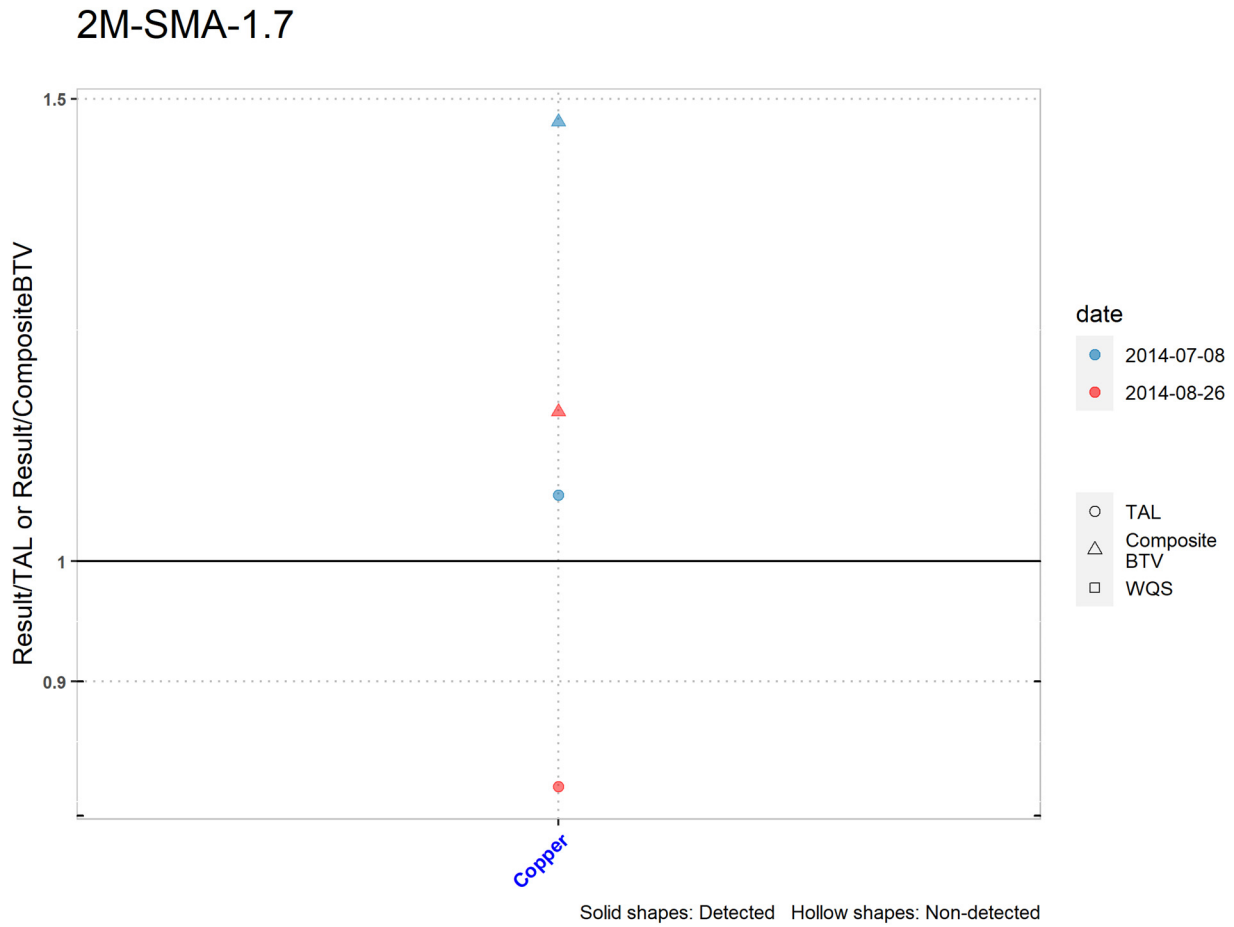

Figure 127.4-1 Analytical Results from Stormwater Samples, 2M-SMA-1.7 (Plot)

2M-SMA-1.7

	Copper
MQL	0.5
ATAL	NA
MTAL	4.35
Composite_BTV	3.12
unit	ug/L
2014-07-08 result	4.60
2014-07-08 dT	1.06
2014-07-08 dB	1.47
2014-08-26 result	3.57
2014-08-26 dT	0.821
2014-08-26 dB	1.14
geo_mean/ATAL	NA
geo_mean/B	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
geo_mean/B=geo_mean/composite_BTV

Figure 127.4-2 Analytical Results from Stormwater Samples, 2M-SMA-1.7 (Table)

127.4.2 Assessment Unit and Stream Impairments

2M-SMA-1.7 drains to Twomile Canyon (Pajarito to headwaters), which has impairments for total aluminum, dissolved copper, PCBs, and adjusted gross alpha. The PCB impairment may be Site-related, based on Site history.

127.5 Site-Specific Demonstration

127.5.1 Soil Data Summary

No Consent Order data.

127.5.2 Stormwater Data Summary

Copper exceeded the TAL and BTV.

127.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related constituents of concern were analyzed for in past samples.

127.5.4 Sampling and Analysis Plan

Table 127.5-1 is the proposed SAP for 2M-SMA-1.7.

Table 127.5-1 Proposed SAP, 2M-SMA-1.7

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment and Site history (organics)
Dissolved copper (1)	Stormwater data
SVOCs	Site history (organics)
DOC	Permit requirement
SSC	Permit requirement

128.0 2M-SMA-1.8

Associated Sites	03-001(k)
Receiving Water	Twomile Canyon
Drainage Area	3.59 acres
Landscape Characteristics	69% impervious, 31% pervious
Consent Order Site Status	SWMU 03-001(k): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the November 2017 field visit, the current SMA sampling location and boundary were agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

128.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, baseline stormwater samples were collected in August and September 2011. Analytical results from these samples initiated corrective action.

The Permittees submitted a request for alternative compliance for the Site per permit Part I.E.3 in May 2015 (LANL 2015, 600418). No response has been received from EPA and stormwater monitoring has not occurred since 2011.

128.2 Site History

03-001(k) (11/27/2017)

SWMU 03-001(k) is the former location of a less-than-90-day hazardous waste accumulation area located on the south side of building 03-16, the inactive Van de Graaff Accelerator and Ion Beam Facility at TA-03. SWMU 03-001(k) consists of two level asphalt areas each measuring approximately 20 ft × 30 ft. The areas are located next to doors on the south side of the building. Concrete pads located in front of each doorway are bounded by asphalt paving on three sides. SWMU 03-001(k) was used primarily as a storage yard for electrical equipment destined for salvage. A former shed on the southwest perimeter of the fenced area was registered as an SAA. A 1986 field inspection of SWMU 03-001(k) noted oily unmarked drums where fresh vacuum oil for experiments was stored. Other containers stored at the Site included empty drums, empty asphalt-lined drums for waste tritium, and drums containing spent solvents. Use of the storage area ceased in 1992. A 1993 inspection found no stains on the asphalt or concrete pad.

For investigation activities refer to “Investigation Work Plan for Twomile Canyon Aggregate Area, Revision 1” (LANL 2010, 109520).

128.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 128.2-1.

Table 128.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
03-001(k)	Storage area	PAHs, PCBs, tritium

128.3 Consent Order Soil Data

Consent Order investigations are not complete for SWMU 03-001(k). Limited data are available from 2001. Analytical results from those samples are presented in Figure 128.3-1 through 128.3-3. The 2010 IWP (LANL 2010, 109520) concluded that the nature and extent of contamination have not been defined and further investigation is recommended.

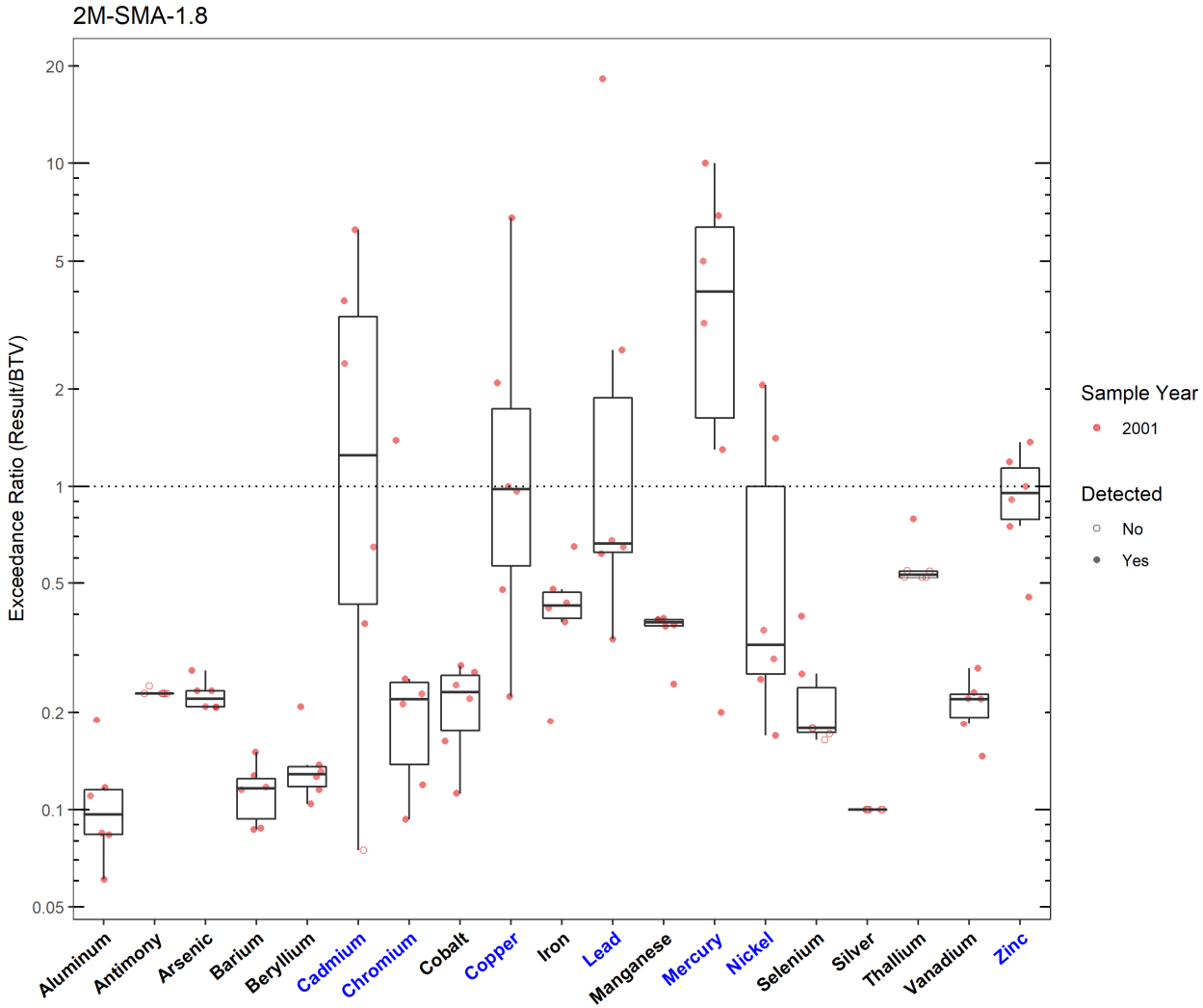

Figure 128.3-1 Inorganics Analytical Results from Soil Samples Associated with 2M-SMA-1.8

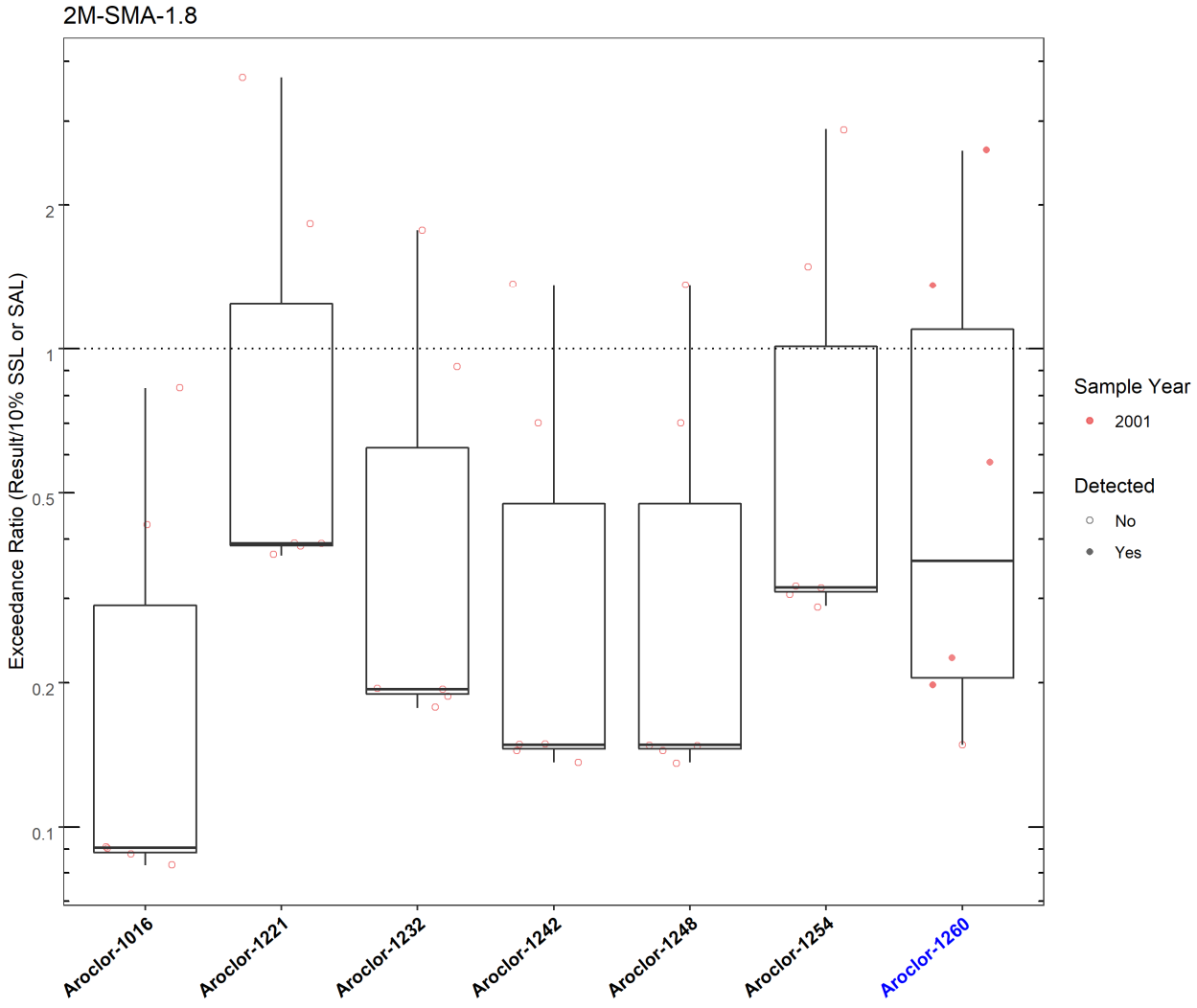

Figure 128.3-2 Organics Analytical Results from Soil Samples Associated with 2M-SMA-1.8

2M-SMA-1.8

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1260	2M-SMA-1.8	11096-82-5	Y	SSL_0.1	0.243	0.630	2001-07-24
Cadmium	2M-SMA-1.8	Cd	Y	BTV	0.400	2.50	2001-07-24
Chromium	2M-SMA-1.8	Cr	Y	BTV	19.3	26.8	2001-07-24
Copper	2M-SMA-1.8	Cu	Y	BTV	14.7	99.8	2001-07-24
Lead	2M-SMA-1.8	Pb	Y	BTV	22.3	407	2001-07-24
Mercury	2M-SMA-1.8	Hg	Y	BTV	0.100	1.00	2001-07-24
Nickel	2M-SMA-1.8	Ni	Y	BTV	15.4	31.7	2001-07-24
Zinc	2M-SMA-1.8	Zn	Y	BTV	48.8	66.9	2001-07-24

Figure 128.3-3 Screening-Level Exceedances from Soil Samples Associated with 2M-SMA-1.8

128.4 Stormwater Evaluation

128.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD.

Corrective action stormwater samples were collected in August and September 2011. Analytical results from these samples are presented in Figures 128.4-1 and 128.4-2.

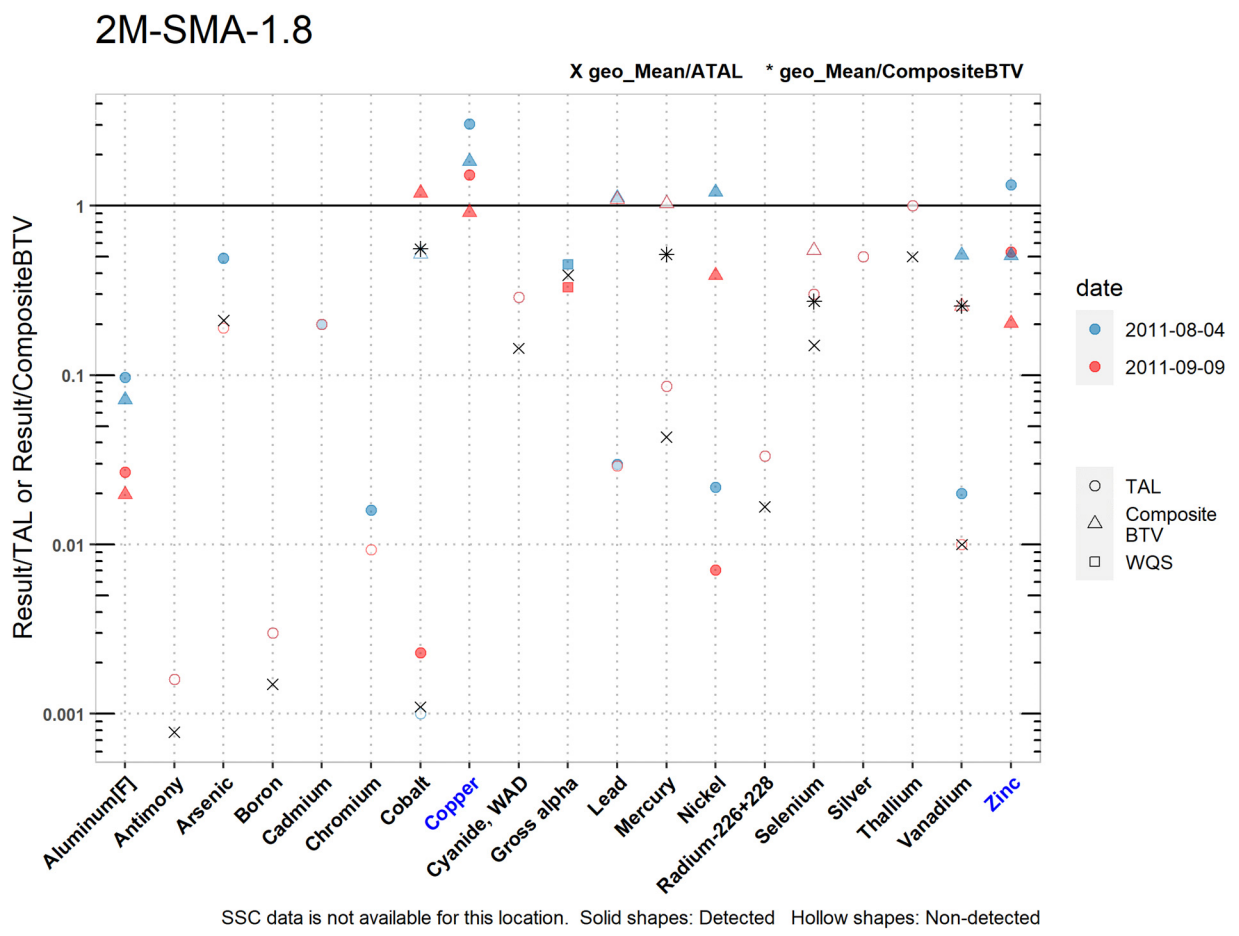

Figure 128.4-1 Analytical Results from Stormwater Samples, 2M-SMA-1.8 (Plot)

2M-SMA-1.8

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Lead	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Vanadium	Zinc
MQL	2.5	1	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	5.2	15	NA	0.77	NA	30	5	NA	0.47	100	NA
MTAL	750	NA	340	NA	0.595	214	NA	4.35	22	NA	17.2	NA	170	NA	20	0.41	NA	NA	53.9
Composite_BTV	1020	NA	NA	NA	NA	NA	1.93	7.22	NA	51.9	0.460	0.0639	3.09	8.50	2.76	NA	NA	3.91	142
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
2011-08-04 result	72.9	*1.00*	4.40	*15.0*	0.130	3.40	*1.00*	13.2	*1.50*	6.77	0.510	*0.0660*	3.70	*1.00*	*1.50*	*0.200*	*0.450*	2.00	71.8
2011-08-04 dT	0.0972	NA	0.49	NA	0.2	0.0159	NA	3.03	NA	0.45	0.0297	NA	0.0218	NA	NA	NA	NA	0.020	1.33
2011-08-04 dB	0.0715	NA	NA	NA	NA	NA	NA	1.83	NA	NA	1.11	NA	1.20	NA	NA	NA	NA	0.512	0.506
2011-09-09 result	20.1	*1.00*	*1.70*	*15.0*	*0.110*	*2.00*	2.30	6.60	*1.50*	5.00	*0.500*	*0.0660*	1.20	*1.00*	*1.50*	*0.200*	*0.450*	*1.00*	28.7
2011-09-09 dT	0.0268	NA	NA	NA	NA	NA	0.0023	1.52	NA	0.33	NA	NA	0.00706	NA	NA	NA	NA	NA	0.532
2011-09-09 dB	0.0197	NA	NA	NA	NA	NA	1.19	0.914	NA	NA	NA	NA	0.388	NA	NA	NA	NA	NA	0.202
geo_mean/ATAL	NA	0.00078	0.21	0.0015	NA	NA	0.0011	NA	0.144	0.39	NA	0.043	NA	0.0167	0.15	NA	0.5	0.010	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	0.556	NA	NA	NA	NA	0.516	NA	NA	0.272	NA	NA	0.256	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV, geo_mean/B=geo_mean/composite_BTV

Figure 128.4-2 Analytical Results from Stormwater Samples, 2M-SMA-1.8 (Table)

128.4.2 Assessment Unit and Stream Impairments

2M-SMA-1.8 drains to Twomile Canyon (Pajarito to headwaters), which has impairments for total aluminum, dissolved copper, PCBs, and adjusted gross alpha. The PCB impairment may be Site-related, based on Site history.

128.5 Site-Specific Demonstration

128.5.1 Soil Data Summary

The following Site-related POC exceeded the applicable soil-screening value in soil data and have not yet been measured in stormwater: Aroclor-1260.

128.5.2 Stormwater Data Summary

Copper exceeded the TAL and BTV, so it will be added to the SAP.

Zinc exceeded the TAL but not the BTV, so it will not be added to the SAP.

128.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related constituents of concern were analyzed for in past samples.

128.5.4 Sampling and Analysis Plan

Table 128.5-1 is the proposed SAP for 2M-SMA-1.8.

Table 128.5-1 Proposed SAP, 2M-SMA-1.8

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment, Site history, and soil data
Dissolved copper (1)	Stormwater data
SVOCs	Site history (PAHs)
Tritium	Site history
DOC	Permit requirement
SSC	Permit requirement

129.0 2M-SMA-1.9

Associated Sites	03-003(a)
Receiving Water	Twomile Canyon
Drainage Area	0.17 acres
Landscape Characteristics	47% impervious, 53% pervious
Consent Order Site Status	SWMU 03-003(a): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the November 2017 field visit, the current SMA sampling location and boundary were agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

129.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in July 2012. Analytical results from this sample initiated corrective action.

The Permittees submitted a request for alternative compliance for the Site per permit Part I.E.3 in May 2015 (LANL 2015, 600418). No response has been received from EPA and stormwater monitoring has not occurred since 2012.

129.2 Site History

03-003(a) (11/27/2017)

SWMU 03-003(a) is a former outdoor storage area used for temporary storage of electrical equipment destined for salvage, some of which contained oil. The storage area was located on the north and west sides of building 03-218 at TA-03. The northern portion of the storage area consisted of the asphalt paving next to the north side of building 03-218. The western portion of the storage area consisted of a 44 ft long × 27 ft wide concrete pad surrounded by an 18 in. to 20 in. high concrete curb. The concrete pad and curb are bounded on three sides by soil covered with gravel. A 30 ft wide × 60 ft long area of asphalt paving abuts the south end of the concrete curb. AOC 03-042 is a former containment area located around the concrete pad in the northwest portion of SWMU 03-003(a). During the 1986 CEARP survey, several hundred capacitors, some marked as PCBs, were stored on pallets the asphalt in the storage area on the north side of building 03-218; staining was visible on the asphalt beneath capacitors. Capacitors and transformers labeled as containing less than 50 ppm PCBs were stored in the southwest portion of the former storage area. During a 1989 inspection, leaking capacitors, drums of epoxy, one or two facility backup batteries, and vacuum pumps were observed in the southwest portion of the storage area. In the early 1990s, a small area of oil-stained asphalt was excavated to a depth of 3 in. around the storm drain located in the western portion of SWMU 03-003(a). Use of the SWMU 03-003(a) storage area ceased in the early 1990s.

For investigation activities refer to “Investigation Work Plan for Twomile Canyon Aggregate Area, Revision 1” (LANL 2010, 109520).

129.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 129.2-1.

Table 129.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
03-003(a)	Storage area	Lead, organic chemicals, PCBs, SVOCs

129.3 Consent Order Soil Data

Decision-level data are not available for SWMU 03-003(a). The 2010 IWP (LANL 2010, 109520) concluded that the nature and extent of contamination have not been defined and further investigation is recommended.

129.4 Stormwater Evaluation

129.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD.

A corrective-action stormwater sample was collected in July 2012. Analytical results from that sample are presented in Figures 129.4-1 and 129.4-2.

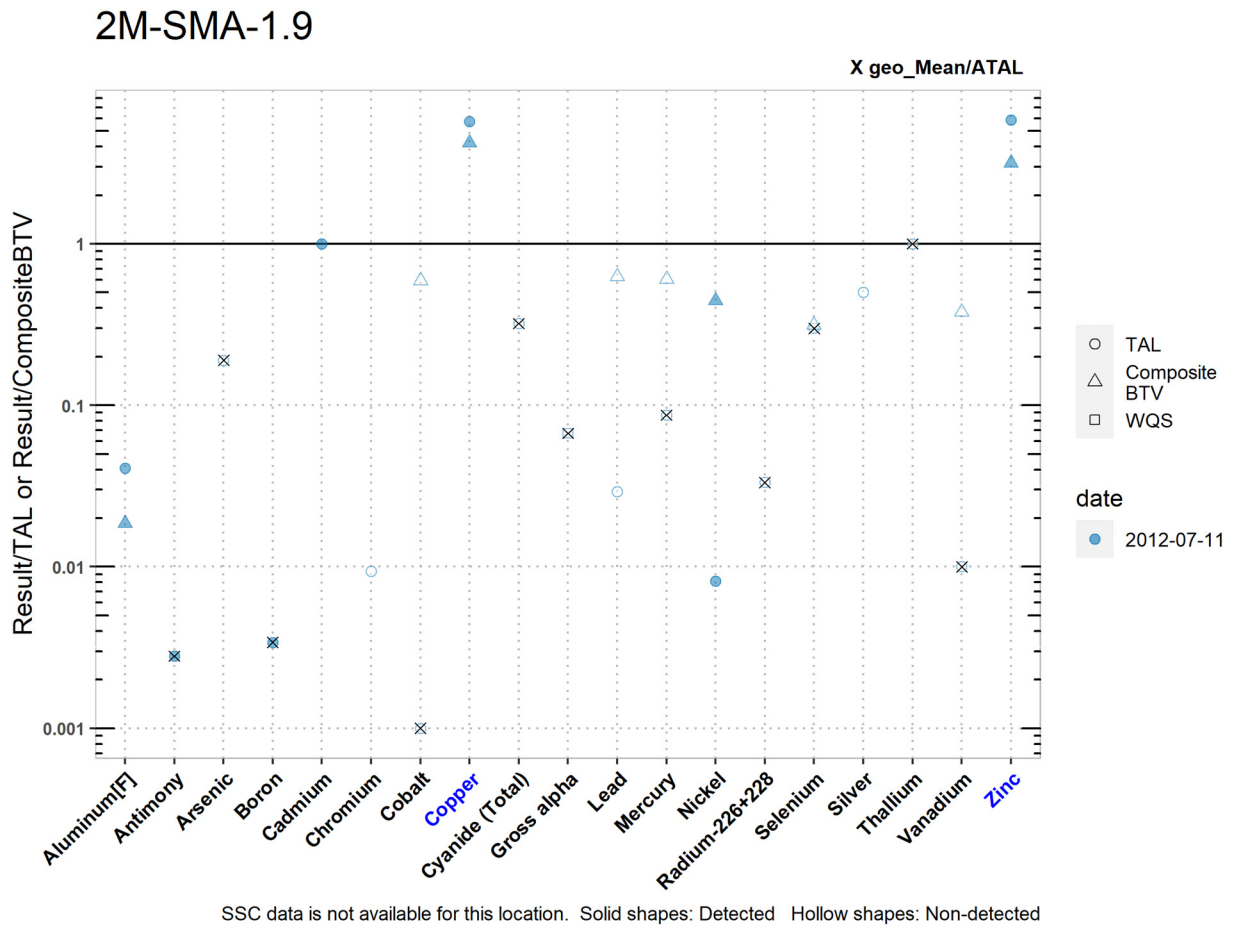

Figure 129.4-1 Analytical Results from Stormwater Sample, 2M-SMA-1.9 (Plot)

2M-SMA-1.9

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide (Total)	Gross alpha	Lead	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Vanadium	Zinc
MQL	2.5	1	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	5.2	15	NA	0.77	NA	30	5	NA	0.47	100	NA
MTAL	750	NA	340	NA	0.595	214	NA	4.35	22	NA	17.2	NA	170	NA	20	0.41	NA	NA	53.9
Composite_BTV	1650	NA	NA	NA	NA	NA	1.69	5.89	NA	53.6	0.798	0.111	3.10	7.11	4.78	NA	NA	2.64	98.9
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
2012-07-11 result	30.7	1.78	*1.70*	16.8	0.815	*2.00*	*1.00*	24.9	*1.67*	*1.00*	*0.500*	*0.0670*	1.38	*1.00*	*1.50*	*0.200*	*0.450*	*1.00*	314
2012-07-11 dT	0.0409	0.0028	NA	0.0034	1	NA	NA	5.72	NA	NA	NA	NA	0.00812	NA	NA	NA	NA	NA	5.83
2012-07-11 dB	0.0186	NA	NA	NA	NA	NA	NA	4.23	NA	NA	NA	NA	0.445	NA	NA	NA	NA	NA	3.17
geo_mean/ATAL	NA	0.0028	0.19	0.0034	NA	NA	0.0010	NA	0.321	0.067	NA	0.087	NA	0.0333	0.30	NA	1	0.010	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 129.4-2 Analytical Results from Stormwater Sample, 2M-SMA-1.9 (Table)

129.4.2 Assessment Unit and Stream Impairments

2M-SMA-1.9 drains to Twomile Canyon (Pajarito to headwaters), which has impairments for total aluminum, dissolved copper, PCBs, and adjusted gross alpha. The PCB impairment may be Site-related, based on Site history.

129.5 Site-Specific Demonstration

129.5.1 Soil Data Summary

No Consent Order data.

129.5.2 Stormwater Data Summary

Copper and zinc exceeded TALs and BTVs.

129.5.3 2022 Permit Status

The SMA is in active monitoring, not all Site-related constituents of concern were analyzed for in past samples.

129.5.4 Sampling and Analysis Plan

Table 129.5-1 is the proposed SAP for 2M-SMA-1.9.

Table 129.5-1 Proposed SAP, 2M-SMA-1.9

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment and Site history
Dissolved copper(1) and zinc(1)	Stormwater data
SVOCs	Site history
DOC	Permit requirement
SSC	Permit requirement

130.0 2M-SMA-2

Associated Sites	03-050(d), 03-054(b)
Receiving Water	Twomile Canyon
Drainage Area	10.27 acres
Landscape Characteristics	53% impervious, 47% pervious
Consent Order Site Status	SWMU 03-050(d): In Progress SWMU 03-054(b): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the November 2017 field visit, the current SMA sampling location and boundary were agreed upon by all parties to be the best representation of stormwater discharge from the Sites.
2022 Permit Status	Corrective Action

130.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, baseline stormwater samples were collected in July and September 2011. Analytical results from these samples initiated corrective action.

Following the June 2013 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2013, 242173), the sampler was relocated to a more representative location, and corrective-action monitoring was initiated. Stormwater samples were collected in June and August 2013. Analytical results from these samples initiated corrective action.

The Permittees submitted a request for alternative compliance for the Sites per permit Part I.E.3 in May 2015 (LANL 2015, 600418). No response has been received from EPA and stormwater monitoring has not occurred since 2013.

130.2 Site History

03-050(d) (8/30/2017)

SWMU 03-050(d) is an area of potential soil contamination from the deposition of contaminants from exhaust emissions from the air-pollution-control device located on the south side of building 03-102 at TA-03. The device was a shaker-type baghouse situated on a concrete pad. Building 03-102 was constructed in 1957 for machining uranium-235 and uranium-238, lithium hydride, and small quantities of other metals. The baghouse was the primary air-pollution-control device to remove lithium hydride particles from the gas stream to the stack, and it was also used as a secondary air-pollution-control device to remove uranium graphite particulates from the gas stream to the stack. The baghouse ceased operating in 1992 because of a failure detected in a test, which measured the efficiency of the collection system. The baghouse was replaced by HEPA-filter banks. Radionuclide air emissions from the baghouse were monitored from the time it became operational in 1957 until it was decommissioned in 1992. Releases of radioactive uranium particulates through the baghouse fabric were deposited on the concrete pad. The concrete pad underlying the baghouse was subsequently painted to immobilize any existing uranium particulates. Radiological field survey results showed no detectable activity on the concrete pad or surrounding soil.

03-054(b) (6/8/2020)

SWMU 03-054(b) is an outfall located southeast of building 03-1411 and southwest of building 03-316 in TA-03. The 1990 SWMU Report describes SWMU 03-054(b) as an outfall located southwest of building 03-316 that discharges into Twomile Canyon. The outfall received discharge from cooling tower blowdown and cooling water from building 03-102. Engineering drawing AB1264 (pg. 15 of 16) shows the outfall that receives stormwater from surface areas surrounding 26 buildings and from 94 roof drains, and noncontact cooling water from a furnace in building 03-102. The outfall was formerly permitted as NPDES 03A009 outfall to receive discharge water from the cooling tower effluent blowdown from building 03-102; this discharge was rerouted to the TA-46 SWSC treatment plant in 1993. The SWMU 03-052(a) and SWMU 03-052(e) storm drains also discharged to the SWMU 03-054(b) outfall, which discharges to a drainage channel southwest of building 03-316. The unit boundary will be revised to depict an outfall discharge marker, the outlet line from building 03-102, and the storm drainlines from the SWMU 03-052(a) and SWMU 03-054(e) storm drains.

For investigation activities at the Sites refer to "Investigation Work Plan for Twomile Canyon Aggregate Area, Revision 1" (LANL 2010, 109520).

130.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 130.2-1.

Table 130.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
03-050(d)	Soil contamination from TA-03 exhaust emissions	Metals, inorganic chemicals, uranium-235, uranium-238
03-054(b)	Outfall from building 03-038	Aluminum, chromium, copper, metal pigments

130.3 Consent Order Soil Data

Decision-level data are not available for SWMU 03-050(d).

Decision-level data for SWMU 03-054(b) consist of results from samples collected in 2002 in conjunction with the investigation of SWMUs 03-052(a) and 03-052(e). Analytical results for those samples are presented in Figures 130.3-1 through 130.3-4. The 2010 IWP (LANL 2010, 109520) concluded that the nature and extent of contamination have not been defined and further investigation is recommended.

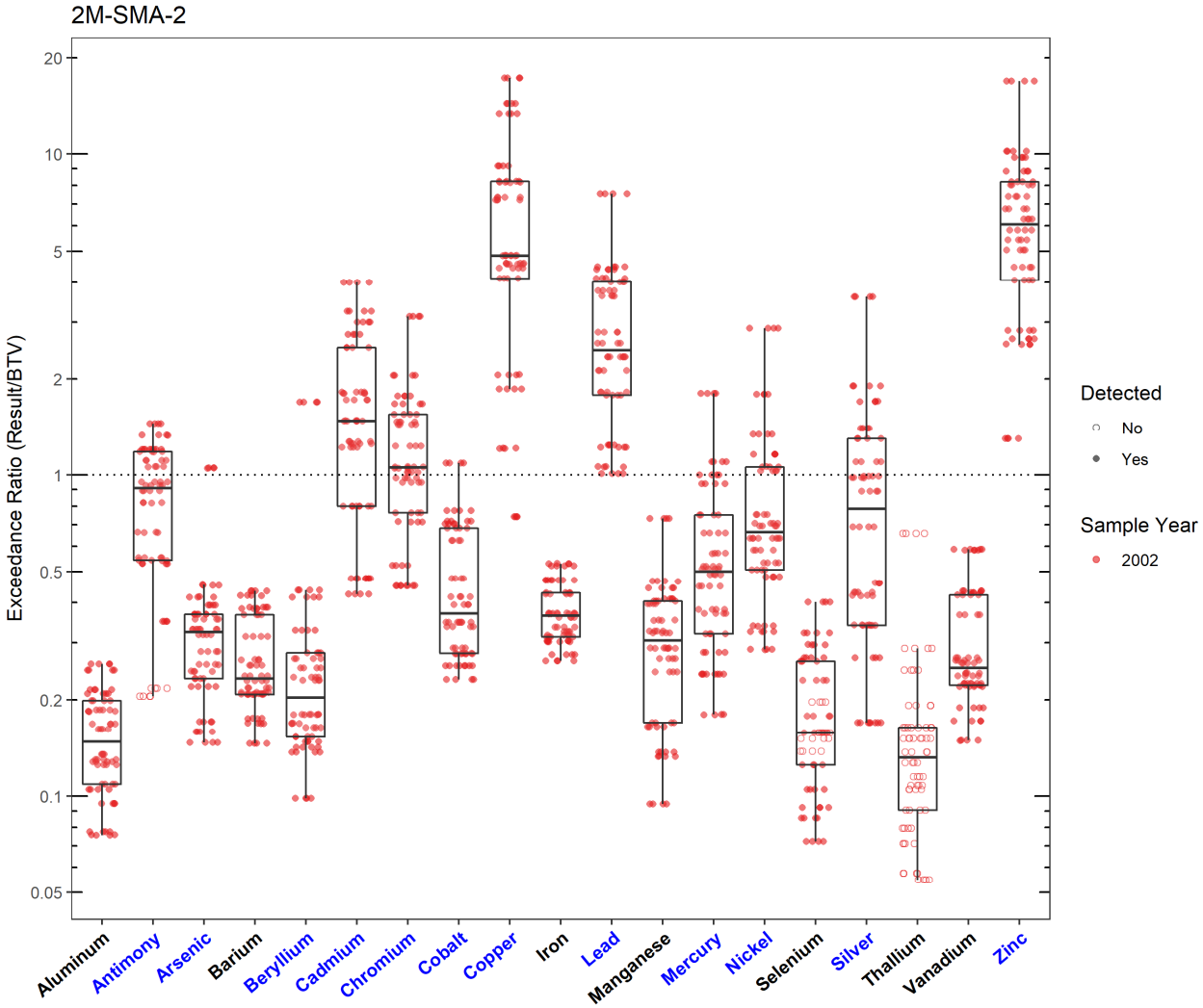

Figure 130.3-1 Inorganics Analytical Results from Soil Samples Associated with 2M-SMA-2

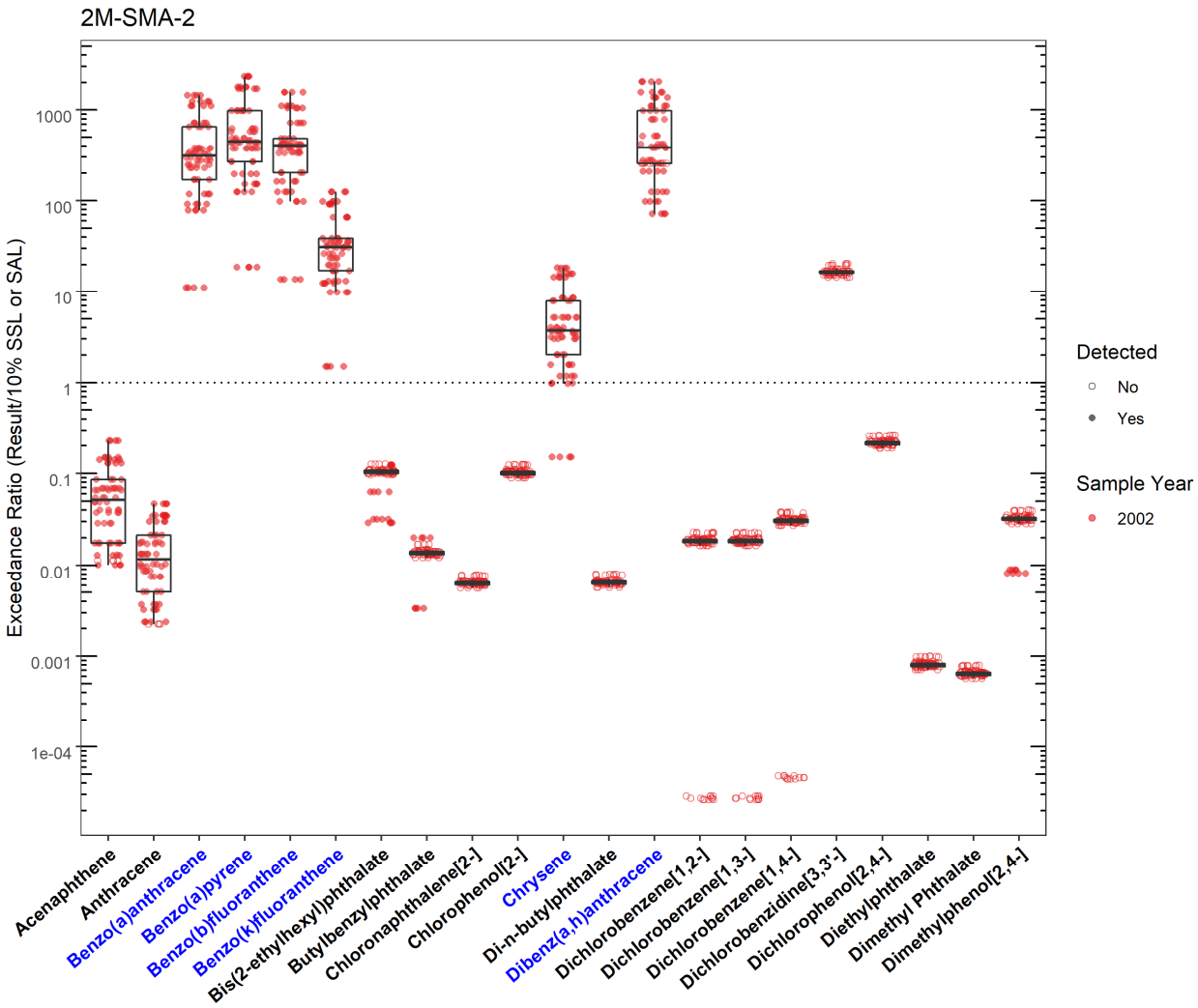

Figure 130.3-2 Organics Analytical Results from Soil Samples Associated with 2M-SMA-2 (Plot 1)

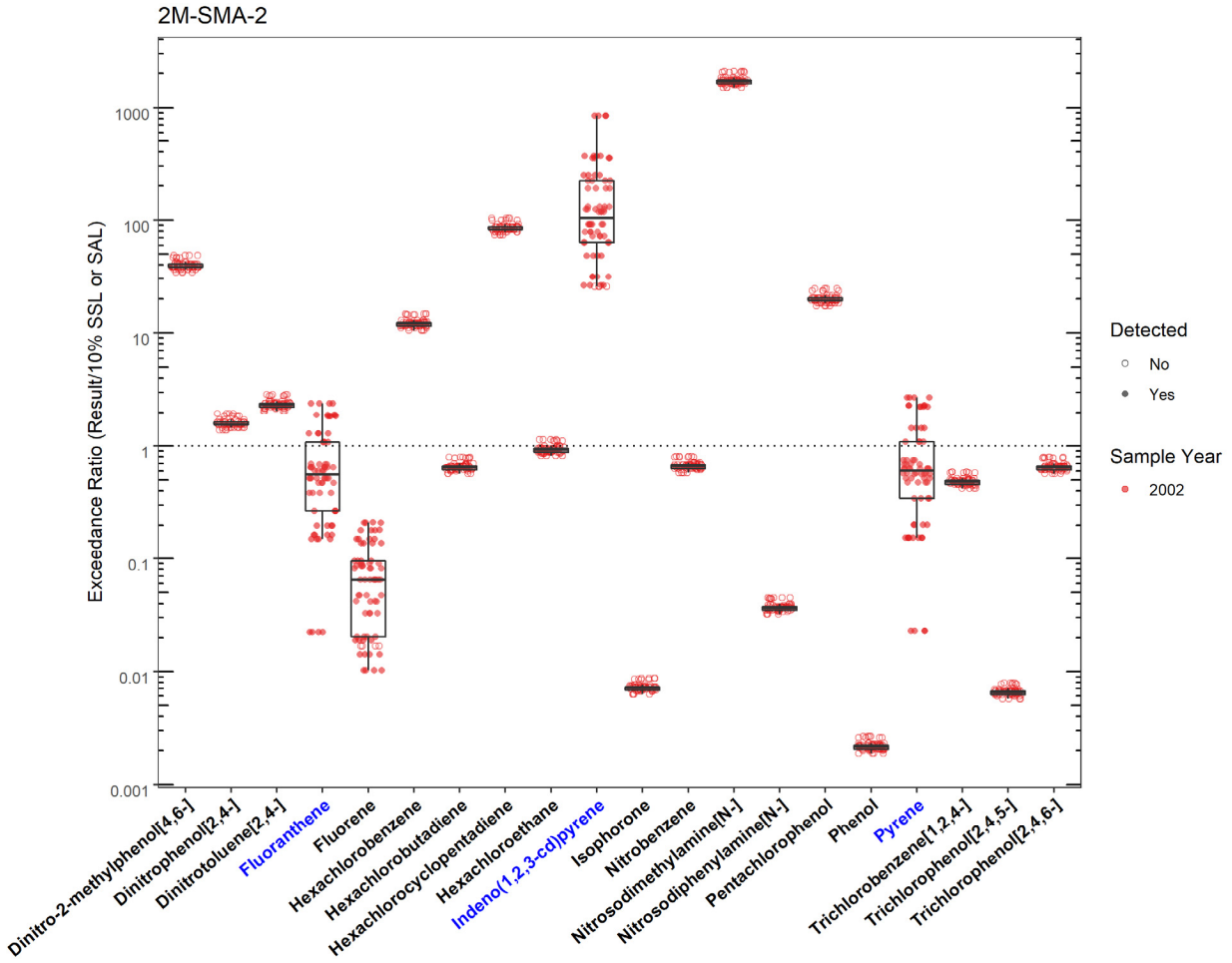

Figure 130.3-3 Organics Analytical Results from Soil Samples Associated with 2M-SMA-2 (Plot 2)

2M-SMA-2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	2M-SMA-2	Sb	Y	BTV	0.830	1.20	2002-03-28
Arsenic	2M-SMA-2	As	Y	BTV	8.17	8.60	2002-03-28
Benzo(a)anthracene	2M-SMA-2	56-55-3	Y	SSL_0.1	0.153	220	2002-03-28
Benzo(a)pyrene	2M-SMA-2	50-32-8	Y	SSL_0.1	0.112	260	2002-03-28
Benzo(b)fluoranthene	2M-SMA-2	205-99-2	Y	SSL_0.1	0.153	240	2002-03-28
Benzo(k)fluoranthene	2M-SMA-2	207-08-9	Y	SSL_0.1	1.53	190	2002-03-28
Beryllium	2M-SMA-2	Be	Y	BTV	1.83	3.10	2002-03-28
Cadmium	2M-SMA-2	Cd	Y	BTV	0.400	1.60	2002-03-28
Chromium	2M-SMA-2	Cr	Y	BTV	19.3	60.5	2002-03-28
Chrysene	2M-SMA-2	218-01-9	Y	SSL_0.1	15.3	280	2002-03-28
Cobalt	2M-SMA-2	Co	Y	BTV	8.64	9.40	2002-03-28
Copper	2M-SMA-2	Cu	Y	BTV	14.7	254	2002-03-28
Dibenz(a,h)anthracene	2M-SMA-2	53-70-3	Y	SSL_0.1	0.0153	31.0	2002-03-28
Fluoranthene	2M-SMA-2	206-44-0	Y	SSL_0.1	232	560	2002-03-28
Indeno(1,2,3-cd)pyrene	2M-SMA-2	193-39-5	Y	SSL_0.1	0.153	130	2002-03-28
Lead	2M-SMA-2	Pb	Y	BTV	22.3	168	2002-03-28
Mercury	2M-SMA-2	Hg	Y	BTV	0.100	0.180	2002-03-28
Nickel	2M-SMA-2	Ni	Y	BTV	15.4	44.2	2002-03-28
Pyrene	2M-SMA-2	129-00-0	Y	SSL_0.1	174	470	2002-03-28
Silver	2M-SMA-2	Ag	Y	BTV	1.00	3.60	2002-03-28
Zinc	2M-SMA-2	Zn	Y	BTV	48.8	825	2002-03-28

Figure 130.3-4 Screening-Level Exceedances from Soil Samples Associated with 2M-SMA-2

130.4 Stormwater Evaluation

130.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Corrective action stormwater samples were collected in June and August 2013. Analytical results from these samples are presented in Figures 130.4-1 and 130.4-2.

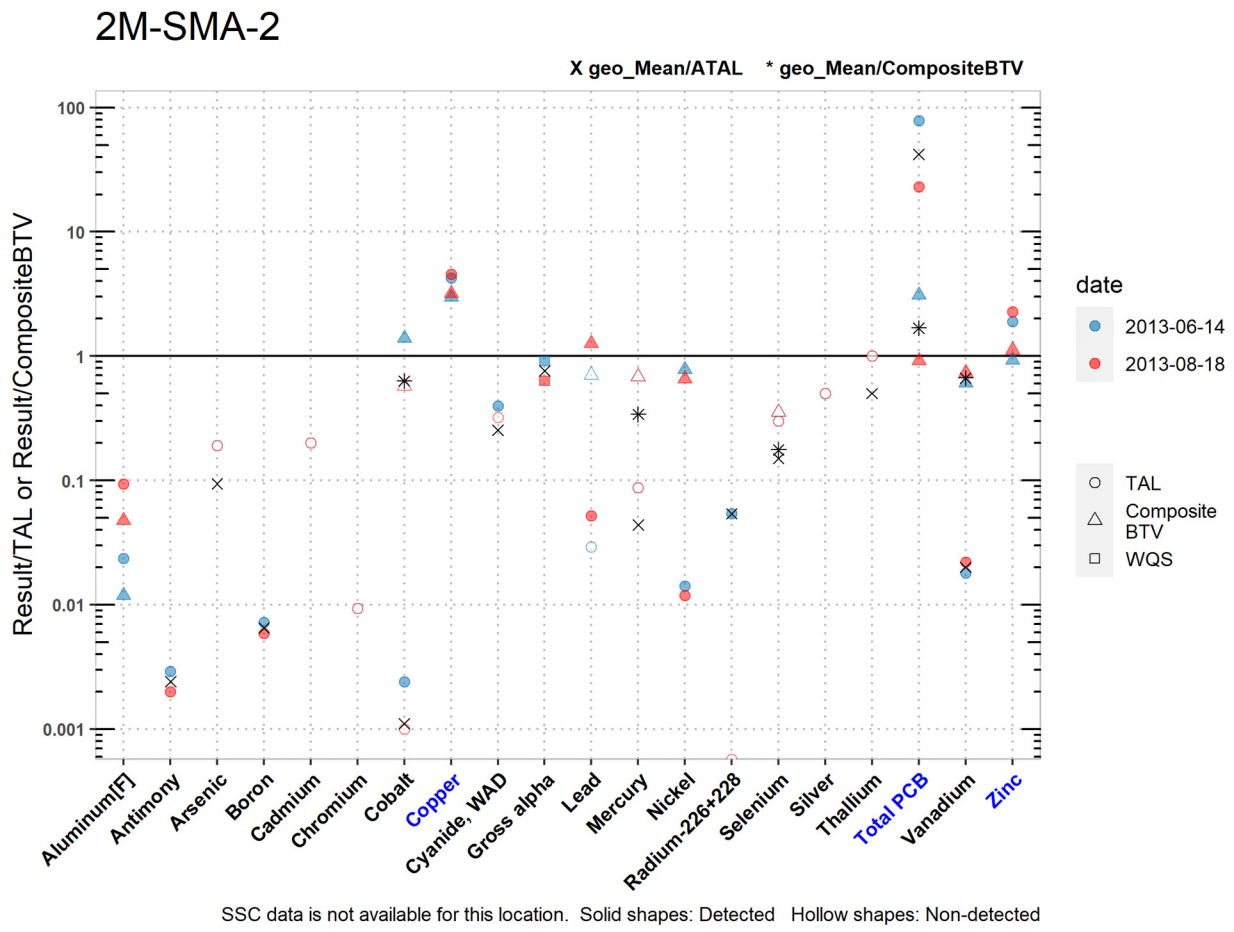

Figure 130.4-1 Analytical Results from Stormwater Samples, 2M-SMA-2 (Plot)

2M-SMA-2

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Lead	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Total PCB	Vanadium	Zinc
MQL	2.5	1	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	0.2	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	5.2	15	NA	0.77	NA	30	5	NA	0.47	0.00064	100	NA
MTAL	750	NA	340	NA	0.595	214	NA	4.35	22	NA	17.2	NA	170	NA	20	0.41	NA	NA	NA	53.9
Composite_BTV	1480	NA	NA	NA	NA	NA	1.75	6.23	NA	53.2	0.709	0.0984	3.09	7.47	4.25	NA	NA	0.0161	2.97	110
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2013-06-14 result	17.6	1.84	*1.70*	36.1	*0.110*	*2.00*	2.43	18.5	2.07	13.7	*0.500*	*0.0670*	2.40	1.62	*1.50*	*0.200*	*0.450*	0.0497	1.80	102
2013-06-14 dT	0.0235	0.0029	NA	0.0072	NA	NA	0.0024	4.25	0.398	0.91	NA	NA	0.0141	0.0540	NA	NA	NA	78	0.018	1.89
2013-06-14 dB	0.0119	NA	NA	NA	NA	NA	1.39	2.97	NA	NA	NA	NA	0.777	NA	NA	NA	NA	3.09	0.606	0.927
2013-08-18 result	70.2	1.25	*1.70*	29.5	*0.110*	*2.00*	*1.00*	19.9	*1.67*	9.51	0.891	*0.0670*	2.03	*NA*	*1.50*	*0.200*	*0.450*	0.0148	2.18	123
2013-08-18 dT	0.0936	0.0020	NA	0.0059	NA	NA	NA	4.57	NA	0.63	0.0518	NA	0.0119	NA	NA	NA	NA	23	0.022	2.28
2013-08-18 dB	0.0474	NA	NA	NA	NA	NA	NA	3.19	NA	NA	1.26	NA	0.657	NA	NA	NA	NA	0.919	0.734	1.12
geo_mean/ATAL	NA	0.0024	0.094	0.0065	NA	NA	0.0011	NA	0.253	0.76	NA	0.044	NA	0.0540	0.15	NA	0.5	42	0.020	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	0.630	NA	NA	NA	NA	0.340	NA	NA	0.176	NA	NA	1.68	0.667	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV, geo_mean/B=geo_mean/composite_BTV

Figure 130.4-2 Analytical Results from Stormwater Samples, 2M-SMA-2 (Table)

130.4.2 Assessment Unit and Stream Impairments

2M-SMA-2 drains to Twomile Canyon (Pajarito to headwaters), which has impairments for total aluminum, dissolved copper, PCBs, and adjusted gross alpha. The metals and adjusted gross alpha impairments may be Site-related, based on Site history.

130.5 Site-Specific Demonstration

130.5.1 Soil Data Summary

No Consent Order data.

130.5.2 Stormwater Data Summary

Copper, PCBs, and zinc exceeded TALs and BTVs, initiating corrective action.

130.5.3 2022 Permit Status

Due to the exceedance of a composite BTV and/or TAL, corrective action will be initiated at this SMA (Part I.C.b.i).

131.0 2M-SMA-2.2

Associated Sites	03-003(k)
Receiving Water	Twomile Canyon
Drainage Area	0.204 acres
Landscape Characteristics	59% impervious, 41% pervious
Consent Order Site Status	AOC 03-003(k): In Progress
2010 Administratively Continued Permit Final Status	Corrective Action Complete for No Exposure
2016–2018 SIP Actions	Based on the November 2017 field visit, it was determined that the current sampler location did not adequately address runoff from the AOC. Therefore, the sampler will be moved to the north side of the parking area, near the transformer pad for confirmation sampling.
2022 Permit Status	Active Monitoring

131.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, baseline stormwater samples were collected in August and September 2011. Analytical results from these samples initiated corrective action.

Following the September 2015 submittal of certification of a no exposure condition to EPA (LANL 2015, 600932), corrective-action monitoring was initiated and an investigation sample was collected in July 2016. The Permittees submitted a completion of corrective action per Permit Part I.E.1(b) for the Site in September 2016 (LANL 2016, 601824). Stormwater monitoring has not occurred since 2016.

131.2 Site History

03-003(k) (8/30/2017)

AOC 03-003(k) consists of area of potential soil contamination associated with the location of a former non-PCB transformer (less than 50 ppm PCB), reportedly staged on the east side of building 03-316 at TA-03. No additional information is available for this Site, including whether there had ever been a release from the transformer. The transformer was removed prior to 1988 and the area where the transformer was situated was graded and paved over when the transportable buildings east of building 03-316 were installed; no documented soil removal. No additional information is available for this Site.

For investigation activities refer to “Investigation Work Plan for Twomile Canyon Aggregate Area, Revision 1” (LANL 2010, 109520).

131.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 131.2-1.

Table 131.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
03-003(k)	Transformer pad	PCBs, SVOCs

131.3 Consent Order Soil Data

Decision-level data are not available for AOC 03-003(k).

131.4 Stormwater Evaluation

131.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the current monitoring location at the SMA.

131.4.2 Assessment Unit and Stream Impairments

2M-SMA-2.2 drains to Twomile Canyon (Pajarito to headwaters), which has impairments for total aluminum, dissolved copper, PCBs, and adjusted gross alpha. The PCB impairment may be Site-related, based on Site history.

131.5 Site-Specific Demonstration

131.5.1 Soil Data Summary

No Consent Order data.

131.5.2 Stormwater Data Summary

No confirmation-monitoring data.

131.5.3 2022 Permit Status

The SMA is in active monitoring. A confirmation-monitoring sample has not been collected at the current location.

131.5.4 Sampling and Analysis Plan

Table 131.5-1 is the proposed SAP for 2M-SMA-2.2.

Table 131.5-1 Proposed SAP, 2M-SMA-2.2

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment, Site history, and stormwater data
SVOCs	Site history
DOC	Permit requirement
SSC	Permit requirement

132.0 2M-SMA-2.5

Associated Sites	40-001(c)
Receiving Water	Twomile Canyon
Drainage Area	0.01 acres
Landscape Characteristics	14% impervious, 86% pervious
Consent Order Site Status	SWMU 40-001(c): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended [a]
2016–2018 SIP Actions	Based on the November 2017 field visit, it was determined that the current sampling location did not address the former discharge area south of the septic tank. Therefore, a new SMA (PJ-SMA-9.2) will be created to address the former discharge area (leach field and cliff edge).
2022 Permit Status	Active Monitoring

[a] Baseline monitoring was reinitiated in 2020 (where one baseline sample had previously been collected with no TAL exceedances) in order to collect a second sample

132.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in September 2012. This sample had no TAL exceedances and stormwater monitoring ceased until 2020. Monitoring resumed in 2020 at 2M-SMA-2.5 to continue baseline confirmation monitoring to collect a second sample with all results below the applicable MTAL or ATAL so the Permittees could make a Site deletion request per Permit Part I.I.2.

132.2 Site History

40-001(c) (2/18/2021)

SWMU 40-001(c) is an active septic system consisting of a septic tank (structure 40-25) located approximately 25 ft east of building 40-11, and inlet and outlet drainlines, two former outfalls, and a leach field at TA-40. Constructed of reinforced concrete, the septic tank measures 4 ft wide × 7 ft long × 6 ft deep, and has a capacity of 540 gal. The septic system was installed in 1950 and serves building 40-11, which houses changing rooms and restrooms. Operators at TA-40 firing sites change into Laboratory-provided protective clothing. Originally, the septic tank discharged through an outlet drainline to the northeast to Twomile Canyon as shown in engineering drawing AB1019 (pg. 2 of 2), as-built drawing ENG-C 1300 (pg. 1 of 6), and a 1988 Site photograph. In 1951, the 2-mile 6-in.-diameter VCP outlet drainline was rerouted to discharge south to Upper Pajarito Canyon as shown in as-built drawing ENG-C 1300 (pg. 1 of 6) and the 1975 Zia Company Drawing for TA-40 (sheet N-1). In 1988, the septic tank outlet drainline was again rerouted; this time to discharge to a leach field constructed south of the septic tank as shown in engineering drawings ENG-C 45511 (pg. 1 of 5) and AB1019 (pg. 2 of 2). The septic tank is currently active and registered with NMED.

For investigation activities refer to “Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1” (LANL 2011, 111794).

132.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 132.2-1.

Table 132.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
40-001(c)	Septic system	Metals, inorganic and organic chemicals, HE

132.3 Consent Order Soil Data

Decision-level data are not available for SWMU 40-001(c).

132.4 Stormwater Evaluation

132.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in September 2012. Analytical results from that sample are presented in Figures 132.4-1 and 132.4-2.

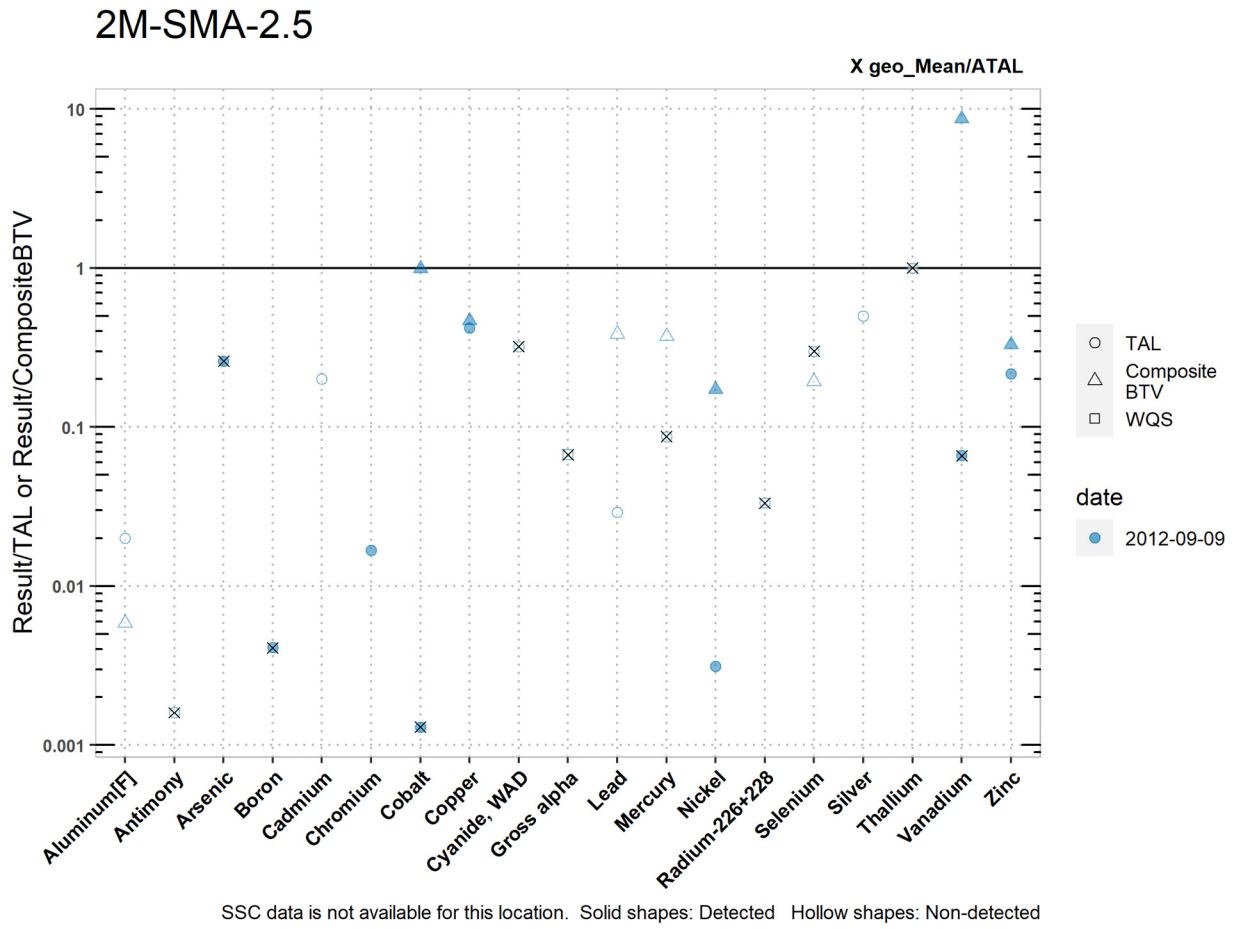

Figure 132.4-1 Analytical Results from Stormwater Sample, 2M-SMA-2.5 (Plot)

2M-SMA-2.5

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Lead	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Vanadium	Zinc
MQL	2.5	1	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	5.2	15	NA	0.77	NA	30	5	NA	0.47	100	NA
MTAL	750	NA	340	NA	0.595	214	NA	4.35	22	NA	17.2	NA	170	NA	20	0.41	NA	NA	53.9
Composite_BTV	2570	NA	NA	NA	NA	NA	1.33	3.92	NA	56.2	1.30	0.180	3.10	5.05	7.77	NA	NA	0.761	35.6
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
2012-09-09 result	*15.0*	*1.00*	2.34	20.5	*0.110*	3.60	1.32	1.83	*1.67*	*1.00*	*0.500*	*0.0670*	0.532	*1.00*	*1.50*	*0.200*	*0.450*	6.59	11.7
2012-09-09 dT	NA	NA	0.26	0.0041	NA	0.0168	0.0013	0.421	NA	NA	NA	NA	0.00313	NA	NA	NA	NA	0.066	0.217
2012-09-09 dB	NA	NA	NA	NA	NA	NA	0.992	0.467	NA	NA	NA	NA	0.172	NA	NA	NA	NA	8.66	0.329
geo_mean/ATAL	NA	0.0016	0.26	0.0041	NA	NA	0.0013	NA	0.321	0.067	NA	0.087	NA	0.0333	0.30	NA	1	0.066	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 132.4-2 Analytical Results from Stormwater Sample, 2M-SMA-2.5 (Table)

132.4.2 Assessment Unit and Stream Impairments

2M-SMA-2.5 drains to Twomile Canyon (Pajarito to headwaters), which has impairments for total aluminum, dissolved copper, PCBs, and adjusted gross alpha. The metals and PCB impairments may be Site-related, based on Site history.

132.5 Site-Specific Demonstration

132.5.1 Soil Data Summary

No Consent Order data.

132.5.2 Stormwater Data Summary

No TAL exceedances.

132.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related constituents of concern were analyzed for in past samples.

132.5.4 Sampling and Analysis Plan

Table 132.5-1 is the proposed SAP for 2M-SMA-2.5.

Table 132.5-1 Proposed SAP, 2M-SMA-2.5

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment and Site history (organics)
Total metals (1)	Impairment (aluminum) and Site history
Dissolved metals (1)	Impairment (copper) and Site history
SVOCs	Site history (organics)
HE	Site history
DOC	Permit requirement
SSC	Permit requirement

133.0 2M-SMA-3

Associated Sites	07-001(a), 07-001(b), 07-001(c), 07-001(d)
Receiving Water	Twomile Canyon
Drainage Area	0.77 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 07-001(a): In Progress SWMU 07-001(b): In Progress SWMU 07-001(c): In Progress SWMU 07-001(d): In Progress
2010 Administratively Continued Permit Final Status	Corrective Action Complete/Enhanced Corrective Action Monitoring
2016–2018 SIP Actions	Based on the December 2016 field visit, the current SMA sampling location and boundary was agreed upon by all parties to be the best representation of stormwater discharge from the 07-001(a), 07-001(b), and 07-001(d). It was also determined that 07-001(c) was not covered by the current sampler location and is larger than depicted by the SWMU boundary. Therefore, the sampler was moved to address this Site.
2022 Permit Status	Active Monitoring

133.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in July 2013. Analytical results from this sample initiated corrective action.

Following the September 2015 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2015, 600911), corrective action-monitoring was initiated and stormwater samples were collected in July and October 2017. Analytical results from these samples had no TAL exceedances.

The Permittees submitted a certification of completion of corrective action per permit Part I.E.2.(a) in November 2019 for SWMUs 07-001(a), 07-001(b), and 07-001(d) (N3B 2019, 700685). Stormwater monitoring has not occurred for these Sites since 2019.

The sampler move recommended in December 2016 was instituted, and one investigative sample was collected under the Administratively Continued Permit. That sample will now be used as compliance sample for the 2022 IP. After a determination that the corrective-action monitoring samples collected in 2017 were not representative of SWMU 07-001(c), corrective-action monitoring was reinitiated in 2019 at the location identified for the Site during the 2016 SIP review. Since that time, stormwater flow has not been sufficient for full-volume sample collection, and monitoring is ongoing to attempt to collect a second sample.

133.2 Site History

07-001(a) (9/26/2017)

SWMU 07-001(a) is an inactive firing pit located near the east end of TA-06. Former TA-07 is now located in TA-06. The Site consists of a circular depression, surrounded by an annular berm about 4 ft high and approximately 30 ft in diameter. The firing pit was used in the 1950s to destroy scrap

detonators and explosives. The materials to be destroyed were mixed with Composition B scraps or flaked TNT and the mixture was detonated. A 1959 memorandum states this method was very effective in destroying detonators, with no intact detonators thrown out of a pit and no undestroyed detonators found during a site survey, although pellets of unexploded PBX were found. The base explosives of the PBX historically used at the Laboratory include HMX; RDX; and TATB. In 1959, this method of destroying detonators was discontinued at this Site.

07-001(b) (9/26/2017)

SWMU 07-001(b) is an inactive firing pit located near the east end of TA-06. Former TA-07 is now located within TA-06. The Site consists of a circular depression, surrounded by an annular berm about 4 ft high and approximately 30 ft in diameter. The firing pit was used in the 1950s to destroy scrap detonators and explosives. The materials to be destroyed were mixed with Composition B scraps or flaked TNT and the mixture was detonated. A 1959 memorandum states this method was very effective in destroying detonators, with no intact detonators thrown out of a pit and no undestroyed detonators found during a site survey, although pellets of unexploded PBX were found. The base explosives of the PBX historically used at the Laboratory include HMX; RDX; and TATB. In 1959, this method of destroying detonators was discontinued at this Site.

07-001(c) (11/30/2017)

SWMU 07-001(c) is in an inactive amphitheater-shaped firing site, approximately 50 ft × 50 ft, located near the eastern boundary of TA-06. Soft metal disks imbedded with bullets have been found at this Site. Little is known about this Site's history, but the Site may have been used briefly to study ballistic initiation of critical mass through the study of projectiles fired at lead plates.

07-001(d) (6/8/2020)

SWMU 07-001(d) is an inactive firing site located near the eastern boundary of TA-06. SWMU 07-001(d) was not included in the 1990 SWMU Report. The OU 1111 RCRA RFI work plan describes SWMU 07-001(d) as an inactive firing site located near the eastern boundary of TA-06 (formerly TA-07). The Site is an approximately 20-ft-diameter × 3-ft-deep crater. Detonator parts have been found near the crater. Little is known about the operating history of this Site, but it is believed to be the location of a one-time "celebratory shot" fired in 1945 after the Japanese surrender at the end of World War II.

For investigation activities at these Sites refer to "Investigation Work Plan for Twomile Canyon Aggregate Area, Revision 1" (LANL 2010, 109520).

133.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 133.2-1.

Table 133.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
07-001(a)	Firing site	Metals, HE, DU
07-001(b)	Firing site	Metals, HE, DU
07-001(c)	Firing site	Metals, lead, HE, radionuclides
07-001(d)	Firing site	Metals, HE, radionuclides

133.3 Consent Order Soil Data

Decision-level data for SWMU 07-001(a) and 07-001(b) consist of results from samples collected in 1996. Analytical results from these samples are presented in Figures 133.3-1 and 133.3-2. The 2010 IWP (LANL 2010, 109520) concluded that the nature and extent of contamination have not been defined and further investigation is recommended.

Decision-level data are not available for SWMU 07-001(c) or 07-001(d).

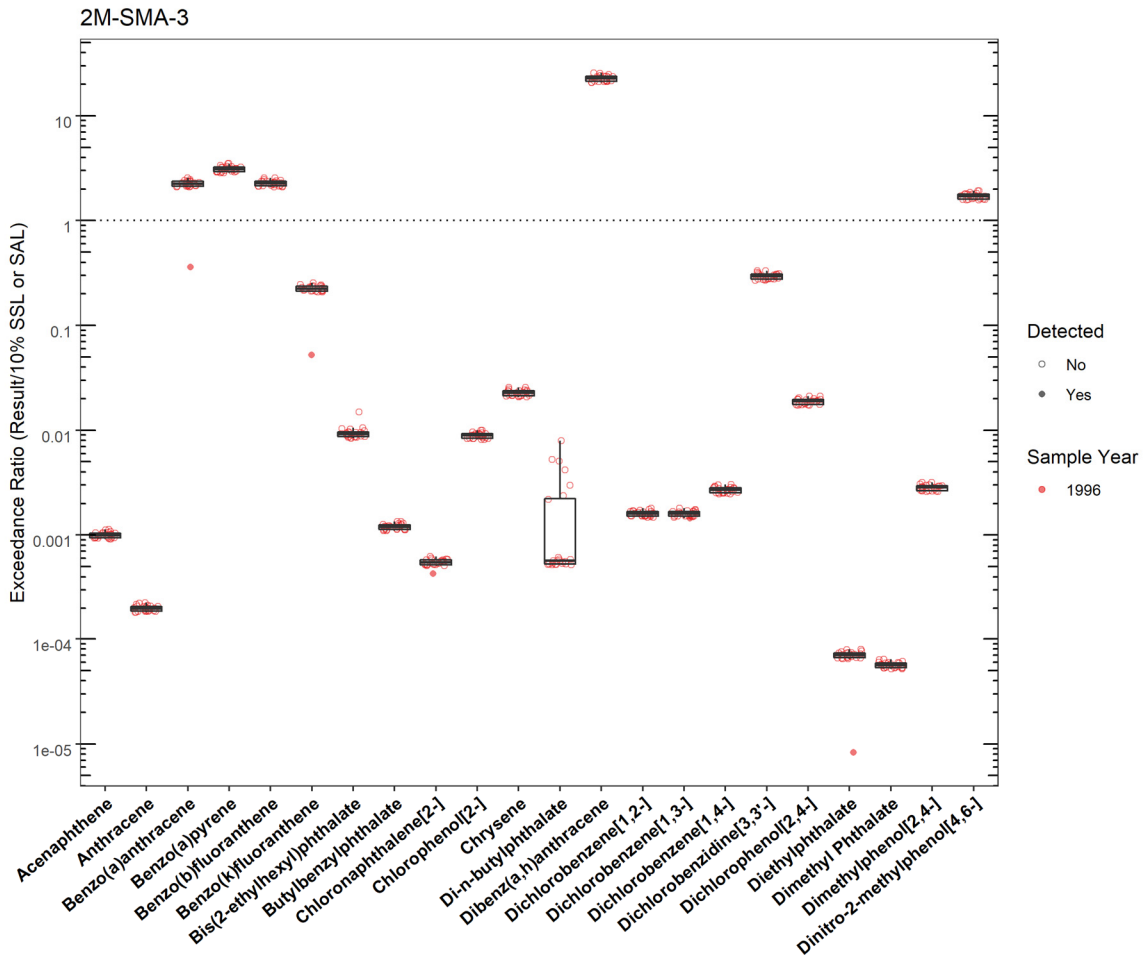

Figure 133.3-1 Organics Analytical Results from Soil Samples Associated with 2M-SMA-3 (Plot 1)

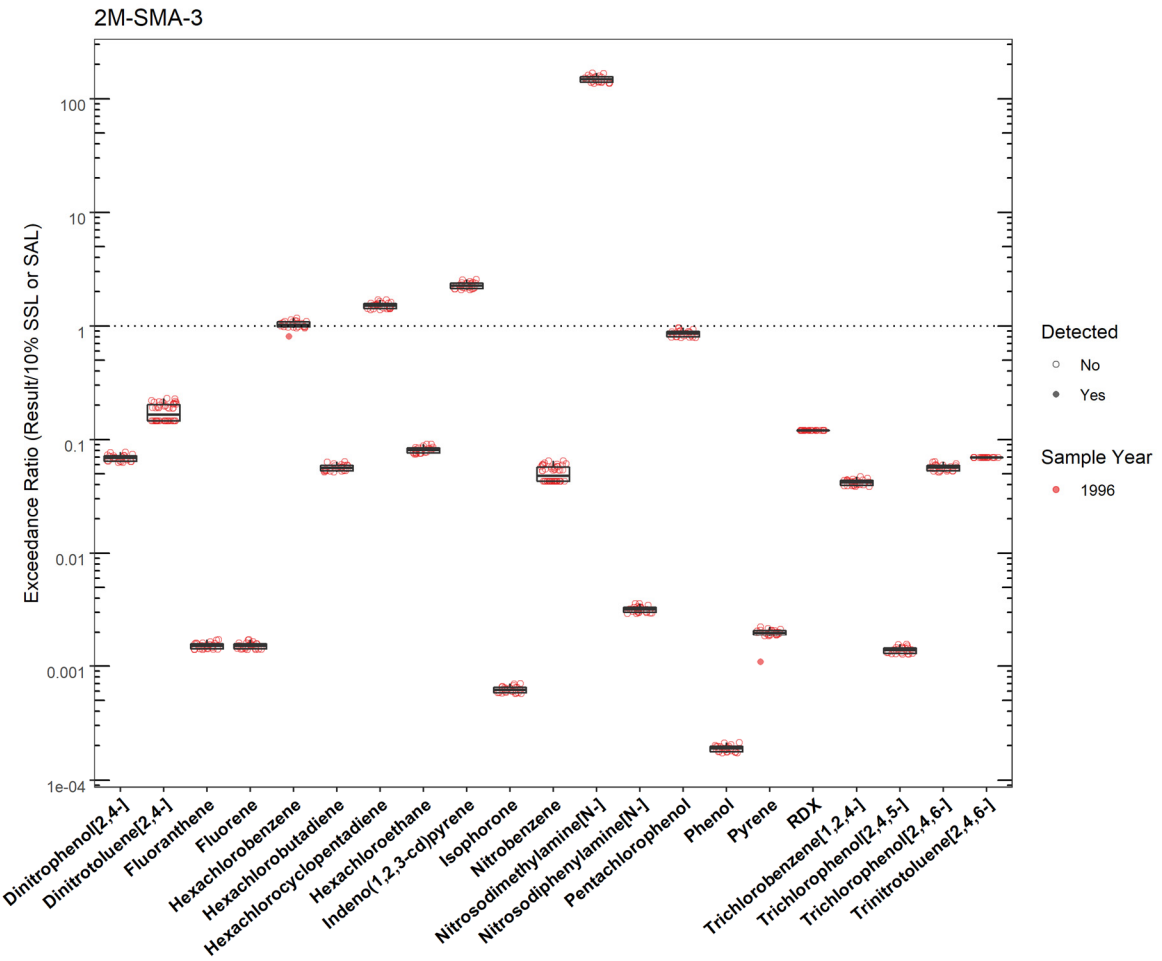

Figure 133.3-2 Organics Analytical Results from Soil Samples Associated with 2M-SMA-3 (Plot 2)

133.4 Stormwater Evaluation

133.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A sample was collected in October 2017 for investigative purposes (at SS193230) under the Administratively Continued Permit at the SIP recommended location. This sample is eligible as a corrective-action stormwater sample for the 2022 Permit SSD. Analytical results from the October 2017 sample at SS193230 are presented in Figures 133.4-1 through 133.4-4.

Based on the need to reactivate monitoring for 07-001(a), 07-001(b) and 07-001(d), monitoring will be resumed at SS2439. Corrective-action samples were collected at SS2439 in July and October 2017. Analytical results from those samples are presented in Figures 133.4-5 through 133.4-8.

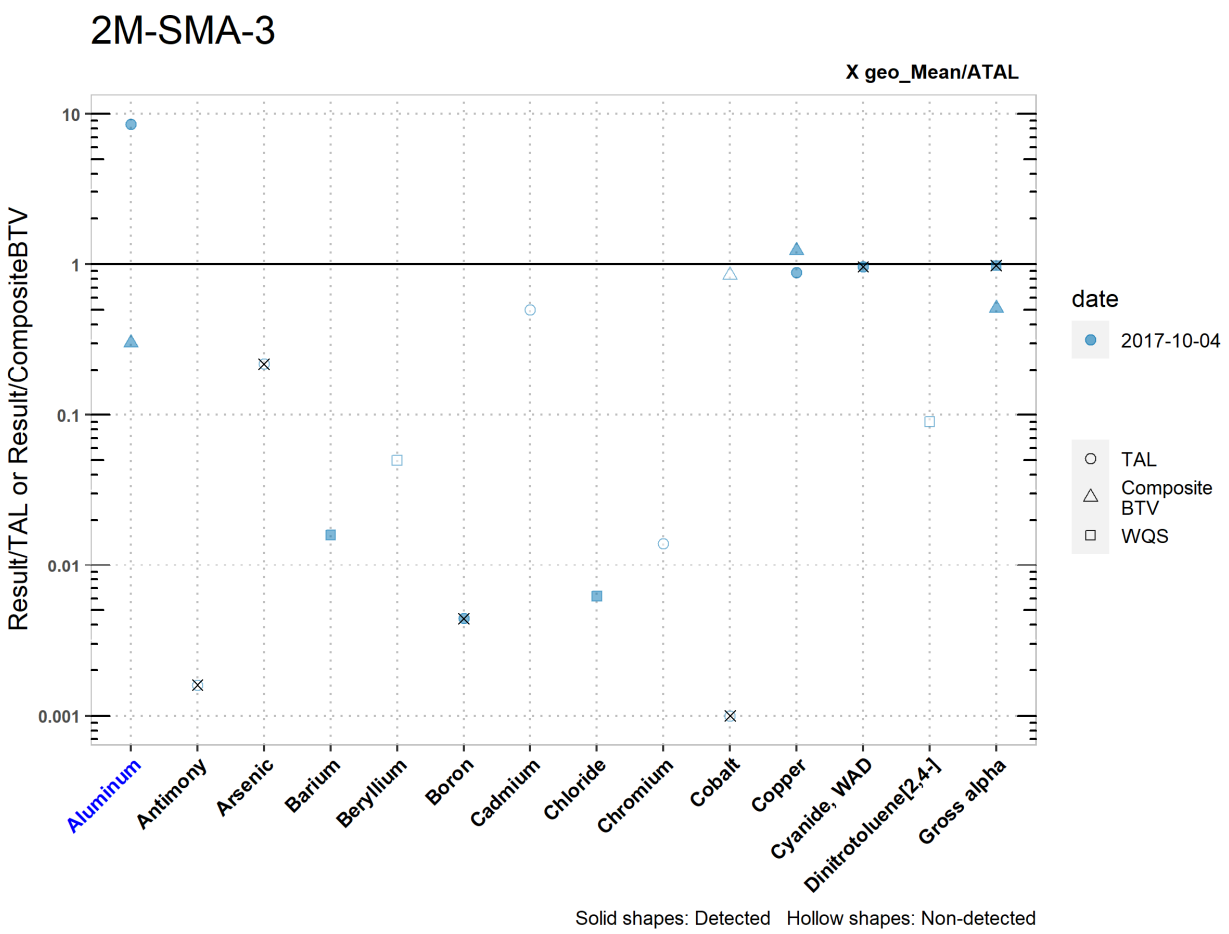

Figure 133.4-1 Analytical Results from Stormwater Sample, 2M-SMA-3 at SS193230 (Plot 1)

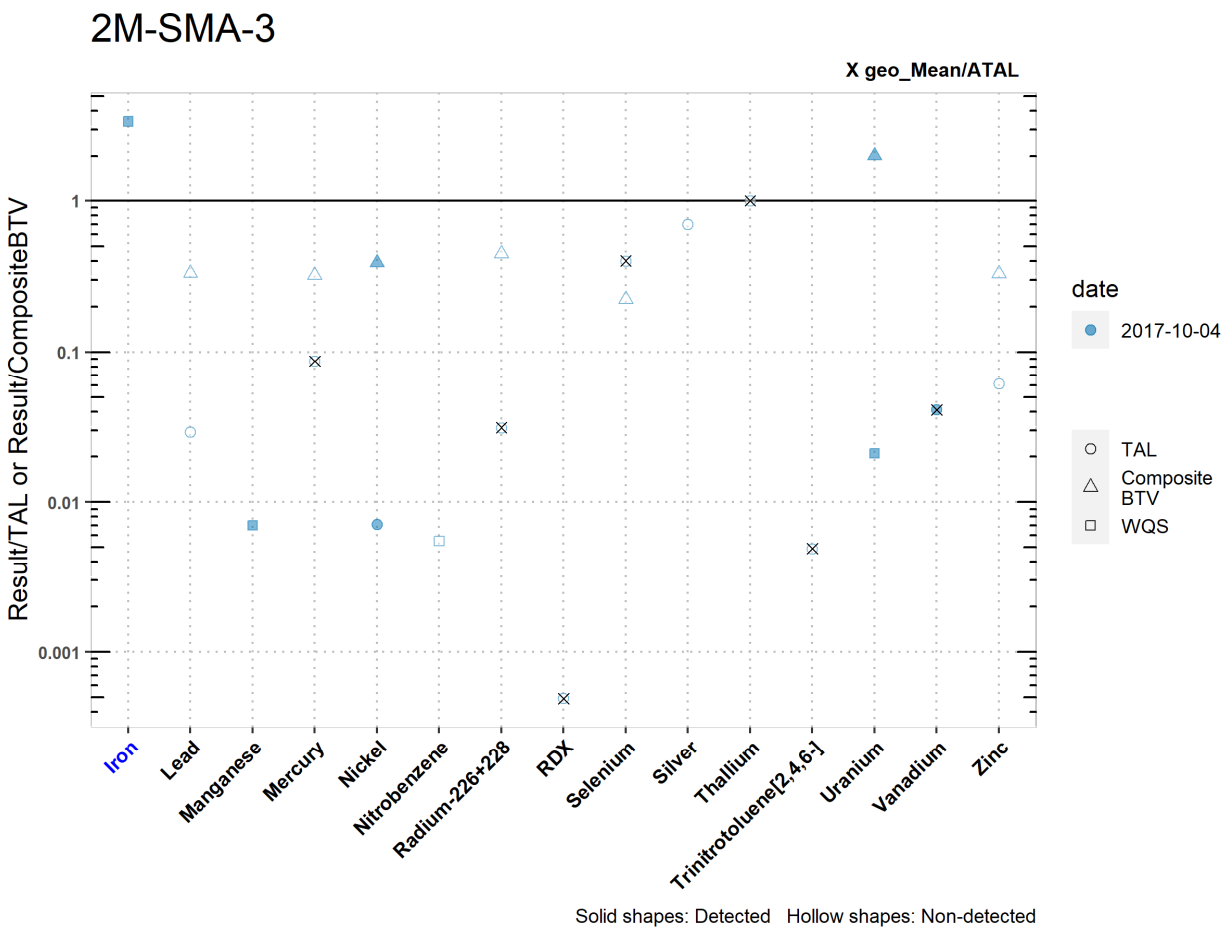

Figure 133.4-2 Analytical Results from Stormwater Sample, 2M-SMA-3 at SS193230 (Plot 2)

2M-SMA-3

	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chloride	Chromium	Cobalt	Copper	Cyanide, WAD	Dinitrotoluene [2,4-]	Gross alpha
MQL	2.5	1	0.5	NA	NA	100	1	NA	10	50	0.5	10	NA	NA
ATAL	NA	640	9	NA	NA	5000	NA	NA	NA	1000	NA	5.2	NA	15
MTAL	664	NA	340	NA	NA	NA	0.595	NA	214	NA	4.35	22	NA	NA
Composite_BTV	37400	NA	NA	NA	NA	NA	NA	NA	NA	1.18	3.12	NA	NA	57.2
unit	ug/L**	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L*
2017-10-04 result	5680	*1.00*	*2.00*	32.7	*0.200*	22.0	*0.300*	1420	*3.00*	*1.00*	3.84	5.00	*0.0988*	14.7
2017-10-04 dT	8.55	NA	NA	0.016	NA	0.0044	NA	0.0062	NA	NA	0.883	0.962	NA	0.98
2017-10-04 dB	0.304	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.23	NA	NA	0.514
geo_mean/ATAL	NA	0.0016	0.22	NA	NA	0.0044	NA	NA	NA	0.0010	NA	0.962	NA	0.98

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
*SSC normalized unit is pCi/g **SSC normalized unit is mg/kg

Figure 133.4-3 Analytical Results from Stormwater Sample, 2M-SMA-3 at SS193230 (Table 1)

2M-SMA-3

	Iron	Lead	Manganese	Mercury	Nickel	Nitrobenzene	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Uranium	Vanadium	Zinc
MQL	NA	0.5	NA	0.005	0.5	NA	NA	NA	5	0.5	0.5	NA	NA	50	20
ATAL	NA	NA	NA	0.77	NA	NA	30	200	5	NA	0.47	20	NA	100	NA
MTAL	NA	17.2	NA	NA	170	NA	NA	NA	20	0.41	NA	NA	NA	NA	53.9
Composite_BTV	NA	1.50	NA	0.208	3.10	NA	4.21	NA	8.98	NA	NA	NA	0.315	NA	10.0
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L*	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2017-10-04 result	3430	*0.500*	7.75	*0.0670*	1.21	*0.0988*	*0.936*	*0.0988*	*2.00*	*0.300*	*0.600*	*0.0988*	0.633	4.07	*3.30*
2017-10-04 dT	3.4	NA	0.0070	NA	0.00712	NA	NA	NA	NA	NA	NA	NA	0.021	0.041	NA
2017-10-04 dB	NA	NA	NA	NA	0.390	NA	NA	NA	NA	NA	NA	NA	2.01	NA	NA
geo_mean/ATAL	NA	NA	NA	0.087	NA	NA	0.0312	0.00049	0.40	NA	1	0.0049	NA	0.041	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
*SSC normalized unit is pCi/g

Figure 133.4-4 Analytical Results from Stormwater Sample, 2M-SMA-3 at SS193230 (Table 2)

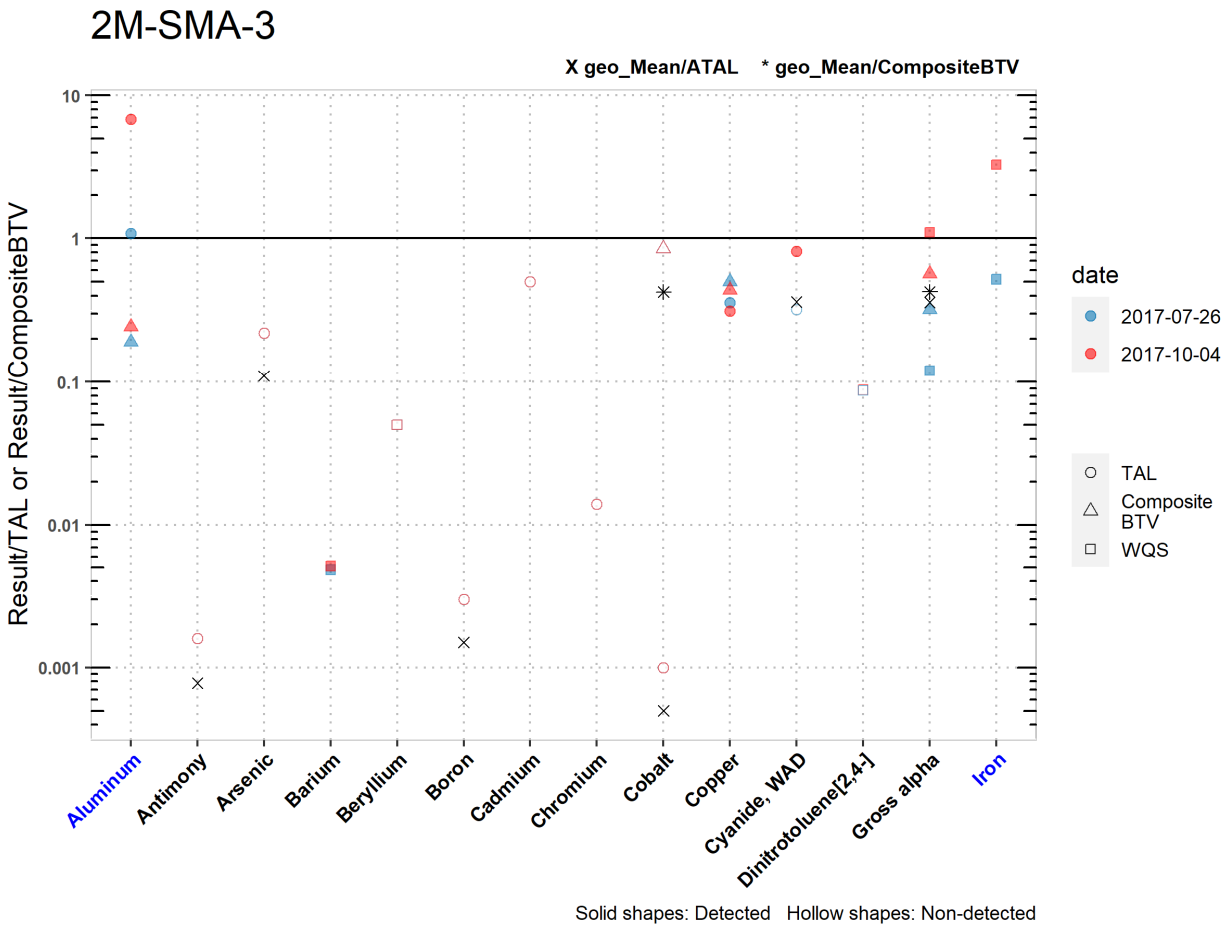

Figure 133.4-5 Analytical Results from Stormwater Samples, 2M-SMA-3 at SS2439 (Plot 1)

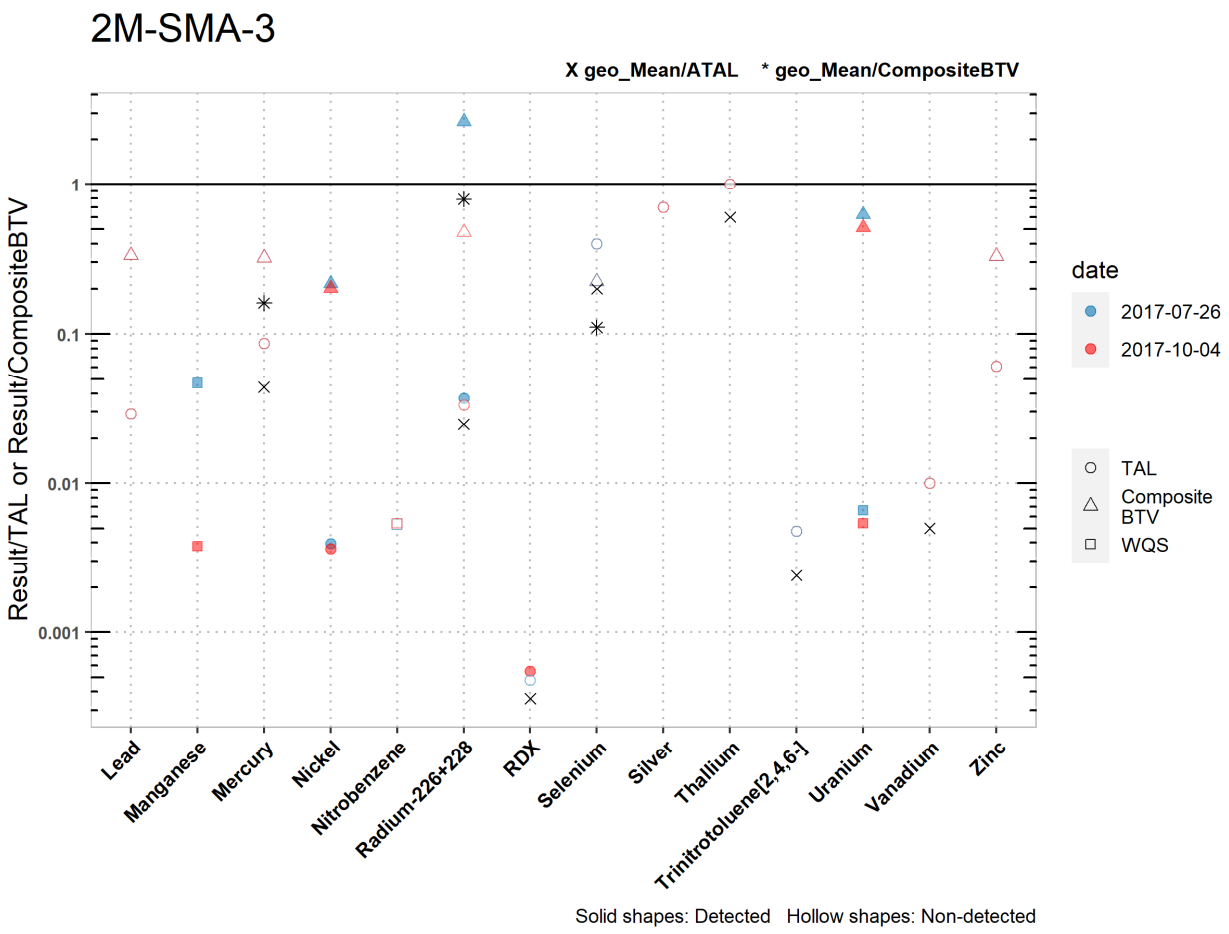

Figure 133.4-6 Analytical Results from Stormwater Samples, 2M-SMA-3 at SS2439 (Plot 2)

2M-SMA-3

	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Dinitrotoluene [2,4-]	Gross alpha	Iron
MQL	2.5	1	0.5	NA	NA	100	1	10	50	0.5	10	NA	NA	NA
ATAL	NA	640	9	NA	NA	5000	NA	NA	1000	NA	5.2	NA	15	NA
MTAL	664	NA	340	NA	NA	NA	0.595	214	NA	4.35	22	NA	NA	NA
Composite_BTV	37400	NA	NA	NA	NA	NA	NA	NA	1.18	3.12	NA	NA	57.2	NA
unit	ug/L**	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L*	ug/L
2017-07-26 result	716	*1.00*	*2.00*	9.56	*0.200*	*15.0*	*0.300*	*3.00*	*1.00*	1.56	*1.67*	*0.0952*	1.83	521
2017-07-26 dT	1.08	NA	NA	0.0048	NA	NA	NA	NA	NA	0.359	NA	NA	0.12	0.52
2017-07-26 dB	0.191	NA	NA	NA	NA	NA	NA	NA	NA	0.500	NA	NA	0.320	NA
2017-10-04 result	4540	*1.00*	*2.00*	10.2	*0.200*	*15.0*	*0.300*	*3.00*	*1.00*	1.36	4.24	*0.0964*	16.2	3290
2017-10-04 dT	6.84	NA	NA	0.0051	NA	NA	NA	NA	NA	0.313	0.815	NA	1.1	3.3
2017-10-04 dB	0.243	NA	NA	NA	NA	NA	NA	NA	NA	0.436	NA	NA	0.566	NA
geo_mean/ATAL	NA	0.00078	0.11	NA	NA	0.0015	NA	NA	0.00050	NA	0.362	NA	0.36	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	NA	NA	0.424	NA	NA	NA	0.426	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
geo_mean/B=geo_mean/composite_BTV
*SSC normalized unit is pCi/g **SSC normalized unit is mg/kg

Figure 133.4-7 Analytical Results from Stormwater Samples, 2M-SMA-3 at SS2439 (Table 1)

2M-SMA-3

	Lead	Manganese	Mercury	Nickel	Nitrobenzene	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Uranium	Vanadium	Zinc
MQL	0.5	NA	0.005	0.5	NA	NA	NA	5	0.5	0.5	NA	NA	50	20
ATAL	NA	NA	0.77	NA	NA	30	200	5	NA	0.47	20	NA	100	NA
MTAL	17.2	NA	NA	170	NA	NA	NA	20	0.41	NA	NA	NA	NA	53.9
Composite_BTV	1.50	NA	0.208	3.10	NA	4.21	NA	8.98	NA	NA	NA	0.315	NA	10.0
unit	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L*	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2017-07-26 result	*0.500*	51.7	*0.0670*	0.673	*0.0952*	1.11	*0.0952*	*2.00*	*0.300*	*0.600*	*0.0952*	0.197	*1.00*	*3.30*
2017-07-26 dT	NA	0.047	NA	0.00396	NA	0.0370	NA	NA	NA	NA	NA	0.0066	NA	NA
2017-07-26 dB	NA	NA	NA	0.217	NA	2.64	NA	NA	NA	NA	NA	0.625	NA	NA
2017-10-04 result	*0.500*	4.19	*0.0670*	0.623	*0.0964*	*1.00*	0.110	*2.00*	*0.300*	*0.600*	*0.0964*	0.161	*1.00*	*3.30*
2017-10-04 dT	NA	0.0038	NA	0.00366	NA	NA	0.00055	NA	NA	NA	NA	0.0054	NA	NA
2017-10-04 dB	NA	NA	NA	0.201	NA	NA	NA	NA	NA	NA	NA	0.511	NA	NA
geo_mean/ATAL	NA	NA	0.044	NA	NA	0.0248	0.00036	0.20	NA	0.6	0.0024	NA	0.0050	NA
geo_mean/B	NA	NA	0.161	NA	NA	0.791	NA	0.111	NA	NA	NA	NA	NA	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
geo_mean/B=geo_mean/composite_BTV
*SSC normalized unit is pCi/g

Figure 133.4-8 Analytical Results from Stormwater Samples, 2M-SMA-3 at SS2439 (Table 2)

133.4.2 Assessment Unit and Stream Impairments

2M-SMA-3 drains to Twomile Canyon (Pajarito to headwaters), which has impairments for total aluminum, dissolved copper, PCBs, and adjusted gross alpha. The metals and adjusted gross alpha impairments may be Site-related, based on Site history.

133.5 Site-Specific Demonstration

133.5.1 Soil Data Summary

No Consent Order data.

133.5.2 Stormwater Data Summary

Aluminum exceeded the TAL but not the BTV. Iron exceeded the WQS; however, there is no TAL in the Permit for iron. Only POCs with TALs are used in the SSD.

133.5.3 2022 Permit Status

The SMA is in active monitoring. A second confirmation-monitoring sample has not been collected at this location.

133.5.4 Sampling and Analysis Plan

Tables 133.5-1 and 133.5-2 are the proposed SAPs for 2M-SMA-3, at SS193230 and SS2439, respectively.

Table 133.5-1 Proposed SAP, 2M-SMA-3 at SS193230

Monitoring Constituent	Background for Monitoring
Dissolved metals (1)	Impairment and Site history
Total metals (1)	Impairment and Site history
Gross alpha (1)	Impairment and Site history (radionuclides)
HE (1)	Site history
Radium-226 and radium-228 (1)	Site history (radionuclides)
Tritium	Site history (radionuclides)
Strontium-90	Site history (radionuclides)
DOC	Permit requirement
SSC	Permit requirement

Table 133.5-2 Proposed SAP, 2M-SMA-3 at SS2439

Monitoring Constituent	Background for Monitoring
Tritium	Site history (radionuclides)
Strontium-90	Site history (radionuclides)
DOC	Permit requirement
SSC	Permit requirement

134.0 3M-SMA-0.2

Associated Sites	15-010(b)
Receiving Water	Threemile Canyon
Drainage Area	2.60 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 15-010(b): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Highest concentrations of inorganics detected in soil at the Site are not within the current SMA boundary. Therefore, based on this and the October 2016 field visit, the sampling location was moved downgradient.
2022 Permit Status	Active Monitoring

134.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, baseline monitoring was initiated. While developing the 2017 SAP, a decision was made to implement the monitoring location move recommended during the 2016 SIP review, and baseline monitoring was reinitiated. A baseline stormwater sample was collected in July 2018. Analytical results from this sample initiated corrective action.

Following the July 2021 submittal of certification of enhanced control installation to EPA as a corrective action (N3B 2021, 701533), the sampler was relocated to a more representative location, and corrective-action monitoring was initiated. Since that time stormwater flow has not been sufficient for full-volume sample collection and corrective-action monitoring is ongoing until at least one confirmation sample is collected from this SMA.

134.2 Site History

15-010(b) (12/21/2021)

SWMU 15-010(b) is an inactive settling tank (structure 15-147) located near former shop building 15-8 in the northwest corner of TA-15. The tank, constructed in 1947 of concrete, measures 5 ft wide × 5 ft long × 5.5 ft deep with an approximate capacity of 900 gal. The tank was originally designed to be a septic tank, but subsequent engineering records confirm the tank was used as a HE settling tank. The settling tank served former building 15-8, which housed HE machining operations during the 1950s and discharged to an outfall at the edge of Threemile Canyon. The tank is no longer in operation, but the date it ceased to be used is not known.

The approved 2008 IWP (LANL 2008, 105673) proposed removing the tank. However, facility restrictions on the handling of HE prevented removal of the tank, which was found to contain liquid, until the contents were characterized. The liquid contents were sampled for waste characterization purposes, were found to be nonhazardous and nonradioactive, and were removed. The facility requested the tank be closed in place and filled with concrete.

For investigation activities refer to “Phase II Investigation Work Plan for Threemile Canyon Aggregate Area, Revision 3” (N3B 2021, 701729).

134.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 134.2-1

Table 134.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
15-010(b)	Settling tank	Metals, HE

134.3 Consent Order Soil Data

Decision-level data for SWMU 15-010(b) consist of results from samples collected in 2010. Analytical results from those samples are presented in Figures 134.3-1 through 134.3-4. Revision 1 of the 2018 supplemental IR (N3B 2018, 700033) concluded that the nature and extent of contamination have been defined or no further sampling for extent is warranted in the drainage below SWMU 15-010(b).

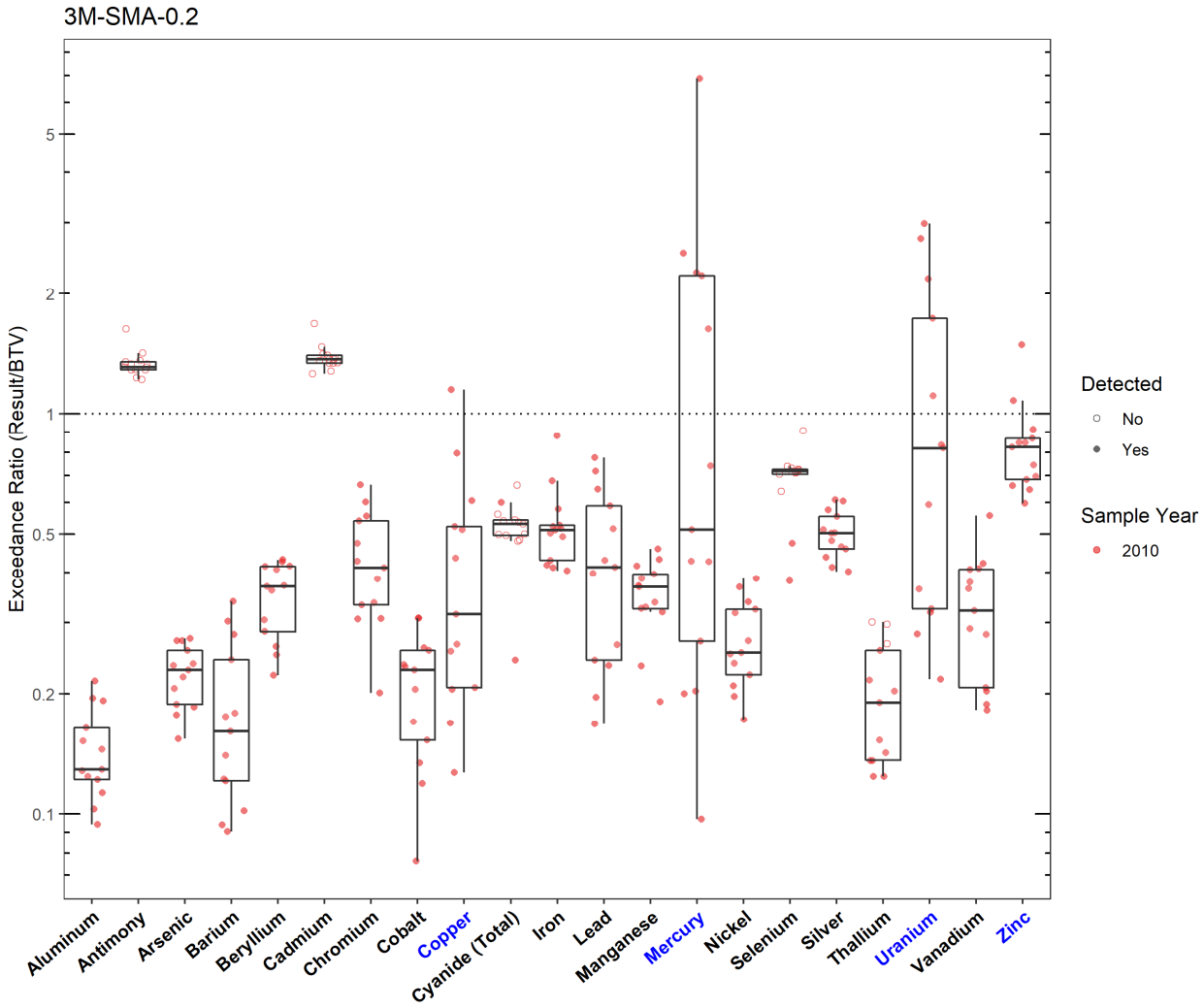

Figure 134.3-1 Inorganics Analytical Results from Soil Samples Associated with 3M-SMA-0.2

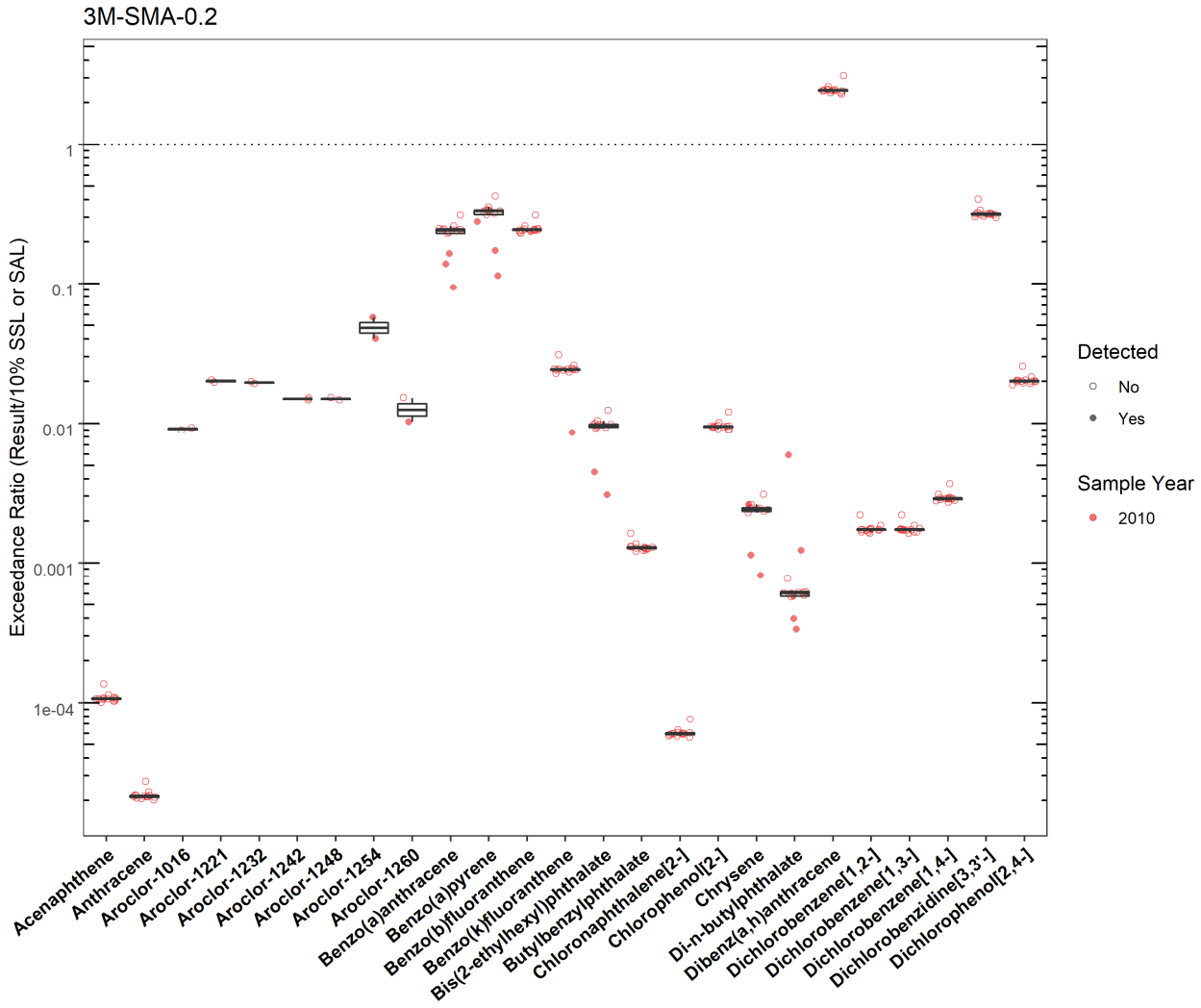

Figure 134.3-2 Organics Analytical Results from Soil Samples Associated with 3M-SMA-0.2 (Plot 1)

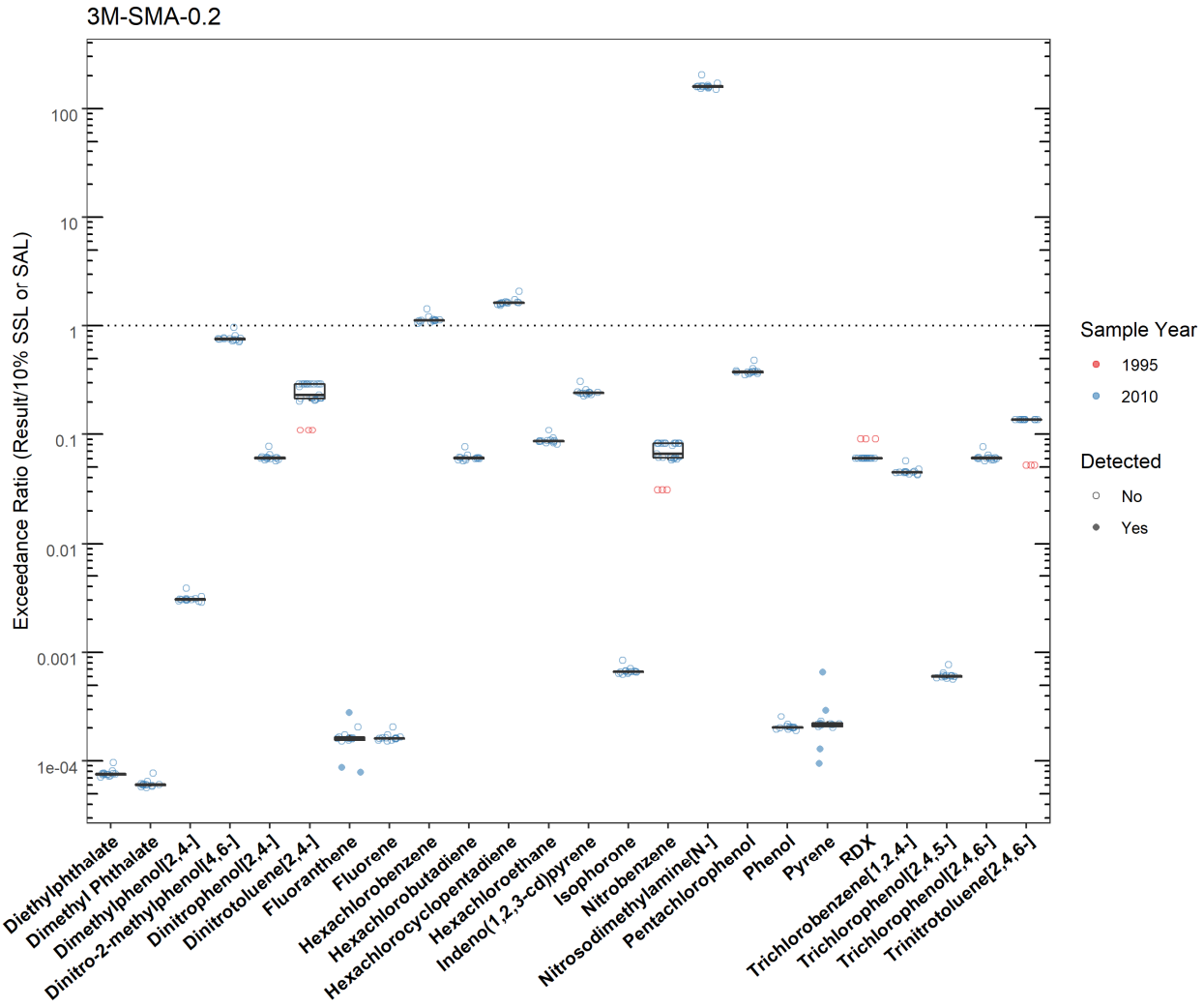

Figure 134.3-3 Organics Analytical Results from Soil Samples Associated with 3M-SMA-0.2 (Plot 2)

3M-SMA-0.2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Copper	3M-SMA-0.2	Cu	Y	BTV	14.7	16.9	2010-01-14
Mercury	3M-SMA-0.2	Hg	Y	BTV	0.100	0.688	2010-01-14
Uranium	3M-SMA-0.2	U	Y	BTV	1.82	5.44	2010-01-14
Zinc	3M-SMA-0.2	Zn	Y	BTV	48.8	72.9	2010-01-14

Figure 134.3-4 Screening-Level Exceedances from Soil Samples Associated with 3M-SMA-0.2

134.4 Stormwater Evaluation

134.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the current monitoring location for the SMA.

134.4.2 Assessment Unit and Stream Impairments

3M-SMA-0.2 drains to Threemile Canyon (Pajarito Canyon to headwaters), which has an impairment for adjusted gross alpha. The impairment is not likely to be Site-related, based on Site history.

135.5 Site-Specific Demonstration

134.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable soil-screening value in soil data: copper, mercury, uranium, and zinc. HE from Site History were measured in soil data and did not exceed applicable screening values.

134.5.2 Stormwater Data Summary

No confirmation-monitoring data.

134.5.3 2022 Permit Status

The SMA is in active monitoring. A confirmation-monitoring sample has not been collected at the current location.

134.5.4 Sampling and Analysis Plan

Table 134.5-1 is the proposed SAP for 3M-SMA-0.2.

Table 134.5-1 Proposed SAP, 3M-SMA-0.2

Monitoring Constituent	Background for Monitoring
Total mercury	Site history (metals) and soil data
Dissolved copper, uranium, and zinc	Site history (metals) and soil data
DOC	Permit requirement
SSC	Permit requirement

135.0 3M-SMA-0.4

Associated Sites	15-006(b)
Receiving Water	Threemile Canyon
Drainage Area	5.78 acres
Landscape Characteristics	1% impervious, 99% pervious
Consent Order Site Status	SWMU 15-006(b): In Progress Deferred per Consent Order
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the October 2016 field visit, the current SMA sampling location and boundary was agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Long-Term Stewardship per Permit Part I.C.3 criterion

135.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in July 2013. Analytical results from this sample initiated corrective action.

The Permittees submitted a request for alternative compliance for the Site per permit Part I.E.3 in May 2015 (LANL 2015, 600417). No response has been received from EPA and stormwater monitoring has not occurred since 2013.

135.2 Site History

15-006(b) (no date)

SWMU 15-006(b) is the Ector firing site. Located along the eastern side of TA-15, the firing site was used for dynamic radiography of explosion-driven weapons components. It was originally established in 1973 and was 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 (15-306), and the blast-protection structure (15-319).

For investigation activities refer to “Investigation Work Plan for Threemile Canyon Aggregate Area” (LANL 2008, 102243).

135.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 135.2-1.

Table 135.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
15-006(b)	Active firing site	Beryllium, lead, HE, uranium

135.3 Consent Order Soil Data

Consent Order soil sampling is not complete for SWMU 15-006(b). Analytical results from those samples are presented in Figures 135.3-1 through 135.3-3.

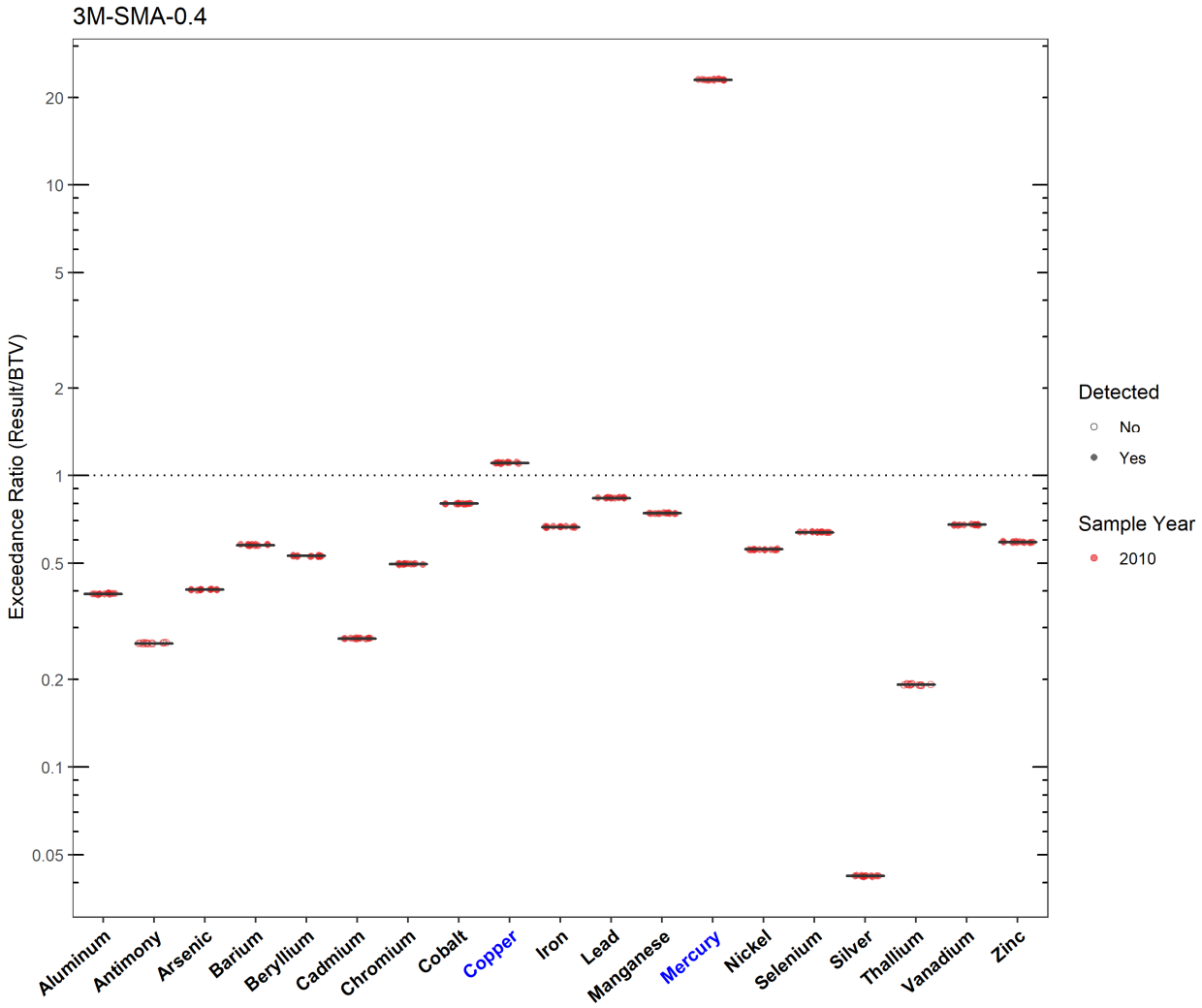

Figure 135.3-1 Inorganics Analytical Results from Soil Samples Associated with 3M-SMA-0.4

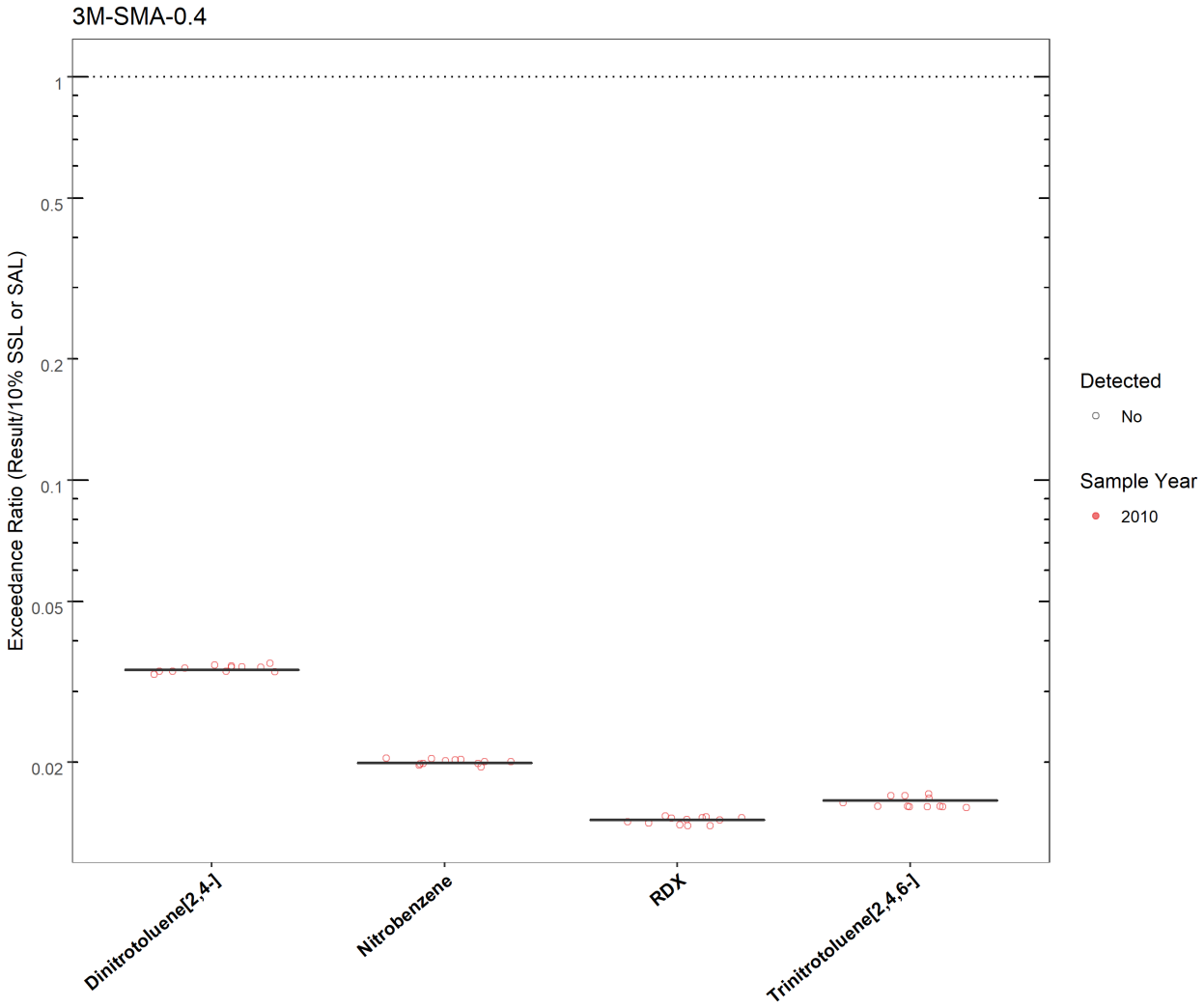

Figure 135.3-2 Organics Analytical Results from Soil Samples Associated with 3M-SMA-0.4

3M-SMA-0.4

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Copper	3M-SMA-0.4	Cu	Y	BTV	14.7	16.2	2010-11-15
Mercury	3M-SMA-0.4	Hg	Y	BTV	0.100	2.30	2010-11-15

Figure 135.3-3 Screening-Level Exceedances from Soil Samples Associated with 3M-SMA-0.4

135.4 Stormwater Evaluation

135.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective action stormwater sample was collected in July 2013. Analytical results from that sample are presented in Figures 135.4-1 and 135.4-2.

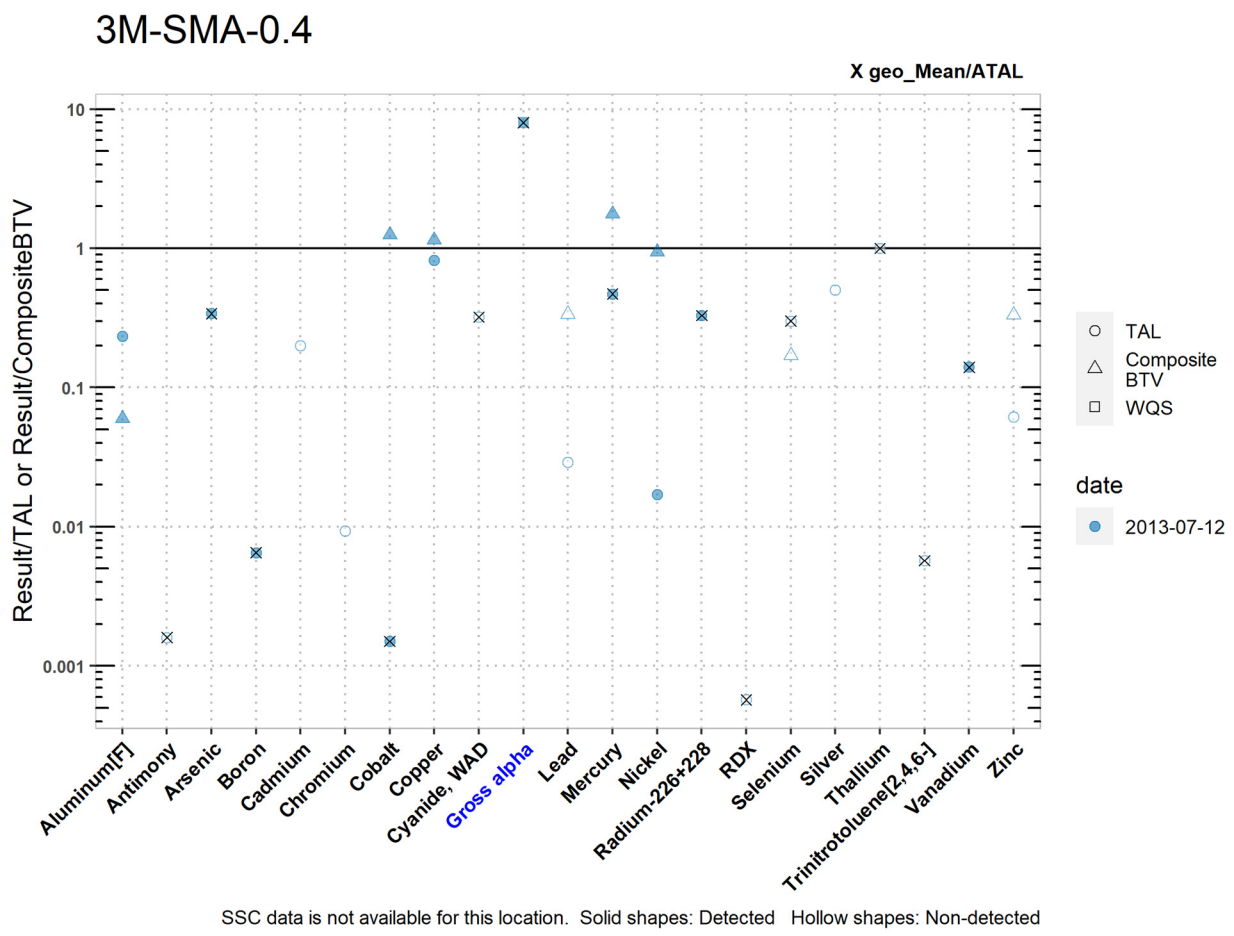

Figure 135.4-1 Analytical Results from Stormwater Sample, 3M-SMA-0.4 (Plot)

3M-SMA-0.4

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Lead	Mercury	Nickel	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
MQL	2.5	1	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	5.2	15	NA	0.77	NA	30	200	5	NA	0.47	20	100	NA
MTAL	750	NA	340	NA	0.595	214	NA	4.35	22	NA	17.2	NA	170	NA	NA	20	0.41	NA	NA	NA	53.9
Composite_BTV	2920	NA	NA	NA	NA	NA	1.17	3.09	NA	56.7	1.49	0.206	3.07	4.17	NA	8.90	NA	NA	NA	NA	9.91
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2013-07-12 result	175	*1.00*	3.06	32.3	*0.110*	*2.00*	1.46	3.56	*1.67*	120	*0.500*	0.363	2.89	9.86	*0.114*	*1.50*	*0.200*	*0.450*	*0.114*	13.9	*3.30*
2013-07-12 dT	0.233	NA	0.34	0.0065	NA	NA	0.0015	0.818	NA	8.0	NA	0.47	0.0170	0.329	NA	NA	NA	NA	NA	0.14	NA
2013-07-12 dB	0.0599	NA	NA	NA	NA	NA	1.25	1.15	NA	NA	NA	1.76	0.941	NA	NA	NA	NA	NA	NA	NA	NA
geo_mean/ATAL	NA	0.0016	0.34	0.0065	NA	NA	0.0015	NA	0.321	8.0	NA	0.47	NA	0.329	0.00057	0.30	NA	1	0.0057	0.14	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 135.4-2 Analytical Results from Stormwater Sample, 3M-SMA-0.4 (Table)

135.4.2 Assessment Unit and Stream Impairments

3M-SMA-0.4 drains to Threemile Canyon (Pajarito Canyon to headwaters), which has impairments for adjusted gross alpha. The adjusted gross alpha impairment may be Site-related, based on Site history.

135.5 Site-Specific Demonstration

135.5.1 Soil Data Summary

Copper and mercury exceeded the applicable soil-screening value in soil data and were previously measured in stormwater data and did not exceed TALs; therefore, they will not be added to the SAP.

135.5.2 Stormwater Data Summary

Gross alpha exceeded in 2013 stormwater data; there was no paired SSC result to confirm whether it was below BTV.

135.5.3 2022 Permit Status

All Sites within the SMA are deferred under the Consent Order. Therefore, the SMA is eligible for long-term stewardship per Part 1.C.3.

136.0 3M-SMA-0.5

Associated Sites	15-006(c), 15-009(c)
Receiving Water	Threemile Canyon
Drainage Area	5.57 acres
Landscape Characteristics	16% impervious, 84% pervious
Consent Order Site Status	SWMU 15-006(c): In Progress Deferred per Consent Order SWMU 15-009(c): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring/Alternative Compliance Requested
2016–2018 SIP Actions	Based on the October 2016 field visit, the current SMA sampling location and boundary was agreed upon by all parties to be the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

136.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA was initiated. The sampler was relocated in 2014 to a more representative location after a change in condition at the SMA, and monitoring was reinitiated. A baseline stormwater sample was collected in July 2014. Analytical results from this sample initiated corrective action.

The Permittees submitted a request for alternative compliance for SWMU 15-009(c) per permit Part I.E.3 in May 2015 (LANL 2015, 600418). No response has been received from EPA and stormwater monitoring for that Site has not occurred since 2014.

Following the October 2015 submittal of certification of enhanced control installation to EPA as a corrective action for 15-006(c) (LANL 2015, 600980), corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection, and corrective-action monitoring is ongoing until at least one confirmation sample is collected.

136.2 Site History

15-006(c) (no date)

SWMU 15-006(c) is the inactive firing site R-44. This firing site, located along the eastern side of TA-15, was originally constructed in 1951 and was used extensively from 1956 to 1978 for diagnostic tests of weapons components. After the PHERMEX and Ector firing sites became operational, firing site R-44 was used only for small experiments. Firing Site R-44 was last used in 1992. Materials used in the tests included uranium, tritium, 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 scattered onto the slope and into the canyon.

For investigation activities refer to “Investigation Work Plan for Threemile Canyon Aggregate Area” (LANL 2008, 102243).

15-009(c) (12/21/2021)

SWMU 15-009(c) is a former septic system that was located at Firing Site R-44 at TA-15. The septic system consists of a former septic tank (former structure 15-62), inlet and outlet drainlines, a seepage

pit, and a former outfall. The septic tank was constructed in 1951 of reinforced concrete with a 540-gal. capacity. The septic system served restroom facilities in firing site control building 15-44. The inlet and outlet drainlines were constructed of cast iron and discharged to an outfall to the south fork of Threemile Canyon. The outfall was located approximately 25 ft downgradient of the septic tank. The septic tank (structure 15-62) was removed during the 2009–2010 Phase I Consent Order investigation and the inlet and outlet drainlines were plugged and left in place. The septic tank excavation was backfilled with soil removed from the excavation and clean fill material from off-Site placed on top to restore the area to its approximate original grade.

For recent Site activities, refer to "Supplemental Investigation Report for Threemile Canyon Aggregate Area, Revision 1" (N3B 2018, 700033).

136.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 136.2-1.

Table 136.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
15-006(c)	Firing Site R-44	Beryllium, lead, HE, tritium, uranium
15-009(c)	Septic system	Metals, organic chemicals, radionuclides

136.3 Consent Order Soil Data

No decision-level data are available for SWMU 15-006(c).

Decision-level data for SWMU 15-009(c) consist of results from samples collected in 1998 and 2010. Analytical results from those samples are presented in Figures 136.3-1 through 136.3-4. Revision 1 of the 2018 supplemental IR (N3B 2018, 700033) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

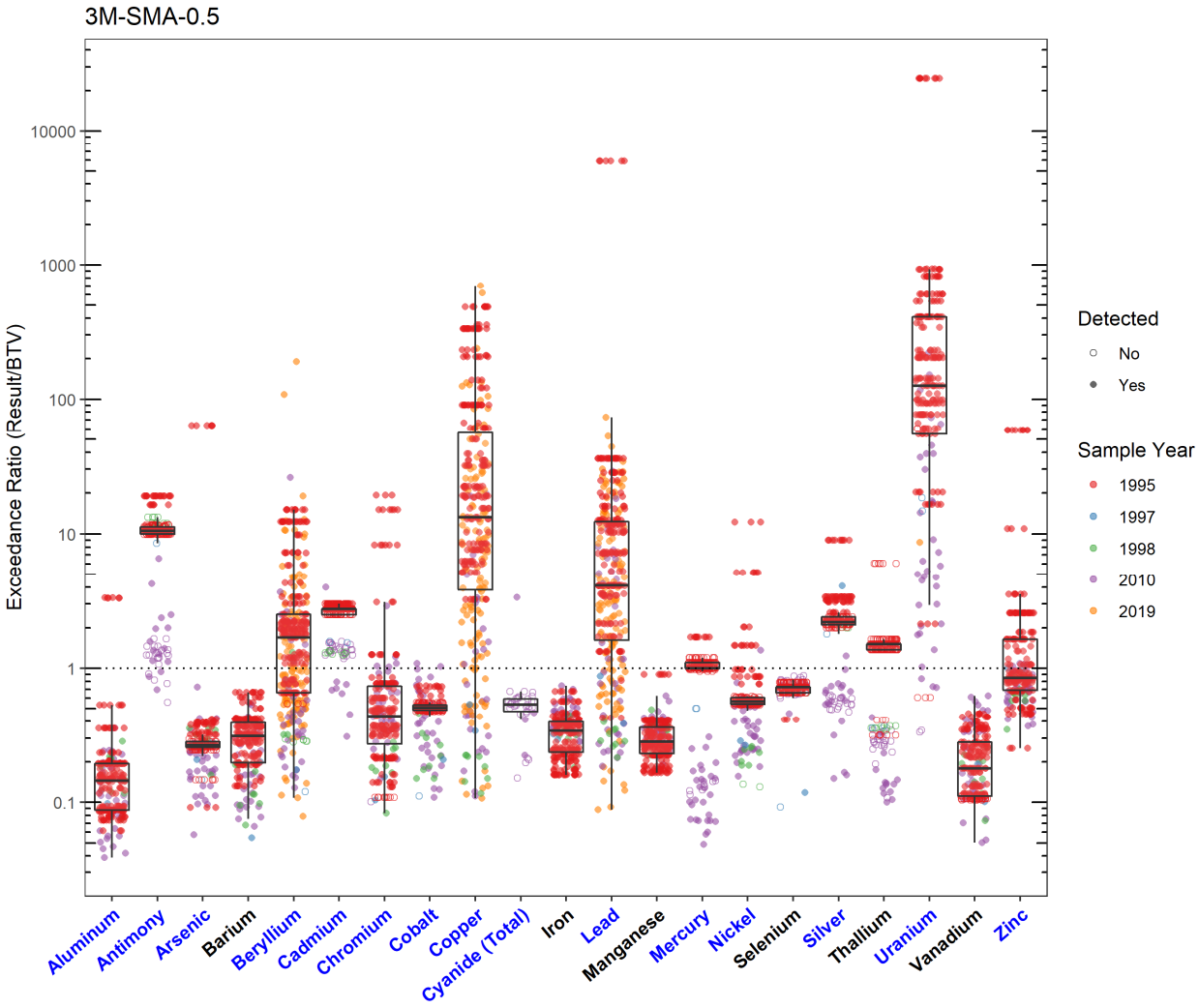

Figure 136.3-1 Inorganics Analytical Results from Soil Samples Associated with 3M-SMA-0.5

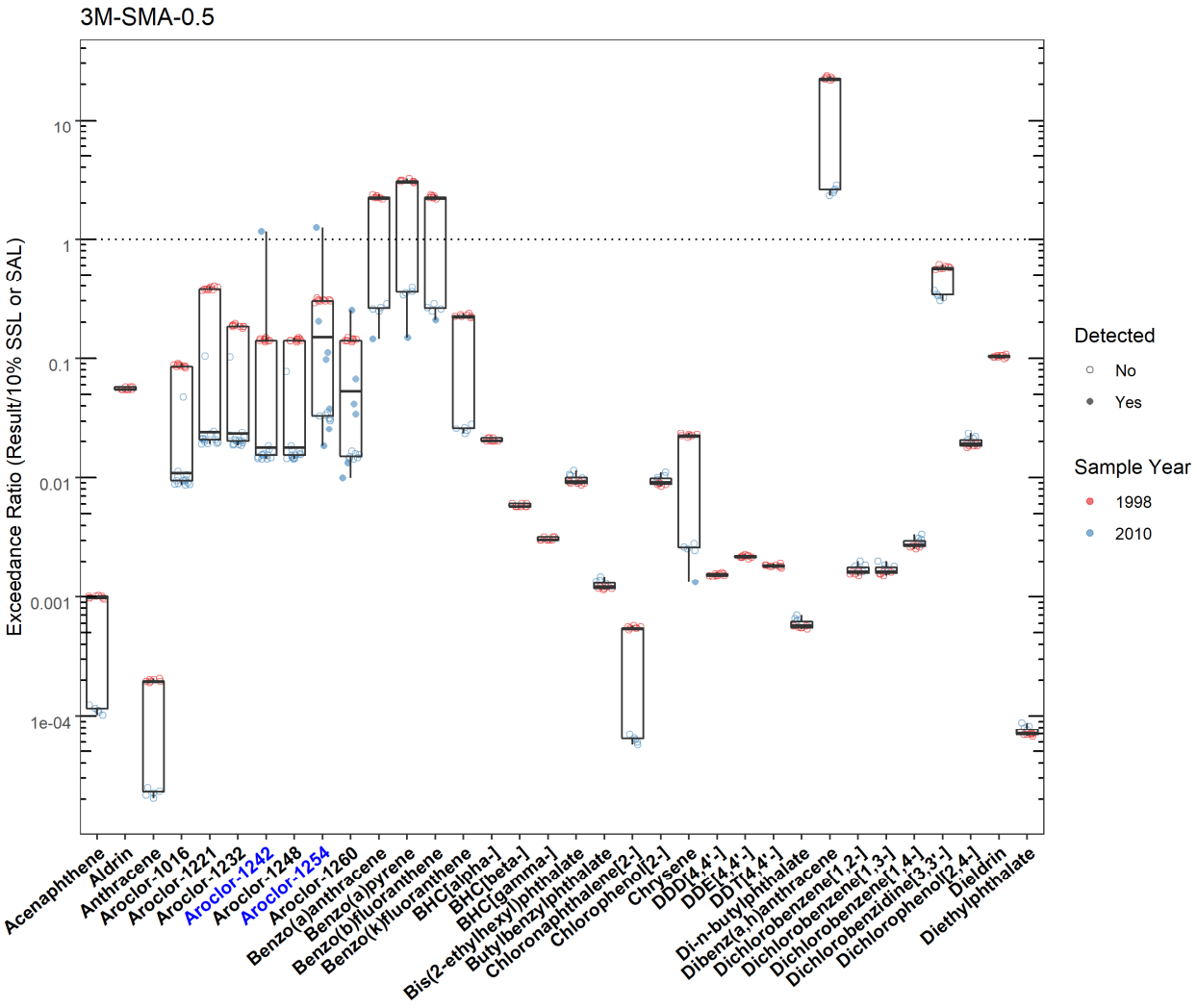

Figure 136.3-2 Organics Analytical Results from Soil Samples Associated with 3M-SMA-0.5 (Plot 1)

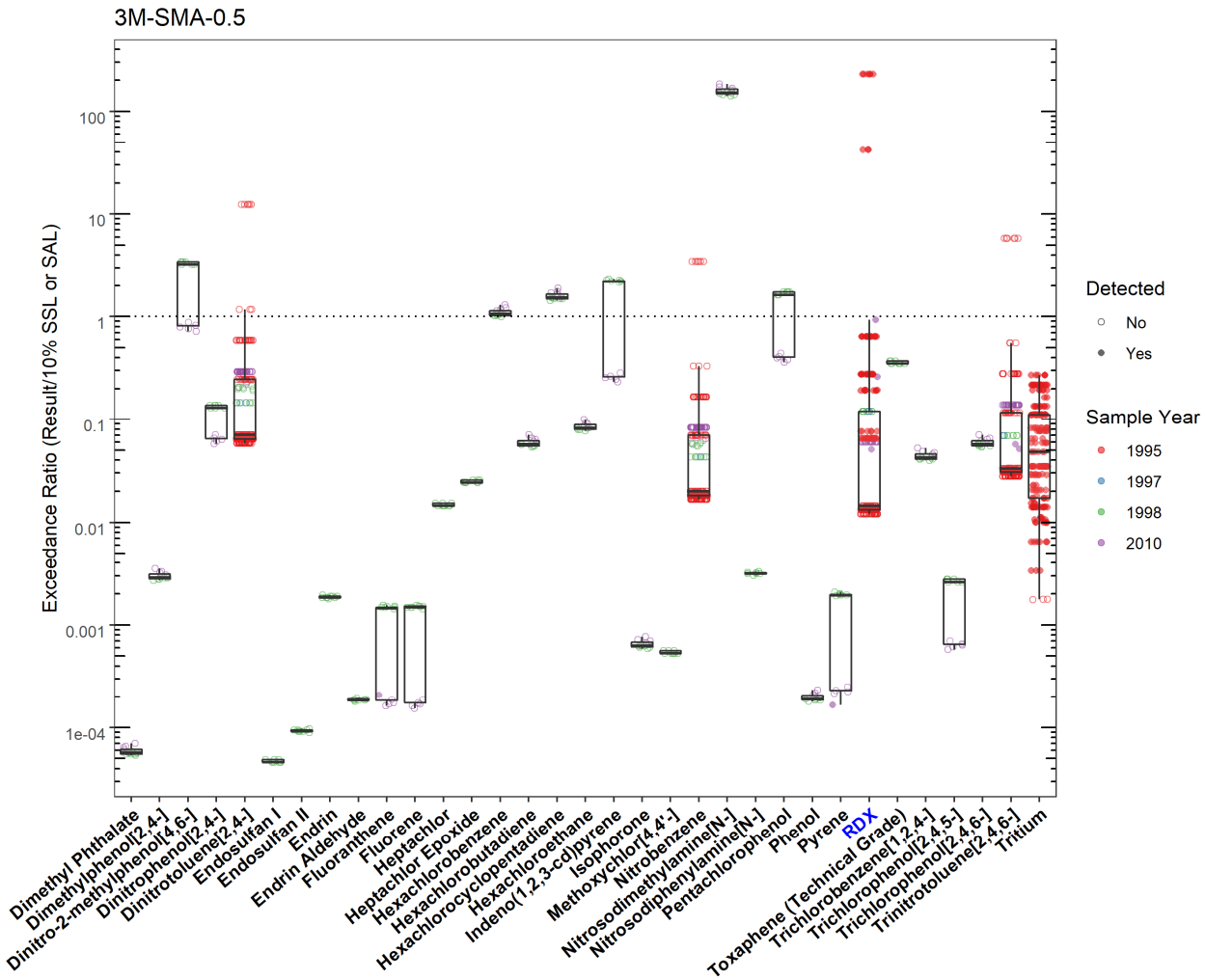

Figure 136.3-3 Organics Analytical Results from Soil Samples Associated with 3M-SMA-0.5 (Plot 2)

3M-SMA-0.5

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aluminum	3M-SMA-0.5	Al	Y	BTV	29200	97200	1995-09-12
Antimony	3M-SMA-0.5	Sb	Y	BTV	0.830	15.8	1995-09-19
Aroclor-1242	3M-SMA-0.5	53469-21-9	Y	SSL_0.1	0.243	0.282	2010-01-19
Aroclor-1254	3M-SMA-0.5	11097-69-1	Y	SSL_0.1	0.114	0.143	2010-01-19
Arsenic	3M-SMA-0.5	As	Y	BTV	8.17	518	1995-09-12
Beryllium	3M-SMA-0.5	Be	Y	BTV	1.83	348	2019-08-05
Cadmium	3M-SMA-0.5	Cd	Y	BTV	0.400	1.60	2010-01-21
Chromium	3M-SMA-0.5	Cr	Y	BTV	19.3	372	1995-09-05
Cobalt	3M-SMA-0.5	Co	Y	BTV	8.64	9.38	2010-01-19
Copper	3M-SMA-0.5	Cu	Y	BTV	14.7	10300	2019-08-05
Cyanide (Total)	3M-SMA-0.5	CN(TOTAL)	Y	BTV	0.500	1.69	2010-02-12
Lead	3M-SMA-0.5	Pb	Y	BTV	22.3	132000	1995-09-12
Mercury	3M-SMA-0.5	Hg	Y	BTV	0.100	0.170	1995-09-06
Nickel	3M-SMA-0.5	Ni	Y	BTV	15.4	188	1995-09-05
RDX	3M-SMA-0.5	121-82-4	Y	SSL_0.1	8.31	1900	1995-09-19
Silver	3M-SMA-0.5	Ag	Y	BTV	1.00	9.00	1995-09-05
Uranium	3M-SMA-0.5	U	Y	BTV	1.82	45000	1995-09-06
Zinc	3M-SMA-0.5	Zn	Y	BTV	48.8	2860	1995-09-06

Figure 136.3-4 Screening-Level Exceedances from Soil Samples Associated with 3M-SMA-0.5

136.4 Stormwater Evaluation

136.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected in the current stage at the SMA.

136.4.2 Assessment Unit and Stream Impairments

3M-SMA-0.5 drains to Threemile Canyon (Pajarito Canyon to headwaters), which has an impairment for adjusted gross alpha. The impairment may be Site-related, based on Site history.

136.5 Site-Specific Demonstration

136.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable soil-screening value in soil data, have not yet been measured in stormwater, and have been added to the SAP: Aroclor-1242, Aroclor-1254, beryllium, and uranium.

The other Site-related POCs that exceeded in soil data were previously measured in stormwater data and did not exceed TALs. Therefore they will not be added to the SAP.

136.5.2 Stormwater Data Summary

No data for the current monitoring stage have been collected. Gross alpha exceeded in the previous monitoring stage.

136.5.3 2022 Permit Status

The SMA is in active monitoring. A confirmation-monitoring sample has not been collected in this monitoring stage.

136.5.4 Sampling and Analysis Plan

Table 136.5-1 is the proposed SAP for 3M-SMA-0.5.

Table 136.5-1 Proposed SAP, 3M-SMA-0.5

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment, Site history, and stormwater data
Strontium-90	Site history
Dissolved beryllium and uranium	Site history and soil data
Total PCBs	Site history and soil data
SVOCs	Site history (organics)
DOC	Permit requirement
SSC	Permit requirement

137.0 3M-SMA-0.6

Associated Sites	15-008(b)
Receiving Water	Threemile Canyon
Drainage Area	2.3 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 15-008(b): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the October 2016 field visit, it was determined that the current sampling location does not adequately monitor 15-008(b) and has not collected any water. Therefore, controls were built and the sampler was moved east to capture more runoff from the disposal area [15-008(b)].
2022 Permit Status	Active Monitoring

137.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, baseline monitoring was initiated. While developing the 2017 SAP, a decision was made to implement the monitoring location move recommended during the 2016 SIP review and monitoring was reinitiated. To date, stormwater flow has not been sufficient for full-volume sample collection and monitoring is ongoing until one confirmation sample is collected from this SMA.

137.2 Site History

15-008(b) (12/21/2021)

SWMU 15-008(b) is a former surface disposal area located north of inactive Firing Site R-44 [SWMU 15-006(c)] and extending along the edge of the mesa and downslope into Threemile Canyon at TA-15. The surface disposal area covers approximately 8.5 acres. Soil and debris generated from activities at the R-44 firing site were disposed of at SWMU 15-008(b). Activities at the firing site began in 1951. The firing site was used extensively until 1978 and sporadically until 1992 when firing site activities ceased.

For investigation activities refer to “Phase II Investigation Work Plan for Threemile Canyon Aggregate Area, Revision 3” (N3B 2021, 701729).

137.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 137.2-1.

Table 137.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
15-008(b)	Surface disposal area	Beryllium, copper, lead, HE, uranium

137.3 Consent Order Soil Data

Decision-level data for SWMU 15-008(b) consist of results from samples collected in 1994 and 2010. Analytical results from those samples are presented in Figures 137.3-1 through 137.3-3.The 2019 letter

completion report concluded that the nature and extent of contamination have been defined, and lead- and copper-contaminated soil has been removed to reduce risk to human health under the industrial scenario and to ecological receptors.

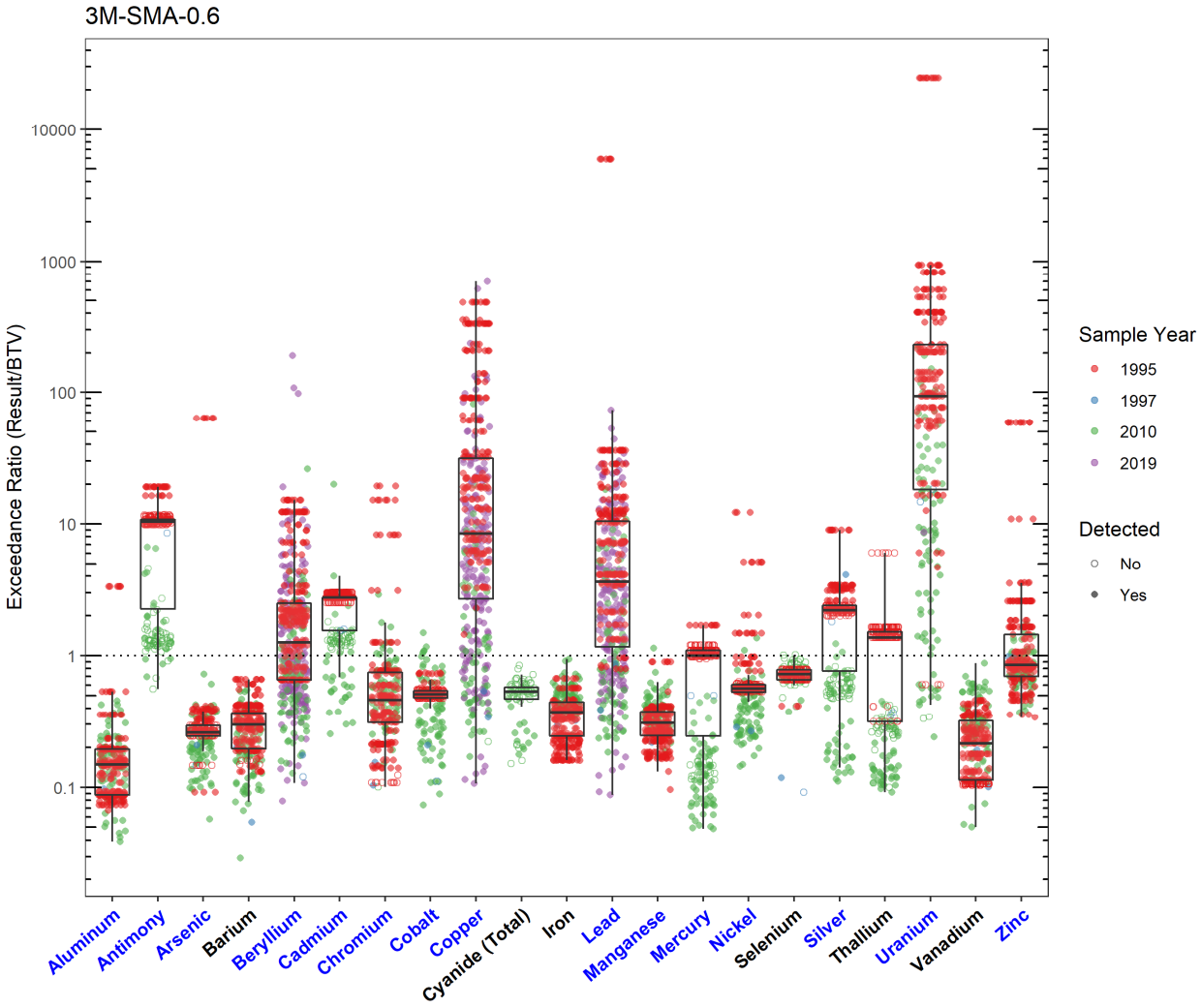

Figure 137.3-1 Inorganics Analytical Results from Soil Samples Associated with 3M-SMA-0.6

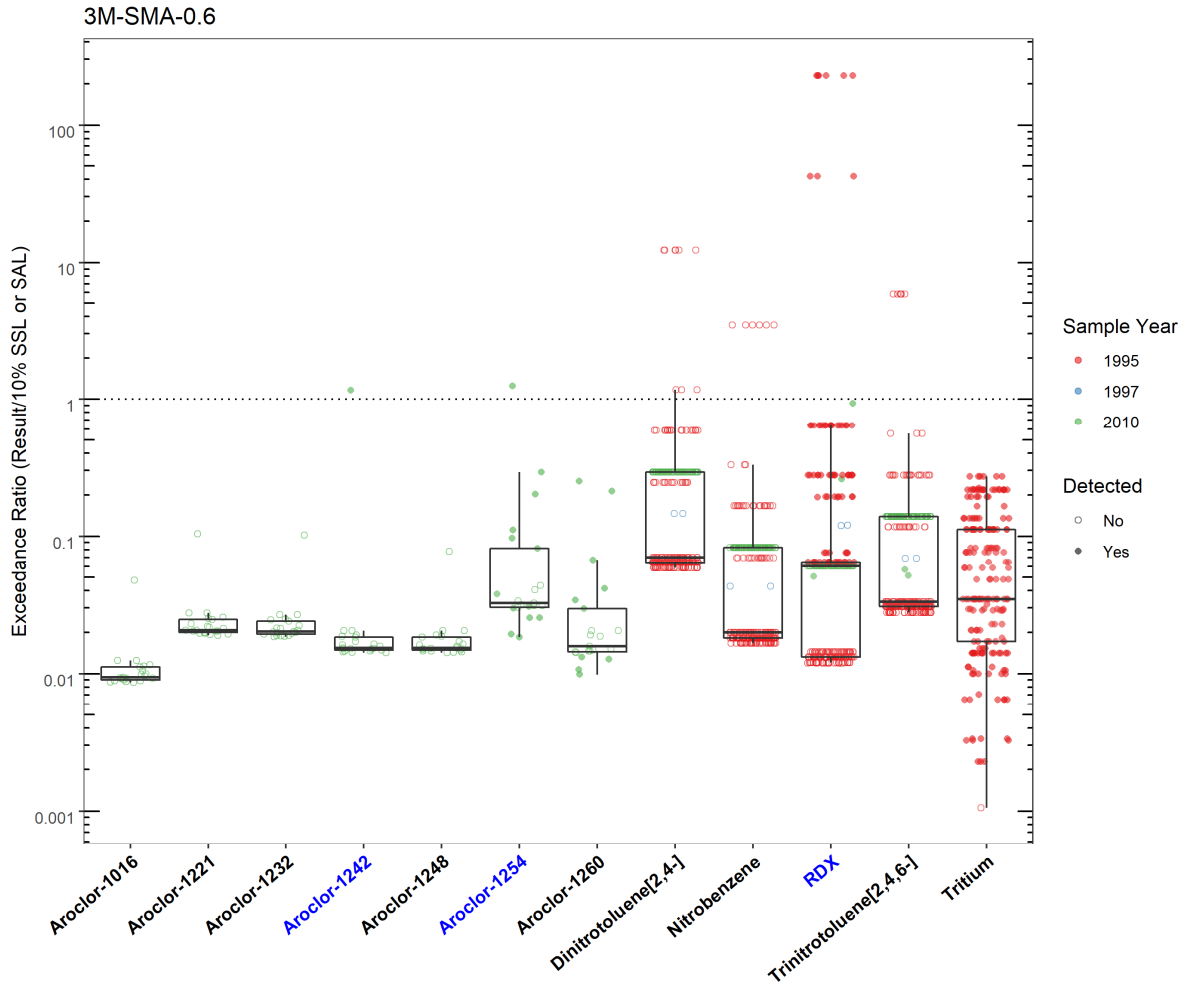

Figure 137.3-2 Organics Analytical Results from Soil Samples Associated with 3M-SMA-0.6

3M-SMA-0.6

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aluminum	3M-SMA-0.6	Al	Y	BTV	29200	97200	1995-09-12
Antimony	3M-SMA-0.6	Sb	Y	BTV	0.830	15.8	1995-09-19
Aroclor-1242	3M-SMA-0.6	53469-21-9	Y	SSL_0.1	0.243	0.282	2010-01-19
Aroclor-1254	3M-SMA-0.6	11097-69-1	Y	SSL_0.1	0.114	0.143	2010-01-19
Arsenic	3M-SMA-0.6	As	Y	BTV	8.17	518	1995-09-12
Beryllium	3M-SMA-0.6	Be	Y	BTV	1.83	348	2019-08-05
Cadmium	3M-SMA-0.6	Cd	Y	BTV	0.400	7.98	2010-01-26
Chromium	3M-SMA-0.6	Cr	Y	BTV	19.3	372	1995-09-05
Cobalt	3M-SMA-0.6	Co	Y	BTV	8.64	12.9	2010-02-08
Copper	3M-SMA-0.6	Cu	Y	BTV	14.7	10300	2019-08-05
Lead	3M-SMA-0.6	Pb	Y	BTV	22.3	132000	1995-09-12
Manganese	3M-SMA-0.6	Mn	Y	BTV	671	765	2010-02-18
Mercury	3M-SMA-0.6	Hg	Y	BTV	0.100	0.170	1995-09-06
Nickel	3M-SMA-0.6	Ni	Y	BTV	15.4	188	1995-09-05
RDX	3M-SMA-0.6	121-82-4	Y	SSL_0.1	8.31	1900	1995-09-19
Silver	3M-SMA-0.6	Ag	Y	BTV	1.00	9.00	1995-09-05
Uranium	3M-SMA-0.6	U	Y	BTV	1.82	45000	1995-09-06
Zinc	3M-SMA-0.6	Zn	Y	BTV	48.8	2860	1995-09-06

Figure 137.3-3 Screening-Level Exceedances from Soil Samples Associated with 3M-SMA-0.6

137.4 Stormwater Evaluation

137.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the SMA.

137.4.2 Assessment Unit and Stream Impairments

3M-SMA-0.6 drains to Threemile Canyon (Pajarito Canyon to headwaters), which has an impairment for adjusted gross alpha. The impairment may be Site-related, based on Site history.

137.5 Site-Specific Demonstration

137.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable soil-screening value in soil data and have not yet been measured in stormwater: beryllium, copper, lead, RDX and uranium.

137.5.2 Stormwater Data Summary

No confirmation-monitoring data.

137.5.3 2022 Permit Status

The SMA is in active monitoring. A confirmation-monitoring sample has not been collected.

137.5.4 Sampling and Analysis Plan

Table 137.5-1 is the proposed SAP for 3M-SMA-0.6.

Table 137.5-1 Proposed SAP, 3M-SMA-0.6

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history (uranium)
Dissolved beryllium, copper, lead and uranium	Site history and soil data
HE	Site history and soil data (RDX)
DOC	Permit requirement
SSC	Permit requirement

138.0 3M-SMA-2.6

Associated Sites	36-008, C-36-003
Receiving Water	Threemile Canyon
Drainage Area	0.42 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 36-008: Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU C-36-003: Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the March 2018 field visit, it was determined that the current sampling location does not adequately monitor C-36-003 and has not collected any water. Therefore, the sampler was moved to eastern drainage (C-36-003) to capture runoff from the outfall area as well as the approximately half of the disposal area (36-008).
2022 Permit Status	Active Monitoring

138.1 2010 Administratively Continued Permit Summary

Following the April 2011 submittal of certification of baseline control installation to EPA, baseline monitoring was initiated. While developing the 2019 SAP, a decision was made to implement the monitoring location move recommended during the 2018 SIP review and monitoring was reinitiated. To date, stormwater flow has not been sufficient for full-volume sample collection and monitoring is ongoing until one confirmation sample is collected from this SMA.

138.2 Site History

36-008 (9/3/2019)

SWMU 36-008 is a surface disposal area located north of building 36-1 at TA-36. The disposal area is on the south rim of Threemile Canyon and extends down the steeply sloping edge of the mesa. The approximately 1 to 2 acres disposal area was discovered in June 2000 after the Cerro Grande fire burned through the area. The dates the Site was used for disposal are not known. The materials strewn over the Site appeared to be associated with activities conducted in building 36-1, which housed an office, laboratory, and x-ray developing operations. It is possible the disposal area may have been used as early as 1950, when building 36-1 became operational. Surface debris included laboratory glassware, metal cans, metal pipe, and miscellaneous metal fragments. As part of Cerro Grande fire response efforts, visible debris was removed from the surface disposal area. Approximately 5 yd^3 of debris was removed from the Site, segregated, and staged for disposal; in addition, stormwater BMPs were installed to prevent erosion.

C-36-003 (9/3/2019)

SWMU C-36-003 is a former NPDES-permitted outfall (EPA 06A106) and associated outlet drainline located north of building 36-1 on the south rim of Threemile Canyon at TA-36. The outfall became operational shortly after building 36-1 became operational in 1950. The outfall served the sink and floor drains on the first floor of the building and the floor, sink, and equipment drain in the photo-processing

unit on the second floor of the building. When operational, a steady stream of liquid was discharged to the outfall that flowed down the drainage for approximately 35 ft. In 1993, the floor and sink drains discharging to the outfall were rerouted to the TA-46 SWSC plant. In 1994, it was confirmed the photo-processing unit was no longer plumbed to the outfall. The outfall was removed from the NPDES permit in 2001.

For recent Site activities at the Sites refer to "Supplemental Investigation Report for Threemile Canyon Aggregate Area, Revision 1" (LANL 2010, 700033).

138.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 138.2-1.

Table 138.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
36-008	Surface disposal area	Metals
C-36-003	Outfall from building 36-1	Chromium, silver, inorganic and organic chemicals

138.3 Consent Order Soil Data

Decision-level data for SWMU 36-008 consist of results from samples collected in 2010. In addition, decision-level data are available from samples collected at SWMU C-36-003 in 2010. Because SWMU C-36-003 is located within SWMU 36-008, the combined data sets for both sites were evaluated together. Revision 1 of the 2018 IR (N3B 2018, 700033) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for SWMU C-36-003 consist of results from samples collected in 2010. All other results were below residential SSLs and SALs. Revision 1 of the 2018 IR (N3B 2018, 700033) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results from these samples are presented in Figures 138.3-1 through 138.3-4.

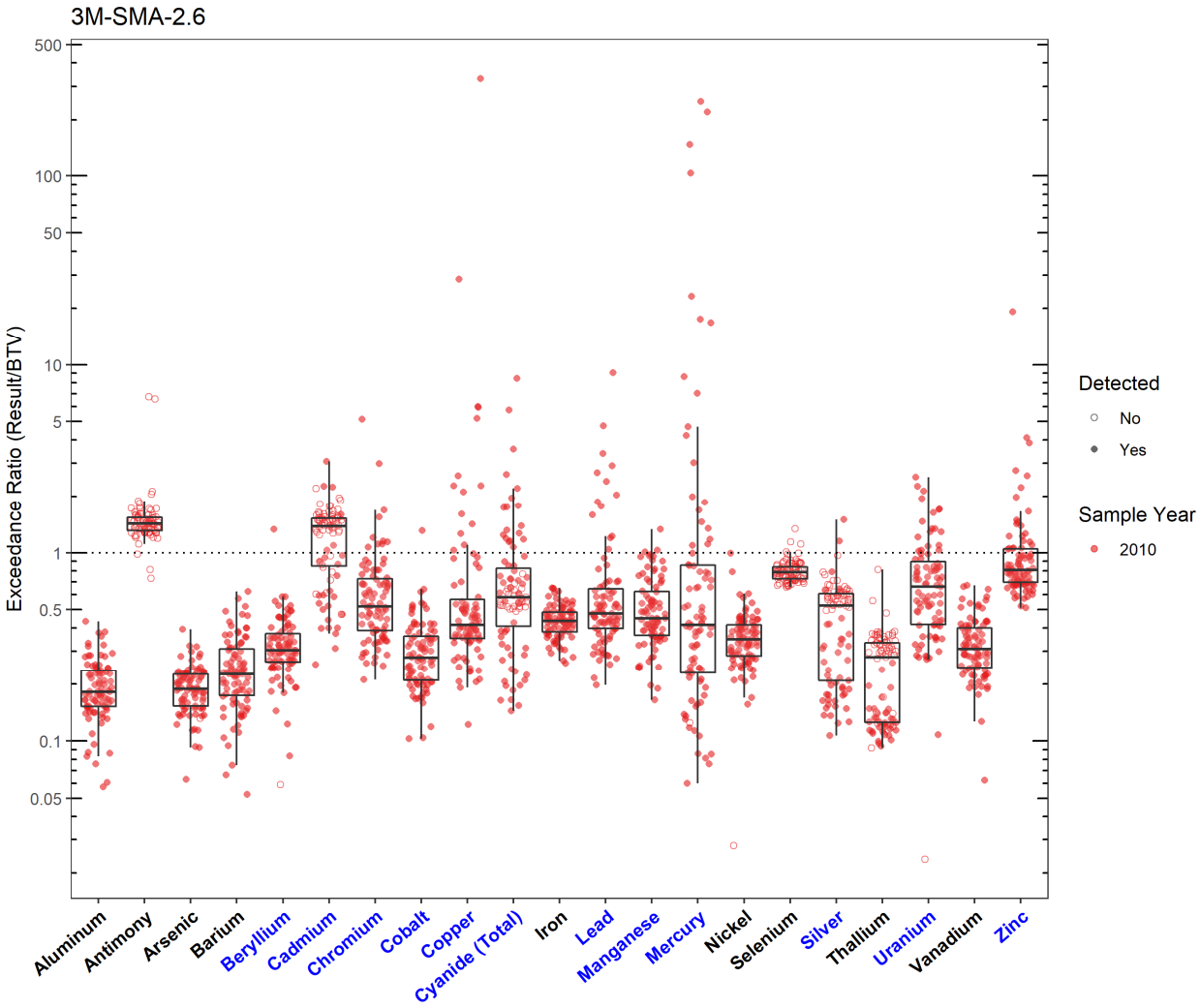

Figure 138.3-1 Inorganics Analytical Results from Soil Samples Associated with 3M-SMA-2.6

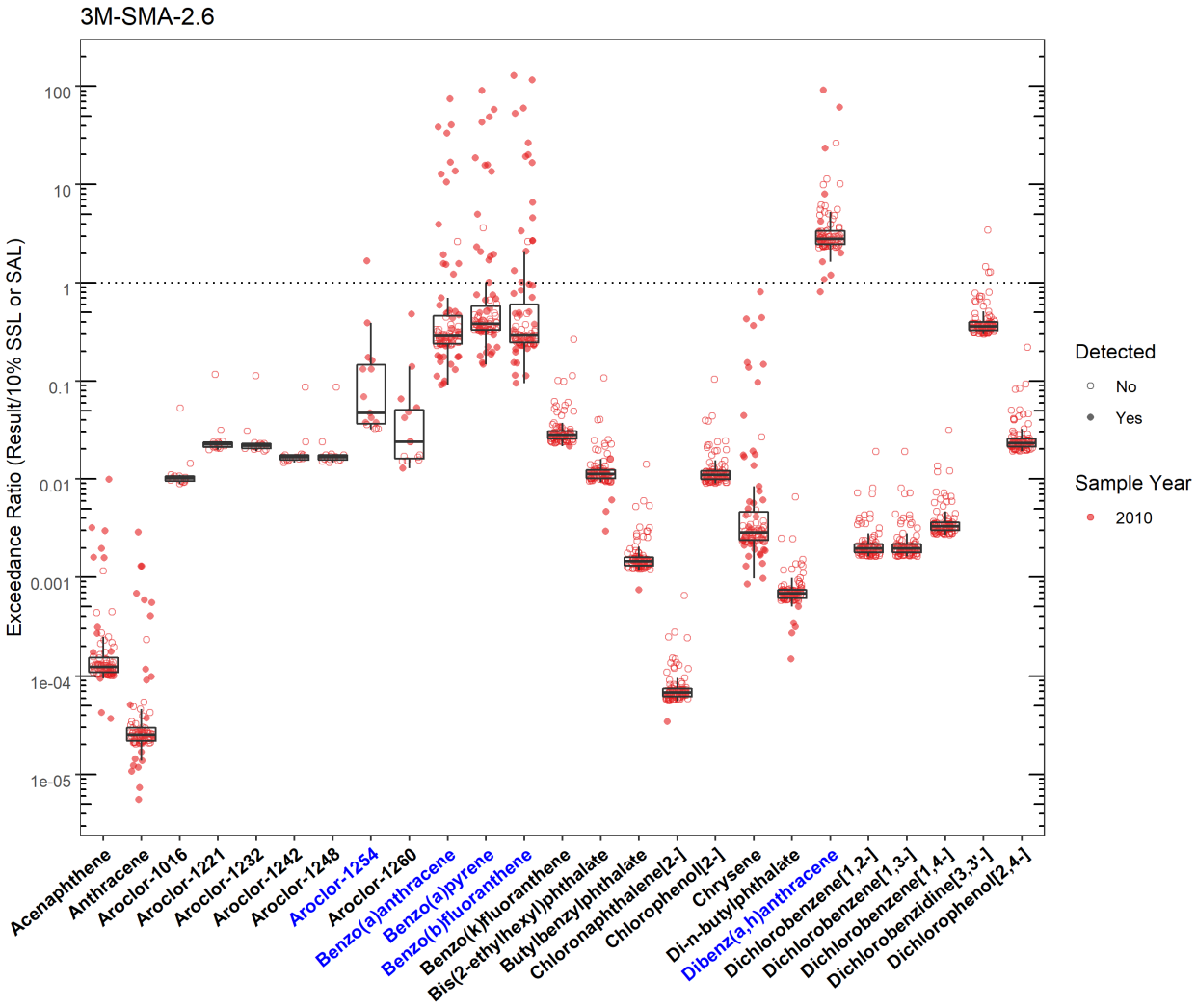

Figure 138.3-2 Organics Analytical Results from Soil Samples Associated with 3M-SMA-2.6 (Plot 1)

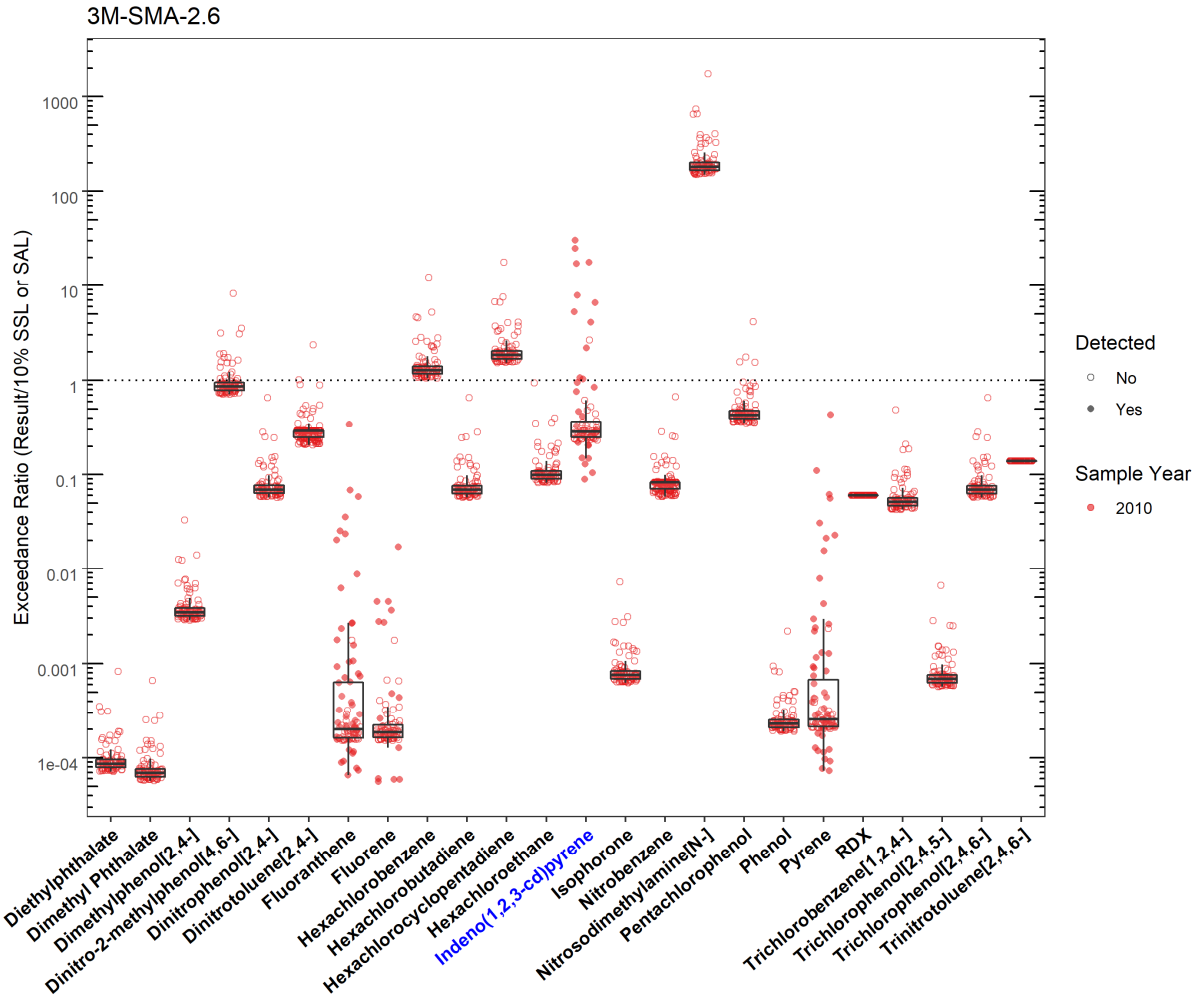

Figure 138.3-3 Organics Analytical Results from Soil Samples Associated with 3M-SMA-2.6 (Plot 2)

3M-SMA-2.6

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	3M-SMA-2.6	11097-69-1	Y	SSL_0.1	0.114	0.191	2010-02-20
Benzo(a)anthracene	3M-SMA-2.6	56-55-3	Y	SSL_0.1	0.153	11.4	2010-02-23
Benzo(a)pyrene	3M-SMA-2.6	50-32-8	Y	SSL_0.1	0.112	10.1	2010-02-23
Benzo(b)fluoranthene	3M-SMA-2.6	205-99-2	Y	SSL_0.1	0.153	19.6	2010-02-23
Beryllium	3M-SMA-2.6	Be	Y	BTV	1.83	2.44	2010-02-24
Cadmium	3M-SMA-2.6	Cd	Y	BTV	0.400	1.23	2010-02-20
Chromium	3M-SMA-2.6	Cr	Y	BTV	19.3	99.0	2010-02-20
Cobalt	3M-SMA-2.6	Co	Y	BTV	8.64	11.3	2010-02-25
Copper	3M-SMA-2.6	Cu	Y	BTV	14.7	4870	2010-02-23
Cyanide (Total)	3M-SMA-2.6	CN(TOTAL)	Y	BTV	0.500	4.24	2010-02-25
Dibenz(a,h)anthracene	3M-SMA-2.6	53-70-3	Y	SSL_0.1	0.0153	1.40	2010-02-20
Indeno(1,2,3-cd)pyrene	3M-SMA-2.6	193-39-5	Y	SSL_0.1	0.153	4.65	2010-02-23
Lead	3M-SMA-2.6	Pb	Y	BTV	22.3	202	2010-02-23
Manganese	3M-SMA-2.6	Mn	Y	BTV	671	893	2010-02-24
Mercury	3M-SMA-2.6	Hg	Y	BTV	0.100	25.0	2010-02-20
Silver	3M-SMA-2.6	Ag	Y	BTV	1.00	1.50	2010-02-20
Uranium	3M-SMA-2.6	U	Y	BTV	1.82	4.63	2010-02-12
Zinc	3M-SMA-2.6	Zn	Y	BTV	48.8	936	2010-02-23

Figure 138.3-4 Screening-Level Exceedances from Soil Samples Associated with 3M-SMA-2.6

138.4 Stormwater Evaluation

138.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the SMA.

138.4.2 Assessment Unit and Stream Impairments

3M-SMA-2.6 drains to Threemile Canyon (Pajarito Canyon to headwaters), which has an impairment for adjusted gross alpha. The impairment is not likely to be Site-related, based on Site history.

138.5 Site-Specific Demonstration

138.5.1 Soil Data Summary

The following parameters exceeded the applicable soil-screening value in soil data and have not yet been measured in stormwater: Aroclor-1254, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, beryllium, cadmium, chromium, cobalt, copper, cyanide, dibenz(a,h)anthracene, indeno(21,2,3-cd)pyrene, lead, manganese, mercury, silver, uranium and zinc.

138.5.2 Stormwater Data Summary

No confirmation-monitoring data.

138.5.3 2022 Permit Status

The SMA is in active monitoring. A confirmation-monitoring sample has not been collected.

138.5.4 Sampling and Analysis Plan

Table 138.5-1 is the proposed SAP for 3M-SMA-2.6.

Table 138.5-1 Proposed SAP, 3M-SMA-2.6

Monitoring Constituent	Background for Monitoring
Total PCBs	Site history (organics)
SVOCs	Site history (organics) and soil data
Dissolved beryllium, silver, cadmium, cobalt, chromium, copper, lead, manganese, uranium, and zinc	Site history (metals) and soil data
Total mercury	Site history (metals) and soil data
DOC	Permit requirement
SSC	Permit requirement

139.0 3M-SMA-4

Associated Sites	18-002(b), 18-003(c), 18-010(f)
Receiving Water	Threemile Canyon
Drainage Area	1050.75 acres
Landscape Characteristics	2% impervious, 98% pervious
Consent Order Site Status	SWMU 18-002(b): In Progress SWMU 18-003(c): In Progress AOC 18-010(f): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the July 2017 field visit, the current SMA sampling location and boundary were agreed upon by all parties to be the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

139.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in July 2014. Analytical results from this sample initiated corrective action.

Following the October 2015 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2015, 600980), corrective-action monitoring was initiated and a stormwater sample was collected in July 2017. Analytical results from this sample initiated corrective action.

The Permittees submitted a request for alternative compliance for the Sites per permit Part I.E.3 in April 2019 (N3B 2019, 700401). No response has been received from EPA and stormwater monitoring has not occurred since 2017.

139.2 Site History

18-002(b) (12/6/2017)

SWMU 18-002(b) is an inactive firing site in Threemile Canyon (AOC C-00-012) near the location of former building 18-32 (Kiva 2) at TA-18. The firing site was used from 1944 to 1945 for shots consisting of no more than a few pounds of HE. The Site consisted of a 2-ft-long × 2-ft-wide × 2-ft-deep firing chamber (former structure 18-4) constructed of 1-in.-thick steel and an aboveground armored bunker (structure 18-5), commonly called a “battleship,” used to protect shot instrumentation. The top of the firing chamber was open and set flush with the ground west of structure 18-5. A ground-level wooden structure (former structure 18-6), located east of structure 18-5, was the battery building for the firing site cable conduit system. It contained racks of lead-acid batteries. Structure 18-4 was removed in 1945 and structure 18-6 was dismantled in 1951, and structure 18-5 was used as a calibration laboratory in the 1950s and 1960s. Structure 18-5 was subsequently decommissioned and is no longer used; however, the structure is considered a contributing historical building as part of the planned Manhattan Project National Historical Park.

Three additional inactive firing points, located west of structure 18-5, are also associated with SWMU 18-002(b). Firing Point C was 51 ft west of structure 18-5 and on its midline. Former building 18-32, Kiva 2 (also known as CASA 2), was a critical assembly building constructed over the

location of Firing Point C in 1951. From 1955 to 1972, non-Rover Program critical assembly work was carried out in Kiva 2. Reactor mockups of various sizes and shapes were constructed using materials including deuterium oxide, uranium carbide, enriched uranium, graphite, niobium, and zirconium hydride. Beryllium oxide was also used in some mockups, and cadmium might also have been used. Unclad uranium [DU, enriched, etc.] and neutron flux were present throughout former building 18-32, and a critical assembly was melted within the structure. Building 18-32 was decommissioned in 2008 and underwent D&D in 2011 and 2012.

Firing Point G was 145 ft west of structure 18-5 and on its midline. Former building 18-122 was a metal building constructed directly northwest of former Firing Point G in 1960. The building functioned as a warehouse for former building 18-32 (CASA 2); the building had fixed uranium contamination (DU and/or natural) throughout and was a posted radiological control area. Hydraulic oil, solvent and rags were accumulated in a SAA formerly located in this building. Building 18-122 was decommissioned in 2008 and underwent D&D in 2011 and 2012.

Firing Points C and G were used in firing operations involving smaller charges than the third firing point. The third firing point located west of the other three firing points, Medium Firing Point, was built to handle HE charges of up to 2 tons. It was located 478 ft west of structure 18-5 and 15 ft south of its midline. A flat, graded area west of former building 18-32 marks the former location of this firing point. The firing points were all removed in the late 1940s, before the construction of former building 18-32 in 1951.

18-003(c) (12/29/2017)

SWMU 18-003(c) is an inactive septic system consisting of a reinforced concrete septic tank (structure 18-42), inlet and outlet drainlines, a drain field, and an outfall at TA-18. The septic tank is located approximately 15 ft east of former building 18-128 and approximately 90 ft northeast of former building 18-32. The tank measures 6 ft in diameter × 5 ft deep and has a capacity of 650 gal. The inlet line leading to the tank is approximately 130 ft in length, and the total length of the outlet line is approximately 115 ft. The drain field begins approximately 60 ft east of the septic tank and extends east 55 ft. The drain field consists of four drainlines spaced approximately 10 ft apart. Each line is approximately 75 ft long. An outfall, located at the distal end of the drain field, discharged into the Threemile Canyon stream channel (AOC C-00-012). The SWMU 18-003(c) septic system received sanitary waste from three restrooms and a janitorial sink in former building 18-32 from 1952 to 1995.

18-010(f) (1/5/2018)

AOC 18-010(f) is a former outfall that received discharges from the roof and floor drains in former building 18-32 at TA-18. The roof and floor drains discharged into a storm drain that exited the former building under the pavement from the northeast corner of former building 18-32. The storm drainline discharged to an outfall, approximately 100 ft north of former building 18-32, on a sandy, grassy bank on the south side of the stream channel in Threemile Canyon (AOC C-00-012). Former building 18-32 was built in 1951 and used for nuclear critical assembly work. The date this outfall became operational is unknown, but it is likely that the outfall was operational from the time building 18-32 was constructed in 1951 until it underwent D&D in 2011 and 2012.

For investigation activities for these Sites refer to “Investigation Work Plan for Lower Pajarito Canyon Aggregate Area, Revision 1” (LANL 2010, 111328).

139.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 139.2-1.

Table 139.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
18-002(b)	Firing Site	Barium, beryllium, cadmium, lead, HE, uranium (depleted and enriched), inorganic and organic chemicals
18-003(c)	Outfall	Organic chemicals, radionuclides, uranium, beryllium
18-010(f)	Outfall	Lead, uranium

139.3 Consent Order Soil Data

Decision-level data are not available for SWMU 18-002(b).

Decision-level data for SWMU 18-003(c) consist of results from samples collected in 1997. Analytical results from those samples are presented in Figures 139.3-1 through 139.3-5. The 2010 IWP (LANL 2010, 111328) concluded that the nature and extent of contamination have not been defined and additional sampling is recommended.

Decision-level data are not available for AOC 18-010(f).

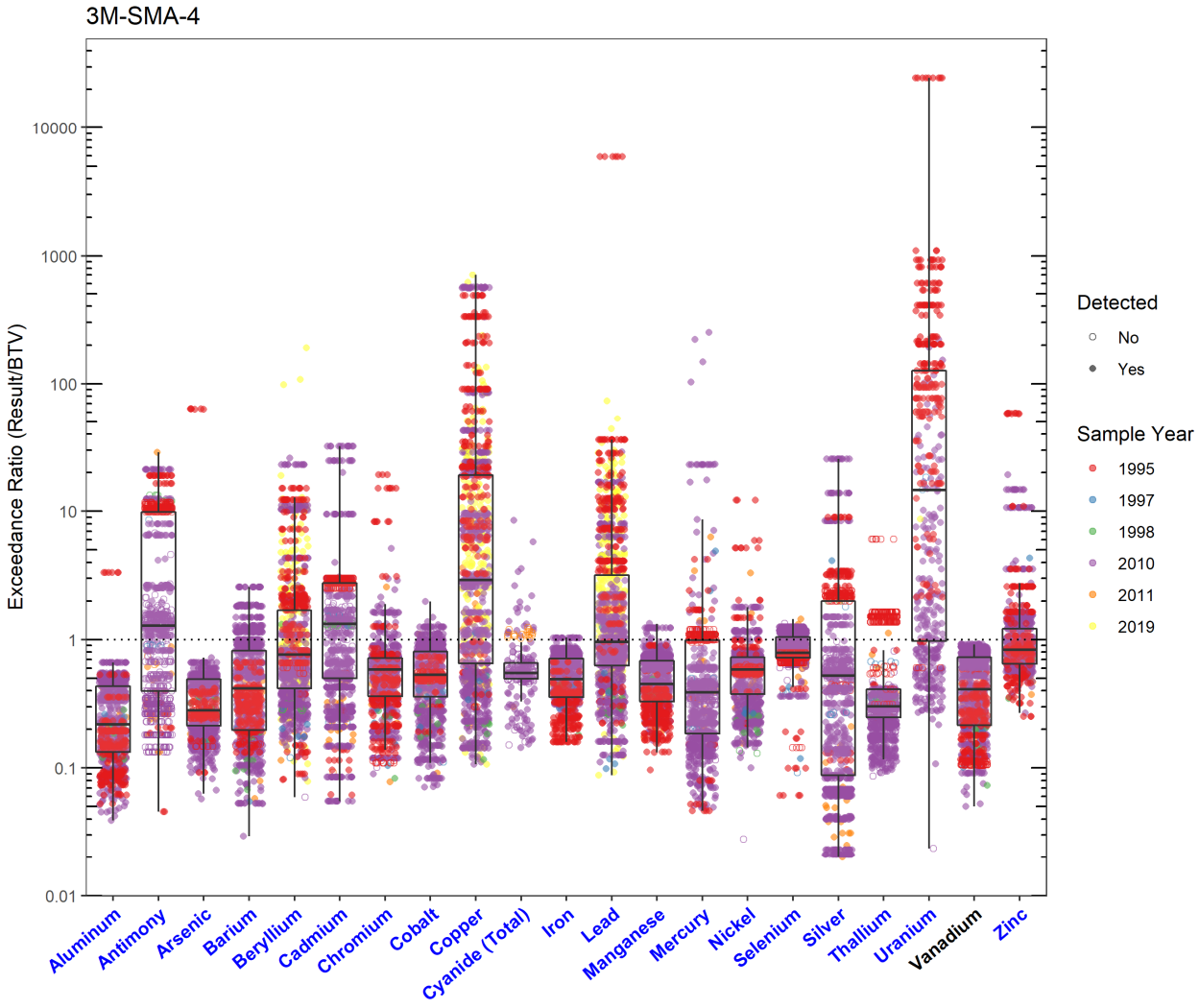

Figure 139.3-1 Inorganics Analytical Results from Soil Samples Associated with 3M-SMA-4

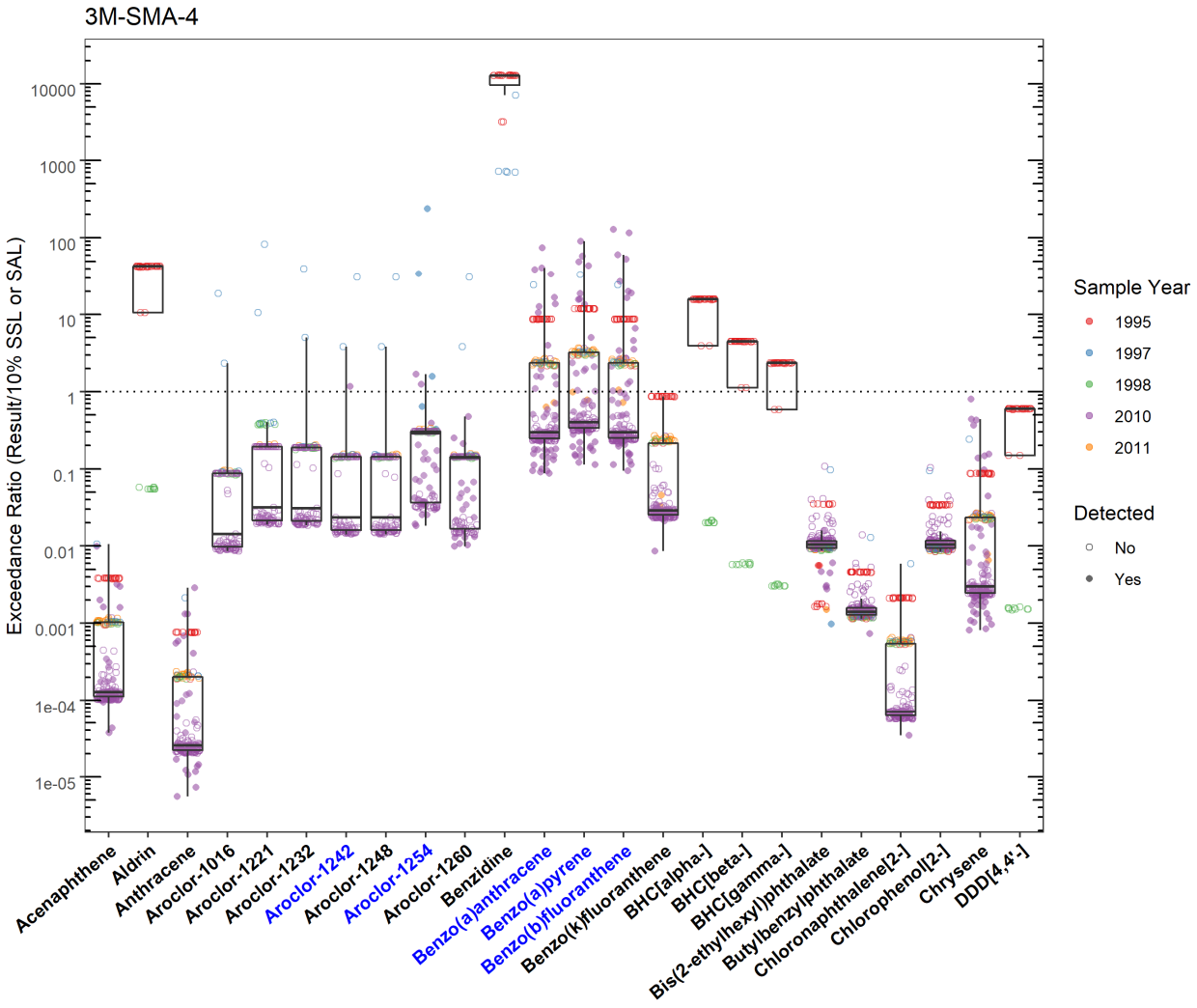

Figure 139.3-2 Organics Analytical Results from Soil Samples Associated with 3M-SMA-4 (Plot 1)

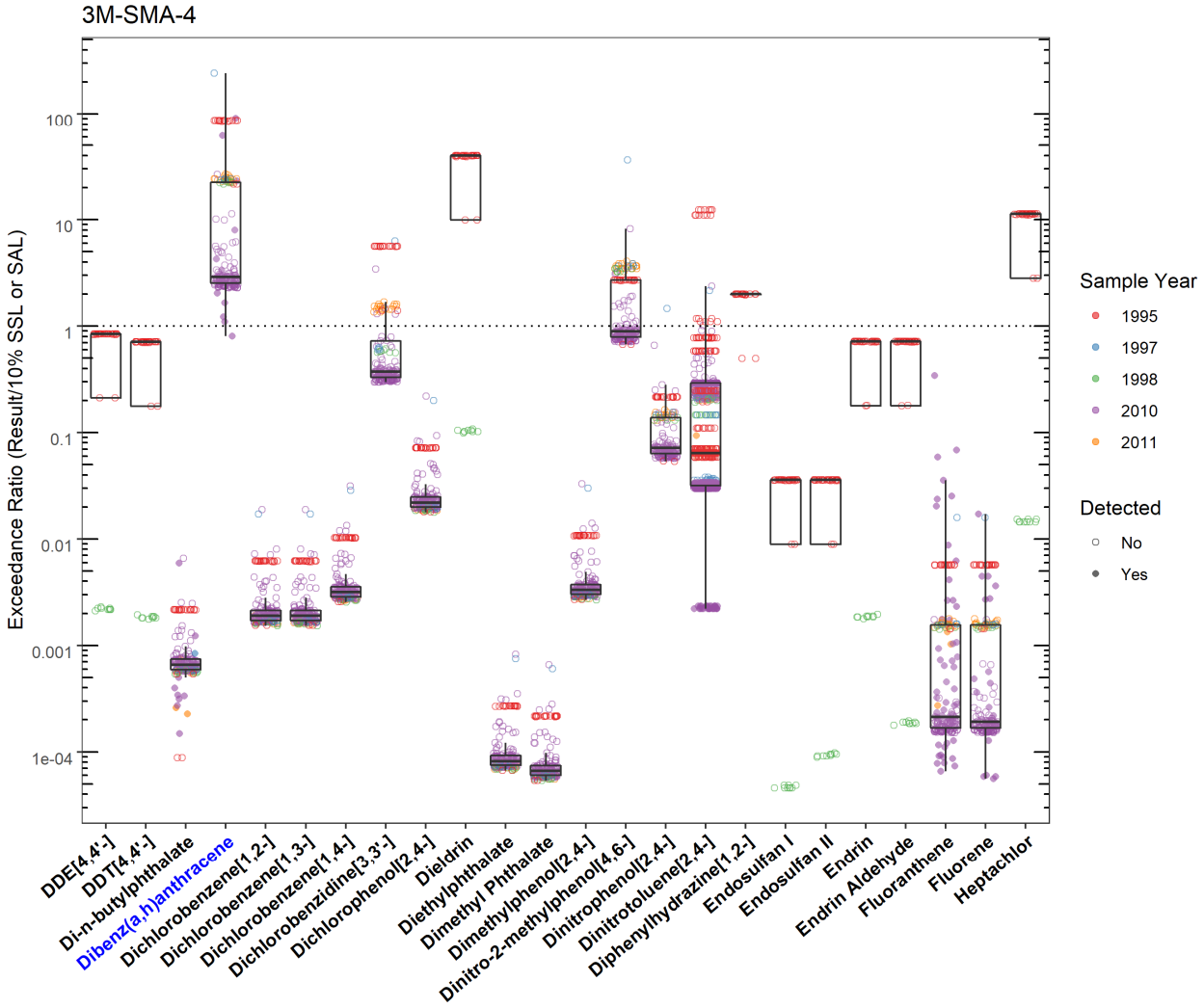

Figure 139.3-3 Organics Analytical Results from Soil Samples Associated with 3M-SMA-4 (Plot 2)

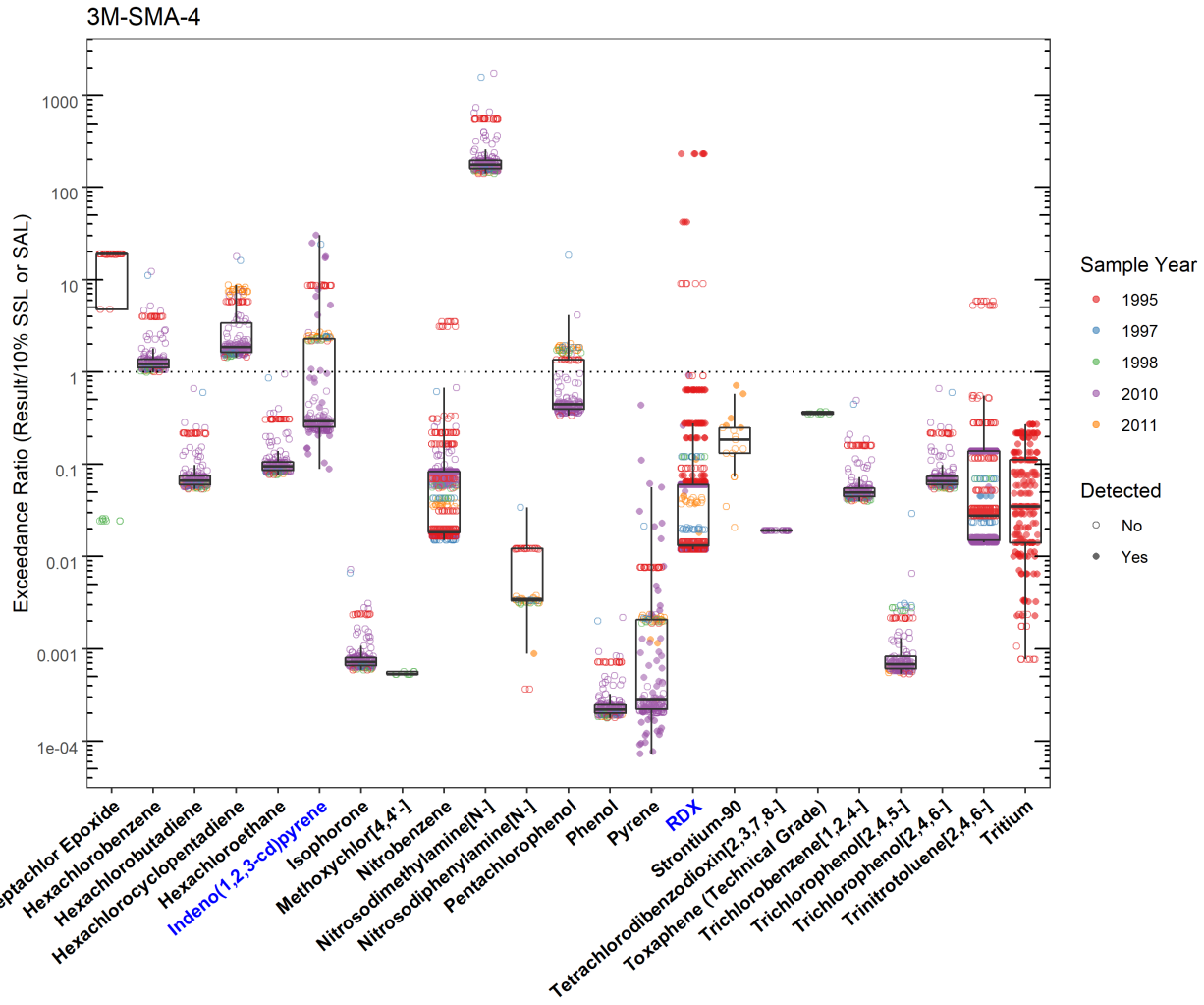

Figure 139.3-4 Organics Analytical Results from Soil Samples Associated with 3M-SMA-4 (Plot 3)

3M-SMA-4

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aluminum	3M-SMA-4	Al	Y	BTV	29200	97200	1995-09-12
Antimony	3M-SMA-4	Sb	Y	BTV	0.830	23.8	2011-09-22
Aroclor-1242	3M-SMA-4	53469-21-9	Y	SSL_0.1	0.243	0.282	2010-01-19
Aroclor-1254	3M-SMA-4	11097-69-1	Y	SSL_0.1	0.114	27.0	1997-09-02
Arsenic	3M-SMA-4	As	Y	BTV	8.17	518	1995-09-12
Barium	3M-SMA-4	Ba	Y	BTV	295	755	2010-11-10
Benzo(a)anthracene	3M-SMA-4	56-55-3	Y	SSL_0.1	0.153	11.4	2010-02-23
Benzo(a)pyrene	3M-SMA-4	50-32-8	Y	SSL_0.1	0.112	10.1	2010-02-23
Benzo(b)fluoranthene	3M-SMA-4	205-99-2	Y	SSL_0.1	0.153	19.6	2010-02-23
Beryllium	3M-SMA-4	Be	Y	BTV	1.83	348	2019-08-05
Cadmium	3M-SMA-4	Cd	Y	BTV	0.400	12.9	2010-11-19
Chromium	3M-SMA-4	Cr	Y	BTV	19.3	372	1995-09-05
Cobalt	3M-SMA-4	Co	Y	BTV	8.64	17.1	2010-01-26
Copper	3M-SMA-4	Cu	Y	BTV	14.7	10300	2019-08-05
Cyanide (Total)	3M-SMA-4	CN(TOTAL)	Y	BTV	0.500	4.24	2010-02-25
Dibenz(a,h)anthracene	3M-SMA-4	53-70-3	Y	SSL_0.1	0.0153	1.40	2010-02-20
Indeno(1,2,3-cd)pyrene	3M-SMA-4	193-39-5	Y	SSL_0.1	0.153	4.65	2010-02-23
Iron	3M-SMA-4	Fe	Y	BTV	21500	22300	2010-02-18
Lead	3M-SMA-4	Pb	Y	BTV	22.3	132000	1995-09-12
Manganese	3M-SMA-4	Mn	Y	BTV	671	893	2010-02-24
Mercury	3M-SMA-4	Hg	Y	BTV	0.100	25.0	2010-02-20
Nickel	3M-SMA-4	Ni	Y	BTV	15.4	188	1995-09-05
RDX	3M-SMA-4	121-82-4	Y	SSL_0.1	8.31	1900	1995-09-19
Selenium	3M-SMA-4	Se	Y	BTV	1.52	2.20	2011-09-09
Silver	3M-SMA-4	Ag	Y	BTV	1.00	25.5	2010-11-19
Thallium	3M-SMA-4	Tl	Y	BTV	0.730	0.820	2011-09-09
Uranium	3M-SMA-4	U	Y	BTV	1.82	45000	1995-09-06
Zinc	3M-SMA-4	Zn	Y	BTV	48.8	2860	1995-09-06

Figure 139.3-5 Screening-Level Exceedances from Soil Samples Associated with 3M-SMA-4

139.4 Stormwater Evaluation

139.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective action stormwater sample was collected in July 2017. Analytical results from that sample are presented in Figures 139.4-1 and 139.4-2.

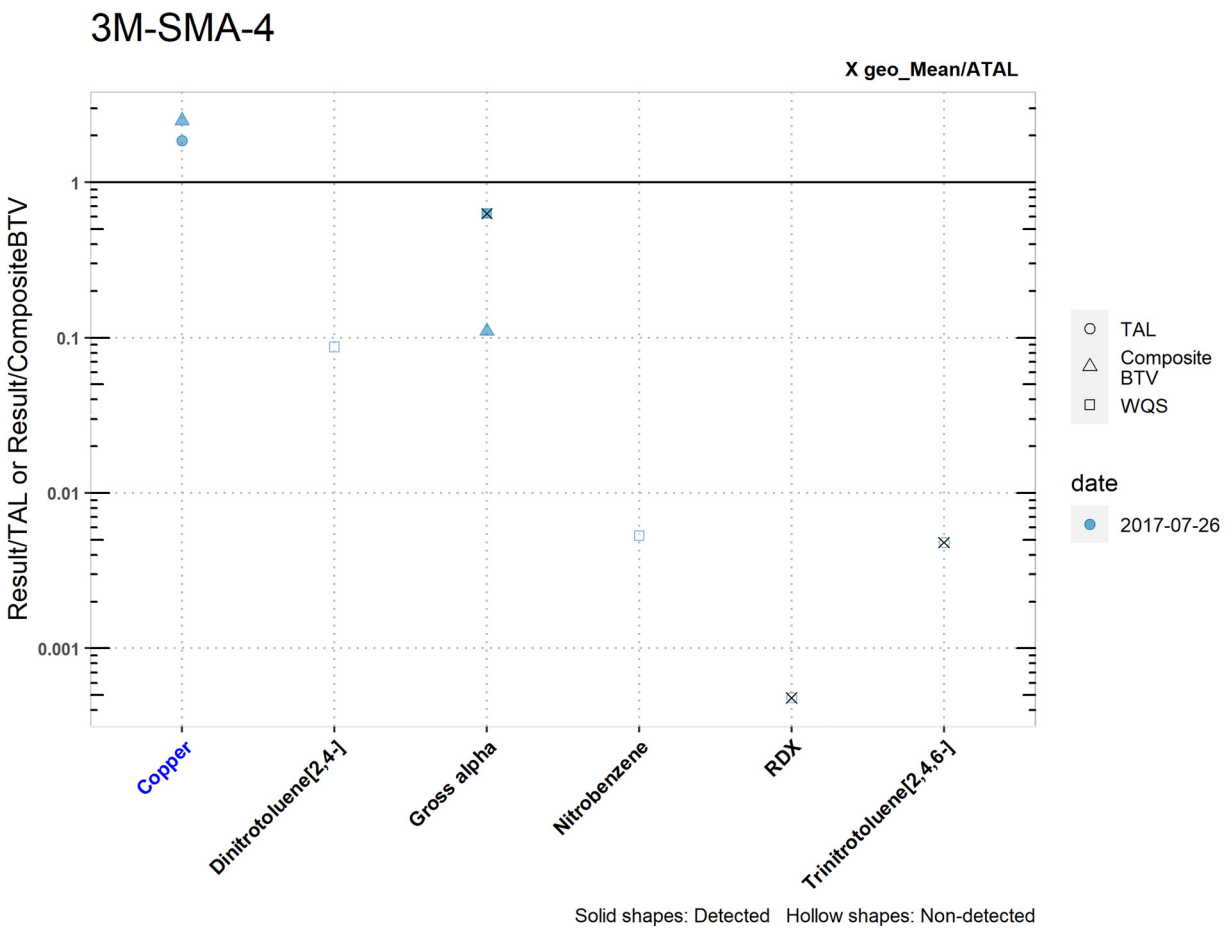

Figure 139.4-1 Analytical Results from Stormwater Sample, 3M-SMA-4 (Plot)

3M-SMA-4

	Copper	Dinitrotoluene [2,4-]	Gross alpha	Nitrobenzene	RDX	Trinitrotoluene [2,4,6-]
MQL	0.5	NA	NA	NA	NA	NA
ATAL	NA	NA	15	NA	200	20
MTAL	4.35	NA	NA	NA	NA	NA
Composite_BTV	3.24	NA	57.0	NA	NA	NA
unit	ug/L	ug/L	pCi/L*	ug/L	ug/L	ug/L
2017-07-26 result	8.11	*0.0952*	9.40	*0.0952*	*0.0952*	*0.0952*
2017-07-26 dT	1.86	NA	0.63	NA	NA	NA
2017-07-26 dB	2.50	NA	0.110	NA	NA	NA
geo_mean/ATAL	NA	NA	0.63	NA	0.00048	0.0048

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
*SSC normalized unit is pCi/g

Figure 139.4-2 Analytical Results from Stormwater Sample, 3M-SMA-4 (Table)

139.4.2 Assessment Unit and Stream Impairments

3M-SMA-4 drains to Threemile Canyon (Pajarito Canyon to headwaters), which has an impairment for adjusted gross alpha. The impairment may be Site-related, based on Site history.

139.5 Site-Specific Demonstration

139.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable soil-screening value in soil data and have not yet been measured in stormwater and will be added to the SAP: Aroclor-1242, Aroclor-1254, barium, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, beryllium, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

Copper exceeded the applicable soil-screening value in soil data and stormwater. The remaining Site-related POCs that exceeded the applicable soil screening value in soil data were previously measured in stormwater data and did not exceed TALs; therefore, they will not be added to the SAP.

139.5.2 Stormwater Data Summary

Copper exceeded the TAL and BTV; therefore, it will be added to the SAP.

139.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related constituents of concern were analyzed for in past samples.

139.5.4 Sampling and Analysis Plan

Table 139.5-1 is the proposed SAP for 3M-SMA-4.

Table 139.5-1 Proposed SAP, 3M-SMA-4

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history
Dissolved barium, beryllium, copper, and uranium	Stormwater data (copper), Site history and soil data
Total PCBs	Soil data and Site history
SVOCs	Soil data and Site history
DOC	Permit requirement
SSC	Permit requirement

140.0 PJ-SMA-1.05

Associated Sites	09-013
Receiving Water	Pajarito Canyon
Drainage Area	0.78 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 09-013: In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the November 2016 field visit, it was decided that the current sampling location is representative of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

140.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in September 2013. Analytical results from these samples initiated corrective action.

Following the September 2015 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2015, 600911), the sampler was relocated to a more representative location, and corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection and corrective-action monitoring is ongoing until at least one confirmation sample is collected from this SMA.

140.2 Site History

09-013 (2/13/2018)

SWMU 09-013 is MDA M, which consisted of two former surface disposal areas, a main area and a smaller satellite area, at TA-09. The main area occupied approximately 3.2 acres and was located approximately 1,600 ft southwest of building 22-120. The satellite area was located approximately 750 ft northwest of the main area and measured approximately 150 ft wide × 260 ft long. MDA M was created during the demolition of the Old Anchor Ranch East and West sites. Structures were flash burned to remove any HE residue and deposited over the surface of the MDA. Debris from the construction of current TA-08 and TA-09 facilities (1949−1965) and other sites (1960−1965) were also deposited at MDA M. Materials present at the MDA included metal debris, wood debris, laboratory appliances and fixtures, and metal and glass containers. The main disposal area was surrounded by an earth berm that eroded through by surface-water runoff. MDA M has been inactive since 1965. All visible debris/waste, and contaminated soil were removed from MDA M during an EC conducted in 1995−1996.

For investigation activities refer to “Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1” (LANL 2011, 111794).

140.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 140.2-1

Table 140.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
09-013	MDA M	Metals, asbestos, PCBs, SVOCs, HE, uranium

140.3 Consent Order Soil Data

Decision-level data are not available for SWMU 09-013.

140.4 Stormwater Evaluation

140.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the current monitoring location at the SMA.

140.4.2 Assessment Unit and Stream Impairments

PJ-SMA-1.05 drains to Pajarito Canyon (above Homestead Spring to LANL boundary) which has impairments for total aluminum and adjusted gross alpha. The aluminum and gross alpha impairments may be Site-related, based on Site history.

140.5 Site-Specific Demonstration

140.5.1 Soil Data Summary

Decision-level data are not available for SWMU 09-013.

140.5.2 Stormwater Data Summary

No confirmation-monitoring data.

140.5.3 2022 Permit Status

The SMA is in active monitoring. A confirmation-monitoring sample has not been collected at the current location.

140.5.4 Sampling and Analysis Plan

Table 140.5-1 is the proposed SAP for PJ-SMA-1.05.

Table 140.5-1 Proposed SAP, PJ-SMA-1.05

Monitoring Constituent	Background for Monitoring
Total aluminum	Impairment and Site history
Gross alpha	Impairment and Site history (uranium)
Dissolved metals	Site history
Total metals	Site history
Total PCBs	Site history
Asbestos	Site history
SVOCs	Site history
HE	Site history
DOC	Permit requirement
SSC	Permit requirement

141.0 PJ-SMA-2

Associated Sites	09-009
Receiving Water	Pajarito Canyon
Drainage Area	0.16 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 09-009: In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the December 2016 field visit, the current SMA sampling location and boundary was agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

141.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, baseline monitoring was initiated. To date, stormwater flow has not been sufficient for full-volume sample collection and monitoring is ongoing until one confirmation sample is collected from this SMA.

141.2 Site History

09-009 (2/13/2018)

SWMU 09-009 consists of a decommissioned surface impoundment and two decommissioned sand filters (structure 09-218), associated inlet and outlet drainlines, and a former outfall at TA-09. The surface impoundment is located approximately 120 ft northeast of building 09-40, the sand filters are approximately 120 ft northeast of the surface impoundment, and the former outfall is located approximately 300 ft to the northwest of the impoundment. The former surface impoundment measures 32 ft wide × 60 ft long × 7 ft deep; the sides are constructed of concrete, and the bottom of bentonite. The sand filters, which cover a total area measuring approximately 33 ft wide × 60 ft long × 4 ft deep, have a flexible membrane liner (butyl rubber) and are surrounded by a concrete curb. The surface impoundment was constructed in 1961 to treat sanitary waste from buildings 09-20, 09-21, 09-28, 09-29, 09-32, 09-33, 09-34, 09-35, 09-37, and 09-38 and discharged to a set of two sand filters northeast of the impoundment. After flowing through the sand filters, effluent was discharged to an outfall approximately 300 ft to the northwest. The outfall was permitted under the Laboratory's NPDES in 1974 as outfall 55502S. In 1986, the sewer lines from TA-08 were connected to the surface impoundment and discharges from the impoundment were tied into the drainline that discharged to NPDES-permitted outfall 05A-066. Discharges from TA-08 included effluent from building 08-24, where the strontium-90 spill occurred in 1954. The surface impoundment and sand filter system were decommissioned when the TA-46 SWSC came online in 1992. Outfalls 55502 and 05A-066 were removed from the Laboratory's NPDES permit in the late 1990s. All active buildings formerly connected to the impoundment continue to discharge sanitary wastewater to the SWSC.

For investigation activities refer to "Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1" (LANL 2011, 111794).

141.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 141.2-1.

Table 141.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
09-009	Surface impoundment	Metals, organic chemicals, strontinum-90

141.3 Consent Order Soil Data

Decision-level data are not available for SWMU 09-009.

141.4 Stormwater Evaluation

141.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the SMA.

141.4.2 Assessment Unit and Stream Impairments

PJ-SMA-2 drains to Arroyo de la Delfe (above Kieling Spring to headwaters), which has impairments for PCBs, dissolved copper, adjusted gross alpha, and total aluminum. The metals impairments may be Site-related, based on Site history.

141.5 Site-Specific Demonstration

141.5.1 Soil Data Summary

Decision-level data are not available for SWMU 09-009.

141.5.2 Stormwater Data Summary

No confirmation-monitoring data.

141.5.3 2022 Permit Status

The SMA is in active monitoring. A confirmation-monitoring sample has not been collected.

141.5.4 Sampling and Analysis Plan

Table 141.5-1 is the proposed SAP for PJ-SMA-2.

Table 141.5-1 Proposed SAP, PJ-SMA-2

Monitoring Constituent	Background for Monitoring
Metals	Impairments (copper and aluminum) and Site history
Total PCBs	Impairment and Site history (organics)
Strontium-90	Site history
SVOCs	Site history (organics)

142.0 PJ-SMA-3.05

Associated Sites	09-004(o)
Receiving Water	Pajarito Canyon
Drainage Area	0.07 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 09-004(o): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	The current sampler location does not include the potentially impacted area or sample location 09-00005. Therefore, the sampler was moved down the drainage.
2022 Permit Status	Active Monitoring

142.1 2010 Administratively Continued Permit Summary

Following the February 2011 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in August 2011. Analytical results from this sample initiated corrective action.

Following the July 2012 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2012, 225367), corrective-action monitoring was initiated. While developing the 2017 SAP, a decision was made to implement the monitoring location move recommended during the 2016 SIP review and monitoring was reinitiated. Stormwater samples were collected in September 2018 and July 2021. Analytical results from these samples initiated corrective action, and installation of enhanced controls was completed in 2022.

142.2 Site History

09-004(o) (2/1/2018)

SWMU 09-004(o) is an active HE sump (structure 09-198) located northeast of building 09-48, and associated inlet and outlet drainlines, and a former outfall at TA-09. The sump, installed between 1950 and 1952, is constructed reinforced concrete with an aluminum liner, and receives industrial waste from building 09-48. Activities in the building involve HE machining. The sump collects settling HE particles that are not filtered out by the building's waste system. Originally, effluent from the sump was discharged to a NPDES-permitted outfall (EPA 05A068) in Pajarito Canyon. The outfall was removed from the permit in the late 1990s; the sump contents are pumped out by a specially equipped truck and treated offsite. The sump is equipped with an overfill alarm and is regularly inspected.

For investigation activities refer to "Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1" (LANL 2011, 111794).

142.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 142.2-1.

Table 142.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
09-004(o)	Settling tank	Aluminum, inorganic and organic chemicals, HE

142.3 Consent Order Soil Data

Decision-level data for SWMU 09-004(o) consist of results from two samples collected at one location in 1999. Analytical results from those samples are presented in Figure 142.3-1. The 2011 IWP (LANL 2011, 111794) concluded that the nature and extent of contamination have not been defined and additional sampling is recommended.

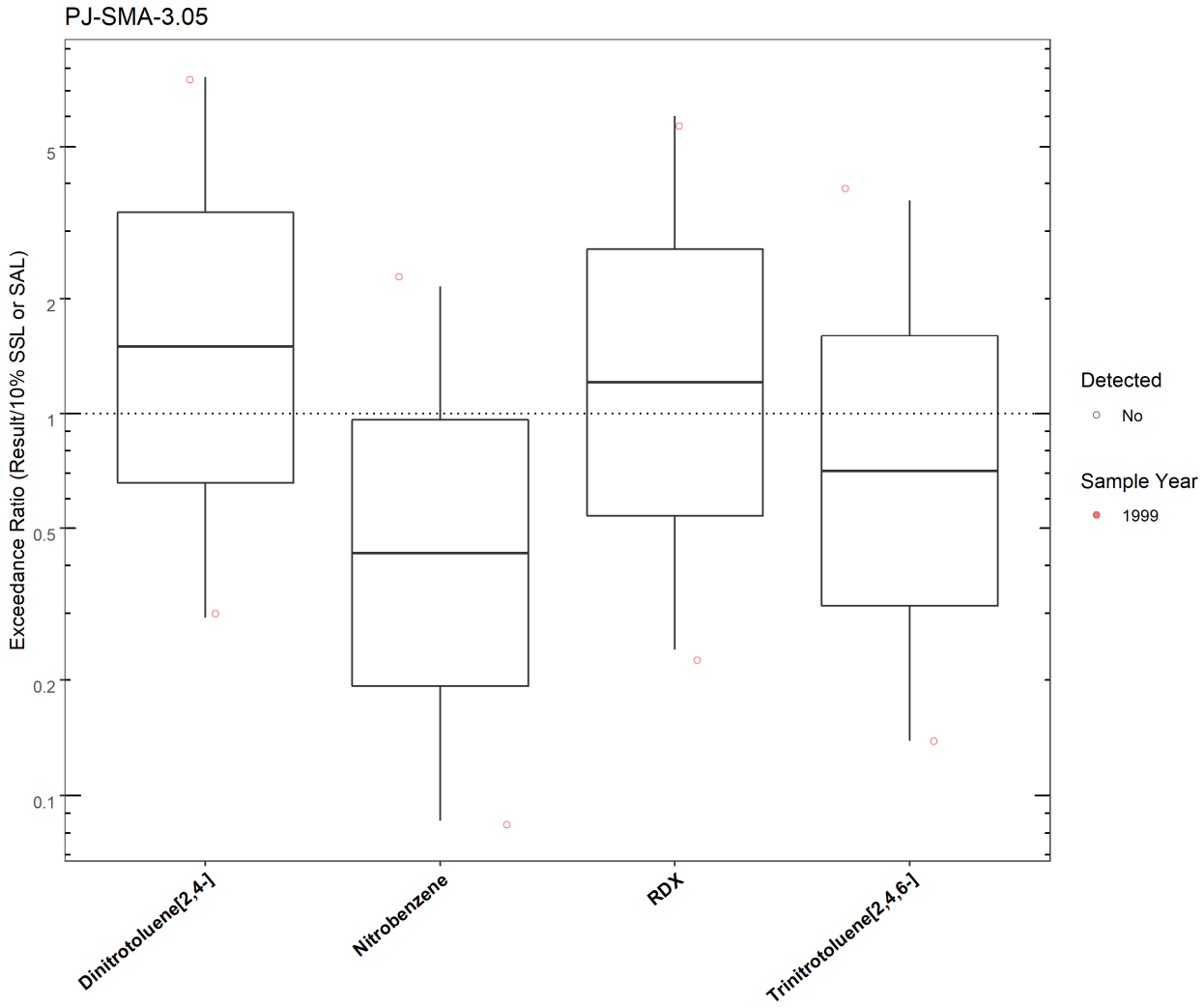

Figure 142.3-1 Analytical Results from Soil Samples Associated with PJ-SMA-3.05

142.4 Stormwater Evaluation

142.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected in the current stage at the SMA.

142.4.2 Assessment Unit and Stream Impairments

PJ-SMA-3.05 drains to Arroyo de la Delfe (above Kieling Spring to headwaters), which has impairments for PCBs, dissolved copper, adjusted gross alpha, and total aluminum. The metal and PCB impairments may be Site-related, based on Site history.

142.5 Site-Specific Demonstration

142.5.1 Soil Data Summary

No parameters exceeded the applicable soil-screening value in soil data. HE is a potential contaminant based on Site history. Because the nature and extent of contamination have not been defined, HE will be included in the SAP.

142.5.2 Stormwater Data Summary

No data for the current monitoring stage have been collected. Copper exceeded the TAL and BTV in the previous monitoring stage and will be included in the SAP. Iron exceeded the WQS; however, there is no TAL in the Permit for iron. Only POCs with TALs are used in the SSD. Aluminum was measured below TAL in the previous monitoring stage; therefore, it will not be added to the SAP.

142.5.3 2022 Permit Status

The SMA is in active monitoring. A confirmation-monitoring sample has not been collected in this monitoring stage.

142.5.4 Sampling and Analysis Plan

Table 142.5-1 is the proposed SAP for PJ-SMA-3.05.

Table 142.5-1 Proposed SAP, PJ-SMA-3.05

Monitoring Constituent	Background for Monitoring
Dissolved copper	Impairment, Site history (inorganics), and stormwater data
Total PCBs	Impairment and Site history (organic chemicals)
SVOCs	Site history (organic chemicals)
HE	Site history
DOC	Permit requirement
SSC	Permit requirement

143.0 PJ-SMA-4.05

Associated Sites	09-005(g)
Receiving Water	Pajarito Canyon
Drainage Area	37.40 acres
Landscape Characteristics	4% impervious, 96% pervious
Consent Order Site Status	SWMU 09-005(g): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the December 2016 field visit, it was determined that the current SMA does not include the area where the absorption bed could have discharged/overflowed (potentially impacted area). Therefore, the sampler location was moved to account for potential discharge from both outfalls but monitoring was not initiated due to the Corrective Action Complete status.
2022 Permit Status	Active Monitoring

143.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in September 2013. Analytical results from this sample initiated corrective action.

The Permittees submitted a request for alternative compliance for the Site per permit Part I.E.3 in May 2015 (LANL 2015, 600417). No response has been received from EPA, and stormwater monitoring has not occurred since 2015.

SWMU 09-005(g) was not monitored on the Administratively Continued Permit and will be added to the 2022 Individual Permit based on NMED's State Certification. The sampler move recommended in December 2016 was instituted in 2017 and two investigative samples were collected under the Administratively Continued Permit. Those samples will now be used as compliance samples for the 2022 IP.

143.2 Site History

09-005(g) (2/1/2018)

SWMU 09-005(g) is an inactive septic system located approximately 100 ft southeast of building 09-50 at TA-09. The septic system consists of a septic tank (structure 09-109), inlet and outlet drainlines, a drain field, and a former NPDES-permitted outfall (EPA 04A155) that received sanitary waste from building 09-50, an active shipping and receiving facility. Installed between 1950 and 1952, the septic tank (structure 09-109) measures approximately 5 ft wide × 8 ft long × 4 ft deep, with a capacity of 750-gal. and originally discharged to the same industrial waste line as the SWMU 09-004(g) sump. In 1989, discharges from the septic system were rerouted to bypass the industrial waste line and discharge to an absorption trench (i.e., drain field). The precise location of the drain field is not known. The outfall was removed from the NPDES permit in the late 1990s. There is no documentation to confirm the inlet drainline from the building to the septic tank has been either plugged or disconnected, although the outlet drainline was plugged in 1989. The septic tank is currently listed as abandoned in the LANL Archibus facility information database, indicating it is not in use.

For investigation activities refer to "Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1" (LANL 2011, 111794).

143.2.1 Potential Use of POCs (POCs)

POCs known to be managed or potentially used at the Site are listed in Table 143.2-1.

Table 143.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
09-005(g)	Settling tank	Metals, organic chemicals, HE

143.3 Consent Order Soil Data

Decision-level data are not available for SWMU 09-005(g).

143.4 Stormwater Evaluation

143.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Samples were collected in July and September 2017 for investigative purposes under the Administratively Continued Permit at the SIP recommended location. These samples are eligible as corrective action stormwater samples for the 2022 Permit SSD. Analytical results from that sample are presented in Figures 143.4-1 through 143.4-4.

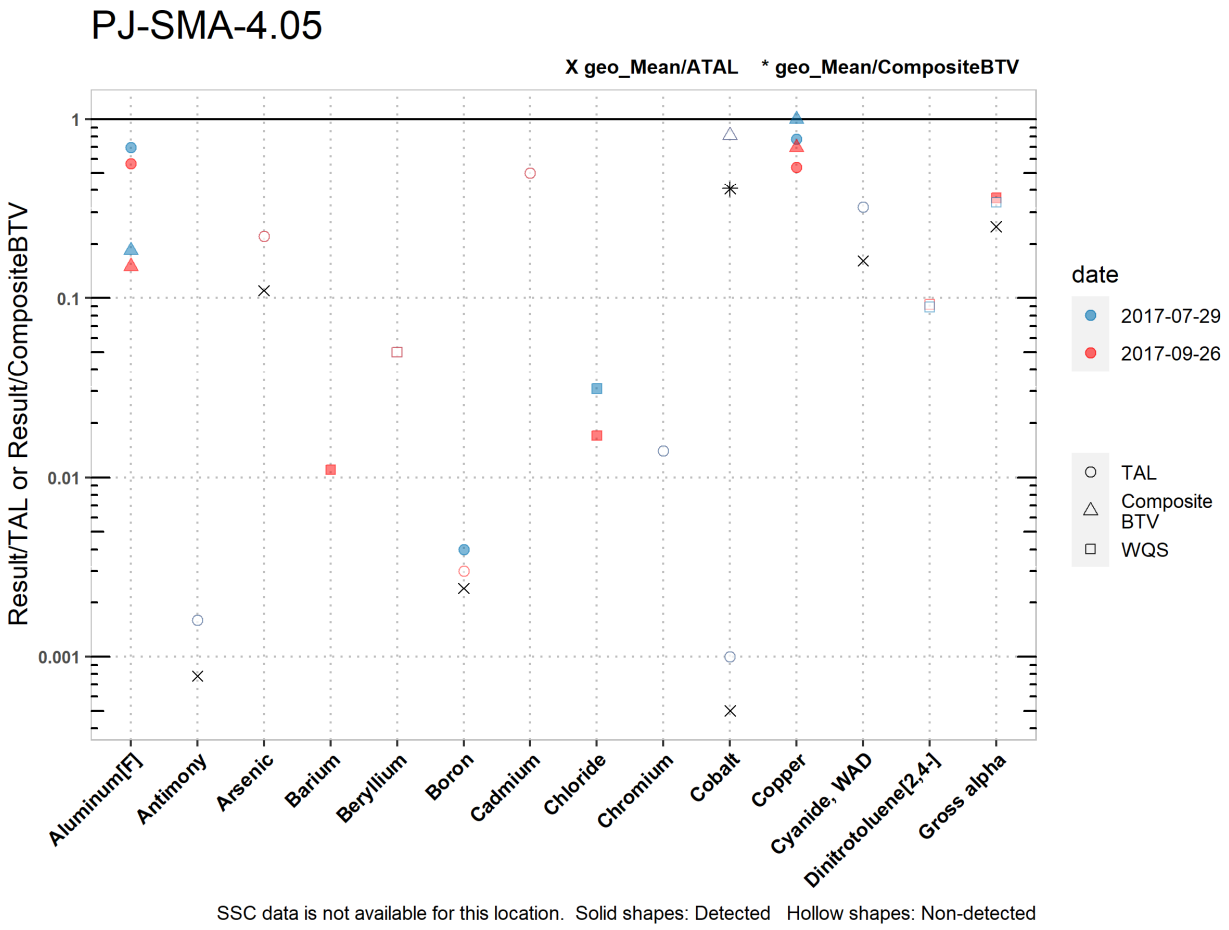

Figure 143.4-1 Analytical Results from Stormwater Samples, PJ-SMA-4.05 (Plot 1)

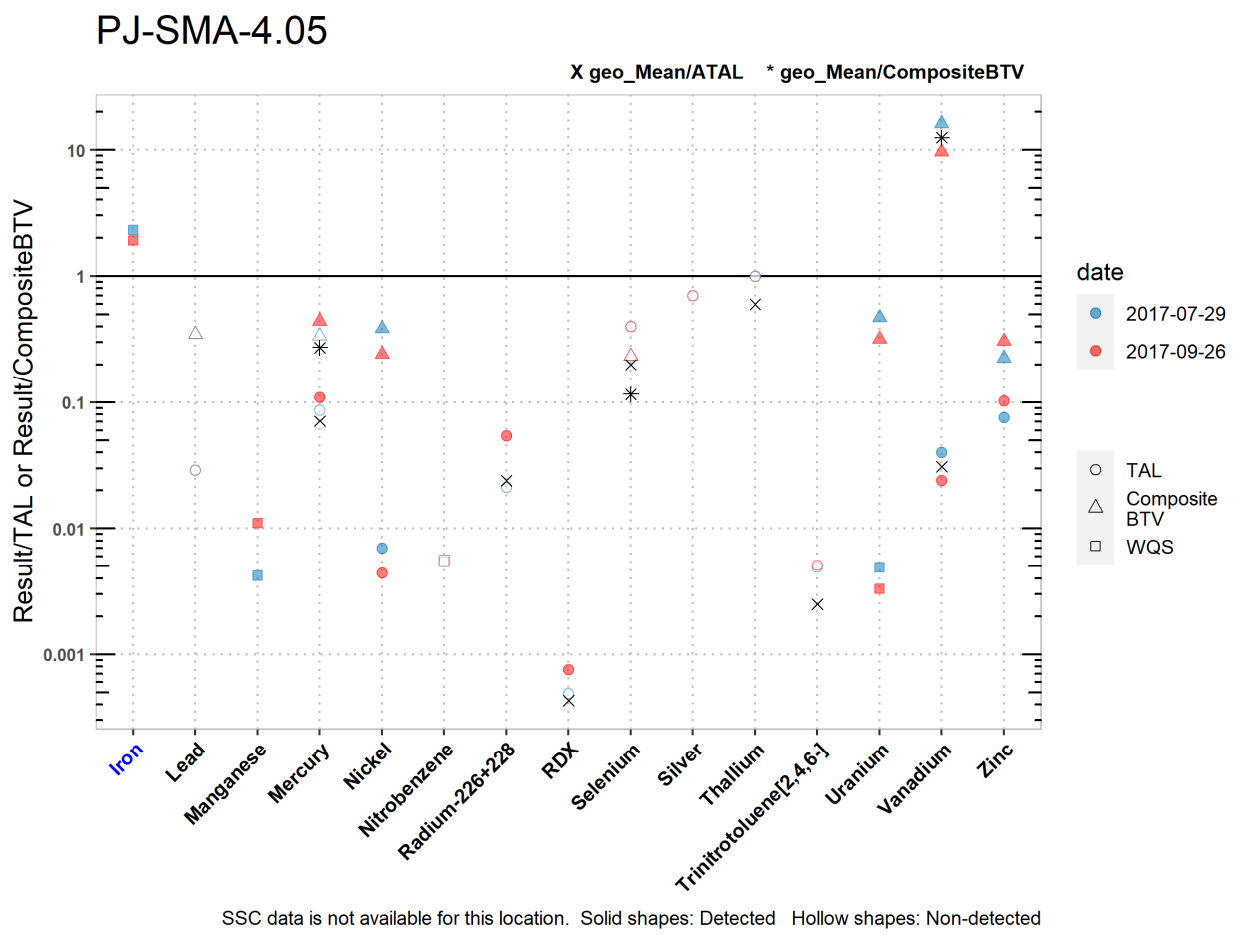

Figure 143.4-2 Analytical Results from Stormwater Samples, PJ-SMA-4.05 (Plot 2)

PJ-SMA-4.05

	Aluminum [F]	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chloride	Chromium	Cobalt	Copper	Cyanide, WAD	Dinitrotoluene [2,4-]	Gross alpha
MQL	2.5	1	0.5	NA	NA	100	1	NA	10	50	0.5	10	NA	NA
ATAL	NA	640	9	NA	NA	5000	NA	NA	NA	1000	NA	5.2	NA	15
MTAL	750	NA	340	NA	NA	NA	0.595	NA	214	NA	4.35	22	NA	NA
Composite_BTV	2830	NA	NA	NA	NA	NA	NA	NA	NA	1.23	3.38	NA	NA	56.9
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L
2017-07-29 result	521	*1.00*	*2.00*	NA	*0.200*	19.9	*0.300*	7030	*3.00*	*1.00*	3.37	*1.67*	*0.0976*	*5.04*
2017-07-29 dT	0.695	NA	NA	NA	NA	0.0040	NA	0.031	NA	NA	0.775	NA	NA	NA
2017-07-29 dB	0.184	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.997	NA	NA	NA
2017-09-26 result	425	*1.00*	*2.00*	22.5	*0.200*	*15.0*	*0.300*	3900	*3.00*	*1.00*	2.35	*1.67*	*0.101*	5.45
2017-09-26 dT	0.567	NA	NA	0.011	NA	NA	NA	0.017	NA	NA	0.540	NA	NA	0.36
2017-09-26 dB	0.150	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.695	NA	NA	NA
geo_mean/ATAL	NA	0.00078	0.11	NA	NA	0.0024	NA	NA	NA	0.00050	NA	0.161	NA	0.25
geo_mean/B	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.407	NA	NA	NA	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
geo_mean/B=geo_mean/composite_BTV

Figure 143.4-3 Analytical Results from Stormwater Samples, PJ-SMA-4.05 (Table 1)

PJ-SMA-4.05

	Iron	Lead	Manganese	Mercury	Nickel	Nitrobenzene	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Uranium	Vanadium	Zinc
MQL	NA	0.5	NA	0.005	0.5	NA	NA	NA	5	0.5	0.5	NA	NA	50	20
ATAL	NA	NA	NA	0.77	NA	NA	30	200	5	NA	0.47	20	NA	100	NA
MTAL	NA	17.2	NA	NA	170	NA	NA	NA	20	0.41	NA	NA	NA	NA	53.9
Composite_BTV	NA	1.44	NA	0.199	3.10	NA	4.48	NA	8.59	NA	NA	NA	0.310	0.244	18.2
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2017-07-29 result	2330	*0.500*	4.67	*0.0670*	1.19	*0.0976*	*0.638*	*0.0976*	*2.00*	*0.300*	*0.600*	*0.0976*	0.146	3.96	4.09
2017-07-29 dT	2.3	NA	0.0042	NA	0.00700	NA	NA	NA	NA	NA	NA	NA	0.0049	0.040	0.0759
2017-07-29 dB	NA	NA	NA	NA	0.384	NA	NA	NA	NA	NA	NA	NA	0.471	16.2	0.225
2017-09-26 result	1870	*0.500*	12.3	0.0880	0.749	*0.101*	1.63	0.151	*2.00*	*0.300*	*0.600*	*0.101*	0.0990	2.36	5.57
2017-09-26 dT	1.9	NA	0.011	0.11	0.00441	NA	0.0543	0.00076	NA	NA	NA	NA	0.0033	0.024	0.103
2017-09-26 dB	NA	NA	NA	0.442	0.242	NA	NA	NA	NA	NA	NA	NA	0.319	9.67	0.306
geo_mean/ATAL	NA	NA	NA	0.071	NA	NA	0.0240	0.00043	0.20	NA	0.6	0.0025	NA	0.031	NA
geo_mean/B	NA	NA	NA	0.273	NA	NA	NA	NA	0.116	NA	NA	NA	NA	12.5	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
geo_mean/B=geo_mean/composite_BTV

Figure 143.4-4 Analytical Results from Stormwater Samples, PJ-SMA-4.05 (Table 2)

143.4.2 Assessment Unit and Stream Impairments

PJ-SMA-4.05 drains to Pajarito Canyon (500 m ds of Arroyo de la Delfe), which has impairments for PCBs, adjusted gross alpha, dissolved copper and silver. The metals and PCB impairments may be Site-related, based on Site history.

143.5 Site-Specific Demonstration

143.5.1 Soil Data Summary

Decision-level data are not available for SWMU 09-005(g).

143.5.2 Stormwater Data Summary

Iron exceeded the WQS; however, there is no TAL in the Permit for iron. Only POCs with TALs are used in the SSD.

143.5.3 2022 Permit Status

The SMA is in active monitoring. Not all Site-related constituents of concern were analyzed for in past samples.

143.5.4 Sampling and Analysis Plan

Table 143.5-1 is the proposed SAP for PJ-SMA-4.05.

Table 143.5-1 Proposed SAP, PJ-SMA-4.05

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment and Site history
SVOCs	Site history
DOC	Permit requirement
SSC	Permit requirement

144.0 PJ-SMA-5

Associated Sites	22-015(c)
Receiving Water	Pajarito Canyon
Drainage Area	1.61 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 22-015(c): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the December 2016 field visit, it was determined that the sampler would not be moved.
2022 Permit Status	Active Monitoring

144.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in October 2012. Analytical results from this sample initiated corrective action.

Following the August 2015 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2015, 600776), corrective-action monitoring was initiated and a stormwater sample was collected in September 2018. Analytical results from this sample initiated corrective action.

Following the December 2020 submittal of certification of enhanced control installation to EPA as a corrective action (N3B 2020, 701161), corrective-action monitoring was initiated and a stormwater sample was collected in May 2021. Corrective action stormwater monitoring is ongoing until a second confirmation sample is collected from this SMA.

144.2 Site History

22-015(c) (2/18/2021)

SWMU 22-015(c) is a former NPDES-permitted outfall (06A077) located approximately 80 ft south of building 22-52, and associated outlet drainline and floor drains in building 22-52 at TA-22. The outfall received discharges from the floor drains in building 22-52, which were connected to the outfall south of building 22-52 via a 6-in.-diameter VCP outlet drainline. Engineering drawing ENG-R 1227 indicates the outfall daylighted in a channel that drained to a pond located near the edge of the mesa 80 ft south of building 22-52. Drainage from the pond eventually discharged into Pajarito Canyon. Beginning in 1952, building 22-52 was used as a plating laboratory and in 1974 standard printed-circuit etching operations began in the building. Although most waste from the plating and etching operations at building 22-52 was collected manually, depleted ferric chloride solution from the rinse tanks was discharged to the outfall from 1974 to 1977. Discharge to the outfall was discontinued in 1977, when all liquid wastes were collected in drums and sent offsite for treatment.

For investigation activities refer to “Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1” (LANL 2011, 111794).

144.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 144.2-1.

Table 144.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
22-015(c)	Outfall from building 22-52	Arsenic, cadmium, chromium, copper, lead, nickel, silver, thallium, zinc, cyanide

144.3 Consent Order Soil Data

Decision-level data for SWMU 22-015(c) consist of samples collected in 1995. Analytical results from those samples are presented in Figures 144.3-1 through 144.3-3. The 2011 IWP (LANL 2011, 111794) concluded that the nature and extent of contamination have not been defined and additional sampling is recommended.

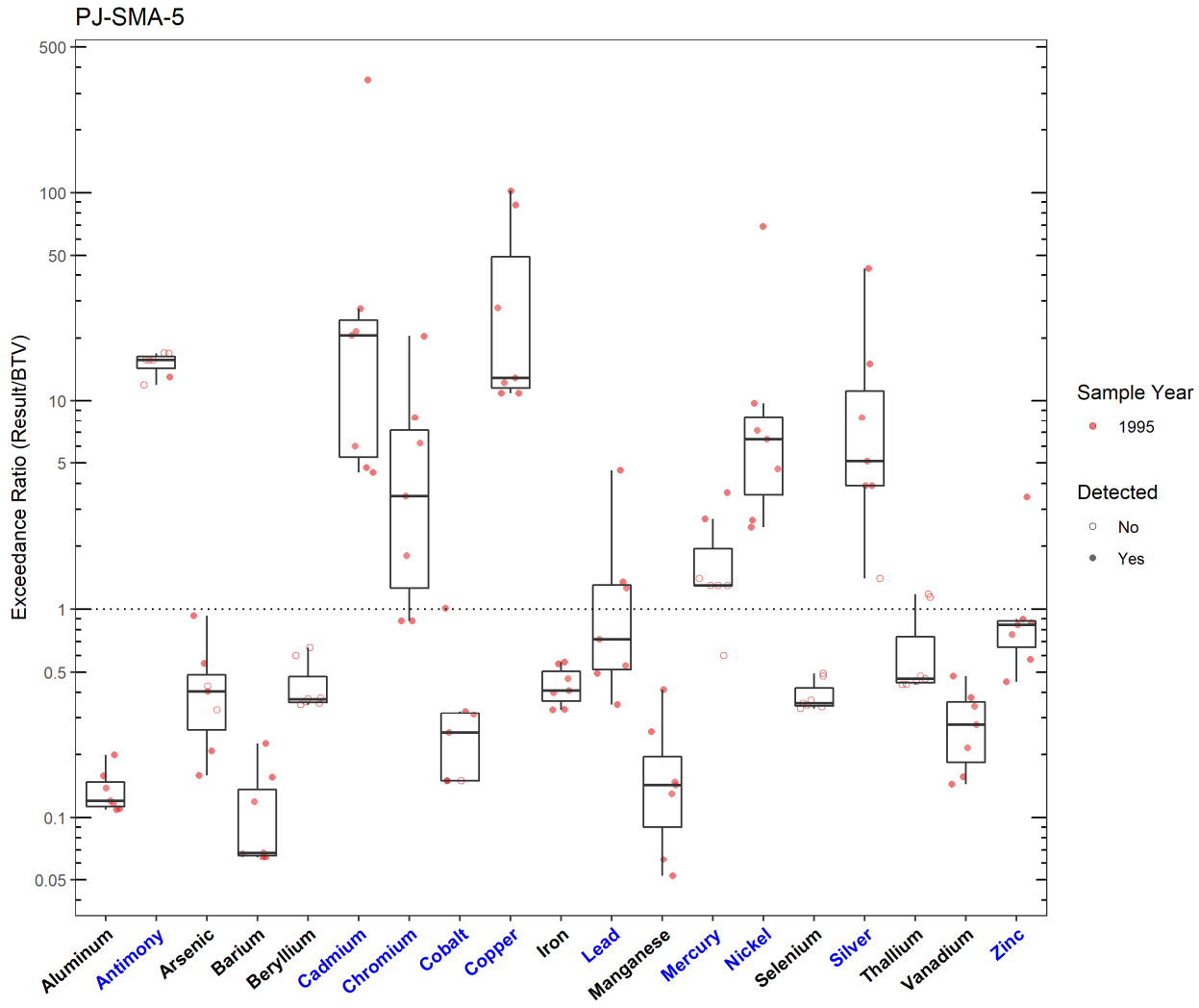

Figure 144.3-1 Inorganics Analytical Results from Soil Samples Associated with PJ-SMA-5

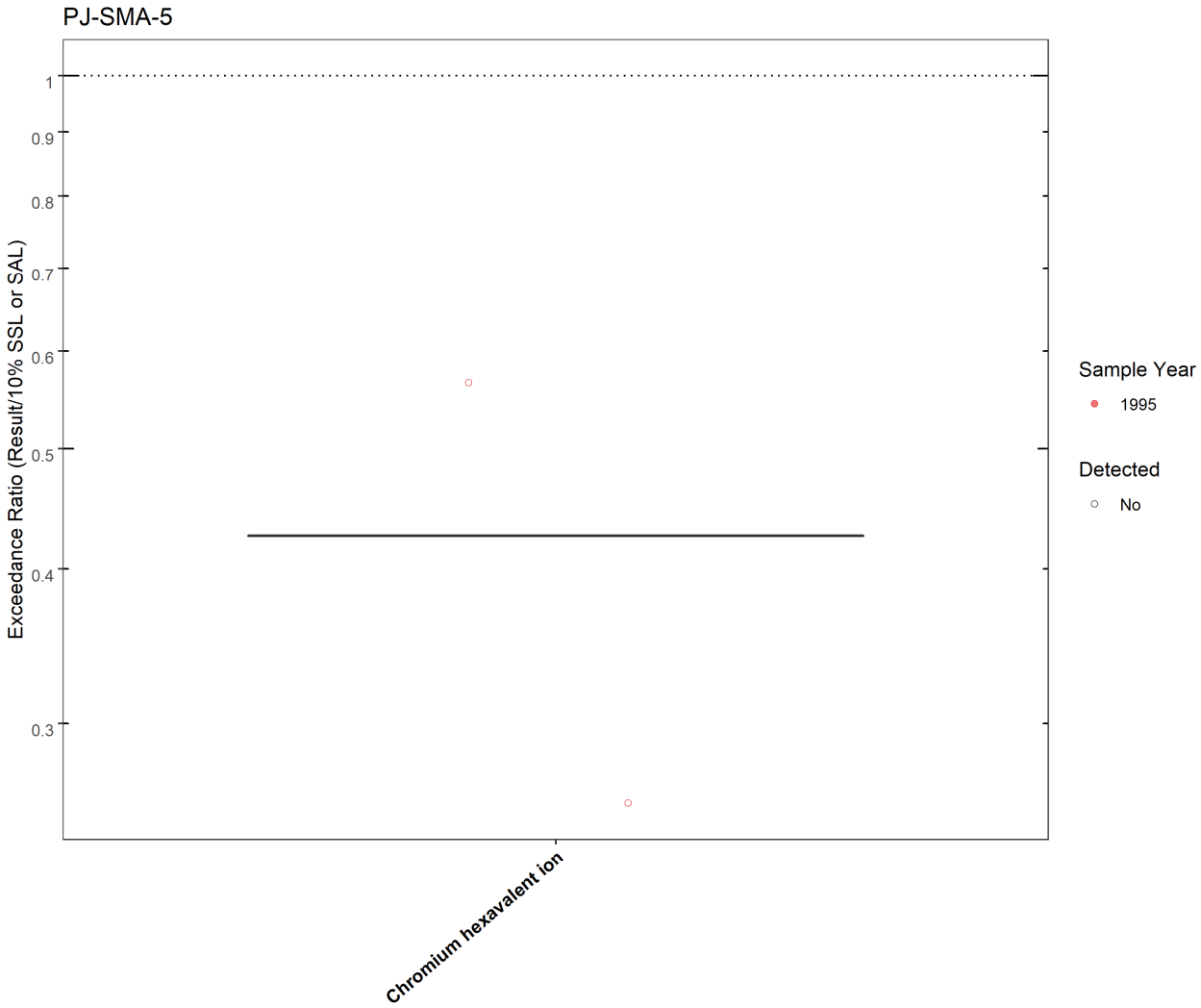

Figure 144.3-2 Inorganics (Hexavalent Chromium) Analytical Results from Soil Samples Associated with PJ-SMA-5

PJ-SMA-5

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	PJ-SMA-5	Sb	Y	BTV	0.830	10.8	1995-08-29
Cadmium	PJ-SMA-5	Cd	Y	BTV	0.400	139	1995-08-29
Chromium	PJ-SMA-5	Cr	Y	BTV	19.3	394	1995-08-29
Cobalt	PJ-SMA-5	Co	Y	BTV	8.64	8.70	1995-08-29
Copper	PJ-SMA-5	Cu	Y	BTV	14.7	1500	1995-09-14
Lead	PJ-SMA-5	Pb	Y	BTV	22.3	103	1995-08-29
Mercury	PJ-SMA-5	Hg	Y	BTV	0.100	0.360	1995-08-29
Nickel	PJ-SMA-5	Ni	Y	BTV	15.4	1060	1995-08-29
Silver	PJ-SMA-5	Ag	Y	BTV	1.00	43.3	1995-08-29
Zinc	PJ-SMA-5	Zn	Y	BTV	48.8	168	1995-08-29

Figure 144.3-3 Screening-Level Exceedances from Soil Samples Associated with PJ-SMA-5

144.4 Stormwater Evaluation

144.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective action stormwater sample was collected in May 2021. Analytical results from that sample are presented in Figures 144.4-1 and 144.4-2.

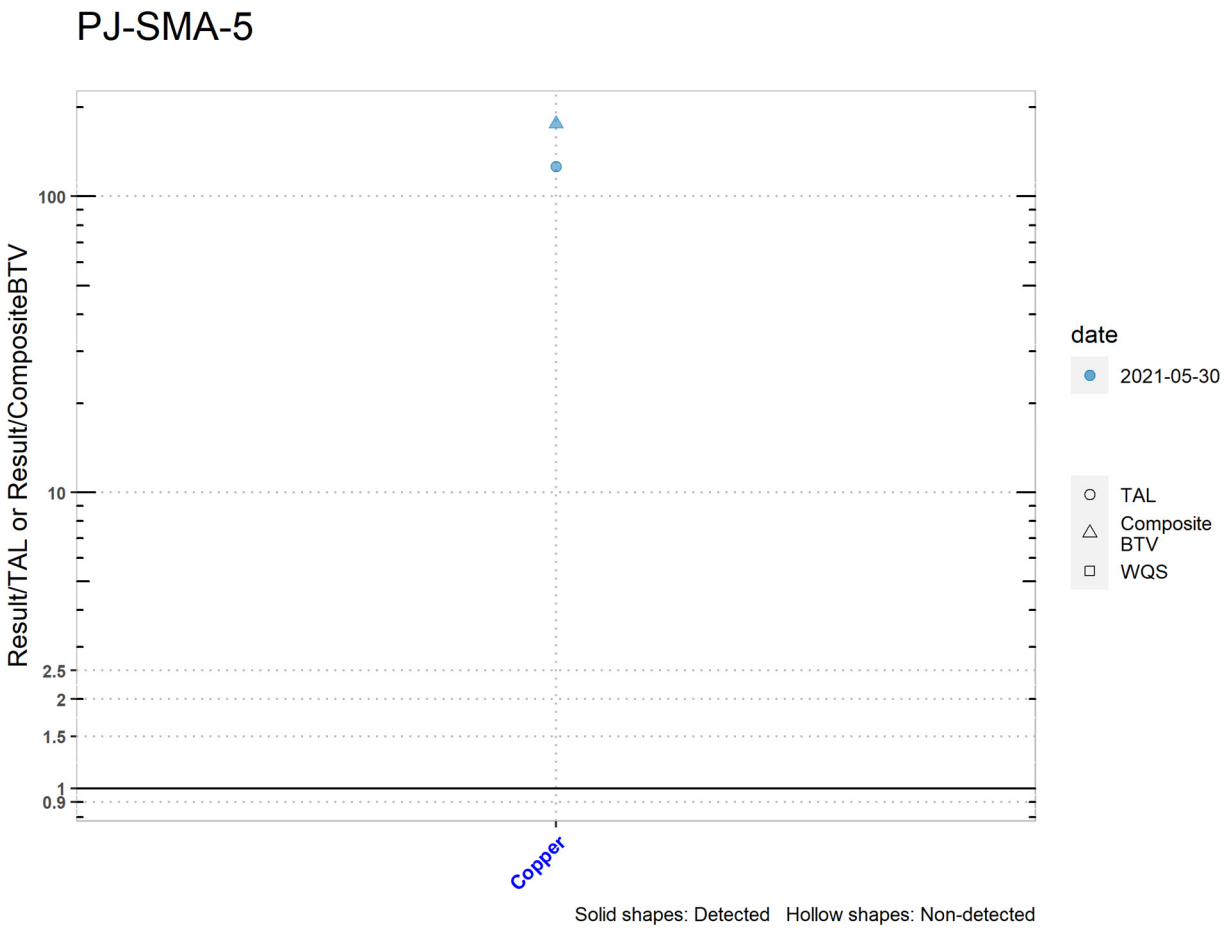

Figure 144.4-1 Analytical Results from Stormwater Sample, PJ-SMA-5 (Plot)

PJ-SMA-5

	Copper
MQL	0.5
ATAL	NA
MTAL	4.35
Composite_BTV	3.12
unit	ug/L
2021-05-30 result	549
2021-05-30 dT	126
2021-05-30 dB	176
geo_mean/ATAL	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 144.4-2 Analytical Results from Stormwater Sample, PJ-SMA-5 (Table)

144.4.2 Assessment Unit and Stream Impairments

PJ-SMA-5 drains to Pajarito Canyon (Arroyo de La Delfe to Starmers Gulch), which has not been assessed for impairments.

144.5 Site-Specific Demonstration

144.5.1 Soil Data Summary

Copper exceeded the applicable soil-screening value in soil data and stormwater TAL and will continue to be monitored for in stormwater. The remaining Site-related POCs that exceeded the applicable soil-screening value in soil data were previously measured in stormwater data and did not exceed TALs; therefore, they will not be added to the SAP.

144.5.2 Stormwater Data Summary

Copper exceeded the TAL and BTV.

144.5.3 2022 Permit Status

The SMA is in active monitoring. A second confirmation-monitoring sample has not been collected.

144.5.4 Sampling and Analysis Plan

Table 144.5-1 is the proposed SAP for PJ-SMA-5.

Table 144.5-1 Proposed SAP, PJ-SMA-5

Monitoring Constituent	Background for Monitoring
Dissolved copper (1)	Site history, soil data, and stormwater data
DOC (1)	Permit requirement
SSC (1)	Permit requirement

145.0 PJ-SMA-5.1

Associated Sites	22-010(b)
Receiving Water	Pajarito Canyon
Drainage Area	1.17 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 22-010(b): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the December 2016 field visit, it was determined that the current sampler location does not monitor the eastern sand filter and outfall. Therefore, the sampler will be moved south of this area.
2022 Permit Status	Active Monitoring

145.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, baseline stormwater samples were collected in August and September 2011. Analytical results from these samples initiated corrective action.

Following the July 2012 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2012, 221595), corrective-action monitoring was initiated. Since that time stormwater flow has not been sufficient for full-volume sample collection and corrective-action monitoring is ongoing until at least one confirmation sample is collected from this SMA.

The sampler move recommended in December 2016 was instituted in 2017 and one investigative sample was collected under the Administratively Continued Permit. That sample will be used as a compliance sample in the 2022 Individual Permit.

145.2 Site History

22-010(b) (2/18/2021)

SWMU 22-010(b) is an inactive septic system located approximately 90 ft south of building 22-1 at TA-22. The septic system consists of a septic tank (structure 22-51), inlet and outlet drainlines, distribution boxes, a leach field, a subsurface sand filter, and a former outfall. Septic tank 22-51 was installed in 1948 to supplement and ultimately replace the SWMU 22-016 septic system that originally served buildings 22-1, an HE assembly building that also housed a PETN recrystallization room and laundry for protective clothing, and building 22-4, an office and fabrication building, and discharged to an outfall directly south of the septic tank. The inactive septic tank has a capacity of 8,775 gal. The SWMU 22-010(b) septic tank was installed in tandem with and upgradient of the original septic tank and tied into the same outlet drainline; building 22-5 (a shop and laboratory building) was tied in and the leach field was added at that time (engineering drawings ENG-R1227 and ENG-R1228). In the 1950s, buildings 22-32 (a guard shack) and 22-52 (a plating and circuit etching shop) were constructed and tied into the SWMU 22-010(b) septic system. In 1984, buildings 22-90 (an office building), 22-91 (an assembly building), and 22-93 (a detonator development building) were constructed and tied into the system. In 1973, a subsurface sand filter was constructed (approximately 200 ft southeast of the leach field) to replace the leach field; the leach field was abandoned in place. Engineering Drawing ENG C-49252 shows the sand filter discharged through a 6-in.-diameter VCP drainline that extends south

120 ft before terminating at an outfall in Pajarito Canyon. The sand filter operated until the 1990s when the TA-22 sewer lines were tied into to the LANL SWSC; the SWMU 22-010(b) septic system was abandoned in place.

For investigation activities refer to "Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1" (LANL 2011, 111794).

145.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table145.2-1.

Table 145.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
22-010(b)	Septic system	Metals, chromium, silver, inorganic chemicals, organic chemicals, SVOCs, HE

145.3 Consent Order Soil Data

Decision-level data are not available for SWMU 22-010(b).

145.4 Stormwater Evaluation

145.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A sample was collected in September 2017 for investigative purposes under the Administratively Continued Permit at the SIP recommended location. This sample is eligible as a corrective action stormwater sample for the 2022 Permit SSD. Analytical results from that sample are presented in Figures 145.4-1 through 145.4-4.

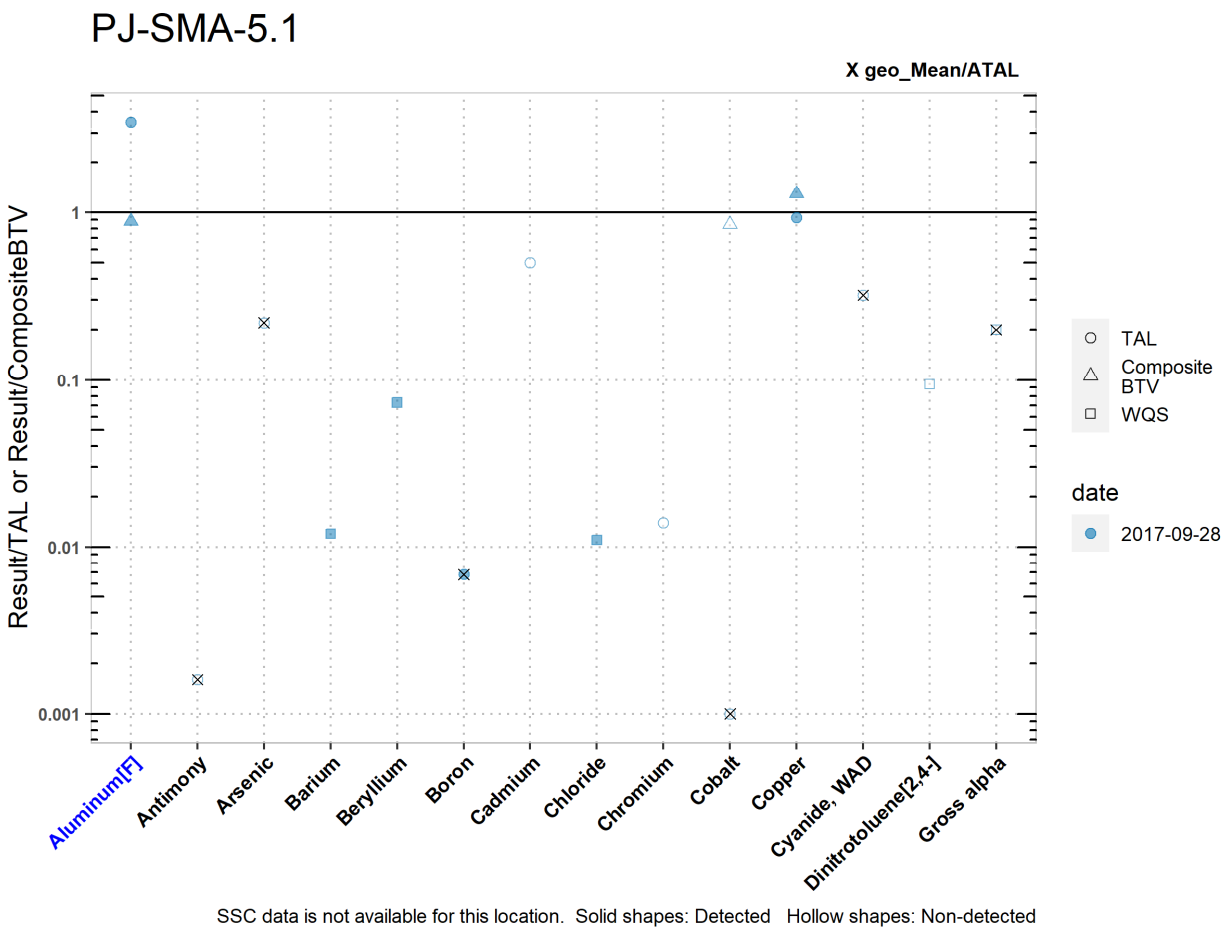

Figure 145.4-1 Analytical Results from Stormwater Sample, PJ-SMA-5.1 (Plot 1)

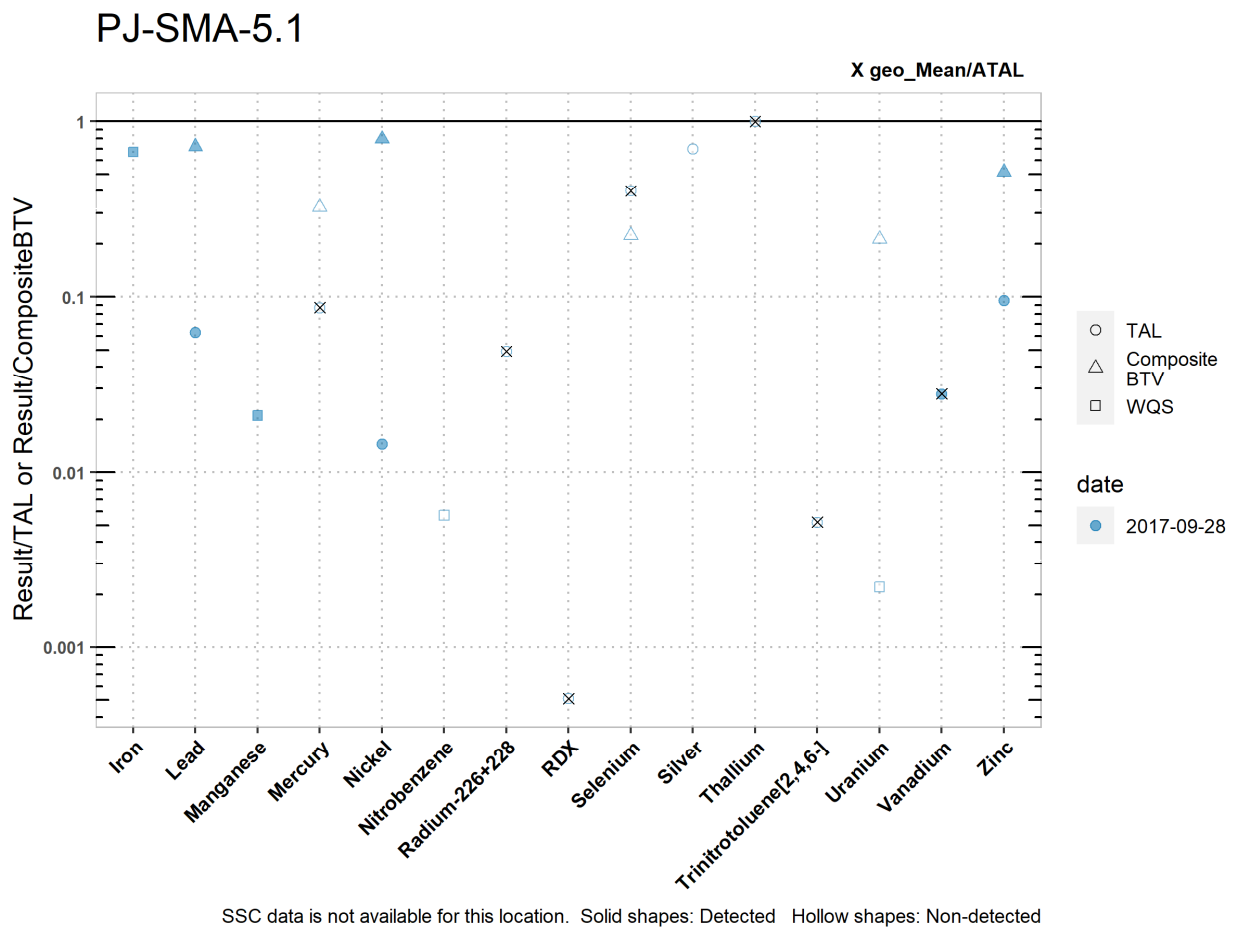

Figure 145.4-2 Analytical Results from Stormwater Sample, PJ-SMA-5.1 (Plot 2)

PJ-SMA-5.1

	Aluminum [F]	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chloride	Chromium	Cobalt	Copper	Cyanide, WAD	Dinitrotoluene [2,4-]	Gross alpha
MQL	2.5	1	0.5	NA	NA	100	1	NA	10	50	0.5	10	NA	NA
ATAL	NA	640	9	NA	NA	5000	NA	NA	NA	1000	NA	5.2	NA	15
MTAL	750	NA	340	NA	NA	NA	0.595	NA	214	NA	4.35	22	NA	NA
Composite_BTV	2950	NA	NA	NA	NA	NA	NA	NA	NA	1.18	3.12	NA	NA	57.2
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L
2017-09-28 result	2610	*1.00*	*2.00*	24.2	0.291	33.9	*0.300*	2620	*3.00*	*1.00*	4.04	*1.67*	*0.103*	*3.00*
2017-09-28 dT	3.48	NA	NA	0.012	0.073	0.0068	NA	0.011	NA	NA	0.929	NA	NA	NA
2017-09-28 dB	0.885	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.29	NA	NA	NA
geo_mean/ATAL	NA	0.0016	0.22	NA	NA	0.0068	NA	NA	NA	0.0010	NA	0.321	NA	0.20

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 145.4-3 Analytical Results from Stormwater Sample, PJ-SMA-5.1 (Table 1)

PJ-SMA-5.1

	Iron	Lead	Manganese	Mercury	Nickel	Nitrobenzene	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Uranium	Vanadium	Zinc
MQL	NA	0.5	NA	0.005	0.5	NA	NA	NA	5	0.5	0.5	NA	NA	50	20
ATAL	NA	NA	NA	0.77	NA	NA	30	200	5	NA	0.47	20	NA	100	NA
MTAL	NA	17.2	NA	NA	170	NA	NA	NA	20	0.41	NA	NA	NA	NA	53.9
Composite_BTV	NA	1.50	NA	0.208	3.10	NA	4.21	NA	8.98	NA	NA	NA	0.315	NA	10.0
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2017-09-28 result	670	1.08	23.3	*0.0670*	2.47	*0.103*	*1.48*	*0.103*	*2.00*	*0.300*	*0.600*	*0.103*	*0.0670*	2.82	5.15
2017-09-28 dT	0.67	0.0628	0.021	NA	0.0145	NA	NA	NA	NA	NA	NA	NA	NA	0.028	0.0955
2017-09-28 dB	NA	0.720	NA	NA	0.797	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.515
geo_mean/ATAL	NA	NA	NA	0.087	NA	NA	0.0492	0.00051	0.40	NA	1	0.0052	NA	0.028	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 145.4-4 Analytical Results from Stormwater Sample, PJ-SMA-5.1 (Table 2)

145.4.2 Assessment Unit and Stream Impairments

PJ-SMA-5.1 drains to Pajarito Canyon (Arroyo de La Delfe to Starmers Gulch), which has not been assessed for impairments.

145.5 Site-Specific Demonstration

145.5.1 Soil Data Summary

Decision-level data are not available for SWMU 22-010(b).

145.5.2 Stormwater Data Summary

Filtered Aluminum exceeded the TAL but not the BTV. The other Site-related metal POCs were previously measured in stormwater data and did not exceed TALs; therefore, they will not be added to the SAP.

145.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related POCs were analyzed for in past samples.

145.5.4 Sampling and Analysis Plan

Table 145.5-1 is the proposed SAP for PJ-SMA-5.1.

Table 145.5-1 Proposed SAP, PJ-SMA-5.1

Monitoring Constituent	Background for Monitoring
HE (1)	Site history
Total PCBs	Site history (organics)
SVOCs	Site history (organics)
DOC	Permit requirement
SSC	Permit requirement

146.0 PJ-SMA-6

Associated Sites	40-010
Receiving Water	Pajarito Canyon
Drainage Area	0.14 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 40-010: In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the November 2017 field visit, the current SMA sampling location and boundary were agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

146.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in July 2014. Analytical results from this sample initiated corrective action.

The Permittees submitted a request for alternative compliance for the Site per permit Part I.E.3 in May 2015 (LANL 2015, 600417). No response has been received from EPA and stormwater monitoring has not occurred since 2014.

146.2 Site History

40-010 (2/16/2018)

SWMU 40-010 is a surface disposal area located on the edge of Pajarito Canyon, approximately 200 ft south of former building 40-72 at TA-40. The surface disposal area extends about 150 ft along the canyon edge and 140 ft down the canyon hillside. The area contained various debris including 20 empty 30-gal. drums. This area also contains debris from farm and home implements that predate Manhattan Project activities. All 20 drums and exposed debris were removed during Post-Cerro Grande fire activities conducted in 2000, with the exception of the pre-Manhattan Project debris, which is considered to be of archaeological importance and was therefore not removed.

SWMU 40-010 is not listed in the 1990 SWMU Report. SWMU 40-010 was one of 27 newly identified SWMUs added to the LANL HWFP by the EPA in 1993.

For investigation activities refer to “Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1” (LANL 2011, 111794).

146.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 146.2-1.

Table 146.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
40-010	Surface disposal area	Metals, inorganic and organic chemicals

146.3 Consent Order Soil Data

Decision-level data are not available for SWMU 40-010.

146.4 Stormwater Evaluation

146.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in July 2014. Analytical results from that sample are presented in Figure 146.4-1 and 146.4-2.

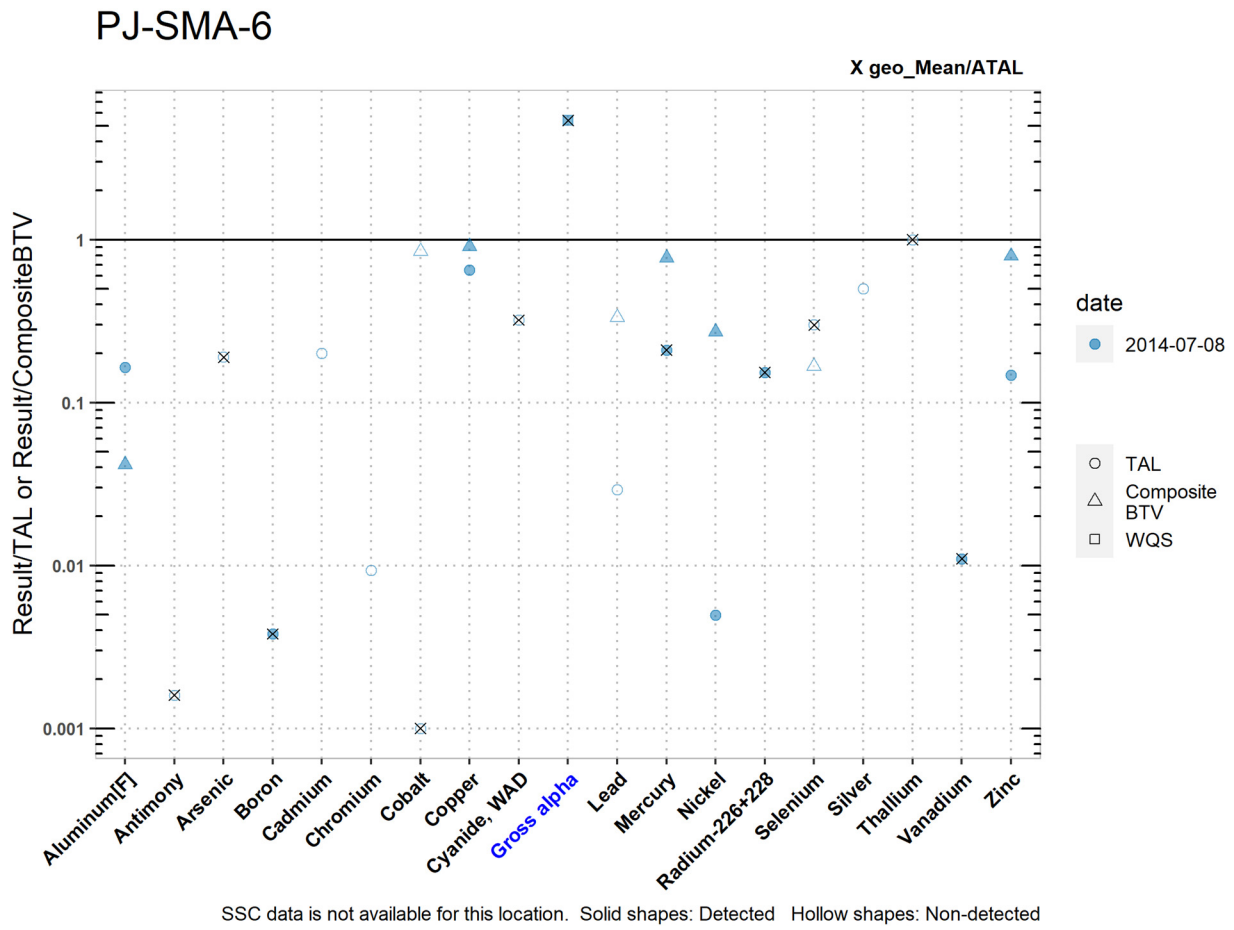

Figure 146.4-1 Analytical Results from Stormwater Sample, PJ-SMA-6 (Plot)

PJ-SMA-6

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Lead	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Vanadium	Zinc
MQL	2.5	1	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	5.2	15	NA	0.77	NA	30	5	NA	0.47	100	NA
MTAL	750	NA	340	NA	0.595	214	NA	4.35	22	NA	17.2	NA	170	NA	20	0.41	NA	NA	53.9
Composite_BTV	2950	NA	NA	NA	NA	NA	1.18	3.12	NA	57.2	1.50	0.208	3.10	4.21	8.98	NA	NA	NA	10.0
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
2014-07-08 result	123	*1.00*	*1.70*	18.9	*0.110*	*2.00*	*1.00*	2.84	*1.67*	81.6	*0.500*	0.161	0.842	4.59	*1.50*	*0.200*	*0.450*	1.11	7.92
2014-07-08 dT	0.164	NA	NA	0.0038	NA	NA	NA	0.653	NA	5.4	NA	0.21	0.00495	0.153	NA	NA	NA	0.011	0.147
2014-07-08 dB	0.0417	NA	NA	NA	NA	NA	NA	0.910	NA	NA	NA	0.774	0.272	NA	NA	NA	NA	NA	0.792
geo_mean/ATAL	NA	0.0016	0.19	0.0038	NA	NA	0.0010	NA	0.321	5.4	NA	0.21	NA	0.153	0.30	NA	1	0.011	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 146.4-2 Analytical Results from Stormwater Sample, PJ-SMA-6 (Table)

146.4.2 Assessment Unit and Stream Impairments

PJ-SMA-6 drains to Pajarito Canyon (500 m ds of Arroyo de la Delfe), which has impairments for dissolved copper, PCBs, adjusted gross alpha, and silver. The PCB and metal impairments may be Site-related, based on Site history.

146.5 Site-Specific Demonstration

146.5.1 Soil Data Summary

Decision-level data are not available for SWMU 40-010.

146.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL and there was no paired SSC result to confirm whether it was below BTVs. Radionuclides are not a Site-related POC; therefore, it will not be added to the monitoring suite for analysis.

146.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related constituents of concern were analyzed for in past samples.

146.5.4 Sampling and Analysis Plan

Table 146.5-1 is the proposed SAP for PJ-SMA-6.

Table 146.5-1 Proposed SAP, PJ-SMA-6

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment and Site history (organics)
SVOCs	Site history (organics)
DOC	Permit requirement
SSC	Permit requirement

147.0 PJ-SMA-7

Associated Sites	40-006(c)
Receiving Water	Pajarito Canyon
Drainage Area	0.01 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 40-006(c): In Progress Deferred per Consent Order
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the November 2017 field visit, the current SMA sampling location and boundary were agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Long-Term Stewardship per Permit Part I.C.3 criterion

147.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, baseline monitoring was initiated. The sampler location was moved in 2011 to a more representative location after a boundary change for the Site, and baseline monitoring was reinitiated. To date, stormwater flow has not been sufficient for full-volume sample collection and monitoring is ongoing until one confirmation sample is collected from this SMA.

147.2 Site History

40-006(c) (2/18/2021)

SWMU 40-006(c) is the location of a firing site that constituted the southern portion of building 40-5 on the north edge of Pajarito Canyon at the west end of Trap Door Site Rd at TA-40. SWMU 40-006(c) is listed as deferred in Appendix A of the 2016 Consent Order; therefore investigation of this Site is deferred until the Site is decommissioned.

The 1990 SWMU Report describes SWMU 40-006(c) as an active firing site consisting of a concrete pad located on the south side of building 40-5 at TA-40. As-constructed drawing ENG-C 12199 (pg. 30 of 132) and engineering drawings ENG-R 3120 (pg. 1 of 1) and ENG-R 2337 (pg. 1 of 1) show the firing site consisted of a 16-ft long × 8-ft wide reinforced concrete and steel firing chamber that allowed observation of the test shots, a partially protected area on the south side of the building where shots were prepared, and a 16-ft long × 15-ft wide open firing concrete pad connected to the south of the building where larger shots were fired. Beginning in 1950, the original firing site was used to test detonators as seen in a 1958 aerial photograph. In 1992, the SWMU 40-006(c) firing site was modified. The firing pad and the top 6 in. of soil were removed and a containment system consisting of a containment large vessel with a high-efficiency particulate filtration system was installed for gaseous emissions. The new firing chamber has been and continues to be used only to test and develop small explosive devices within the containment vessel. The 1994 as-built drawing AB31 (pg. 3 of 3) shows the addition to the building 40-5 that currently encapsulates the boundary of the original firing site. Historically, the firing site included an open firing pad connected to the south of the building where the larger shots which could use up to 85 lb of HE were fired. In the past after each shot, large pieces of debris were removed and disposed of, and sand and remaining debris were pushed to the edge of Upper Pajarito Canyon as shown in the 2018 Orthographic GIS Layer and PRS website photographs. This

practice created a sand berm near the canyon edge. The unit boundary will be revised to depict the correct dimensions and accurate location of the firing site that previously encompassed the southern portion of the original footprint of building 40-5 and the concrete pad located adjacent to the south side of the original building 40-5 footprint. The boundary for SWMU 40-006(c) is now located within the current footprint of building 40-5. The SWMU 40-006(c) debris disposal area on the edge and slope side of the northern rim of Upper Pajarito Canyon directly south of building 40-5 is depicted as an associated feature in GIS.

For recent Site activities refer to "Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1" (LANL 2011, 111794).

147.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 147.2-1.

Table 147.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
40-006(c)	Firing site	Barium, copper, lead, thallium, zinc, nitrates, PAHs, HE

147.3 Consent Order Soil Data

Decision-level data are not available for SWMU 40-006(c). The 2011 IWP (LANL 2011, 111794) states that investigation of the firing site is deferred per section IV.A.5.b and Table IV-2 of the 2005 Consent Order. The 2005 Consent Order was superseded by Appendix A in the 2016 Consent Order.

147.4 Stormwater Evaluation

147.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the SMA.

147.4.2 Assessment Unit and Stream Impairments

PJ-SMA-7 drains to Pajarito Canyon (500 m ds of and to Arroyo de la Delfe), which has impairments for dissolved copper, PCBs, adjusted gross alpha, and silver. The copper impairment may be Site-related based on Site history.

147.5 Site-Specific Demonstration

147.5.1 Soil Data Summary

Decision-level data are not available for SWMU 40-006(c).

147.5.2 Stormwater Data Summary

No confirmation-monitoring data.

147.5.3 2022 Permit Status

All Sites within the SMA are deferred under the Consent Order. Therefore, the SMA is eligible for long-term stewardship pursuant to Part 1.C.3.

148.0 PJ-SMA-8

Associated Sites	40-006(b)
Receiving Water	Pajarito Canyon
Drainage Area	0.18 acres
Landscape Characteristics	16% impervious, 84% pervious
Consent Order Site Status	SWMU 40-006(b): In Progress Deferred per Consent Order
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the March 2018 field visit, the current SMA sampling location and boundary were agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Long-Term Stewardship per Permit Part I.C.3 criterion

148.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, baseline monitoring was initiated. The sampler location was moved in 2011 to a more representative location after a boundary change for the Site, and baseline monitoring was reinitiated. To date, stormwater flow has not been sufficient for full-volume sample collection and monitoring is ongoing until one confirmation sample is collected from this SMA.

148.2 Site History

40-006(b) (2/18/2021)

SWMU 40-006(b) is the location of a former firing site consisting of a reinforced concrete and steel firing chamber and concrete pad on the south side of building 40-8 on the northern rim of Upper Pajarito Canyon, at the west end of Trap Door Site Rd at TA-40. SWMU 40-006(b) is listed as deferred in Appendix A of the 2016 Consent Order; therefore investigation of this Site is deferred until the Site is decommissioned.

The 1990 SWMU Report describes SWMU 40-006(b) as an active firing site consisting of a concrete pad located on the south side of building 40-8 at TA-40. As-constructed drawing ENG-C 12205 (pg. 36 of 132) and engineering drawing ENG-R 3123 (pg. 1 of 1) show the firing site consisted of a 16-ft long × 8-ft wide reinforced concrete and steel firing chamber that allowed for observation of the test shots, a partially protected area on the south side of the building where shots were prepared, and a 16-ft long × 10-ft wide open firing concrete pad connected to the south side of the building where larger shots were fired. Beginning in 1950, the original firing site was used to test detonators as seen in the 1958 aerial photograph. Historically, the firing site included an open firing pad connected to the south of the building where the larger shots, which could use up to 85 lb of high explosives were fired. In the past after each shot, large pieces of debris were removed and disposed of, and sand and remaining debris were pushed to the edge of Upper Pajarito Canyon as shown in the 2018 Orthographic GIS Layer. This practice created a sand berm near the canyon edge. In 1992, the SWMU 40-006(b) firing site was modified. The firing pad and the top 6 in. of soil were removed and replaced with a containment system consisting of a large containment vessel with a high-efficiency particulate filtration system was installed for gaseous emissions. The new firing chamber has been and continues to be used only to test and develop small explosive devices within the containment vessel. The 1994 as-built drawing AB288 (pg. 1

of 1) shows the addition to building 40-8 that currently encapsulates the boundary of the original firing site. The boundary for SWMU 40-006(b) is now located within the current footprint of building 40-8. The SWMU 40-006(b) debris disposal area on the edge and slope side of the northern rim of Upper Pajarito Canyon directly south of building 40-8 is depicted as an associated feature in GIS.

For recent Site activities refer to "Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1" (LANL 2011, 111794).

148.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 148.2-1.

Table 148.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
40-006(b)	Firing site	Barium, copper, lead, thallium, zinc, nitrates, PAHs, HE, uranium

148.3 Consent Order Soil Data

Decision-level data are not available for SWMU 40-006(b). The 2011 IWP (LANL 2011, 111794) states that investigation of the firing site is deferred per section IV.A.5.b and Table IV-2 of the 2005 Consent Order. The 2005 Consent Order was superseded by Appendix A in the 2016 Consent Order.

148.4 Stormwater Evaluation

148.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the SMA.

148.4.2 Assessment Unit and Stream Impairments

PJ-SMA-8 drains to Pajarito Canyon (Twomile Canyon to 500 m ds of Arroyo de la Delfe), which has impairments for dissolved silver, dissolved copper, PCBs, and adjusted gross alpha. The copper impairment may be Site-related, based on Site history.

148.5 Site-Specific Demonstration

148.5.1 Soil Data Summary

Decision-level data are not available for SWMU 40-006(b).

148.5.2 Stormwater Data Summary

No confirmation-monitoring data.

148.5.3 2022 Permit Status

All Sites within the SMA are deferred under the Consent Order. Therefore, the SMA is eligible for long-term stewardship pursuant to Part 1.C.3.

149.0 PJ-SMA-9

Associated Sites	40-009
Receiving Water	Pajarito Canyon
Drainage Area	0.22 acres
Landscape Characteristics	15% impervious, 85% pervious
Consent Order Site Status	SWMU 40-009: In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the November 2017 field visit, the current SMA sampling location and boundary were agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

149.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in June 2014. Analytical results from this sample initiated corrective action.

Following the October 2015 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2015, 600980), corrective-action monitoring was initiated and a stormwater sample was collected in July 2021. Corrective-action monitoring is ongoing until a second confirmation sample is collected from this SMA.

149.2 Site History

40-009 (2/16/2018)

SWMU 40-009 is a surface disposal area located south of building 40-9 at TA-40. The 1990 SWMU Report describes the Site as a landfill resulted from a decommissioning effort undertaken at TA-15 in 1967 during which several structures were burned. The SWMU Report provides only a vague location and no estimation of the size or depth of the landfill, stating that debris from TA-15 was taken to TA-40 and disposed of in the canyon between buildings 40-5 and 40-15. The RCRA RFI investigating field team walked the canyon area between the two buildings and found two prominent earthen berms on the steep hillside directly south of building 40-9. The field team suspected the berms to be the disposal Site described in the SWMU Report.

For investigation activities refer to “Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1” (LANL 2011, 111794).

149.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 149.2-1.

Table 149.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
40-009	Landfill	Metals, dioxins/furans, PAHs

149.3 Consent Order Soil Data

Decision-level data for SWMU 40-009 consist of results from samples collected in 1995. Analytical results from those samples are presented in Figures 149.3-1 through 149.3-4. The 2011 IWP (LANL 2011, 111794) concluded that the nature and extent of contamination have not been defined and additional sampling is recommended.

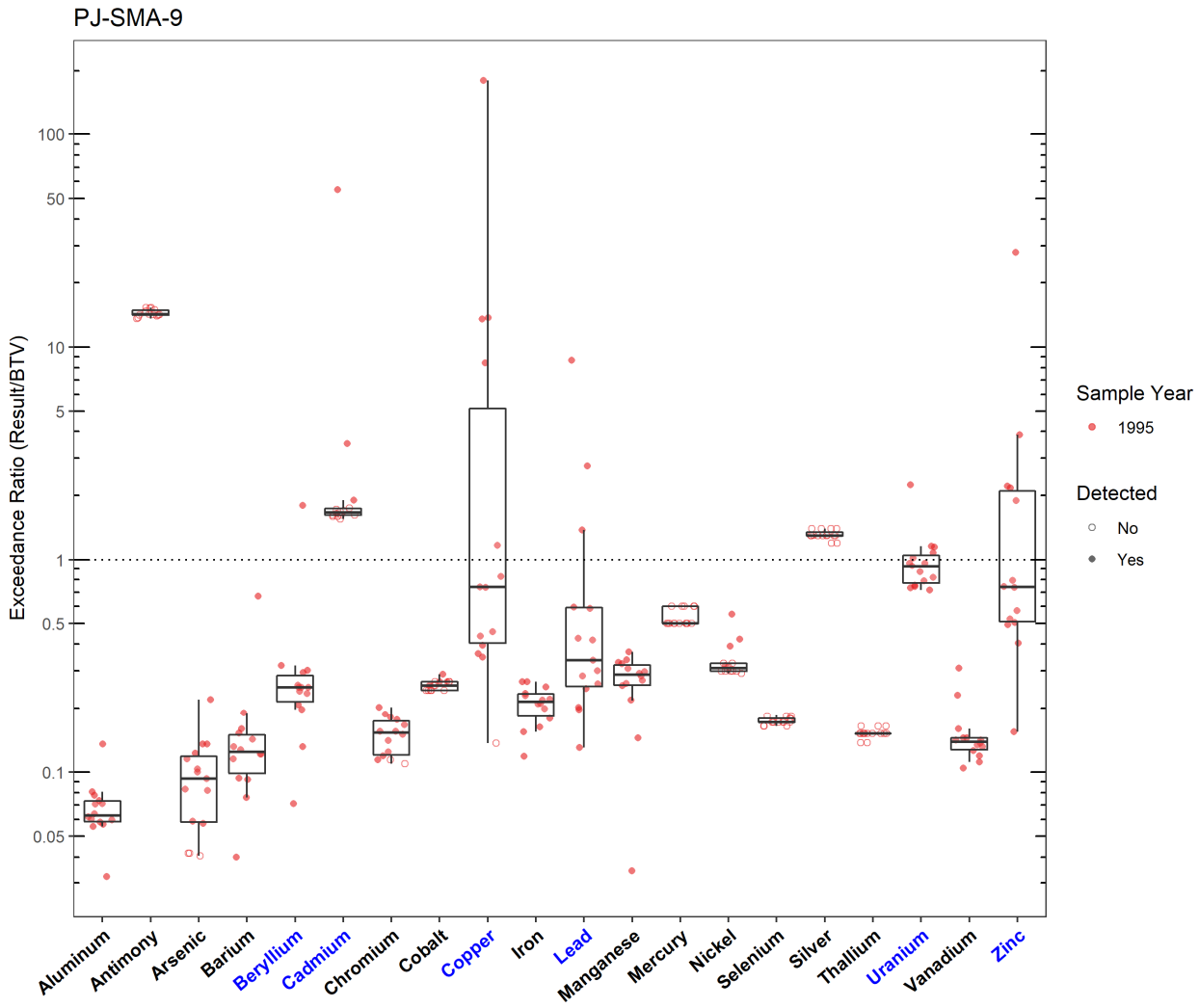

Figure 149.3-1 Inorganics Analytical Results from Soil Samples Associated with PJ-SMA-9

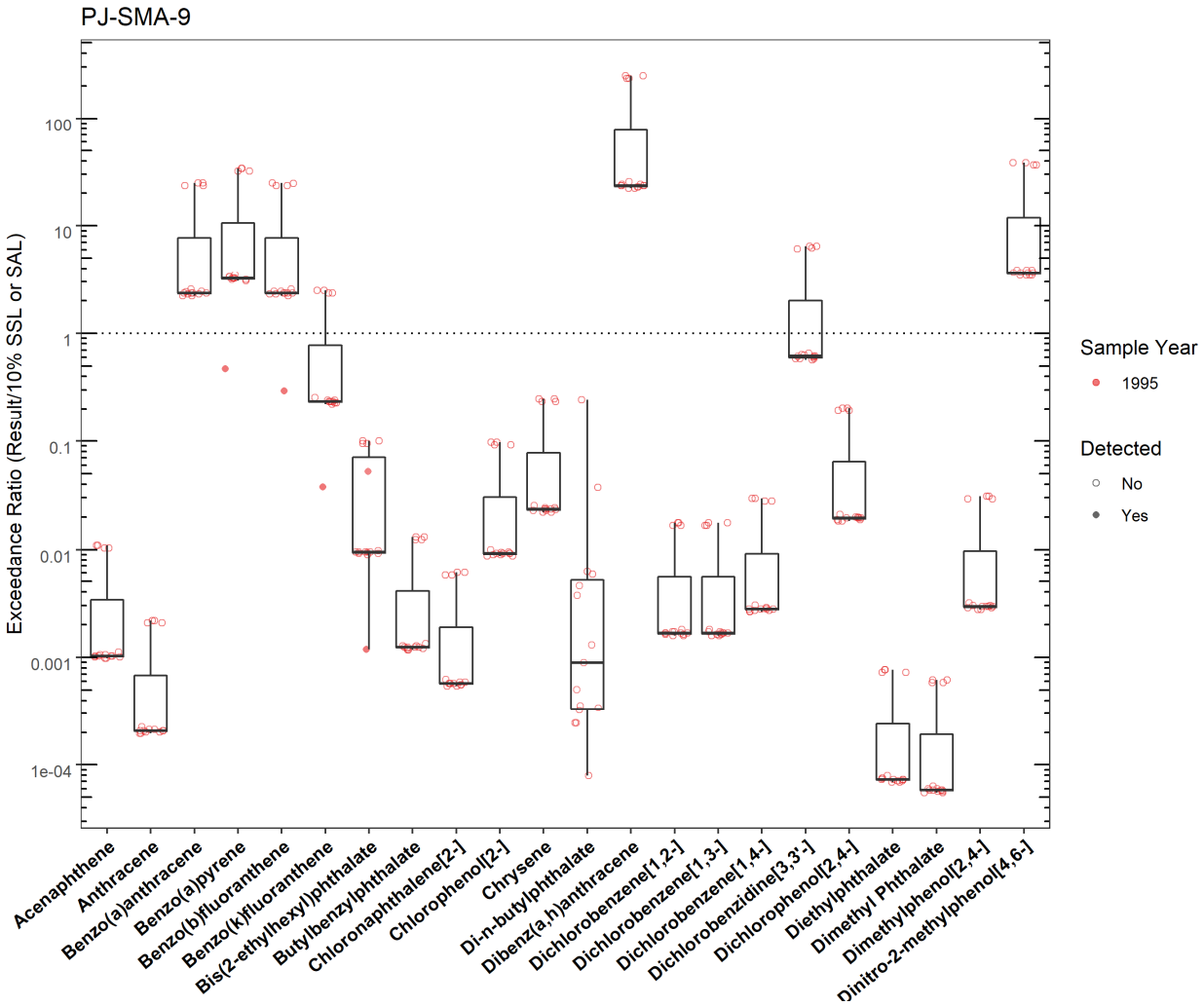

Figure 149.3-2 Organics Analytical Results from Soil Samples Associated with PJ-SMA-9 (Plot 1)

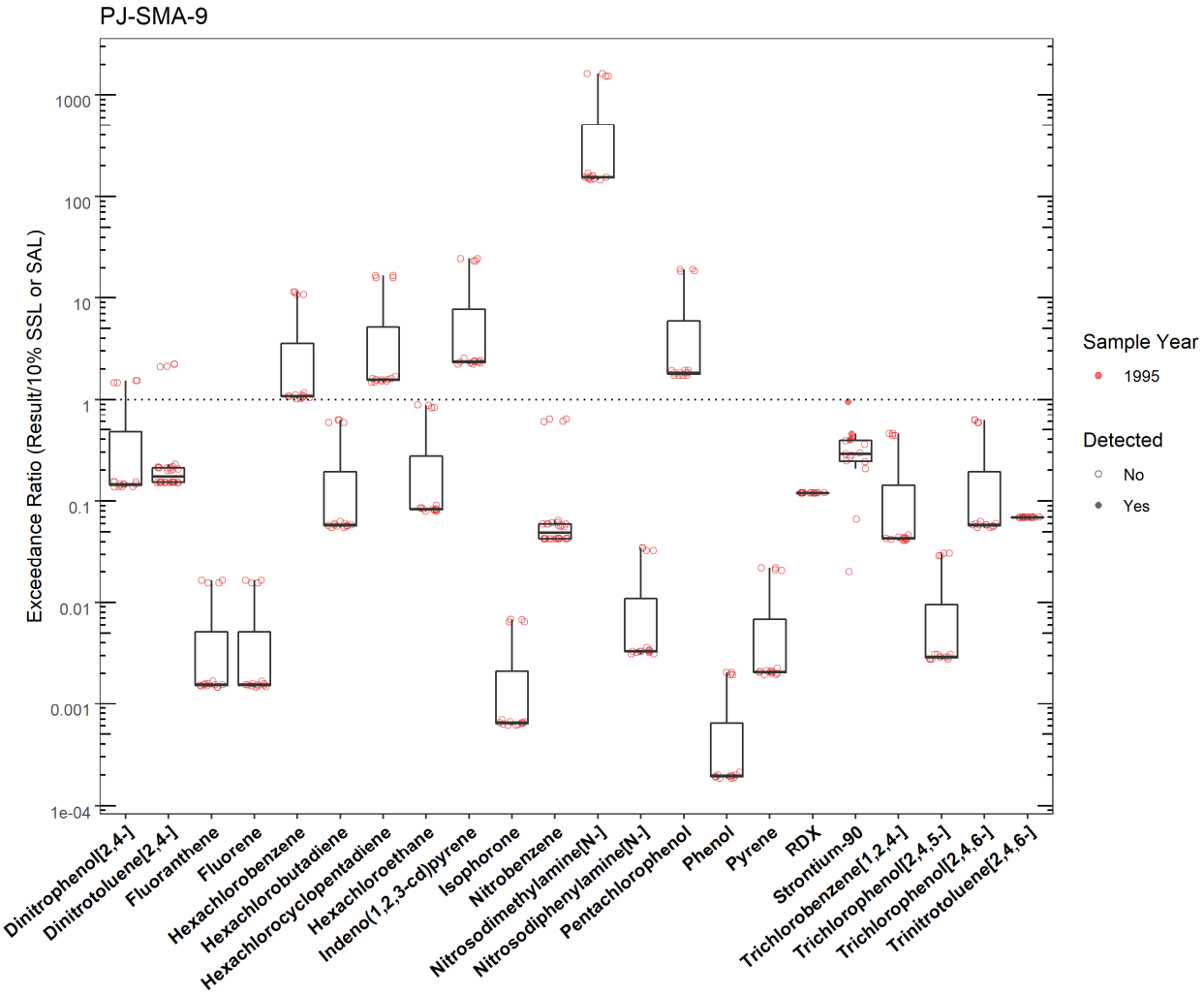

Figure 149.3-3 Organics Analytical Results from Soil Samples Associated with PJ-SMA-9 (Plot 2)

PJ-SMA-9

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Beryllium	PJ-SMA-9	Be	Y	BTV	1.83	3.30	1995-06-21
Cadmium	PJ-SMA-9	Cd	Y	BTV	0.400	22.0	1995-06-21
Copper	PJ-SMA-9	Cu	Y	BTV	14.7	2650	1995-06-21
Lead	PJ-SMA-9	Pb	Y	BTV	22.3	193	1995-06-21
Uranium	PJ-SMA-9	U	Y	BTV	1.82	4.08	1995-06-21
Zinc	PJ-SMA-9	Zn	Y	BTV	48.8	1360	1995-06-21

Figure 149.3-4 Screening-Level Exceedances from Soil Samples Associated with PJ-SMA-9

149.4 Stormwater Evaluation

149.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective action stormwater sample was collected in July 2021. Analytical results from that sample are presented in Figures 149.4-1 through 149.4-4.

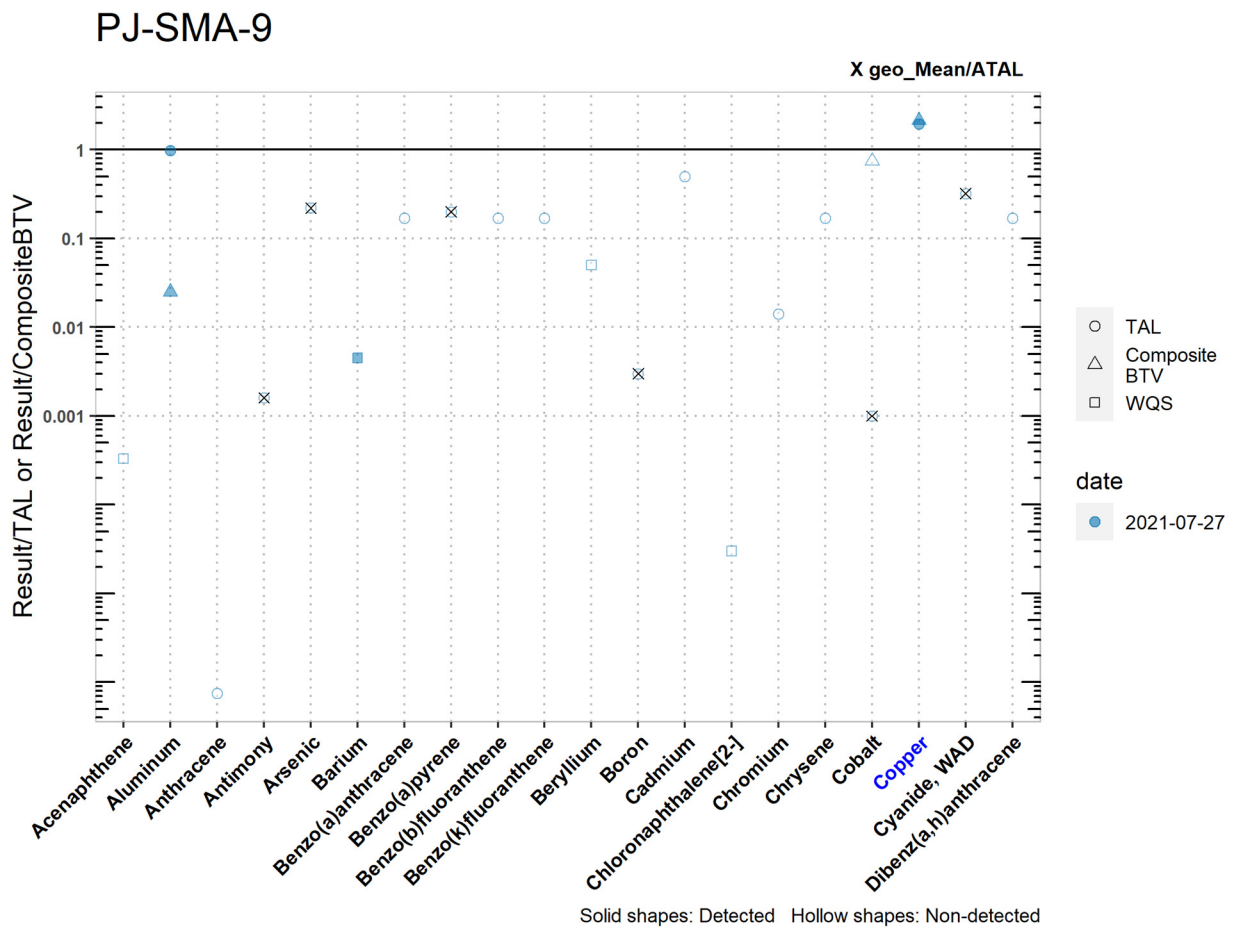

Figure 149.4-1 Analytical Results from Stormwater Sample, PJ-SMA-9 (Plot 1)

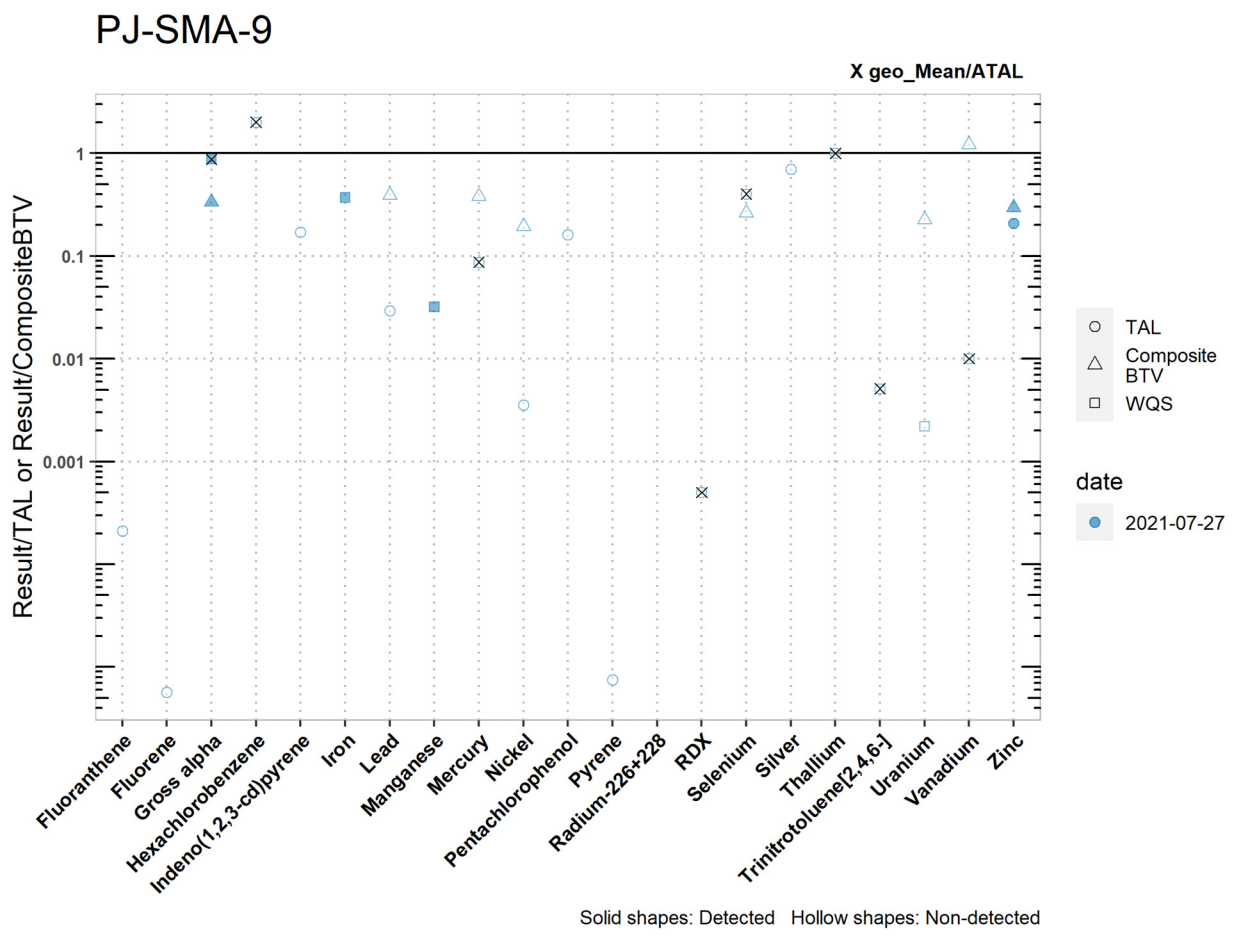

Figure 149.4-2 Analytical Results from Stormwater Sample, PJ-SMA-9 (Plot 2)

PJ-SMA-9

	Acenaphthene	Aluminum	Anthracene	Antimony	Arsenic	Barium	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Beryllium	Boron	Cadmium	Chloronaphthalene [2-]	Chromium	Chrysene	Cobalt	Copper	Cyanide, WAD	Dibenz(a,h)anthracene
MQL	NA	2.5	0.064	1	0.5	NA	0.064	0.064	0.064	0.064	NA	100	1	NA	10	0.064	50	0.5	10	0.064
ATAL	NA	NA	NA	640	9	NA	NA	0.18	NA	NA	NA	5000	NA	NA	NA	NA	1000	NA	5.2	NA
MTAL	NA	664	NA	NA	340	NA	0.18	NA	0.18	0.18	NA	NA	0.595	NA	214	0.18	NA	4.35	22	0.18
Composite_BTV	NA	36900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.34	3.99	NA	NA
unit	ug/L	ug/L**	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2021-07-27 result	*0.0300*	647	*0.0300*	*1.00*	*2.00*	8.91	*0.0300*	*0.0300*	*0.0300*	*0.0300*	*0.200*	*15.0*	*0.300*	*0.0300*	*3.00*	*0.0300*	*1.00*	8.52	*1.67*	*0.0300*
2021-07-27 dT	NA	0.974	NA	NA	NA	0.0045	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.96	NA	NA
2021-07-27 dB	NA	0.0250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.14	NA	NA
geo_mean/ATAL	NA	NA	NA	0.0016	0.22	NA	NA	0.2	NA	NA	NA	0.0030	NA	NA	NA	NA	0.0010	NA	0.321	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
**SSC normalized unit is mg/kg

Figure 149.4-3 Analytical Results from Stormwater Samples, PJ-SMA-9 (Table 1)

PJ-SMA-9

	Fluoranthene	Fluorene	Gross alpha	Hexachlorobenzene	Indeno(1,2,3-cd)pyrene	Iron	Lead	Manganese	Mercury	Nickel	Pentachlorophenol	Pyrene	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Uranium	Vanadium	Zinc
MQL	0.064	0.064	NA	5	0.064	NA	0.5	NA	0.005	0.5	5	0.064	NA	NA	5	0.5	0.5	NA	NA	50	20
ATAL	NA	NA	15	0.0029	NA	NA	NA	NA	0.77	NA	NA	NA	30	200	5	NA	0.47	20	NA	100	NA
MTAL	140	5300	NA	NA	0.18	NA	17.2	NA	NA	170	19	4000	NA	NA	20	0.41	NA	NA	NA	NA	53.9
Composite_BTV	NA	NA	56.1	NA	NA	NA	1.28	NA	0.177	3.10	NA	NA	5.12	NA	7.66	NA	NA	NA	0.298	0.829	37.9
unit	ug/L	ug/L	pCi/L*	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L*	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2021-07-27 result	*0.0300*	*0.0300*	13.1	*0.00710*	*0.0300*	373	*0.500*	35.2	*0.0670*	*0.600*	*3.00*	*0.0300*	*NA*	*0.101*	*2.00*	*0.300*	*0.600*	*0.101*	*0.0670*	*1.00*	11.2
2021-07-27 dT	NA	NA	0.87	NA	NA	0.37	NA	0.032	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.208
2021-07-27 dB	NA	NA	0.334	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.296
geo_mean/ATAL	NA	NA	0.87	2	NA	NA	NA	NA	0.087	NA	NA	NA	NA	0.00050	0.40	NA	1	0.0051	NA	0.010	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
*SSC normalized unit is pCi/g

Figure 149.4-4 Analytical Results from Stormwater Samples, PJ-SMA-9 (Table 2)

149.4.2 Assessment Unit and Stream Impairments

PJ-SMA-9 drains to Pajarito Canyon (Twomile Canyon to 500 m ds of Arroyo de la Delfe), which has impairments for dissolved silver, dissolved copper, PCBs, and adjusted gross alpha. The metals impairments may be Site-related, based on Site history.

149.5 Site-Specific Demonstration

149.5.1 Soil Data Summary

Decision-level data are not available for SWMU 40-006(b).

149.5.2 Stormwater Data Summary

Copper exceeded the TAL and BTV.

149.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related constituents of concern were analyzed for in past samples.

149.5.4 Sampling and Analysis Plan

Table 149.5-1 is the proposed SAP for PJ-SMA-9.

Table 149.5-1 Proposed SAP, PJ-SMA-9

Monitoring Constituent	Background for Monitoring
Dissolved copper (1) and silver (1)	Impairment, Site history, and stormwater data
Tetrachlorodibenzodioxin [2,3,7,8-]	Site history
SVOCs	Site history (PAHs)
DOC	Permit requirement
SSC	Permit requirement

150.0 PJ-SMA-9.2

Associated Sites	40-001(c)
Receiving Water	Pajarito Canyon
Drainage Area	TBD
Landscape Characteristics	TBD
Consent Order Site Status	SWMU 40-001(c): In Progress
2010 Administratively Continued Permit Final Status	New SMA, not on 2010 Permit
2016–2018 SIP Actions	Based on the November 2017 field visit for 2M-SMA-2.5 which monitors discharge area of SWMU 40-001(c) to the north, it was determined that the current sampling location did not address the former discharge area south of the septic tank. Therefore, a new SMA (PJ-SMA-9.2) will be created to address the former discharge area (leach field and cliff edge).
2022 Permit Status	Active Monitoring

150.1 2010 Administratively Continued Permit Summary

No administratively continued permit monitoring was conducted at PJ-SMA-9.2.

150.2 Site History

40-001(c) (2/18/2021)

SWMU 40-001(c) is an active septic system consisting of a septic tank (structure 40-25) located approximately 25 ft east of building 40-11, and inlet and outlet drainlines, two former outfalls, and a leach field at TA-40. Constructed of reinforced concrete, the septic tank measures 4 ft wide × 7 ft long × 6 ft deep, and has a capacity of 540 gal. The septic system was installed in 1950 and serves building 40-11, which houses changing rooms and restrooms. Operators at TA-40 firing sites change into Laboratory-provided protective clothing. Originally, the septic tank discharged through an outlet drainline to the northeast to Twomile Canyon as shown in engineering drawing AB1019 (pg. 2 of 2), as-built drawing ENG-C 1300 (pg. 1 of 6), and a 1988 Site photograph. In 1951, the 6-in.-diameter VCP outlet drainline was rerouted to discharge south to Upper Pajarito Canyon as shown in as-built drawing ENG-C 1300 (pg. 1 of 6) and the 1975 Zia Company Drawing for TA-40 (sheet N-1). In 1988, the septic tank outlet drainline was again rerouted; this time to discharge to a leach field constructed south of the septic tank as shown in engineering drawings ENG-C 45511 (pg. 1 of 5) and AB1019 (pg. 2 of 2). The septic tank is currently active and registered with the NMED.

For investigation activities refer to “Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1” (LANL 2011, 111794).

150.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 150.2-1.

Table 150.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
40-001(c)	Septic system	Metals, inorganic and organic chemicals, HE

150.3 Consent Order Soil Data

Decision-level data are not available for SWMU 40-001(c).

150.4 Stormwater Evaluation

150.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the SMA.

150.4.2 Assessment Unit and Stream Impairments

PJ-SMA-9.2 drains to Pajarito Canyon (Twomile Canyon to 500 m ds of Arroyo de la Delfe), which has impairments for dissolved silver, dissolved copper, PCBs, and adjusted gross alpha. The metal and PCBs impairments may be Site-related, based on Site history.

150.5 Site-Specific Demonstration

150.5.1 Soil Data Summary

Decision-level data are not available for SWMU 40-001(c).

150.5.2 Stormwater Data Summary

No confirmation-monitoring data.

150.5.3 2022 Permit Status

The SMA is in active monitoring. A confirmation-monitoring sample has not been collected.

150.5.4 Sampling and Analysis Plan

Table 150.5-1 is the proposed SAP for PJ-SMA-9.2.

Table 150.5-1 Proposed SAP, PJ-SMA-9.2

Monitoring Constituent	Background for Monitoring
Dissolved metals	Impairments and Site history
Total PCBs	Impairments and Site history (organics)
Total aluminum	Site history (metals)
Total mercury, selenium and iron	Site history (metals)
SVOCs	Site history (organics)
HE	Site history
DOC	Permit requirement
SSC	Permit requirement

151.0 PJ-SMA-10

Associated Sites	40-006(a)
Receiving Water	Pajarito Canyon
Drainage Area	0.02 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 40-006(a): In Progress Deferred per Consent Order
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based in the November 2016 field visit and post-visit meeting, the sampling location was moved in order to monitor the push-pile areas.
2022 Permit Status	Long-Term Stewardship per Permit Part I.C.3 criterion

151.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in July 2014. Analytical results from this sample initiated corrective action.

Following the October 2015 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2015, 600980), corrective-action monitoring was initiated, and samples were collected in July and August 2016. These samples were determined to not be representative of the Site. While developing the 2017 SAP, a decision was made to implement the monitoring location move recommended during the 2016 SIP review and monitoring was reinitiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection, and corrective-action monitoring is ongoing until at least one confirmation sample is collected from this SMA.

151.2 Site History

40-006(a) (2/18/2021)

SWMU 40-006(a) is the location of a former firing site that constituted the southern portion of building 40-15 on the northern rim of Upper Pajarito Canyon, at the east end of Trap Door Site Road at TA-40. SWMU 40-006(a) is listed as deferred in Appendix A of the 2016 Consent Order; therefore, investigation of this Site is deferred until the Site is decommissioned.

The 1990 SWMU Report describes SWMU 40-006(a) as an active firing site consisting of an iron wall and firing bunker on two sides of a concrete pad to provide some confinement of shot debris constituting the southern portion of building 40-15 at TA-40. As-constructed drawing ENG-C 12214 (pg. 45 of 132), a 1950 aerial photograph, and the 2014 Orthographic GIS Layer show the firing site consisted of a 16-ft long × 8-ft wide reinforced concrete and steel firing chamber that allowed the observation of the test shots, a partially protected area on the south side of the building where shots were prepared, and a 10-ft long × 8-ft wide open firing concrete pad connected to the south end of the building where larger shots were fired. Beginning in 1950, the original firing site was used to test and develop detonators. Tests conducted at this Site have included detonator booster tests, which could use up to 85 lb of high explosives. After each shot, large pieces of debris were removed and disposed of, the open area south of building 40-15 is graded, and the sand and debris was pushed to the edge and slope side of Upper Pajarito Canyon as shown in the 2018 Orthographic GIS Layer, a 1988 site photograph(ERID-0020425), and the PRS website photograph. This practice created an approximately

15-ft high sand berm near the canyon edge. In late 2017 and early 2018, construction began on the 40-15 Chamber Upgrade Project, which expanded building 40-15 to the west, south, and east and fully replaced the firing site with a new enclosed firing chamber. Excavated soil from SWMU 40-006(a) was placed along Trap Door Site Road east of structure 40-15 and may have impacted portions of AOC 40-003(a). The boundary for SWMU 40-006(a) is now located within the current footprint of building 40-15. The SWMU 40-006(a) debris disposal area is located on the edge and slope side of the northern rim of Upper Pajarito Canyon directly south of building 40-15 and is depicted as an associated feature in GIS.

For recent Site activities refer to "Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1" (LANL 2011, 111794).

151.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 151.2-1.

Table 151.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
40-006(a)	Active firing site	Barium, copper, lead, thallium, PAHs, HE

151.3 Consent Order Soil Data

Decision-level data for SWMU 40-006(a) consist of results from samples collected in 1995. Analytical results from those samples are presented in Figures 151.3-1 through 151.3-4. The 2011 IWP (LANL 2011, 111794) states that investigation of the firing site is deferred per section IV.A.5.b and Table IV-2 of the 2005 Consent Order. The 2005 Consent Order was superseded by Appendix A in the 2016 Consent Order.

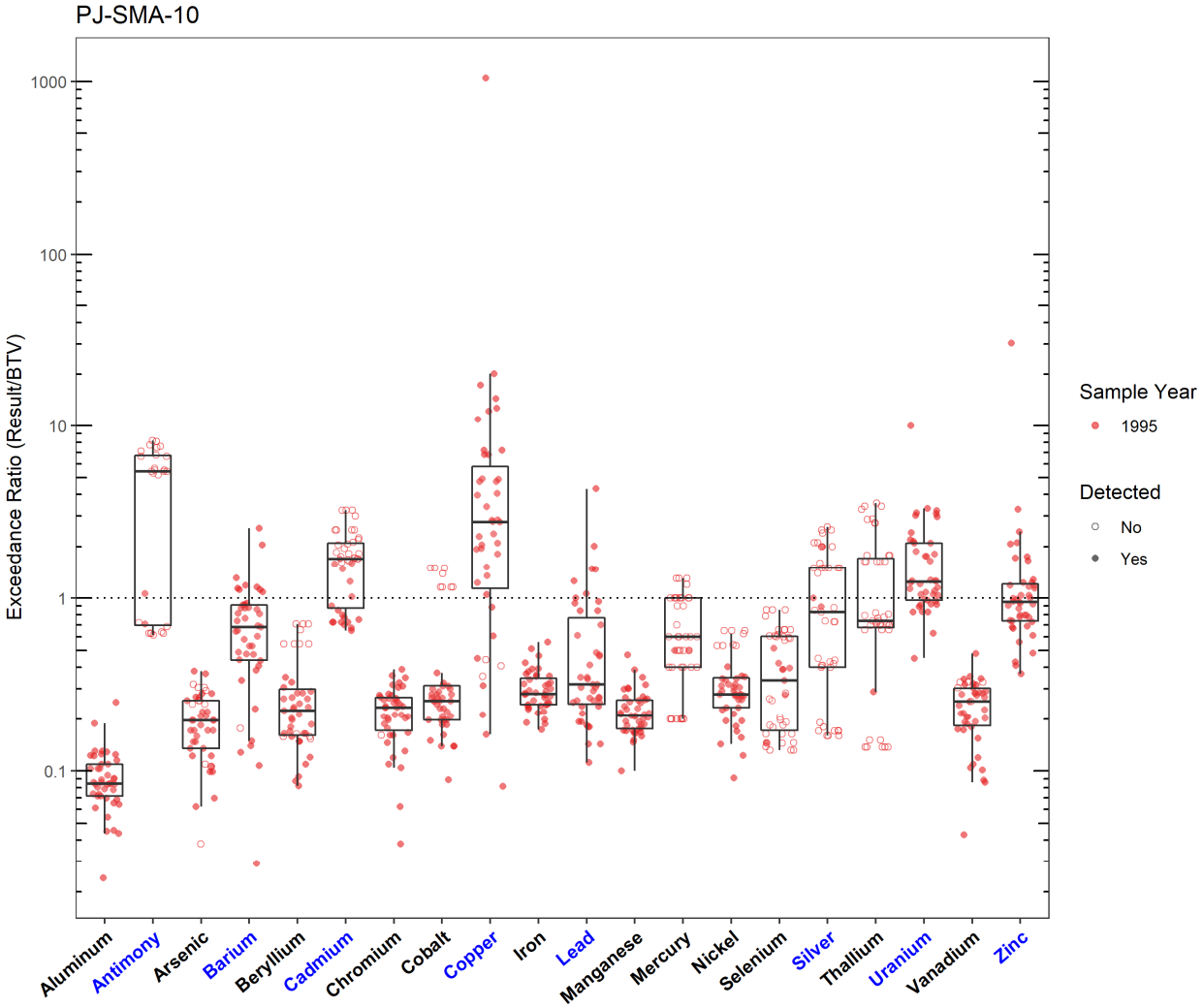

Figure 151.3-1 Inorganics Analytical Results from Soil Samples Associated with PJ-SMA-10

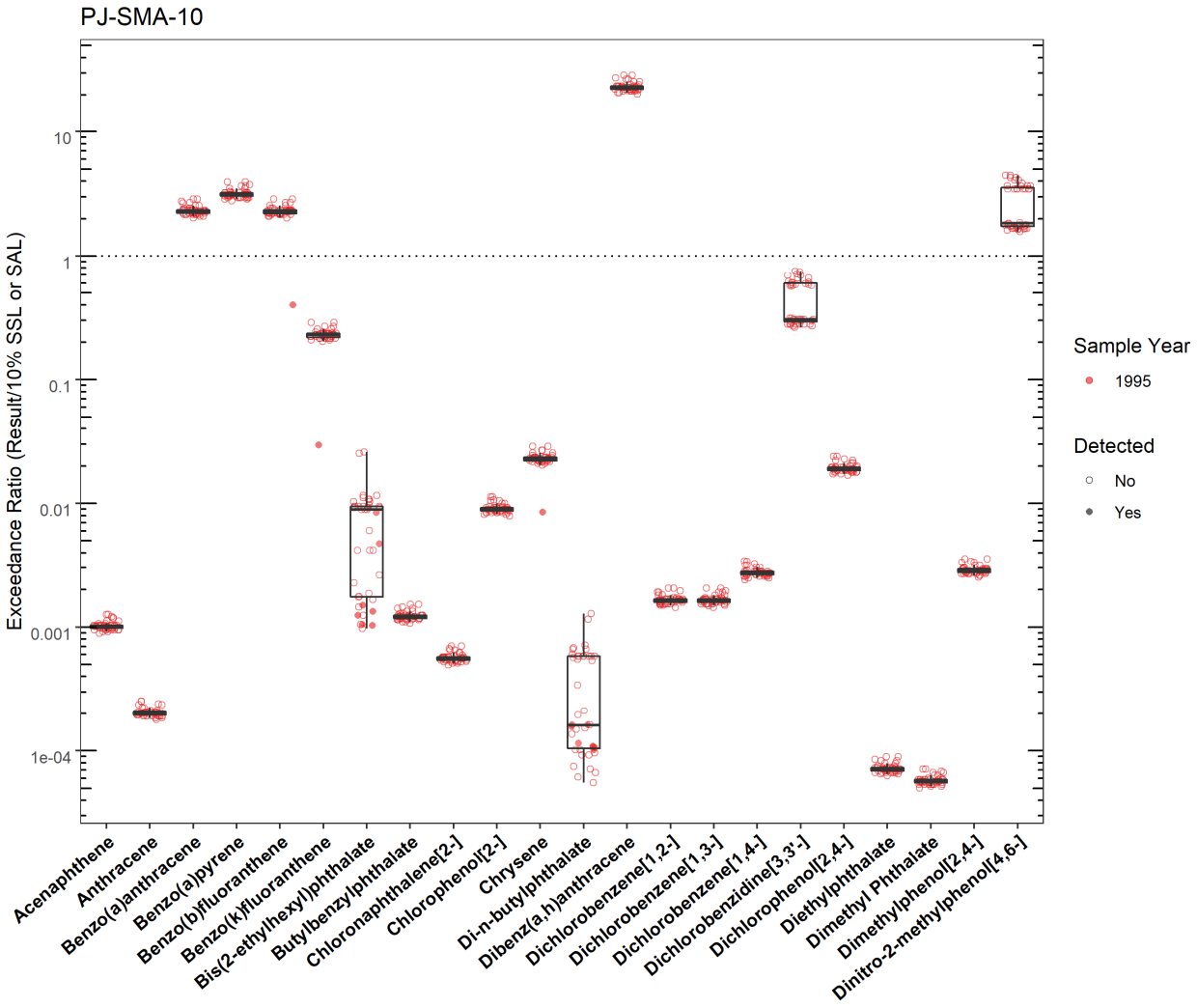

Figure 151.3-2 Organics Analytical Results from Soil Samples Associated with PJ-SMA-10 (Plot 1)

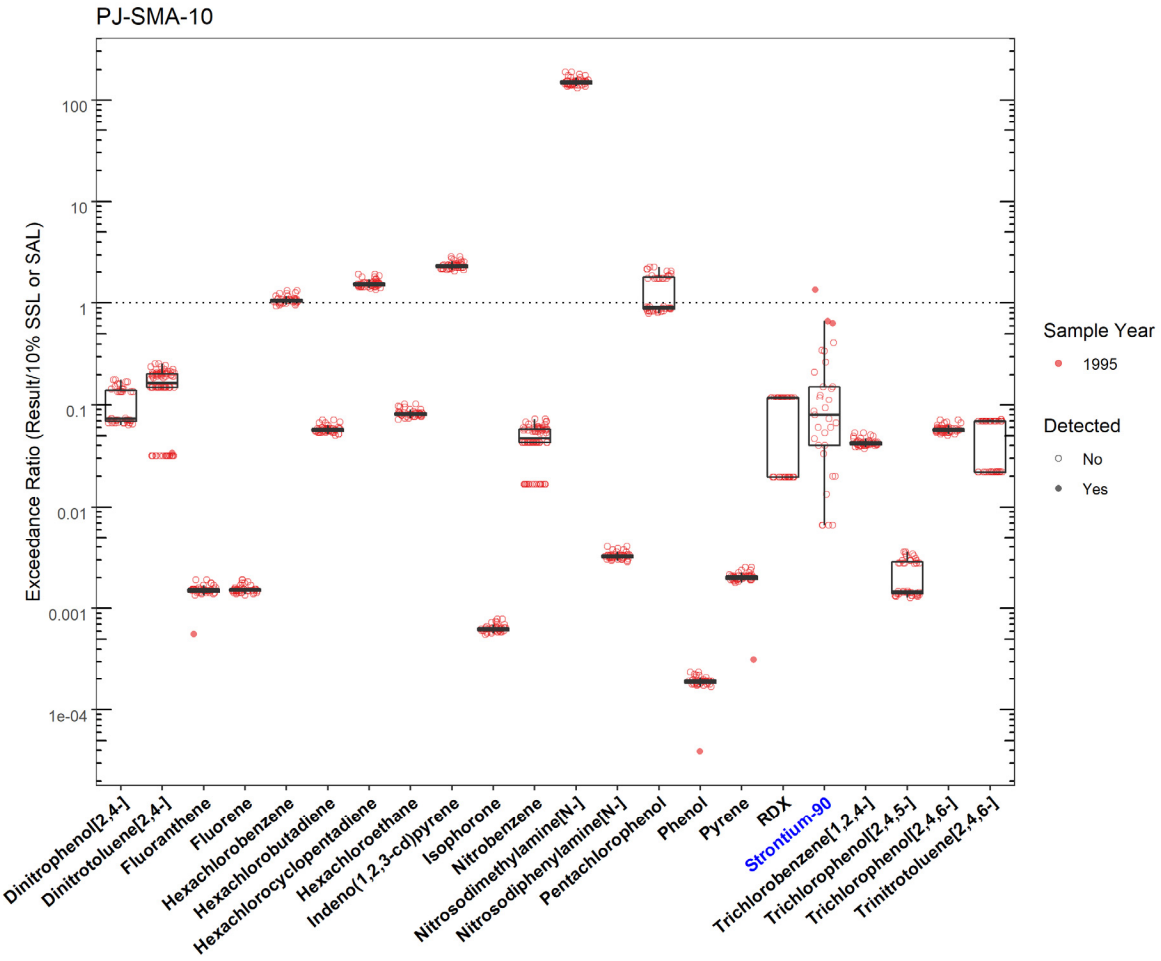

Figure 151.3-3 Organics Analytical Results from Soil Samples Associated with PJ-SMA-10 (Plot 2)

PJ-SMA-10

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	PJ-SMA-10	Sb	Y	BTV	0.830	0.880	1995-06-05
Barium	PJ-SMA-10	Ba	Y	BTV	295	751	1995-06-01
Cadmium	PJ-SMA-10	Cd	Y	BTV	0.400	0.680	1995-07-05
Copper	PJ-SMA-10	Cu	Y	BTV	14.7	15400	1995-06-01
Lead	PJ-SMA-10	Pb	Y	BTV	22.3	96.1	1995-06-05
Silver	PJ-SMA-10	Ag	Y	BTV	1.00	2.00	1995-06-01
Strontium-90	PJ-SMA-10	Sr-90	Y	SAL_0.1	1.50	2.01	1995-06-05
Uranium	PJ-SMA-10	U	Y	BTV	1.82	18.1	1995-06-05
Zinc	PJ-SMA-10	Zn	Y	BTV	48.8	1480	1995-06-01

Figure 151.3-4 Screening-Level Exceedances from Soil Samples Associated with PJ-SMA-10

151.4 Stormwater Evaluation

151.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the current monitoring location at the SMA.

151.4.2 Assessment Unit and Stream Impairments

PJ-SMA-10 drains to Pajarito Canyon (Twomile Canyon to 500 m ds of Arroyo de la Delfe), which has impairments for dissolved silver, dissolved copper, PCBs, and adjusted gross alpha. The copper impairment may be Site-related, based on Site history.

151.5 Site-Specific Demonstration

151.5.1 Soil Data Summary

The following parameters exceeded the applicable soil-screening value in soil data and have not yet been measured in stormwater: antimony, cadmium, copper, lead, silver, strontium-90, and zinc. The Site is deferred monitoring is not required until the Site status changes.

151.5.2 Stormwater Data Summary

No confirmation-monitoring data.

151.5.3 2022 Permit Status

All Sites within the SMA are deferred under the Consent Order. Therefore, the SMA is eligible for long-term stewardship pursuant to Part 1.C.3.

152.0 PJ-SMA-11

Associated Sites	40-003(a)
Receiving Water	Pajarito Canyon
Drainage Area	0.89 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 40-003(a): In Progress
2010 Administratively Continued Permit Final Status	Corrective Action Monitoring
2016–2018 SIP Actions	Based on the March 2018 meeting, it was determined that the current monitoring location does not monitor runoff from the western SWMU area but a sampler move was not recommended.
2022 Permit Status	Active Monitoring

152.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in September 2013. Analytical results from this sample initiated corrective action.

Following the August 2015 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2015, 600776), the sampler was relocated to a more representative location, and corrective-action monitoring was initiated. Stormwater samples were collected in August 2018 and July 2019. Analytical results from these samples initiated corrective action.

Following the June 2022 submittal of certification of enhanced control installation to EPA as a corrective action (N3B 2022, 701265), corrective-action monitoring was initiated. Since that time stormwater flow has not been sufficient for full-volume sample collection and corrective-action monitoring is ongoing until at least one confirmation sample is collected from this SMA.

152.2 Site History

40-003(a) (2/13/2018)

SWMU 40-003(a) consists of two former detonation sites located at TA-40. The first site was located approximately 450 ft east of structure 40-15. The detonation area is roughly circular and approximately 30 ft in diameter. Use of the Site for disposal of scrap HE and detonators began in the early 1950s; detonations were remotely controlled from structure 40-15. In 1958, several instances occurred where intact detonators and pieces of HE were released during detonations. Efforts to recover all the scattered detonators and HE were unsuccessful. Detonation activities at the first site ceased in the early 1960s when a second open detonation site was developed at a location further to the east.

The second former detonation site was located approximately 1,300 ft east of structure 40-15, within a natural amphitheater at the end of an unnamed dirt road. At the second site, scrap explosive materials were detonated and controlled remotely from structure 40-15. The detonation area measured approximately 90 ft (east-west) × 110 ft (north-south). After each detonation, scattered debris was picked up and transported to an appropriate waste disposal site. Rock rubble and crushed tuff that sloughed from the amphitheater wall was pushed to the south, creating an area of fill that extended nearly to the edge of Pajarito Canyon. The second detonation site was later operated under RCRA

interim status. All detonation operations ceased in 1985. The interim status open detonation area underwent RCRA closure from 1992 to 1994. The closure report was approved by NMED in August 1995.

The 1990 SWMU Report and the Operable Unit 1111 RCRA RFI Work Plan both describe SWMU 40-003(a) as being located 450 ft east of structure 40-15 and state that a RCRA closure plan was being developed for the Site. Both documents mistakenly identify the location 450 ft east of structure 40-15 as undergoing RCRA closure. The 1991 Final Closure Plan was developed for the second detonation site located 1,300 ft east of structure 40-15 and specifically states that the first detonation site located 450 ft east of structure 40-15 would not be addressed under RCRA closure. The first detonation site was omitted from the closure because its period of use occurred prior to RCRA regulation; therefore the Site is subject to Consent Order requirements.

For investigation activities refer to "Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1" (LANL 2011, 111794).

152.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 152.2-1.

Table 152.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
40-003(a)	Scrap burn site/open detonation	Barium, lead, thallium, PAHs, HE

152.3 Consent Order Soil Data

Decision level data are not available for SWMU 40-003(a).

152.4 Stormwater Evaluation

152.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected in the current stage at the SMA.

152.4.2 Assessment Unit and Stream Impairments

PJ-SMA-11 drains to Pajarito Canyon (Twomile Canyon to 500 m ds of Arroyo de la Delfe), which has impairments for dissolved silver, dissolved copper, PCBs, and adjusted gross alpha. The impairments are not likely Site-related, based on Site history.

152.5 Site-Specific Demonstration

152.5.1 Soil Data Summary

Decision level data are not available for SWMU 40-003(a).

152.5.2 Stormwater Data Summary

Copper exceeded the TAL and BTV in the previous monitoring stage. Gross alpha exceeded the TAL and will not be added for future monitoring.

152.5.3 2022 Permit Status

The SMA is in active monitoring. A confirmation-monitoring sample has not been collected in the current monitoring stage.

152.5.4 Sampling and Analysis Plan

Table 152.5-1 is the proposed SAP for PJ-SMA-11.

Table 152.5-1 Proposed SAP, PJ-SMA-11

Monitoring Constituent	Background for Monitoring
HE	Site history
SVOC	Site history (PAHs)
Dissolved copper	Stormwater data
DOC	Permit requirement
SSC	Permit requirement

153.0 PJ-SMA-11.1

Associated Sites	40-003(b)
Receiving Water	Pajarito Canyon
Drainage Area	1.53 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	AOC 40-003(b): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the March 2018 field visit, the current SMA sampling location and boundary were agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

153.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in September 2013. Analytical results from this sample initiated corrective action.

Following the August 2015 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2015, 600776), corrective-action monitoring was initiated and a stormwater sample was collected in August 2021. Corrective-action stormwater monitoring is ongoing until a second confirmation sample is collected from this SMA.

153.2 Site History

40-003(b) (2/15/2018)

AOC 40-003(b) is a former burn site located approximately 1,400 ft east of building 40-15 at TA-40. The Site is adjacent to the second former open detonation site associated with SWMU 40-003(a). The burn site consists of three former small burning areas (burn cage locations) and a burn pit. Materials burned consisted of HE-contaminated combustibles, including rags, paper, wood, and glassware. From 1960 to 1985, a wire burn cage measuring 4 ft wide × 4 ft long × 5 ft high and equipped with a steel-plate floor was used at three different locations. The burn cage was used to contain burning materials and to prevent wastes from being windblown before and during burning activities. Kerosene was poured over the stacked waste, and burning was initiated using explosive detonators fired remotely from building 40-15. The burn cage locations operated as a hazardous waste thermal treatment unit under RCRA interim status from 1980 until operations ceased in 1985. The burn cage locations underwent RCRA closure from 1992 to 1994. The closure report was approved by NMED in August 1995.

The former burn pit was located between the two former northern burn cage locations and measured approximately 12 ft wide × 50 ft long × 12 ft deep. Burn pit operations began in 1961 and ceased sometime before 1977. Aerial photographs showed the entire area, including the burn pit had been backfilled and covered by 1976. The burn pit was omitted from the RCRA closure because its period of use occurred before 1980 and; therefore, prior to RCRA regulation.

For investigation activities refer to “Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1” (LANL 2011, 111794).

153.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 153.2-1.

Table 153.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
40-003(b)	Burning area	Barium, lead, thallium, tungsten, dioxins/furans, PAHs, HE

153.3 Consent Order Soil Data

Decision-level data are not available for AOC 40-003(b).

153.4 Stormwater Evaluation

153.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective action stormwater sample was collected in August 2021. Analytical results from that sample are presented in Figure 153.4-1 and 153.4-2.

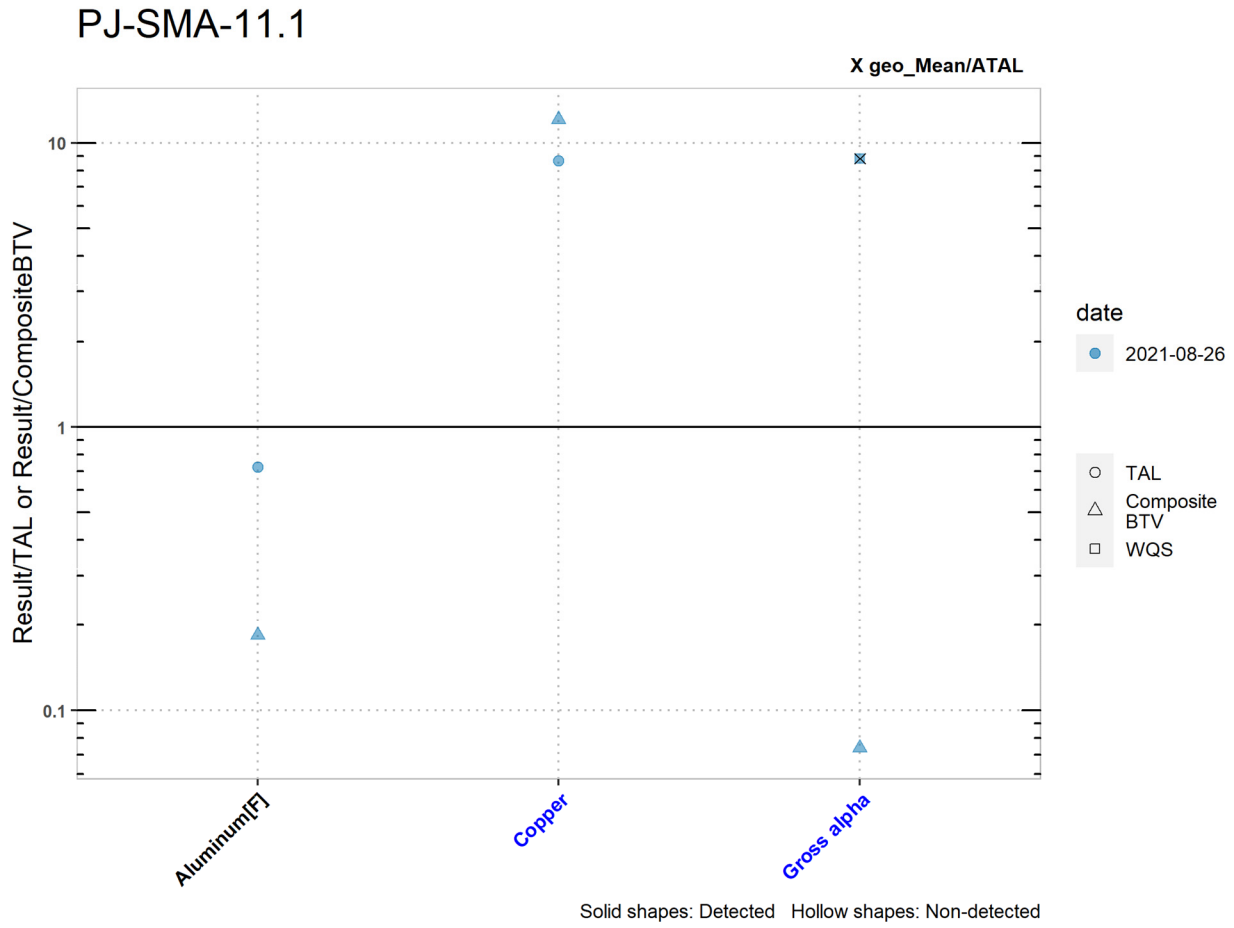

Figure 153.4-1 Analytical Results from Stormwater Sample, PJ-SMA-11.1 (Plot)

PJ-SMA-11.1

	Aluminum [F]	Copper	Gross alpha
MQL	2.5	0.5	NA
ATAL	NA	NA	15
MTAL	750	4.35	NA
Composite_BTV	2950	3.12	57.2
unit	ug/L**	ug/L	pCi/L*
2021-08-26 result	542	37.6	132
2021-08-26 dT	0.723	8.64	8.8
2021-08-26 dB	0.184	12.1	0.0740
geo_mean/ATAL	NA	NA	8.8

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
*SSC normalized unit is pCi/g **SSC normalized unit is mg/kg

Figure 153.4-2 Analytical Results from Stormwater Sample, PJ-SMA-11.1 (Table)

153.4.2 Assessment Unit and Stream Impairments

PJ-SMA-11.1 drains to Pajarito Canyon (Twomile Canyon to 500 m ds of Arroyo de la Delfe), which has impairments for dissolved silver, dissolved copper, PCBs, and adjusted gross alpha. The impairments are not likely Site-related.

153.5 Site-Specific Demonstration

153.5.1 Soil Data Summary

Decision-level data are not available for AOC 40-003(b).

153.5.2 Stormwater Data Summary

Copper exceeded the TAL and BTV and will be added to the SAP. Gross alpha exceeded the TAL but not the BTV, so it will not be added to the SAP.

153.5.3 2022 Permit Status

The SMA is in active monitoring. A second confirmation-monitoring sample has not been collected in this monitoring stage.

153.5.4 Sampling and Analysis Plan

Table 153.5-1 is the proposed SAP for PJ-SMA-11.1.

Table 153.5-1 Proposed SAP, PJ-SMA-11.1

Monitoring Constituent	Background for Monitoring
HE	Site history
Tetrachlorodibenzodioxin[2,3,7,8-]	Site history
SVOCs	Site history
Dissolved copper (1)	Stormwater data
DOC	Permit requirement
SSC	Permit requirement

154.0 PJ-SMA-13.7

Associated Sites	18-010(b)
Receiving Water	Pajarito Canyon
Drainage Area	29.86 acres
Landscape Characteristics	4% impervious, 96% pervious
Consent Order Site Status	AOC 18-010(b): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the July 2017 field visit, the current SMA sampling location and boundary were agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

154.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in September 2011. Analytical results from these samples initiated corrective action.

Following the July 2013 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2013, 244386), the sampler was relocated to a more representative location, and corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection and corrective-action monitoring is ongoing until at least one confirmation sample is collected from this SMA.

154.2 Site History

18-010(b) (1/5/2018)

AOC 18-010(b) is an outfall that receives stormwater runoff from an asphalt-paved drainage ditch running southward along the west side of the paved area, west of former building 18-30 in TA-18. The outfall discharges to a flat, grassy area at the fence southwest of former building 18-30. The discharge point is approximately 25 ft north of the stream channel in Pajarito Canyon (AOC C-00-011). The date this outfall became operational is unknown, but it is likely that the outfall has been operational from the time former building 18-30 was constructed in 1951.

Former building 18-30 served as the main administrative building at TA-18, and was constructed in 1951. Building 18-30 also housed three control rooms with systems for remote nuclear criticality research, a welding shop, machine shops, laboratory space, darkrooms (Rooms 120A and 120B) with floor drains and piping to an outfall [SWMU 18-012(b)]. No radioactive liquids were ever present in former building 18-30. Building 18-30 underwent D&D in 2011 and 2012.

For investigation activities refer to “Investigation Work Plan for Lower Pajarito Canyon Aggregate Area, Revision 1” (LANL 2010, 111328).

154.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 154.2-1.

Table 154.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
18-010(b)	Outfall	Lead, uranium

154.3 Consent Order Soil Data

Decision-level data are not available for AOC 18-010(b).

154.4 Stormwater Evaluation

154.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the current monitoring location at the SMA.

154.4.2 Assessment Unit and Stream Impairments

PJ-SMA-13.7 drains to Pajarito Canyon (lower LANL boundary to Twomile Canyon), which has impairments for total recoverable cyanide, PCBs, adjusted gross alpha, total aluminum, and dissolved copper. The adjusted gross alpha impairment may be Site-related, based on Site history.

154.5 Site-Specific Demonstration

154.5.1 Soil Data Summary

Decision-level data are not available for AOC 18-010(b).

154.5.2 Stormwater Data Summary

No confirmation-monitoring data.

154.5.3 2022 Permit Status

The SMA is in active monitoring. A confirmation-monitoring sample has not been collected at the current location.

154.5.4 Sampling and Analysis Plan

Table 154.5-1 is the proposed SAP for PJ-SMA-13.7.

Table 154.5-1 Proposed SAP, PJ-SMA-13.7

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history
Dissolved lead and uranium	Site history
DOC	Permit requirement
SSC	Permit requirement

155.0 PJ-SMA-14.2

Associated Sites	18-012(b)
Receiving Water	Pajarito Canyon
Drainage Area	0.60 acres
Landscape Characteristics	22% impervious, 78% pervious
Consent Order Site Status	SWMU 18-012(b): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the July 2017 field visit, the current SMA sampling location and boundary were agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

155.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, baseline monitoring was initiated. To date, stormwater flow has not been sufficient for full-volume sample collection and monitoring is ongoing until one confirmation sample is collected from this SMA.

155.2 Site History

18-012(b) (12/6/2017)

SWMU 18-012(b) is a former outfall that received discharge from several sources in former buildings 18-30 and 18-31 at TA-18. The outfall is located south of former building 18-31 approximately 20 ft north of the main drainage channel in Pajarito Canyon (AOC C-00-011) and was active from early 1950s when the buildings were constructed until they were decommissioned in 2008. The outfall received discharges from an associated sump [SWMU 18-001(c)], floor drains, sinks, stormwater from the east-wing roof of former building 18-31, and a welding quench tank in former building 18-30. The outfall also received discharges from machine shop floor drains and stormwater from the roof of former building 18-31. Discharge from both buildings was transported to the outfall via a series of 4-in. polyethylene pipes connected to the sources within the buildings. The drainline that previously exited the southeast corner of former building 18-31 flowed into the SWMU 18-003(e) septic system and was not associated with SWMU 18-012(b). Former building 18-30 served as the main administrative building at TA-18, and was constructed in 1951. Building 18-30 also housed three control rooms with systems for remote nuclear criticality research, a welding shop, machine shops, laboratory space, and darkrooms. Former building 18-31 was the main utility building for TA-18 and was constructed in 1952. Buildings 18-30 and 18-31 underwent D&D in 2011 and 2012.

For investigation activities refer to “Investigation Work Plan for Lower Pajarito Canyon Aggregate Area, Revision 1” (LANL 2010, 111328).

155.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 155.2-1.

Table 155.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
18-012(b)	Outfall	Beryllium, silver, cyanide, polonium, uranium

155.3 Consent Order Soil Data

Decision-level data are not available for SWMU 18-012(b).

155.4 Stormwater Evaluation

155.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the SMA.

155.4.2 Assessment Unit and Stream Impairments

PJ-SMA-14.2 drains to Pajarito Canyon (lower LANL boundary to Twomile Canyon), which has impairments for total recoverable cyanide, PCBs, adjusted gross alpha, total aluminum, and dissolved copper. The cyanide and adjusted gross alpha impairments may be Site-related, based on Site history.

155.5 Site-Specific Demonstration

155.5.1 Soil Data Summary

Decision-level data are not available for SWMU 18-012(b).

155.5.2 Stormwater Data Summary

No confirmation-monitoring data.

155.5.3 2022 Permit Status

The SMA is in active monitoring. A confirmation-monitoring sample has not been collected.

155.5.4 Sampling and Analysis Plan

Table 155.5-1 is the proposed SAP for PJ-SMA-14.2.

Table 155.5-1 Proposed SAP, PJ-SMA-14.2

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history
Cyanide	Impairment and Site history
Dissolved silver, beryllium, and uranium	Site history
DOC	Permit requirement
SSC	Permit requirement

156.0 PJ-SMA-14.3

Associated Sites	18-003(e)
Receiving Water	Pajarito Canyon
Drainage Area	0.02 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 18-003(e): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the July 2017 field visit, the current SMA sampling location and boundary were agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

156.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, baseline monitoring was initiated. To date, stormwater flow has not been sufficient for full-volume sample collection and monitoring is ongoing until one confirmation sample is collected from this SMA.

156.2 Site History

18-003(e) (1/5/2018)

SWMU 18-003(e) is an inactive septic system consisting of a cylindrical septic tank (structure 18-40), inlet and outlet drainlines, a drain field, and a former outfall at TA-18. The septic tank is located approximately 50 ft southwest of former building 18-37 and approximately 50 ft east of building 18-29 (an historical log cabin). The septic tank is constructed of reinforced concrete and measures 6 ft in diameter × 6 ft deep. The septic system received sanitary waste from former building 18-31 (a utility building), former building 18-37 (a guard tower), former building 18-129 (a reactor subassembly building), former building 18-189 (an electronics building for site security), and former building 18-190 (the main guard station for TA-18). While in operation from 1951 to 1969, the septic system may have also received industrial waste from a sink in former building 18-28 (a warehouse). Septic tanks associated with SWMUs 18-003(g, h) (structure 18-43 and structure 18-152, respectively) may have also discharged to this septic system.

Effluent from the septic tank was discharged through the outlet drainline to a drain field consisting of four drainlines, each of which is approximately 40 ft long. The drainlines, which are 10 ft apart, merge at the distal end of the drain field and continue an estimated 100 ft to the south to the former outfall in the Pajarito Canyon drainage channel (AOC C-00-011). In 1969, sanitary waste lines from the buildings listed above were connected to the TA-18 sewer system that routed effluent to the sanitary sewage lagoons [SWMUs 18-001(a) and 18-001(b)]. At that time, the septic tank was backfilled with sand.

Buildings 18-31, 18-37, 18-129, 18-189, and 18-190 underwent D&D in 2011 and 2012. Building 18-29, the historical log cabin near the SWMU 18-003(e) septic system, is considered a contributing historical building as part of the planned Manhattan Project National Historical Park and the septic system is located within the planned Manhattan Project National Historical Park boundary.

For investigation activities refer to "Investigation Work Plan for Lower Pajarito Canyon Aggregate Area, Revision 1" (LANL 2010, 111328).

156.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 156.2-1.

Table 156.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
18-003(e)	Septic system	Beryllium, chromium, silver, cyanide, organic chemicals, uranium

156.3 Consent Order Soil Data

Decision-level data are not available for SWMU 18-003(e).

156.4 Stormwater Evaluation

156.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the SMA.

156.4.2 Assessment Unit and Stream Impairments

PJ-SMA-14.3 drains to Pajarito Canyon (lower LANL boundary to Twomile Canyon), which has impairments for total recoverable cyanide, PCBs, adjusted gross alpha, total aluminum, and dissolved copper. The cyanide, PCBs and adjusted gross alpha impairments may be Site-related, based on Site history.

156.5 Site-Specific Demonstration

156.5.1 Soil Data Summary

Decision-level data are not available for SWMU 18-003(e).

156.5.2 Stormwater Data Summary

No confirmation-monitoring data.

156.5.3 2022 Permit Status

The SMA is in active monitoring. A confirmation-monitoring sample has not been collected.

156.5.4 Sampling and Analysis Plan

Table 156.5-1 is the proposed SAP for PJ-SMA-14.3.

Table 156.5-1 Proposed SAP, PJ-SMA-14.3

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history
Cyanide	Impairment and Site history
Total PCBs	Impairment and Site history (organics)
Dissolved chromium, silver, beryllium, and uranium	Site history
SVOCs	Site history (organics)
DOC	Permit requirement
SSC	Permit requirement

157.0 PJ-SMA-14.4

Associated Sites	18-010(d)
Receiving Water	Pajarito Canyon
Drainage Area	1.56 acres
Landscape Characteristics	11% impervious, 89% pervious
Consent Order Site Status	AOC 18-010(d): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the July 2017 field visit, the current SMA sampling location and boundary were agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

157.1 2010 Administratively Continued Permit Summary

Following the April 2011 submittal of certification of baseline control installation to EPA, baseline monitoring was initiated. To date, stormwater flow has not been sufficient for full-volume sample collection and monitoring is ongoing until one confirmation sample is collected from this SMA.

157.2 Site History

18-010(d) (1/5/2018)

AOC 18-010(d) is an outfall that receives discharge in the form of sheet flow from a storm drainage collection area that drains the paved area northeast of former building 18-37 at TA-18. The outfall discharges to a flat graveled and grassy area southeast of former building 18-37 and west of building 18-258. The discharge point is approximately 100 ft north of the stream channel in Pajarito Canyon (AOC C-00-011). The date this outfall became operational is unknown, but it is likely that the outfall has been operational from the time former building 18-37 was constructed in 1951.

Former building 18-37 was an inactive guard station, constructed between 1949 and 1951. The structure consisted of 10-in.-thick concrete walls on a concrete slab. Former building 18-37 underwent D&D in 2011 and 2012.

For investigation activities refer to “Investigation Work Plan for Lower Pajarito Canyon Aggregate Area, Revision 1” (LANL 2010, 111328).

157.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 157.2-1.

Table 157.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
18-010(d)	Outfall	Lead, uranium

157.3 Consent Order Soil Data

Decision-level data are not available for AOC 18-010(d).

157.4 Stormwater Evaluation

157.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the SMA.

157.4.2 Assessment Unit and Stream Impairments

PJ-SMA-14.4 drains to Pajarito Canyon (lower LANL boundary to Twomile Canyon), which has impairments for total recoverable cyanide, PCBs, adjusted gross alpha, total aluminum, and dissolved copper. The adjusted gross alpha impairment may be Site-related, based on Site history.

157.5 Site-Specific Demonstration

157.5.1 Soil Data Summary

Decision-level data are not available for AOC 18-010(d).

157.5.2 Stormwater Data Summary

No confirmation-monitoring data.

157.5.3 2022 Permit Status

The SMA is in active monitoring. A confirmation-monitoring sample has not been collected.

157.5.4 Sampling and Analysis Plan

Table 157.5-1 is the proposed SAP for PJ-SMA-14.4.

Table 157.5-1 Proposed SAP, PJ-SMA-14.4

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history
Dissolved lead and uranium	Site history
DOC	Permit requirement
SSC	Permit requirement

158.0 PJ-SMA-14.6

Associated Sites	18-010(e)
Receiving Water	Pajarito Canyon
Drainage Area	0.12 acres
Landscape Characteristics	19% impervious, 81% pervious
Consent Order Site Status	AOC 18-010(e): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the July 2017 field visit, the current SMA sampling location and boundary were agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

158.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, baseline monitoring was initiated. To date, stormwater flow has not been sufficient for full-volume sample collection and monitoring is ongoing until one confirmation sample is collected from this SMA.

158.2 Site History

18-010(e) (1/5/2018)

AOC 18-010(e) is an outfall that receives discharge from a storm sewer drainage that drains the paved area between former building 18-28 and former building 18-147 at TA-18. The drainage enters a storm drain that runs southeast under the paved area west of former building 18-129 to a grating east of former building 18-190 and turns south. The drainage reaches the outfall south of former building 18-129 where stormwater is discharged to a small grassy gully leading to the main stream channel in Pajarito Canyon (AOC C-00-011). The outfall is located approximately 200 ft north of the Pajarito Canyon stream channel. The date this outfall became operational is unknown, but it is likely the outfall has been operational from the time former building 18-37 was constructed in 1951.

Former building 18-28 was a 40 ft × 110 ft prefabricated metal warehouse, and was constructed between 1949 and 1950. One end of this building was offices. Radiation work was conducted in the middle of the building. Former building 18-37 was an inactive guard station, constructed between 1949 and 1951. The structure consisted of 10-in.-thick concrete walls on a concrete slab. Former building 18-129 was the reactor sub-assembly building, constructed in 1962. Fixed sources were stored in Room 4A along with lead; there were also eight holes 10-12 ft deep in the concrete floor of Room 4A previously used for fuel rod storage. Former building 18-190 was the main guard station for TA-18, constructed in 1985. An addition on the west side of the building housed sumps and hydraulic pumps for the vehicle access gate. All four buildings underwent D&D in 2011 and 2012.

For investigation activities refer to “Investigation Work Plan for Lower Pajarito Canyon Aggregate Area, Revision 1” (LANL 2010, 111328).

158.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 158.2-1.

Table 158.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
18-010(e)	Outfall	Lead, uranium

158.3 Consent Order Soil Data

Decision-level data are not available for AOC 18-010(e).

158.4 Stormwater Evaluation

158.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected at the SMA.

158.4.2 Assessment Unit and Stream Impairments

PJ-SMA-14.6 drains to Pajarito Canyon (lower LANL boundary to Twomile Canyon), which has impairments for total recoverable cyanide, PCBs, adjusted gross alpha, total aluminum, and dissolved copper. The adjusted gross alpha impairment may be Site-related, based on Site history.

158.5 Site-Specific Demonstration

158.5.1 Soil Data Summary

Decision-level data are not available for AOC 18-010(e).

158.5.2 Stormwater Data Summary

No confirmation-monitoring data.

158.5.3 2022 Permit Status

The SMA is in active monitoring. A confirmation-monitoring sample has not been collected.

158.5.4 Sampling and Analysis Plan

Table 158.5-1 is the proposed SAP for PJ-SMA-14.6.

Table 158.5-1 Proposed SAP, PJ-SMA-14.6

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history
Dissolved lead and uranium	Site history
DOC	Permit requirement
SSC	Permit requirement

159.0 PJ-SMA-14.8

Associated Sites	18-012(a)
Receiving Water	Pajarito Canyon
Drainage Area	0.01 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 18-012(a): In Progress
2010 Administratively Continued Permit Final Status	Baseline Confirmation Complete
2016–2018 SIP Actions	Based on the July 2017 field visit, the current SMA sampling location and boundary were agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

159.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal of certification of baseline control installation to EPA, baseline stormwater samples were collected in July and August 2011. Analytical results from these samples had no TAL exceedances, and corrective action initiation was not required. Stormwater monitoring has not occurred since 2011.

159.2 Site History

18-012(a) (12/6/2017)

SWMU 18-012(a) is a former outfall for a combined industrial drain and storm sewer drain associated with former building 18-116 (Kiva 3) at TA-18. The drainlines that discharged to this outfall were connected to the building 18-116 roof drains, floor drains, and sinks. The outfall, identified during 1992 field inspections using a dye-trace test, is located approximately 120 ft northeast of former building 18-116 and approximately 150 ft from the main stream channel in Pajarito Canyon (AOC C-00-011). Former building 18-116 was constructed in 1960 and was used for uranium mockup tests for the Rover Program, a nuclear rocket propulsion program conducted at the Laboratory from 1955 to 1972. The date this outfall became operational is unknown, but it is likely that the outfall was used from the time building 18-116 was completed in 1960 until the building was decommissioned in 2008. Building 18-116 underwent D&D in 2011 and 2012.

For investigation activities refer to “Investigation Work Plan for Lower Pajarito Canyon Aggregate Area, Revision 1” (LANL 2010, 111328).

159.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 159.2-1.

Table 159.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
18-012(a)	Outfall	Beryllium, silver, plutonium-238, uranium

159.3 Consent Order Soil Data

Decision-level data are not available for SWMU 18-012(a).

159.4 Stormwater Evaluation

159.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Corrective-action stormwater samples were collected in July and August 2011. Analytical results from these samples are presented in Figures 159.4-1 and 159.4-2.

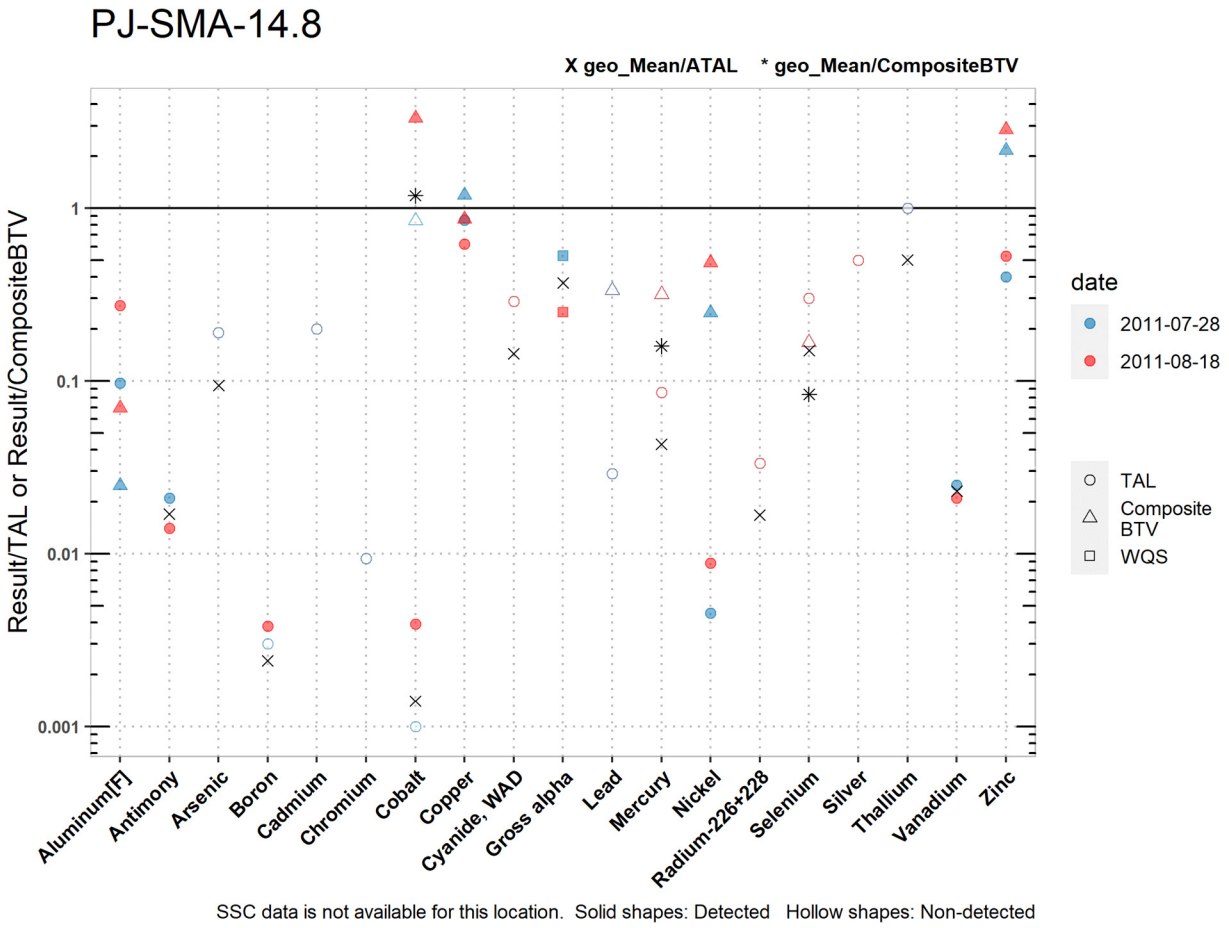

Figure 159.4-1 Analytical Results from Stormwater Samples, PJ-SMA-14.8 (Plot)

PJ-SMA-14.8

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Lead	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Vanadium	Zinc
MQL	2.5	1	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	5.2	15	NA	0.77	NA	30	5	NA	0.47	100	NA
MTAL	750	NA	340	NA	0.595	214	NA	4.35	22	NA	17.2	NA	170	NA	20	0.41	NA	NA	53.9
Composite_BTV	2950	NA	NA	NA	NA	NA	1.18	3.12	NA	57.2	1.50	0.208	3.10	4.21	8.98	NA	NA	NA	10.0
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
2011-07-28 result	72.9	13.6	*1.70*	*15.0*	*0.110*	*2.00*	*1.00*	3.70	*1.50*	7.91	*0.500*	*0.0660*	0.770	*1.00*	*1.50*	*0.200*	*0.450*	2.50	21.6
2011-07-28 dT	0.0972	0.021	NA	NA	NA	NA	NA	0.851	NA	0.53	NA	NA	0.00453	NA	NA	NA	NA	0.025	0.401
2011-07-28 dB	0.0247	NA	NA	NA	NA	NA	NA	1.19	NA	NA	NA	NA	0.248	NA	NA	NA	NA	NA	2.16
2011-08-18 result	205	8.80	*1.70*	19.1	*0.110*	*2.00*	3.90	2.70	*1.50*	3.81	*0.500*	*0.0660*	1.50	*1.00*	*1.50*	*0.200*	*0.450*	2.10	28.5
2011-08-18 dT	0.273	0.014	NA	0.0038	NA	NA	0.0039	0.621	NA	0.25	NA	NA	0.00882	NA	NA	NA	NA	0.021	0.529
2011-08-18 dB	0.0695	NA	NA	NA	NA	NA	3.31	0.865	NA	NA	NA	NA	0.484	NA	NA	NA	NA	NA	2.85
geo_mean/ATAL	NA	0.017	0.094	0.0024	NA	NA	0.0014	NA	0.144	0.37	NA	0.043	NA	0.0167	0.15	NA	0.5	0.023	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	1.18	NA	NA	NA	NA	0.159	NA	NA	0.0835	NA	NA	NA	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV, geo_mean/B=geo_mean/composite_BTV

Figure 159.4-2 Analytical Results from Stormwater Samples, PJ-SMA-14.8 (Table)

159.4.2 Assessment Unit and Stream Impairments

PJ-SMA-14.8 drains to Pajarito Canyon (lower LANL boundary to Twomile Canyon), which has impairments for total recoverable cyanide, PCBs, adjusted gross alpha, total aluminum, and dissolved copper. The adjusted gross alpha impairment may be Site-related, based on Site history.

159.5 Site-Specific Demonstration

159.5.1 Soil Data Summary

Decision-level data are not available for SWMU 18-012(a).

159.5.2 Stormwater Data Summary

No TAL exceedances in the two confirmation samples collected.

159.5.3 2022 Permit Status

The SMA is in active monitoring. Not all Site-related constituents of concern were analyzed for in past samples.

159.5.4 Sampling and Analysis Plan

Table 159.5-1 is the proposed SAP for PJ-SMA-14.8.

Table 159.5-1 Proposed SAP, PJ-SMA-14.8

Monitoring Constituent	Background for Monitoring
Dissolved beryllium and uranium	Site history
DOC	Permit requirement
SSC	Permit requirement

160.0 PJ-SMA-16

Associated Sites	27-002
Receiving Water	Pajarito Canyon
Drainage Area	3.04 acres
Landscape Characteristics	27% impervious, 73% pervious
Consent Order Site Status	SWMU 27-002: In Progress
2010 Administratively Continued Permit Final Status	Baseline Confirmation Complete
2016–2018 SIP Actions	Based on the July 2017 field visit, the current SMA sampling location and boundary were agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

160.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, baseline stormwater samples were collected in July 2011 and August 2013. Analytical results from these samples had no TAL exceedances, and corrective action initiation was not required. Stormwater monitoring has not occurred since 2013.

160.2 Site History

27-002 (1/5/2018)

SWMU 27-002 is an inactive firing site in Pajarito Canyon used between 1944 and 1947 in former TA-27. The Site consists of five former firing pits situated on either side of Pajarito Road, approximately 0.9 mi southeast of main area of TA-18. Former TA-27 is located within the boundary of TA-18. Firing Pit 1 is located in the grassy area approximately 100 ft south of the TA-36 fence. Firing Pits 2 and 3 are approximately 200 ft east of Firing Pit 1, between the fence and Pajarito Road. Firing Pit 4 was impacted by the construction of Pajarito Road but is located on the north side of Pajarito Road. Firing Pit 5 is located on a small curve on the north side of Pajarito Road. The pits were used for explosives testing with materials such as beryllium, thorium, and uranium. A 1946 bullet sensitivity test at Firing Pit 1 caused a block of Composition B explosive to undergo a low-order explosion, scattering unexploded HE over a 250-yd radius. The sites of all former structures were located in relation to the current Pajarito Road. Firing Pits 4 and 5 were north of the road; all other structures were south of the road. Only Firing Pit 4 had a surface expression; the other firing pits are buried. The material in and around Firing Pit 5 may have been removed during excavations for road gravel.

During the 1960s, all structures, concrete foundations, and HE, and other debris were removed from former TA-27, the firing pits were backfilled, and the ground surface was leveled. LANL personnel made several surface sweeps to collect HE fragments; however, some may remain.

Former TA-27 is located approximately 1 mi southeast of TA-18. In late 1945, former TA-27 was upgraded with several structures from TA-18 and became known as Gamma Site. The 1945 site upgrade included improving the access road from TA-18 with a layer of gravel. In early 1947, the entire site was abandoned and fenced off; since then, no Laboratory operations have been conducted at former TA-27. Gravel was excavated for road material between 1949 and 1962 throughout the length of Pajarito Canyon east of TA-18, including the area within the former boundary of TA-27. The former TA-27 area

was reopened in March 1960 to begin construction of a road to White Rock from Los Alamos. The gravel road from TA-18 was shifted north, bisecting Pit 5. It was widened, paved, and opened to the public as Pajarito Road on July 11, 1962.

For investigation activities refer to "Investigation Work Plan for Lower Pajarito Canyon Aggregate Area, Revision 1" (LANL 2010, 111328).

160.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 160.2-1.

Table 160.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
27-002	Firing site	Beryllium, lead, HE, thorium, uranium

160.3 Consent Order Soil Data

Decision-level data are not available for SWMU 27-002.

160.4 Stormwater Evaluation

160.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Corrective action stormwater samples were collected in July 2011 and August 2013. Analytical results from these samples are presented in Figures 160.4-1 and 160.4-2.

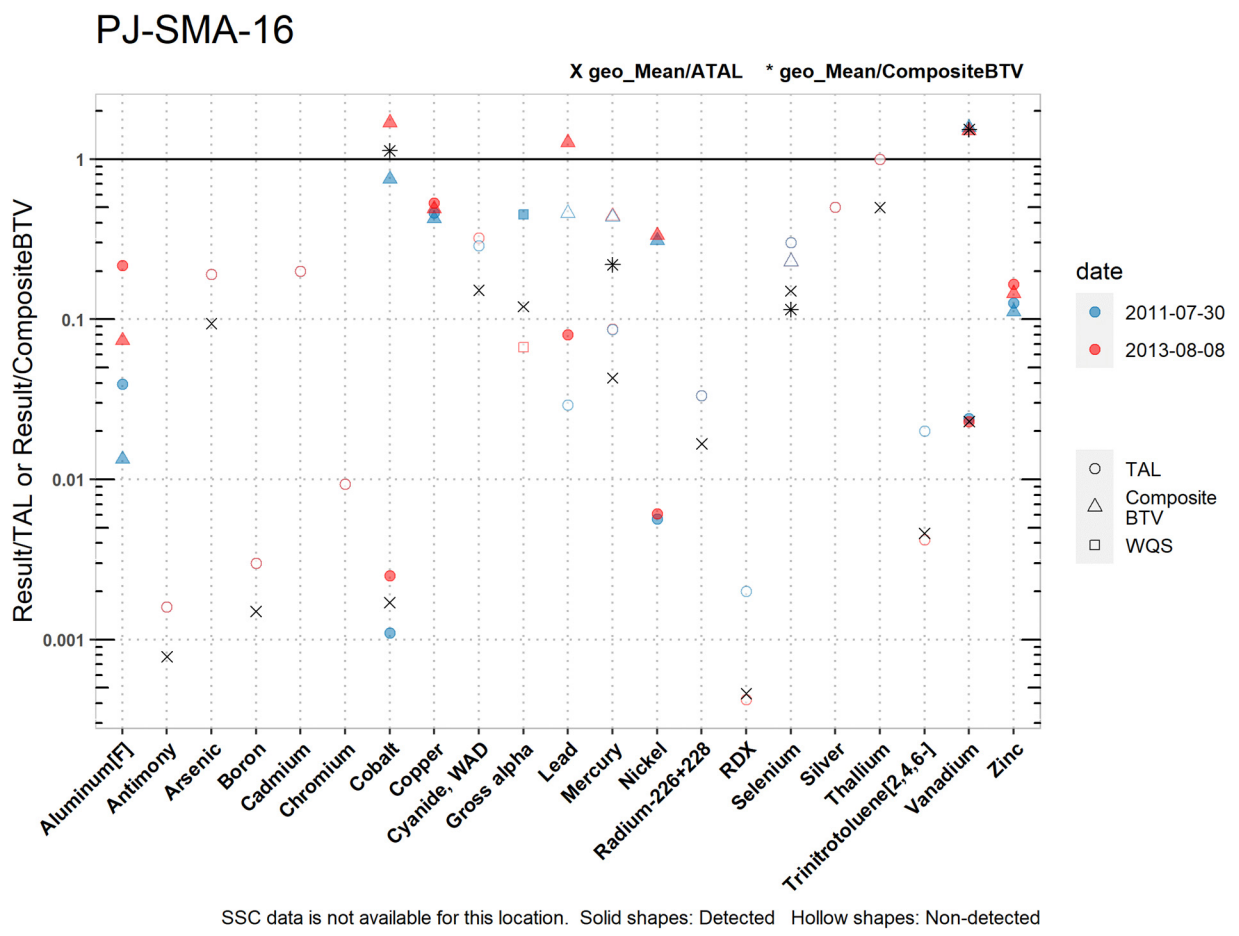

Figure 160.4-1 Analytical Results from Stormwater Samples, PJ-SMA-16 (Plot)

PJ-SMA-16

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Lead	Mercury	Nickel	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
MQL	2.5	1	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	5.2	15	NA	0.77	NA	30	200	5	NA	0.47	20	100	NA
MTAL	750	NA	340	NA	0.595	214	NA	4.35	22	NA	17.2	NA	170	NA	NA	20	0.41	NA	NA	NA	53.9
Composite_BTV	2200	NA	NA	NA	NA	NA	1.47	4.72	NA	55.1	1.09	0.152	3.10	5.89	NA	6.55	NA	NA	NA	1.53	61.5
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2011-07-30 result	29.4	*1.00*	*1.70*	*15.0*	*0.110*	*2.00*	1.10	2.00	*1.50*	6.74	*0.500*	*0.0660*	0.960	*1.00*	*0.410*	*1.50*	*0.200*	*0.450*	*0.410*	2.40	6.80
2011-07-30 dT	0.0392	NA	NA	NA	NA	NA	0.0011	0.460	NA	0.45	NA	NA	0.00565	NA	NA	NA	NA	NA	NA	0.024	0.126
2011-07-30 dB	0.0134	NA	NA	NA	NA	NA	0.748	0.424	NA	NA	NA	NA	0.310	NA	NA	NA	NA	NA	NA	1.57	0.111
2013-08-08 result	162	*1.00*	*1.70*	*15.0*	*0.110*	*2.00*	2.49	2.31	*1.67*	*1.00*	1.38	*0.0670*	1.04	*1.00*	*0.0842*	*1.50*	*0.200*	*0.450*	*0.0842*	2.29	8.90
2013-08-08 dT	0.216	NA	NA	NA	NA	NA	0.0025	0.531	NA	NA	0.0802	NA	0.00612	NA	NA	NA	NA	NA	NA	0.023	0.165
2013-08-08 dB	0.0736	NA	NA	NA	NA	NA	1.69	0.489	NA	NA	1.27	NA	0.335	NA	NA	NA	NA	NA	NA	1.50	0.145
geo_mean/ATAL	NA	0.00078	0.094	0.0015	NA	NA	0.0017	NA	0.152	0.12	NA	0.043	NA	0.0167	0.00046	0.15	NA	0.5	0.0046	0.023	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	1.13	NA	NA	NA	NA	0.219	NA	NA	NA	0.115	NA	NA	NA	1.53	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV, geo_mean/B=geo_mean/composite_BTV

Figure 160.4-2 Analytical Results from Stormwater Samples, PJ-SMA-16 (Table)

160.4.2 Assessment Unit and Stream Impairments

PJ-SMA-16 drains to Pajarito Canyon (lower LANL boundary to Twomile Canyon), which has impairments for total recoverable cyanide, PCBs, adjusted gross alpha, total aluminum, and dissolved copper. The adjusted gross alpha impairment may be Site-related, based on Site history.

160.5 Site-Specific Demonstration

160.5.1 Soil Data Summary

Decision-level data are not available for SWMU 27-002.

160.5.2 Stormwater Data Summary

No TAL exceedances in the two confirmation samples collected.

160.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related constituents of concern were analyzed for in past samples.

160.5.4 Sampling and Analysis Plan

Table 160.5-1 is the proposed SAP for PJ-SMA-16.

Table 160.5-1 Proposed SAP, PJ-SMA-16

Monitoring Constituent	Background for Monitoring
Dissolved beryllium and uranium	Site history
DOC	Permit requirement
SSC	Permit requirement

161.0 PJ-SMA-17

Associated Sites	54-018
Receiving Water	Pajarito Canyon
Drainage Area	14.27 acres
Landscape Characteristics	16% impervious, 84% pervious
Consent Order Site Status	SWMU 54-018: In Progress
2010 Administratively Continued Permit Final Status	Corrective Action Complete for No Exposure
2016–2018 SIP Actions	Based on the July 2017 field visit, the current SMA sampling location and boundary were agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

161.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in July 2013. Analytical results from this sample initiated corrective action.

Following the August 2014 submittal of certification of a no exposure condition to EPA (LANL 2014, 260884), corrective-action monitoring was initiated and an investigation sample was collected in May 2015. The Permittees submitted a completion of corrective action per Permit Part I.E.1(b) for the Site in October 2015 (LANL 2015, 600951). Stormwater monitoring has not occurred since 2015.

161.1 Site History

54-018 (7/18/2019)

SWMU 54-018 consists of inactive disposal pits 25 through 33 and 35 through 37 located in Area G at TA-54. Only Pit 29 (although no longer in use) is considered a RCRA-regulated unit until RCRA closure is certified and approved by the NMED. Pits 25 through 28, 30 through 33, and 34 through 36 received low-level radioactive, mixed, and TRU-contaminated waste in the form of reactor control rods, D&D waste, contaminated soil, transformers, glove boxes, asbestos, and lab waste and range in volume from 20,957 to 59,930 yd^3. Pit 29 operated until 1986 after which the surface of Pit 29 was used to store retrievable TRU waste in cement-filled sections of corrugated pipe [SWMU 54-015(k)]. Pit 37 operated from 1990 to 1997 and primarily received circuit boards and contaminated soil. When filled, the pits were covered with 3.3 ft of consolidated crushed tuff and 4 in. of topsoil and reseeded with native grasses. SWMU 54-018 is part of MDA G, which consists of the subsurface disposal units within Area G that are subject to the Consent Order.

For investigation activities refer to “Corrective Measures Evaluation Report for Material Disposal Area G, Solid Waste Management Unit 54-013(b)-99, at Technical Area 54, Revision 3” (LANL 2011, 206324).

161.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 161.2-1.

Table 161.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
54-018	Inactive disposal pits at MDA G	Metals, asbestos, PCBs, fission products, plutonium, uranium

161.3 Consent Order Soil Data

Decision-level data for SWMU 54-018 consist of results from investigations conducted at and around MDA G between 2005 and 2011 including borehole, vapor monitoring, ambient air, and groundwater sampling. The 2005 IR (LANL 2005, 090513) concluded that the nature and extent of contamination in solid media have been defined and the detected hazardous constituent concentrations and radionuclide activities in the subsurface of MDA G pose no potential unacceptable present-day risk or dose to human health or the environment based on current site use. There are no decision-level data for SWMU 54-018 within the SMA boundary and/or at a depth of 3 ft bgs or less.

161.4 Stormwater Evaluation

161.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective action stormwater sample was collected in May 2015. Analytical results from that sample are presented in Figures 161.4-1 and 161.4-2.

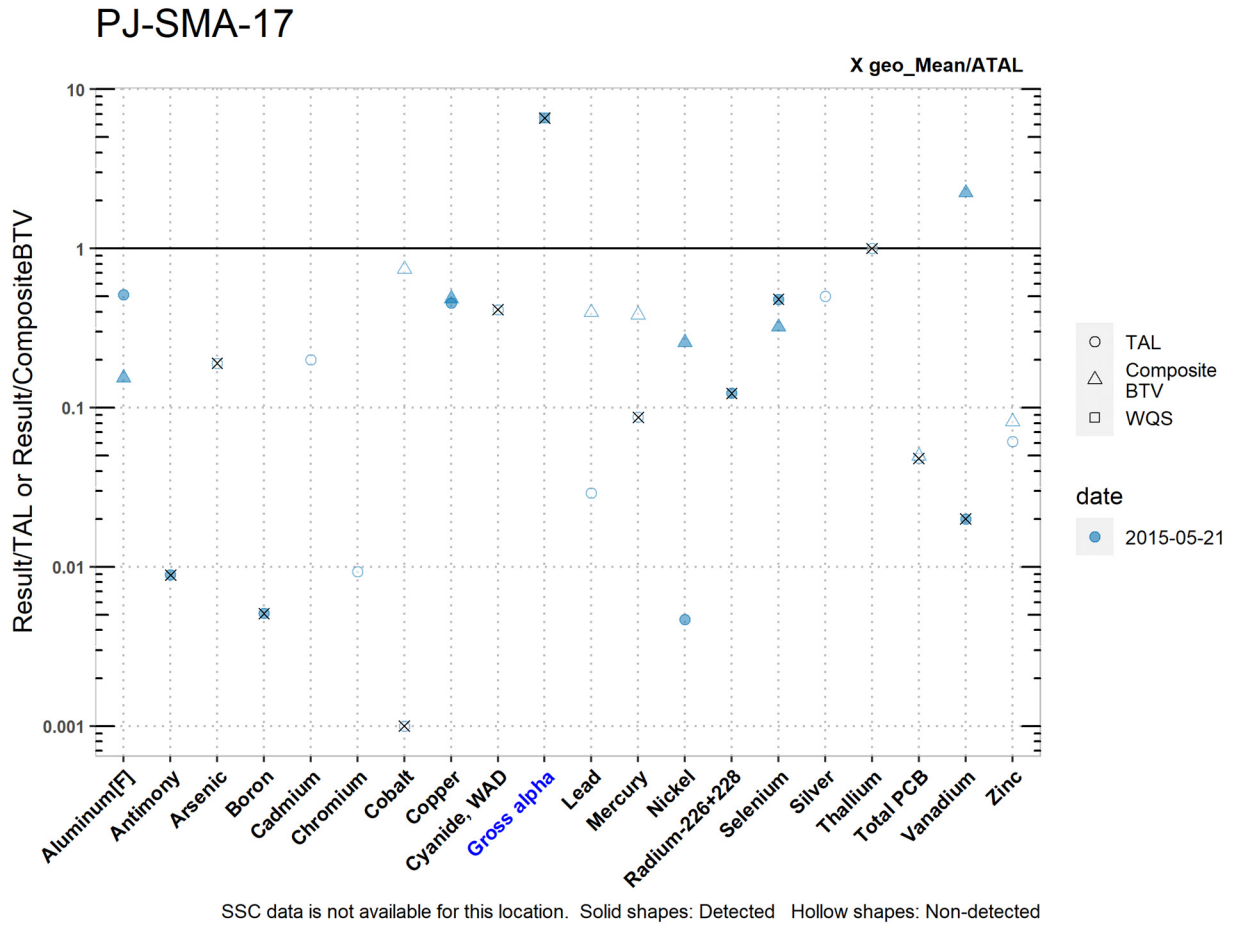

Figure 161.4-1 Analytical Results from Stormwater Sample, PJ-SMA-17 (Plot)

PJ-SMA-17

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Lead	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Total PCB	Vanadium	Zinc
MQL	2.5	1	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	0.2	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	5.2	15	NA	0.77	NA	30	5	NA	0.47	0.014	100	NA
MTAL	750	NA	340	NA	0.595	214	NA	4.35	22	NA	17.2	NA	170	NA	20	0.41	NA	NA	NA	53.9
Composite_BTV	2500	NA	NA	NA	NA	NA	1.35	4.07	NA	56.0	1.26	0.175	3.10	5.20	7.54	NA	NA	0.0134	0.902	40.4
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2015-05-21 result	385	5.70	*1.70*	25.5	*0.110*	*2.00*	*1.00*	1.97	*2.14*	98.3	*0.500*	*0.0670*	0.796	3.70	2.42	*0.200*	*0.450*	*0.000666*	2.02	*3.30*
2015-05-21 dT	0.513	0.0089	NA	0.0051	NA	NA	NA	0.453	NA	6.6	NA	NA	0.00468	0.123	0.48	NA	NA	NA	0.020	NA
2015-05-21 dB	0.154	NA	NA	NA	NA	NA	NA	0.484	NA	NA	NA	NA	0.257	NA	0.321	NA	NA	NA	2.24	NA
geo_mean/ATAL	NA	0.0089	0.19	0.0051	NA	NA	0.0010	NA	0.412	6.6	NA	0.087	NA	0.123	0.48	NA	1	0.048	0.020	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 161.4-2 Analytical Results from Stormwater Sample, PJ-SMA-17 (Table)

161.4.2 Assessment Unit and Stream Impairments

PJ-SMA-17 drains to Pajarito Canyon (lower LANL boundary to Twomile Canyon), which has impairments for total recoverable cyanide, PCBs, adjusted gross alpha, total aluminum, and dissolved copper. The metals, PCBs, and adjusted gross alpha impairments may be Site-related, based on Site history.

161.5 Site-Specific Demonstration

161.5.1 Soil Data Summary

No Consent Order data.

161.5.2 Stormwater Data Summary

Gross alpha exceeded in 2015 stormwater data and there was no paired SSC result to confirm whether it was below BTVs; therefore, it will be added to the monitoring suite for analysis.

161.5.3 2022 Permit Status

The SMA is in active monitoring. A second confirmation-monitoring sample has not been collected in this monitoring stage.

161.5.4 Sampling and Analysis Plan

Table 161.5-1 is the proposed SAP for PJ-SMA-17.

Table 161.5-1 Proposed SAP, PJ-SMA-17

Monitoring Constituent	Background for Monitoring
Gross alpha (1)	Impairment and Site history
Dissolved copper (1) and uranium	Impairment and Site history
Total PCBs (1)	Impairment and Site history
Asbestos	Site history
DOC	Permit requirement
SSC	Permit requirement

162.0 PJ-SMA-18

Associated Sites	54-014(d), 54-017
Receiving Water	Pajarito Canyon
Drainage Area	2.85 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 54-014(d): In Progress SWMU 54-017: In Progress
2010 Administratively Continued Permit Final Status	Corrective Action Complete for No Exposure
2016–2018 SIP Actions	Based on the July 2017 field visit, the current SMA sampling location and boundary were agreed upon by all parties to be the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

162.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in July 2013. Analytical results from this sample initiated corrective action.

Following the August 2014 submittal of certification of a no exposure condition to EPA (LANL 2014, 260887), corrective-action monitoring was initiated and an investigation sample was collected in August 2018. The Permittees submitted a completion of corrective action per Permit Part I.E.1(b) for the Site in December 2018 (N3B 2018, 700144). Stormwater monitoring has not occurred since 2018.

162.2 Site History

54-014(d) (7/18/2019)

SWMU 54-014(d) consists of retrievable TRU waste storage trenches A, B, C, and D, which are located in the south-central portion of Area G at TA-54. These trenches began receiving TRU waste in 1974. Trenches A, B, and C vary in size from 219 ft to 262.5 ft long × 13 ft wide × 6 ft to 8 ft deep. Trench D is 60 ft long × 13 ft wide × 6 ft deep. The TRU waste placed in these trenches was packaged in 30-gal. containers inside concrete casks. When filled, the trenches were backfilled with 3.3 ft of crushed tuff followed by 4 in. of topsoil. The surface was reseeded with native grasses. The TRU waste in these trenches was placed for future retrieval and processing for disposal at WIPP.

54-017 (7/18/2019)

SWMU 54-017 consist of inactive disposal pits 1 through 8, 10, 12, 13, 16 through 22, and 24 located in Area G at TA-54. Pits 1 through 8, 10, 12, 13, 16 through 22, and 24 were operational between 1959 and 1980 and received low-level radioactive, mixed, and non-retrievable TRU waste in the form of wing tanks, dry boxes, building debris, sludge drums, lab waste, contaminated soil, D&D waste, filter plenums, and uranium. Pits 1 through 8, 10, 12, 13, 16 through 22, and 24 are located in the eastern portion of Area G with volumes ranging from 1,371 to 56,759 yd^3. When filled, the pits were covered with 3.3 ft of consolidated crushed tuff and 4 in. of topsoil, and reseeded with native grasses. SWMU 54-017 is part of

MDA G, which consists of the subsurface disposal units within Area G that are subject to the Consent Order.

For investigation activities at the Sites, refer to "Corrective Measures Evaluation Report for Material Disposal Area G, Solid Waste Management Unit 54-013(b)-99, at Technical Area 54, Revision 3" (LANL 2011, 206324).

162.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 162.2-1.

Table 162.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
54-014(d)	Storage trenches A, B, C, and D at MDA G	plutonium-238, plutonium-239
54-017	Inactive disposal pits at MDA G	Metals, asbestos, PCBs, fission products, plutonium, uranium

162.3 Consent Order Soil Data

Decision-level data for SWMU 54-014(d) and 54-017 consist of results from investigations conducted at and around MDA G between 2005 and 2011 including borehole, vapor monitoring, ambient air, and groundwater sampling. The 2005 IR (LANL 2005, 090513) concluded that the nature and extent of contamination in solid media have been defined and the detected hazardous constituent concentrations and radionuclide activities in the subsurface of MDA G pose no potential unacceptable present-day risk or dose to human health or the environment based on current site use. There are no decision-level data for SWMU 54-014(d) or 54-017 within the SMA boundary and/or at a depth of 3 ft bgs or less.

162.4 Stormwater Evaluation

162.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective action stormwater sample was collected in August 2018. Analytical results from that sample are presented in Figures 162.4-1 through 162.4-4.

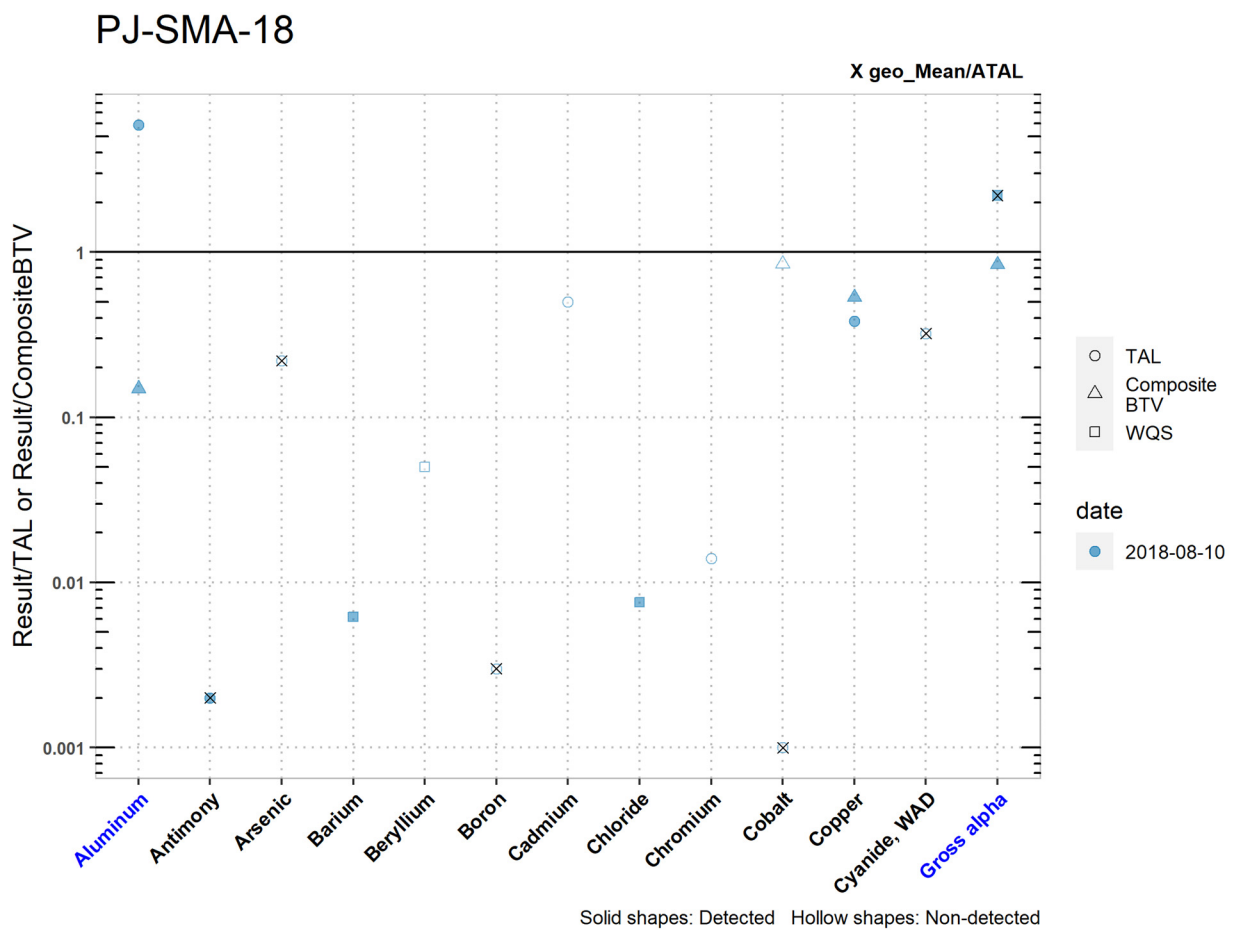

Figure 162.4-1 Analytical Results from Stormwater Sample, PJ-SMA-18 (Plot 1)

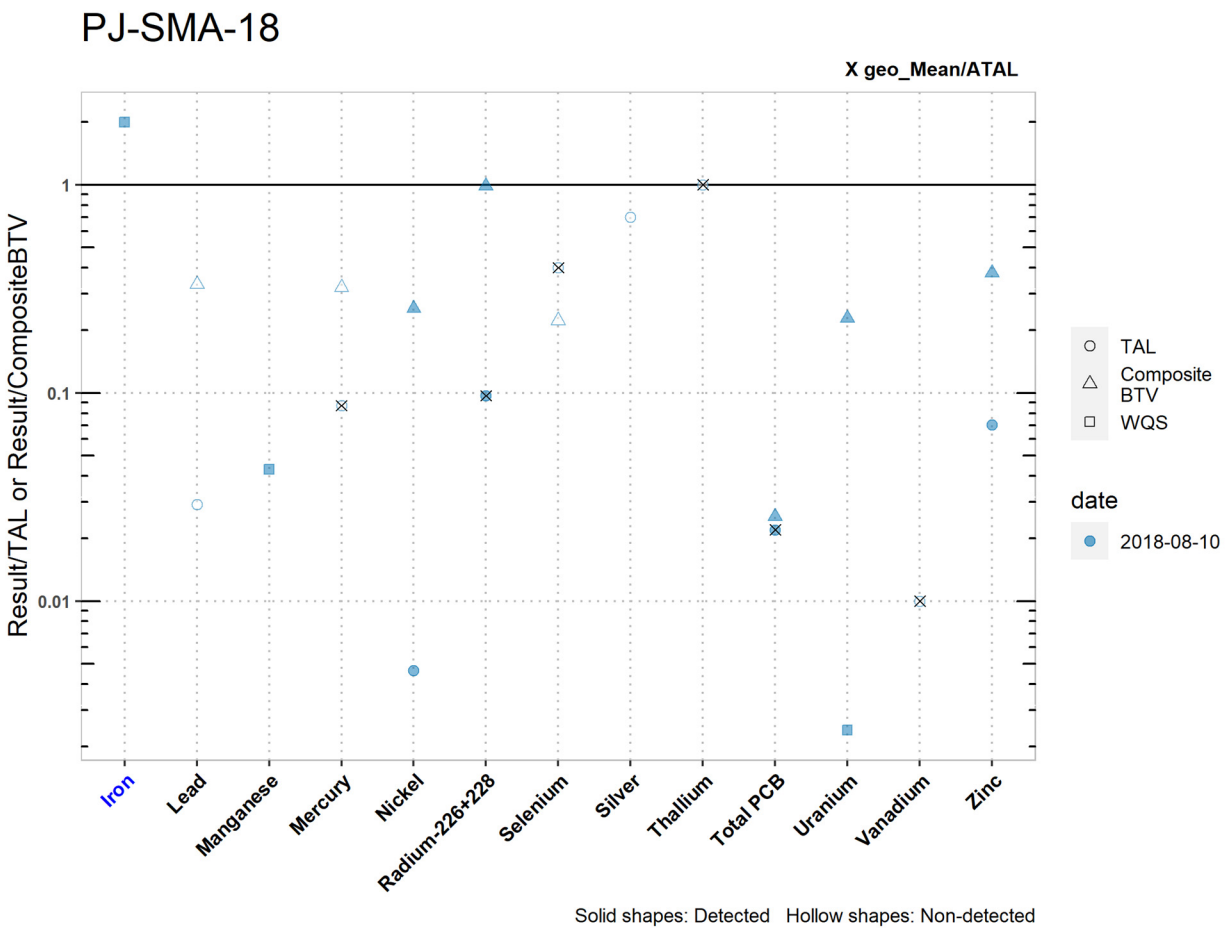

Figure 162.4-2 Analytical Results from Stormwater Sample, PJ-SMA-18 (Plot 2)

PJ-SMA-18

	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chloride	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha
MQL	2.5	1	0.5	NA	NA	100	1	NA	10	50	0.5	10	NA
ATAL	NA	640	9	NA	NA	5000	NA	NA	NA	1000	NA	5.2	15
MTAL	664	NA	340	NA	NA	NA	0.595	NA	214	NA	4.35	22	NA
Composite_BTV	37400	NA	NA	NA	NA	NA	NA	NA	NA	1.18	3.12	NA	57.2
unit	ug/L**	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L*
2018-08-10 result	3910	1.27	*2.00*	12.4	*0.200*	*15.0*	*0.300*	1740	*3.00*	*1.00*	1.66	*1.67*	33.6
2018-08-10 dT	5.89	0.0020	NA	0.0062	NA	NA	NA	0.0076	NA	NA	0.382	NA	2.2
2018-08-10 dB	0.149	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.532	NA	0.839
geo_mean/ATAL	NA	0.0020	0.22	NA	NA	0.0030	NA	NA	NA	0.0010	NA	0.321	2.2

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
*SSC normalized unit is pCi/g **SSC normalized unit is mg/kg

Figure 162.4-3 Analytical Results from Stormwater Sample, PJ-SMA-18 (Table 1)

PJ-SMA-18

	Iron	Lead	Manganese	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Total PCB	Uranium	Vanadium	Zinc
MQL	NA	0.5	NA	0.005	0.5	NA	5	0.5	0.5	0.2	NA	50	20
ATAL	NA	NA	NA	0.77	NA	30	5	NA	0.47	0.014	NA	100	NA
MTAL	NA	17.2	NA	NA	170	NA	20	0.41	NA	NA	NA	NA	53.9
Composite_BTV	NA	1.50	NA	0.208	3.10	4.21	8.98	NA	NA	0.0122	0.315	NA	10.0
unit	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L*	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2018-08-10 result	1950	*0.500*	47.8	*0.0670*	0.790	2.91	*2.00*	*0.300*	*0.600*	0.000311	0.0720	*1.00*	3.78
2018-08-10 dT	2.0	NA	0.043	NA	0.00465	0.0970	NA	NA	NA	0.022	0.0024	NA	0.0701
2018-08-10 dB	NA	NA	NA	NA	0.255	0.987	NA	NA	NA	0.0255	0.229	NA	0.378
geo_mean/ATAL	NA	NA	NA	0.087	NA	0.0970	0.40	NA	1	0.022	NA	0.010	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
*SSC normalized unit is pCi/g

Figure 162.4-4 Analytical Results from Stormwater Sample, PJ-SMA-18 (Table 2)

162.4.2 Assessment Unit and Stream Impairments

PJ-SMA-18 drains to Pajarito Canyon (lower LANL boundary to Twomile Canyon), which has impairments for total recoverable cyanide, PCBs, adjusted gross alpha, total aluminum, and dissolved copper. The adjusted gross alpha, metals, and PCB impairments may be Site-related, based on Site history.

162.5 Site-Specific Demonstration

162.5.1 Soil Data Summary

No Consent Order data.

162.5.2 Stormwater Data Summary

Aluminum and gross alpha exceeded the TAL but not the BTV. Iron exceeded the WQS; however, there is no TAL in the Permit for iron. Only POCs with TALs are used in the SSD.

162.5.3 2022 Permit Status

The SMA is in active monitoring. A second confirmation-monitoring sample has not been collected in this monitoring stage.

162.5.4 Sampling and Analysis Plan

Table 162.5-1 is the proposed SAP for PJ-SMA-18.

Table162.5-1 Proposed SAP, PJ-SMA-18

Monitoring Constituent	Background for Monitoring
Gross alpha (1)	Impairment and Site history
Uranium	Site history
Asbestos	Site history
DOC	Permit requirement
SSC	Permit requirement

163.0 PJ-SMA-19

Associated Sites	54-013(b), 54-017, 54-020
Receiving Water	Pajarito Canyon
Drainage Area	26.78 acres
Landscape Characteristics	11% impervious, 89% pervious
Consent Order Site Status	SWMU 54-013(b): In Progress SWMU 54-017: In Progress SWMU 54-020: In Progress
2010 Administratively Continued Permit Final Status	Corrective Action Complete for No Exposure
2016–2018 SIP Actions	Based on the July 2017 field visit, the current SMA sampling location and boundary were agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

163.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in August 2013. Analytical results from this sample initiated corrective action.

Following the August 2014 submittal of certification of a no exposure condition to EPA (LANL 2014, 260887), corrective-action monitoring was initiated and an investigation sample was collected in August 2021. The Permittees submitted a completion of corrective action per Permit Part I.E.1(b) for the Site in November 2021 (N3B 2021, 701780). Stormwater monitoring has not occurred since 2021.

163.2 Site History

54-013(b) (7/18/2019)

SWMU 54-013(b) was a vehicle monitoring and decontamination area located in the northcentral portion of Area G at TA-54. This Site was excavated in April 1971 specifically to be used as a decontamination pit for washing trucks carrying equipment used at MDA G and TRU waste drums. The truck washing and decontamination pit was converted to a LLW disposal pit (Pit 19) in November 1975 when truck-washing activities ceased. Pit 19 is one of the LLW disposal pits comprising SWMU 54-017, and is also part of MDA G, which consists of the subsurface disposal units within Area G that are subject to the Consent Order.

54-017 (7/18/2019)

SWMU 54-017 consists of inactive disposal pits 1 through 8, 10, 12, 13, 16 through 22, and 24 located in Area G at TA-54. Pits 1 through 8, 10, 12, 13, 16 through 22, and 24 were operational between 1959 and 1980 and received low-level radioactive, mixed, and non-retrievable TRU waste in the form of wing tanks, dry boxes, building debris, sludge drums, lab waste, contaminated soil, D&D waste, filter plenums, and uranium. Pits 1 through 8, 10, 12, 13, 16 through 22, and 24 are located in the eastern portion of

Area G with volumes ranging from 1,371 to 56,759 yd^3. When filled, the pits were covered with 3.3 ft of consolidated crushed tuff and 4 in. of topsoil and reseeded with native grasses. SWMU 54-017 is part of MDA G, which consists of the subsurface disposal units within Area G that are subject to the Consent Order.

54-020 (7/18/2019)

SWMU 54-020 consists of 68 disposal shafts (shafts C1 through C10, C12, C13, 22, 35 through 37, 93 through 95, 99 through 108, 114, 115, 118 through 136, 138 through 140, 151 through 160, 189 through 192, and 196) located in Area G at TA-54. These shafts were operational between 1970 and the early 1990s. Shafts 189 and 192 are described in the 1990 SWMU Report as being "triplet shafts" where three shafts are associated with one shaft number and shaft 191 is a "doublet shaft" where two shafts are associated with one shaft number. Only Shaft 124 (although no longer in use) is considered a RCRA-regulated unit until RCRA closure is certified and approved by the NMED. The shafts contain one or a combination of the following waste types: PCB residues, LLW, hazardous, and mixed waste. The shafts range in size from 1 ft to 8 ft in diameter and 25 ft to 65 ft deep and are located throughout the eastern portion of Area G. Most shafts are unlined, although a few are lined with cement or CMP. The shafts are separated by a minimum distance of 7.5 ft (the distance between doublet and triplet shafts is unknown). The shafts have 0.5-ft-thick layers of crushed tuff between the waste layers. Disposal shafts were typically filled with waste to within 3 ft of the ground surface, backfilled with crushed tuff, and covered with a concrete dome. SWMU 54-020 is part of MDA G, which consists of the subsurface disposal units within Area G that are subject to the Consent Order.

For investigation activities at the Sites, refer to "Corrective Measures Evaluation Report for Material Disposal Area G, Solid Waste Management Unit 54-013(b)-99, at Technical Area 54, Revision 3" (LANL 2011, 206324).

163.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 163.2-1.

Table 163.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
54-013(b)	Former Vehicle Monitoring/ Decontamination Area at MDA G	Asbestos, radionuclides
54-017	Inactive disposal pits at MDA G	Metals, asbestos, PCBs, fission products, plutonium, uranium
54-020	Inactive disposal shafts at MDA G	Metals, asbestos, PCBs, fission products, plutonium, uranium

163.3 Consent Order Soil Data

Decision-level data for SWMUs 54-013(b), 54-017, and 54-020 consist of results from investigations conducted at and around MDA G between 2005 and 2011 including borehole, vapor monitoring, ambient air, and groundwater sampling. The 2005 IR (LANL 2005, 090513) concluded that the nature and extent of contamination in solid media have been defined and the detected hazardous constituent concentrations and radionuclide activities in the subsurface of MDA G pose no potential unacceptable present-day risk or dose to human health or the environment based on current site use. There are no decision-level data for SWMUs 54-013(b), 54-017, or 54-020 within the SMA boundary and/or at a depth of 3 ft bgs or less.

163.4 Stormwater Evaluation

163.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective action stormwater sample was collected in August 2021. Analytical results from that sample are presented in Figures 163.4-1 through 163.4-4.

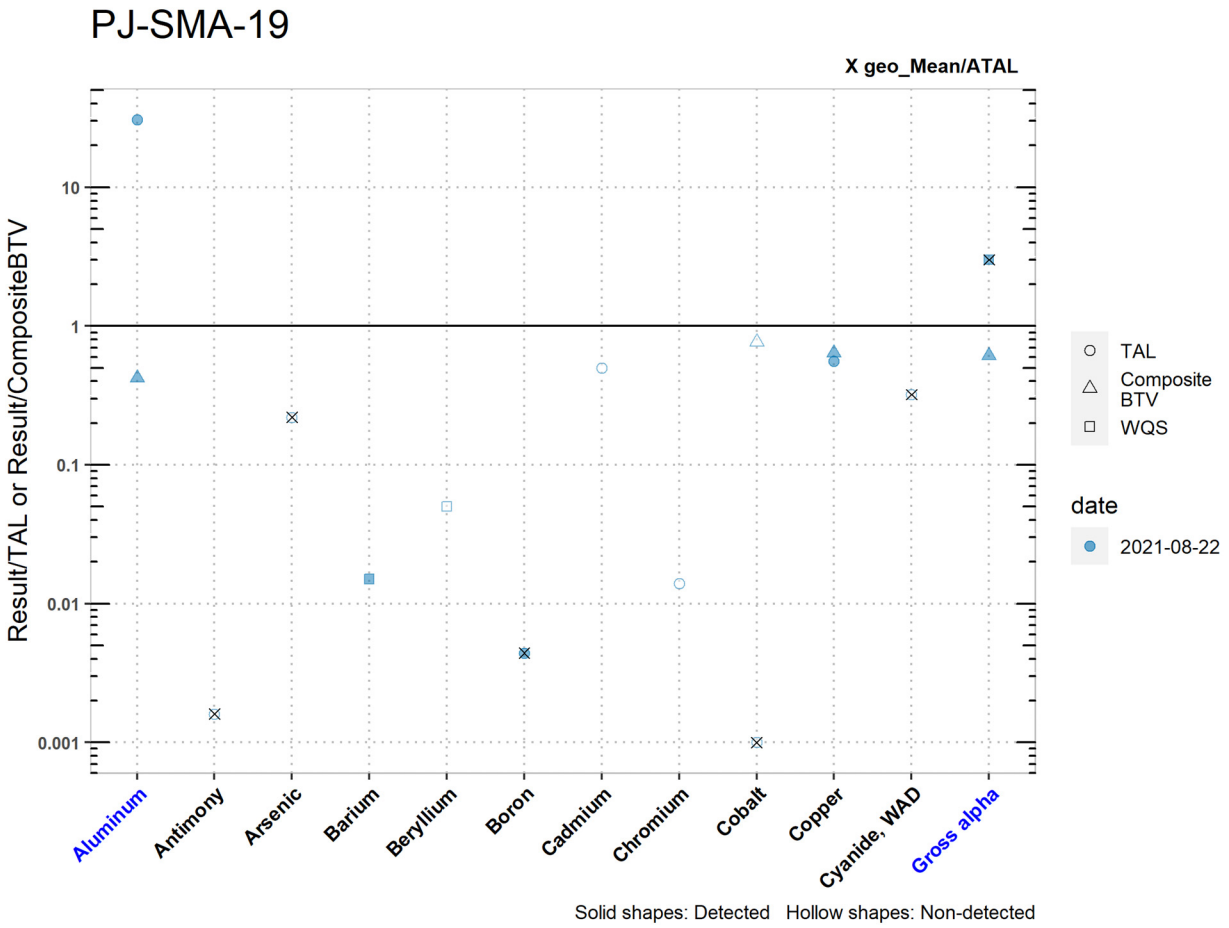

Figure 163.4-1 Analytical Results from Stormwater Sample, PJ-SMA-19 (Plot 1)

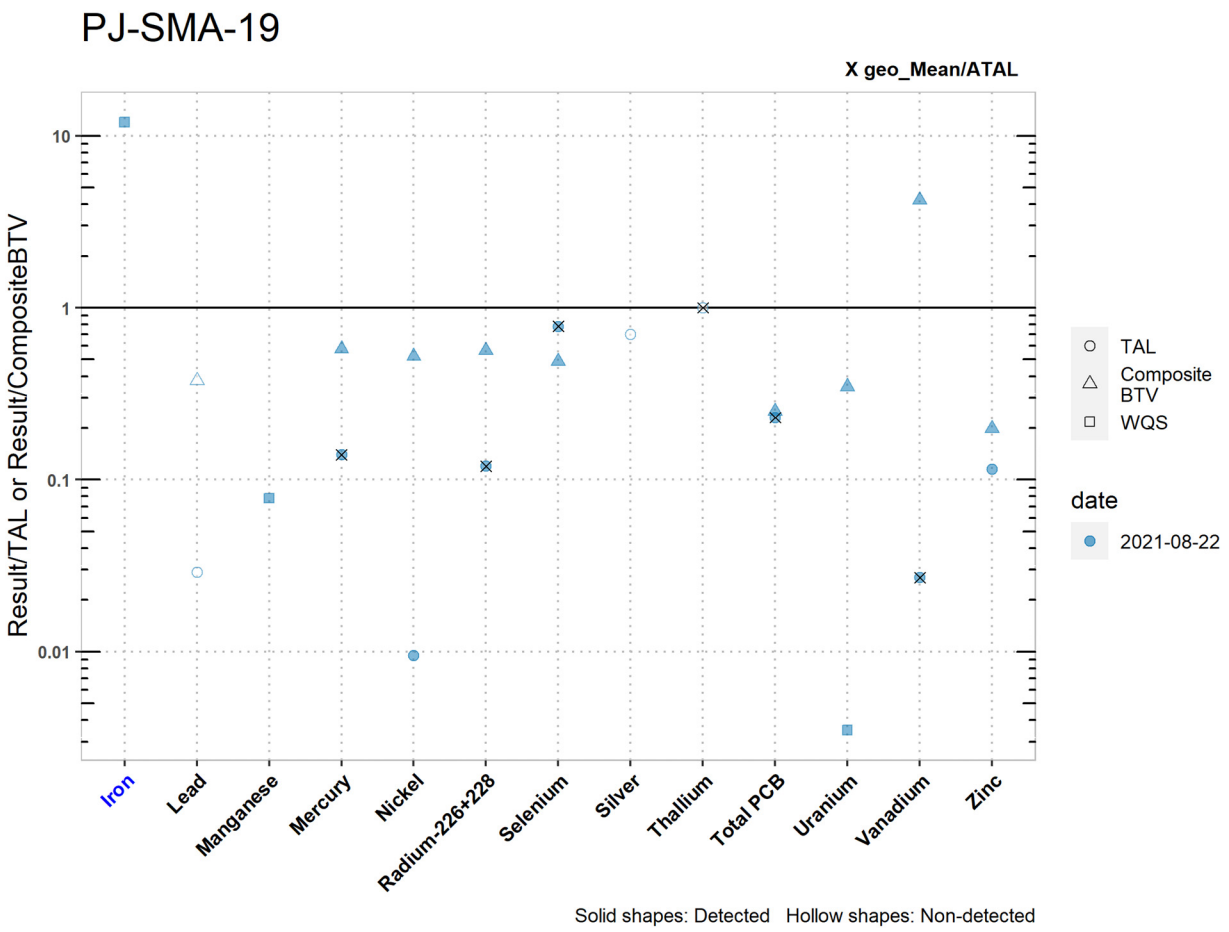

Figure 163.4-2 Analytical Results from Stormwater Sample, PJ-SMA-19 (Plot 2)

PJ-SMA-19

	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha
MQL	2.5	1	0.5	NA	NA	100	1	10	50	0.5	10	NA
ATAL	NA	640	9	NA	NA	5000	NA	NA	1000	NA	5.2	15
MTAL	664	NA	340	NA	NA	NA	0.595	214	NA	4.35	22	NA
Composite_BTV	37000	NA	NA	NA	NA	NA	NA	NA	1.30	3.78	NA	56.3
unit	ug/L**	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L*
2021-08-22 result	20400	*1.00*	*2.00*	29.7	*0.200*	22.2	*0.300*	*3.00*	*1.00*	2.42	*1.67*	44.7
2021-08-22 dT	30.7	NA	NA	0.015	NA	0.0044	NA	NA	NA	0.556	NA	3.0
2021-08-22 dB	0.424	NA	NA	NA	NA	NA	NA	NA	NA	0.640	NA	0.611
geo_mean/ATAL	NA	0.0016	0.22	NA	NA	0.0044	NA	NA	0.0010	NA	0.321	3.0

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
*SSC normalized unit is pCi/g **SSC normalized unit is mg/kg

Figure 163.4-3 Analytical Results from Stormwater Sample, PJ-SMA-19 (Table 1)

PJ-SMA-19

	Iron	Lead	Manganese	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Total PCB	Uranium	Vanadium	Zinc
MQL	NA	0.5	NA	0.005	0.5	NA	5	0.5	0.5	0.2	NA	50	20
ATAL	NA	NA	NA	0.77	NA	30	5	NA	0.47	0.014	NA	100	NA
MTAL	NA	17.2	NA	NA	170	NA	20	0.41	NA	NA	NA	NA	53.9
Composite_BTV	NA	1.33	NA	0.185	3.10	4.90	7.97	NA	NA	0.0130	0.302	0.632	31.3
unit	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L*	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2021-08-22 result	11900	*0.500*	86.1	0.107	1.62	3.59	3.90	*0.300*	*0.600*	0.00325	0.105	2.67	6.19
2021-08-22 dT	12	NA	0.078	0.14	0.00953	0.120	0.78	NA	NA	0.23	0.0035	0.027	0.115
2021-08-22 dB	NA	NA	NA	0.578	0.523	0.564	0.489	NA	NA	0.250	0.348	4.22	0.198
geo_mean/ATAL	NA	NA	NA	0.14	NA	0.120	0.78	NA	1	0.23	NA	0.027	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
*SSC normalized unit is pCi/g

Figure 163.4-4 Analytical Results from Stormwater Sample, PJ-SMA-19 (Table 2)

163.4.2 Assessment Unit and Stream Impairments

PJ-SMA-19 drains to Pajarito Canyon (lower LANL boundary to Twomile Canyon), which has impairments for total recoverable cyanide, PCBs, adjusted gross alpha, total aluminum, and dissolved copper. The adjusted gross alpha, metals, and PCB impairments may be Site-related, based on Site history.

163.5 Site-Specific Demonstration

163.5.1 Soil Data Summary

No Consent Order data.

163.5.2 Stormwater Data Summary

PCBs exceeded TAL and BTV in the previous monitoring stage and will be added to the monitoring suite for analysis. Aluminum and gross alpha exceeded the TAL but not the BTV. Iron exceeded the WQS; however, there is no TAL in the Permit for iron. Only POCs with TALs are used in the SSD.

163.5.3 2022 Permit Status

The SMA is in active monitoring. A second confirmation-monitoring sample has not been collected in this monitoring stage.

163.5.4 Sampling and Analysis Plan

Table 163.5-1 is the proposed SAP for PJ-SMA-19.

Table 163.5-1 Proposed SAP, PJ-SMA-19

Monitoring Constituent	Background for Monitoring
Gross alpha (1)	Impairment and Site history
Total PCBs (1)	Impairment and Site history
Asbestos	Site history
Dissolved uranium	Site history
Strontium-90	Site history
Tritium	Site history
DOC	Permit requirement
SSC	Permit requirement

164.0 PJ-SMA-20

Associated Sites	54-017
Receiving Water	Pajarito Canyon
Drainage Area	7.29 acres
Landscape Characteristics	30% impervious, 70% pervious
Consent Order Site Status	SWMU 54-017: In Progress
2010 Administratively Continued Permit Final Status	Corrective action Complete for No Exposure
2016–2018 SIP Actions	Based on the December 2016 field visit, the current SMA sampling location and boundary was agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

164.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in July 2011. Analytical results from this sample initiated corrective action.

Following the August 2014 submittal of certification of a no exposure condition to EPA (LANL 2013, 250402), corrective-action monitoring was initiated and an investigation sample was collected in May 2014. The Permittees submitted a completion of corrective action per Permit Part I.E.1(b) for the Site in August 2014 (LANL 2014, 260188). Stormwater monitoring has not occurred since 2014.

164.2 Site History

54-017 (7/18/2019)

SWMU 54-017 consists of inactive disposal pits 1 through 8, 10, 12, 13, 16 through 22, and 24 located in Area G at TA-54. Pits 1 through 8, 10, 12, 13, 16 through 22, and 24 were operational between 1959 and 1980 and received low-level radioactive, mixed, and non-retrievable TRU waste in the form of wing tanks, dry boxes, building debris, sludge drums, lab waste, contaminated soil, D&D waste, filter plenums, and uranium. Pits 1 through 8, 10, 12, 13, 16 through 22, and 24 are located in the eastern portion of Area G with volumes ranging from 1,371 to 56,759 yd^3. When filled, the pits were covered with 3.3 ft of consolidated crushed tuff and 4 in. of topsoil and reseeded with native grasses. SWMU 54-017 is part of MDA G, which consists of the subsurface disposal units within Area G that are subject to the Consent Order.

For investigation activities refer to “Corrective Measures Evaluation Report for Material Disposal Area G, Solid Waste Management Unit 54-013(b)-99, at Technical Area 54, Revision 3” (LANL 2011, 206324).

164.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 164.2-1.

Table 164.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
54-017	Inactive disposal pits at MDA G	Metals, asbestos, PCBs, fission products, plutonium, uranium

164.3 Consent Order Soil Data

Decision-level data for SWMU 54-017 consist of results from investigations conducted at and around MDA G between 2005 and 2011 including borehole, vapor monitoring, ambient air, and groundwater sampling. The 2005 IR (LANL 2005, 090513) concluded that the nature and extent of contamination in solid media have been defined and the detected hazardous constituent concentrations and radionuclide activities in the subsurface of MDA G pose no potential unacceptable present-day risk or dose to human health or the environment based on current site use. There are no decision-level data for SWMU 54-017 within the SMA boundary and/or at a depth of 3 ft bgs or less.

164.4 Stormwater Evaluation

164.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective action stormwater sample was collected in July 2011. Analytical results from that sample are presented in Figures 164.4-1 and 164.4-2.

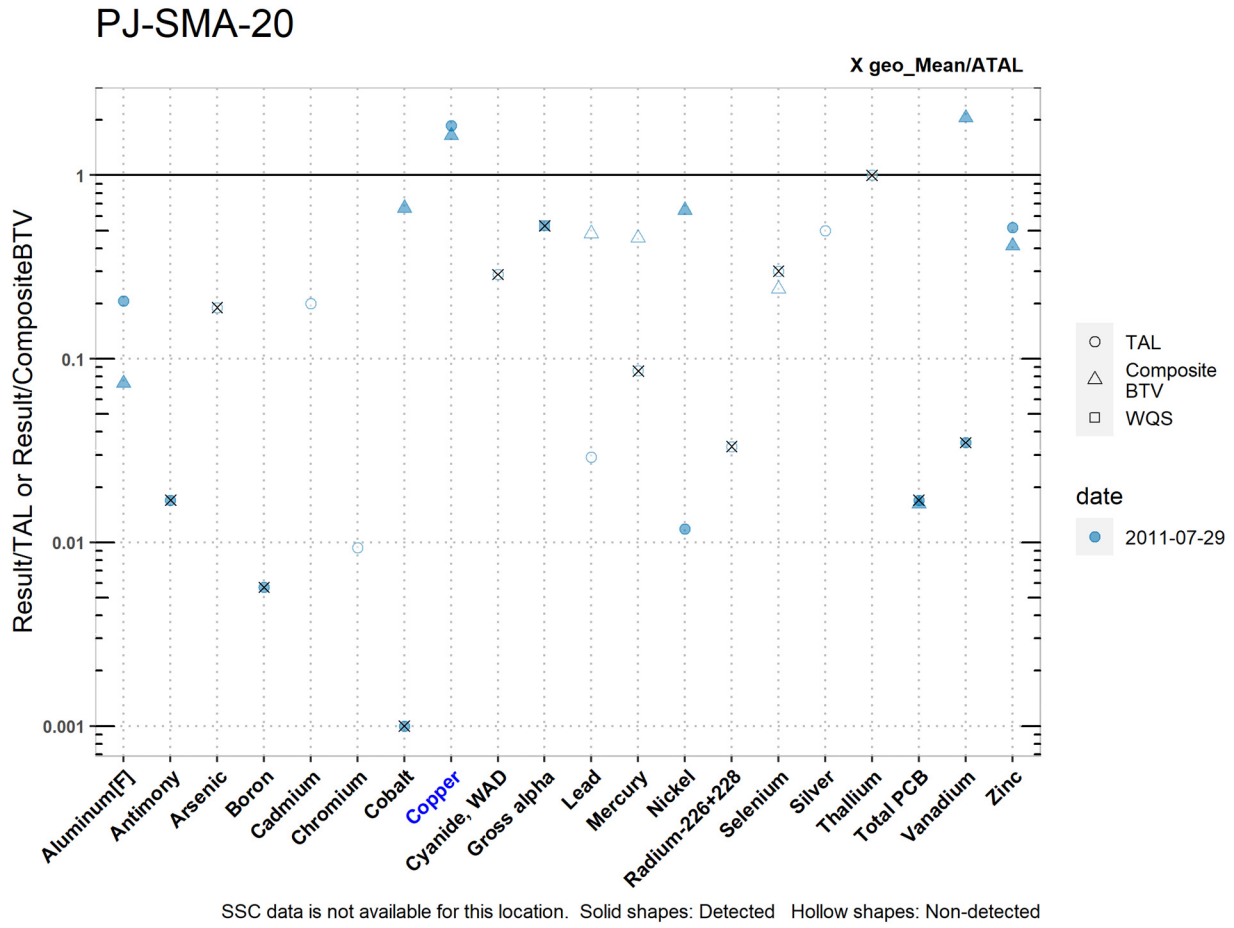

Figure 164.4-1 Analytical Results from Stormwater Sample, PJ-SMA-20 (Plot)

PJ-SMA-20

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Lead	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Total PCB	Vanadium	Zinc
MQL	2.5	1	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	0.2	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	5.2	15	NA	0.77	NA	30	5	NA	0.47	0.014	100	NA
MTAL	750	NA	340	NA	0.595	214	NA	4.35	22	NA	17.2	NA	170	NA	20	0.41	NA	NA	NA	53.9
Composite_BTV	2100	NA	NA	NA	NA	NA	1.51	4.92	NA	54.9	1.04	0.145	3.10	6.09	6.25	NA	NA	0.0144	1.71	67.8
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2011-07-29 result	155	10.6	*1.70*	28.4	*0.110*	*2.00*	1.00	8.10	*1.50*	8.00	*0.500*	*0.0660*	2.00	*1.00*	*1.50*	*0.200*	*0.450*	0.000233	3.50	27.9
2011-07-29 dT	0.207	0.017	NA	0.0057	NA	NA	0.0010	1.86	NA	0.53	NA	NA	0.0118	NA	NA	NA	NA	0.017	0.035	0.518
2011-07-29 dB	0.0738	NA	NA	NA	NA	NA	0.662	1.65	NA	NA	NA	NA	0.645	NA	NA	NA	NA	0.0162	2.05	0.412
geo_mean/ATAL	NA	0.017	0.19	0.0057	NA	NA	0.0010	NA	0.288	0.53	NA	0.086	NA	0.0333	0.30	NA	1	0.017	0.035	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 164.4-2 Analytical Results from Stormwater Sample, PJ-SMA-20 (Table)

164.4.2 Assessment Unit and Stream Impairments

PJ-SMA-20 drains to Pajarito Canyon (lower LANL boundary to Twomile Canyon), which has impairments for total recoverable cyanide, PCBs, adjusted gross alpha, total aluminum, and dissolved copper. The adjusted gross alpha, metals, and PCB impairments may be Site-related, based on Site history.

164.5 Site-Specific Demonstration

164.5.1 Soil Data Summary

No Consent Order data.

164.5.2 Stormwater Data Summary

Copper exceeded the TAL and BTV.

164.5.3 2022 Permit Status

The SMA is in active monitoring. A second confirmation-monitoring sample has not been collected in this monitoring stage.

164.5.4 Sampling and Analysis Plan

Table 164.5-1 is the proposed SAP for PJ-SMA-20.

Table 164.5-1 Proposed SAP, PJ-SMA-20

Monitoring Constituent	Background for Monitoring
Dissolved copper (1) and uranium	Impairment and Site history
Asbestos	Site history
DOC	Permit requirement
SSC	Permit requirement

165.0 STRM-SMA-1.05

Associated Sites	08-009(f)
Receiving Water	Pajarito Canyon/Starmers Gulch
Drainage Area	4.36 acres
Landscape Characteristics	22% impervious, 78% pervious
Consent Order Site Status	AOC 08-009(f): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the field visit in November 2016, the area sampled by the then-current sampler location has been rebuilt and capped with asphalt and does not represent the impacted area (outfall drainage area). Therefore, the sampler was moved down the drainage area, but monitoring was not initiated due to the Alternative Compliance Request.
2022 Permit Status	Active Monitoring

165.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, two baseline stormwater samples were collected in August 2011. Analytical results from these samples initiated corrective action.

Following the June 2013 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2013, 242173), corrective-action monitoring was initiated. Stormwater samples were collected in July and August 2013. Analytical results from these samples initiated corrective action.

The Permittees submitted a request for alternative compliance for the Site per permit Part I.E.3 in May 2015 (LANL 2015, 600418). No response has been received from EPA and stormwater monitoring for that Site has not occurred since 2013.

The sampler move recommended in November 2016 was instituted in 2017 and two investigative samples were collected under the Administratively Continued Permit. Those two samples will be used as compliance samples under the 2022 Individual Permit.

165.2 Site History

08-009(f) (1/9/2018)

AOC 08-009(f) is the former outfall located approximately 40 ft southeast of building 08-22 and the associated drains and drainline at TA-08. Fluorescent penetrants (mixtures of dyes and surfactants) were used in building 08-22 to detect cracks in parts being prepared for installation into weapons assemblies. Historically, fluorescent penetrants, developers, and emulsifiers were discharged to the outfall through drains located within building 08-22. The valves to the sinks that discharged to the AOC 08-009(f) drains were disconnected in 1992, and the drains were rerouted to the building 08-22 sanitary sewer system. After 1992, secondary containers were used to collect the chemicals for disposal offsite.

The 1990 SWMU Report incorrectly attributed the source of effluent to the SWMU 08-009(d) drain to the fluorescent penetrant experiments. To account for the drains that received the fluorescent penetrant effluent, the approved RCRA RFI work plan proposed designating a new identifier for those drains and associated drainline; AOC 08-009(f).

For investigation activities refer to "Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1" (LANL 2011, 111794).

165.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 165.2-1.

Table 165.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
08-009(f)	Outfall associated with building 08-22	Fluoranthene (SVOC)

165.3 Consent Order Soil Data

Decision-level data are not available for AOC 08-009(f).

165.4 Stormwater Evaluation

165.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Samples were collected in July and August 2017 for investigative purposes under the Administratively Continued Permit at the SIP recommended location. These samples are eligible as corrective action stormwater samples for the 2022 Permit SSD. Analytical results from these samples are presented in Figure 165.4-1 through 165.4-4.

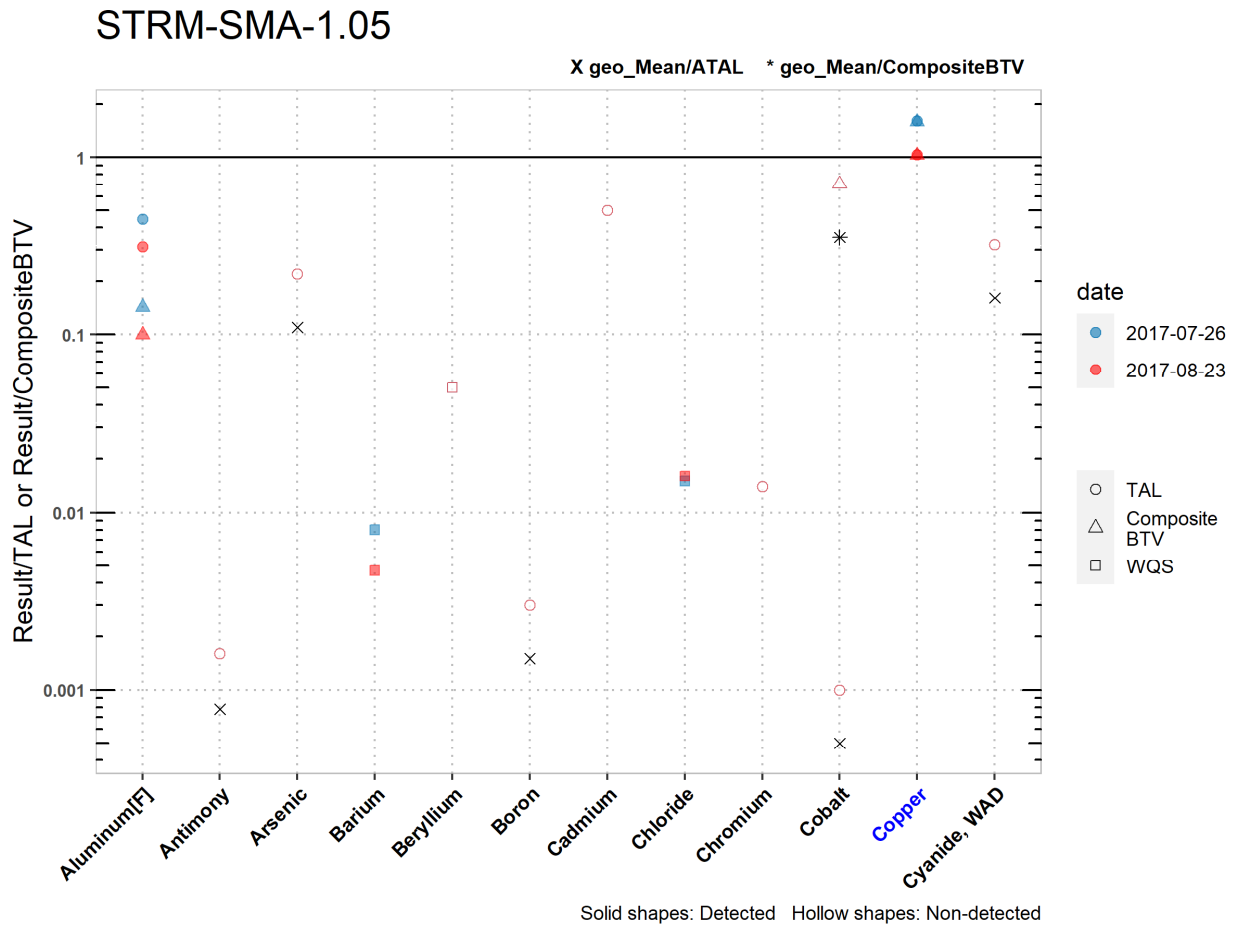

Figure 165.4-1 Analytical Results from Stormwater Samples, STRM-SMA-1.05 (Plot 1)

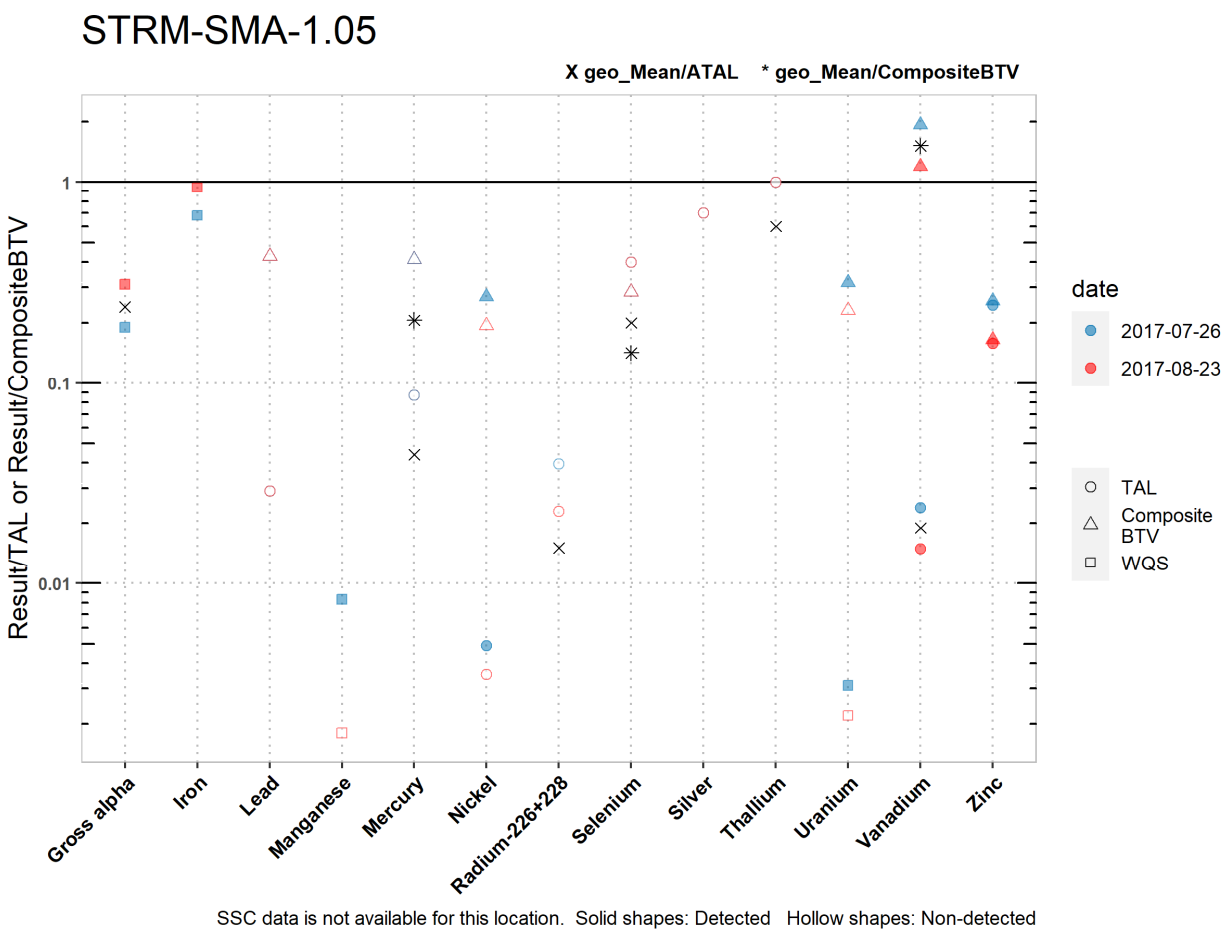

Figure 165.4-2 Analytical Results from Stormwater Samples, STRM-SMA-1.05 (Plot 2)

STRM-SMA-1.05

	Aluminum [F]	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chloride	Chromium	Cobalt	Copper	Cyanide, WAD
MQL	2.5	1	0.5	NA	NA	100	1	NA	10	50	0.5	10
ATAL	NA	640	9	NA	NA	5000	NA	NA	NA	1000	NA	5.2
MTAL	750	NA	340	NA	NA	NA	0.595	NA	214	NA	4.35	22
Composite_BTV	2340	NA	NA	NA	NA	NA	NA	NA	NA	1.42	4.41	NA
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2017-07-26 result	335	*1.00*	*2.00*	16.0	*0.200*	*15.0*	*0.300*	3550	*3.00*	*1.00*	7.00	*1.67*
2017-07-26 dT	0.447	NA	NA	0.0080	NA	NA	NA	0.015	NA	NA	1.61	NA
2017-07-26 dB	0.143	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.59	NA
2017-08-23 result	234	*1.00*	*2.00*	9.34	*0.200*	*15.0*	*0.300*	3780	*3.00*	*1.00*	4.53	*1.67*
2017-08-23 dT	0.312	NA	NA	0.0047	NA	NA	NA	0.016	NA	NA	1.04	NA
2017-08-23 dB	0.100	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.03	NA
geo_mean/ATAL	NA	0.00078	0.11	NA	NA	0.0015	NA	NA	NA	0.00050	NA	0.161
geo_mean/B	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.352	NA	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
geo_mean/B=geo_mean/composite_BTV

Figure 165.4-3 Analytical Results from Stormwater Samples, STRM-SMA-1.05 (Table 1)

STRM-SMA-1.05

	Gross alpha	Iron	Lead	Manganese	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc
MQL	NA	NA	0.5	NA	0.005	0.5	NA	5	0.5	0.5	NA	50	20
ATAL	15	NA	NA	NA	0.77	NA	30	5	NA	0.47	NA	100	NA
MTAL	NA	NA	17.2	NA	NA	170	NA	20	0.41	NA	NA	NA	53.9
Composite_BTV	55.5	NA	1.17	NA	0.163	3.10	5.56	7.02	NA	NA	0.290	1.23	51.4
unit	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2017-07-26 result	2.85	682	*0.500*	9.16	*0.0670*	0.834	*1.19*	*2.00*	*0.300*	*0.600*	0.0920	2.37	13.2
2017-07-26 dT	0.19	0.68	NA	0.0083	NA	0.00491	NA	NA	NA	NA	0.0031	0.024	0.245
2017-07-26 dB	NA	NA	NA	NA	NA	0.269	NA	NA	NA	NA	0.317	1.93	0.257
2017-08-23 result	4.66	937	*0.500*	*2.00*	*0.0670*	*0.600*	*0.690*	*2.00*	*0.300*	*0.600*	*0.0670*	1.47	8.49
2017-08-23 dT	0.31	0.94	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.015	0.158
2017-08-23 dB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.20	0.165
geo_mean/ATAL	0.24	NA	NA	NA	0.044	NA	0.0151	0.20	NA	0.6	NA	0.019	NA
geo_mean/B	NA	NA	NA	NA	0.206	NA	NA	0.142	NA	NA	NA	1.52	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
geo_mean/B=geo_mean/composite_BTV

Figure 165.4-4 Analytical Results from Stormwater Samples, STRM-SMA-1.05 (Table 2)

165.4.2 Assessment Unit and Stream Impairments

STRM-SMA-1.05 drains to Starmers Gulch (Pajarito Canyon to headwaters), which has not been assessed for impairments.

165.5 Site-Specific Demonstration

165.5.1 Soil Data Summary

No Consent Order data.

165.5.2 Stormwater Data Summary

Copper exceeded the TAL and BTV; therefore, it will be added to the SAP.

165.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related POCs were analyzed for in past samples.

165.5.4 Sampling and Analysis Plan

Table 165.5-1 is the proposed SAP for STRM-SMA-1.05.

Table 165.5-1 Proposed SAP, STRM-SMA-1.05

Monitoring Constituent	Background for Monitoring
SVOCs	Site history
Dissolved copper	Stormwater data
DOC	Permit requirement
SSC	Permit requirement

166.0 STRM-SMA-1.5

Associated Sites	08-009(d)
Receiving Water	Pajarito Canyon/Starmers Gulch
Drainage Area	4.33 acres
Landscape Characteristics	5% impervious, 95% pervious
Consent Order Site Status	SWMU 08-009(d): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the field visit in November 2016, the current SMA sampling location and boundary was agreed upon by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

166.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in July 2012. Analytical results from this sample initiated corrective action.

Following the July 2013 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2013, 244386), the sampler was relocated to, a more representative location, and corrective-action monitoring was initiated. A stormwater sample was collected in September 2013. Analytical results from this sample initiated corrective action.

Following the September 2015 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2015, 600911), corrective-action monitoring was initiated, and a stormwater sample was collected in September 2018. Analytical results from this sample initiated corrective action.

Following the July 2021 submittal of certification of enhanced control installation to EPA as a corrective action (N3B 2021, 701533), corrective-action monitoring was initiated. Since that time stormwater flow has not been sufficient for full-volume sample collection and monitoring is ongoing until at least one confirmation sample is collected from this SMA.

166.2 Site History

08-009(d) (1/9/2018)

SWMU 08-009(d) consists of the inactive drains in the photo-processing and x-ray rooms of building 08-22 (x-ray building) and associated drainlines and former outfall at TA-08. Building 08-22 was constructed in 1950 and housed x-ray machines used to radiograph various items. The SWMU 08-009(d) drains were dedicated to receive photoprocessing and photo-development solutions containing silver salts, chromium, pentachlorophenol, and other chemicals used during the radiography process. Before being plugged, the drains discharged effluent to a formerly NPDES-permitted outfall (EPA 06A074), located approximately 300 ft northeast of building 08-22. The outfall discharged into Starmer Gulch, a tributary of Upper Pajarito Canyon. The drains in building 08-22 were plugged between 1995 and 1997. The outfall was removed from the NPDES permit on September 19, 1997.

Based on the NPDES-permit outfall number listed in the 1990 SWMU Report, the RCRA RFI investigating team concluded that the SWMU Report incorrectly attributed the source of effluent to the

SWMU 08-009(d) drain to fluorescent penetrant experiments. To account for the drains that received the fluorescent penetrant effluent, the approved RFI work plan proposed designating a new identifier for those drains and associated drainline; AOC 08-009(f).

For investigation activities refer to "Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1" (LANL 2011, 111794).

166.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 166.2-1.

Table 166.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
08-009(d)	Drains and outfall	Chromium, silver, SVOCs

166.3 Consent Order Soil Data

Decision-level data are not available for SWMU 08-009(d).

166.4 Stormwater Evaluation

166.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No confirmation-monitoring stormwater samples have been collected in the current stage at the SMA.

166.4.2 Assessment Unit and Stream Impairments

STRM-SMA-1.5 drains to Starmers Gulch (Pajarito Canyon to headwaters), which has not been assessed for impairments.

166.5 Site-Specific Demonstration

166.5.1 Soil Data Summary

No Consent Order data.

166.5.2 Stormwater Data Summary

No data for the current monitoring stage have been collected. In the previous stage, total aluminum and gross alpha exceeded the TAL but not the BTV. Silver exceeded TAL and there is no BTV. Chromium from Site history did not exceed the TAL.

166.5.3 2022 Permit Status

The SMA is in active monitoring. A confirmation-monitoring sample has not been collected in this monitoring stage.

166.5.4 Sampling and Analysis Plan

Table 166.5-1 is the proposed SAP for STRM-SMA-1.5.

Table 166.5-1 Proposed SAP, STRM-SMA-1.5

Monitoring Constituent	Background for Monitoring
Dissolved silver	Site history and stormwater data
SVOCs	Site history
DOC	Permit requirement
SSC	Permit requirement

167.0 STRM-SMA-4.2

Associated Sites	09-008(b)
Receiving Water	Pajarito Canyon/Starmers Gulch
Drainage Area	92.79 acres
Landscape Characteristics	4% impervious, 96% pervious
Consent Order Site Status	SWMU 09-008(b): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the field visit in November 2016, it was decided that the current sampling location is representative of backwater from channel and not discharge from the Site. Therefore, the sampler was moved down the drainage swale to evaluate the potentially-affected media area.
2022 Permit Status	Active Monitoring

167.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, baseline stormwater samples were collected in August and September 2011. Analytical results from these samples initiated corrective action.

Following the August 2012 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2012, 225367), corrective-action monitoring was initiated. While developing the 2017 SAP, a decision was made to implement the monitoring location move recommended during the 2016 SIP review and monitoring was reinitiated. Stormwater samples were collected in July and September 2017. Analytical results from these samples initiated corrective action.

Following the January 2020 submittal of certification of enhanced control installation to EPA as a corrective action (N3B 2020, 700732), corrective-action monitoring was initiated and a stormwater sample was collected in July 2021. Corrective-action monitoring is ongoing until a second confirmation sample is collected from this SMA.

167.2 Site History

09-008(b) (2/1/2018)

SWMU 09-008(b) is the decommissioned oxidation pond (structure 09-212) located next to the western boundary of TA-09, approximately 200 ft east of Anchor Ranch Road. Although associated with TA-09, SWMU 09-008(b) is located within the physical boundary of TA-08. Installed in 1969, the pond measures 15 ft wide × 65 ft long × 6 ft deep, is clay plated with emulsified asphalt water proofing, and is surrounded by an 8-ft-high chain-link fence. An overflow pipe, located at the southeast corner of the pond, discharged to an outfall in a drainage channel that flows into Starmer Canyon. The pond treated sanitary waste received from the SWMU 09-005(d) septic tank, which received discharges from buildings 08-20, 08-21, 08-22, 08-23, and 08-24, where the strontium-90 spill occurred in 1954. The pond was decommissioned in 1988.

For investigation activities refer to “Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1” (LANL 2011, 111794).

167.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 167.2-1.

Table 167.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
09-008(b)	Oxidation pond	Metals, organic chemicals, strontium-90

167.3 Consent Order Soil Data

Decision-level data are not available for SWMU 09-008(b).

167.4 Stormwater Evaluation

167.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective action stormwater sample was collected in July 2021. Analytical results from that sample are presented in Figures 167.4-1 and 167.4-2.

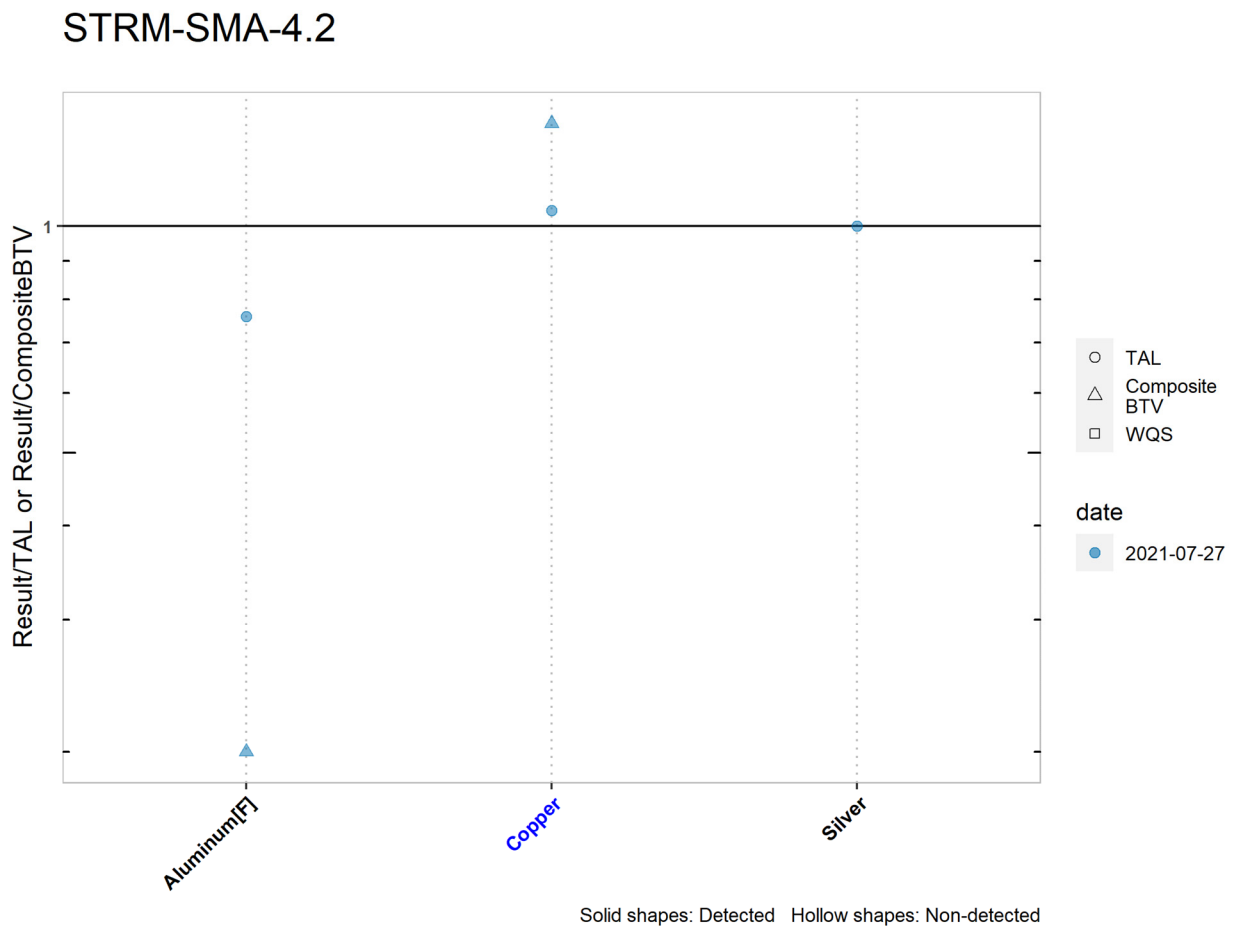

Figure 167.4-1 Analytical Results from Stormwater Sample, STRM-SMA-4.2 (Plot)

STRM-SMA-4.2

	Aluminum [F]	Copper	Silver
MQL	2.5	0.5	0.5
ATAL	NA	NA	NA
MTAL	750	4.35	0.41
Composite_BTV	2850	3.33	NA
unit	ug/L**	ug/L	ug/L
2021-07-27 result	569	4.57	0.568
2021-07-27 dT	0.759	1.05	1
2021-07-27 dB	0.200	1.37	NA
geo_mean/ATAL	NA	NA	NA

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
**SSC normalized unit is mg/kg

Figure 167.4-2 Analytical Results from Stormwater Sample, STRM-SMA-4.2 (Table)

167.4.2 Assessment Unit and Stream Impairments

STRM-SMA-4.2 drains to Starmers Gulch (Pajarito Canyon to headwaters), which has not been assessed for impairments.

167.5 Site-Specific Demonstration

167.5.1 Soil Data Summary

No Consent Order data.

167.5.2 Stormwater Data Summary

Copper exceeded the TAL and BTV. Silver exceeded the TAL and there is no BTV for silver.

167.5.3 2022 Permit Status

The SMA is in active monitoring. A second confirmation-monitoring sample has not been collected in this monitoring stage.

167.5.4 Sampling and Analysis Plan

Table 167.5-1 is the proposed SAP for STRM-SMA-4.2.

Table 167.5-1 Proposed SAP, STRM-SMA-4.2

Monitoring Constituent	Background for Monitoring
Dissolved copper (1), silver (1)	Stormwater data, Site history (metals)
Strontium-90	Site history
SVOCs	Site history
Total PCBs	Site history
DOC	Permit requirement
SSC	Permit requirement

168.0 STRM-SMA-5.05

Associated Sites	09-013
Receiving Water	Pajarito Canyon/Starmers Gulch
Drainage Area	2.91 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 09-013: In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the field visit in November 2016, it was decided that the current sampling location is representative of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

168.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in August 2011. Analytical results from this sample initiated corrective action.

Following the July 2012 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2012, 221595), corrective-action monitoring was initiated and a stormwater sample was collected in August 2015. Analytical results from this sample initiated corrective action.

The Permittees submitted a request for alternative compliance for the Site per permit Part I.E.3 in February 2016 (LANL 2016, 601239). No response has been received from EPA and stormwater monitoring has not occurred since 2015.

168.2 Site History

09-013 (2/13/2018)

SWMU 09-013 is Material Disposal Area (MDA) M, which consisted of two former surface disposal areas, a main area and a smaller satellite area, at TA-09. The main area occupied approximately 3.2 acres and was located approximately 1,600 ft southwest of building 22-120. The satellite area was located approximately 750 ft northwest of the main area and measured approximately 150 ft wide × 260 ft long. MDA M was created during the demolition of the Old Anchor Ranch East and West sites. Structures were flash burned to remove any HE residue and deposited over the surface of the MDA. Debris from the construction of current TA-08 and TA-09 facilities (1949−1965) and other sites (1960−1965) were also deposited at MDA M. Materials present at the MDA included metal debris, wood debris, laboratory appliances and fixtures, and metal and glass containers. The main disposal area was surrounded by an earth berm that eroded through by surface-water runoff. MDA M has been inactive since 1965. All visible debris/waste, and contaminated soil were removed from MDA M during an EC conducted in 1995−1996.

For investigation activities refer to “Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area, Revision 1” (LANL 2011, 111794).

168.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 168.2-1.

Table 168.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
09-013	MDA M	Metals, asbestos, PCBs, SVOCs, HE, uranium

168.3 Consent Order Soil Data

All visible debris/waste, and contaminated soil were removed from MDA M during an EC conducted in 1995−1996. Analytical results from samples taken from STRM-SMA-5.05 are presented in Figures 168.3-1 through 168.3-3. Consent Order investigations are not complete at SWMU 09-013.

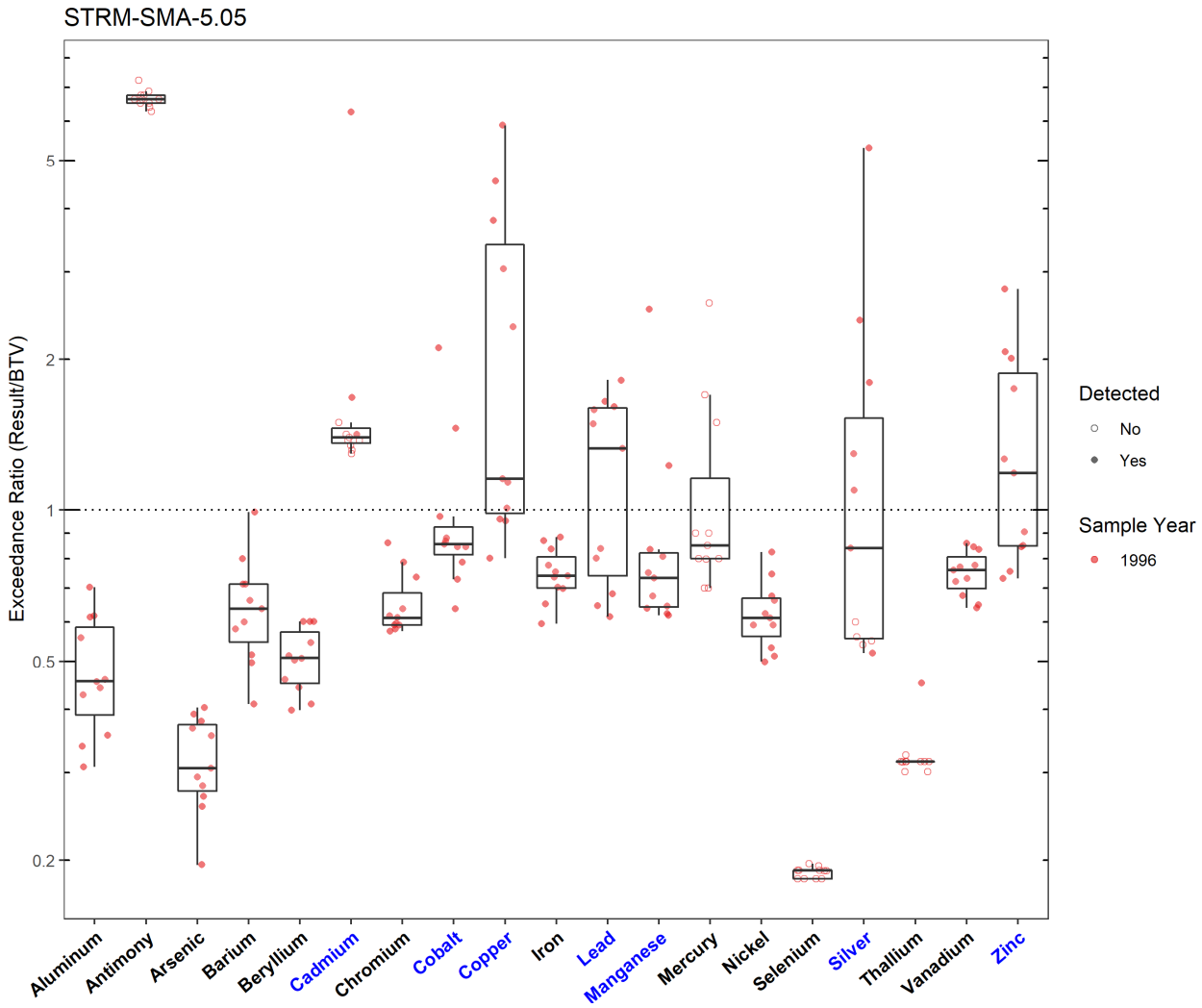

Figure 168.3-1 Inorganics Analytical Results from Soil Samples Associated with STRM-SMA-5.05

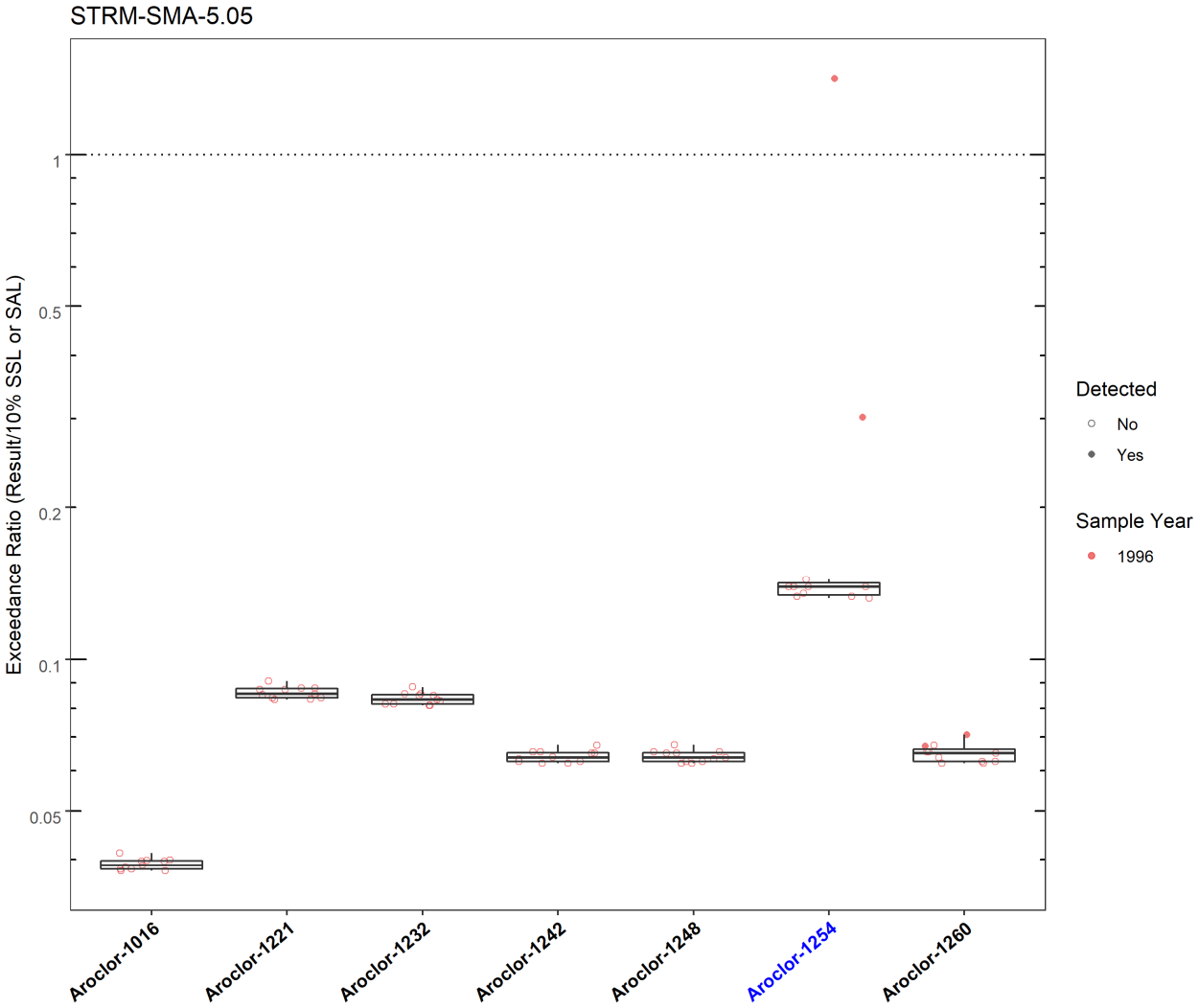

Figure 168.3-2 Organics Analytical Results from Soil Samples Associated with STRM-SMA-5.05

STRM-SMA-5.05

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	STRM-SMA-5.05	11097-69-1	Y	SSL_0.1	0.114	0.162	1996-03-07
Cadmium	STRM-SMA-5.05	Cd	Y	BTV	0.400	2.50	1996-03-07
Cobalt	STRM-SMA-5.05	Co	Y	BTV	8.64	18.2	1996-03-07
Copper	STRM-SMA-5.05	Cu	Y	BTV	14.7	86.5	1996-03-07
Lead	STRM-SMA-5.05	Pb	Y	BTV	22.3	40.6	1996-03-07
Manganese	STRM-SMA-5.05	Mn	Y	BTV	671	1700	1996-03-07
Silver	STRM-SMA-5.05	Ag	Y	BTV	1.00	5.30	1996-03-07
Zinc	STRM-SMA-5.05	Zn	Y	BTV	48.8	135	1996-03-07

Figure 168.3-3 Screening-Level Exceedances from Soil Samples Associated with STRM-SMA-5.05

168.4 Stormwater Evaluation

168.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective action stormwater sample was collected in August 2015. Analytical results from that sample are presented in Figures 168.4-1 and 168.4-2.

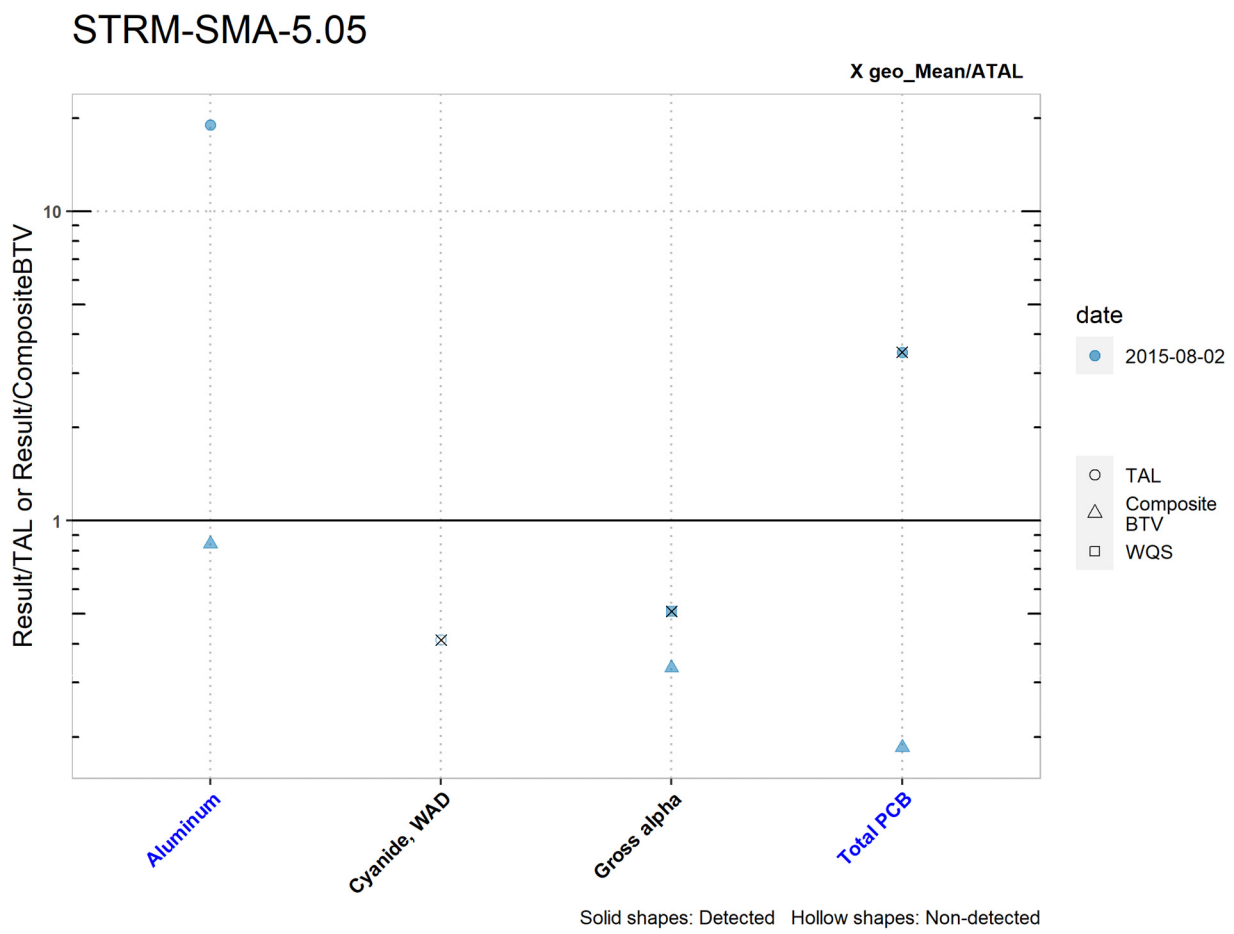

Figure 168.4-1 Analytical Results from Stormwater Sample, STRM-SMA-5.05 (Plot)

STRM-SMA-5.05

	Aluminum	Cyanide, WAD	Gross alpha	Total PCB
MQL	2.5	10	NA	0.2
ATAL	NA	5.2	15	0.00064
MTAL	664	22	NA	NA
Composite_BTV	37400	NA	57.2	0.0122
unit	ug/L**	ug/L	pCi/L*	ug/L
2015-08-02 result	12600	*2.14*	7.66	0.00226
2015-08-02 dT	19.0	NA	0.51	3.5
2015-08-02 dB	0.842	NA	0.335	0.185
geo_mean/ATAL	NA	0.412	0.51	3.5

Italic font indicates nondetect results
dT=detected_result/TAL, dB=detected_result/composite_BTV
*SSC normalized unit is pCi/g **SSC normalized unit is mg/kg

Figure 168.4-2 Analytical Results from Stormwater Sample, STRM-SMA-5.05 (Table)

168.4.2 Assessment Unit and Stream Impairments

STRM-SMA-5.05 drains to Starmers Gulch (Pajarito Canyon to headwaters), which has not been assessed for impairments.

168.5 Site-Specific Demonstration

168.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable soil-screening value in soil data: Aroclor-1254, cadmium, cobalt, copper, lead, silver, zinc. These were all previously measured in stormwater data and did not exceed TALs; therefore, they will not be added to the SAP.

168.5.2 Stormwater Data Summary

Total aluminum and PCBs exceeded the TAL but not the BTV.

168.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related constituents of concern were analyzed for in past samples.

168.5.4 Sampling and Analysis Plan

Table 168.5-1 is the proposed SAP for STRM-SMA-5.05.

Table 168.5-1 Proposed SAP, STRM-SMA-5.05

Monitoring Constituent	Background for Monitoring
HE	Site history
SVOCs	Site history
Asbestos	Site history
DOC	Permit requirement
SSC	Permit requirement