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(505) 257-7690

Environmental Management
Los Alamos Field Office
1200 Trinity Drive, Suite 400
Los Alamos, New Mexico 87544
(505) 562-1122

Date: June 22, 2023
Refer To: N3B-2023-0209

Carol Johnson
Enforcement and Compliance Assurance Division (6 ECD-WR)
U.S. Environmental Protection Agency, Region 6
1201 Elm Street, Suite 500
Dallas, Texas 75270-2102

Mr. Ruben Alayon-Gonzalez
NPDES Permitting Section (6WD-PE)
U.S. Environmental Protection Agency, Region 6
1201 Elm Street, Suite 500
Dallas, Texas 75270-2102

Subject: Submittal of the Response to the U.S. Environmental Protection Agency National Pollutant Discharge Elimination System Permit No. NM0030759 Los Alamos National Laboratory Stormwater Individual Permit Comments on 2022 Annual Sampling Implementation Plan

Dear Ms. Johnson and Mr. Alayon-Gonzalez:

This letter and enclosures are being submitted in accordance with the requirements of the U.S. Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Permit No. NM0030759, for discharges of stormwater at Los Alamos National Laboratory. The permit was issued to Newport News Nuclear BWXT-Los Alamos, LLC (N3B) and the U.S. Department of Energy Environmental Management Los Alamos Field Office (EM-LA), effective August 1, 2022. As specified in Part I.E.2:

> The SIP shall be prepared and submitted to EPA as follows:
>
> a. The Permittees shall prepare a draft SIP and provide it to NMED for review no later than October 15, 2022. The Permittees shall allow NMED a period of at least 30-days to review the draft SIP and provide comment.

EM-LA and N3B began implementation of the proposed SIP on May 1, 2023. EPA comments on the initial SIP were received on May 2, 2023. The enclosed provides the DOE response to EPA comments, as well as those comments received from Communities for Clean Water, and the revised draft SIP results from the required revision and submittal to EPA for approval, as stated in part I.E.2 of the Permit:

f. EPA will review the proposed SIP, require revisions as necessary, and approve via a minor permit modification (40CFR 122.63(b) and/or (e)(2)) to incorporate the first annual SIP requirements applicable for a specified monitoring period. Unless disapproved, permittee may begin implementation of proposed SIP on a provisional basis 30 days after submittal to EPA, and update as necessary once the final SIP is approved.

If you have questions, please contact Christian Maupin at (505) 695-4281 (christian.maupin@em-la.doe.gov) or M. Lee Bishop at (505) 257-7902 (lee.bishop@em.doe.gov).

Sincerely,

Troy Thomson
Program Manager
Environmental Remediation
N3B-Los Alamos

Sincerely,

M Lee Bishop
Digitally signed by M Lee Bishop
Date: 2023.06.20 14:30:54 -06'00'

M. Lee Bishop, Director
Office of Quality and Regulatory Compliance
U.S. Department of Energy
Environmental Management
Los Alamos Field Office

Enclosure(s): One copy with electronic files –

1. 2022 Annual Sampling Implementation Plan NPDES Permit No. NM0030759 June 2023 (EM2023-0377, EM2023-0378, EM2023-0379, EM2023-0380, EM2023-0381, and EM2023-0382)
2. Response to the U.S. Environmental Protection Agency's NPDES Permit No. NM0030759 Los Alamos National Lab. (LANL) Stormwater Individual Permit Comments on Sampling Implementation Plan (SIP), Dated May 2, 2023 (EM2023-0383)

cc (letter with hard copy enclosure[s]):
Karly Rodriguez, N3B

cc (letter with DVD enclosure[s]):
Steve Yanicak, NMED-DOE-OB
Shelly Lemon, NMED-SWQB
Ricardo Maestas, NMED-HWB
Rick Shean, NMED-RPD/HWB
emla.docs@em.doe.gov
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Curry Jones, EPA Region 6, Dallas, TX
Laurie King, EPA Region 6, Dallas, TX
Brent Larsen, EPA Region 6, Dallas, TX
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Jennifer Fullam, NMED-SWQB
Susan Lucas-Kamat, NMED-SWQB
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City, State, ZIP+4® Dallas, Texas, 75270-2102

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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Sincerely,

Troy Thomson
Program Manager
Environmental Remediation
N3B-Los Alamos

Sincerely,

M Lee Bishop

Digitally signed by M Lee Bishop
Date: 2023.06.20 14:30:54 -06'00'

M. Lee Bishop, Director
Office of Quality and Regulatory Compliance
U.S. Department of Energy
Environmental Management
Los Alamos Field Office

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PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

Response to the U.S. Environmental Protection Agency's NPDES Permit NO. NM0030759 Los Alamos National Lab. (LANL) Stormwater Individual Permit Comments on Sampling Implementation Plan (SIP), Dated May 2, 2023

INTRODUCTION

To facilitate review of this response, comments from the U.S. Environmental Protection Agency (EPA) are included verbatim. The responses by the U.S. Department of Energy (DOE) Environmental Management Los Alamos Field Office follow each EPA comment.

OVERVIEW/GENERAL COMMENTS

EPA Comment

1. The Final SIP shall be uploaded in the Individual Permit Public Website as required by Part II.C(1) under the Sampling Implementation Plan tab. If the SIP is stored elsewhere in the webpage (e.g., Electronic Public Reading Room), please provide an easy link under the SIP tab to redirect to the Reading Room.

DOE Response

1. The initial sampling implementation plan (SIP) submitted to EPA on March 29, 2023 is currently available on the Individual Permit (IP) public website at https://ext.em-la.doe.gov/IPS/Home/sip. Upon receipt of final approval from EPA, the document links will be updated to include the changes made to the final SIP as part of this response.

EPA Comment

2. In annual SIP updates, EPA requests a Section under the Overview summarizing substantial changes from the previous SIP.

DOE Response

2. A section will be added in the Overview summarizing substantial changes from the previous SIP, as requested.

EPA Comment

3. Per Part I.C.2.(b).(i) – SW Tier 3; When the confirmation sample result for one or more POCs exceeds the TAL and 90th percentile composite BTV, the SMA shall enter corrective action per Part I.D. As last resort, Permittees may also seek to place a Site into Alternative Compliance per Part I.D.2; whereby corrective action shall be accomplished on a case-by-case basis pursuant to an individually tailored control measure approved by the EPA. The SIP must clearly indicate that Corrective Action procedures required per Part I.C.2.b.(i) will commence upon sampling results indicate that at least one POC has exceeded TAL and BTV regardless of whether sampling has not been completed for all Site POCs.

The Site status list should clearly indicate whether they are in Corrective Action (i.e., have completed all Confirmation Monitoring and one or more POCs have exceeded TALS and BTVs), Active Monitoring (i.e., have not completed Confirmation Monitoring for all POCs and for those completed non exceeded TALs and BTVs) or in a combination of the two (i.e., Corrective Action for some POCs and in Active Monitoring for POCs that have not yet completed Confirmation Sampling).

DOE Response

3. Resolution of this comment results in 30 site monitoring areas (SMAs) being placed in a combination of Corrective Action and Active Monitoring, 4 SMAs moving from Active Monitoring to Corrective Action, and 3 SMAs remaining in Active Monitoring. For organizational purposes, the Permittees have compiled the following summary table of the changes.

Summary of Status Changes from Initial SIP, dated May 30, 2023

Number of SSD[a] samples	Sample(s) greater than 2 yr old?	Exceeded POC(s)[b]	Number of SMAs	Response	See SMA-specific responses to EPA comment #s
1	Y	copper	10	17 SMAs in combination of Corrective Action and Active Monitoring. 2 SMAs updated from Active Monitoring to Corrective Action as exceedance was only pollutant of concern (POC) on the Master Sampling and Analysis Plan (SAP, Overview, Table 4.1-1).	18, 21, 22, 27, 28, 31, 34, 37, and 39. One additional SMA (CHQ-SMA-1.03) was identified during review of comments.
		copper & aluminum	1		10.
		copper & PCBs[c]	3		14, 23 and EPA response to CCW[d] Comment #2 regarding P-SMA-3.05.
		copper & zinc	1		30.
		PCBs	2		16 and 36.
		selenium	1		9.
		zinc	1		Not identified in EPA comments. Exceedance at M-SMA-7 was identified during review of comments.
	N	copper	3	3 SMAs eligible to remain in Active Monitoring until after the end of 2 yr from the receipt of validated analytical data, per Permit Part I.B.1.a.	19, 32, and 33.
2	Y	copper	6	13 SMAs in combination of Corrective Action for exceeded POC and Active Monitoring for other POCs. 2 SMAs updated from Active Monitoring to Corrective Action as exceedance was the only POC on the Master SAP (Overview, Table 4.1-1).	6, 11, 17, 29, and 35. One additional SMA (2M-SMA-1.7) was identified during review of comments.
		copper & PCBs	2		7 and 8.

Summary of Status Changes from Initial SIP, dated May 30, 2023					
Number of SSD[a] samples	**Sample(s) greater than 2 yr old?**	**Exceeded POC(s)[b]**	**Number of SMAs**	**Response**	**See SMA-specific responses to EPA comment #s**
		copper & zinc	1		15.
		cadmium, copper & zinc	1		20.
		PCBs	4		4, 5, 12, and 13.
		copper, PCBs, & zinc	1		26

[a] SSD = site-specific demonstration

[b] POCs = pollutants of concern

[c] PCBs = polychlorinated biphenyls

[d] CCW = Communities for Clean Water

The Permittees have added the following paragraph to the SIP Overview section 1.5 to identify the addition of a combination of tiers:

> The monitoring status of 30 SMAs consists of a combination of Active Monitoring and Corrective Action tiers. At these SMAs, the site-specific demonstration (SSD) reviewed stormwater data for samples that were collected under the 2010 permit, are more than two years old, and had at least one TAL and/or composite BTV exceedance. Corrective action was required for those POCs per Part I.D. However, the SSD also determined that not all Site-related POCs were monitored for in those samples, thus Active Monitoring is also being initiated. These SMAs are discussed in Overview Section 3.0 and listed in Table 3.5-1. Additionally, they are identified in the Master Sampling and Analysis Plan (Table 4.1-1) as being in Active Monitoring/Corrective Action status.

Section 3.5 and Table 3.5-1 have been added to identify the SMAs that are in a combination of the Active Monitoring and Corrective Action tiers. Overview Table 4.1-1, Master Sampling and Analysis Plan (SAP), has been updated for the 30 SMAs to denote that they are in Active Monitoring and Corrective Action, and their SAPs have been updated as identified in DOE responses to other EPA comments.

VOLUME 1 COMMENTS

EPA Comment

4. ACID-SMA-2 – Active Monitoring status but exceeds TAL and BTV for PCBs in stormwater samples. ACID-SMA-2 drains to South Fork Acid Canyon (Pueblo Canyon to headwaters), which has impairment for PCBs. This Site should be in Corrective Action for PCBs and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

4. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 1 sections 8.0 and 8.5, as needed, to place this SMA in Corrective Action for polychlorinated biphenyls (PCBs). The SMA will continue in Active Monitoring for the pollutants of concern (POCs) listed in Table 8.5-1.

EPA Comment

5. ACID-SMA-2.1 – Active Monitoring status but exceeds TAL and BTV for PCBs in stormwater samples. ACID-SMA-2.1 drains to South Fork Acid Canyon (Pueblo Canyon to headwaters), which has impairment for PCBs. This Site should be in Corrective Action for PCBs and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

5. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 1 sections 10.0 and 10.5, as needed, to place this SMA in Corrective Action for PCBs. The SMA will continue in Active Monitoring for the POCs listed in Table 10.5-1.

EPA Comment

6. LA-SMA-0.85 – Active Monitoring but exceeds TAL and BTV for Copper in stormwater samples. LA-SMA-0.85 drains to Los Alamos Canyon (DP to upper LANL boundary). This Site should be in Corrective Action for Copper and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

6. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 1 sections 17.0 and 17.5, as needed, to place this SMA in Corrective Action for copper. The SMA will continue in Active Monitoring for the POCs listed in Table 17.5-1.

EPA Comment

7. LA-SMA-4.1 – Active Monitoring but exceeds TAL and BTV for Copper and PCBs in stormwater samples. LA-SMA-4.1 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairment for PCBs. This Site should be in Corrective Action for Copper and PCBs and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

7. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 1 sections 26.0 and 26.5, as needed, to place this SMA in Corrective Action for copper and PCBs. The SMA will continue in Active Monitoring for the POCs listed in Table 26.5-1.

EPA Comment

8. LA-SMA-5.02– Active Monitoring but exceeds TAL and BTV for PCBs in stormwater samples. LA-SMA-5.02 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairment for PCBs. This Site should be in Corrective Action for PCBs and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

8. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 1 sections 29.0 and 29.5, as needed, to place this SMA in Corrective Action for PCBs as well as copper, which also exceeded target action level (TAL) and background threshold value (BTV) in stormwater samples. The SMA will continue in Active Monitoring for the remaining POCs listed in Table 29.5-1.

EPA Comment

9. LA-SMA-5.361– Active Monitoring but exceeds TAL and BTV for Selenium in stormwater samples. LA-SMA-5.361 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairment for Total Recoverable Selenium. This Site should be in Corrective Action for Selenium and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

9. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 1 sections 34.0 and 34.5, as needed, to place this SMA in Corrective Action for selenium. The SMA will continue in Active Monitoring for the POCs listed in Table 34.5-1.

EPA Comment

10. DP-SMA-0.4 – Active Monitoring but exceeds TAL and BTV for Aluminum and Copper in stormwater samples. DP-SMA-0.4 drains to DP Canyon (400m upstream of grade control to upper LANL boundary), which has impairments for total recoverable aluminum and dissolved copper. This Site should be in Corrective Action for Aluminum and Copper and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

10. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 1 sections 53.0 and 53.5, as needed, to place this SMA in Corrective Action for aluminum and copper. The SMA will continue in Active Monitoring for the POCs listed in Table 53.5-1.

VOLUME 2 COMMENTS

EPA Comment

11. S-SMA-0.25– Active Monitoring but exceeds TAL and BTV for Copper in stormwater samples. S-SMA-0.25 drains to Sandia Canyon (Sigma Canyon to NPDES Outfall 001), which has impairments for dissolved copper. This Site should be in Corrective Action for Copper and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

11. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 2 sections 59.0 and 59.5, as needed, to place this SMA in Corrective Action for copper. The SMA will continue in Active Monitoring for the POCs listed in Table 59.5-1.

EPA Comment

12. S-SMA-1.1 – Active Monitoring status but exceeds TAL and BTV for PCBs in stormwater samples. S-SMA-1.1 drains to Sandia Canyon (Sigma Canyon to NPDES Outfall 001), which has impairments for PCBs. This Site should be in Corrective Action for PCBs and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

12. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 2 sections 60.0 and 60.5, as needed, to place this SMA in Corrective Action for PCBs. The SMA will continue in Active Monitoring for the POCs listed in Table 60.5-1.

EPA Comment

13. S-SMA-2 – Active Monitoring but exceeds TAL and BTV for PCBs in stormwater samples. S-SMA-2 drains to Sandia Canyon (Sigma Canyon to NPDES Outfall 001), which has impairments for PCBs. This Site should be in Corrective Action for PCBs and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

13. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 2 sections 61.0 and 61.5, as needed, to place this SMA in Corrective Action for PCBs. The SMA will continue in Active Monitoring for the POCs listed in Table 61.5-1.

EPA Comment

14. S-SMA-3.53 – Active Monitoring but exceeds TAL and BTV for Copper and PCBs in stormwater samples. S-SMA-3.53 drains to Sandia Canyon (Sigma Canyon to NPDES Outfall 001), which has impairments for dissolved copper and PCBs. This Site should be in Corrective Action for Copper and PCBs and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

14. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 2 sections 66.0 and 66.5, as needed, to place this SMA in Corrective Action for copper and PCBs. The SMA will continue in Active Monitoring for the POCs listed in Table 66.5-1.

EPA Comment

15. S-SMA-3.6 – Active Monitoring but exceeds TAL and BTV for Copper and Zinc in stormwater samples. S-SMA-3.6 drains to Sandia Canyon (Sigma Canyon to NPDES Outfall 001), which has impairment for Dissolved Copper. This Site should be in Corrective Action for Copper and Zinc and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

15. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 2 sections 67.0 and 67.5, as needed, to place this SMA in Corrective Action for copper and zinc. The SMA will continue to be in Active Monitoring for the POCs listed in Table 67.5-1.

EPA Comment

16. S-SMA-3.72 – Active Monitoring but exceeds TAL and BTV for PCBs in stormwater samples. S-SMA-3.72 drains to Sandia Canyon (within LANL below Sigma), which has impairments for PCBs. This Site should be in Corrective Action for PCBs and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

16. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 2 sections 72.0 and 72.5, as needed, to place this SMA in Corrective Action for PCBs. The SMA will continue in Active Monitoring for the POCs listed in Table 72.5-1.

EPA Comment

17. CDB-SMA-0.25 – Active Monitoring but exceeds TAL and BTV for Copper in stormwater samples. CDB-SMA-0.25 drains to Cañada del Buey (within LANL). This Site should be in Corrective Action for Copper and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

17. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 2 sections 80.0 and 80.5, as needed, to place this SMA in Corrective Action for copper. As this was the only Site-related POC planned for monitoring in the initial SIP, section 80.5.4 has been removed, and section 80.5.3 has been updated as follows:

> Due to the exceedance of a composite BTV and/or TAL, corrective action will be initiated for copper at this SMA (Part I.C.2.b.i).

EPA Comment

18. CDB-SMA-0.55 – Active Monitoring but exceeds TAL and BTV for Copper in stormwater samples. CDB-SMA-0.55 drains to Cañada del Buey (within LANL). This Site should be in Corrective Action for Copper and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

18. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 2 sections 81.0 and 81.5, as needed, to place this SMA in Corrective Action for copper. The SMA will continue in Active Monitoring for the POCs listed in Table 81.5-1.

EPA Comment

19. CDB-SMA-1 – Active Monitoring but exceeds TAL and BTV for Copper in stormwater samples. CDB-SMA-1 drains to Cañada del Buey (within LANL). This Site should be in Corrective Action for Copper and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

19. The single Corrective Action stormwater sample that exceeded TAL and BTV for copper was collected in August 2021 under the Administratively Continued Permit, and the final analytical results were received on September 8, 2021. Per 2022 Permit Part I.B.1.(a), this SMA is eligible to remain in Active Monitoring under the initial SIP until September 7, 2023.

    If a second confirmation sample is not collected by that time, the SMA will move into Corrective Action for copper, and this change will be included in the 2023 SIP update published in 2024.

EPA Comment

20. M-SMA-1 – Active Monitoring but exceeds TAL and BTV for Copper and Zinc in stormwater samples. M-SMA-1 drains to Mortandad Canyon (within LANL), which has impairment for Dissolved Copper. This Site should be in Corrective Action for Copper and Zinc and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

20. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 2 sections 85.0 and 85.5, as needed, to place this SMA in Corrective Action for cadmium, copper, and zinc. The SMA will continue in Active Monitoring for the POCs listed in Table 85.5-1.

EPA Comment

21. M-SMA-1.2 – Active Monitoring but exceeds TAL and BTV for Copper and Zinc in stormwater samples. M-SMA-1.2 drains to Mortandad Canyon (within LANL), which has impairment for Dissolved Copper. This Site should be in Corrective Action for Copper and Zinc and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

21. Although zinc exceeded the applicable screening value in soil data, it was measured in stormwater data in a previous stage and did not exceed the TAL. Therefore, the Permittees are not required to move into Corrective Action for zinc. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 2 sections 86.0 and 86.5, as needed, to place this SMA in Corrective Action for copper. The SMA will continue in Active Monitoring for the POCs listed in Table 86.5-1.

EPA Comment

22. M-SMA-4 – Active Monitoring but exceeds TAL and BTV for Copper in stormwater samples. M-SMA-4 drains to Effluent Canyon (Mortandad Canyon to headwaters), which has not been assessed for impairments. This Site should be in Corrective Action for Copper and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

22. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 2 sections 92.0 and 92.5, as needed, to place this SMA in Corrective Action for copper. The SMA will continue in Active Monitoring for the POCs listed in Table 92.5-1.

EPA Comment

23. M-SMA-6 – Active Monitoring status but exceeds TAL and BTV for Copper and PCBs in stormwater samples. M-SMA-6 drains to Effluent Canyon (Mortandad Canyon to headwaters), which has not been assessed for impairments. This Site should be in Corrective Action for Copper and PCBs and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

23. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 2 sections 94.0 and 94.5, as needed, to place this SMA in Corrective Action for copper and PCBs. As these were the only Site-related POCs planned for monitoring in the initial SIP, section 94.5.4 has been removed and section 94.5.3 has been updated as follows:

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

EPA Comment

24. M-SMA-10.3 – 2022 Permit Status (Table 99.0) should be Corrective Action and not Active Monitoring. Corrective Action was initiated per 99.5.3.

DOE Response

24. EPA is correct that, per 99.5.3, Corrective Action has been initiated. Table 99.0 has been corrected to Corrective Action. No revisions are needed in the Overview, as it correctly identifies the Corrective Action stage for this SMA.

EPA Comment

25. M-SMA-12 – 2022 Permit Status (Table 101.0) should be Corrective Action and not Active Monitoring. Corrective Action was initiated per 101.5.3.

DOE Response

25. EPA is correct that, per 101.5.3, Corrective Action has been initiated. Table 101.0 has been corrected to Corrective Action. No revisions are needed in the Overview as it correctly identifies the Corrective Action stage for this SMA.

EPA Comment

26. T-SMA-1 – Active Monitoring but exceeds TAL and BTV for Copper, PCBs and Zinc in stormwater samples. T-SMA-1 drains to Ten Site Canyon (Mortandad Canyon to headwaters), which has impairments for PCBs. This Site should be in Corrective Action for Copper, PCBs and Zinc and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

26. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 2 sections 110.0 and 110.5, as needed, to place this SMA in Corrective Action for copper, PCBs, and zinc. As these were the only Site-related POCs planned for monitoring in the initial SIP, section 110.5.4 has been removed and section 110.5.3 has been updated as follows:

> Due to the exceedances of composite BTV and/or TAL, corrective action will be initiated at this SMA (Part I.C.2.b.i).

EPA Comment

27. T-SMA-6.8 – Active Monitoring but exceeds TAL and BTV for Copper in stormwater samples. T-SMA-6.8 drains to Ten Site Canyon (Mortandad Canyon to headwaters). This Site should be in Corrective Action for Copper and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

27. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 2 sections 116.0 and 116.5, as needed, to place this SMA in Corrective Action for copper. The SMA will continue in Active Monitoring for the POCs listed in Table 116.5-1.

EPA Comment

28. T-SMA-7.1 – Active Monitoring but exceeds TAL and BTV for Copper in stormwater samples. T-SMA-7.1 drains to Ten Site Canyon (Mortandad Canyon to headwaters). This Site should be in Corrective Action for Copper and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

28. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 2 sections 118.0 and 118.5, as needed, to place this SMA in Corrective Action for copper. The SMA will continue in Active Monitoring for the POCs listed in Table 118.5-1.

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EPA Comment

29. 2M-SMA-1.8 – Active Monitoring but exceeds TAL and BTV for Copper in stormwater samples. 2M-SMA-1.8 drains to Two Mile Canyon (Pajarito to headwaters), which has impairments for Copper. This Site should be in Corrective Action for Copper and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

29. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 3 sections 128.0 and 128.5, as needed, to place this SMA in Corrective Action for copper. The SMA will continue in Active Monitoring for the POCs listed in Table 128.5-1.

EPA Comment

30. 2M-SMA-1.9 – Active Monitoring but exceeds TAL and BTV for Copper and Zinc in stormwater samples. 2M-SMA-1.9 drains to Two Mile Canyon (Pajarito to headwaters), which has impairments for Copper. This Site should be in Corrective Action for Copper and Zinc and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

30. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 3 sections 129.0 and 129.5, as needed, to place this SMA in Corrective Action for copper and zinc. The SMA will continue in Active Monitoring for the POCs listed in Table 129.5-1.

EPA Comment

31. 3M-SMA-4 – Active Monitoring but exceeds TAL and BTV for Copper in stormwater samples. 3M-SMA-4 drains to Three Mile Canyon (Pajarito to headwaters). This Site should be in Corrective Action for Copper and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

31. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 3 sections 139.0 and 139.5, as needed, to place this SMA in Corrective Action for copper. The SMA will continue in Active Monitoring for the POCs listed in Table 139.5-1.

EPA Comment

32. PJ-SMA-5 – Active Monitoring but exceeds TAL and BTV for Copper in stormwater samples. PJ-SMA-5 drains to Pajarito Canyon (Arroyo de la Delfe to Starmers Gulch). This Site should be in Corrective Action for Copper and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

32. Per section 1.2 of the initial SIP Overview, the initial SIP covers stormwater data collected between 2010 and 2021. Stormwater data collected in 2022 will be included in the 2023 SIP update, along with any stormwater data collected in 2023.

    The single Corrective Action stormwater sample at PJ-SMA-5 that exceeded TAL and BTV for copper was collected in May 2021 under the Administratively Continued Permit, and the final analytical results were received on July 7, 2021. Per 2022 Permit Part I.B.1.(a), this SMA is eligible to remain in active monitoring until July 6, 2023. A second confirmation monitoring sample was collected in 2022, and the SMA has moved into Corrective Action for copper as a result. This change in monitoring status will be included in the 2023 SIP update that will be published in 2024.

EPA Comment

33. PJ-SMA-9 – Active Monitoring but exceeds TAL and BTV for Copper in stormwater samples. PJ-SMA-9 drains to Pajarito Canyon (Two mile Canyon to 500 m ds of Arroyo de la Delfe), which has impairments for Copper. This Site should be in Corrective Action for Copper and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

33. Per section 1.2 of the initial SIP Overview, the initial SIP covers stormwater data collected between 2010 and 2021. Stormwater data collected in 2022 will be included in the 2023 SIP update along with any stormwater data collected in 2023.

    The single Corrective Action stormwater sample at PJ-SMA-9 that exceeded TAL and BTV for copper was collected in July 2021 under the Administratively Continued Permit, and the final analytical results were received on August 31, 2021. Per 2022 Permit Part I.B.1.(a), this SMA is eligible to remain in Active Monitoring until August 30, 2023. A second confirmation-monitoring sample was collected in 2022, and the SMA has moved into Corrective Action for copper and PCBs as a result. This change in monitoring status will be included in the 2023 SIP update that will be published in 2024.

EPA Comment

34. PJ-SMA-20 – Active Monitoring but exceeds TAL and BTV for Copper in stormwater samples. PJ-SMA-20 drains to Pajarito Canyon (lower LANL boundary to Two Mile Canyon), which has impairments for Copper. This Site should be in Corrective Action for Copper and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

34. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 3 sections 164.0 and 164.5, as needed, to place this SMA in Corrective Action for copper. The SMA will continue in Active Monitoring for the POCs listed in Table 164.5-1.

EPA Comment

35. STRM-SMA-1.05 – Active Monitoring but exceeds TAL and BTV for Copper in stormwater samples. STRM-SMA-1.05 drains to Starmers Gulch (Pajarito Canyon to headwaters). This Site should be in Corrective Action for Copper and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

35. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 3 sections 165.0 and 165.5, as needed, to place this SMA in Corrective Action for copper. The SMA will continue in Active Monitoring for the POCs listed in Table 165.5-1.

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EPA Comment

36. CDV-SMA-2.41 – Active Monitoring but exceeds TAL and BTV for PCBs in stormwater samples. CDV-SMA-2.41 drains to Cañon de Valle (LANL gage E256 to Burning Ground Spring), which has impairments for PCBs. This Site should be in Corrective Action for PCBs and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

36. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 4 sections 176.0 and 176.5, as needed, to place this SMA in Corrective Action for PCBs. The SMA will continue in Active Monitoring for the POCs listed in Table 176.5-1.

EPA Comment

37. W-SMA-9.7 – Active Monitoring but exceeds TAL and BTV for Copper in stormwater samples. W-SMA-9.7 drains to S-Site Canyon (Water Canyon to headwaters). This Site should be in Corrective Action for Copper and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

37. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 4 sections 211.0 and 211.5, as needed, to place this SMA in Corrective Action for copper. As this was the only Site-related POC planned in the initial SIP, section 211.5.3 has been updated as follows:

> Due to the exceedances of composite BTV and/or TAL, corrective action will be initiated at this SMA (Part I.C.2.b.i).

EPA Comment

38. W-SMA-11.7 – Check 215.5.2 and 215.5.3, unclear if Stormwater samples were collected at this monitoring stage.

DOE Response

38. The current monitoring stage began in 2022 after certification of enhanced control measure installation. No samples have been collected in this stage. The sample discussed in section 215.5.2 was from the previous monitoring stage at the same monitoring location. Section 215.5.2 has been changed as follows:

> Gross alpha exceeded the TAL but not the BTV in the previous stage of stormwater monitoring; therefore it will not be added to the SAP.

VOLUME 5 COMMENTS

EPA Comment

39. A-SMA-6 – Active Monitoring but exceeds TAL and BTV for Copper in stormwater samples. A-SMA-6 drains to Rio Grande (Cochiti reservoir to boundary of Pueblo de San Ildefonso). This Site should be in Corrective Action for Copper and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

39. The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 5 sections 227.0 and 227.5, as needed, to place this SMA in Corrective Action for copper. The SMA will continue in Active Monitoring for the POCs listed in Table 227.5-1.

EPA Comment

40. CHQ-SMA-0.5 – Active Monitoring but exceeds TAL and BTV for Copper and PCBs in stormwater samples. CHQ-SMA-0.5 drains to Chaquehui Canyon (within LANL), which has impairments for PCBs. This Site should be in Corrective Action for PCBs and continue Active Monitoring for POCs that have yet completed the Confirmation Sampling. Please refer to EPA Comment #3.

DOE Response

40. The single Corrective Action stormwater sample used for the site-specific demonstration (SSD) in Volume 5 section 228.5 was collected in August 2021, and the final analytical results were received on September 8, 2021. Per 2022 Permit Part I.B.1.(a), this SMA is eligible to remain in Active Monitoring until September 7, 2023, to attempt to collect a second sample under the initial SIP. At that time, if there are any exceedances of TAL and composite BTVs in stormwater for Site-related POCs, the Permittees will update the status as applicable in the next SIP update.

    In the 2021 stormwater sample, copper and total PCBs did not exceed the associated TAL or BTV values. Section 228.5.2 notes that the SMA is currently in corrective action confirmation sampling for the corrective action taken in 2015 (installation of enhanced controls) based on the PCB exceedance in the previous stage. PCBs are in the SAP for the attempt at a second sample because this SMA is still in confirmation monitoring for that Corrective Action, not because there is a TAL and BTV exceedance that is awaiting corrective action. Section 228.5.2 has been corrected to clarify as follows:

    > Aluminum and gross alpha exceeded the TAL in the current monitoring stage but did not exceed the BTV. PCBs exceeded the TAL in the previous stage and corrective action was taken in 2015. PCBs did not exceed the TAL or BTV in the current monitoring. However, because this stage is for confirmation-monitoring of the 2015 corrective action for the PCB exceedance from the previous stage, PCBs are included in the SAP until a second confirmation-monitoring sample is collected.

COMMENTS FROM COMMUNITIES FOR CLEAN WATER

INTRODUCTION

To facilitate review of this response, the comments from Communities For Clean Water (CCW) that were included in the EPA comments on the initial SIP received on April 3, 2023, are included verbatim, along with the initial DOE response and EPA response. The final DOE responses follow.

GENERAL COMMENTS

CCW Comment and EPA Response

1a. SIP Process and Formatting:
Please show the location and number of soil sample locations on the Site Monitoring Maps. With the heavy emphasis on soil sampling, it is difficult to adequately review the SIP without this critical information.

Initial DOE Response: Maps developed and approved by the New Mexico Environmental Department (NMED) during the initial 2016-2018 SIP exercise, as discussed in Section 1.3 of the SIP Overview, are included in the Individual Stormwater Permit Renewal application, dated July 15, 2019, which is available on the Individual Permit (IP) Public website. These maps contain soil sampling locations available at that time. It is infeasible to add the soil sampling locations to the site monitoring area (SMA) maps, due to scale and resource availability. Additionally, Section X.2 in each site-specific chapter includes the most recent soil investigation report, with citation. These reports are available on the Electronic Public Reading Room (EPRR) and contain maps with soil sample locations.

EPA Response: Site Monitoring Maps and location and number of soil sample locations can be found in the LANL Individual Permit public webpage. The requirements of the Sampling Implementation Plan can be found in Permit Part I.E.2.a & b.

DOE Response

1a. The Permittees concur with EPA response to CCW comment and initial DOE response to 1a.

CCW Comment and EPA Response

1b. SIP Process and Formatting:
The document does not appear to contain a definition (or easy way of locating) what pollutants of concern (POCs) are specifically included in sampling for constituents such as SVOCs, DOC, SSC, etc.

Initial DOE Response: Pollutants of concern (POCs) with target action levels (TALs) and/or water quality standards (WQS), including metals, organic chemicals, and pesticides, have been added to Table 1.4-1 in the SIP Overview. The dissolved organic carbon (DOC) definition has been added to Appendix A, Acronyms and Glossary. The semivolatile organic compound (SVOC) and suspended sediment concentration (SSC) definitions are present in Appendix A. DOC and SSC are not included in Table 1.4-1 because they are not POCs.

EPA Response: Permittees added additional information on pollutants of concern in Table 1.4-1 in the Overview. Other definitions have been added in Appendix A.

DOE Response

1b. The Permittees concur with EPA response to CCW comment and initial DOE response to 1b.

CCW Comment and EPA Response

1c. SIP Process and Formatting:
CCW requests that the annual IP public meeting as required under PART II.C.3 of the 2022 IP be held annually between January 15th and March 15th to coincide with the annual SIP update process. We request that the intention to hold the public meeting during this time to review the previous year's sampling results and proposed changes to the SIP be written into the SIP itself.

Initial DOE Response: The IP Public meeting schedule is determined based on many factors, and the Permittees cannot provide set schedules at this time. Beginning in 2024, the Permittees will attempt to hold the meeting between January 15 and March 15th.

EPA Response: The Permittees will attempt to hold the meeting between January 15 and March 15 beginning in 2024. EPA encourages Permittees to hold these meeting before the Sampling begins for each year.

DOE Response

1c. The Permittees concur with EPA response to CCW comment and initial DOE response to 1c.

CCW Comment and EPA Response

1d. SIP Process and Formatting:
It would make the SIP review process transparent to have the acronym list up front or the very least provide a link to acronyms in PDF instead of as an appendix.

Initial DOE Response: An acronym list is provided as Appendix A in the SIP Overview.

EPA Response: The acronym list is provided as Appendix A in the SIP Overview.

DOE Response

1d. The Permittees concur with EPA response to CCW comment and initial DOE response to 1d.

CCW Comment and EPA Response

1e. SIP Process and Formatting:

Throughout the SIP there is language that states "corrective action was initiated" at sites but omits any summary of what type of corrective action or whether this corrective action was complete or is still in process. It is therefore unclear if we are awaiting confirmation sampling to determine if the corrective action was effective or if we are still waiting for the corrective action to be implemented. It is essential to have more details about the corrective action status of each site.

Initial DOE Response: In the initial SIP, the Permittees presented a summary of more than 12 years of activities that occurred under the 2010 IP for the convenience of the reader. Specific details of each corrective action, and the current status, can be found in the corresponding Site Discharge Pollution Prevention Plan Updates and/or author report(s) that are available on the public website.

EPA Response: See EPA comment #3 above, regarding clarification of the Sampling and Corrective Action status for each Site. The details of the Corrective Actions can be found in the SDPPP updates and/or author reports available on the public website.

DOE Response

1e. The Permittees concur with EPA response to CCW comment and initial DOE response to 1e.

CCW Comment and EPA Response

1f. SIP Process and Formatting:
Figure 1.5-1 – Site Specific Demonstration Process Flowchart. The flowchart inaccurately depicts that decisions about removing POCs and ultimately deleting whole sites can be made solely on soil data without collecting or reviewing stormwater data. The flowchart should be edited to show that stormwater data must be considered, especially when making decisions about deleting sites. In addition, please revise the flowchart to clarify that soil sample results can also lead to POCs being identified for corrective action.

Initial DOE Response: The flowchart reflects the site-specific demonstration process and is part of the Permit per the NMED State Certification dated February 22, 2022. No Site will be requested for deletion without stormwater data.

EPA Response: NMED Surface Water Quality Bureau and NMED Hazardous Waste Bureau worked with the Permittees to develop a sediment removal decision tree that accounted for both hazardous waste and surface water regulatory requirements for removal of sediments accumulated in stormwater retention facilities. NMED included this decision tree as supplemental information to this certification to assist in decision making regarding maintenance of BMPs required under this permit. The Permit requirements for Site Deletions are found at Part I.C.4 and do not rely solely on the flowchart.

DOE Response

1f. The Permittees concur with EPA response to CCW comment and initial DOE response to 1f.

CCW Comment and EPA Response

1g. SIP Process and Formatting:
Table 3.3-1 has a confusing footnote labeled "a". CCW believes that this footnote should be labeled "*" instead. Also, this table inaccurately identifies sites that are RCRA deferred as eligible for long-term stewardship (LTS) solely on RCRA deferral status. See comment number #3 below for more details.

Initial DOE Response: The footnote in Table 3.3-1 has been corrected to '' Per the U.S. Environmental Protection Agency's (EPA's) June 24, 2022 Response to Draft IP Public Comment #13, "Resource Conservation and Recovery Act (RCRA) deferred sites with best management practices (BMPs) required under Part I.A have been added to Part I.C.3. Maintenance of these controls is required under Part I.A.1.b." The Permittees have adhered to this BMP requirement and will continue to do so. Therefore, the RCRA-deferred SMAs listed in Table 3.3-1 of the SIP Overview are eligible for long-term stewardship (LTS).*

EPA Response: Footnote corrected. RCRA-deferred SMAs listed in Table 3.3-1 are eligible for Long-Term Stewardship (LTS) Category per Part I.C.3.

DOE Response

1g. The Permittees concur with EPA response to CCW comment and initial DOE response to 1g. RCRA-deferred SMAs listed in Table 3.3-1 will remain in the LTS category. Footnote for Table 3.3-1 has been changed to read, "SMA also qualifies for Long-Term Stewardship pursuant to Part I.C.3.c criterion."

CCW Comment and EPA Response

1h. SIP Process and Formatting:
Table 4.1-1 needs more explanation about why there are "1s" and "2s" under each POC.

Initial DOE Response: A footnote has been added to the table and the reference in the text for Table 4.1-1 (Section 4.0) has been modified to read:

> *Table 4.1-1 shows the Master SAP for the project, with 1s and 2s indicating the number of samples required. By default, two samples are planned for each POC. One sample is planned when the POC was analyzed for in a previous sample in the same stage at the SMA.*

EPA Response: A footnote has been added to explain what are the "1s" and "2s".

DOE Response

1h. The Permittees concur with EPA response to CCW comment and initial DOE response to 1h.

CCW Comment and EPA Response

1i. SIP Process and Formatting:
It would be helpful to have clickable bookmarks in the pdf to be able to click to different sections of the SIP, including to the acronym list and specific tables.

Initial DOE Response: The document format is developed using the Newport News Nuclear BWXT-Los Alamos, LLC (N3B) Regulatory Documentation template.

EPA Response: Comment noted. LANL may consider adding this feature to future SIPS.

DOE Response

1i. The Permittees concur with EPA response to CCW comment and initial DOE response to 1i.

CCW Comment and EPA Response

1j. SIP Process and Formatting:
Analytical plots should consider using a symbol other than an open circle. In some cases, when sampling results overlap it is not possible to discern an open circle from a closed one.

Initial DOE Response: The Permittees went through many iterations of symbols when developing the analytical plots and decided to use circles. When results overlap, the reader is encouraged to review the tabular data provided below the analytical plot.

EPA Response: EPA notes that detected sample results from Soil and Water Data are tabulated in Tables for each SMA.

DOE Response

1j. The Permittees concur with EPA response to CCW comment and initial DOE response to 1j.

CCW Comment and EPA Response

1k. SIP Process and Formatting:
For some sites either the SIP is inaccurate in stating that all pollutants that showed exceedances in soil did not show TAL exceedances in stormwater or not all the data has been included in the SIP (for example: W-SMA-9.9, W-SMA-10, W-SMA-14.1, A-SMA-2, among others).

Initial DOE Response: Per Section 2.2 of the SIP Overview, "For the purposes of the SSD, only the most recent monitoring stage of stormwater data is used. For example, if an SMA had progressed from Baseline Monitoring to Corrective Action, only data from the Corrective Action stage would be screened." The dates and years of previous-stage sampling, which are not presented in the SIP but included as part of the SSD, are provided in Section X.1 in the five SIP volumes, 2010 Administratively Continued Permit Summary, as applicable. The analytical results from these samples can be found in the corresponding IP Annual Report(s) for those year(s), which are available on the IP public website. Additionally, all analytical data for confirmation-monitoring samples collected for the IP are available on Intellus.

EPA Response: To be representative of the current Site conditions and controls, the most recent monitoring stage of stormwater data is used and shall be used in the SIP. Sampling for each pollutant will depend on site history, impairment, and stormwater data for each SMA.

DOE Response

1k. The Permittees concur with EPA response to CCW comment and initial DOE response to 1k.

CCW Comment and EPA Response

1l. SIP Process and Formatting:
In annual updates CCW requests to have changes to the SIP clearly identified – either through underline/bold, redline strikeout (RLSO) or some other form of highlighting.

Initial DOE Response: Future annual updates of the SIP will include only the changes for the monitoring year and should be viewed as a new document.

EPA Response: Please refer to EPA comment #2.

DOE Response

1l. The Permittees concur with EPA response to CCW comment and initial DOE response to 1l. As requested in EPA comment #2, the Permittees will add a section to the Overview of the annual SIP updates summarizing substantial changes from the previous SIP.

CCW Comment and EPA Response

1m. SIP Process and Formatting:
CCW requests that the SIP requirements outlined in the 2022 IP PART I.E.2 of the permit be included the SIP Introduction. It would be helpful to have the exact permit language to reference when reviewing the SIP.

Initial DOE Response: Due to the size of the document, verbatim Permit language will not be introduced. All documentation related to the Permit is available on EPA's website, https://www.epa.gov/nm/lanlstorm-water-individual-permit-npdes-permit-no-nm0030759 .

EPA Response: The Final Permit can be found at the EPA Region 6 NPDES webpage. The requirements of the Sampling Implementation Plan can be found in Permit Part I.E.2.a & b.

DOE Response

1m. The Permittees concur with EPA response to CCW comment and initial DOE response to 1m.

CCW Comment and EPA Response

2. Sites with TAL and BTV Exceedances: CCW is concerned that many sites with TAL and BTV Exceedances are not being put into corrective action as per the permit requirement at PART I.D.1. For example, many sites including, but not limited to, P-SMA-3.05, LA-SMA-.85, LA-SMA- 4.1, M-SMA-3, M-SMA-4, S-SMA-3.53, S-SMA-3.6, S-SMA-3.72, have TAL and BTV exceedances but instead of being placed into corrective they have been left in the active monitoring category. For some of these sites, such as for LA-SMA-4.1, the POCs (PCBs and copper) that have TAL and BTV exceedances are no longer being monitored at the site, indicating that the current TAL/BTV results are not going to change with additional monitoring. In addition, many of the sites have stormwater data dating back more than 2 years that show TAL and BTV exceedances, meaning that even if only one sample was collected during this time, this one sample should be considered representative as per PART I.B of the 2022 IP and the site should be put into corrective action. Throughout the SIP the following language is used: "the permit uses current-stage monitoring data for the SSD". It is unclear what this language means and if it means that a sample that was taken in previous years such as in 2013 or 2016 is no longer being considered adequate. It does appear that if one sample was collected in previous years and it did not exceed TALs, then that data is considered adequate, and no further sampling or action is being required – see LA-SMA-9 as an example. CCW is concerned that the Permittees are using this double standard.

Required Action: All sites that have a BTV and TAL exceedance must be put immediately into the corrective action category as required by the permit.

Initial DOE Response: Corrective actions are based on TAL exceedances per Part 1.B.1. SMAs are screened to active monitoring when not all site-related POCs have yet been analyzed, as stated in Permit Part I.E.2.b.

If the SIP requires the addition of one or more POCs for monitoring and the Site has previously entered corrective action, the Permittees are required to complete all applicable requirements of Part I.B.1 and initiate confirmation monitoring for all added POCs.

With regard to the use of "current-stage monitoring data for the SSD," Section 2.2 of the SIP Overview has been updated as follows:

> *For the purposes of the SSD, only the most recent monitoring stage stormwater data is used. For example, if an SMA had progressed from Baseline Monitoring to Corrective Action with no sampler move, only data from the Corrective Action stage would be screened.*

EPA Response: Please see EPA comment 3.

DOE Response

2. The Permittees have reviewed the SMAs listed in EPAs response to CCW comment #2, in the context of EPAs comment #3, and have made the following changes:

   - P-SMA-3.05 – The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 1 sections 16.0 and 16.5, as needed, to place this SMA in Corrective Action for copper and PCBs. The SMA will continue in Active Monitoring for the POCs listed in Table 16.5-1.
   - LA-SMA-0.85 – See Permittees' response to EPA comments #3 and #6.
   - LA-SMA-4.1– See Permittees' response to EPA comments #3 and #7.
   - M-SMA-3 – The Permittees have already completed corrective action for the PCB TAL and BTV exceedance in baseline stormwater sample from 2013 with the certification of installation of enhanced controls in October 2015, and monitoring has been ongoing to collect a confirmation sample since that time. As the sample was collected under the previous Administratively Continued Permit, the Permittees are eligible to remain in Active Monitoring until September 8, 2024 to attempt a second sample collection per Permit Part I.B.1.a. One confirmation-monitoring sample was collected in July 2022 and analytical data was received on September 9, 2022. The results of this sample will be included in the 2023 SIP update and Site Discharge Pollution Prevention Plan (SDPPP) Update, which will be published in 2024.
   - M-SMA-4 – See Permittees' response to EPA comments #3 and #22.
   - S-SMA-3.53 – See Permittees' response to EPA comments #3 and #14.
   - S-SMA-3.6 – See Permittees' response to EPA comments #3 and #15.
   - S-SMA-3.72 – See Permittees' response to EPA comments #3 and #16.
   - The Permittees have reviewed all SMAs listed for Active Monitoring in the initial SIP overview, in the context of EPAs comment #3, and have made the following changes:

- M-SMA-7 - The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 2 sections 95.0 and 95.5, as needed, to place this SMA in Corrective Action for zinc. The SMA will continue in Active Monitoring for the POCs listed in Table 95.5-1.

- 2M-SMA-1.7 - The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 3 sections 127.0 and 127.5, as needed, to place this SMA in Corrective Action for copper. The SMA will continue in Active Monitoring for the POCs listed in Table 127.5-1.

- CHQ-SMA-1.03 - The Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan, and Volume 5 sections 231.0 and 231.5, as needed, to place this SMA in Corrective Action for copper. The SMA will continue in Active Monitoring for the POCs listed in Table 231.5-1.

CCW Comment and EPA Response

3. Long Term Stewardship (LTS): CCW is concerned that that sites that have either TAL or BTV exceedances (or both) and in some cases have TAL and BTV exceedances for POCs that are both site-related and impaired in the receiving waterbody, such as is the case for S-SMA-6, are being put into the LTS category instead of into corrective action based on the following poorly worded and poorly placed permit language:

> ***"The LTS Category includes Sites that do not meet the requirements for Site deletion under Part I.C.4 and RCRA deferred sites with BMPs required, but do not currently require additional corrective action." PART I.C.3 of the 2022 IP.***

CCW's interpretation of this sentence is that LTS category includes sites that do not meet requirements for site deletion, do not meet the requirements for RCRA deferral, and do not require corrective action. Taking S-SMA-6 as example to apply this sentence:

- ***S-SMA-6 does not meet requirements for site deletion (therefore could potentially be a LTS site)***

- ***S-SMA-6 is a RCRA deferred site, (therefore, LTS is not appropriate)***

- ***Corrective action is required at this site because both BTVs and TALs are exceeded. (therefore, LTS is not appropriate).***

As per Part 3.3. of the SIP, it appears that LANL is interpreting this sentence differently to mean that the LTS category does include RCRA deferred sites. Regardless of which interpretation is followed, at least for S-SMA-6, this question should be moot given the last clause of the sentence "but do not currently require additional corrective action", because corrective action is indeed required at S-SMA-6 due to the exceedance of TALs and BTVs. In addition, while this confusing sentence provides guidance, it does not stand alone in determining whether sites can be put in the LTS category. For a site to be put in LTS it must also meet one of the four criteria listed in PART I.C.3 of the 2022 IP. Finally, on a practical note, CCW points out that RCRA status does not necessarily tell us whether the site is currently discharging pollutants in stormwater as is demonstrated by the high levels of gross alpha, copper, and lead being detected in stormwater samples at S-SMA-6.

Required Action: All 16 sites that have been proposed for LTS based on RCRA deferral status must be reevaluated before the final SIP is issued for the 2023 season.

<u>Initial DOE Response</u>: Per EPA's June 24, 2022 Response to Draft IP Public Comment #13, "RCRA deferred sites with BMPs required under Part I.A have been added to Part I.C.3. Maintenance of these controls is

required under Part I.A.1.b." The Permittees have adhered to this BMP requirement and will continue to do so. Therefore, the RCRA-deferred SMAs listed in Table 3.3-1 of the SIP Overview are eligible for LTS.

<u>EPA Response</u>: Long Term Stewardship (LTS) Category includes Sites that do not meet the requirements for Site Deletion under Part I.C.4 and RCRA deferred sites with BMPs required, but do not currently require additional corrective action per I.C.3. Deferred site means the SWMU or AOCs for which full investigation and/or remediation is deferred until such time as the SWMU or AOC is taken out of service or otherwise becomes accessible (e.g., firing sites and active facilities). The Permittees are eligible to include the RCRA deferred sites in Table 3.3-1 for LTS Category.

DOE Response

3. The Permittees concur with EPA response to CCW comment and initial DOE response to 3. The 16 RCRA-deferred sites listed in Table 3.3-1 will remain in the LTS category.

CCW Comment and EPA Response

4. Site Related POCs and Impaired Waterbodies: The permit requires sampling of site related POCs that are impaired in the receiving water body:

> ***"For sites discharging to impaired and water quality-limited waters (see table below), if the pollutants for which the water body is impaired are determined to be Site-related, as demonstrated under Part I.C.2 of the permit (Site Specific Demonstration), the Permittees shall include the Site-related pollutants of impairment on the priority list for each Site in the SIP and shall prioritize these pollutants for analysis in the event a partial sample is collected." PART I.B.4 of the 2022 IP. Unfortunately, there are many sites where sampling for pollutants for which the water body is impaired is not occurring, including at sites where the impaired pollutant has been determined to be site related. Four examples:***

- ***LA-SMA-6.395: At this site mercury is impaired in the receiving waterbody, is considered site related (48.4.2 of the SIP) and exceeded the BTV in stormwater (Figure 48-4.1) yet mercury is omitted in the SAP.***
- ***LA-SMA-9: It appears that while one sample from previous years has not been deemed adequate to trigger corrective action, one sample is being used to eliminate further sampling for impaired, site related pollutants. Cyanide is impaired in the receiving water body, may be site-related (50.4.2 of the SIP), was exceeded in soil samples (Figure 50-3.1 of the SIP) and was only sampled once in stormwater, yet cyanide monitoring is omitted in the SAP.***
- ***PJ-SMA-3.05: Aluminum is impaired in the receiving water body, may be site related, and there isn't any stormwater or soil data, yet aluminum monitoring is omitted in the SAP.***
- ***W-SMA-14.1: Mercury is impaired for the receiving water body and exceeded in the BTV is stormwater, indicating that mercury is being discharged from the site. (Unless the SMA is not representative, in which case the there is a larger problem of the permit not including representative monitoring for the sites covered by W-SMA-14.1.) Mercury monitoring is omitted in the SAP.***

The first and last examples above are especially problematic because the BTV for the impaired pollutant (mercury) was exceeded indicating that the site is discharging mercury and could be causing or contributing to the exceedance of water quality standards. This points to the larger issue of BTVs being used to get out of sampling and corrective action, but not being used to trigger corrective action when they are exceeded. See comment number #5 below for more on this topic.

Required Action: Sites must be reevaluated to ensure that pollutants for which the receiving water body is impaired are being adequately monitored, especially where other indicators such as BTV exceedances, soil exceedances, and identification that impairments may be site related are present.

Initial DOE Response: Per the SSD process, as depicted on Figure 1.5-1 of the SIP Overview, impairment(s) not listed on the proposed sampling analysis plan (SAP) in Table X.5-1 in the five SIP volumes do not require continued monitoring under the current stage because either:

- *Impairment is or is not a Site-related POC, but the applicable screening value was not exceeded in soil data and the TAL was not exceeded in stormwater data; or,*
- *The Permit does not require stormwater monitoring for Site-related POCs that are below TAL, even in the event the composite BTV was exceeded.*

For LA-SMA-6.395, the following text was added, "Although there is an impairment for mercury, the applicable screening value was not exceeded in soil data and the TAL was not exceeded in stormwater data. Therefore, it will not be added to the SAP."

For LA-SMA-9, because the SMA remains in active monitoring, one additional sample for cyanide has been added to the SAP.

For PJ-SMA-3.05, the following text was added, "Aluminum was measured below TAL in the previous monitoring stage; therefore it will not be added to the SAP."

For W-SMA-14.1, the following text was added, "Although there is an impairment for mercury, it is not a Site-related POC, the applicable screening value was not exceeded in soil data, and the TAL was not exceeded in stormwater data. Therefore, it will not be added to the SAP."

EPA Response: EPA concurs with the changes in LANL response to CCW #4.

DOE Response

4. The Permittees concur with EPA response to CCW comment and initial DOE response to 4.

CCW Comment and EPA Response

5. BTVs and Representative Sampling: As per federal regulations monitoring in NPDES permit must be representative of the monitored activity (40 CFR 122.41(j)(1)). In addition, the permit itself specifies that monitoring in the permit must be representative:

SMA locations are based on reasonable site accessibility for sampling purposes and samples taken must be representative of discharges of storm water from Site-affected media (soil, sediment, or bedrock) as determined by the SIP" (PART I.B.2 of the 2022 IP). Therefore, as per federal regulations and permit language, SMA sampling is considered representative of the discharges from the sites and any exceedance of background levels for pollutants in SMA sampling is an indication that the site is discharging those pollutants. While this concerning for all sites where this occurring, and there are

many sites and many pollutants where this happens (including but not limited to 2M-SMA-3, B-SMA-.5, B-SMA-1, Acid-SMA-2, Acid-SMA-2.1, LA-SMA-.85, LA-SMA-3.05, LA-SMA-4.1, LA-SMA-6.395, LA-SMA-9, PJ-SMA-5.1, 3M-SMA-4, 3M-SMA-.4, to name a few), it is especially concerning where the receiving water body is impaired for a pollutant that has a BTV exceedance (including but not limited to LA-SMA-6.395, PJ-SMA-4.05, 2M-SMA-3).

Required Action: BTV exceedances, even when a TAL has not been exceeded, is an indication that the pollutant is site related and is being discharged from the site. Pollutants that have BTV exceedances should be added to the SAP and further analysis must be done, especially in cases where the pollutant is impaired in the receiving water body, to determine if the levels being discharged from the site may be causing or contributing to the violation of a water quality standard.

Initial DOE Response: Monitoring is based on TALs and WQS, not BTVs, per Permit Parts I.1 and I.C.1. Per Permit Part I.C.2.b(i), site-specific SSD stormwater tiers are based on exceedance of TAL(s) or TAL and 90th percentile composite BTVs. The Permit does not require stormwater monitoring for Site-related POCs that are below TAL, even if the composite BTV was exceeded.

EPA Response: Per Part I.C.2, the Permittees may use the Site-specific information to perform a site-specific demonstration (SSD) showing that a Site or Sites are not reasonably expected to be the source for POCs that have exceeded applicable TALs and/or composite BTVs. If the BTV was exceeded and the TAL was not exceeded, the SMA is not required to add that pollutant to the SAP.

DOE Response

5. The Permittees concur with EPA response to CCW comment and initial DOE response to 5.

EPA Response to CCW comment

6. Site Deletion: Sites that have soil and BTV exceedances should not be eligible for site deletion. For example, R-SMA-2.3 shows soil exceedances for beryllium, chromium, lead, mercury, and thallium (Figure 3.3-1 in the SIP), and BTV exceedances for cobalt, zinc, nickel yet it is being proposed for site deletion. Site CDV-SMA-6.02 has soil exceedances for cadmium, lead, selenium, and zinc and a BTV exceedance for cobalt and is also being proposed for site deletion.

Required Action: Sites, such as R-SMA-2.3 and CDV-SMA-6.02 that have soil and BTV exceedances should not be eligible for site deletion.

Initial DOE Response: These sites are eligible for deletion per Part I.C.4.e of the Permit, which states that deletion can be requested if components (i) and (ii) of Part I.2.b are satisfied. Where soil exceedances are presented with Sites eligible for deletion, the constituents are either not Site-related POCs or were also measured in stormwater data and did not exceed TALs. Where exceedances of BTVs in stormwater data are presented with Sites eligible for deletion, the TAL was not exceeded. The permit requires monitoring based on exceedances of TALs, or TAL and composite BTVs, not exceedances of only composite BTVs.

With respect to R-SMA-2.3, chromium, lead, mercury, and thallium were also measured in stormwater data and did not exceed TALs. Cobalt is not a Site-related POC, did not exceed in soil data, and did not exceed the TAL, but did exceed BTV in stormwater data. Beryllium is not a Site-related POC and has no TAL. The permit requires monitoring based on exceedances of TALs or TAL and composite BTVs, not exceedances of only composite BTVs. Therefore, SW Tier 1 and SD Tier 1 criteria have been met, and this Site is eligible for deletion.

With respect to CDV-SMA-6.02, cadmium, lead, selenium, and zinc were monitored for in stormwater and did not exceed TALs. They are also not Site-related POCs. Cobalt, zinc, and nickel are not Site-related POCs, did not exceed in soil data, and did not exceed the TAL, but did exceed BTV in stormwater data. The permit requires monitoring based on exceedances of TALs or TAL and composite BTVs, not exceedances of only composite BTVs. Therefore, SW Tier 1 and SD Tier 1 criteria have been met, and this Site is eligible for deletion.

EPA Response: Sites eligible for deletion:

- **R-SMA-2.3 – Stormwater Tier 1 and soil data Tier 1 criteria have been met and the Site would be eligible for deletion per Part I.C.4.e.**
- **CDV-SMA-6.02 – Stormwater Tier 1 and soil data Tier 1 criteria have been met and the Site would be eligible for deletion per Part I.C.4.e.**

DOE Response

6. The Permittees concur with EPA response to CCW comment and initial DOE response to 6. R-SMA-2.3 and CDV-SMA-6.02 will remain in the Eligible for Site Deletion category.

EPA Response to CCW comment

7a. Additional Site-Specific Comments:

S-SMA-0.25: This site shows the following:

- ***soil sample exceedances including for the following pollutants: cadmium, copper, zinc, lead, chromium, PCBs and cyanide among other pollutants,***
- ***BTVs exceedances for lead, copper, nickel, zinc, vanadium and cobalt,***
- ***TAL exceedances for copper, zinc, PCBs, and gross alpha, and***
- ***metals, PAHs, organic chemicals, beryllium, chromium, lead, nickel, inorganic chemicals, and PCBs, are all identified as known or suspected to be used historically at the site.***

The SIP only mentions the copper TAL and BTV exceedance and does not mention the zinc TAL and BTV exceedance. In addition, since SMA stormwater sampling is required to be representative and if the Permittees are going to rely heavily on soil data, both soil and BTV exceedances need to be used to make determinations about monitoring and ideally corrective action. Also, since there are two POCs that have both TAL and BTV exceedances (zinc and copper), this site should be immediately put into corrective action.

Required Action: Due to TAL and BTV exceedances for copper and zinc this site should be put immediately into corrective action. This is especially critical since the receiving water body is impaired for copper. In addition, any future monitoring should include the POCs that exceeded BTVs, as BTV exceedances are indicators that the site is contributing those pollutants to stormwater concentrations.

Initial DOE Response: Corrective actions are based on TAL exceedances per Part 1.B.1. S-SMA-0.25 remains in active monitoring because not all Site-related POCs have been measured yet, per Permit Part I.E.2.b.

EPA Response: S-SMA-0.25 – Please refer to EPA Comment #3 and #10

DOE Response

7a. As resolution to EPA Comments #3 and #11 for S-SMA-0.25, the Permittees have updated the initial SIP Overview and Master Sampling and Analysis Plan and section 59.5.4 as needed, to place this SMA in Corrective Action for copper. The SMA will continue in Active Monitoring for the remaining POCs listed in Table 59.5-1.

EPA Response to CCW comment

7b. Additional Site-Specific Comments:

W-SMA-9.9: This site shows the following:

- ***Soil exceedances for antimony, copper, cyanide, nickel, and zinc.***
- ***Gross alpha TAL exceedance***
- ***The site has been placed into LTS because it is RCRA deferred***

The SIP says "All Site-related POCs that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs, therefore, they will not be added to the SAP", (PART213.5.1 of the SIP), yet stormwater data is only included for aluminum, cyanide, and gross alpha.

Required Action(s): This site should be reevaluated for LTS because as mentioned previously in the comments, RCRA deferral by itself is not an adequate reason for placing sites in LTS, and is especially not adequate as per PART I.C.3 for sites with TAL or BTV exceedances, such as this site. This site should be placed in active monitoring for copper, antimony, nickel, zinc, gross alpha, and other gross alpha related pollutants. If further sampling shows that gross alpha exceeds the composite BTV or any of the other pollutants exceed TAL and BTVs the site should be placed immediately into corrective action.

Initial DOE Response: The Permittees did not place W-SMA-9.9 into LTS per Part I.C.3 (e.g., RCRA deferred). Gross alpha is the only Site-related TAL exceedance, and accordingly, the SMA is eligible for LTS pursuant to Permit Part I.C.3.c.

As specified in Part 2.5.1 of the SIP Overview, the plots include all data from the current monitoring stage; data from previous stages are not included. As noted in Section 213.1 of the SIP, the previous stage of stormwater collection occurred in August 2011. Results from that sample can be found in that year's corresponding Annual Report, available on the IP website.

Antimony, copper, nickel, and zinc are not Site-related POCs.

EPA Response: W-SMA-9.9 – SMA was placed into LTS Category per Part I.C.3.c criterion, since only gross alpha is the site related TAL exceedance. Note that the New Mexico WQS is for Adjusted Gross Alpha.

DOE Response

7b. The Permittees concur with EPA response to CCW comment and initial DOE response to 7b. W-SMA-9.9 will remain in the LTS category.

EPA Response to CCW comment

7c. Additional Site-Specific Comments:

ACID-SMA-2: This SMA shows the following:

- ***TAL exceedances for adjusted gross alpha, aluminum, and PCBs***
- ***BTV exceedances for PCBs, mercury, lead***
- ***Soil exceedances for antimony, cadmium, copper, chromium, lead, mercury, manganese, silver, nickel, zinc, PCBs, strontium-90 and others.***

Required Action: The SMA should be put into corrective action immediately because the TAL and BTV were exceeded for PCBs. After corrective action sampling for all pollutants currently in the SAP, plus PCBs, and at a minimum also lead and mercury as they are currently showing both BTV and soil level exceedances, must be conducted..

Initial DOE Response: Corrective actions are based on TAL exceedances per Part 1.B.1. ACID-SMA-2 remains in active monitoring because not all Site-related POCs have been measured yet, per Permit Part I.E.2.b.

EPA Response – Please refer to EPA Comment #3 and #4.

DOE Response

7c. See DOE responses to EPA comments #3 and #4 for copper and PCBs. Per SIP section 8.5.1, lead and mercury exceeded the BTVs in a previous stage of stormwater data, but not the TALs. Therefore, and additionally, per EPA response to CCW comment #5 above regarding only BTV exceedances in stormwater data, the Permittees are not required to continue stormwater monitoring for these POCs. Per SIP section 8.5.2, adjusted gross alpha and aluminum exceeded the TALs but not the BTVs in stormwater. Therefore, the Permittees are not required to move into corrective action for these POCs.

2022 Annual Sampling Implementation Plan

NPDES Permit No. NM0030759
June 2023

Overview

CERTIFICATION

NEWPORT NEWS NUCLEAR BWXT-LOS ALAMOS, LLC

NPDES Permit No. NM0030759

2022 Annual Sampling Implementation Plan

C E R T I F I C A T I O N   S T A T E M E N T   O F   A U T H O R I Z A T I O N

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Troy Thomson

June 13, 2023

Troy Thomson, Program Manager
Environmental Remediation
Newport News Nuclear BWXT-Los Alamos, LLC

Date

M Lee Bishop Digitally signed by M Lee Bishop
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M. Lee Bishop, Director
Office of Quality and Regulatory Compliance
U.S. Department of Energy
Environmental Management
Los Alamos Field Office

Date

CONTENTS

1.0 Background

1.1 Individual Permit

DOE and N3B, collectively the Permittees, have prepared this initial Sampling Implementation Plan (hereafter, the SIP) for the Individual Stormwater Permit, pursuant to the requirements of NPDES Permit No. NM0030759 (hereafter, the Individual Permit, Permit, or IP), as authorized by the EPA. All acronyms and abbreviations used in this SIP are included in Appendix A of this Overview and are not defined at first use.

The IP regulates stormwater discharges associated with historical industrial activities from 397 permitted SWMUs and/or AOCs (collectively, Sites). The majority of the Sites covered by the IP are remotely located and are not associated with current industrial activities. Stormwater discharges associated with current conventional industrial activities at the Laboratory are excluded from the IP. The Permit incorporating the latest modifications became effective on August 1, 2022. A minor modification to address administrative changes was issued on September 8, 2022.

The Sites regulated under this Permit are a subset of the SWMUs and AOCs that are addressed under the June 2016 Compliance Order on Consent (Consent Order) modified February 2017. The Consent Order fulfills the corrective action requirements under Sections 3004(u) and (v) and 3008(h) of RCRA for releases of hazardous waste or hazardous waste constituents from SWMUs and AOCs.

- A SWMU is any discernible unit at which solid waste has been placed at any time, and from which NMED determines there may be a risk of a release of hazardous waste or hazardous waste constituents, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at which solid wastes have been routinely and systematically released, but do not include one-time spills.
- An AOC is any area having a known or suspected release of hazardous waste or hazardous constituents that is not from an SWMU and that may pose a current or potential threat to human health or the environment. An AOC may include buildings and structures at which releases of hazardous waste or constituents were not remediated, including one-time and accidental spills.

All SWMUs and AOCs regulated under the Consent Order were evaluated for inclusion in the Permit based on the following criteria:

1. the SWMU/AOC is exposed to stormwater (e.g., not capped or subsurface);
2. the SWMU/AOC may contain "significant industrial material" (e.g., not cleaned up or has contamination in place); and
3. industrial materials from the SWMU/AOC could potentially impact waters of the United States.

The IP categorizes a Site as having had an "industrial activity" that creates a "point source discharge," and directs the Permittees to monitor representative stormwater discharges from Sites at specified sampling points known as SMAs. An SMA is a single drainage area within a sub-watershed, and may extend across more than one Site. Stormwater from a Site may drain to multiple sub-watersheds and may be associated with multiple SMAs. The 397 Sites included on this permit are monitored at 239 SMAs with a total of 436 Site/SMA associations.

Per the new Permit, a total of 39 Site/SMA relationships, affecting 23 SMAs, were removed from the Permit; 33 Sites and 14 SMAs (Table 1.1-1 and Table 1.1-2, respectively) were removed from the Permit; 24 Sites and 3 SMAs (Table 1.1-3 and Table 1.1-4, respectively) were added to the Permit.

Table 1.1-1 Sites on the 2010 Individual Permit that were Removed from the 2022 Individual Permit

Watershed	2010 Permit Associated SMA	Removed Site ID	Site Description
Los Alamos/Pueblo	LA-SMA-4.1	01-003(b)[a]	Surface Disposal Site
	LA-SMA-5.01	01-001(d)[a]	Septic Tank
		01-006(h)[a]	Storm Drain and Outfall
	LA-SMA-5.362	32-002(b)[a]	Soil Contamination from Former Septic Tank
Mortandad Canyon	CDB-SMA-0.55	46-004(e2)[b]	Mortandad Canyon
	CDB-SMA-1	C-46-001	Spill/Non-Intentional Release Area
	PRATT-SMA-1.05	35-004(h)	Container Storage Area
		35-016(k)	Drainline and Outfall from Building 35-029
		35-016(m)	Drainlines and Outfall Associated with Cooling Tower 35-33
Pajarito Canyon	PJ-SMA-4.05	09-004(g)	Settling Tanks
	PJ-SMA-5.1	22-016	Septic System
Water Canyon/ Cañon de Valle	CDV-SMA-6.02	14-002(d)	Firing Site
		14-002(e)	Firing Site
	CDV-SMA-1.4	16-030(g)	Outfall from Building 16-380
	PT-SMA-1.7	15-006(a)	Phermex Firing Site
	W-SMA-7	16-026(h2)	Outfall Associated with Building 16-360

[a] During the 2010 Permit term, the Site was split into multiple Sites under modifications made to the LANL HWFP. These changes were tracked as administrative changes on the 2010 Permit.

[b] The site was incorrectly associated with CDB-SMA-0.55 on the 2010 Permit instead of CDB-SMA-0.25. This change was tracked as an administrative change on the 2010 Permit, and the site remains active at CDB-SMA-0.25 on the 2022 Permit.

Table 1.1-2 SMAs and Associated Sites on the 2010 Individual Permit that were Removed from the 2022 Individual Permit

Watershed	2010 Permit SMA	2010 Permit Associated Sites (also Removed)	Site Description
Los Alamos/Pueblo Canyon	DP-SMA-4	21-021*	Soil Contamination from Stack Emissions
	LA-SMA-6.27	21-021*	Soil Contamination from Stack Emissions
		21-027(c)*	Outfall from Former Building 21-6

Table 1.1-2 (continued)

Watershed	2010 Permit SMA	2010 Permit Associated Sites (also Removed)	Site Description
Los Alamos/Pueblo Canyon	LA-SMA-6.36	21-021*	Soil Contamination from Stack Emissions
		21-024(a)	Septic System
	LA-SMA-10.11	53-002(a)	Former Surface Impoundment
	R-SMA-0.5	C-00-020	Mortar Impact Area
	R-SMA-2.05	00-011(c)	Mortar Impact Area
Mortandad Canyon	CDB-SMA-1.35	46-004(a2)	Outfall Associated with Building 46-31
		46-004(u)	Outfall from Building 46-87
		46-004(v)	Outfall from Building 46-87
		46-004(x)	Outfall from Building 46-31
		46-006(d)	Operational Release
		46-008(f)	Storage Area
	CDB-SMA-1.54	46-004(h)	Drains and Exhaust System
		46-006(d)	Operational Release
		46-004(q)	Outfall
	CDB-SMA-1.55	46-003(e)	Septic System
	CDB-SMA-1.65	46-003(b)	Septic System
	M-SMA-9.1	35-016(f)	Strom Drain and Outfall
Pajarito Canyon	PJ-SMA-13	18-002(a)	Firing Site
	PJ-SMA-14	54-004	MDA H
Sandia Canyon	S-SMA-4.5	20-002(d)	Firing Site

* Site remains active on 2022 Permit, associated with a different SMA.

Table 1.1-3 Sites Added to the 2022 Permit

Watershed	2022 Permit Associated SMA	Site	Site Description
Ancho Canyon	A-SMA-6	33-010(b)[a]	Surface Disposal Site
Los Alamos/Pueblo Canyon	LA-SMA-4.1	01-003(b1)[b]	Surface Disposal Site
		01-003(b2)[b]	Surface Disposal Site
	LA-SMA-5.01	01-001(d1)[b]	Septic Tank
		01-001(d2)[b]	Septic Tank
		01-001(d3)[b]	Septic Tank
		01-006(h1)[b]	Storm Drain and Outfall
		01-006(h2)[b]	Storm Drain and Outfall
		01-006(h3)[b]	Storm Drain and Outfall

Table 1.1-3 (continued)

Watershed	2022 Permit Associated SMA	Site	Site Description
Los Alamos/Pueblo Canyon	LA-SMA-5.362	32-002(b1)[b]	Soil Contamination from Former Septic Tank
		32-002(b2)[b]	Soil Contamination from Former Septic Tank
	LA-SMA-5.51	02-014[b]	Former Transformer Stations
Mortandad Canyon	CDB-SMA-0.25	46-004(e2)[c]	Mortandad Canyon
	PRATT-SMA-1.05	35-014(b)[a]	Soil Contamination from Leaking Drum
		35-015(b)[a]	Soil Contamination from Former Waste Oil Treatment Facility
		35-018(a)[a]	Former Transformer
	T-SMA-4	35-009(b)[a]	Septic System
Pajarito Canyon	PJ-SMA-4.05	09-005(g)[b]	Settling Tank
	PJ-SMA-5.1	22-010(b)[b]	Septic System
Sandia Canyon	S-SMA-2.01	03-056(k)[a]	Container Storage Area
Water Canyon/ Cañon de Valle	CDV-SMA-6.02	14-002(c)[b]	Control Building
	PT-SMA-1.7	15-003[b]	Phermex Firing Site
	W-SMA-7	16-029(e)[b]	Sump

[a] Site added based on the NMED State Certification of the 2022 Permit.

[b] Site added as acceptance of administrative changes tracked on the 2010 Permit.

[c] This change was tracked as an administrative change on the 2010 Permit. Site remains active at CDB-SMA-0.25 on the 2022 Permit, 46-004(e2) is not a new Site.

Table 1.1-4 SMAs Added to the 2022 Permit

Watershed	2022 SMA	Associated Site ID	Site Description
Pajarito Canyon	PJ-SMA-9.2	40-001(c)*	Septic System
Sandia Canyon	S-SMA-3.61	60-004(f)	Storage Area
	S-SMA-3.62	60-002	Storage Area

* Site also monitored on 2010 Permit and 2022 Permit associated with 2M-SMA-2.5.

The selection of SAPs are based on Site history, soil data, and stormwater data available at the time that the SIP document was prepared. The investigation and remediation of SWMUs and AOCs began during the 1990s, before the effective date of the IP, and continues concurrently with implementation of the IP.

The IP contains nonnumeric, technology-based effluent limitations, coupled with a comprehensive, coordinated inspection and monitoring program, to minimize pollutants in the Permittees' stormwater discharges that are associated with historical industrial activities from specified SWMUs and AOCs. The Permittees are required to implement Site-specific control measures (including BMPs) to address the nonnumeric technology-based effluent limits, as necessary, to reduce or minimize pollutants in stormwater discharges to the extent achievable.

1.2 2022 Sampling Implementation Plan

The requirements for the initial SIP document are defined in the Permit Part I.E.2. This SIP covers stormwater data collected between 2010 and 2021, and Consent Order Decision-Level soil data collected between 1995 and 2021. Stormwater and soil data collected in 2022 will be included in the 2023 SIP along with data collected in 2023. The stormwater samples collected in 2022 will be prioritized over the 2023 data for screening, and for corrective action implementation as necessary.

1.3 2016 to 2018 Sampling Implementation Plan Exercise

In anticipation of a permit being issued following the permit reapplication in 2015, a pre-SIP exercise was conducted between 2016 and 2018, in a joint effort between the Permittees and NMED, in which all SMAs were visited and reviewed. The main goals of these reviews were to identify if runoff from SWMUs/AOCs within an SMA were being captured at the monitoring location, and to determine if the correct POCs were being sampled based on site history. This review determined that 52 samplers needed to be relocated.

At the time of issuance of the 2022 permit, 41 samplers had been moved and 11 samplers remained to be moved. Samplers were not moved if monitoring was completed at that SMA. During the 2022 SIP process, all recommended sampler moves were reviewed. Based on changes to Site conditions, three samplers were not moved. The remaining 8 samplers will be moved to the locations presented in Table 4.1-1 as part of activation activities for the 2023 monitoring season.

The 2016–2018 SIP exercise identified 11 SMAs where sampling had ceased for the duration of the 2010 Permit, and suggested that the samplers at those locations should be moved. If the 2022 SIP called for the sampler at that SMA to be reactivated, that proposed move was re-evaluated in 2022 to determine if Site conditions still warranted a sampler move, or if the location previously selected was still the most representative location. This re-evaluation resulted in the following changes to the list of recommended sampler moves:

- At DP-SMA-0.3, construction of an apartment complex has altered the topology such that the current monitoring location is the most appropriate monitoring location for that SMA.
- At LA-SMA-5.01, the move previously recommended was very minor, and Permittees determined that a move was no longer warranted.
- At 2M-SMA-2.5, a sampler move was recommended to address the area of former discharge on the south side of the Site. Permittees determined that the sampler should remain in its current location to continue monitoring the discharge area on the north side of the Site.
- New SMA PJ-SMA-9.2 would be added to monitor the south side of SWMU 40-001(c).

Updated maps are available on the IP public website (https://ext.em-la.doe.gov/IPS/Home/SiteMonitoringAreaMaps). Table 1.3-1 lists the sampler moves that were recommended in the 2016–2018 SIP Exercise.

Investigative sampler additions and changes to the SAP were also considered during the initial SIP. Data from investigative samplers (run-on and runoff samplers) can be used to aid in the SSD process (Permit Part I.C.2). The SSD looks at all available Site-specific information (Site history, stormwater data, and soil data) to determine the correct compliance path for the SMA.

In 2017, the Permittees added investigative samplers that had been recommended in the pre-SIP in anticipation of a new permit. These investigative samplers have been deactivated and will be removed from the field. Due to the difficulty of collecting paired samples, as well as changes in Site conditions since the initial SIP, the Permittees will not be adding more investigative samplers at this time. If, in the future, the Permittees decide to conduct a run-on/runoff evaluation, any requests to add investigative samplers will be included in subsequent SIPs.

Data that was collected as part of the 2017 SIP Sampling Plan, that is now associated with a compliance sampling location, will be screened through the SSD as compliance data. In 2017, investigative data was collected at eight SMAs:

- 2M-SMA-1.43,
- 2M-SMA-3,
- M-SMA-4,
- PJ-SMA-4.05,
- PJ-SMA-5.1,
- STRM-SMA-1.05,
- T-SMA-3, and
- T-SMA-6.8.

Information about recommendations from the 2016–2018 SIP exercise is included for each SMA, as well as information as to how the recommendation has been reviewed and addressed.

Table 1.3-1 Sampler Moves Executed as Recommended in the 2016–2018 SIP Exercise

SMA	SIP Move Summary	Monitoring Year Move Completed
2M-SMA-1.42	The SIP exercise determined that the reviewed sampling location was not representative because it was at the mouth of the outfall and not downgradient of any affected media. Therefore, the sampler was moved outside the security fence to sample more of the potentially affected area.	2017
2M-SMA-1.43	The SIP exercise determined that the reviewed sampling location did not capture potential surface water runoff from the 22-014(a) drywell. Therefore, the sampler was moved.	2017
2M-SMA-2.2	The SIP exercise determined that the reviewed sampler location did not adequately address runoff from the Site. Therefore, the sampler will be moved to the north side of the parking area, near the transformer pad.	2023 (scheduled)
3M-SMA-0.2	The SIP exercise determined that the reviewed sampling location should be moved downgradient to monitor more areas where soil sampling has occurred. Therefore, the sampler was moved.	2017
3M-SMA-0.6	The SIP exercise determined that the reviewed sampling location did not adequately monitor 15-008(b) and had 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]).	2017
3M-SMA-2.6	The SIP exercise determined that the reviewed sampling location did not adequately monitor C-36-003 and has not collected any water. Therefore, the sampler was moved to the eastern drainage (C-36-003) to capture runoff from the outfall area as well as approximately half of the disposal area (36-008).	2019

Table 1.3 (continued)

SMA	SIP Move Summary	Monitoring Year Move Completed
A-SMA-2.5	The SIP exercise recommended moving the sampler to increase the likelihood of collecting a sample from this SMA. Therefore, the sampler was moved.	2018
CHQ-SMA-4.1	The SIP exercise recommended moving the reviewed sampler location downgradient in the drainage to capture runoff from more of the potentially affected area.	2023 (scheduled)
ACID-SMA-1.05	The SIP exercise recommended moving the reviewed sampler location downgradient in the drainage to capture runoff from more of the potentially affected area. Therefore, the sampler was moved.	2020
ACID-SMA-2	The SIP exercise determined that the reviewed sampler location did not include part of the impacted area where there are high detections of radionuclides in soil. Therefore, the sampler was moved downgradient in the drainage to better characterize runoff from the Site.	2017
CDV-SMA-1.7	The SIP exercise determined that the reviewed sampler location should be moved. Therefore, the sampler was moved.	2019
CDV-SMA-2	The SIP exercise determined that the reviewed monitoring location did not adequately monitor runoff from the affected area. Therefore, the sampler will be moved downgradient in the drainage channel past soil sampling location 16-06420 (high concentrations of barium and explosives).	2023 (scheduled)
CDV-SMA-8.5	The SIP exercise determined that more of the impacted area should be included in the SMA. Therefore, the sampler was moved downgradient to address silver in soil at location 15-02532.	2018
DP-SMA-1	The SIP exercise determined that the sampler location should be moved towards the Site discharge area to determine potential impacts from the Site. The reviewed location was impacted by an area that is not associated with the Site. Therefore, the sampler was moved.	2017
DP-SMA-3	The SIP exercise determined that the reviewed sampler location had been moved too far from the previous IP sampler location to be representative of the Site. Therefore, the sampler was returned to the location where the IP sampler was formerly located (SS121907).	2018
LA-SMA-0.9	The SIP exercise determined that the sampler should be moved to a better location to increase the chance of collecting a sample. Therefore, the sampler was moved.	2018
LA-SMA-1.1	The SIP exercise determined that the reviewed sampler location did not adequately monitor the affected area. Therefore, the sampler will be moved downgradient in the drainage.	2023 (scheduled)
LA-SMA-1.25	The SIP exercise determined that the reviewed sampler location does not adequately monitor the affected area. Therefore, the sampler will be moved downgradient in the drainage.	2023 (scheduled)
LA-SMA-2.3	The SIP exercise determined that the reviewed sampler location does not adequately monitor the affected area. Therefore, the sampler will be moved downgradient in the drainage.	2023 (scheduled)
LA-SMA-3.1	The SIP exercise determined that the reviewed sampler location does not adequately monitor the affected area. Therefore, the sampler was moved downgradient in the drainage.	2018

Table 1.3 (continued)

SMA	SIP Move Summary	Monitoring Year Move Completed
LA-SMA-3.9	The SIP exercise determined that the reviewed sampler location did not adequately monitor the affected area. Therefore, the sampler was moved downgradient in the drainage.	2019
LA-SMA-5.361	The SIP exercise determined that more of the impacted area should be included in the SMA. Therefore, the sampler was moved downgradient in the drainage.	2018
LA-SMA-6.38	The SIP exercise determined that the reviewed sampler location did not adequately monitor the affected area. Therefore, the sampler was moved downgradient in the drainage.	2018
M-SMA-3.5	The SIP exercise determined that the Site likely drained to the new SMA drainage. The sampler was not moved; the SMA map was edited to reflect this correction to the SMA drainage.	2017
M-SMA-4	The SIP exercise determined that chromium is Site-related and high chromium detections in soil/sediment are located downgradient of the reviewed sampler location. Therefore, the sampler was moved.	2017
M-SMA-5	The SIP exercise determined that the sampler should be moved to increase the chances of collecting a sample. Therefore, the sampler was moved.	2017
M-SMA-7.9	The SIP exercise determined that the sampler should be moved into the channel at the same location as the runoff location sampled for alternative compliance. Therefore, the sampler was moved.	2017
P-SMA-0.3	The SIP exercise determined that the sampler should be moved downgradient in the drainage, past current Site controls located in the drainage channel, to include more of the potentially affected area.	2023 (scheduled)
P-SMA-1	The SIP exercise determined that the reviewed sampling location did not include the channel area. Therefore, the sampler was moved to the former NMED-OB sampling location, "Pueblo Below Landfill East," to include more of the potentially affected area.	2018
P-SMA-2	The SIP exercise determined that the reviewed sampler was located upslope from the highest detection of dioxin/furans in soil (73-25599). In addition, the western drainage area, with high detections of metals in soil (73-27297 copper, 73-25605 silver), is not currently monitored. Therefore, the sampler will be moved approximately 20 ft. downgradient of soil sampling location 73-25599 to include more of the potentially affected area.	2023 (scheduled)
P-SMA-2.2	The SIP exercise determined that the sampler should be moved downgradient in the drainage, past soil location 00-10256 (elevated detections of metals and PCBs), to include more of the potentially affected area. Therefore, the sampler was moved.	2018
PJ-SMA-3.05	The SIP exercise determined that the reviewed sampler location did not include the potentially impacted area or sample location 09-00005. Therefore, the current sampler was moved downgradient in the drainage.	2017

Table 1.3 (continued)

SMA	SIP Move Summary	Monitoring Year Move Completed
PJ-SMA-4.05	The SIP exercise determined that the reviewed sampler location did not include the area where the absorption bed could have discharged/overflowed (potentially impacted area). Therefore, the sampler was moved to a location that will account for potential discharge from both outfalls.	2017
PJ-SMA-10	The SIP exercise determined that the reviewed sampling location should be moved to monitor the push-pile areas. Therefore, the sampler was moved.	2017
PT-SMA-1	The SIP exercise determined that the reviewed sampler location did not capture surface water from the firing points west of the main firing mounds, nor from the 15-008(a) location that is on top of the mesa. Therefore, the sampler was moved downgradient in the drainage area.	2017
PT-SMA-3	The SIP exercise determined that the reviewed sampling location monitored an SMA area of over 700 acres, and should be moved closer to the Sites to capture the runoff from Sites 36-004(a) and 36-006. Therefore, the sampler was moved.	2018
S-SMA-3.52	The SIP exercise determined that the sampler should be moved to capture an original exposed drainage channel feature that likely was impacted by Site discharge not monitored at the reviewed location. The sampler was moved to a location where this drainage channel meets tuff, and upgradient of where the channel joins the main drainage and downgradient of the berm low point.	2017
S-SMA-3.7	The SIP exercise determined that the reviewed sampler location did not adequately address runoff from the AOC. Therefore, the sampler was moved downgradient to address PCBs in soil at location 53-01087.	2018
S-SMA-6	The SIP exercise determined that the reviewed sampling location was being impacted by up-canyon sources. The sampler was moved to better represent historical SWMU activities at this Site.	2017
STRM-SMA-1.05	The SIP exercise determined that the reviewed sampler location had been rebuilt and capped with asphalt, and did not represent the impacted area (outfall drainage area). Therefore, the sampler was moved downgradient in the drainage area.	2017
STRM-SMA-4.2	The SIP exercise determined that the reviewed sampling location was representative of backwater from channel and did not discharge from the Site. Therefore, the sampler was moved downgradient in the drainage swale to evaluate the potentially affected media area.	2017
T-SMA-2.5	The SIP exercise determined that the affected area was not adequately addressed by the reviewed sampling location. Therefore, the sampler was moved downgradient of soil sampling location 35-23203.	2017
T-SMA-2.85	The SIP exercise determined that the affected area was not adequately addressed by the reviewed sampling location. Therefore, the sampler was moved downgradient of soil sampling location 35-23209.	2017
T-SMA-3	The SIP exercise determined that the affected area for silver was not adequately addressed by the reviewed sampling location. Therefore, the sampler was moved downgradient of soil sampling location 35-23207.	2017

Table 1.3 (continued)

SMA	SIP Move Summary	Monitoring Year Move Completed
T-SMA-6.8	The SIP exercise determined that the reviewed sampling location should be moved downgradient in the drainage area to include more of the affected area. Therefore, the sampler was moved.	2017
T-SMA-7.1	The SIP exercise determined that, although copper concentrations in soil at this Site are less than 1.8 times the maximum background concentration, copper concentrations in all surface samples at this Site are above background. Copper was used at the Site. Therefore, the sampling location was moved to address the affected area downgradient of soil sampling location 04-23236.	2017
W-SMA-6	The SIP exercise determined that the reviewed sampling location should be moved downgradient on the hillslope to capture stormwater runoff from the entire upper area. Therefore, the sampler was moved.	2017
W-SMA-9.5	The SIP exercise determined that the reviewed sampling location should be moved to catch runoff from the upgradient side of the berm. Therefore, the sampler was moved.	2017
W-SMA-9.8	The SIP exercise determined that the reviewed sampling location should be moved approximately 50' downgradient. Therefore, the sampler was moved.	2017

1.4 Determining Pollutants of Concern

For each Site on the IP, the Site history and relevant documents have been used to determine the POCs. POCs with TALs will be used for screening and corrective action per the Permit. POCs with an NMWQCC- and EPA-approved method will be used for screening purposes only. Table 1.4-1 lists the actions that will be taken for each of the groups of POCs identified in the Site history.

Table 1.4-1 Actions Taken for Pollutants of Concern

Pollutant of Concern Group	Pollutant of Concern Action Taken
Metals	Metals were analyzed for every sample in the former permit using the TAL metals suite, which included aluminum, antimony, arsenic, boron, cadmium, chromium, cobalt, copper, lead, mercury (total), nickel, selenium (total), silver, thallium, vanadium, and zinc. If samples have already been collected, the sampler will only be reactivated if a metal, not previously monitored for, is specifically designated in the Site history (e.g., aluminum (total), barium, beryllium, iron, and manganese, which do not have TALs but do have WQS).

Table 1.4-1 (continued)

Pollutant of Concern Group	Pollutant of Concern Action Taken
Organic Chemicals	SVOCs with a TAL and/or WQS and PCB congeners will be monitored as indicated by the Site history. Because there are new SVOCs with WQS, we will monitor for all SVOCs when in the Site history regardless of soil sampling results. The SVOC list for analysis includes acenaphthene, anthracene, benzidine, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)floranthene, bis(2-ethylhexyl)phthalate, bis(chloromethyl)ether, butylbenzylphthalate, chloro-3-methylphenol[4-], chloronaphthalene[2-], chlorophenol[2-], chrysene, dibenz(a,h)anthracene, dichlorobenzene[1,2-], dichlorobenzene[1,3-], dichlorobenzene[1,4-], dichlorobenzidine[3,3'-], dichlorophenol[2,4-], diethylphthalate, dimethyl phthalate, dimethylphenol[2,4-], di-n-butylphthalate, dinitro-2-methylphenol[4,6-], dinitrophenol[2,4-], dinitrophenols, diphenylhydrazine[1,2-], fluoranthene, fluorene, hexachlorobenzene, hexchlorobutadiene, hexachlorocyclopentadiene, hexachloroethane, indeno(1,2,3-cd)pyrene, isophorone, nitrosamines, nitrosodiethylamine[N-], nitrosodimethylamine[N-], nitroso-di-n-butylamine[N-], nitroso-di-n-propylamine[N-], nitrosodiphenylamine[N-], nitrosopyrrolidine[N-], nonylphenol, pentachlorobenzene, pentachlorophenol, phenol, pyrene, tetrachlorobenzene[1,2,4,5], trichlorobenzene[1,2,4-], trichlorophenol[2,4,5-], and trichlorophenol[2,4,6-]. SVOCs with a TAL will be prioritized, followed by SVOCs with a WQS but no TAL. PCB congeners will be analyzed according to method EPA 1668.
Inorganic Chemicals	The full metals suite will be analyzed. See metals above for list.
Radionuclides	Radium-226/228, gross alpha, strontium-90, and tritium will be analyzed.
Dioxins/Furans	Tetrachlorodibenzodioxin[2,3,7,8-], will be analyzed.
Cyanide	Cyanide (total) will be analyzed.
HE	RDX, TNT, 2,4-dinitrotoluene, and nitrobenzene will be analyzed. (2,4-dinitrotoluene and nitrobenzene do not have TALs but they do have WQS).
Pesticides	Pesticides with TALs and/or WQS will be analyzed. These include aldrin, BHC[alpha-], BHC[beta-], BHC[gamma-], carbaryl, chlordane(alpha/gamma), chlorpyrifos, DDD[4,4'-], DDE[4,4'-], DDT[4,4'-], demeton, diazinon, dieldrin, endosulfan I, endosulfan II, endosulfan sulfate, endrin, endrin aldehyde, guthion, heptachlor, heptachlor epoxide, malathion, methoxychlor[4,4'-], mirex, parathion, total BHC (technical grade), and toxaphene (technical grade). Pesticides with a TAL will be prioritized, followed by pesticides with a WQS but no TAL.

Once POCs are identified for all Sites within an SMA, the SSD will be performed to determine the parameters in the SAP (which summarizes SMA status and analytical suite for monitoring) for that SMA. (For more information, refer to Section 1.3.) The following actions will be taken to determine if a POC will be added to the SAP:

- If the POC is in the Site history, the POC was monitored for in soil data, and exceeds screening level, add the POC to the SAP.
- If the POC is in the Site history, and the POC was monitored for in soil data but does not exceed screening level, do not add the POC to the SAP (except for SVOCs because RCRA monitors for a smaller SVOC suite in soils than required under IP for stormwater. If SVOCs are in Site history, then add to the SAP).
- If the POC is in the Site history, but soil data has not been collected under RCRA, add the POC to the SAP.

- If an analyte exceeds soil-screening levels but is not a POC based on Site history, do not add the POC to the SAP.

1.5 Site Specific Demonstration

The Permit establishes TALs that are based on New Mexico WQCs. These TALs are used as benchmarks to determine the effectiveness of control measures implemented under the Permit. As stated in Permit Part I.3, "Where corrective action is triggered by an event that does not itself constitute Permit noncompliance, such as an exceedance of applicable TALs or BTVs, there is no violation of the Permit, provided the Permittees take the required corrective action within the relevant deadlines."

To ensure compliance with this portion of the Permit, confirmation-monitoring sample results for an SMA are compared with applicable TALs and composite BTVs as part of the SSD. Two confirmation-monitoring samples are planned per monitoring stage, unless two years have passed since analytical results were received from the first sample at an SMA, in which case, under Part I.B.1.a of the 2022 IP, one sample may be used in the SSD. For this initial SIP (aka the 2022 SIP), each SMA has been screened using the SSD process, as outlined in Figure 1.5-1.

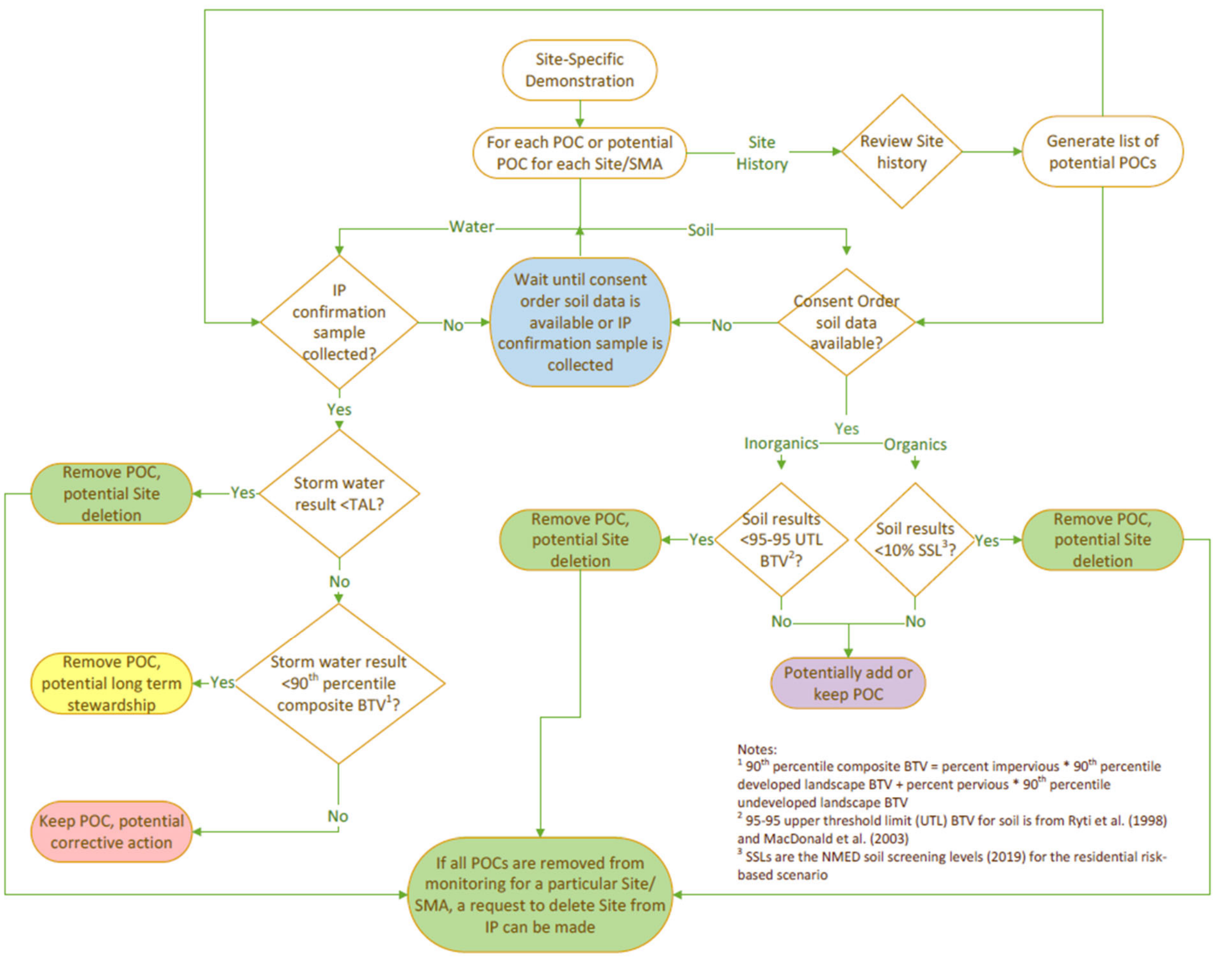


Figure 1.5-1 Site-Specific Demonstration Process

Site history, stormwater data, and soil data for each SMA was reviewed to determine POCs to be monitored and the SMA tier. There are four tiers that result from the SSD, based on Part I.C.2.b.i:

- Active Monitoring – the SMA and associated Sites are in active monitoring status. At least one new stormwater sample will be collected.
- Site Deletion − All Site-related POCs have been monitored, and no TAL exceedances were reported. Soil sampling at the SMA is complete.
- Long-Term Stewardship − All Site-related POCs have been monitored, and results were either less than TAL, or less than TAL and composite BTV, with the exception of gross alpha.
- Corrective Action − One or more Site-related POCs exceed the TAL and composite BTV.

The monitoring status of 30 SMAs consists of a combination of Active Monitoring and Corrective Action tiers. At these SMAs, the SSD reviewed stormwater data for samples that were collected under the 2010 permit, are more than two years old, and had at least one TAL and/or composite BTV exceedance. Corrective action was required for those POCs per Part I.D. However, the SSD also determined that not all Site-related POCs were monitored for in those samples, thus, Active Monitoring is also being initiated. These SMAs are listed in Overview Section 3.0 and Table 3.5-1. Additionally, they are identified in the Master Sampling and Analysis Plan (Table 4.1-1) as being in "Active Monitoring/Corrective Action" status.

This document and process, as outlined in the IP and explained in this Overview, is referred to as the SIP. The results of the SIP have been gathered into a sampling and analysis plan, referred to as the SAP. The SAP will drive what is monitored for at each SMA. The SIP is to be published annually by EPA as Appendix E to the IP. For this initial SIP (aka the 2022 SIP) all available Site history, stormwater data, and soil data for each SMA were reviewed to determine the SMA tier and POCs to be monitored. The 2022 SIP covers data collected through Monitoring Year 2021. In subsequent SIPs, only SMAs with new data or information will be screened through the SSD; the status of all other SMAs will be unchanged, and will be included in the SAP. The 2023 SIP will include data collected in 2022 and 2023.

1.6 Data Quality Objectives

Analytical results meet the N3B minimum data quality objectives as outlined in N3B-PLN-SDM-1000, "Sample and Data Management Plan." N3B-PLN-SDM-1000 sets the validation frequency criteria at 100% Level 1 examination and Level 2 verification of data, and at 10% minimum Level 3 validation of data.

A Level 1 examination assesses the completeness of the data as delivered from the analytical laboratory, identifies any reporting errors, and checks the usability of the data based on the analytical laboratory's evaluation of the data. A Level 2 verification evaluates the data to determine the extent to which the laboratory met the analytical method and the contract-specific quality-control and reporting requirements. A Level 3 validation includes Levels 1 and 2 criteria, and determines the effect of potential anomalies encountered during analysis, and possible effects on data quality and usability. A Level 3 validation is performed manually with method-specific data validation procedures.

Laboratory analytical data are validated by N3B personnel as outlined in N3B-PLN-SDM-1000; N3B-AP-SDM-3000, "General Guidelines for Data Validation"; N3B-AP-SDM-3014, "Examination and Verification of Analytical Laboratory Data"; and additional method-specific analytical data validation procedures. All associated validation procedures have been developed, where applicable, from the EPA QA/G-8 "Guidance on Environmental Data Verification and Data Validation," the Department of Defense (DoD)/DOE "Consolidated Quality Systems Manual for Environmental Laboratories," EPA "Superfund CLP National Functional Guidelines for Data Review," and the American National

Standards Institute/American Nuclear Society 41.5: "Verification and Validation of Radiological Data for Use in Waste Management and Environmental Remediation."

The Permittees will plan for collection of 10 percent duplicates of samples in the 2023 monitoring season.

2.0 Guide to the Sampling Implementation Plan

The SIP is organized by SMA and grouped by watershed. For clarity, SMAs are uniquely and consecutively numbered from 1–239. All SWMUs/AOCs monitored by an SMA are discussed in the applicable section. The structure for each SMA in the SIP is:

X.0 SMA Overview
- X.1 Administratively Continued Permit Summary
- X.2 Site History (with descriptions of each Site within the SMA)
  - X.2.1 Known or Potential Use of Pollutants of Concern
- X.3 Consent Order Soil Data
- X.4 Stormwater Evaluation
  - X.4.1 Summary of Stormwater Results Compared with TALs and BTVs
  - X.4.2 Assessment Unit and Stream Impairments
- X.5 Site Specific Demonstration
  - X.5.1 Soil Data Summary
  - X.5.2 Stormwater Data Summary
  - X.5.3 2022 Permit Status
  - X.5.4 Sampling and Analysis Plan (if applicable)

Detailed descriptions of each of these sections of the SIP follow.

2.1 SIP Section X.0, SMA Overview

Each SMA discussion begins with an overview table of SMA characteristics. Table 2.1-1 shows a sample list of such characteristics with descriptions of each line item.

Table 2.1-1 Descriptions of SMA Characteristics

Term	Description
Associated Sites	SWMUs and AOCs associated with the SMA
Receiving Water	Designated Canyon/Watershed that the SMA drains to
Drainage Area	Area in acres of the SMA
Landscape Characteristics	The percentage of land within the SMA that is designated as impervious, and the percentage designated as pervious
Consent Order Site Status	The current Consent Order site status for each of the SWMUs and AOCs that are monitored by the SMA
2010 Administratively Continued Permit Final Status	SMA status upon issuance of the 2022 Individual Permit
2016–2018 SIP Actions	Recommendations for sampler moves from the initial SIP exercise, if any, and any actions taken, or scheduled to be taken, as a consequence
2022 Permit Status	Result of the SSD screening process and the status of the SMA under the 2022 Individual Permit

2.2 SIP Section X.1, 2010 Administratively Continued Permit Summary

This section summarizes control installation, stormwater sample collection, and certifications submitted to EPA. Any additional sampler moves are included in this section. For the purposes of the SSD, only the most recent monitoring stage stormwater data is used. For example, if an SMA had progressed from Baseline Monitoring to Corrective Action with no sampler move, only data from the Corrective Action stage would be screened.

A current project map of each SMA is available on the IP Public Website: https://ext.em-la.doe.gov/IPS/Home/SiteMonitoringAreaMaps. As changes occur during the year, maps are updated and posted to the website.

2.3 SIP Section X.2, Site History

The Site history for each SWMU and/or AOC within an SMA in this section is the most up-to-date information available at the time of the document publication. The date of the last update (if available) is included with each Site history. The Site history data is updated in accordance with the Consent Order effort as documents are reviewed and new investigations are planned.

2.3.1 SIP Section X.2.1, Potential Pollutants of Concern

The POCs known to have been used, or that potentially were used, at a Site are listed in the SSD for each applicable SMA (Part I.C.2). The table in this section lists each Site, and a list of potential POCs associated with the Site. The POCs are used as the building blocks for the SSD and help to determine which POCs will be monitored at the SMA. For example, a Site description that identifies the Site as an outfall from an HE sump would result in the identification of HE as a potential POC. If HE is not currently a monitoring requirement, and HE was not monitored for in-soil data or HE exceeded screening levels for in-soil data, it would be added to the SAP for the respective SMA.

The POC table is the starting point for determining which potential POCs with TALs or WQS will be monitored at the SMA. This determination, coupled with the soil and stormwater data, determines the SAP for SMAs in active monitoring. If a parameter with a TAL or a WQS is listed as a POC based on the Site history, but has not been monitored for in-soil or stormwater, it is added to the SAP. POCs without TALs or WQS are not added to the SAP for monitoring because there are no criteria against which to screen them. The Permittees adhere to the requirements in the federal Clean Water Act, the New Mexico Water Quality Act, the New Mexico WQS, and the Individual Permit. When updates to the NMAC 20.6.4 occur, the Permittees will adopt the new and/or revised WQS from the most current NMAC update.

2.4 SIP Section X.3, Consent Order Soil Data

The next step in the SSD is to identify Consent Order Decision-Level soil data associated with the SMA and the Sites monitored by the SMA. Soil data is included if it meets all of the following criteria:

- collected after 1995,
- collected from a starting depth between 0−3 ft bgs,
- within the SMA or within 100 ft of the SMA boundary, and
- considered decision-level data.

This information is used in the screening process outlined further in Section 2.6.

Per Permit Part I.C.2.b.ii, soil data is screened using “95-95 upper tolerance limit (UTL) BTVs for inorganic POCs (LANL 1998, 059730) and the most recent NMED soil screening levels (SSLs) for organic POCs and inorganic POCs with no BTV (Permittees must use most recent NMED soil screening levels). As of the finalization of this permit, the most recent version of soil screening levels were in the NMED November 2021,” “Risk Assessment Guidance for Site Investigations and Remediation; Volume 1 Soil Screening Guidance for Human Health Risk Assessments.”

Following the introductory text in this section, soil analytical plots include all parameters analyzed for in-soil data that have either a TAL or a WQS. Analytical results for each analyte presented in the plots are normalized by calculating an exceedance ratio, defined as the analytical result divided by the applicable screening value (BV, 10% of the SSL, or 10% of the SAL). The exceedance ratios are plotted in box plots to allow for the display of a significant amount of data. Box plots are organized as follows:

- a horizontal line at the median;
- the upper box is the upper quartile (25% of data is greater than the upper line of the box);
- the lower box is the lower quartile (75% of data is greater than the lower line of the box);
- whiskers represent the max value, that is not an outlier, on the top, and the min value, that is not an outlier, on the bottom; and
- points represent outliers that are outside the range of normal.

A solid symbol on the plot represents a result that is detected, while a hollow symbol represents a value that is considered ND, where the analytical laboratory was not able to detect a concentration greater than the MDL, which is defined as “...the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte” (40 CFR Appendix B to Part 136).

Figures 2.4-1 through 2.4-3 provide more specific details related to individual components of the soils analytical results and how they are represented on the plots and tables in the document.

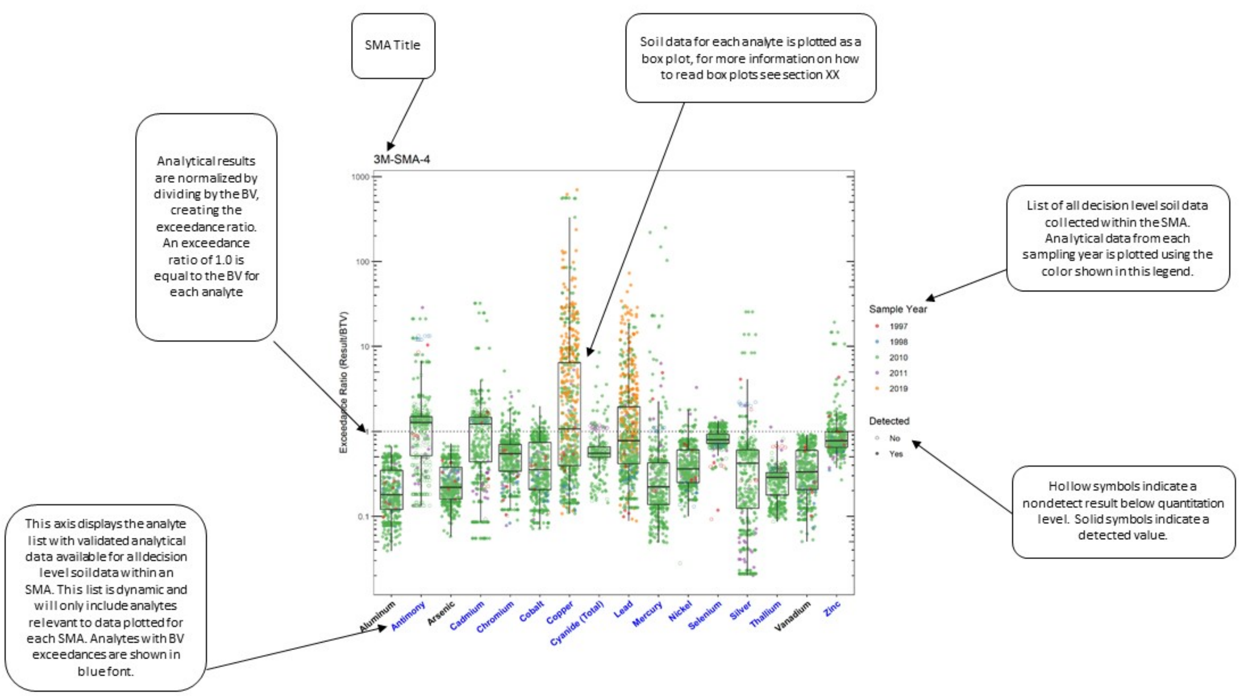


Figure 2.4-1 Inorganics Analytical Results (Soils) – Sample Plot with Explanations

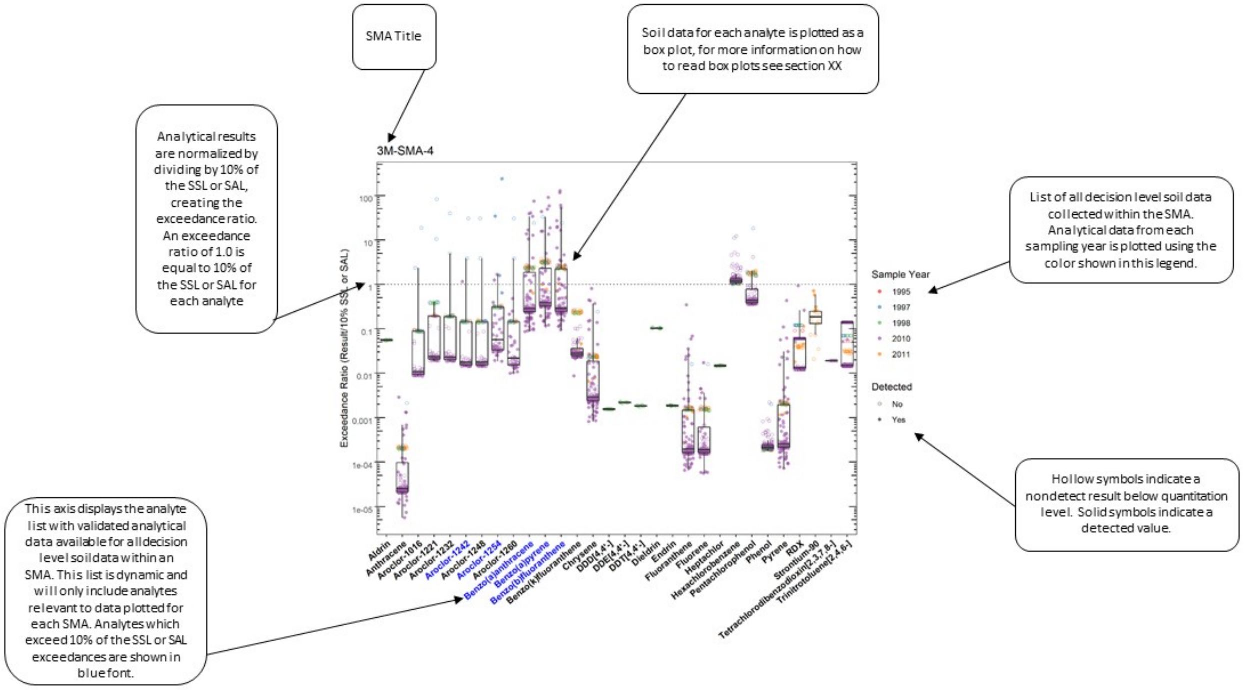
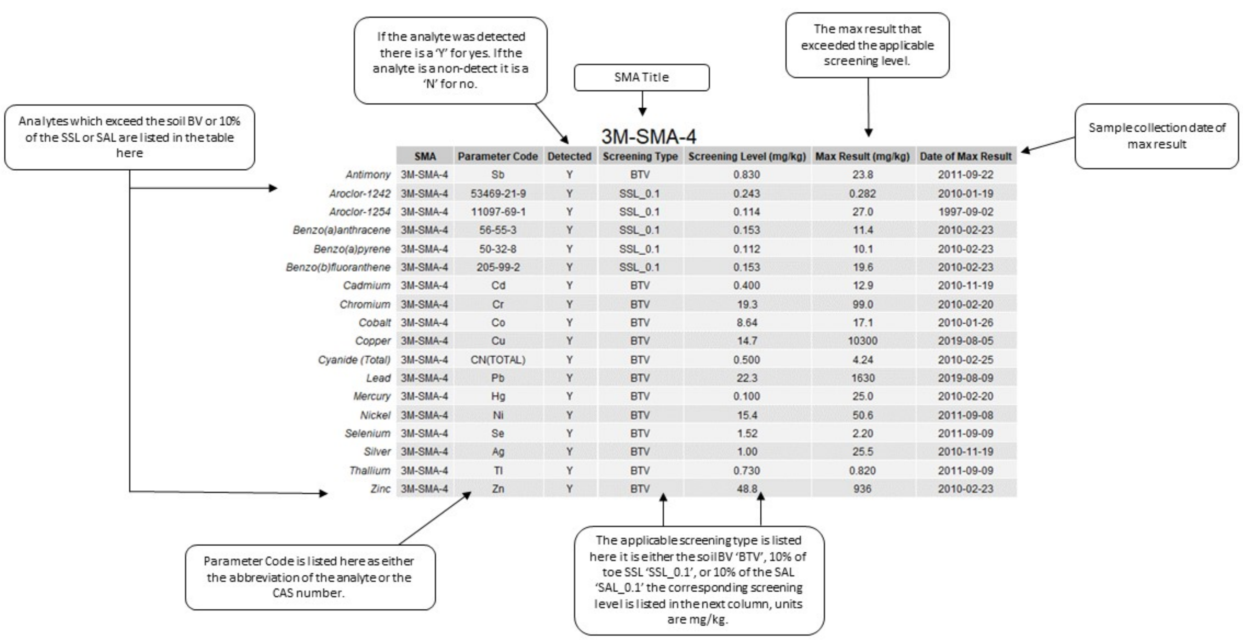


Figure 2.4-2 Organics Analytical Results (Soils) – Sample Plot with Explanations



3M-SMA-4

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
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
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
Cadmium	3M-SMA-4	Cd	Y	BTV	0.400	12.9	2010-11-19
Chromium	3M-SMA-4	Cr	Y	BTV	19.3	99.0	2010-02-20
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
Lead	3M-SMA-4	Pb	Y	BTV	22.3	1630	2019-08-09
Mercury	3M-SMA-4	Hg	Y	BTV	0.100	25.0	2010-02-20
Nickel	3M-SMA-4	Ni	Y	BTV	15.4	50.6	2011-09-08
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
Zinc	3M-SMA-4	Zn	Y	BTV	48.8	936	2010-02-23

Figure 2.4-3 Screening-Level Exceedances (Soils) – Sample Plot with Explanations

2.5 SIP Section X.4, Stormwater Evaluation

This section describes the stormwater data, date of sample collection (if applicable), comparison to applicable TALs and BTVs, and any impairments associated with the receiving assessment unit. This information is used in the screening process outlined further in Section 2.6.

2.5.1 SIP Section X.4.1, Summary of Stormwater Results Compared to TALs and BTVs

The stormwater analytical plots in this section include all analyzed parameters that have a TAL and/or a WQS. The plot contains the results for all analyzed metals, weak-acid-dissociable cyanide, gross-alpha radioactivity and radium, and organic compounds in the stormwater sample collected at the Site and associated SMA, per the requirements set forth in this SIP. The plots include all data from the current monitoring stage; data from previous stages is not included. Results are compared to the applicable TAL (shown as circles on the plots) and to the composite BTV, when available (triangles). The composite BTV calculation is included in Part I.C.2.b.i and the BTVs are in Appendix C of the permit. The content of the plots will vary by SMA based on the amount of analytical data and number of samples collected.

Analytical results for each analyte presented in the plots are normalized by calculating an exceedance ratio, defined as the analytical result divided by the applicable TAL (ATAL, MTAL, or MQL) or Composite BTV (Permit Part I.B.1.f). Thus, results exceeding the TAL and/or Composite BTV will have an exceedance ratio greater than 1.0.

The exceedance ratios are plotted on a log scale to allow the display of a larger range of values. A solid symbol on the plot represents a result that is detected above the MDL, while a hollow symbol represents a value that is considered ND. A circle represents a result with a TAL and a WQS, while a square represents a result with only a WQS.

Figures 2.5-1 and 2.5-2 provide more specific details related to individual components of the stormwater analytical results and how they are represented on the plots and tables in the document.

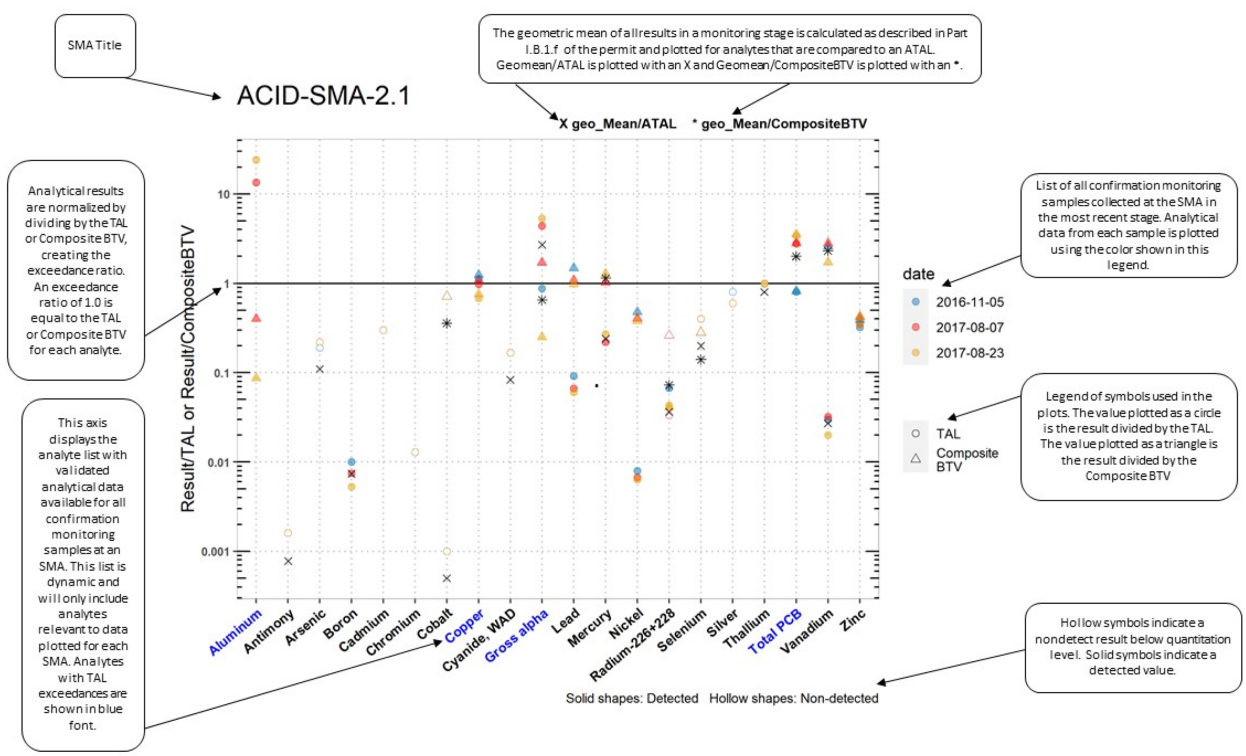


Figure 2.5-1 Analytical Results from Stormwater – Sample Plot with Explanations

These rows present the TAL value used in the plot, the applicable MQL, ATAL, and MTAL, and the unit of measurement reported for each analyte as established in Appendix B and C of the Permit.

This row represents the analyte list with validated analytical data available for confirmation monitoring samples at an SMA and corresponds to the analytes displayed on the plot.

SMA Title

The Composite BTV is calculated for each SMA as described in Part I.C.2.b.i

Analytical data for each sample date plotted are displayed on three rows. The result, the analytical result normalized to the TAL listed as an exceedance ratio, and the analytical result normalized to the Composite BTV and listed as an exceedance ratio. Italic font indicates a nondetect. NA indicates no analytical results.

ACID-SMA-2.1

	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	765	NA	340	NA	NA	NA	0.65	233	NA	4.8	22	NA
Composite_BTV	36700	NA	NA	NA	NA	NA	NA	NA	1.40	4.33	NA	55.6
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*
2016-11-05 result	NA	*1.00*	*1.70*	NA	NA	50.4	*0.300*	*3.00*	*1.00*	5.36	*1.67*	13.2
2016-11-05 dT	NA	NA	NA	NA	NA	0.010	NA	NA	NA	1.12	NA	0.88
2016-11-05 dB	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.24	NA	NA
2017-08-07 result	10300	*1.00*	*2.00*	19.7	*0.200*	37.4	*0.300*	*3.00*	*1.00*	4.69	*1.67*	66.1
2017-08-07 dT	13.5	NA	NA	0.0098	NA	0.0075	NA	NA	NA	0.977	NA	4.4
2017-08-07 dB	0.401	NA	NA	NA	NA	NA	NA	NA	NA	1.08	NA	1.70
2017-08-23 result	18400	*1.00*	*2.00*	23.3	*0.200*	26.4	*0.300*	*3.00*	*1.00*	3.27	*1.67*	80.2
2017-08-23 dT	24.1	NA	NA	0.012	NA	0.0053	NA	NA	NA	0.681	NA	5.3
2017-08-23 dB	0.0864	NA	NA	NA	NA	NA	NA	NA	NA	0.755	NA	0.249
geo_mean/ATAL	NA	0.00078	0.11	NA	NA	0.0074	NA	NA	0.00050	NA	0.161	2.7
geo_mean/B	NA	NA	NA	NA	NA	NA	NA	NA	0.357	NA	NA	0.650

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

This is the geometric mean of all corrective action monitoring data for the analytes that are compared to an ATAL in the plot. There are two rows 'geo_mean/ATAL' normalizes the geometric mean to the applicable ATAL and 'geo_mean/B' normalizes the geometric mean to the Composite BTV.

Note: For total aluminum and gross alpha the result is normalized by the suspended sediment concentration (SSC) then divided by the Composite BTV to determine if the POC has exceeded the BTV.

Figure 2.5-2 Analytical Results from Stormwater – Sample Table with Explanations

2.5.2 SIP Section X.4.2, Assessment Unit and Stream Impairments

A drainage analysis was conducted at each SMA to determine which stream Assessment Unit the SMA drains to. Assessment units are set by NMED-SWQB and are stream reaches intended to represent surface-water segments where the water quality is the same. The 2022–2024 State of New Mexico Clean Water Act 303(d)/305(b) Integrated Report was used in this analysis to determine which impairments could be related to historic site activity, based on site history. That information is included in this section. A stream-reach impairment will be added to the sampling plan if it meets the following conditions:

- It is included in the Site history of an associated SMA as a potential POC and
- It has not yet been monitored at that SMA.

If it has been monitored at the SMA and exceeded TAL and BTV, it will continue to be monitored at the SMA. If the POC was monitored previously at the SMA and did not exceed TAL and BTV, it will not be added for monitoring.

2.6 SIP Section X.5, Site-Specific Demonstration

The SSD is the screening process used to review all data at an SMA and determine the current permit status for that SMA, taking into account all of the following:

- Site history,
- applicable soil data, and
- stormwater data.

2.6.1 SIP Section X.5.1, Soil Data Summary

In this section, the soil plot and exceedance table (as described in Section 2.4) is used to determine if all Site-related POCs that exceeded BVs, SSLs, or SALs in soil data were previously monitored in stormwater data. If Site-related POCs were not previously monitored in stormwater, and they exceed the soil screening levels, they are added to the SAP for that SMA.

2.6.2 SIP Section X.5.2, Stormwater Data Summary

In this section, stormwater data from the most recent stage is used to determine which POCs to include in the SAP.

- If, in a previous sample, a Site-related POC exceeded the TAL and Composite BTV, it is included in the SAP for the SMA.
- If, in a previous sample, a Site-related POC exceeded the TAL but not the Composite BTV, it is not included in the SAP for the SMA.
- If, in a previous sample, a Site-related POC exceeded the TAL and there is no Composite BTV, it will be included in the SAP for the SMA.
- If there is no stormwater data for that SMA, that is noted here.

2.6.3 SIP Section X.5.3, 2022 Permit Status

The results of the SSD and the status of each SMA (Active Monitoring, Active Monitoring/Corrective Action, Deletion, Long-Term Stewardship, or Corrective Action) are presented in this section, with a brief description of the screening process for that SMA.

2.6.4 Sampling and Analysis Plan

This section describes the SAP for SMAs that are in Active Monitoring status. The SAP is a table with two columns:

- The first column identifies the POCs that will be monitored.
- The second column provides the background for including the POCs for monitoring. Possible rationales for monitoring include: Site History, Impairment, Soil Data, and/or Stormwater Data.

Unless otherwise denoted, two samples are planned for each POC. One sample is planned when the POC was analyzed for in a previous sample in the same stage at the SMA; in this case, a ‘(1)’ is added behind the POC in the table. If two years have passed since analytical results were received from the first sample at an SMA, the Permittees will act on the results from the first sample collected (Part I.B.1.a).

Per Permit Part I.B.4, “in the event the volume of stormwater collected is insufficient to perform all required analysis listed in the SIP, the partial sample shall be analyzed in accordance with a priority list of Site-specific POCs determined based upon a review of site history, soil data, and other acceptable knowledge.” Prioritization of Site-related POCs shall be as follows:

- Site-related impairments,
- new POCs not previously analyzed in stormwater, then
- all remaining POCs.

This is denoted in the SAP tables for each SMA by the order of analytes listed in the table.

Different analyses require different stormwater sample volumes. If the required volume for analyses cannot be met for a particular POC, the next POC on the prioritization list will be analyzed until all water in the partial sample can be used. If a second partial sample is collected at the same SMA, the remaining POCs that were not analyzed in the prior sample will be prioritized.

3.0 Site-Specific Screening Determinations

The results of the SSD are presented in the following sections. Because of the Permit issuance timeline, the 2022 SIP review is being conducted during Monitoring Year 2022. Therefore, the 2022 SIP will not be implemented until Monitoring Year 2023 (approximately April to November 2023). All sampling results and other relevant changes to SMA information, which occur in 2022, will be incorporated into the 2023 SIP, which will be implemented in Monitoring Year 2024.

3.1 Active Monitoring

One hundred and sixty (160) SMAs will be in Active Monitoring status for Monitoring Year 2023 based on the results reviewed in the 2022 SIP. These SMAs are included in Table 3.1-1. Table 4.1-1 lists the POCs to be monitored at each SMA. Some SMAs previously listed in Completed status under the previous permit are being reactivated and placed into Active Monitoring because Site-related POCs were not analyzed in previous samples.

Sites added to the permit (Table 1.1-3) were generally covered by existing SMAs. In three instances, the Sites added to the permit could not be monitored by an existing SMA, and a new SMA needed to be created. These SMAs are S-SMA-3.61, S-SMA-3.62, and PJ-SMA-9.2. During Monitoring Year 2023, baseline controls will be installed and certified at these locations.

Table 3.1-1 SMAs in Active Monitoring Status for Monitoring Year 2023

SMA (Active Monitoring)	SMA (Active Monitoring)	SMA (Active Monitoring)	SMA (Active Monitoring)	SMA (Active Monitoring)
2M-SMA-1	CDV-SMA-2.3	LA-SMA-4.2	PJ-SMA-13.7	S-SMA-3.61*
2M-SMA-1.42	CDV-SMA-2.42	LA-SMA-5.01	PJ-SMA-14.2	S-SMA-3.62*
2M-SMA-1.43	CDV-SMA-2.51	LA-SMA-5.2	PJ-SMA-14.3	S-SMA-3.7
2M-SMA-1.44	CDV-SMA-3	LA-SMA-5.33	PJ-SMA-14.4	S-SMA-3.71
2M-SMA-1.45	CDV-SMA-4	LA-SMA-5.362	PJ-SMA-14.6	S-SMA-3.95
2M-SMA-1.5	CDV-SMA-6.01	LA-SMA-5.51	PJ-SMA-14.8	S-SMA-5
2M-SMA-1.67	CDV-SMA-7	LA-SMA-5.52	PJ-SMA-16	S-SMA-5.5
2M-SMA-2.2	CDV-SMA-8.5	LA-SMA-5.53	PJ-SMA-17	STRM-SMA-1.5
2M-SMA-2.5	CDV-SMA-9.05	LA-SMA-5.54	PJ-SMA-18	STRM-SMA-4.2
2M-SMA-3 at SS193230	CHQ-SMA-0.5	LA-SMA-5.91	PJ-SMA-19	STRM-SMA-5.05
2M-SMA-3 at SS2439	CHQ-SMA-1.01	LA-SMA-5.92	PJ-SMA-2	T-SMA-2.5
3M-SMA-0.2	CHQ-SMA-2	LA-SMA-6.25	PJ-SMA-3.05	T-SMA-2.85
3M-SMA-0.5	CHQ-SMA-3.05	LA-SMA-6.31	PJ-SMA-4.05	T-SMA-3
3M-SMA-0.6	CHQ-SMA-4	LA-SMA-6.32	PJ-SMA-5	T-SMA-4
3M-SMA-2.6	CHQ-SMA-4.1	LA-SMA-6.34	PJ-SMA-5.1	T-SMA-5
ACID-SMA-1.05	CHQ-SMA-4.5	LA-SMA-6.38	PJ-SMA-6	T-SMA-7
ACID-SMA-2.01	CHQ-SMA-5.05	LA-SMA-6.395	PJ-SMA-9	W-SMA-10
A-SMA-2.5	CHQ-SMA-6	LA-SMA-6.5	PJ-SMA-9.2*	W-SMA-11.7

Table 3.1-1 (continued)

SMA (Active Monitoring)	SMA (Active Monitoring)	SMA (Active Monitoring)	SMA (Active Monitoring)	SMA (Active Monitoring)
A-SMA-2.7	CHQ-SMA-7.1	LA-SMA-9	Pratt-SMA-1.05	W-SMA-12.05
A-SMA-2.8	DP-SMA-0.3	M-SMA-10	P-SMA-0.3	W-SMA-14.1
A-SMA-3	DP-SMA-1	M-SMA-11.1	P-SMA-1	W-SMA-15.1
A-SMA-4	DP-SMA-2	M-SMA-12.6	P-SMA-2	W-SMA-2.05
B-SMA-0.5	DP-SMA-2.35	M-SMA-12.7	P-SMA-2.15	W-SMA-3.5
CDB-SMA-1	DP-SMA-3	M-SMA-12.92	P-SMA-2.2	W-SMA-4.1
CDB-SMA-1.15	LA-SMA-0.9	M-SMA-3	PT-SMA-0.5	W-SMA-5
CDB-SMA-4	LA-SMA-1.1	M-SMA-3.1	PT-SMA-2	W-SMA-7
CDV-SMA-1.2	LA-SMA-1.25	M-SMA-3.5	PT-SMA-3	W-SMA-7.9
CDV-SMA-1.3	LA-SMA-10.12	M-SMA-5	R-SMA-1	W-SMA-8
CDV-SMA-1.4	LA-SMA-2.1	M-SMA-7.9	S-SMA-2.01	W-SMA-8.7
CDV-SMA-1.45	LA-SMA-2.3	PJ-SMA-1.05	S-SMA-2.8	W-SMA-8.71
CDV-SMA-1.7	LA-SMA-3.1	PJ-SMA-11	S-SMA-3.51	W-SMA-9.05
CDV-SMA-2	LA-SMA-3.9	PJ-SMA-11.1	S-SMA-3.52	W-SMA-9.8

* Active monitoring will begin after certification of installation of baseline controls in monitoring year 2023.

3.2 Deletion

Three (3) SMAs and associated Sites are eligible for deletion based on the results reviewed in the 2022 SIP, because all POCs have been monitored in stormwater data with no exceedances of the TAL or WQS. Consent Order investigation is complete (i.e., nature and extent have been defined) and all parameters which exceeded in-soil data were monitored in stormwater data. The SMAs eligible for deletion from the Permit are included in Table 3.2-1.

Table 3.2-1 SMAs Eligible for Deletion for Monitoring Year 2023

SMA (Deletion)
CDV-SMA-6.02
R-SMA-2.3
S-SMA-4.1

3.3 Long-Term Stewardship

Thirty-two (32) SMAs will be eligible to be placed into Long-Term Stewardship beginning in 2023 based on the SSD. Sites are placed into Long-term Stewardship when:

- all Sites within the SMA are deferred per the Consent Order (Part I.C.3),
- results exceed the TAL but do not exceed the Composite BTV (when the Composite BTV is greater than the TAL) (Part I.C.3.a),
- results exceed the HH-OO-based TALs, but are below the Wildlife Habitat TALs for discharge to non-perennial streams, (Part I.C.3.b),
- gross alpha was the sole TAL exceedance for samples collected under the 2010 permit (Part I.C.3.c) , or
- post-storm rain-event inspections have shown no evidence of stormwater discharges (per the requirements of Part I.B.8) from the Site for the past five years (Part I.C.3.d).

The SMAs eligible for Long-Term Stewardship are included in Table 3.3-1.

Table 3.3-1 SMAs Eligible for Long-Term Stewardship for Monitoring Year 2023

SMA (Long-Term Stewardship per Permit Part I.C.3 criterion)		SMA (Long-Term Stewardship per Permit Part I.C.3.a criterion)	SMA (Long-Term Stewardship Permit Part I.C.3.c criterion)
3M-SMA-0.4	PJ-SMA-8	CDV-SMA-2.5	2M-SMA-1.65
A-SMA-1.1	PJ-SMA-10	DP-SMA-0.6	B-SMA-1
A-SMA-2	PT-SMA-1.7	LA-SMA-6.3	M-SMA-10.01
A-SMA-3.5	PT-SMA-2.01	M-SMA-1.21	PT-SMA-1
F-SMA-2	PT-SMA-4.2	M-SMA-1.22	W-SMA-9.9
LA-SMA-5.31	R-SMA-1.95*	R-SMA-2.5	
LA-SMA-5.35	S-SMA-6	W-SMA-1	
PJ-SMA-7	W-SMA-9.5	W-SMA-1.5	
		W-SMA-6	
		W-SMA-7.8	
		CDV-SMA-8	

* SMA also qualifies for Long-Term Stewardship pursuant to Part I.C.3.c criterion.

3.4 Corrective Action

Fifteen (15) SMAs have been screened into Corrective Action. SMAs are screened into Corrective Action when one or more Site-related POCs exceed the TAL and Composite BTV. The Permittees are preparing a compliance schedule for these SMAs. The SMAs that have been screened into Corrective Action are included in Table 3.4-1.

Table 3.4-1 SMAs Screened into Corrective Action

SMA (Corrective Action)	SMA (Corrective Action)
2M-SMA-2	M-SMA-12.5
CDB-SMA-0.15	M-SMA-12.8
CDB-SMA-0.25	M-SMA-12.9
CHQ-SMA-1.02	M-SMA-13
LA-SMA-1	S-SMA-5.2
M-SMA-6	T-SMA-1
M-SMA-10.3	W-SMA-9.7
M-SMA-12	

3.5 Active Monitoring and Corrective Action

Thirty (30) SMAs have been screened into a combination of Active Monitoring/ Corrective Action statuses. At these SMAs, the SSD reviewed stormwater data for samples that were collected under the 2010 permit and are more than two years old, which had at least one TAL and composite BTV exceedance. Corrective action is required for the POC(s) that exceeded TAL and composite BTV in those samples, and the Permittees are preparing a compliance schedule for these SMAs. However, the SSD also determined that not all Site-related POCs have been monitored. Table 4.1-1 lists the POCs to be monitored at each SMA.

Table 3.4-1 SMAs Screened into Corrective Action

SMA (Corrective Action)	SMA (Corrective Action)	SMA (Corrective Action)	SMA (Corrective Action)	SMA (Corrective Action)
2M-SMA-1.7	A-SMA-6	LA-SMA-4.1	M-SMA-7	S-SMA-3.53
2M-SMA-1.8	CDB-SMA-0.55	LA-SMA-5.02	PJ-SMA-20	S-SMA-3.6
2M-SMA-1.9	CDV-SMA-2.41	LA-SMA-5.361	P-SMA-3.05	S-SMA-3.72
3M-SMA-4	CHQ-SMA-1.03	M-SMA-1	S-SMA-0.25	STRM-SMA-1.05
ACID-SMA-2	DP-SMA-0.4	M-SMA-1.2	S-SMA-1.1	T-SMA-6.8
ACID-SMA-2.1	LA-SMA-0.85	M-SMA-4	S-SMA-2	T-SMA-7.1

4.0 Sampling Implementation Plan for Each Site Monitoring Area

This SIP will be implemented for Monitoring Year 2023, pending approval from EPA. Once it is approved by EPA, it will be added to the Permit as Appendix E, via a minor permit modification (Part I.E.2.f). The SMA status and SAP (as applicable) for all SMAs is included in the SIP. Table 4.1-1 shows the Master SAP for the project, with 1s and 2s indicating the number of samples required. By default, two samples are planned for each POC. One sample is planned when the POC was analyzed for in a previous sample in the same stage at the SMA.

Table 4.1-1 Master Sampling and Analysis Plan

Permit Sort Order	SMA	Latitude	Longitude	Status	Dissolved Organic Carbon	Suspended Sediment Concentration	Tritium	Strontium-90	Radium-226 and Radium-228	Gross Alpha	Total PCBs	SVOCs	Dissolved Antimony	Dissolved Arsenic	Dissolved Barium	Dissolved Beryllium	Dissolved Cadmium	Dissolved Chromium	Dissolved Cobalt	Dissolved Copper	Dissolved Lead	Dissolved Manganese	Dissolved Nickel	Dissolved Silver	Dissolved Thallium	Dissolved Uranium	Dissolved Vanadium	Dissolved Zinc	Total Aluminum	Total Iron	Total Mercury	Total Selenium	Total Cyanide	Asbestos	HE	Pesticides	Hexavalent Chromium	Tetrachlorodibenzodioxin[2,3,7,8-]	Chloride	Nitrate
119	2M-SMA-1	35.87306	-106.33083	Active Monitoring	2[a]	2	2	—[b]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
120	2M-SMA-1.42	35.86489	-106.33428	Active Monitoring	2	2	—	—	—	—	—	—	—	—	—	—	—	—	2	—	2	—	—	2	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—
121	2M-SMA-1.43	35.86136	-106.33382	Active Monitoring	2	2	—	—	—	—	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
122	2M-SMA-1.44	35.86521	-106.33294	Active Monitoring	2	2	—	—	—	—	2	2	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—
123	2M-SMA-1.45	35.86428	-106.33274	Active Monitoring	2	2	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
124	2M-SMA-1.5	35.86107	-106.33322	Active Monitoring	2	2	—	—	—	—	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	—	—	—	—	—	—	—	—
125	2M-SMA-1.65	35.86034	-106.32919	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
126	2M-SMA-1.67	35.86319	-106.32634	Active Monitoring	1	1	—	—	—	—	—	—	—	—	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
127	2M-SMA-1.7	35.86821	-106.32491	Active Monitoring/ Corrective Action	2	2	—	—	—	—	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
128	2M-SMA-1.8	35.86825	-106.32430	Active Monitoring/ Corrective Action	2	2	2	—	—	—	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
129	2M-SMA-1.9	35.87215	-106.32594	Active Monitoring/ Corrective Action	2	2	—	—	—	—	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
130	2M-SMA-2	35.86841	-106.32273	Corrective Action	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
131	2M-SMA-2.2	35.86906	-106.32147	Active Monitoring	2	2	—	—	—	—	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
133	2M-SMA-2.5	35.85730	-106.31854	Active Monitoring	2	2	—	—	—	—	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	—	—	2	—	—	—	—	—
132	2M-SMA-3 at SS193230	35.85911	-106.31390	Active Monitoring	2	2	2	2	1	1	—	—	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	—	—	1	—	—	—	—	—
132	2M-SMA-3 at SS2439	35.86001	-106.31271	Active Monitoring	2	2	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
134	3M-SMA-0.2	35.84912	-106.30879	Active Monitoring	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	2	—	2	—	—	2	—	—	—	—	—	—	—	—	—
135	3M-SMA-0.4	35.84338	-106.29502	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
136	3M-SMA-0.5	35.84338	-106.29043	Active Monitoring	2	2	—	2	—	2	2	2	—	—	—	2	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
137	3M-SMA-0.6	35.84532	-106.29037	Active Monitoring	2	2	—	—	—	2	—	—	—	—	—	2	—	—	—	2	2	—	—	—	—	2	—	—	—	—	—	—	—	—	2	—	—	—	—	—
138	3M-SMA-2.6	35.83891	-106.27309	Active Monitoring	2	2	—	—	—	—	2	2	—	—	—	2	2	2	2	2	2	2	—	2	—	2	—	2	—	—	2	—	—	—	—	—	—	—	—	—
139	3M-SMA-4	35.83918	-106.26936	Active Monitoring/ Corrective Action	2	2	—	—	—	2	2	2	—	—	2	2	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
7	ACID-SMA-1.05	35.88555	-106.30995	Active Monitoring	2	2	—	—	—	2	2	2	2	—	—	—	2	—	—	2	2	2	—	2	—	—	—	2	2	—	2	—	—	—	—	—	—	—	—	—
8	ACID-SMA-2	35.88671	-106.30727	Active Monitoring/ Corrective Action	2	2	—	2	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table 4.1-1 (continued)

Permit Sort Order	SMA	Latitude	Longitude	Status	Dissolved Organic Carbon	Suspended Sediment Concentration	Tritium	Strontium-90	Radium-226 and Radium-228	Gross Alpha	Total PCBs	SVOCs	Dissolved Antimony	Dissolved Arsenic	Dissolved Barium	Dissolved Beryllium	Dissolved Cadmium	Dissolved Chromium	Dissolved Cobalt	Dissolved Copper	Dissolved Lead	Dissolved Manganese	Dissolved Nickel	Dissolved Silver	Dissolved Thallium	Dissolved Uranium	Dissolved Vanadium	Dissolved Zinc	Total Aluminum	Total Iron	Total Mercury	Total Selenium	Total Cyanide	Asbestos	HE	Pesticides	Hexavalent Chromium	Tetrachlorodibenzodioxin[2,3,7,8-]	Chloride	Nitrate
9	ACID-SMA-2.01	35.88448	-106.30656	Active Monitoring	2	2	—	—	—	—	2	2	—	—	—	—	2	—	—	2	—	2	2	2	—	—	—	2	—	—	2	—	—	—	—	—	—	—	—	—
10	ACID-SMA-2.1	35.88880	-106.30397	Active Monitoring/ Corrective Action	2	2	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
219	A-SMA-1.1	35.80885	-106.26700	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
220	A-SMA-2	35.80861	-106.26749	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
221	A-SMA-2.5	35.80642	-106.26349	Active Monitoring	2	2	—	—	—	2	2	—	2	—	—	2	—	—	—	2	2	—	—	—	—	2	—	2	—	—	2	—	—	—	—	—	—	—	—	—
222	A-SMA-2.7	35.80242	-106.26176	Active Monitoring	2	2	—	—	—	2	2	—	—	—	—	2	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
223	A-SMA-2.8	35.80211	-106.26120	Active Monitoring	2	2	—	—	—	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	2	—	—	—	—	—	—	—	—	—
224	A-SMA-3	35.79977	-106.26259	Active Monitoring	2	2	—	—	—	2	2	—	—	—	—	2	2	2	—	2	2	—	—	2	2	2	—	—	—	—	2	—	—	—	—	—	—	—	—	—
225	A-SMA-3.5	35.78595	-106.25059	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
226	A-SMA-4	35.77320	-106.23043	Active Monitoring	2	2	2	2	—	—	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
227	A-SMA-6	35.77150	-106.22970	Active Monitoring/ Corrective action	2	2	2	2	1	—	2	2	—	—	—	2	—	—	—	—	—	—	—	—	—	2	—	—	2	—	—	—	—	2	—	—	—	—	—	—
5	B-SMA-0.5	35.88696	-106.24388	Active Monitoring	2	2	2	2	—	1	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—
6	B-SMA-1	35.90022	-106.29622	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
79	CDB-SMA-0.15	35.85982	-106.29199	Corrective Action	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
80	CDB-SMA-0.25	35.85561	-106.28135	Corrective Action	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
81	CDB-SMA-0.55	35.85548	-106.28083	Active Monitoring/ Corrective Action	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	2	—	—	—
82	CDB-SMA-1	35.85293	-106.27970	Active Monitoring	2	2	2	2	—	—	1	2	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—
83	CDB-SMA-1.15	35.85537	-106.28017	Active Monitoring	2	2	—	—	—	2	2	2	—	—	—	—	2	2	—	2	2	—	—	2	—	2	—	2	—	2	2	—	—	—	—	—	—	—	—	—
84	CDB-SMA-4	35.83289	-106.23944	Active Monitoring	2	2	—	—	—	2	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	2	—	—	—	—	—	—	—	2	—	—	—	—	—	—
169	CDV-SMA-1.2	35.84835	-106.34781	Active Monitoring	2	2	—	—	—	—	—	2	—	—	2	—	—	—	—	—	—	2	—	—	—	2	—	—	—	2	—	—	—	—	—	—	—	—	—	—
170	CDV-SMA-1.3	35.84823	-106.34714	Active Monitoring	2	2	—	—	—	2	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
171	CDV-SMA-1.4	35.85013	-106.34675	Active Monitoring	2	2	—	—	—	—	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	—	—	2	—	—	—	—	—
172	CDV-SMA-1.45	35.84985	-106.34694	Active Monitoring	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
173	CDV-SMA-1.7	35.85100	-106.34221	Active Monitoring	2	2	—	—	—	—	—	—	—	—	2	—	2	—	2	2	2	2	2	2	—	2	—	2	2	—	2	—	—	—	2	—	—	2	—	—
174	CDV-SMA-2	35.85041	-106.33986	Active Monitoring	2	2	—	—	—	2	—	—	—	2	2	—	2	2	2	2	2	2	2	2	—	2	2	2	2	—	—	—	—	—	2	—	—	—	—	—
175	CDV-SMA-2.3	35.84610	-106.33307	Active Monitoring	2	2	—	—	—	—	2	2	—	—	2	2	—	—	—	—	—	2	—	—	—	2	—	—	—	2	—	—	—	—	2	—	—	—	—	—

Table 4.1-1 (continued)

Permit Sort Order	SMA	Latitude	Longitude	Status	Dissolved Organic Carbon	Suspended Sediment Concentration	Tritium	Strontium-90	Radium-226 and Radium-228	Gross Alpha	Total PCBs	SVOCs	Dissolved Antimony	Dissolved Arsenic	Dissolved Barium	Dissolved Beryllium	Dissolved Cadmium	Dissolved Chromium	Dissolved Cobalt	Dissolved Copper	Dissolved Lead	Dissolved Manganese	Dissolved Nickel	Dissolved Silver	Dissolved Thallium	Dissolved Uranium	Dissolved Vanadium	Dissolved Zinc	Total Aluminum	Total Iron	Total Mercury	Total Selenium	Total Cyanide	Asbestos	HE	Pesticides	Hexavalent Chromium	Tetrachlorodibenzodioxin[2,3,7,8-]	Chloride	Nitrate
176	CDV-SMA-2.41	35.84996	-106.33273	Active Monitoring/ Corrective Action	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—
177	CDV-SMA-2.42	35.84908	-106.33209	Active Monitoring	2	2	—	—	—	—	2	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	2	—	—
178	CDV-SMA-2.5	35.84652	-106.33079	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
179	CDV-SMA-2.51	35.84696	-106.32992	Active Monitoring	2	2	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
180	CDV-SMA-3	35.84777	-106.32067	Active Monitoring	2	2	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
181	CDV-SMA-4	35.84797	-106.31973	Active Monitoring	2	2	2	—	2	2	2	2	2	—	—	—	—	2	2	2	2	—	2	2	2	2	—	2	—	—	2	2	—	—	—	—	—	—	—	—
182	CDV-SMA-6.01	35.84780	-106.31693	Active Monitoring	2	2	—	—	2	2	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—
183	CDV-SMA-6.02	35.84774	-106.31628	SMA Deletion	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
184	CDV-SMA-7	35.84531	-106.31173	Active Monitoring	1	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
185	CDV-SMA-8	35.84427	-106.31015	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
186	CDV-SMA-8.5	35.84136	-106.31146	Active Monitoring	2	2	—	—	—	—	2	2	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—
187	CDV-SMA-9.05	35.83612	-106.30591	Active Monitoring	2	2	2	2	—	1	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—
228	CHQ-SMA-0.5	35.78388	-106.25917	Active Monitoring	2	2	—	—	—	—	1	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
229	CHQ-SMA-1.01	35.78250	-106.25472	Active Monitoring	2	2	2	—	—	—	—	—	2	—	2	—	2	2	—	2	2	—	—	2	—	2	—	2	—	—	2	2	—	—	—	—	—	—	—	—
230	CHQ-SMA-1.02	35.78273	-106.25466	Corrective Action	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
231	CHQ-SMA-1.03	35.78257	-106.25424	Active Monitoring/ Corrective Action	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—
232	CHQ-SMA-2	35.78154	-106.25810	Active Monitoring	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
233	CHQ-SMA-3.05	35.78179	-106.25416	Active Monitoring	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
234	CHQ-SMA-4	35.78070	-106.25577	Active Monitoring	2	2	—	—	—	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
235	CHQ-SMA-4.1	35.77891	-106.25592	Active Monitoring	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—
236	CHQ-SMA-4.5	35.77625	-106.24670	Active Monitoring	2	2	—	—	—	2	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	2	—	—	—	—	—
237	CHQ-SMA-5.05	35.77156	-106.25358	Active Monitoring	2	2	2	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
238	CHQ-SMA-6	35.77084	-106.25220	Active Monitoring	2	2	2	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
239	CHQ-SMA-7.1	35.77146	-106.25041	Active Monitoring	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
52	DP-SMA-0.3	35.88002	-106.28875	Active Monitoring	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
53	DP-SMA-0.4	35.87879	-106.27880	Active Monitoring/ Corrective Action	2	2	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
54	DP-SMA-0.6	35.87784	-106.27750	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table 4.1-1 (continued)

Permit Sort Order	SMA	Latitude	Longitude	Status	Dissolved Organic Carbon	Suspended Sediment Concentration	Tritium	Strontium-90	Radium-226 and Radium-228	Gross Alpha	Total PCBs	SVOCs	Dissolved Antimony	Dissolved Arsenic	Dissolved Barium	Dissolved Beryllium	Dissolved Cadmium	Dissolved Chromium	Dissolved Cobalt	Dissolved Copper	Dissolved Lead	Dissolved Manganese	Dissolved Nickel	Dissolved Silver	Dissolved Thallium	Dissolved Uranium	Dissolved Vanadium	Dissolved Zinc	Total Aluminum	Total Iron	Total Mercury	Total Selenium	Total Cyanide	Asbestos	HE	Pesticides	Hexavalent Chromium	Tetrachlorodibenzodioxin[2,3,7,8-]	Chloride	Nitrate
55	DP-SMA-1	35.87764	-106.27451	Active Monitoring	2	2	2	2	—	2	—	—	—	—	—	—	2	—	—	2	—	—	—	—	—	—	—	—	2	—	2	—	—	—	—	—	—	—	—	—
56	DP-SMA-2	35.87739	-106.27239	Active Monitoring	2	2	2	—	2	2	2	2	—	2	—	—	2	2	—	2	2	2	—	—	—	—	—	2	—	—	2	2	2	—	—	—	—	—	—	—
57	DP-SMA-2.35	35.87667	-106.27174	Active Monitoring	2	2	2	—	—	2	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
58	DP-SMA-3	35.87648	-106.27090	Active Monitoring	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
188	F-SMA-2	35.82732	-106.27673	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
17	LA-SMA-0.85	35.87873	-106.32351	Active Monitoring/ Corrective Action	2	2	—	—	—	—	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
18	LA-SMA-0.9	35.87964	-106.32146	Active Monitoring	2	2	2	—	2	2	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
19	LA-SMA-1	35.88018	-106.32128	Corrective Action	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
20	LA-SMA-1.1	35.88057	-106.32109	Active Monitoring	2	2	2	—	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
21	LA-SMA-1.25	35.87992	-106.32066	Active Monitoring	2	2	2	—	2	2	—	—	—	—	—	—	2	2	—	2	2	—	—	2	—	—	—	2	—	—	2	2	—	—	—	—	—	—	—	—
51	LA-SMA-10.12	35.86666	-106.25086	Active Monitoring	2	2	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
22	LA-SMA-2.1	35.87899	-106.31026	Active Monitoring	2	2	—	—	—	2	2	2	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	2	2	—	—	—	—	—	—	—	—
23	LA-SMA-2.3	35.87905	-106.30927	Active Monitoring	2	2	—	—	—	2	2	2	—	—	—	—	2	2	—	2	2	—	2	2	—	—	—	2	—	—	2	2	2	—	—	—	—	—	—	—
24	LA-SMA-3.1	35.87835	-106.30732	Active Monitoring	2	2	2	—	—	—	1	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—
25	LA-SMA-3.9	35.87875	-106.30589	Active Monitoring	2	2	2	—	2	2	2	2	—	—	—	—	—	2	—	—	2	—	—	—	—	—	—	2	—	—	2	2	—	—	—	—	—	—	—	—
26	LA-SMA-4.1	35.87849	-106.30525	Active Monitoring/ Corrective Action	2	2	—	—	—	2	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
27	LA-SMA-4.2	35.87843	-106.30490	Active Monitoring	2	2	2	—	2	2	2	2	—	—	—	—	—	2	2	—	2	2	2	—	—	—	—	2	—	—	2	2	—	—	—	—	—	—	—	—
28	LA-SMA-5.01	35.87819	-106.30305	Active Monitoring	2	2	2	—	—	2	2	2	—	—	—	2	—	2	—	2	2	—	—	2	—	—	—	2	—	—	2	2	—	—	—	—	—	—	—	—
29	LA-SMA-5.02	35.87841	-106.30286	Active Monitoring/ Corrective Action	2	2	—	—	—	—	—	2	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
30	LA-SMA-5.2	35.87717	-106.30188	Active Monitoring	2	2	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	2	—	—	—	—	—	—	—	—
31	LA-SMA-5.31	35.87666	-106.29638	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
32	LA-SMA-5.33	35.87789	-106.29601	Active Monitoring	2	2	2	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
33	LA-SMA-5.35	35.87662	-106.29694	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
34	LA-SMA-5.361	35.87665	-106.29534	Active Monitoring/ Corrective Action	2	2	—	—	—	—	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35	LA-SMA-5.362	35.87774	-106.29519	Active Monitoring	2	2	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
36	LA-SMA-5.51	35.87632	-106.29038	Active Monitoring	2	2	—	2	—	2	2	2	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	—	—	2	—	—	2	—	—	—

Table 4.1-1 (continued)

Permit Sort Order	SMA	Latitude	Longitude	Status	Dissolved Organic Carbon	Suspended Sediment Concentration	Tritium	Strontium-90	Radium-226 and Radium-228	Gross Alpha	Total PCBs	SVOCs	Dissolved Antimony	Dissolved Arsenic	Dissolved Barium	Dissolved Beryllium	Dissolved Cadmium	Dissolved Chromium	Dissolved Cobalt	Dissolved Copper	Dissolved Lead	Dissolved Manganese	Dissolved Nickel	Dissolved Silver	Dissolved Thallium	Dissolved Uranium	Dissolved Vanadium	Dissolved Zinc	Total Aluminum	Total Iron	Total Mercury	Total Selenium	Total Cyanide	Asbestos	HE	Pesticides	Hexavalent Chromium	Tetrachlorodibenzodioxin[2,3,7,8-]	Chloride	Nitrate
37	LA-SMA-5.52	35.87637	-106.29001	Active Monitoring	2	2	—	2	—	2	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—
38	LA-SMA-5.53	35.87609	-106.28976	Active Monitoring	2	2	2	2	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
39	LA-SMA-5.54	35.87623	-106.28928	Active Monitoring	2	2	—	2	—	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
40	LA-SMA-5.91	35.87702	-106.28209	Active Monitoring	2	2	—	—	—	2	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
41	LA-SMA-5.92	35.87664	-106.28161	Active Monitoring	2	2	—	—	—	2	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—
42	LA-SMA-6.25	35.87513	-106.27930	Active Monitoring	2	2	2	2	2	2	2	2	—	2	—	—	2	2	2	2	2	2	2	2	—	2	—	2	—	—	2	2	2	—	—	—	—	—	—	—
43	LA-SMA-6.3	35.87497	-106.27852	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
44	LA-SMA-6.31	35.87477	-106.27796	Active Monitoring	2	2	2	—	2	2	2	2	2	—	—	—	2	2	—	2	2	—	—	—	—	—	—	2	—	—	2	2	2	—	—	—	—	—	—	—
45	LA-SMA-6.32	35.87569	-106.27688	Active Monitoring	2	2	—	2	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
46	LA-SMA-6.34	35.87435	-106.27651	Active Monitoring	2	2	—	—	2	2	2	2	—	—	—	—	2	2	—	2	2	—	—	2	—	—	—	2	—	2	2	2	2	—	—	—	—	—	—	—
47	LA-SMA-6.38	35.87409	-106.27430	Active Monitoring	2	2	2	—	2	2	2	2	—	—	—	—	2	—	—	2	2	—	—	—	—	2	—	2	—	—	2	2	2	—	—	—	—	—	—	—
48	LA-SMA-6.395	35.87370	-106.27327	Active Monitoring	2	2	2	—	—	2	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
49	LA-SMA-6.5	35.87395	-106.27101	Active Monitoring	2	2	2	—	2	2	2	2	2	2	2	—	2	2	—	2	2	—	—	—	2	—	—	2	—	—	2	2	2	—	—	—	—	—	—	—
50	LA-SMA-9	35.87350	-106.25405	Active Monitoring	2	2	2	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	1	—	—	—	—	—	—	—
85	M-SMA-1	35.87009	-106.31917	Active Monitoring/ Corrective Action	2	2	2	2	—	2	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
86	M-SMA-1.2	35.86991	-106.31648	Active Monitoring/ Corrective Action	2	2	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—
87	M-SMA-1.21	35.87069	-106.31721	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
88	M-SMA-1.22	35.87063	-106.31807	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
97	M-SMA-10	35.86451	-106.29426	Active Monitoring	2	2	—	—	—	—	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
98	M-SMA-10.01	35.86470	-106.29403	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
99	M-SMA-10.3	35.86465	-106.29317	Corrective Action	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
100	M-SMA-11.1	35.86396	-106.29063	Active Monitoring	2	2	2	—	2	2	2	2	—	—	—	—	—	2	—	2	2	—	2	—	—	—	—	2	—	—	2	—	—	—	—	—	—	—	—	—
101	M-SMA-12	35.86355	-106.28925	Corrective Action	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
102	M-SMA-12.5	35.85791	-106.27678	Corrective Action	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
103	M-SMA-12.6	35.85772	-106.27450	Active Monitoring	2	2	—	—	—	—	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
104	M-SMA-12.7	35.85922	-106.27066	Active Monitoring	2	2	—	—	—	2	—	—	—	—	—	—	2	—	—	2	2	—	—	—	—	2	—	2	—	—	2	—	—	—	—	—	—	—	—	—
105	M-SMA-12.8	35.85918	-106.27023	Corrective Action	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table 4.1-1 (continued)

Permit Sort Order	SMA	Latitude	Longitude	Status	Dissolved Organic Carbon	Suspended Sediment Concentration	Tritium	Strontium-90	Radium-226 and Radium-228	Gross Alpha	Total PCBs	SVOCs	Dissolved Antimony	Dissolved Arsenic	Dissolved Barium	Dissolved Beryllium	Dissolved Cadmium	Dissolved Chromium	Dissolved Cobalt	Dissolved Copper	Dissolved Lead	Dissolved Manganese	Dissolved Nickel	Dissolved Silver	Dissolved Thallium	Dissolved Uranium	Dissolved Vanadium	Dissolved Zinc	Total Aluminum	Total Iron	Total Mercury	Total Selenium	Total Cyanide	Asbestos	HE	Pesticides	Hexavalent Chromium	Tetrachlorodibenzodioxin[2,3,7,8-]	Chloride	Nitrate
106	M-SMA-12.9	35.85877	-106.26926	Corrective Action	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
107	M-SMA-12.92	35.86086	-106.26836	Active Monitoring	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	—	2	2	2	—	—	—	—	—	—	—	—
108	M-SMA-13	35.85706	-106.26539	Corrective Action	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
89	M-SMA-3	35.86688	-106.30656	Active Monitoring	2	2	2	—	—	2	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
90	M-SMA-3.1	35.86694	-106.30603	Active Monitoring	2	2	2	2	2	2	—	—	—	—	—	—	—	2	—	2	2	—	—	—	—	2	—	2	—	—	—	—	—	—	—	—	—	—	—	—
91	M-SMA-3.5	35.86692	-106.30490	Active Monitoring	2	2	2	—	2	2	2	2	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
92	M-SMA-4	35.86549	-106.30402	Active Monitoring/ Corrective Action	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
93	M-SMA-5	35.86449	-106.30103	Active Monitoring	2	2	—	2	2	2	—	2	—	—	2	—	—	2	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—
94	M-SMA-6	35.86377	-106.29744	Corrective Action	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
95	M-SMA-7	35.86432	-106.29876	Active Monitoring/ Corrective Action	2	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
96	M-SMA-7.9	35.86545	-106.29668	Active Monitoring	2	2	—	—	2	2	—	—	2	2	2	—	2	2	—	2	2	2	2	—	2	—	—	2	—	—	2	—	—	—	—	—	—	—	—	—
140	PJ-SMA-1.05	35.86236	-106.34178	Active Monitoring	2	2	—	—	—	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	—	2	2	—	—	—	—	—
151	PJ-SMA-10	35.85642	-106.31600	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
152	PJ-SMA-11	35.85601	-106.31126	Active Monitoring	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—
153	PJ-SMA-11.1	35.85606	-106.31110	Active Monitoring	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	2	—	—
154	PJ-SMA-13.7	35.84007	-106.26638	Active Monitoring	2	2	—	—	—	2	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
155	PJ-SMA-14.2	35.83962	-106.26559	Active Monitoring	2	2	—	—	—	2	—	—	—	—	—	2	—	—	—	—	—	—	—	2	—	2	—	—	—	—	—	—	2	—	—	—	—	—	—	—
156	PJ-SMA-14.3	35.83939	-106.26503	Active Monitoring	2	2	—	—	—	2	2	2	—	—	—	2	—	2	—	—	—	—	—	2	—	2	—	—	—	—	—	—	2	—	—	—	—	—	—	—
157	PJ-SMA-14.4	35.83967	-106.26494	Active Monitoring	2	2	—	—	—	2	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
158	PJ-SMA-14.6	35.83956	-106.26443	Active Monitoring	2	2	—	—	—	2	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
159	PJ-SMA-14.8	35.83831	-106.26427	Active Monitoring	2	2	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
160	PJ-SMA-16	35.83057	-106.24817	Active Monitoring	2	2	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
161	PJ-SMA-17	35.83014	-106.24266	Active Monitoring	2	2	—	—	—	1	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—	2	—	—	—	—	—	—	—	2	—	—	—	—	—	—
162	PJ-SMA-18	35.82891	-106.23792	Active Monitoring	2	2	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	2	—	—	—	—	—	—
163	PJ-SMA-19	35.82923	-106.23679	Active Monitoring	2	2	2	2	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	2	—	—	—	—	—	—
141	PJ-SMA-2	35.85724	-106.34125	Active Monitoring	2	2	—	2	—	—	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	—	—	—	—	—	—	—	—
164	PJ-SMA-20	35.82974	-106.23466	Active Monitoring/ Corrective Action	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	2	—	—	—	—	—	—
142	PJ-SMA-3.05	35.85672	-106.33916	Active Monitoring	2	2	—	—	—	—	2	2	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—

Table 4.1-1 (continued)

Permit Sort Order	SMA	Latitude	Longitude	Status	Dissolved Organic Carbon	Suspended Sediment Concentration	Tritium	Strontium-90	Radium-226 and Radium-228	Gross Alpha	Total PCBs	SVOCs	Dissolved Antimony	Dissolved Arsenic	Dissolved Barium	Dissolved Beryllium	Dissolved Cadmium	Dissolved Chromium	Dissolved Cobalt	Dissolved Copper	Dissolved Lead	Dissolved Manganese	Dissolved Nickel	Dissolved Silver	Dissolved Thallium	Dissolved Uranium	Dissolved Vanadium	Dissolved Zinc	Total Aluminum	Total Iron	Total Mercury	Total Selenium	Total Cyanide	Asbestos	HE	Pesticides	Hexavalent Chromium	Tetrachlorodibenzodioxin[2,3,7,8-]	Chloride	Nitrate
143	PJ-SMA-4.05	35.85374	-106.33571	Active Monitoring	2	2	—	—	—	—	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
144	PJ-SMA-5	35.85962	-106.33492	Active Monitoring	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
145	PJ-SMA-5.1	35.85896	-106.33386	Active Monitoring	2	2	—	—	—	—	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
146	PJ-SMA-6	35.85731	-106.32934	Active Monitoring	2	2	—	—	—	—	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
147	PJ-SMA-7	35.85689	-106.32176	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
148	PJ-SMA-8	35.85703	-106.32060	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
149	PJ-SMA-9	35.85672	-106.31951	Active Monitoring	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—
150	PJ-SMA-9.2	35.85655	-106.31888	Active Monitoring	2	2	—	—	—	—	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	—	—	2	—	—	—	—	—
109	Pratt-SMA-1.05	35.86217	-106.28731	Active Monitoring	2	2	—	2	—	2	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—
11	P-SMA-0.3	35.88213	-106.23874	Active Monitoring	2	2	—	—	—	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	2	—	—	—	—	—	—	—	—	—
12	P-SMA-1	35.88301	-106.26539	Active Monitoring	2	2	—	—	—	2	2	2	—	—	—	2	2	2	—	2	2	—	2	2	—	2	—	2	—	—	2	—	—	—	—	2	—	—	—	—
13	P-SMA-2	35.88417	-106.27478	Active Monitoring	2	2	2	—	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	—	—	—	2	—	2	—	—
14	P-SMA-2.15	35.88528	-106.27951	Active Monitoring	2	2	—	—	—	—	2	2	—	—	—	—	—	—	—	2	2	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—
15	P-SMA-2.2	35.88411	-106.28633	Active Monitoring	2	2	2	—	—	2	2	2	2	2	2	2	2	2	—	2	2	—	2	2	2	—	2	2	—	—	2	2	—	—	—	—	—	—	—	—
16	P-SMA-3.05	35.88993	-106.30863	Active Monitoring/ Corrective Action	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
189	PT-SMA-0.5	35.83918	-106.29948	Active Monitoring	2	2	—	—	—	2	—	2	—	—	—	—	—	—	—	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
190	PT-SMA-1	35.83783	-106.29758	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
191	PT-SMA-1.7	35.83340	-106.29452	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
192	PT-SMA-2	35.83651	-106.29234	Active Monitoring	1	1	—	—	—	1	—	2	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
193	PT-SMA-2.01	35.83654	-106.29184	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
194	PT-SMA-3	35.83369	-106.28074	Active Monitoring	2	2	—	—	—	2	—	—	—	—	2	2	—	—	—	2	2	—	2	—	—	2	—	—	2	—	2	—	—	—	—	—	—	—	—	—
195	PT-SMA-4.2	35.82428	-106.24869	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1	R-SMA-1	35.90749	-106.29976	Active Monitoring	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2	R-SMA-1.95	35.91000	-106.27458	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3	R-SMA-2.3	35.91417	-106.27481	SMA Deletion	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table 4.1-1 (continued)

Permit Sort Order	SMA	Latitude	Longitude	Status	Dissolved Organic Carbon	Suspended Sediment Concentration	Tritium	Strontium-90	Radium-226 and Radium-228	Gross Alpha	Total PCBs	SVOCs	Dissolved Antimony	Dissolved Arsenic	Dissolved Barium	Dissolved Beryllium	Dissolved Cadmium	Dissolved Chromium	Dissolved Cobalt	Dissolved Copper	Dissolved Lead	Dissolved Manganese	Dissolved Nickel	Dissolved Silver	Dissolved Thallium	Dissolved Uranium	Dissolved Vanadium	Dissolved Zinc	Total Aluminum	Total Iron	Total Mercury	Total Selenium	Total Cyanide	Asbestos	HE	Pesticides	Hexavalent Chromium	Tetrachlorodibenzodioxin[2,3,7,8-]	Chloride	Nitrate
4	R-SMA-2.5	35.91077	-106.26755	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
59	S-SMA-0.25	35.87623	-106.32230	Active Monitoring/ Corrective Action	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
60	S-SMA-1.1	35.87598	-106.31809	Active Monitoring/ Corrective Action	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
61	S-SMA-2	35.87517	-106.31850	Active Monitoring/ Corrective Action	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—
62	S-SMA-2.01	35.87259	-106.31721	Active Monitoring	2	2	2	2	2	2	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
63	S-SMA-2.8	35.87493	-106.31678	Active Monitoring	2	2	2	2	2	2	2	2	—	—	—	—	2	2	—	2	2	—	2	2	—	2	—	2	2	—	2	—	2	—	—	—	—	—	—	—
64	S-SMA-3.51	35.87352	-106.31615	Active Monitoring	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
65	S-SMA-3.52	35.87390	-106.31632	Active Monitoring	2	2	—	—	—	—	—	—	2	—	—	—	—	2	—	2	2	—	2	—	2	—	—	2	2	—	—	—	—	—	—	—	—	—	—	—
66	S-SMA-3.53	35.87527	-106.31586	Active Monitoring/ Corrective Action	2	2	2	2	—	1	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
67	S-SMA-3.6	35.87348	-106.31287	Active Monitoring/ Corrective Action	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
68	S-SMA-3.61	35.87187	-106.31314	Active Monitoring	2	2	—	—	—	—	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
69	S-SMA-3.62	35.87157	-106.31258	Active Monitoring	2	2	—	—	—	—	2	2	—	—	2	—	—	—	—	2	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—
70	S-SMA-3.7	35.86830	-106.27451	Active Monitoring	2	2	2	—	2	2	2	2	2	—	—	—	2	2	—	2	2	—	2	2	—	—	—	2	2	—	2	—	2	—	—	—	—	—	—	—
71	S-SMA-3.71	35.86906	-106.27395	Active Monitoring	2	2	—	—	—	—	2	2	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	2	—	2	—	—	—	—	—	—	—	—	—
72	S-SMA-3.72	35.86804	-106.27407	Active Monitoring/ Corrective Action	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73	S-SMA-3.95	35.86545	-106.26377	Active Monitoring	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
74	S-SMA-4.1	35.86750	-106.26206	SMA Deletion	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
75	S-SMA-5	35.86376	-106.25784	Active Monitoring	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—
76	S-SMA-5.2	35.86407	-106.25731	Corrective Action	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
77	S-SMA-5.5	35.86300	-106.25534	Active Monitoring	2	2	—	—	—	—	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
78	S-SMA-6	35.86384	-106.24817	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
165	STRM-SMA-1.05	35.85963	-106.34929	Active Monitoring/ Corrective Action	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
166	STRM-SMA-1.5	35.86085	-106.34906	Active Monitoring	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table 4.1-1 (continued)

Permit Sort Order	SMA	Latitude	Longitude	Status	Dissolved Organic Carbon	Suspended Sediment Concentration	Tritium	Strontium-90	Radium-226 and Radium-228	Gross Alpha	Total PCBs	SVOCs	Dissolved Antimony	Dissolved Arsenic	Dissolved Barium	Dissolved Beryllium	Dissolved Cadmium	Dissolved Chromium	Dissolved Cobalt	Dissolved Copper	Dissolved Lead	Dissolved Manganese	Dissolved Nickel	Dissolved Silver	Dissolved Thallium	Dissolved Uranium	Dissolved Vanadium	Dissolved Zinc	Total Aluminum	Total Iron	Total Mercury	Total Selenium	Total Cyanide	Asbestos	HE	Pesticides	Hexavalent Chromium	Tetrachlorodibenzodioxin[2,3,7,8-]	Chloride	Nitrate
167	STRM-SMA-4.2	35.85878	-106.34480	Active Monitoring	2	2	—	2	—	—	2	2	—	—	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
168	STRM-SMA-5.05	35.85951	-106.33981	Active Monitoring	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	—	—	—	—	—
110	T-SMA-1	35.86140	-106.29730	Corrective Action	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
111	T-SMA-2.5	35.86160	-106.29451	Active Monitoring	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
112	T-SMA-2.85	35.86160	-106.29367	Active Monitoring	2	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
113	T-SMA-3	35.86160	-106.29309	Active Monitoring	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
114	T-SMA-4	35.86194	-106.29246	Active Monitoring	2	2	2	2	2	2	2	2	2	2	2	—	—	2	—	2	2	—	2	2	—	2	—	2	—	—	2	—	—	—	—	—	—	—	—	—
115	T-SMA-5	35.86150	-106.29163	Active Monitoring	2	2	2	—	2	2	2	2	—	—	—	—	2	2	—	2	2	—	—	2	—	—	—	2	—	—	2	—	—	—	—	—	—	—	—	—
116	T-SMA-6.8	35.86171	-106.28229	Active Monitoring/ Corrective Action	2	2	2	2	2	1	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—
117	T-SMA-7	35.86118	-106.28292	Active Monitoring	2	2	2	2	1	1	2	2	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—
118	T-SMA-7.1	35.86125	-106.28252	Active Monitoring/ Corrective Action	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
196	W-SMA-1	35.84228	-106.35188	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
197	W-SMA-1.5	35.84177	-106.35540	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
214	W-SMA-10	35.83794	-106.32334	Active Monitoring	2	2	—	—	—	—	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
215	W-SMA-11.7	35.82445	-106.30004	Active Monitoring	2	2	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
216	W-SMA-12.05	35.82545	-106.29894	Active Monitoring	2	2	2	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
217	W-SMA-14.1	35.83216	-106.29676	Active Monitoring	2	2	—	—	—	2	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
218	W-SMA-15.1	35.82442	-106.29501	Active Monitoring	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
198	W-SMA-2.05	35.83952	-106.35299	Active Monitoring	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—
199	W-SMA-3.5	35.83729	-106.34431	Active Monitoring	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—
200	W-SMA-4.1	35.83706	-106.34052	Active Monitoring	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
201	W-SMA-5	35.84162	-106.33879	Active Monitoring	2	2	—	—	—	—	—	2	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	2	—
202	W-SMA-6	35.83760	-106.33968	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
203	W-SMA-7	35.83852	-106.33728	Active Monitoring	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—
204	W-SMA-7.8	35.83625	-106.33795	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table 4.1-1 (continued)

Permit Sort Order	SMA	Latitude	Longitude	Status	Dissolved Organic Carbon	Suspended Sediment Concentration	Tritium	Strontium-90	Radium-226 and Radium-228	Gross Alpha	Total PCBs	SVOCs	Dissolved Antimony	Dissolved Arsenic	Dissolved Barium	Dissolved Beryllium	Dissolved Cadmium	Dissolved Chromium	Dissolved Cobalt	Dissolved Copper	Dissolved Lead	Dissolved Manganese	Dissolved Nickel	Dissolved Silver	Dissolved Thallium	Dissolved Uranium	Dissolved Vanadium	Dissolved Zinc	Total Aluminum	Total Iron	Total Mercury	Total Selenium	Total Cyanide	Asbestos	HE	Pesticides	Hexavalent Chromium	Tetrachlorodibenzodioxin[2,3,7,8-]	Chloride	Nitrate
205	W-SMA-7.9	35.83592	-106.33770	Active Monitoring	2	2	—	—	—	—	2	2	—	—	2	—	2	2	2	2	2	—	2	—	2	2	—	2	2	—	2	—	—	—	—	—	—	—	—	—
206	W-SMA-8	35.83613	-106.33730	Active Monitoring	2	2	—	—	—	—	—	2	—	—	—	—	2	2	2	2	2	—	2	—	—	2	—	2	2	—	2	—	—	—	—	—	—	—	—	2
207	W-SMA-8.7	35.84359	-106.33358	Active Monitoring	2	2	2	2	—	—	—	2	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
208	W-SMA-8.71	35.84355	-106.33460	Active Monitoring	2	2	2	2	—	—	2	2	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—
209	W-SMA-9.05	35.83501	-106.33310	Active Monitoring	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
210	W-SMA-9.5	35.83861	-106.32759	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
211	W-SMA-9.7	35.83906	-106.32595	Corrective Action	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
212	W-SMA-9.8	35.83894	-106.32482	Active Monitoring	2	2	—	—	—	—	—	—	—	—	—	—	2	—	—	2	2	—	—	—	—	—	—	2	—	—	2	—	—	—	—	—	—	—	—	—
213	W-SMA-9.9	35.83898	-106.32383	Long-Term Stewardship	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

[a] 1s and 2s correspond to the number of samples planned.

[b] — = not applicable.

Appendix A Acronyms and Glossary

AEC	Atomic Energy Commission
AOC	area of concern
AST	aboveground storage tank
ATAL	average target action level
AUA	annual unit audit
bgs	below ground surface
BMP	best management practice
BTV	background threshold value
BV	background value
CDB	Cañada del Buey
CDV	Cañon de Valle
CEARP	Comprehensive Environmental Assessment and Response Program
CFR	Code of Federal Regulations
CHQ	Chaquehui
CMP	corrugated metal pipe
CMR	Chemistry and Metallurgy Research
CO	Consent Order
COC	certificate of completion
Consent Order	Compliance Order on Consent
cpm	counts per minute
D&D	decontamination and decommissioning
DOC	dissolved organic carbon
DOE	Department of Energy (U.S.)
DP	Delta Prime
DRO	diesel range organics
ds	downstream
DU	Depleted uranium
EC	expedited cleanup
EPA	Environmental Protection Agency (U.S.)
gpd	gallons per day
GSA	General Services Administration
HE	high explosives
HEPA	high-efficiency particulate air
HRL	Health Research Laboratory
HSE	Health, Safety and Environment

Appendix A Acronyms and Glossary (continued)

HYPO	high power
IA	interim action
ID	identification
IP	Individual Permit (National Pollutant Discharge Elimination System Permit No. NM0030759)
IR	investigation report
IWP	investigation work plan
Laboratory	Los Alamos National Laboratory
LA	Los Alamos
LASCP	Los Alamos Site Characterization Program
LANL	Los Alamos National Laboratory
LASL	Los Alamos Scientific Laboratory
LLW	low-level waste
LOPO	low power
MD	munitions debris
MDA	material disposal area
MDL	method detection limit
MLLW	mixed LLW
MQL	minimum quantification level
MTAL	maximum target action level
ND	nondetect
NES	nuclear environmental site
N3B	Newport News Nuclear BWXT-Los Alamos, LLC
NESHAP	National Emissions Standards for Hazardous Air Pollutants Program
NM	New Mexico
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMWQCC	New Mexico Water Quality Control Commission
NPDES	National Pollutant Discharge Elimination System
NTISV	non-traditional in-situ vitrification
OB	(NMED) Oversight Bureau
OD	open detonation
OEW	ordnance and explosives waste
OU	operable unit
OWR	Omega West Reactor
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl

Appendix A Acronyms and Glossary (continued)

pCi/L	picocuries per liter
Permittees	DOE and N3B
PETN	pentaerythritol tetranitrate
PJ	Pajarito
POC	pollutant of concern
PT	Potrillo
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RDX	Royal Demolition Explosive (hexahydro-1,3,5-trinitro-1,3,5-triazine)
RFI	RCRA facility investigation
RLW	radioactive liquid waste
RLWTF	Radioactive Liquid Waste Treatment Facility
SAA	satellite accumulation area
SAFR	small arms firing range
SAL	screening action level
SAP	sampling and analysis plan
SERF	Sanitary Effluent Reclamation Facility
SIM	significant industrial material
SIP	sampling implementation plan
SMA	site monitoring area
SPCC	spill prevention control and countermeasure
SSC	suspended sediment concentration
SSD	site-specific demonstration
SSL	soil screening level
STRM	Starmers
SUPO	super power
SVOC	semivolatile organic compound
SWMU	solid waste management unit
SWSC	Sanitary Wastewater Systems Consolidation (plant)
TA	technical area
TAL	target action level
TCE	trichloroethane
TCLP	toxicity characteristic leaching procedure
TNT	trinitrotoluene(2,4,6-)
TPH	total petroleum hydrocarbons
Triad	Triad National Security, LLC

Appendix A Acronyms and Glossary (continued)

TRU	transuranic
TSCA	Toxic Substances Control Act
TSTA	Tritium Systems Test Assembly
ULR	unassigned land release
USFS	U.S. Forest Service
UST	underground storage tank
UTL	upper tolerance limit
UXO	unexploded ordnance
µg/L	micrograms per liter
VCA	voluntary corrective action
VCM	voluntary corrective measure
VCP	vitrified clay pipe
VOC	volatile organic compound
WBR	water boiler reactor
WIPP	Waste Isolation Pilot Plant
WQC	water-quality criteria
WQS	water-quality standards
WWTF	wastewater treatment facility
WWTP	wastewater treatment plant

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N3B (Newport News Nuclear BWXT-Los Alamos, LLC), December 7, 2021. "NPDES Permit No. NM0030759 – Certification of Installation of Enhanced Control Measures at A-SMA-1.1 and A-SMA-3," Newport News Nuclear BWXT-Los Alamos, LLC, letter N3B-2021-0391 to C. Johnson (EPA Region 6) from T. Thomson (N3B) and M.L. Bishop (EM-LA), Los Alamos, New Mexico. (N3B 2021, 701797)

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N3B (Newport News Nuclear BWXT-Los Alamos, LLC), April 19, 2022. "NPDES Permit No. NM0030759 – Alternative Compliance Requests for Two Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources," Newport News Nuclear BWXT-Los Alamos, LLC, letter N3B-2022-0075 to C. Johnson (EPA Region 6) from T. Thomson (N3B) and M.L. Bishop (EM-LA), Los Alamos, New Mexico. (N3B 2022, 701992)

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N3B (Newport News Nuclear BWXT-Los Alamos, LLC), May 27, 2022. "2021 Annual Long-Term Monitoring and Maintenance Report for the Corrective Measures Implementation at Former 260 Outfall Area, Revision 1, and Comment Response," Newport News Nuclear BWXT-Los Alamos, LLC documents EM2022-0230, EM2022-0231, Los Alamos, New Mexico. (N3B 2022, 702086)

N3B (Newport News Nuclear BWXT-Los Alamos, LLC), June 27, 2022. "Certification of Installation of Enhanced Control Measures for CHQ-SMA-6, PJ-SMA-3.05, and PJ-SMA-11, " Newport News Nuclear BWXT-Los Alamos, LLC, letter N3B-2022-0360 to C. Johnson (EPA Region 6) from T. Thomson (N3B) and M.L. Bishop (EM-LA), Los Alamos, New Mexico. (N3B 2022, 701265)

N3B (Newport News Nuclear BWXT-Los Alamos, LLC), September 7, 2022. "NDPES Permit NM0030759 – Certification of Installation of Enhanced Control Measures for W-SMA-11.7," Newport News Nuclear BWXT-Los Alamos, LLC, letter N3B-2022-0360 to C. Johnson (EPA -----------Region 6) from T. Thomson (N3B) and M.L. Bishop (EM-LA), Los Alamos, New Mexico. (N3B 2022, 702307)

NMED (New Mexico Environment Department), November 1, 2018. "2018–2020 State of New Mexico Clean Water Act Section 303(d)/Section 305(b) Integrated Report," New Mexico Environment Department, Surface Water Quality Bureau, Santa Fe, New Mexico. (NMED 2018, 700253)

WGII (Washington Group International, Inc.), October 3, 2000. "Mortandad Canyon Sediment Trap Maintenance, Final Closeout Report," Los Alamos, New Mexico. (WGII 2000, 070735)

2022 Annual Sampling Implementation Plan

NPDES Permit No. NM0030759
June 2023

Los Alamos/Pueblo Watershed

Receiving Waters:
Bayo Canyon, DP Canyon,
Los Alamos Canyon, Pueblo Canyon, and Rendija Canyon

Volume 1

CONTENTS

1.0 R-SMA-1

Associated Sites	C-00-041
Receiving Water	Rendija Canyon
Drainage Area	262.54 acres
Landscape Characteristics	13% impervious, 87% pervious
Consent Order Site Status	AOC C-00-041: Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls
2010 AC Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the August 2017 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

1.1 2010 Administratively Continued Permit Summary

Following the May 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 initiated corrective action.

AOC C-00-041 received a COC under the Consent Order in July 2016. The Permittees submitted a certification of completion of corrective action for the Site per Permit part I.E.2(d) for the Site in March 2017 (LANL 2017, 602213). Stormwater monitoring has not occurred since 2011.

1.2 Site History

C-00-041 (12/21/2021)

AOC C-00-041 is the site of a former asphalt batch plant in a 600-ft-long portion of a side slope and drainage channel that flows into Rendija Canyon on USFS land. Aerial photographs confirm that the asphalt plant operated from the late 1940s to 1958. After the plant was removed, a portion of the land was transferred from the U.S. AEC to Los Alamos County in 1965, and another portion was transferred from the AEC to the USFS in 1969 to manage as public land. Currently, the site is undeveloped, and is located in a grassy open meadow bisected south to north by an ephemeral stream. A hiking trail, the Dot Grant Trail, is located to the east of AOC C-00-041, and another hiking trail, Perimeter Trail, and Guaje Pines Cemetery, are located to the west.

For the most recent Site activities, refer to “2021 Biennial Asphalt Monitoring and Removal Report for Area of Concern C-00-041, Guaje/Barrancas/Rendija Canyons Aggregate Area” (N3B 2021, 701812).

1.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 1.2-1.

Table 1.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
C-00-041	Asphalt batch plant	SVOCs (PAHs)

1.3 Consent Order Soil Data

Decision-level data for AOC C-00-041 consist of results from samples collected in 2007. Analytical results from those samples are presented in Figures 1.3-1 through 1.3-4. The 2007 IR, Revision 1, concluded that the nature and extent of contamination are defined.

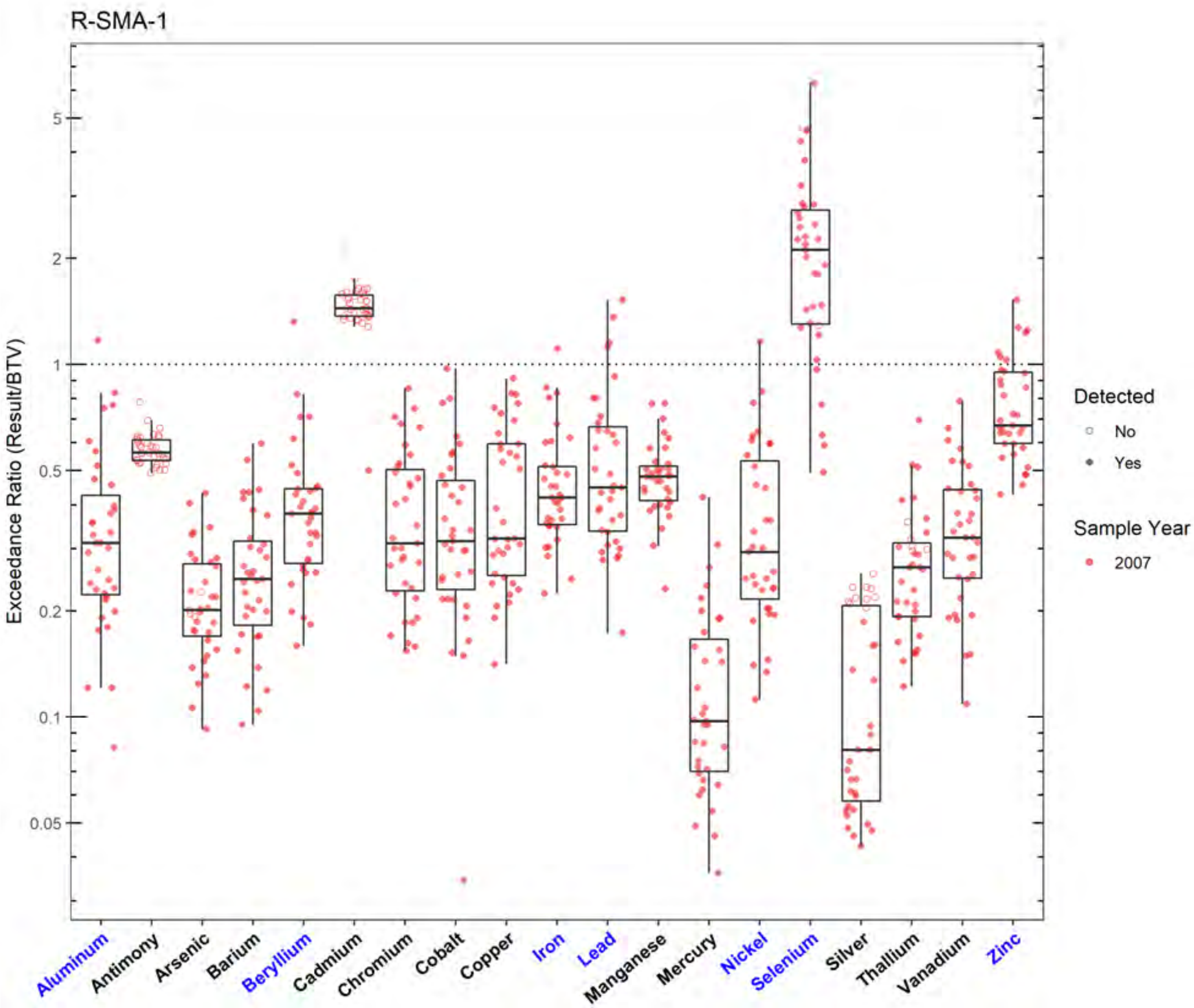

Figure 1.3-1 Inorganics Analytical Results from Soil Samples Associated with R-SMA-1

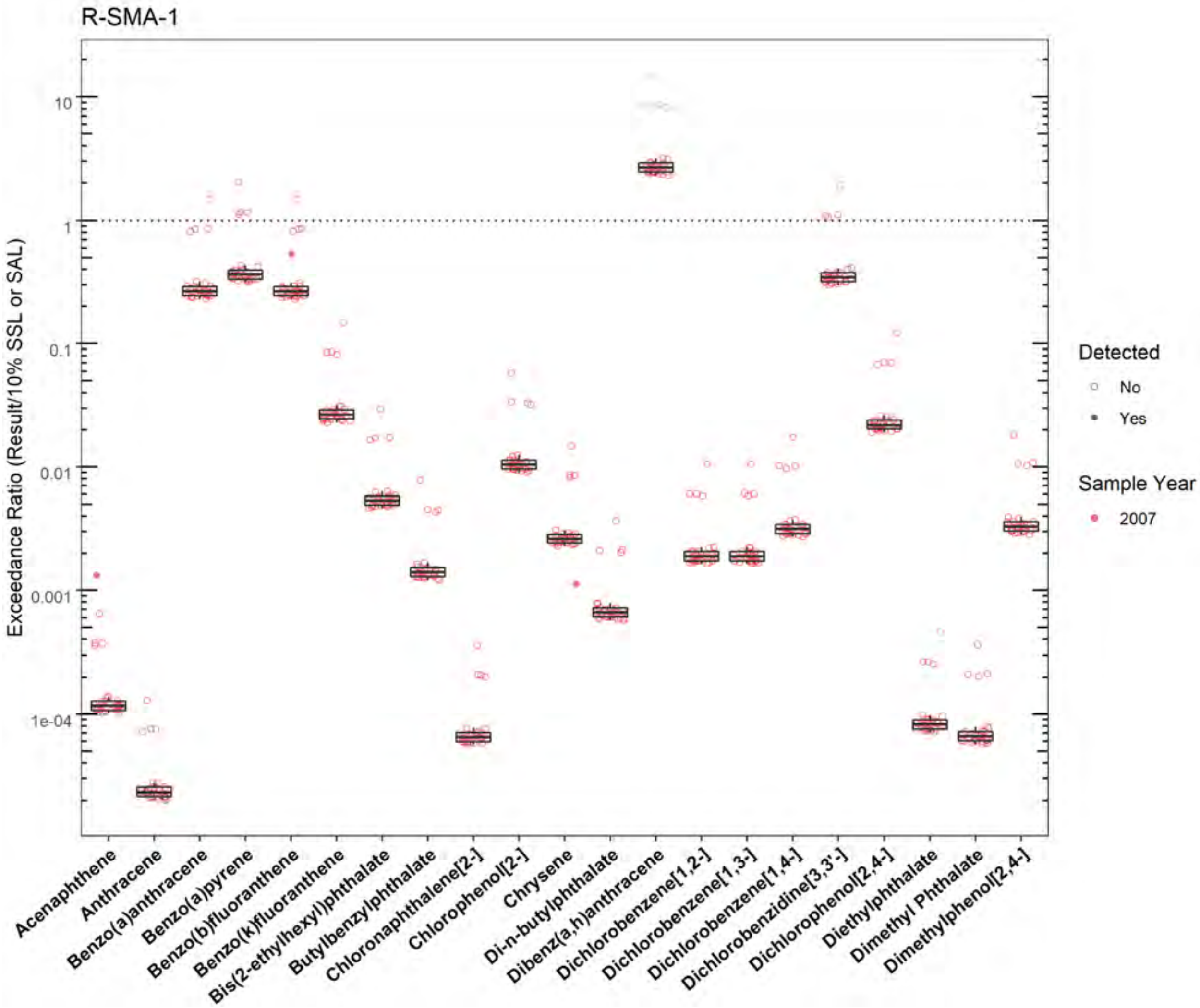

Figure 1.3-2 Organics Analytical Results from Soil Samples Associated with R-SMA-1 (Plot 1)

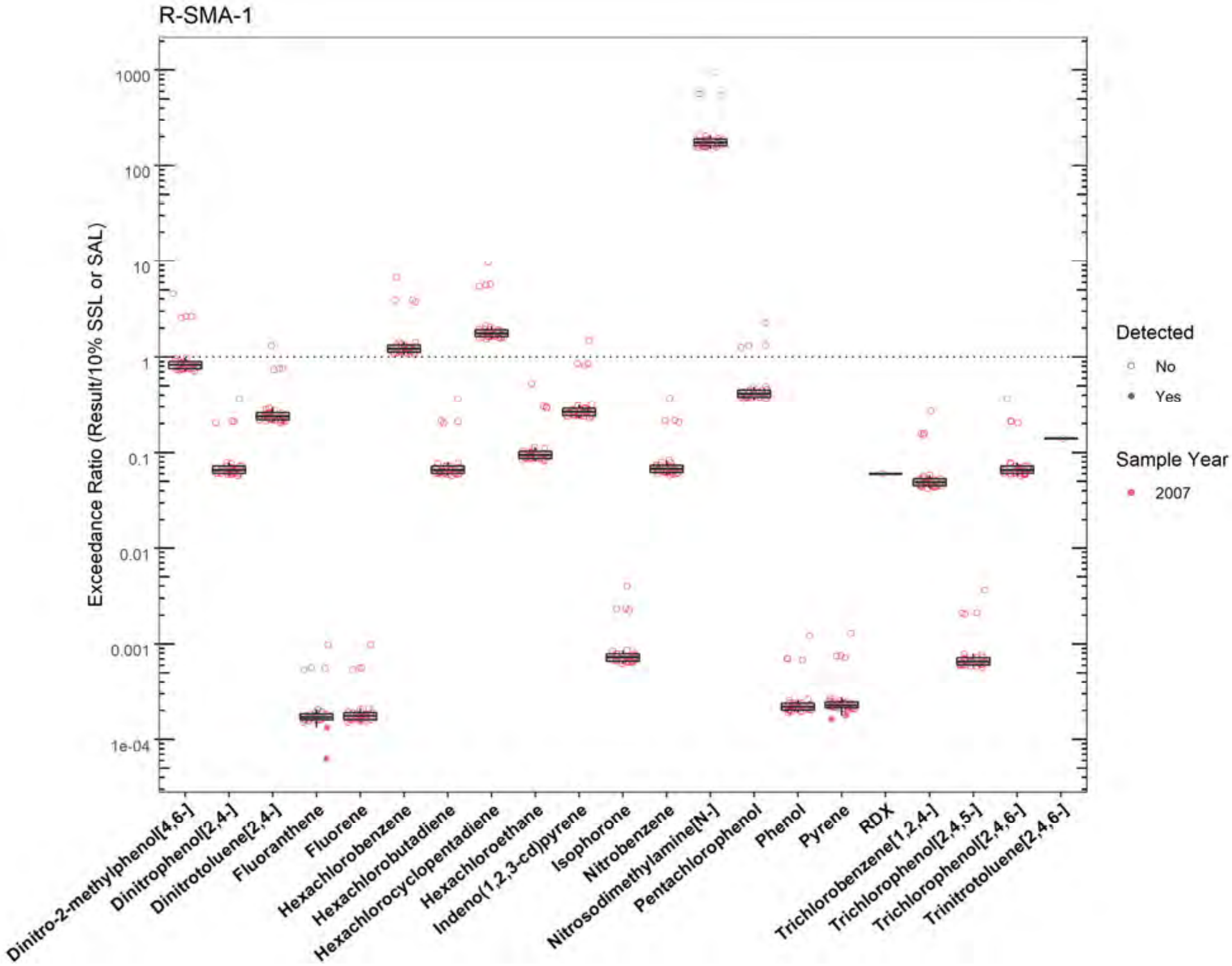

Figure 1.3-3 Organics Analytical Results from Soil Samples Associated with R-SMA-1 (Plot 2)

R-SMA-1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aluminum	R-SMA-1	Al	Y	BTV	29200	34100	2007-02-16
Beryllium	R-SMA-1	Be	Y	BTV	1.83	2.41	2007-02-16
Iron	R-SMA-1	Fe	Y	BTV	21500	23800	2007-02-16
Lead	R-SMA-1	Pb	Y	BTV	22.3	33.9	2007-02-15
Nickel	R-SMA-1	Ni	Y	BTV	15.4	17.9	2007-02-16
Selenium	R-SMA-1	Se	Y	BTV	1.52	9.54	2007-02-16
Zinc	R-SMA-1	Zn	Y	BTV	48.8	74.0	2007-02-16

Figure 1.3-4 Screening-Level Exceedances from Soil Samples Associated with R-SMA-1

1.4 Stormwater Evaluation

1.4.1 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 those samples are presented in Figures 1.4-1 and 1.4-2.

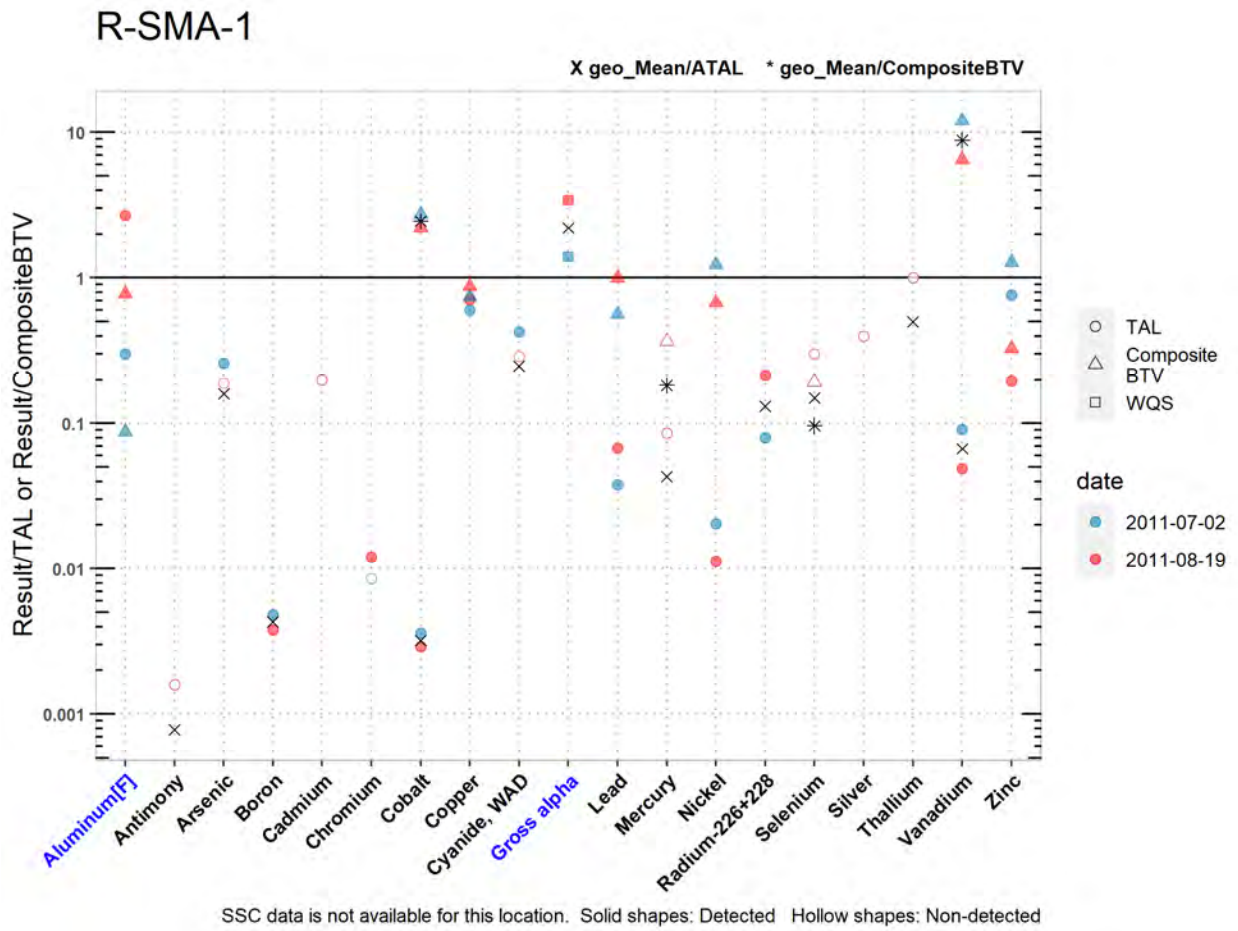

Figure 1.4-1 Analytical Results from Stormwater Samples, R-SMA-1 (Plot)

R-SMA-1

	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	0.65	233	NA	4.8	22	NA	19.3	NA	186	NA	20	0.49	NA	NA	59.2
Composite_BTV	2580	NA	NA	NA	NA	NA	1.32	3.91	NA	56.2	1.30	0.180	3.10	5.04	7.78	NA	NA	0.756	35.5
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
2011-07-02 result	226	*1.00*	2.30	24.2	*0.110*	*2.00*	3.60	2.90	2.21	21.1	0.730	*0.0660*	3.80	2.39	*1.50*	*0.200*	*0.450*	9.10	45.3
2011-07-02 dT	0.301	NA	0.26	0.0048	NA	NA	0.0036	0.604	0.425	1.4	0.0378	NA	0.0204	0.0797	NA	NA	NA	0.091	0.765
2011-07-02 dB	0.0876	NA	NA	NA	NA	NA	2.73	0.742	NA	NA	0.562	NA	1.23	NA	NA	NA	NA	12.0	1.28
2011-08-19 result	2010	*1.00*	*1.70*	19.1	*0.110*	2.80	2.90	3.40	*1.50*	51.1	1.30	*0.0660*	2.10	6.42	*1.50*	*0.200*	*0.450*	4.90	11.6
2011-08-19 dT	2.68	NA	NA	0.0038	NA	0.0120	0.0029	0.708	NA	3.4	0.0674	NA	0.0113	0.214	NA	NA	NA	0.049	0.196
2011-08-19 dB	0.779	NA	NA	NA	NA	NA	2.20	0.870	NA	NA	1.00	NA	0.677	NA	NA	NA	NA	6.48	0.327
geo_mean/ATAL	NA	0.00078	0.16	0.0043	NA	NA	0.0032	NA	0.248	2.2	NA	0.043	NA	0.131	0.15	NA	0.5	0.067	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	2.45	NA	NA	NA	NA	0.183	NA	NA	0.0964	NA	NA	8.83	NA

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

Figure 1.4-2 Analytical Results from Stormwater Samples, R-SMA-1 (Table)

1.4.2 Assessment Unit and Stream Impairments

R-SMA-1 drains to Rendija Canyon (Guaje Canyon to headwaters), which has not been assessed for impairments.

1.5 Site-Specific Demonstration

1.5.1 Soil Data Summary

The Site-related POCs that exceeded the applicable 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.

Beryllium and iron exceeded the applicable screening value in soil data but are not Site-related POCs and will not be added to the SAP.

1.5.2 Stormwater Data Summary

Aluminum and gross alpha exceeded TALs in a previous stage of stormwater data but not BTVs Therefore, they will not be added to the SAP. The zinc result does not exceed the hardness-based TAL and will not be added to the SAP.

1.5.3 2022 Permit Status

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

1.5.4 Sampling and Analysis Plan

Table 1.5-1 is the proposed SAP for R-SMA-1.

Table 1.5-1 Proposed SAP, R-SMA-1

Monitoring Constituent	Background for Monitoring
SVOCs	Site history (PAHs)
DOC	Permit requirement
SSC	Permit requirement

2.0 R-SMA-1.95

Associated Sites	00-015
Receiving Water	Rendija Canyon
Drainage Area	0.81 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	AOC 00-015: In Progress Deferred per Consent Order
2010 AC Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the August 2017 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site.
2022 Permit Status	Long-Term Stewardship per Permit Part I.C.3 and I.C.3.c criteria

2.1 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 September 2014 submittal to EPA of certification of enhanced control installation (LANL 2014, 261903), corrective-action monitoring was initiated. To date, stormwater flow has not been sufficient for sample collection at R-SMA-1.95. Corrective-action monitoring is ongoing until at least one confirmation sample is collected.

2.2 Site History

00-015 (no date)

AOC 00-015 is the Los Alamos Sportsmen's Club, an active firing range located on GSA land leased from DOE in Rendija Canyon. The area covers approximately 30 acres. The firing range consists of several small-arms ranges and has operated since 1966. Lead is expected to be present in earthen berms and on the surface of the ranges. Shattered clay projectiles are present on the skeet and trap ranges.

Investigations under the Consent Order were not performed at AOC 00-015 as part of the Guaje/Barrancas/Rendija Canyons Aggregate Area investigation; the approved IWP (LANL 2005, 089657) proposed delaying full characterization of this active firing range until operations cease. At that time, the nature and extent of contamination at AOC 00-015 will be determined, and any necessary corrective actions will be identified and implemented.

2.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 2.2-1.

Table 2.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
00-015	Active firing site	Lead, copper

2.3 Consent Order Soil Data

No decision-level data exist for AOC 00-015.

2.4 Stormwater Evaluation

2.4.1 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.

2.4.2 Assessment Unit and Stream Impairments

R-SMA-1.95 drains to Rendija Canyon (Guaje Canyon to headwaters), which has not been assessed for impairments.

2.5 Site-Specific Demonstration

2.5.1 Soil Data Summary

No soil data available.

2.5.2 Stormwater Data Summary

Gross alpha was the only parameter to exceed the TAL in the previous stage of monitoring. Monitoring for gross alpha is only required if the SMA drains to an assessment unit that is impaired for gross alpha. The assessment unit to which R-SMA-1.95 drains is not impaired for gross alpha, and radionuclides are not a Site-related POC. Therefore, gross alpha will not be added to the SAP. Lead and copper, POCs from Site history, were measured below TALs.

2.5.3 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. The SWMU is also deferred under the Consent Order and is eligible for long-term stewardship pursuant to Part I.C.3.

3.0 R-SMA-2.3

Associated Sites	00-011(e)
Receiving Water	Rendija Canyon
Drainage Area	22.82 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 00-011(e): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls
2010 AC Permit Final Status	Baseline Monitoring Extended[a]
2016–2018 SIP Actions	Based on the March 2018 meeting, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site.
2022 Permit Status	Site Deletion, unless a sample is collected between October 15 and the end of the 2022 Monitoring season.

[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

3.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected at R-SMA-2.3 in June 2013. This sample had no TAL exceedances, and stormwater monitoring ceased until 2020. Monitoring resumed in 2020 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. Since that time, stormwater flow has not been sufficient for full-volume sample collection, and monitoring is ongoing at this SMA.

3.2 Site History

00-011(e) (no date)

SWMU 00-011(e) is a former ammunition impact area located on USFS land, in a tributary of Rendija Canyon known as Thirty-Seven-Millimeter Canyon. The Site was used from the mid-to-late 1940s for training U.S. Army personnel operating tanks firing 20- and 37-mm rounds. The impact area extends north along the tributary to the top of a cliff face.

SWMU 00-011(e) is located within a very steep natural amphitheater with numerous loose rocks and boulders. Vegetation at the site consists of thick weeds and small shrubs. The site is fenced with barbed wire and posted with “Explosives No Trespassing” signs. During the 1993 Phase I RFI conducted at SWMU 00-011(e), the site was surveyed for UXO and OEW. Materials recovered in the ordnance sweep included 37-mm rounds and fragments. Because it was not known whether these rounds were HE or armor-piercing, they were all placed in shallow pits and detonated with explosives.

For investigation activities, refer to “2019 Triennial Ordnance Survey Report, Solid Waste Management Units 00-011(a, d, and e), Guaje/Barrancas/Rendija Canyons Aggregate Area” (N3B 2019, 700717).

3.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 3.2-1.

Table 3.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
00-011(e)	Former ammunition impact area	Copper, lead, iron, HE

3.3 Consent Order Soil Data

Decision-level data for SWMU 00-011(e) consist of results for samples collected in 2007. Analytical results from those samples are presented in Figures 3.3-1 through 3.3-3. The approved IR (LANL 2007, 099954) concluded that the lateral and vertical extent of all detected chemicals are defined.

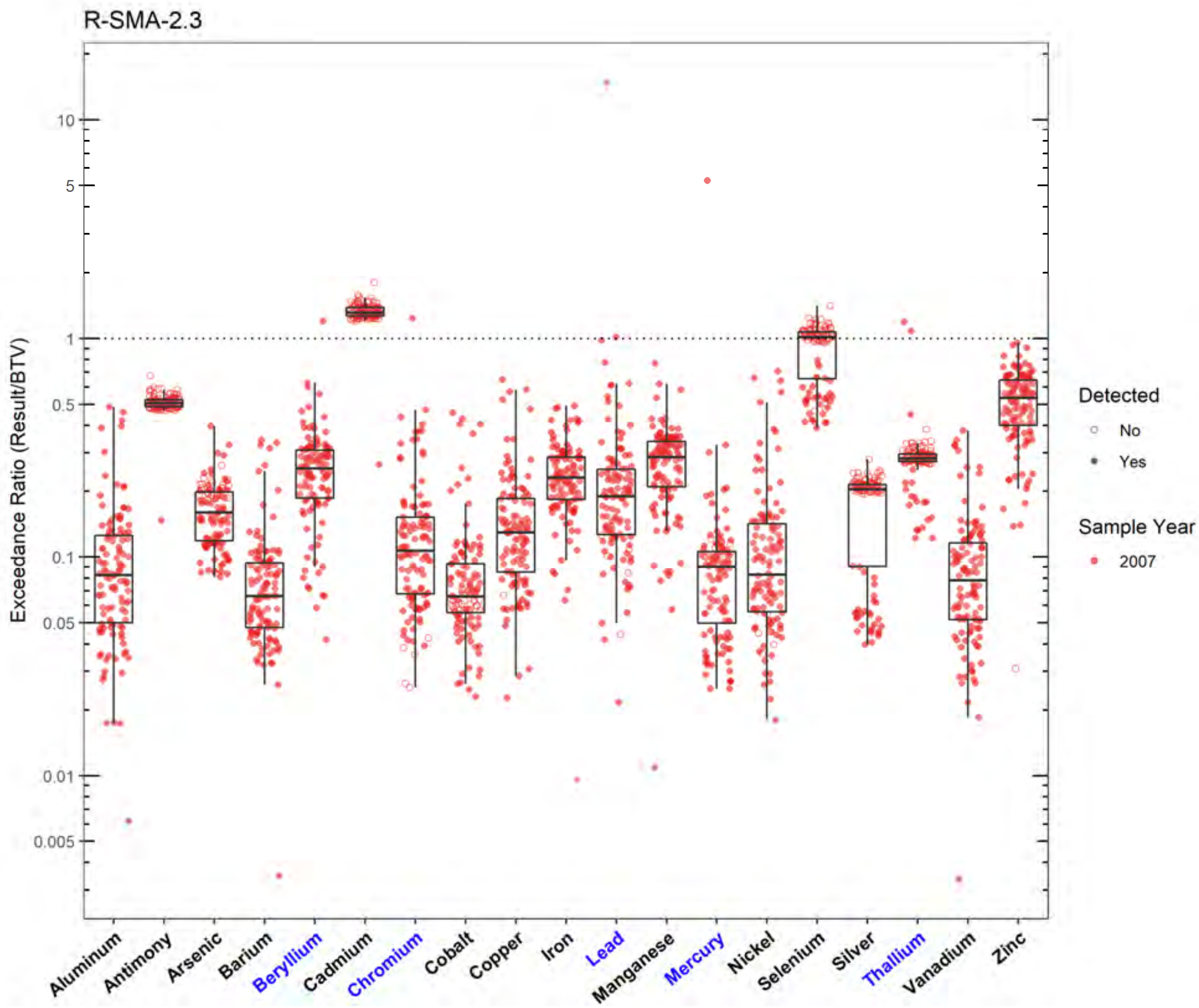

Figure 3.3-1 Inorganics Analytical Results from Soil Samples Associated with R-SMA-2.3

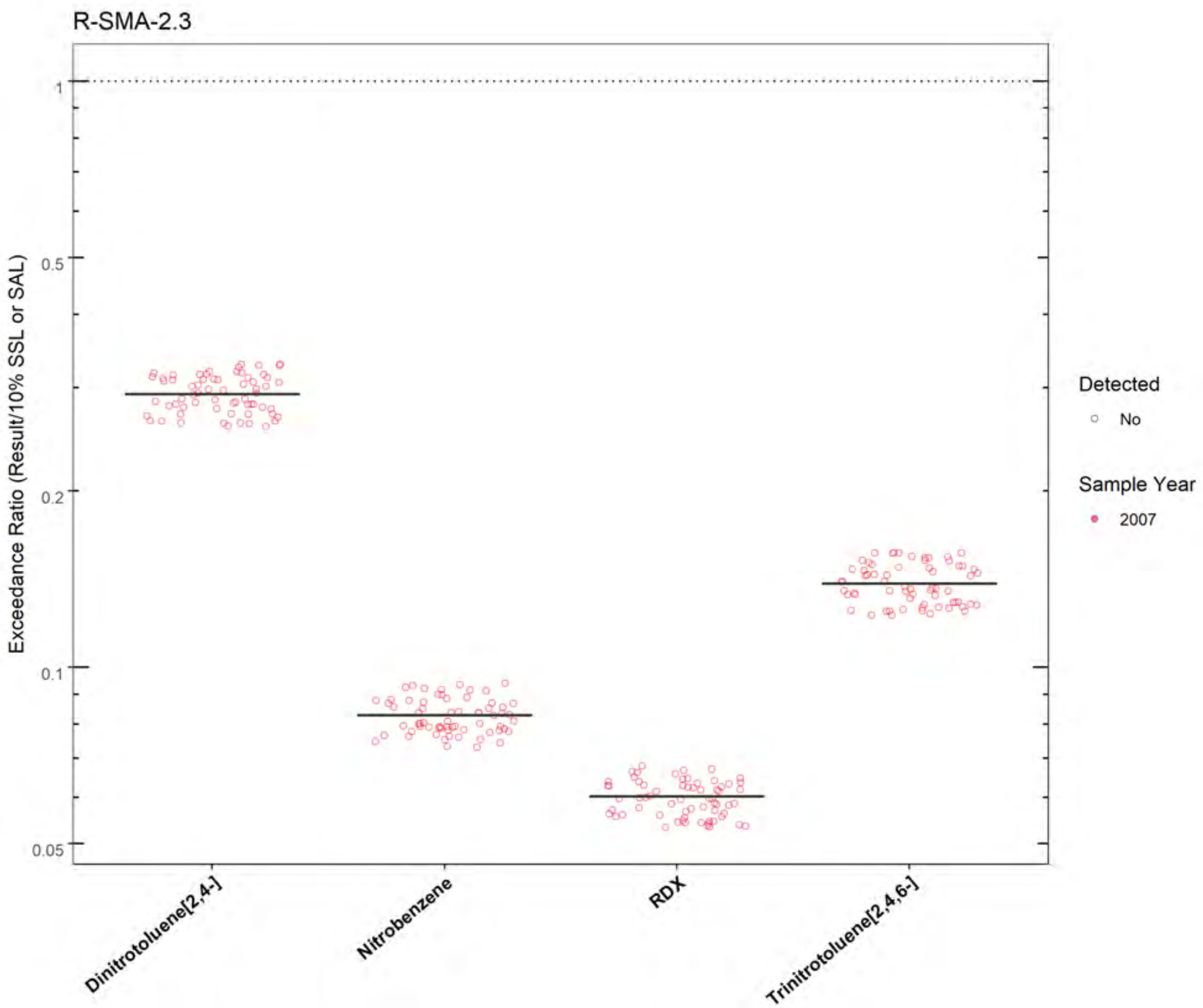

Figure 3.3-2 Organics Analytical Results from Soil Samples Associated with R-SMA-2.3

R-SMA-2.3

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Beryllium	R-SMA-2.3	Be	Y	BTV	1.83	2.20	2007-03-19
Chromium	R-SMA-2.3	Cr	Y	BTV	19.3	23.8	2007-03-27
Lead	R-SMA-2.3	Pb	Y	BTV	22.3	330	2007-03-05
Mercury	R-SMA-2.3	Hg	Y	BTV	0.100	0.525	2007-03-12
Thallium	R-SMA-2.3	Tl	Y	BTV	0.730	0.866	2007-03-27

Figure 3.3-3 Screening-Level Exceedances from Soil Samples Associated with R-SMA-2.3

3.4 Stormwater Evaluation

3.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Following the installation of baseline control measures, a baseline stormwater sample was collected in June 2013. Analytical results from that sample are presented in Figures 3.4-1 and 3.4-2.

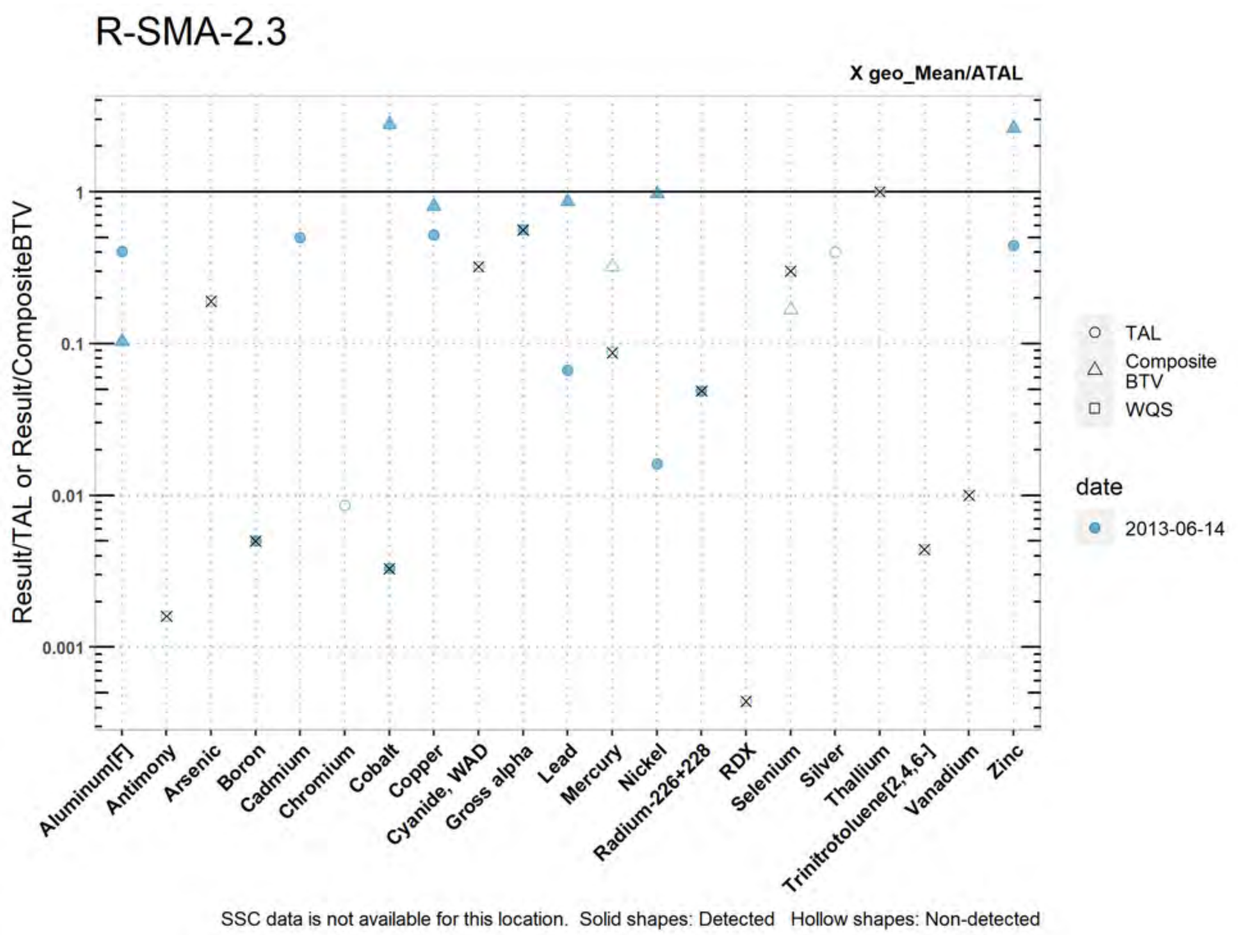

Figure 3.4-1 Analytical Results from Stormwater Sample, R-SMA-2.3 (Plot)

R-SMA-2.3

	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	0.65	233	NA	4.8	22	NA	19.3	NA	186	NA	NA	20	0.49	NA	NA	NA	59.2
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
2013-06-14 result	303	*1.00*	*1.70*	25.1	0.353	*2.00*	3.28	2.50	*1.67*	8.37	1.29	*0.0670*	3.00	1.46	*0.0889*	*1.50*	*0.200*	*0.450*	*0.0889*	*1.00*	26.2
2013-06-14 dT	0.404	NA	NA	0.0050	0.5	NA	0.0033	0.521	NA	0.56	0.0668	NA	0.0161	0.0487	NA	NA	NA	NA	NA	NA	0.443
2013-06-14 dB	0.103	NA	NA	NA	NA	NA	2.78	0.801	NA	NA	0.860	NA	0.968	NA	NA	NA	NA	NA	NA	NA	2.62
geo_mean/ATAL	NA	0.0016	0.19	0.0050	NA	NA	0.0033	NA	0.321	0.56	NA	0.087	NA	0.0487	0.00044	0.30	NA	1	0.0044	0.010	NA

Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 3.4-2 Analytical Results from Stormwater Sample, R-SMA-2.3 (Table)

3.4.2 Assessment Unit and Stream Impairments

R-SMA-2.3 drains to Rendija Canyon (Guaje Canyon to headwaters), which has not been assessed for impairments.

3.5 Site-Specific Demonstration

3.5.1 Soil Data Summary

All Site-related POCs that exceeded the applicable 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. Iron is a Site-related POC and did not exceed in soil data; therefore, it will not be added to the SAP for monitoring.

Beryllium exceeded the applicable screening value in soil data but is not a Site-related POC and will not be added to the SAP.

3.5.2 Stormwater Data Summary

The 2013 stormwater sample had no TAL exceedances.

3.5.3 2022 Permit Status

The SMA and associated Sites are eligible for deletion because stormwater discharges associated with industrial activity no longer occur at the Site (Part I.C.4.e)

4.0 R-SMA-2.5

Associated Sites	00-011(a)
Receiving Water	Rendija Canyon
Drainage Area	29.33 acres
Landscape Characteristics	4% impervious, 96% pervious
Consent Order Site Status	SWMU 00-011(a): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls
2010 AC Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the February 2016 signatures of the SIP evaluation map, all parties agreed that current SMA sampler location is representative of runoff from the Site.
2022 Permit Status	Long-Term Stewardship per Permit Part I.C.3.a criterion

4.1 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 2019. Analytical results from this sample initiated corrective action.

SWMU 00-011(e) received a COC under the Consent Order in May 2013. The Permittees submitted a certification of completion of corrective action for the Site, per Permit part I.E.2(d), in December 2019 (N3B 2019, 700724). Stormwater monitoring has not occurred since 2019.

4.2 Site History

00-011(a) (no date)

SWMU 00-011(a) is a 29-acre former mortar-impact area located on GSA land, about 0.4 mi east of the Sportsmen's Club small-arms firing range (AOC 00-015), in Rendija Canyon. The Site was a mortar-impact area in the mid-1940s for 60-mm and 82-mm rounds; operations ceased in the late 1940s. SWMU 00-011(a) is located in a relatively flat open grassland with scattered shrubs and trees. The Site is bisected east to west by Rendija Road (unpaved). On the north side of the road, the Site has a gradual to steep slope to the ephemeral stream channel. The slope is covered by mulch consisting of downed trees that burned during the 2000 Cerro Grande fire.

Although the Site is fenced and posted with DOE "No Trespassing" signs, evidence indicates the Site is used for recreational activities such as dirt-biking and target practice. During the 1993 Phase I RFI conducted at SWMU 00-011(a), the Site was surveyed for UXO and OEW; two live mortar rounds were found and destroyed. Other materials recovered during the ordnance sweep included approximately 2400 pieces of ordnance fragments and three times as many pieces of scrap material. Geomorphic mapping was conducted including mapping of all drainage channels that drained the area enclosed within the boundaries of the Site, and the areas with high concentrations of ordnance fragments. Two pits containing tires and UXO/MD were excavated and removed.

For most recent Site activities, refer to “2019 Triennial Ordnance Survey Report, Solid Waste Management Units 00-011(a, d, and e), Guaje/Barrancas/Rendija Canyons Aggregate Area” (N3B 2019, 700717).

4.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 4.2-1.

Table 4.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
00-011(a)	Former mortar impact area	Copper, lead, iron, HE

4.3 Consent Order Soil Data

Decision-level data for SWMU 00-011(a) consist of results for samples collected in 2007. Analytical results from those samples are presented in Figures 4.3-1 through 4.3-3. The approved IR (LANL 2007, 099954) concluded that the lateral and vertical extent of all detected chemicals are defined.

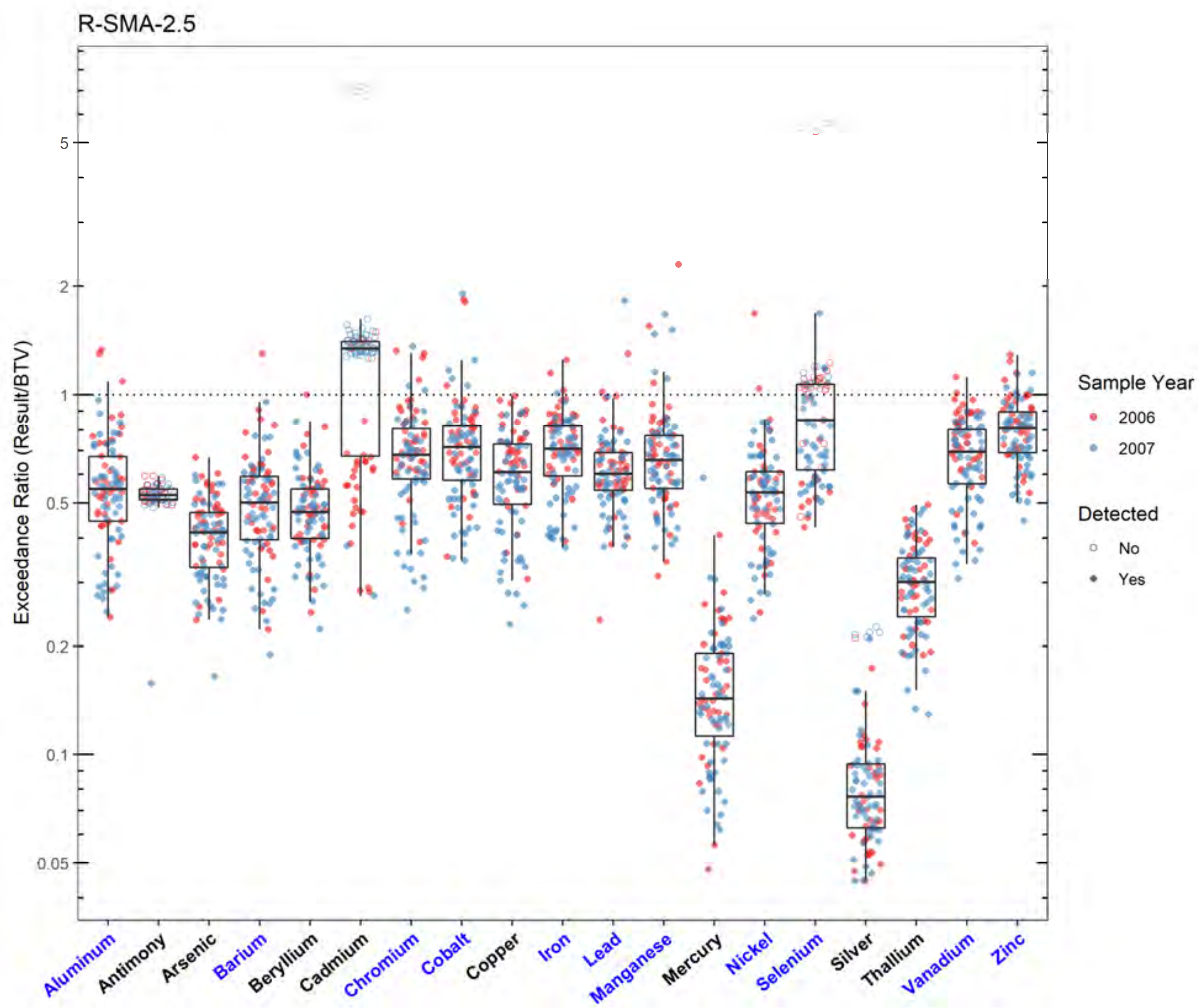

Figure 4.3-1 Inorganics Analytical Results from Soil Samples Associated with R-SMA-2.5

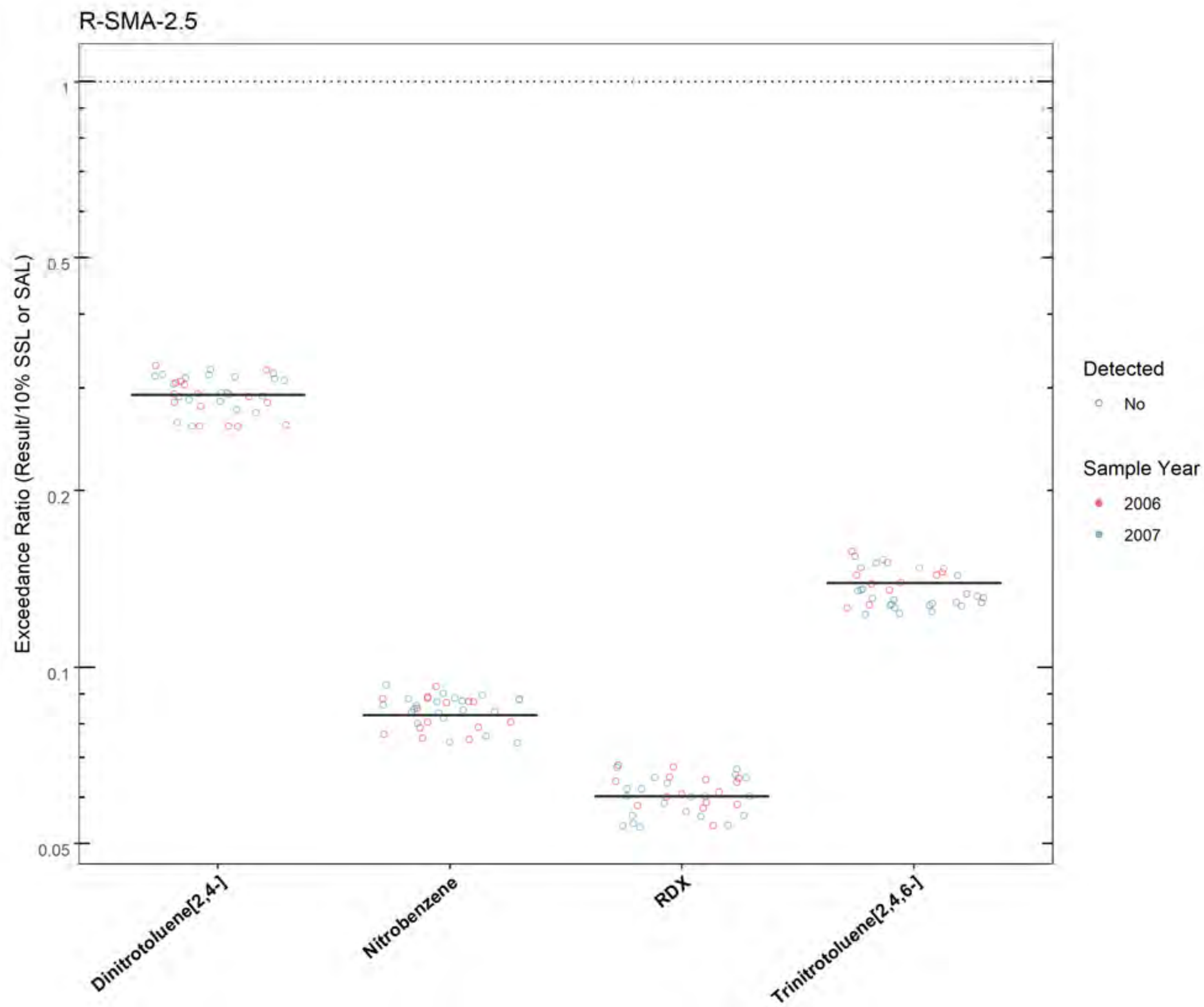

Figure 4.3-2 Organics Analytical Results from Soil Samples Associated with R-SMA-2.5

R-SMA-2.5

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aluminum	R-SMA-2.5	Al	Y	BTV	29200	38700	2006-12-14
Barium	R-SMA-2.5	Ba	Y	BTV	295	383	2006-12-04
Chromium	R-SMA-2.5	Cr	Y	BTV	19.3	26.3	2007-01-25
Cobalt	R-SMA-2.5	Co	Y	BTV	8.64	16.5	2007-01-08
Iron	R-SMA-2.5	Fe	Y	BTV	21500	26900	2006-12-04
Lead	R-SMA-2.5	Pb	Y	BTV	22.3	40.6	2007-01-30
Manganese	R-SMA-2.5	Mn	Y	BTV	671	1540	2006-12-07
Nickel	R-SMA-2.5	Ni	Y	BTV	15.4	25.8	2006-12-15
Selenium	R-SMA-2.5	Se	Y	BTV	1.52	2.55	2007-01-30
Vanadium	R-SMA-2.5	V	Y	BTV	39.6	44.5	2006-12-14
Zinc	R-SMA-2.5	Zn	Y	BTV	48.8	63.1	2006-12-14

Figure 4.3-3 Screening-Level Exceedances from Soil Samples Associated with R-SMA-2.5

4.4 Stormwater Evaluation

4.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Following the installation of baseline control measures, a baseline stormwater sample was collected in August 2019. Analytical results from that sample are presented in Figures 4.4-1 through 4.4-4.

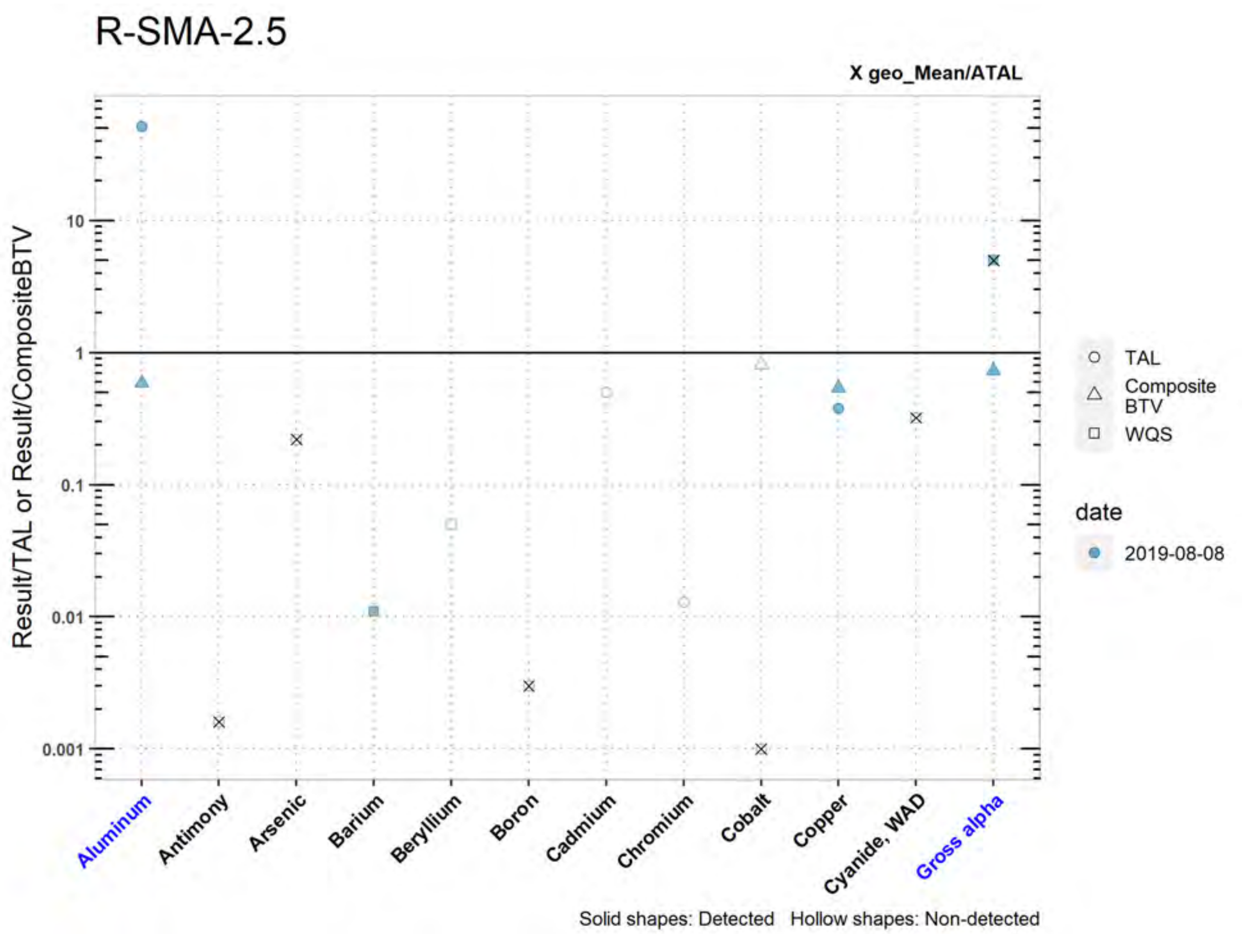

Figure 4.4-1 Analytical Results from Stormwater Sample, R-SMA-2.5 (Plot 1)

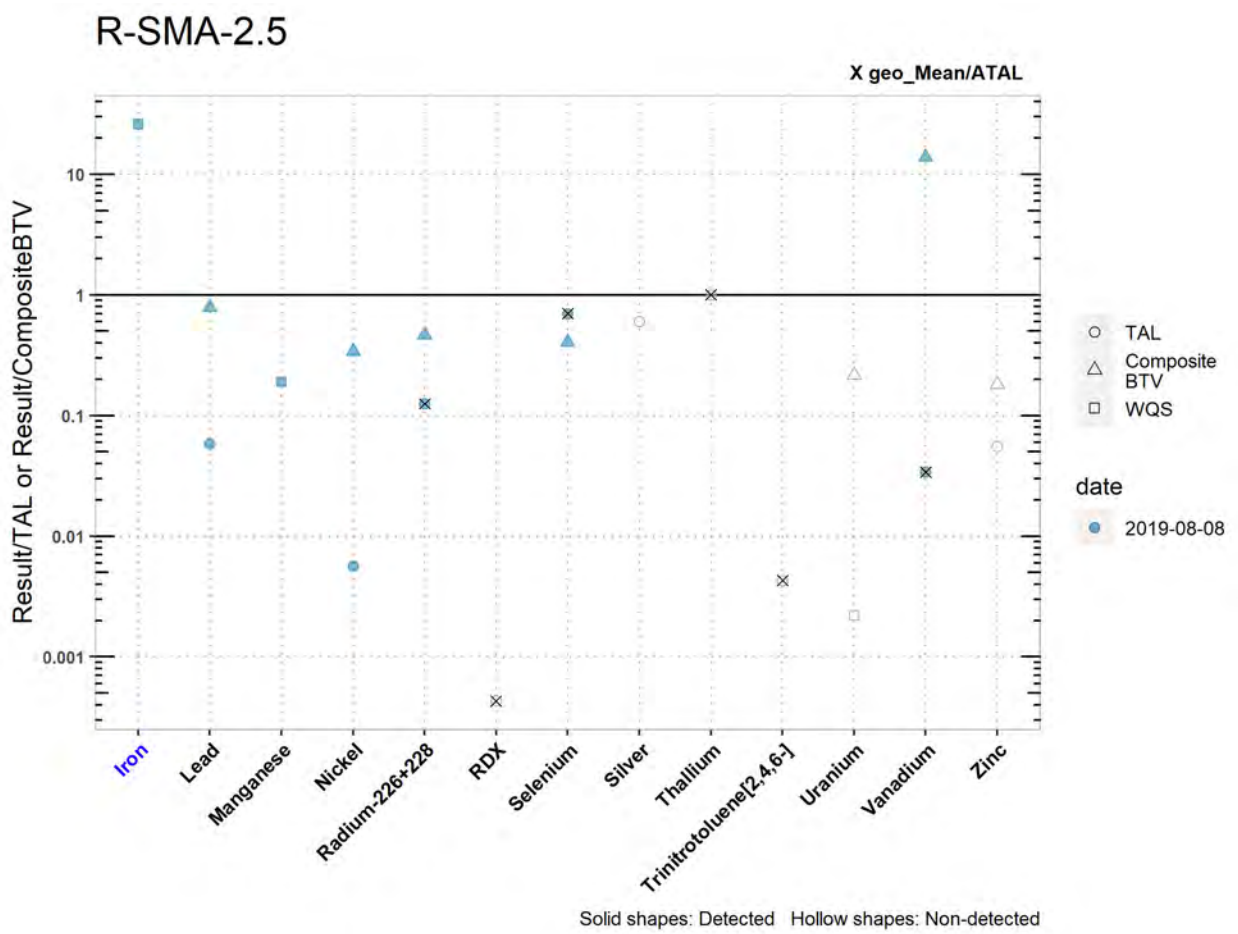

Figure 4.4-2 Analytical Results from Stormwater Sample, R-SMA-2.5 (Plot 2)

R-SMA-2.5

	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	765	NA	340	NA	NA	NA	0.65	233	NA	4.8	22	NA
Composite_BTV	37200	NA	NA	NA	NA	NA	NA	NA	1.23	3.37	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	pCi/L*
2019-08-08 result	39500	*1.00*	*2.00*	21.1	*0.200*	*15.0*	*0.300*	*3.00*	*1.00*	1.82	*1.67*	74.7
2019-08-08 dT	51.6	NA	NA	0.011	NA	NA	NA	NA	NA	0.379	NA	5.0
2019-08-08 dB	0.590	NA	NA	NA	NA	NA	NA	NA	NA	0.540	NA	0.729
geo_mean/ATAL	NA	0.0016	0.22	NA	NA	0.0030	NA	NA	0.0010	NA	0.321	5.0

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 4.4-3 Analytical Results from Stormwater Sample, R-SMA-2.5 (Table 1)

R-SMA-2.5

	Iron	Lead	Manganese	Nickel	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Uranium	Vanadium	Zinc
MQL	NA	0.5	NA	0.5	NA	NA	5	0.5	0.5	NA	NA	50	20
ATAL	NA	NA	NA	NA	30	200	5	NA	0.47	20	NA	100	NA
MTAL	NA	19.3	NA	186	NA	NA	20	0.49	NA	NA	NA	NA	59.2
Composite_BTV	NA	1.44	NA	3.10	4.48	NA	8.59	NA	NA	NA	0.310	0.243	18.2
unit	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
2019-08-08 result	26500	1.13	23.0	1.05	3.76	*0.0851*	3.49	*0.300*	*0.600*	*0.0851*	*0.0670*	3.35	*3.30*
2019-08-08 dT	26	0.0585	0.19	0.00565	0.125	NA	0.70	NA	NA	NA	NA	0.034	NA
2019-08-08 dB	NA	0.785	NA	0.339	0.466	NA	0.406	NA	NA	NA	NA	13.8	NA
geo_mean/ATAL	NA	NA	NA	NA	0.125	0.00043	0.70	NA	1	0.0043	NA	0.034	NA

Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV

*SSC normalized unit is pCi/g

Figure 4.4-4 Analytical Results from Stormwater Sample, R-SMA-2.5 (Table 2)

4.4.2 Assessment Unit and Stream Impairments

R-SMA-2.5 drains to Rendija Canyon (Guaje Canyon to headwaters), which has not been assessed for impairments.

4.5 Site-Specific Demonstration

4.5.1 Soil Data Summary

With the exception of aluminum and iron, the Site-related POCs that exceeded the applicable 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. Aluminum exceeded the applicable screening value in soil data and exceeded TAL in stormwater, but was below BTV. Therefore, it will not be added to the SAP.

4.5.2 Stormwater Data Summary

Total aluminum and gross alpha exceeded TALs but not BTVs in stormwater.

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

4.5.3 2022 Permit Status

The SMA is eligible for long-term stewardship. All Site-related POCs with TALs were below their respective composite BTVs (Part I.C.3.a).

5.0 B-SMA-0.5

Associated Sites	10-001(a), 10-001(b), 10-001(c), 10-001(d), 10-004(a), 10-004(b), 10-008, 10-009
Receiving Water	Bayo Canyon
Drainage Area	1052.68 acres
Landscape Characteristics	7% impervious, 93% pervious
Consent Order Site Status	SWMU 10-001(a): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 10-001(b): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 10-001(c): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 10-001(d): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 10-004(a): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 10-004(b): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 10-008: Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 10-009: Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 AC Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the July 2017 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

5.1 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.

All Sites in this SMA received COCs under the Consent Order in January 2017. The Permittees submitted a certification of completion of corrective action for the Sites per Permit part I.E.2(d) in March 2017 (LANL 2017, 602250). Stormwater monitoring has not occurred since 2013.

5.2 Site History

For investigation activities at the Sites, refer to “Investigation Report for Bayo Canyon Aggregate Area, Revision 1” (LANL 2008, 102424).

10-001(a, b, c, d) (9/28/2021)

SWMU 10-001(a), known as former Firing Point 1, is one of four former firing sites [SWMUs 10-001(a-d)] (shot pads) that were located in the central-western portion of former TA-10 in Bayo Canyon. The firing site components included an x-unit chamber (former structure 10-22), an electronics chamber (former structure 10-23), a control chamber (former structure 10-13), a battery building (former structure 10-14), and an inspection building (former structure 10-8); the latter three were also associated with

Firing Point 2 [SWMU 10-001(b)]. Recently-discovered engineering drawing A5-C-42 shows the former x-unit chamber measured approximately 7 ft 8 in. wide × 7 ft 8 in. long, and engineering drawing A5-C-47 shows the former electronics chamber measured approximately 6 ft 8 in. wide × 8 ft 4 in. long.

SWMU 10-001(b), known as former Firing Point 2, is one of four former firing sites [SWMUs 10-001(a-d)] (shot pads) that were located in the central-western portion of former TA-10 in Bayo Canyon. The firing site components included an x-unit chamber (former structure 10-24), an electronics chamber (former structure 10-25), a control chamber (former structure 10-13), a battery building (former structure 10-14), and an inspection building (former structure 10-8); the latter three were also associated with Firing Point 1 [SWMU 10-001(a)].

SWMU 10-001(c), known as former Firing Point 3, is one of four former firing sites [SWMUs 10-001(a-d)] (shot pads) that were located in the central-western portion of former TA-10 in Bayo Canyon. The 1992 RFI Work Plan describes Firing Point 3 as a former asphalt shot pad associated with the decommissioned northwestern firing site at former TA-10, as shown on engineering drawings ENG-R 125 (pg. 1 of 1), ENG-C 1856, and A5-R36. Firing Point 3 consisted of an x-unit chamber (former structure 10-26), an electronics chamber (former structure 10-27), a control chamber (former structure 10-15), a battery building (former structure 10-16), and an inspection building (former structure 10-08); the latter three were also associated with Firing Point 4 [SWMU 10-001(d)].

SWMU 10-001(d), known as former Firing Point 4, is one of four former firing sites [SWMUs 10-001(a-d)] (shot pads) that were located in the central-western portion of former TA-10 in Bayo Canyon. The 1992 RFI Work Plan describes Firing Point 4 as a former asphalt shot pad associated with the decommissioned northwestern firing site at former TA-10, as shown on engineering drawings ENG-R 125 (pg. 1 of 1), ENG-C 1856, and A5-R36. Firing Point 4 consisted of an x-unit chamber (former structure 10-26), an electronics chamber (former structure 10-27), a control chamber (former structure 10-15), a battery building (former structure 10-16), and an inspection building (former structure 10-08); the latter three were also associated with Firing Point 3 [SWMU 10-001(c)].

Experiments for nuclear weapons research conducted at the four firing sites from 1943 to 1960 used 500–600-lb shots of HE. The experimental shots usually contained a short-lived radioactive source such as lanthanum-140 for diagnostic purposes. Over the operational life of the four firing sites, the active components of the shots included a total of approximately 2000 kg of natural uranium, 3380 kg of uranium-238, 39.6 ci of strontium-90, lead, and possibly beryllium. Other materials used in the shots included aluminum, steel, cable, and electronics components. The lanthanum-120 used in the shots has since decayed to below detection levels. Because residual radioactive material remained at and around the pad after a shot, the Site could not be used again for approximately one month, so shots were rotated among the four firing sites. The firing pads were washed with water and swept after each shot; residual material from the shot pads was moved to the SWMU 10-005 disposal pit located northwest of the four firing sites. Wash water flowed into the Bayo Canyon stream channel [AOC C-00-004], located directly north of the former firing sites.

All explosives testing at former TA-10 ceased in 1960. Because of the proximity and overlapping dispersion areas of each firing site and common use of the SWMU 10-005 disposal pit, source terms cannot be separated by SWMU or AOC. Former TA-10 underwent extensive D&D, including the razing of all structures, from 1961 to 1963. In 1963, the area surrounding the firing sites, to a radius of approximately 760 meters, was swept, and 90 truckloads of debris, including the asphalt shot pads and soil, were transported to MDAs C and G at TA-54 for disposal. All excavations were backfilled and the ground surface was subsequently regraded. All concrete structures associated with each firing site were demolished using dynamite, and were disposed of in the SWMU 10-007 landfill. Former TA-10 and Bayo Canyon were conveyed to Los Alamos County in 1967, but remain under DOE administrative control, and are currently open to the public for recreational activities except where access is limited by a fence with posted "Caution – Do Not Enter" signs. A dirt road runs parallel to the former firing sites.

10-004(a) (9/28/2021)

SWMU 10-004(a) consists of a former septic system that served a former personnel building (building 10-21) from 1949 to 1961 in the northcentral portion of former TA-10 in Bayo Canyon. The septic system consisted of a 550-gal. reinforced-concrete septic tank (former structure 10-40), inlet and outlet drainlines, a disposal pit measuring 8 ft wide × 8 ft long × 12 ft deep located directly east of septic tank 10-40, and an outfall located in the Bayo Canyon drainage channel, approximately 200 ft directly north of former septic tank 10-40. The septic tank (former structure 10-40) received effluent via a 6-in.-diameter VCP inlet drainline from former building 10-21, and discharged to a 6-in.-diameter VCP outlet overflow drainline that discharged to an outfall north of the septic tank and into the Bayo Canyon drainage channel [AOC C-00-004], as shown in engineering drawing ENG-C 25683 (pg. 10 of 43). However, engineering drawing ENG-R 637 (pg. 2 of 3) indicates that, at one time, the septic tank discharged to the disposal pit.

Former TA-10 underwent extensive D&D, including the razing of all structures, from 1961 to 1963. During the D&D activities, the septic tank was excavated, removed, and disposed of at MDA G at TA-54; the excavation was backfilled with clean soil in 1963. There is no information available regarding the removal of the drainlines or soil/sediment at and downgradient of the outfall; however, a 2007 geophysical survey did not identify any subsurface anomalies, indicating that the inlet and outlet drainlines were likely removed during the 1961–1963 D&D activities.

Bayo Canyon was conveyed to Los Alamos County in 1967 but remains under U.S. DOE administrative control, and is currently open to the public for recreational activities except where access is limited by a fence with posted "Caution — Do Not Enter" signs.

10-004(b) (9/28/2021)

SWMU 10-004(b) is a former septic system that served the former radiochemistry laboratory (building 10-1) from 1944 to 1961 at former TA-10 in Bayo Canyon. The Task 15 CEARP Report for TA-10 describes SWMU 10-004(b) as an outfall from the SWMU 10-004(b) septic tank (former structure 10-38), that served former building 10-1 and discharged approximately 100 ft north-northeast into the Bayo Canyon drainage channel [AOC C-00-004]. The 1990 SWMU Report describes SWMU 10-004(b) as a decommissioned septic system that received sanitary, and likely laboratory, wastes from the radiochemistry laboratory housed in former building 10-1 in the southeastern portion of former TA-10. The septic system consisted of a 4-ft-wide × 10-ft-long × 4-ft-deep reinforced-concrete septic tank (former structure 10-38), inlet and outlet drainlines, and an overflow 4-in. VCP open joint drainline, identified as the SWMU 10-003(n) leach field located north of former building 10-1 in the Bayo Canyon drainage channel [AOC C-00-004] at former TA-10. The septic tank (former structure 10-38) received effluent via a 4-in.-diameter VCP inlet drainline, and discharged to a 4-in.-diameter VCP outlet overflow drainline that discharged to the SWMU 10-003(n) leach field located north of former building 10-1, as shown in engineering drawings ENG-C 1856 (Sheet U-1) and ENG-C 25683 (pg. 10 of 43). The SWMU 10-004(b) septic system was a component of the former liquid waste disposal complex, also known as the tank farm, which supported radiochemistry laboratory operations and handled sanitary waste from former building 10-1 in the southeastern portion of former TA-10. The exact dates of use for the septic system are unknown; however, it is estimated to have been used from 1944 to 1960.

Former TA-10 underwent extensive D&D, including the razing of all structures, from 1961 to 1963. In 1963, the liquid waste disposal complex, including the SWMU 10-004(b) septic system, was excavated to a depth of 20 ft bgs and disposed of at MDA G at TA-54. The excavation was partially backfilled with uncontaminated building debris from the D&D of site structures, and the remainder of the excavation was backfilled with clean soil. There is no information available regarding the removal of the drainlines or the leach field; however, a 2007 geophysical survey did not identify the presence of subsurface anomalies, indicating that the inlet and outlet drainlines were likely removed during the 1961–1963 D&D activities. The area was released to Los Alamos County in 1967 but remains under the U.S. DOE administrative control, and is currently open to the public for recreational activities except where access is limited by a fence with posted "Caution — Do Not Enter" signs.

10-008 (1/31/2017)

SWMU 10-008 is a former satellite firing site located approximately 1,400 ft northwest of the former primary firing sites [SWMUs 10-001(a-d)] at TA-10. During a 1994 IA, shrapnel was found embedded in the northwestern sides of trees in this area (opposite the known primary firing sites). Because of the proximity and overlapping dispersion areas of each firing site and use of the disposal pit, source terms cannot be separated by SWMU or AOC.

This Site has been listed as an AOC in historical documentation. However, it is listed as a SWMU in the Consent Order and in Appendix K of the RCRA Permit.

10-009 (1/31/2017)

SWMU 10-009 is a former landfill discovered during routine surface shrapnel characterization activities in Bayo Canyon, when a small depression was noted that contained materials, including asbestos siding, heavy-gauge and coaxial wire and cable, glass laboratory equipment, and other debris. A geophysical survey conducted in the area showed additional anomalies; interviews conducted with former area workers confirmed that the area had been used for disposal. EPA was notified of a new SWMU in May 1995. The Site was fenced in 1995, pending further investigation and/or remediation. AOC C-10-001, which consists of two former radioactive (strontium-90) soil contamination areas, is located within the fenced area that encompasses SWMU 10-009.

This Site has been listed as an AOC in historical documentation. However, it is listed as a SWMU in the Consent Order and in Appendix K of the RCRA Permit.

5.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 5.2-1.

Table 5.2-1 POCs Known or Suspected to be Used Historically at the Sites

Site	Potential POC Source	Potential POCs
10-001(a)	Firing site	HE, natural uranium, uranium-238, strontium-90, lead, aluminum, and beryllium
10-001(b)	Firing site	HE, natural uranium, uranium-238, strontium-90, lead, aluminum, and beryllium
10-001(c)	Firing site	HE, natural uranium, uranium-238, strontium-90, lead, aluminum, and beryllium
10-001(d)	Firing site	HE, natural uranium, uranium-238, strontium-90, lead, aluminum, and beryllium
10-004(a)	Firing site	Metals, organic chemicals, strontium-90, barium, and cadmium
10-004(b)	Septic system	Metals, organic chemicals, strontium-90, barium, and cadmium
10-008	Firing point	Metals
10-009	Former Bayo Canyon landfill	Asbestos, metals, organic chemicals, radionuclides

5.3 Consent Order Soil Data

Decision-level data for SWMU 10-001(a), SWMU 10-001(b), SWMU 10-001(c), SWMU 10-001(d), SWMU 10-004(a), and SWMU 10-008 consist of results from samples collected in 1994 and 2007. Revision 1 of the 2008 IR (LANL 2008, 102424) concluded that the nature and extent of contamination have been defined.

Decision-level data for 10-004(b) consist of samples collected in 1994, 1996, 2007, and 2008, in conjunction with the investigation of SWMUs 10-002(a–b), 10-003(a–o), 10-004(b), and 10-007. Revision 1 of the 2008 IR (LANL 2008, 102424) concluded that the nature and extent of contamination are defined.

SMWU 10-009 and AOC C-10-001 were investigated together as one Site during the 2007 investigation. Decision-level data for SMWU 10-009 and AOC C-10-001 consist of results for samples collected in 2007. The approved IR concluded that the lateral and vertical extent of detected chemicals and radionuclides are defined at SMWU 10-009 and AOC C-10-001.

Analytical results from all decision-level soil samples for B-SMA-0.5 are presented in Figures 5.3-1 through 5.3-4.

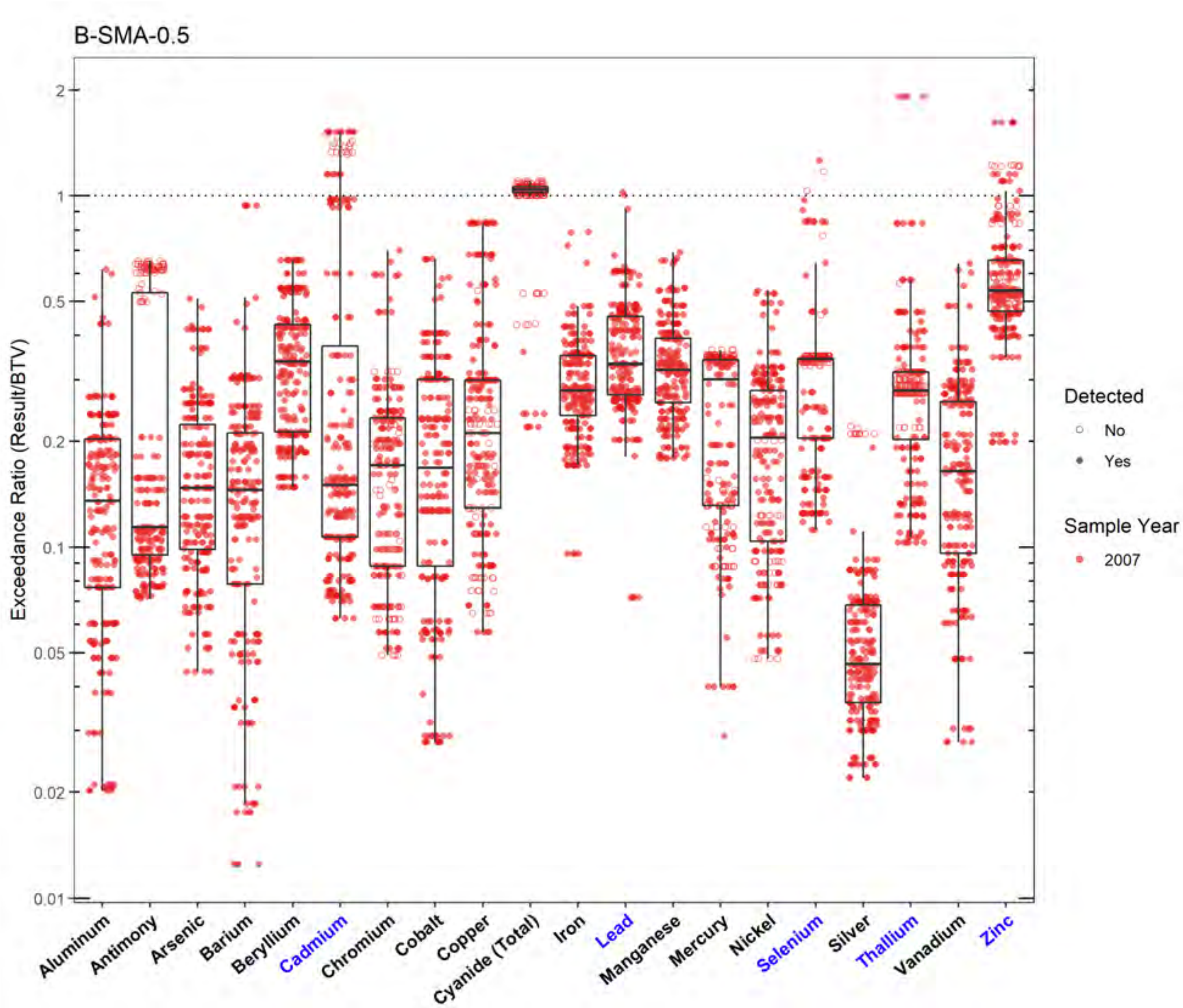

Figure 5.3-1 Inorganics Analytical Results from Soil Samples Associated with B-SMA-0.5

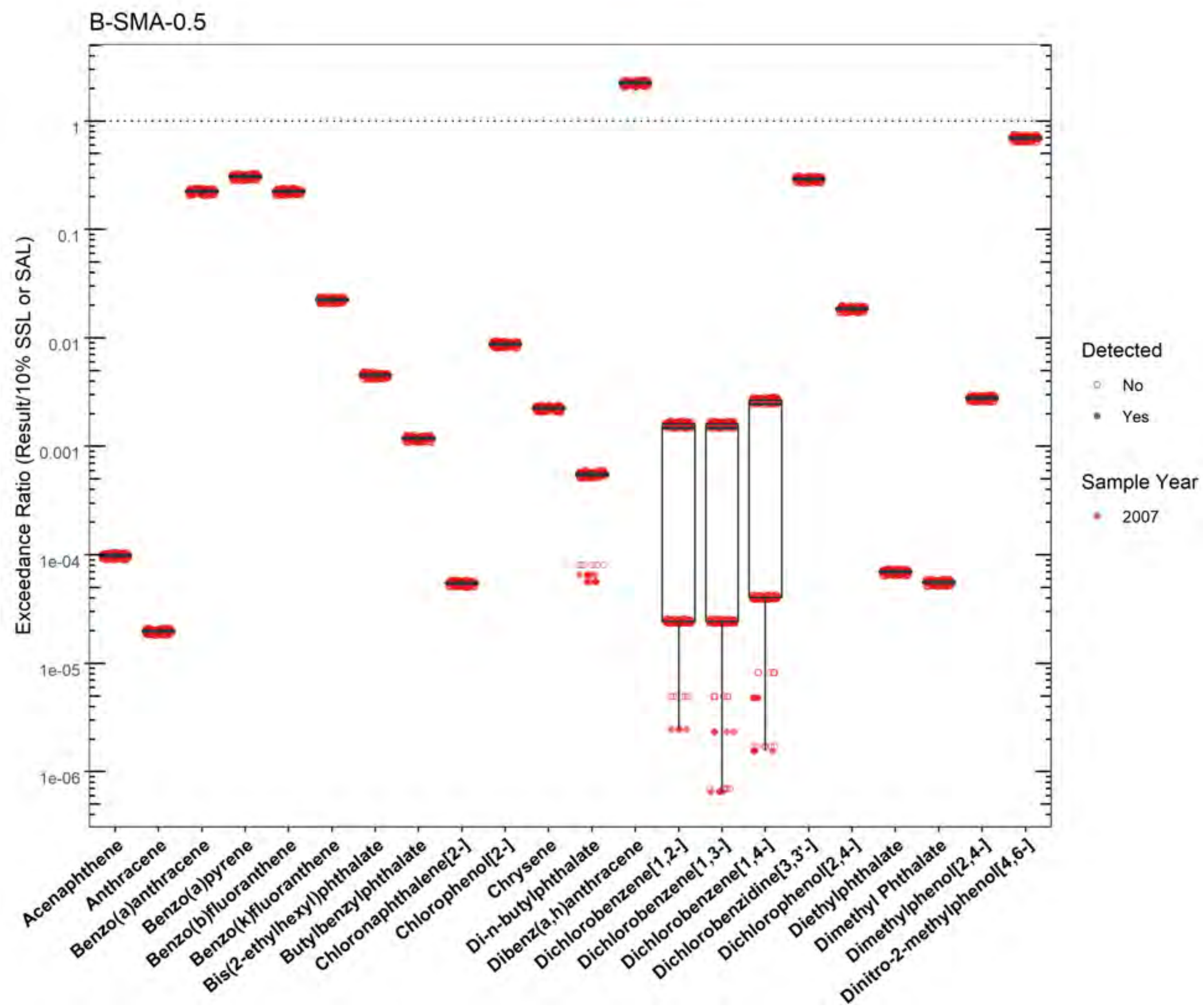

Figure 5.3-2 Organics Analytical Results from Soil Samples Associated with B-SMA-0.5 (Plot 1)

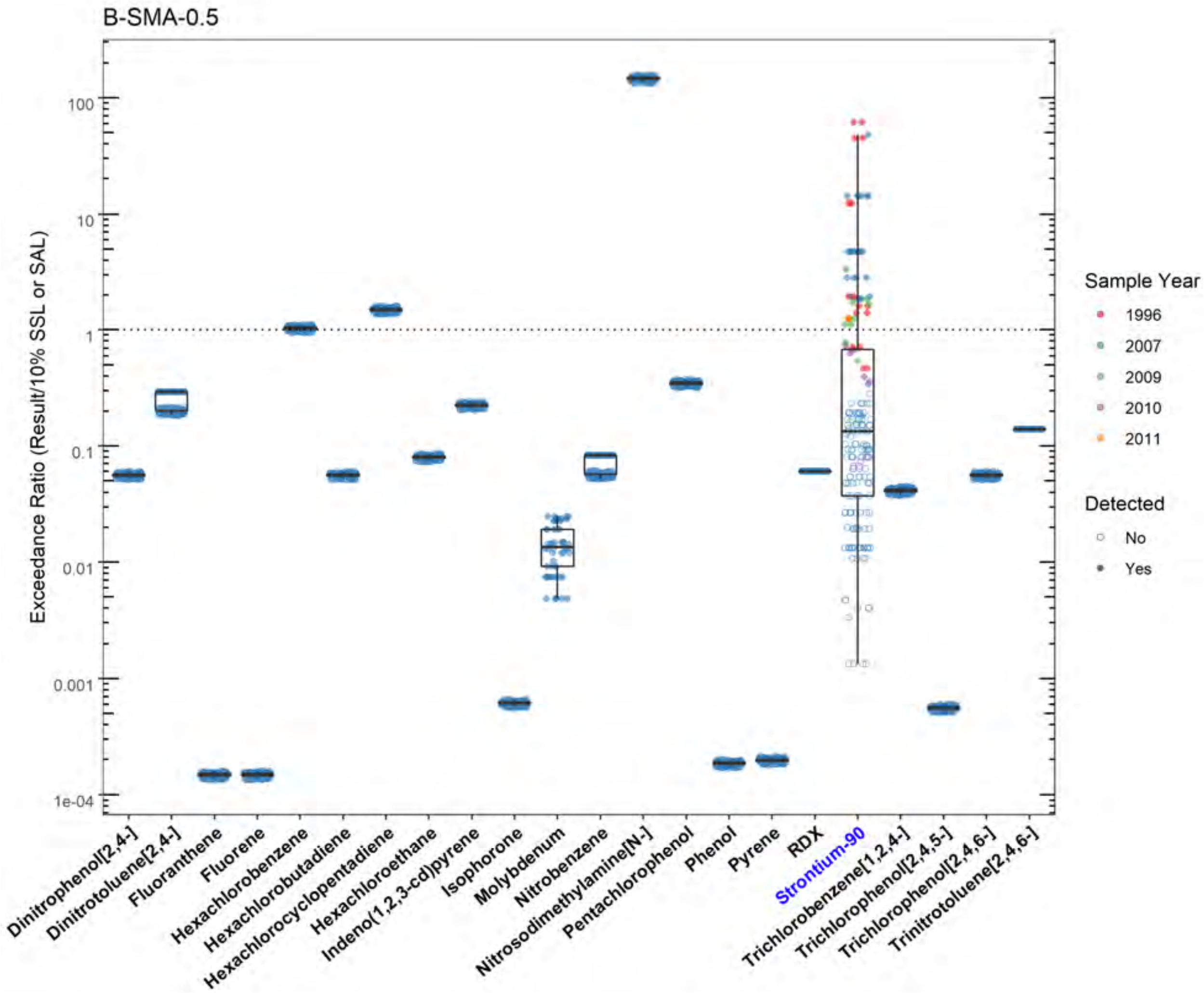

Figure 5.3-3 Organics Analytical Results from Soil Samples Associated with B-SMA-0.5 (Plot 2)

B-SMA-0.5

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Cadmium	B-SMA-0.5	Cd	Y	BTV	0.400	0.610	2007-09-10
Lead	B-SMA-0.5	Pb	Y	BTV	22.3	22.8	2007-02-02
Selenium	B-SMA-0.5	Se	Y	BTV	1.52	1.92	2007-02-01
Strontium-90	B-SMA-0.5	Sr-90	Y	SAL_0.1	1.50	92.0	1996-11-19
Thallium	B-SMA-0.5	Tl	Y	BTV	0.730	1.40	2007-08-13
Zinc	B-SMA-0.5	Zn	Y	BTV	48.8	79.3	2007-08-14

Figure 5.3-4 Screening-Level Exceedances from Soil Samples Associated with B-SMA-0.5

5.4 Stormwater Evaluation

5.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Following the installation of baseline control measures, a baseline stormwater sample was collected in September 2013. Analytical results from that sample are presented in Figures 5.4-1 and 5.4-2.

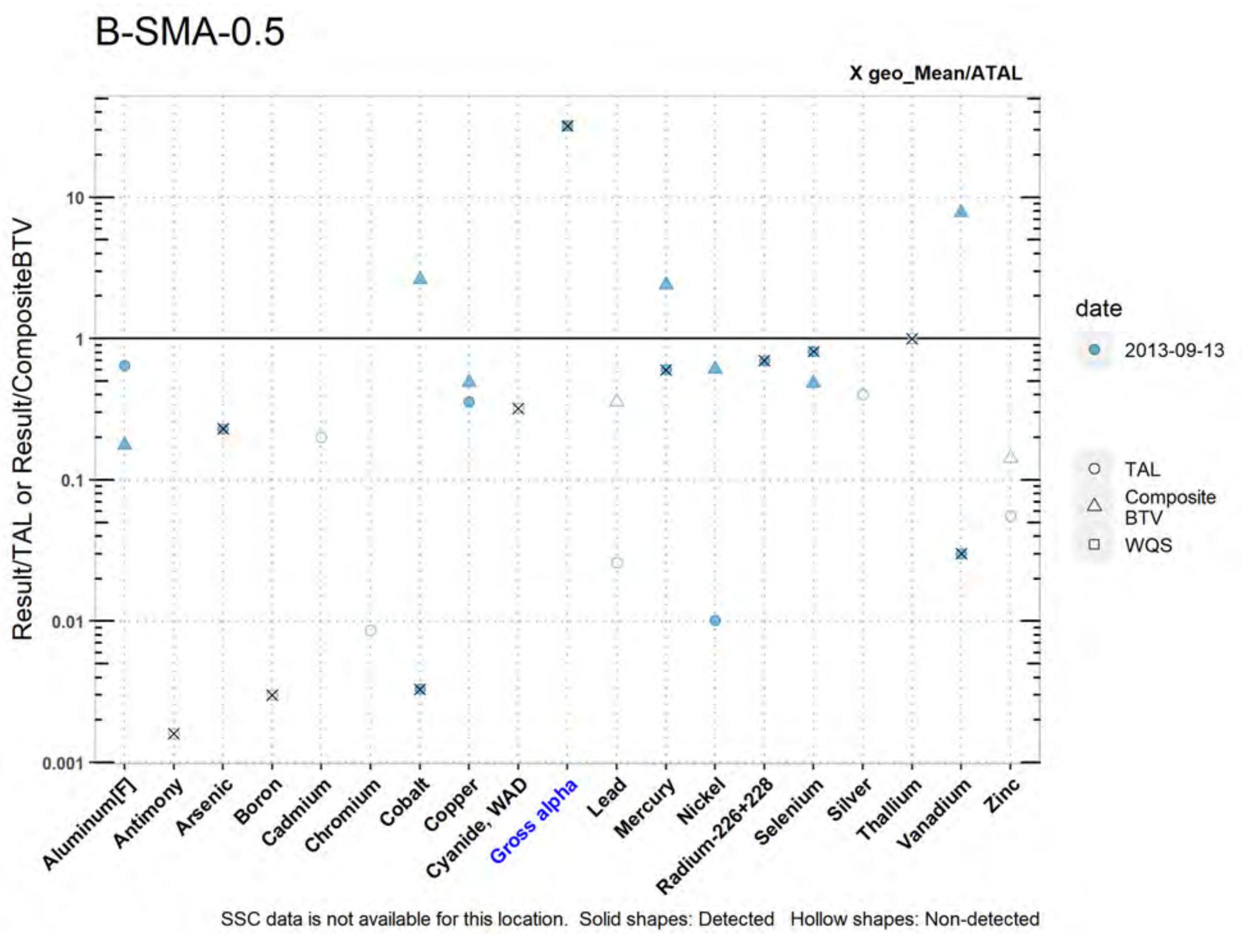

Figure 5.4-1 Analytical Results from Stormwater Sample, B-SMA-0.5 (Plot)

B-SMA-0.5

	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	0.65	233	NA	4.8	22	NA	19.3	NA	186	NA	20	0.49	NA	NA	59.2
Composite_BTV	2760	NA	NA	NA	NA	NA	1.25	3.52	NA	56.7	1.40	0.194	3.10	4.63	8.36	NA	NA	0.387	23.0
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
2013-09-13 result	485	*1.00*	2.08	*15.0*	*0.110*	*2.00*	3.28	1.71	*1.67*	486	*0.500*	0.464	1.88	20.9	4.03	*0.200*	*0.450*	3.02	*3.30*
2013-09-13 dT	0.647	NA	0.23	NA	NA	NA	0.0033	0.356	NA	32	NA	0.60	0.0101	0.697	0.81	NA	NA	0.030	NA
2013-09-13 dB	0.176	NA	NA	NA	NA	NA	2.62	0.486	NA	NA	NA	2.39	0.606	NA	0.482	NA	NA	7.80	NA
geo_mean/ATAL	NA	0.0016	0.23	0.0030	NA	NA	0.0033	NA	0.321	32	NA	0.60	NA	0.697	0.81	NA	1	0.030	NA

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

Figure 5.4-2 Analytical Results from Stormwater Sample, B-SMA-0.5 (Table)

5.4.2 Assessment Unit and Stream Impairments

B-SMA-0.5 drains to Bayo Canyon (boundary of Pueblo de San Ildefonso to headwaters), which has not been assessed for impairments.

5.5 Site-Specific Demonstration

5.5.1 Soil Data Summary

Strontium-90 exceeded the applicable screening value in soil data and has not yet been measured in stormwater. It will be added to the SAP.

The metals that exceeded the applicable screening value in soil data were previously measured in stormwater and did not exceed TALs. Therefore, they will not be added to the SAP.

5.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL, and radionuclides are a Site-related POC. Therefore, it will be added to the SAP.

5.5.3 2022 Permit Status

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

5.5.4 Sampling and Analysis Plan

Table 5.5-1 is the proposed SAP for B-SMA-0.5.

Table 5.5-1 Proposed SAP, B-SMA-0.5

Monitoring Constituent	Background for Monitoring
Strontium-90	Site history and soil data
Gross alpha (1)	Site history and stormwater data
Tritium	Site history (radionuclides)
Total PCBs	Site history (organics)
SVOCs	Site history (organics)
Asbestos	Site history
DOC	Permit requirement
SSC	Permit requirement

6.0 B-SMA-1

Associated Sites	00-011(d)
Receiving Water	Bayo Canyon
Drainage Area	17.04 acres
Landscape Characteristics	8% impervious, 92% pervious
Consent Order Site Status	SWMU 00-011(d): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls
2010 AC Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the July 2017 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site.
2022 Permit Status	Long-Term Stewardship per Permit Part I.C.3.c criterion

6.1 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.

SWMU 00-011(d) received a COC under the Consent Order in May 2013. The Permittees submitted a certification of completion of corrective action for the Site per Permit part I.E.2(d) in November 2013 (LANL 2013, 251268). Stormwater monitoring has not occurred since 2013.

6.2 Site History

00-011(d) (no date)

SWMU 00-011(d) is a former bazooka firing area, located on predominantly Los Alamos County land and a small section of private property, in a small north-trending tributary of Bayo Canyon. The Site, which operated between 1944 and 1948, is located northeast of the intersection of San Ildefonso Road and Diamond Drive. The 6-acre site is only partially fenced and is accessible to the public.

An investigation was conducted in 1992 to search for and remove UXO and OEW. OEW recovered from the site was found in the subsurface and was composed of about 0.5 yd^3 of tailfin assemblies, motors, bullets, and other fragments from bazooka rockets. The 2007 Consent Order IR recommended the Site for corrective action complete without controls. The NMED approved the report with directions requiring biennial UXO surveys. NMED did not approve a request for COC without controls, but did approve a COC with controls for UXO. LANL requested that NMED rescind the COC with controls and reconsider the request for COC without controls, because the controls are not associated with requirements under the Consent Order.

For investigation activities, refer to "Investigation Report for Guaje/Barrancas/Rendija Canyons Aggregate Area at Technical Area 00, Revision 1" (LANL 2007, 099954).

6.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 6.2-1.

Table 6.2-1 POCs Known or Suspected to Be Used Historically At the Site

Site	Potential POC Source	Potential POCs
00-011(d)	Former bazooka firing area	Copper, lead, iron, HE

6.3 Consent Order Soil Data

Decision-level data for SWMU 00-011(d) consist of results collected from 2007. Analytical results from those samples are presented in Figures 6.3-1 through 6.3-3. The approved IR concluded that the lateral and vertical extent of all detected chemicals are defined at SWMU 00-011(d).

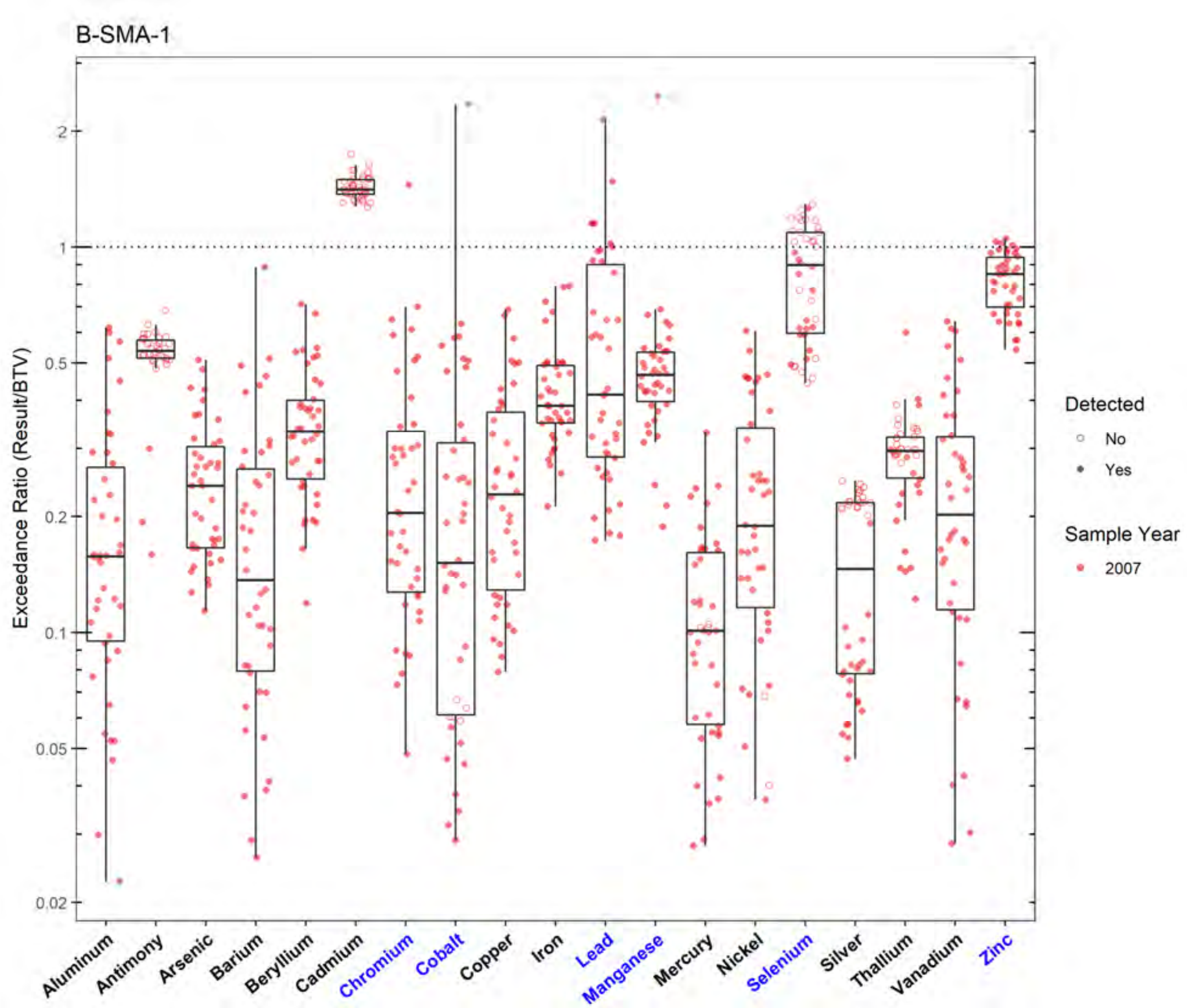

Figure 6.3-1 Inorganics Analytical Results from Soil Samples Associated with B-SMA-1

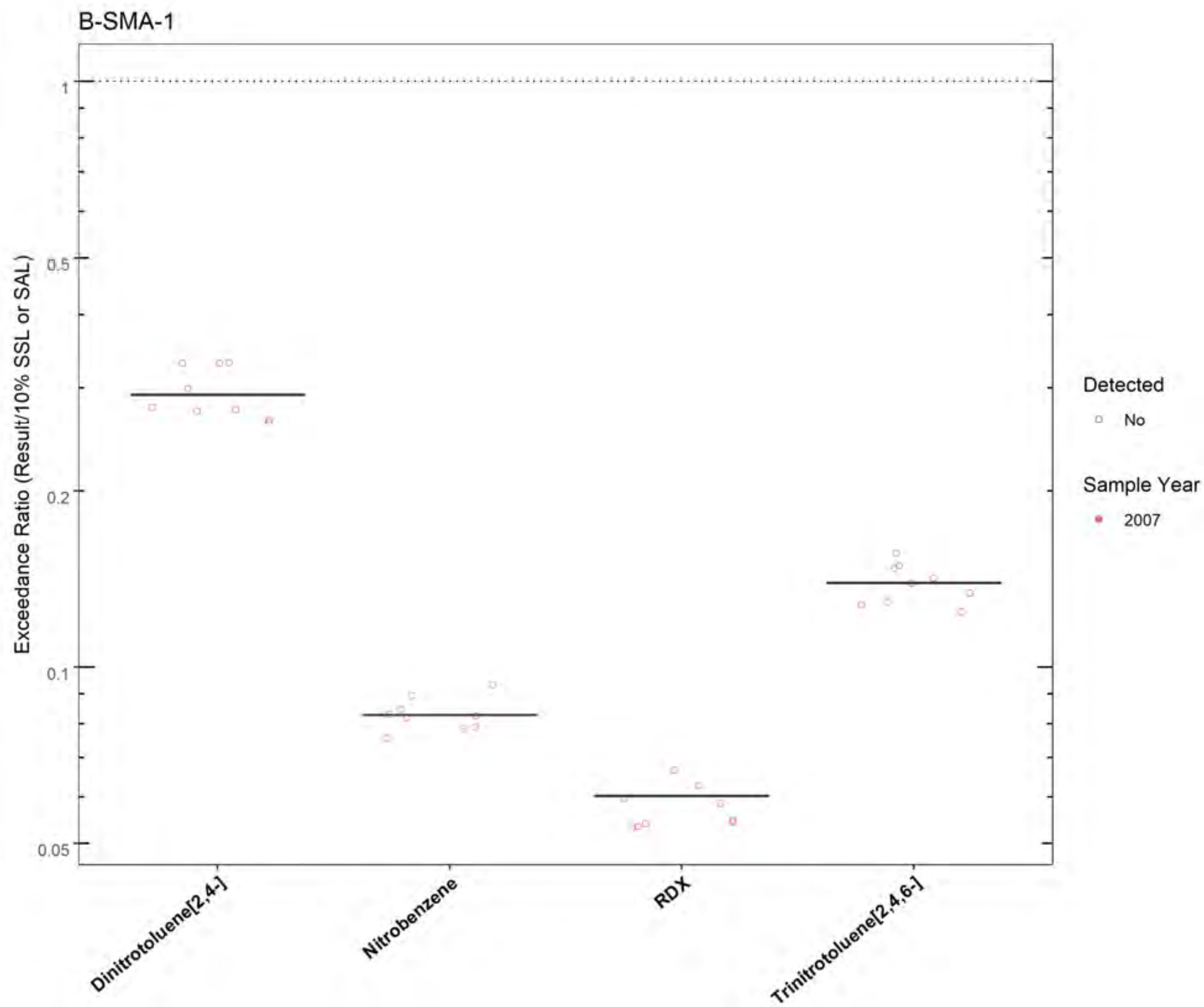

Figure 6.3-2 Organics Analytical Results from Soil Samples Associated with B-SMA-1

B-SMA-1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Chromium	B-SMA-1	Cr	Y	BTV	19.3	27.9	2007-02-06
Cobalt	B-SMA-1	Co	Y	BTV	8.64	20.3	2007-02-06
Lead	B-SMA-1	Pb	Y	BTV	22.3	47.7	2007-02-06
Manganese	B-SMA-1	Mn	Y	BTV	671	1650	2007-02-06
Selenium	B-SMA-1	Se	Y	BTV	1.52	1.92	2007-02-01
Zinc	B-SMA-1	Zn	Y	BTV	48.8	51.4	2007-02-07

Figure 6.3-3 Screening-Level Exceedances from Soil Samples Associated with B-SMA-1

6.4 Stormwater Evaluation

6.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Following the installation of baseline control measures, a baseline stormwater sample was collected in September 2013. Analytical results from this sample are presented in Figures 6.4-1 and 6.4-2.

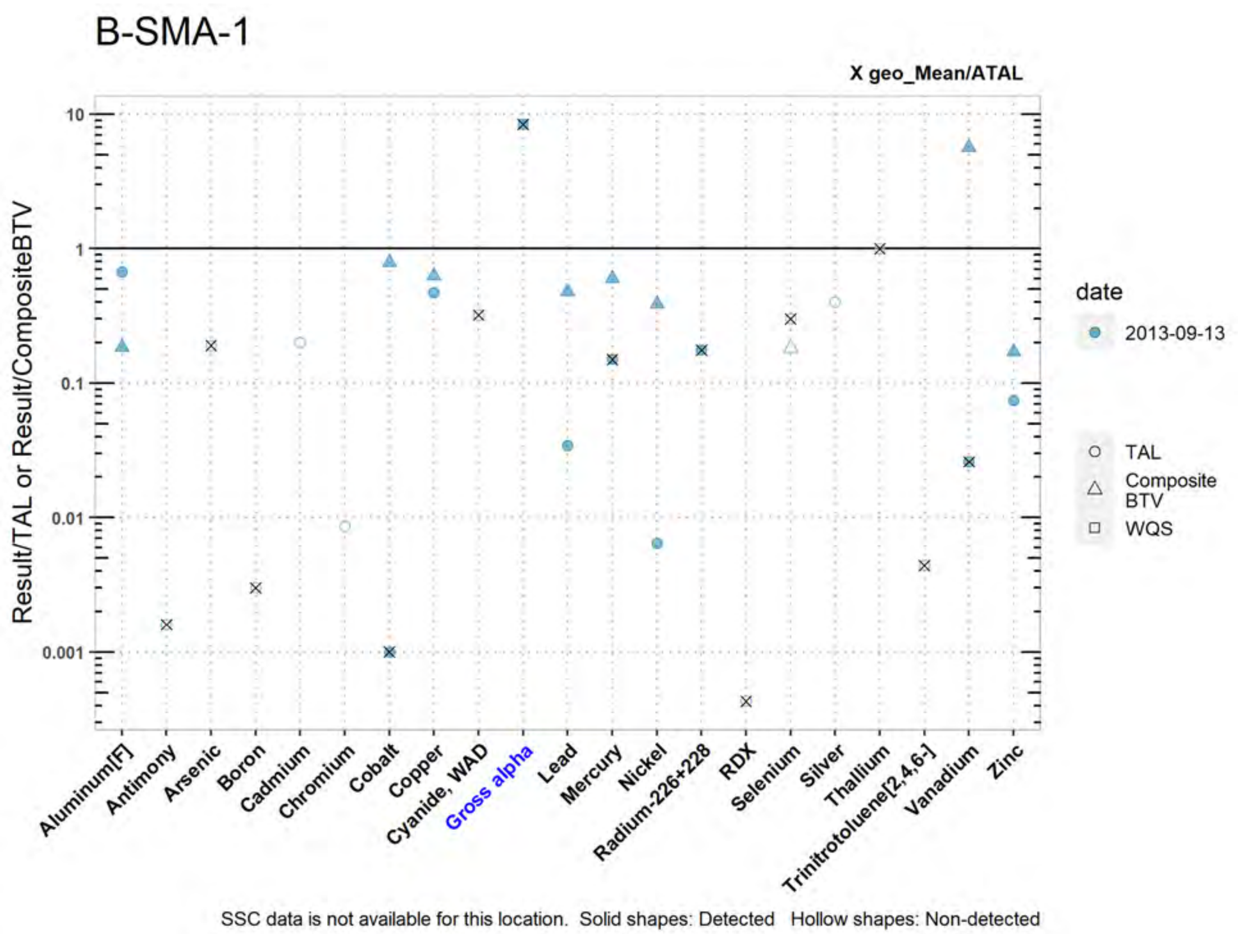

Figure 6.4-1 Analytical Results from Stormwater Sample, B-SMA-1 (Plot)

B-SMA-1

	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	0.65	233	NA	4.8	22	NA	19.3	NA	186	NA	NA	20	0.49	NA	NA	NA	59.2
Composite_BTV	2720	NA	NA	NA	NA	NA	1.27	3.61	NA	56.6	1.38	0.191	3.10	4.73	NA	8.23	NA	NA	NA	0.470	25.8
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	ug/L
2013-09-13 result	502	*1.00*	*1.70*	*15.0*	*0.110*	*2.00*	1.00	2.26	*1.67*	126	0.663	0.114	1.20	5.27	*0.0870*	*1.50*	*0.200*	*0.450*	*0.0870*	2.65	4.41
2013-09-13 dT	0.669	NA	NA	NA	NA	NA	0.0010	0.471	NA	8.4	0.0344	0.15	0.00645	0.176	NA	NA	NA	NA	NA	0.026	0.0745
2013-09-13 dB	0.185	NA	NA	NA	NA	NA	0.787	0.626	NA	NA	0.480	0.597	0.387	NA	NA	NA	NA	NA	NA	5.64	0.171
geo_mean/ATAL	NA	0.0016	0.19	0.0030	NA	NA	0.0010	NA	0.321	8.4	NA	0.15	NA	0.176	0.00043	0.30	NA	1	0.0044	0.026	NA

Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 6.4-2 Analytical Results from Stormwater Sample, B-SMA-1 (Table)

6.4.2 Assessment Unit and Stream Impairments

B-SMA-1 drains to Bayo Canyon (boundary of Pueblo de San Ildefonso to headwaters), which has not been assessed for impairments.

6.5 Site-Specific Demonstration

6.5.1 Soil Data Summary

Iron is a Site-related POC but did not exceed the applicable screening value in soil data. Therefore, it will not be added to the SAP.

The remaining metals that exceeded the applicable 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.

6.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL, and there was no paired SSC result to confirm whether it was below BTV. Monitoring for gross alpha is required only if the SMA drains to an assessment unit that is impaired for gross alpha or if it is a Site-related constituent. The assessment unit to which B-SMA-1 drains is not impaired for gross alpha, and radionuclides are not a Site-related POC. Therefore, it will not be added to the SAP.

6.5.3 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.

7.0 ACID-SMA-1.05

Associated Sites	SWMU 00-030(g)
Receiving Water	Acid Canyon - Tributary to Pueblo Canyon
Drainage Area	24.35 acres
Landscape Characteristics	27% impervious, 73% pervious
Consent Order Site Status	SWMU 00-030(g): In Progress
2010 Administratively Continued AC Permit Final Status	Extended Baseline Monitoring
2016–2018 SIP Actions	Based on the August 2017 field visits, the sampler was moved downgradient in the drainage near location 00-10237 (elevated detection of mercury) to include more of the potentially affected area.
2022 Permit Status	Active Monitoring

7.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to the EPA, a baseline stormwater sample was collected in August 2011. This sample had no TAL exceedances, and stormwater monitoring ceased until 2020. Monitoring resumed in 2020 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.

During development of the 2020 SAP, Permittees decided to implement the monitoring location move recommended during the 2017 SIP review. Because of the move, analytical results from the 2011 sample will no longer be used for confirmation-monitoring purposes. Since the relocation, stormwater flow has not been sufficient for full-volume sample collection and monitoring is ongoing.

7.2 Site History

00-030(g) (6/12/2017)

SWMU 00-030(g) was a sanitary septic system installed north of Canyon Road, west of the Canyon Road and Central Avenue Intersection, and directly east of the former Catholic Church (3200 Canyon Road) in former TA-00. The septic system consisted of a septic tank (referred to as Septic Tank #6), an inlet drainline, VCP outlet drainline, and an outfall that discharged to Acid Canyon.

The septic system was installed in the early 1940s and likely received sanitary waste from the original townsite and from early Laboratory operations at TA-01. Waste from TA-01 facilities may have included isotopic plutonium, polonium, uranium, and mercury. Septic Tank #6 consisted of reinforced concrete and measured 32 ft long × 22 ft wide × 6.5 ft deep. A center baffle separated the tank into east and west chambers. Effluent from the septic system discharged through an outfall to a drainage channel in Acid Canyon, a side canyon to Pueblo Canyon, in an area owned by Los Alamos County.

The septic system was decommissioned when the CWWTP (SWMU 00-019) came online in 1947. The septic tank and associated drainlines were removed in 1993; however, the inlet line was never discovered and may have been removed during the installation of a gas pipeline that crosses the Site. The former tank location is on private property that is currently used as an access driveway and parking lot for apartments. There were no known releases from this septic system other than the designed discharges of effluent to the outfall at the edge of the mesa.

For investigation activities refer to "RFI Report for SWMU 00-030(g)" (LANL 2001, 070273) and associated submittals to "Response to Request for Supplemental Information for the RFI Report for SWMU 00-030(g)" (LANL 2003, 079263).

7.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 7.2-1.

Table 7.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
00-030(g)	Septic System	Metals, mercury, organic chemicals, plutonium, uranium, polonium

7.3 Consent Order Soil Data

Decision-level data for SWMU 00-030(g) consist of results from samples collected in 1996, 1998, and 1999 (Figures 7.3-1 through 7.3-4). Analytical results from those samples are presented in Figures 7.3-1 through 7.3-4. The RFI report concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

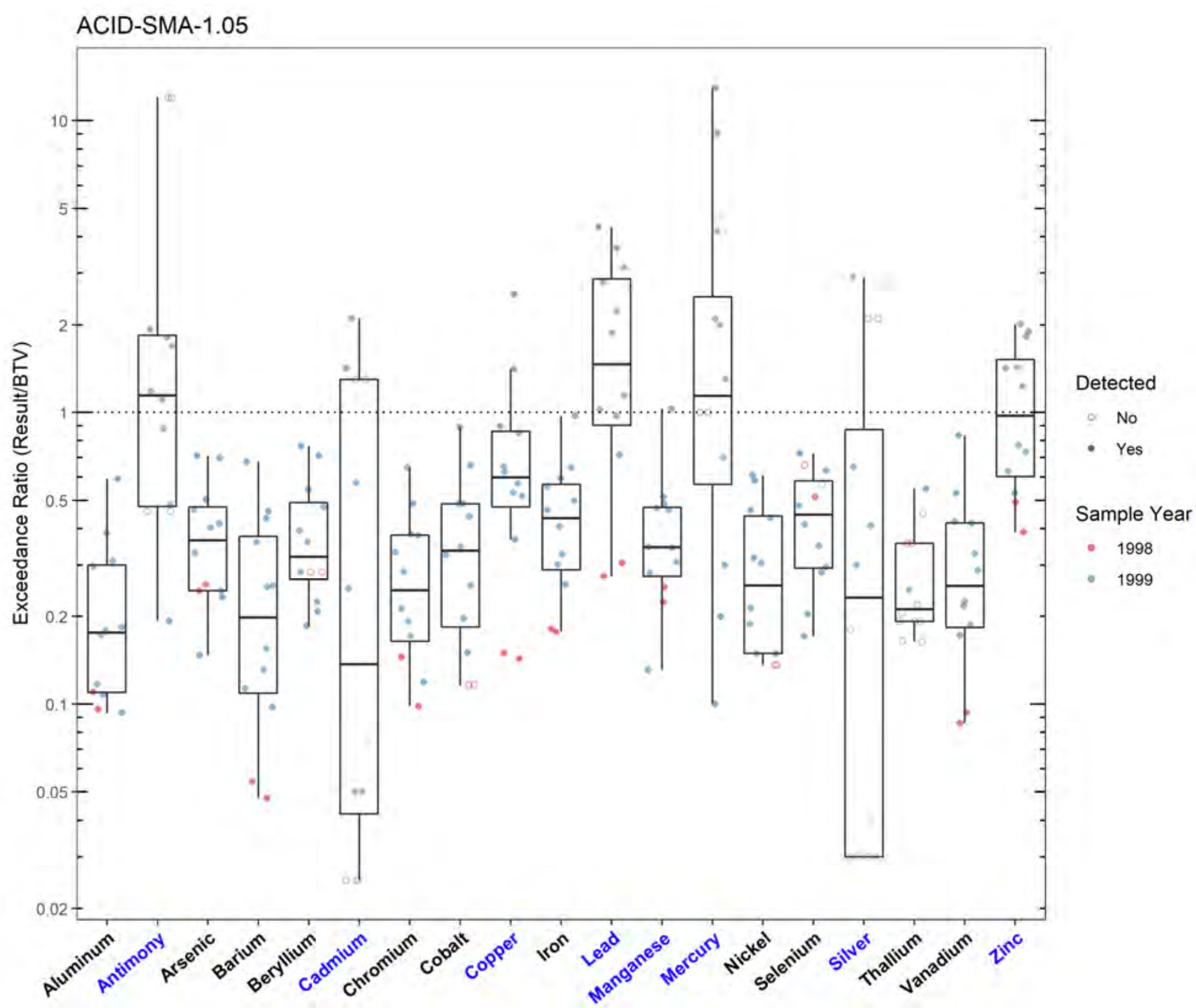

Figure 7.3-1 Inorganics Analytical Results from Soil Samples Associated with ACID-SMA-1.05

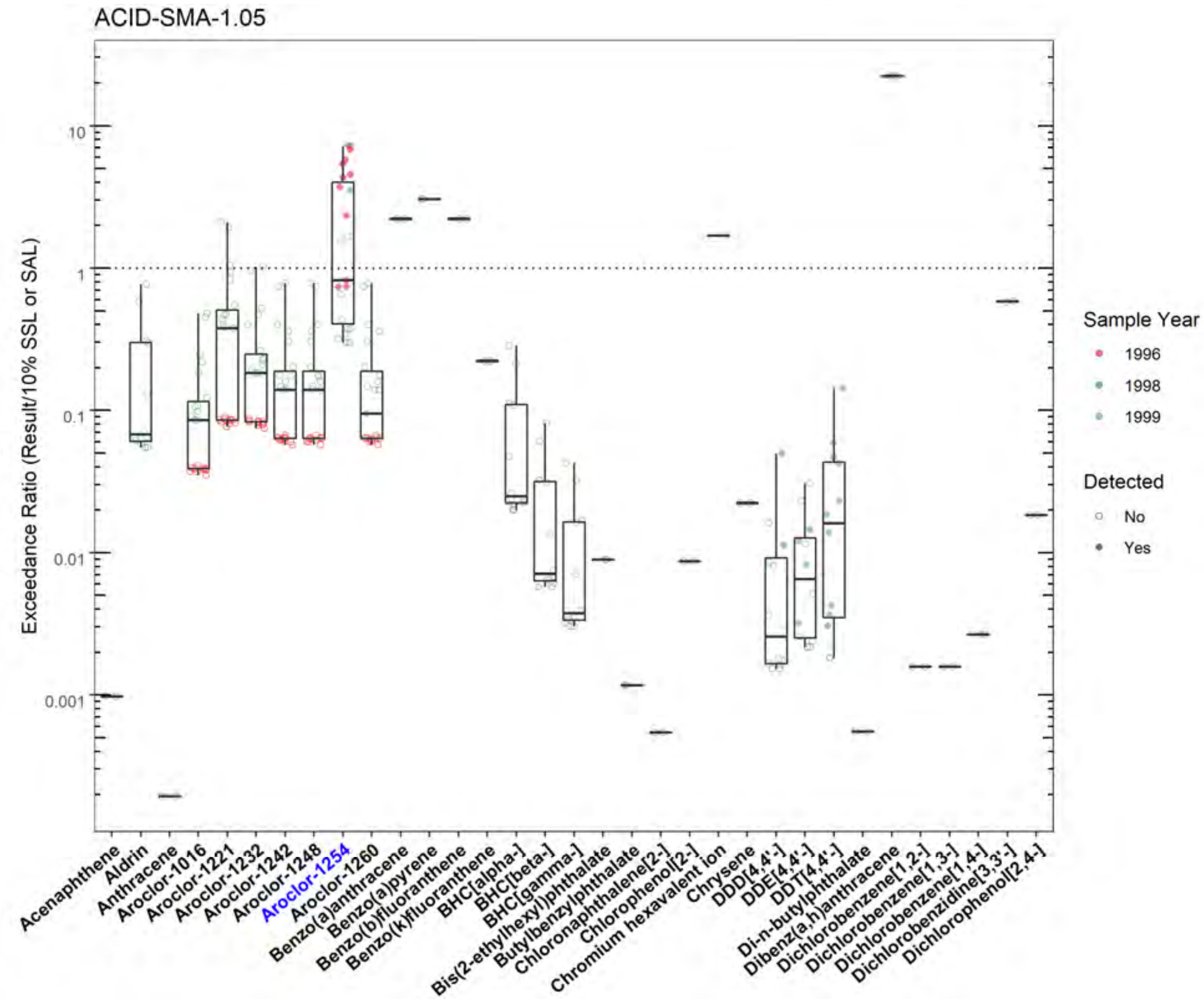

Figure 7.3-2 **Organics Analytical Results from Soil Samples Associated with ACID-SMA-1.05 (Plot 1)**

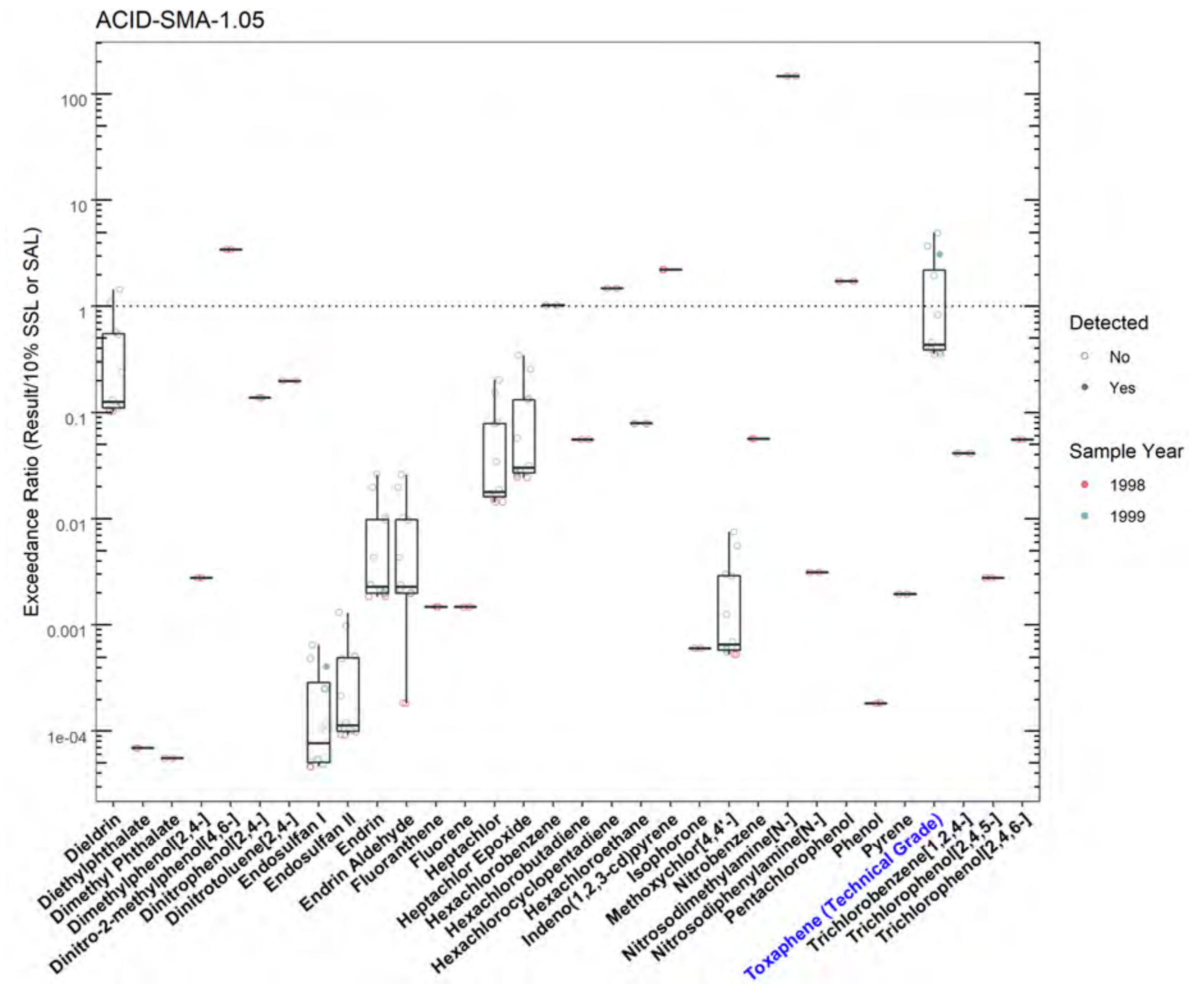

Figure 7.3-3 Organics Analytical Results from Soil Samples Associated with ACID-SMA-1.05 (Plot 2)

ACID-SMA-1.05

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	ACID-SMA-1.05	Sb	Y	BTV	0.830	1.60	1999-05-03
Aroclor-1254	ACID-SMA-1.05	11097-69-1	Y	SSL_0.1	0.114	0.828	1996-10-17
Cadmium	ACID-SMA-1.05	Cd	Y	BTV	0.400	0.840	1999-09-29
Copper	ACID-SMA-1.05	Cu	Y	BTV	14.7	37.5	1999-09-29
Lead	ACID-SMA-1.05	Pb	Y	BTV	22.3	96.4	1999-05-03
Manganese	ACID-SMA-1.05	Mn	Y	BTV	671	693	1999-09-29
Mercury	ACID-SMA-1.05	Hg	Y	BTV	0.100	1.30	1999-05-03
Silver	ACID-SMA-1.05	Ag	Y	BTV	1.00	2.90	1999-05-03
Toxaphene (Technical Grade)	ACID-SMA-1.05	8001-35-2	Y	SSL_0.1	0.484	1.50	1999-09-29
Zinc	ACID-SMA-1.05	Zn	Y	BTV	48.8	97.9	1999-09-29

Figure 7.3-4 Screening-Level Exceedances from Soil Samples Associated with ACID-SMA-1.05

7.4 Stormwater Evaluation

7.4.1 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.

7.4.2 Assessment Unit and Stream Impairments

ACID-SMA-1.05 drains to Acid Canyon (Pueblo Canyon to headwaters), which has impairments for adjusted gross alpha, PCBs, total recoverable aluminum, and dissolved copper. These impairments may be Site-related, based on the Site history.

7.5 Site-Specific Demonstration

7.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: Aroclor-1254, antimony, cadmium, copper, lead, mercury, silver, and zinc.

Toxaphene exceeded the applicable screening value in soil data, but is not a Site-related POC and will not be added to the SAP.

7.5.2 Stormwater Data Summary

No confirmation-monitoring data.

7.5.3 2022 Permit Status

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

7.5.4 Sampling and Analysis Plan

Table 7.5-1 is the proposed SAP for ACID-SMA-1.05.

Table 7.5-1 Proposed SAP, ACID-SMA-1.05

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history (plutonium, uranium, polonium)
Total PCBs	Impairment, Site history (organic chemicals), and soil data
Dissolved antimony, cadmium, copper, lead, manganese, silver, zinc	Impairment (copper), Site history (metals), and soil data
Total aluminum and mercury	Impairment (aluminum), Site history (metals), and soil data
SVOCs	Site history (organic chemicals)
DOC	Permit requirement
SSC	Permit requirement

8.0 ACID-SMA-2

Associated Sites	01-002(b)-00, 45-001, 45-002, 45-004
Receiving Water	Acid Canyon - Tributary to Pueblo Canyon
Drainage Area	52.44 acres
Landscape Characteristics	27% impervious, 73% pervious
Consent Order Site Status	SWMU 01-002(b)-00: Pending Receipt of Certificate of Completion SWMU 45-001: Pending Approval of Permit Modification Request. Certificate of Completion Received Without Controls SWMU 45-002: Pending Approval of Permit Modification Request. Certificate of Completion Received Without Controls SWMU 45-004: Pending Approval of Permit Modification Request. Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested/Corrective Action Complete
2016–2018 SIP Actions	Based on the 2016 field visits, the current sampler location does not include part of the impacted area where there are high detections of radionuclides in soil. Therefore, the sampler was moved down the drainage to better characterize runoff from the Site.
2022 Permit Status	Active Monitoring/Corrective Action

8.1 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 October 2016 certification to EPA of enhanced control installation as a corrective action (LANL 2016, 601865.1), a corrective action stormwater sample was collected in November 2016. During development of the 2017 SAP, a decision was made to implement the monitoring location move recommended during the 2016 SIP review. Because of the monitoring location move, analytical results from the 2016 sample could no longer be used for confirmation-monitoring purposes. After the move, two corrective action stormwater samples were collected in July 2017.

SWMUs 45-001, 45-002, and 45-004 received COCs under the Consent Order in February 2013. The Permittees submitted a certification of completion of corrective action per Permit part I.E.2(d) for the SWMUs in March 2013 (LANL 2013, 237754).

The Permittees submitted a request for alternative compliance per permit Part I.E.3 on April 22, 2019, for SWMU 01-002(b)-00 (N3B 2019, 700401). No response has been received from EPA, and stormwater monitoring has not occurred since 2017.

8.2 Site History

For investigation activities at the Sites, refer to “Phase II Investigation Report for Pueblo Canyon Aggregate Area” (LANL 2010, 110864).

01-002(b)-00 (6/12/2017)

SWMU 01-002(b)-00 consists of a former TA -01 industrial waste line outfall and drainage area in Acid Canyon. The outfall was located within the boundaries of TA-45, at the head of a small branch of Acid

Canyon known as the south fork of Acid Canyon. Untreated RLW generated in laboratories and research facilities in former TA-01 was discharged to this outfall from 1943 until 1951. Approximately 4.8 million gal./yr of untreated RLW were discharged to the SWMU 01-002(b)-00 outfall during this period. Average plutonium concentrations in the RLW ranged from 1000 to 10,000 pCi/L, resulting in a total estimated discharge of 1.9 g of plutonium. Discharges of untreated RLW ceased when the TA-45 RLW treatment plant began operation in 1951. However, releases of treated RLW continued until 1964.

In 1966, the SWMU 01-002(b)-00 outlet drainline, associated weir box, and contaminated tuff around the outfall and from the canyon cliff and drainage below the outfall were removed and disposed of at TA-54 as part of the D&D of the TA-45 RLW treatment plant. The TA-45 property was transferred to Los Alamos County in September 1967. In 1985, the last remnants of the industrial waste line between TA-01 and the SWMU 01-002(b)-00 outfall were removed and disposed of at TA-54. SWMU 01-002(b)-00 was part of SWMU 01-002, which was split into two units [SWMUs 01-002(a)-00 and 01-002(b)-00] in 2000.

45-001 (no date)

SWMU 45-001 consists of the former TA-45 liquid waste treatment plant and its two associated outfalls. The TA-45 liquid waste treatment plant (building 45-2) was the first such facility at LANL and was located near the current intersection of Canyon Road and Central Avenue in the Los Alamos townsite. The treatment plant began operation in 1951 and operated until 1961. The capacity of the plant was originally 90 gal./min but was expanded to 145 gal./min in 1957. The treatment plant included neutralization and storage tanks, flocculation tanks, sedimentation basins, vacuum filters, and granular media filters. Effluent from the plant discharged to Acid Canyon through outfalls located near the canyon rim. One outfall was used to discharge treated wastewater and the other was connected to floor drains in building 45-2.

Operation of the treatment plant ceased after the new RLW treatment facility was constructed at TA-50. D&D of SWMU 45-001 began in October 1966 and included demolition and removal of the treatment plant equipment, facilities, and waste lines, and excavation of contaminated soil. In September 1967, the TA-45 property was transferred to Los Alamos County.

45-002 (no date)

SWMU 45-002 consists of a former vehicle decontamination facility (former building 45-1), located adjacent to the TA-45 wastewater treatment plant, which was used to remove radioactive contamination from vehicles and large equipment, filters from the Sigma Building, trash dumpsters, and wing tanks from airplanes. SWMU 45-002 was located approximately 40 ft south of the TA-45 RLW treatment plant (SWMU 45-001). Vehicles and other equipment were decontaminated by steam cleaning. Decontamination wastewater was initially discharged to Acid Canyon, and later routed to the RLW treatment plant. The decontamination facility began operation in 1952 and was operated approximately once per month. The facility was decommissioned in 1966.

45-004 (no date)

SWMU 45-004 consists of a former sanitary sewer outfall. This outfall was associated with the sanitary sewer system that was constructed at TA-45 in 1947 to serve the Los Alamos townsite. This sewer system included a sanitary sewer lift station (structure 45-3) and sanitary sewer manholes (structures 45-5 and 45-6). The outfall was located north of the lift station, approximately 100 ft north of the TA-45 treatment plant (SWMU 45-001), and was used for emergency discharge of overflow. The outfall discharged into a drainage channel leading into Acid Canyon. The sanitary sewer system was transferred to Los Alamos County in 1967.

8.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 8.2-1.

Table 8.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
01-002(b)-00	Outfall associated with TA-01	Plutonium, uranium, americium, thorium, tritium, cesium-137, strontium-90, metals
45-001	Soil contamination from former RLW treatment plant	Plutonium, uranium, americium, thorium, tritium, cesium-137, strontium-90
45-002	Soil contamination from former decontamination facility	Radionuclides
45-004	Sanitary sewer outfall	Inorganic and organic chemicals

8.3 Consent Order Soil Data

Decision-level data for SWMU 01-002(b)-00 consist of results from samples collected in 1999, 2000 and 2001. Analytical results from those samples are presented in Figures 8.3-1 through 8.3-5). The 2002 IA completion report concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted (LANL 2002, 073660).

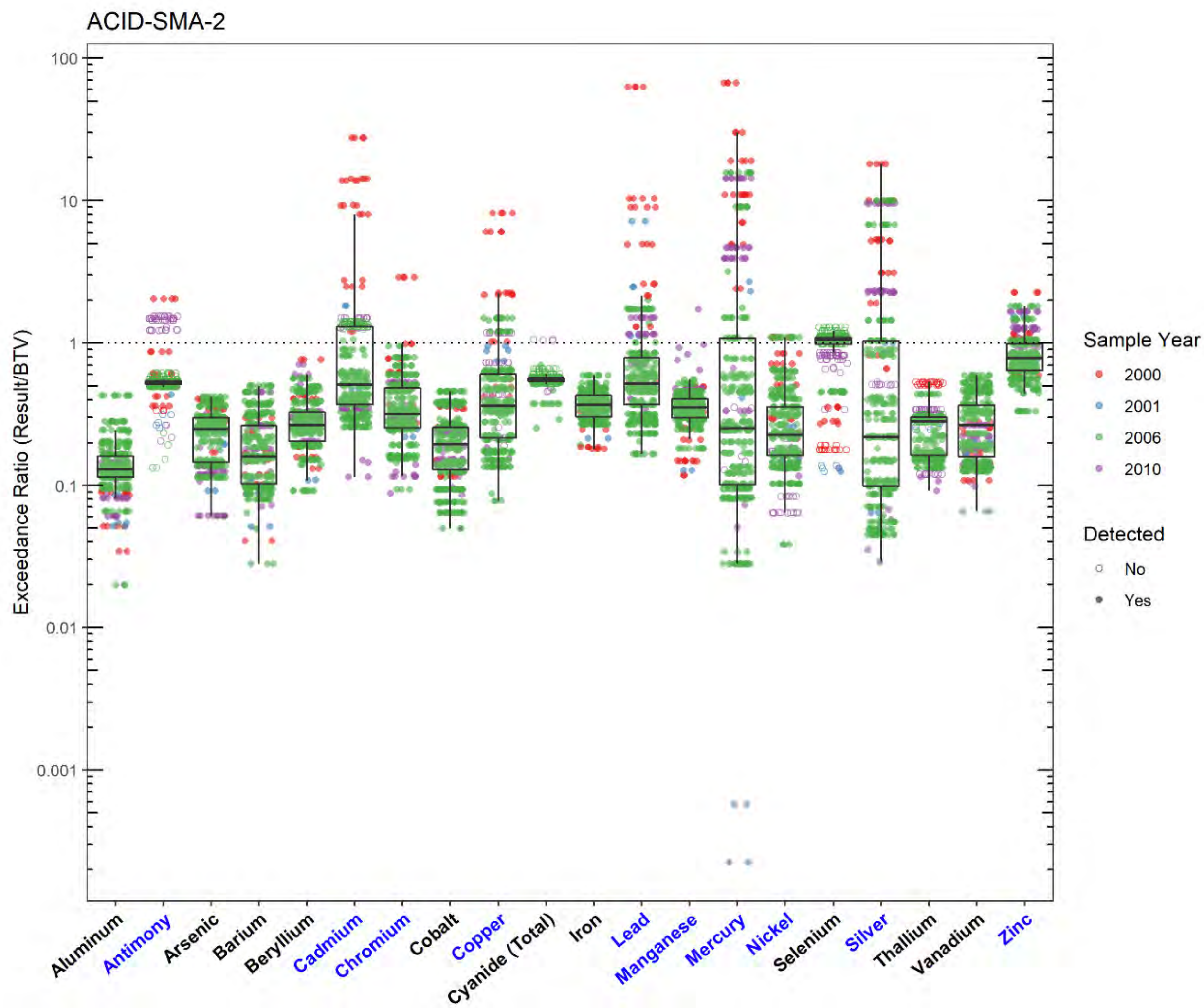

Figure 8.3-1 Inorganics Analytical Results from Soil Samples Associated with ACID-SMA-2

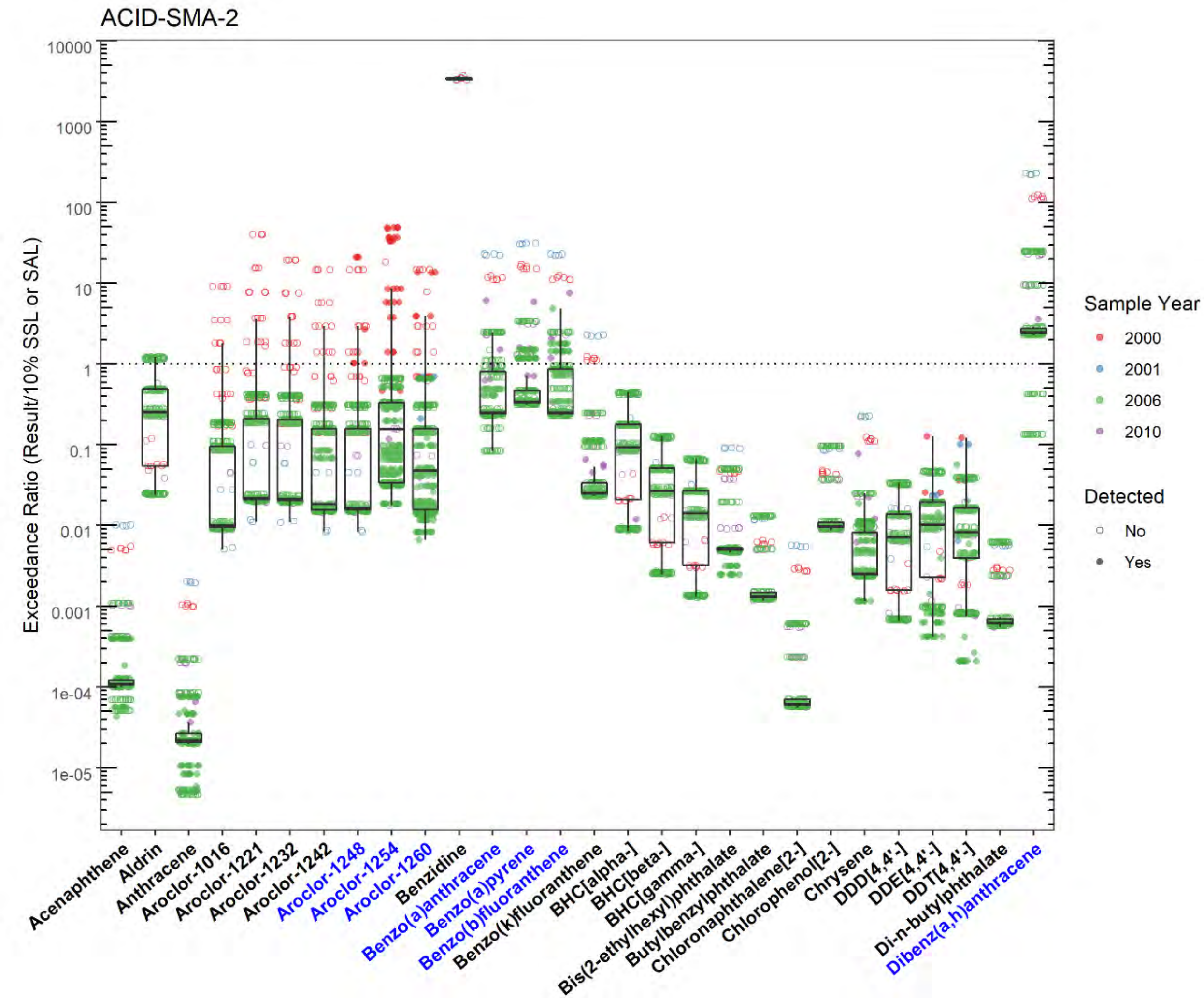

Figure 8.3-2 Organics and Radionuclides Analytical Results from Soil Samples Associated with ACID-SMA-2 (Plot 1)

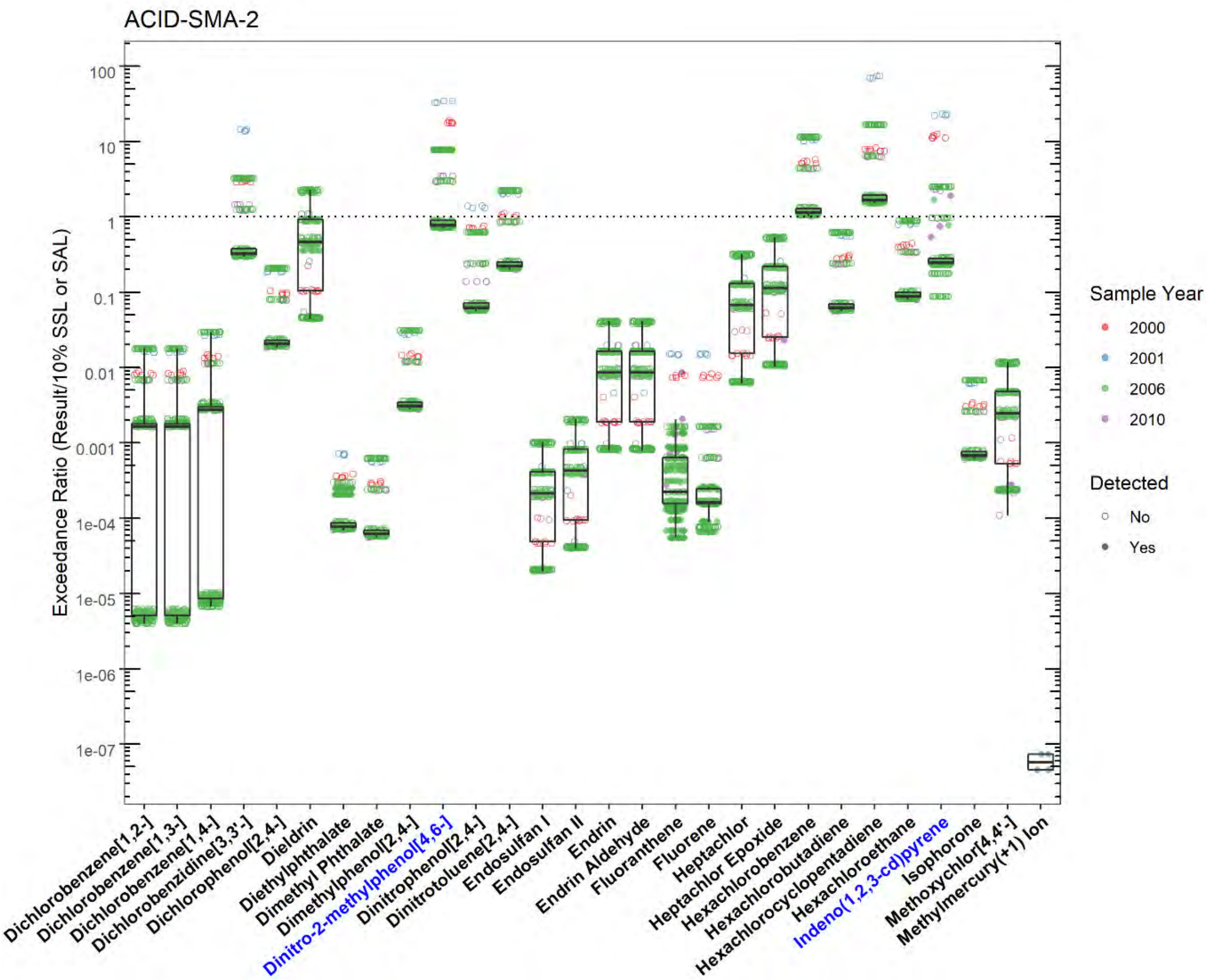

Figure 8.3-3 Organics and Radionuclides Analytical Results from Soil Samples Associated with ACID-SMA-2 (Plot 2)

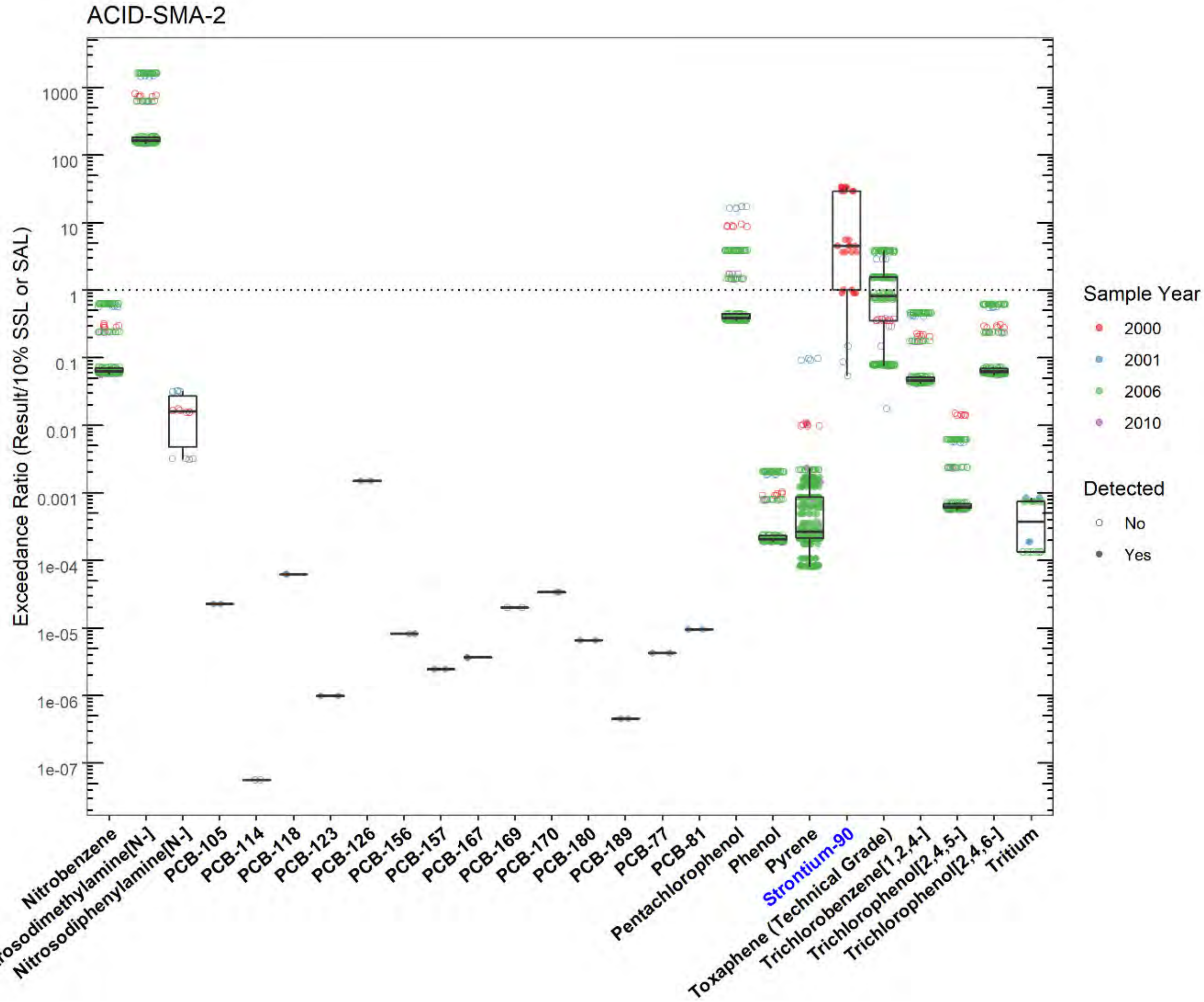

Figure 8.3-4 Organics and Radionuclides Analytical Results from Soil Samples Associated with ACID-SMA-2 (Plot 3)

ACID-SMA-2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	ACID-SMA-2	Sb	Y	BTV	0.830	1.70	2000-08-31
Aroclor-1248	ACID-SMA-2	12672-29-6	Y	SSL_0.1	0.243	5.10	2000-09-11
Aroclor-1254	ACID-SMA-2	11097-69-1	Y	SSL_0.1	0.114	5.60	2000-08-31
Aroclor-1260	ACID-SMA-2	11096-82-5	Y	SSL_0.1	0.243	3.30	2000-09-11
Benzo(a)anthracene	ACID-SMA-2	56-55-3	Y	SSL_0.1	0.153	0.934	2010-03-01
Benzo(a)pyrene	ACID-SMA-2	50-32-8	Y	SSL_0.1	0.112	0.657	2010-03-01
Benzo(b)fluoranthene	ACID-SMA-2	205-99-2	Y	SSL_0.1	0.153	1.15	2010-03-01
Cadmium	ACID-SMA-2	Cd	Y	BTV	0.400	11.0	2000-08-31
Chromium	ACID-SMA-2	Cr	Y	BTV	19.3	56.0	2000-08-31
Copper	ACID-SMA-2	Cu	Y	BTV	14.7	120	2000-08-31
Dibenz(a,h)anthracene	ACID-SMA-2	53-70-3	Y	SSL_0.1	0.0153	0.0549	2010-03-01
Dinitro-2-methylphenol[4,6-]	ACID-SMA-2	534-52-1	Y	SSL_0.1	0.493	3.79	2006-07-25
Indeno(1,2,3-cd)pyrene	ACID-SMA-2	193-39-5	Y	SSL_0.1	0.153	0.291	2010-03-01
Lead	ACID-SMA-2	Pb	Y	BTV	22.3	1400	2000-08-31
Manganese	ACID-SMA-2	Mn	Y	BTV	671	1160	2010-03-01
Mercury	ACID-SMA-2	Hg	Y	BTV	0.100	6.70	2000-08-31
Nickel	ACID-SMA-2	Ni	Y	BTV	15.4	17.0	2000-08-31; 2006-08-17
Silver	ACID-SMA-2	Ag	Y	BTV	1.00	18.0	2000-08-31
Strontium-90	ACID-SMA-2	Sr-90	Y	SAL_0.1	1.50	50.2	2000-08-31
Zinc	ACID-SMA-2	Zn	Y	BTV	48.8	110	2000-08-31

Figure 8.3-5 Screening-Level Exceedances from Soil Samples Associated with ACID-SMA-2

8.4 Stormwater Evaluation

8.4.1 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 2017. Analytical results from these samples are presented in Figures 8.4-1 through 8.4-4.

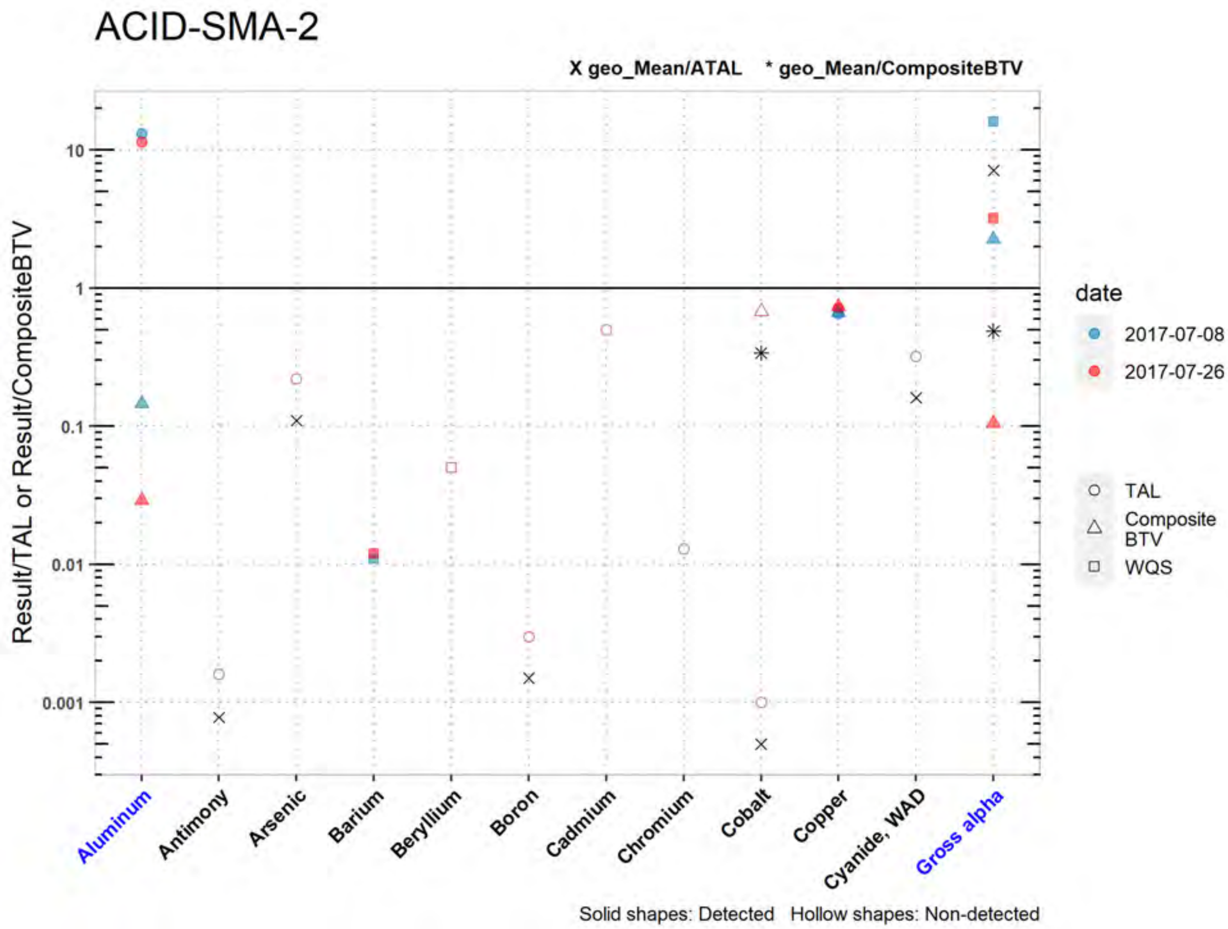

Figure 8.4-1 Analytical Results from Stormwater Samples, ACID-SMA-2 (Plot 1)

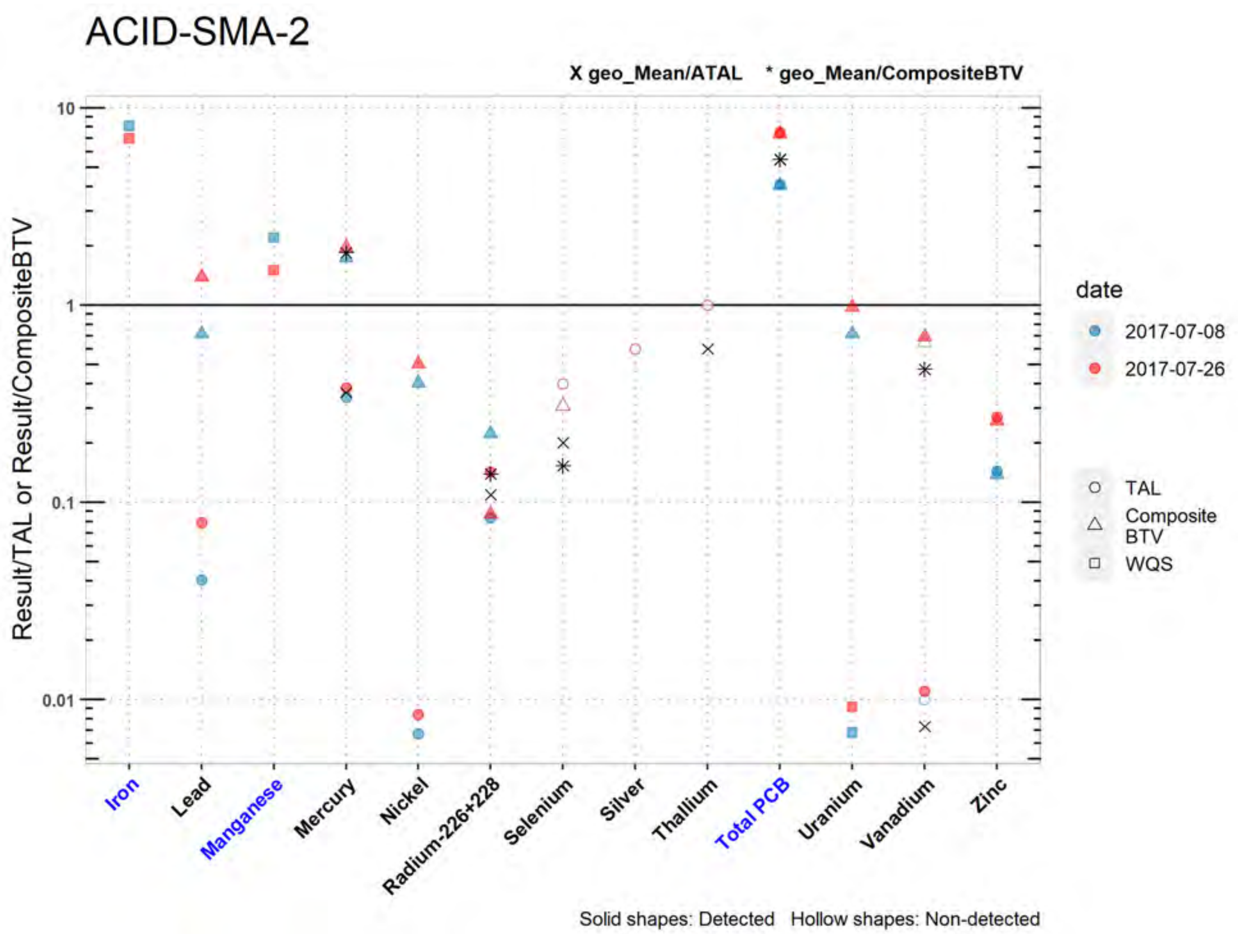

Figure 8.4-2 Analytical Results from Stormwater Samples, ACID-SMA-2 (Plot 2)

ACID-SMA-2

	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	765	NA	340	NA	NA	NA	0.65	233	NA	4.8	22	NA
Composite_BTV	36400	NA	NA	NA	NA	NA	NA	NA	1.48	4.74	NA	55.1
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*
2017-07-08 result	10000	*1.00*	*2.00*	21.4	*0.200*	*15.0*	*0.300*	*3.00*	*1.00*	3.14	*1.67*	236
2017-07-08 dT	13.1	NA	NA	0.011	NA	NA	NA	NA	NA	0.654	NA	16
2017-07-08 dB	0.145	NA	NA	NA	NA	NA	NA	NA	NA	0.662	NA	2.25
2017-07-26 result	8750	*1.00*	*2.00*	23.3	*0.200*	*15.0*	*0.300*	*3.00*	*1.00*	3.45	*1.67*	47.9
2017-07-26 dT	11.4	NA	NA	0.012	NA	NA	NA	NA	NA	0.719	NA	3.2
2017-07-26 dB	0.0290	NA	NA	NA	NA	NA	NA	NA	NA	0.728	NA	0.105
geo_mean/ATAL	NA	0.00078	0.11	NA	NA	0.0015	NA	NA	0.00050	NA	0.161	7.1
geo_mean/B	NA	NA	NA	NA	NA	NA	NA	NA	0.338	NA	NA	0.486

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 8.4-3 Analytical Results from Stormwater Samples, ACID-SMA-2 (Table 1)

ACID-SMA-2

	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	19.3	NA	NA	186	NA	20	0.49	NA	NA	NA	NA	59.2
Composite_BTV	NA	1.09	NA	0.151	3.10	5.91	6.52	NA	NA	0.0142	0.283	1.55	62.1
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
2017-07-08 result	8110	0.782	259	0.262	1.25	2.50	*2.00*	*0.300*	*0.600*	0.0573	0.203	*1.00*	8.55
2017-07-08 dT	8.1	0.0405	2.2	0.34	0.00672	0.0833	NA	NA	NA	4.1	0.0068	NA	0.144
2017-07-08 dB	NA	0.717	NA	1.74	0.403	0.223	NA	NA	NA	4.04	0.717	NA	0.138
2017-07-26 result	7040	1.52	177	0.296	1.56	4.26	*2.00*	*0.300*	*0.600*	0.105	0.276	1.07	16.0
2017-07-26 dT	7.0	0.0788	1.5	0.38	0.00839	0.142	NA	NA	NA	7.5	0.0092	0.011	0.270
2017-07-26 dB	NA	1.39	NA	1.96	0.503	0.0868	NA	NA	NA	7.39	0.975	0.690	0.258
geo_mean/ATAL	NA	NA	NA	0.36	NA	0.109	0.20	NA	0.6	5.5	NA	0.0073	NA
geo_mean/B	NA	NA	NA	1.84	NA	0.139	0.153	NA	NA	5.46	NA	0.472	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 8.4-4 Analytical Results from Stormwater Samples, ACID-SMA-2 (Table 2)

8.4.2 Assessment Unit and Stream Impairments

ACID-SMA-2 drains to South Fork Acid Canyon (Acid Canyon to headwaters), which has impairments for adjusted gross alpha, PCBs, and dissolved copper. The impairments may be Site-related, based on the Site history.

8.5 Site-Specific Demonstration

8.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, dinitro-2-methylphenol[4,6-], indeno(1,2,3-cd)pyrene, and strontium-90.

Antimony, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc exceeded the applicable screening value in soil data, but were below TALs in stormwater data. Therefore, they will not be added to the SAP.

Manganese exceeded the applicable screening value in soil data and exceeded the WQS; however, there is no TAL in the Permit for manganese. Only POCs with TALs are used in the SSD.

8.5.2 Stormwater Data Summary

Total aluminum and gross alpha results exceeded the TAL but not the BTV, therefore they will not be added to the SAP. Total PCBs in stormwater data exceeded both TALs and BTVs.

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

8.5.3 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.2.b.i) for PCBs. The SMA is also in active monitoring; not all Site-related POCs were analyzed for in past samples.

8.5.4 Sampling and Analysis Plan

Table 8.5-1 is the proposed SAP for ACID-SMA-2.

Table 8.5-1 Proposed SAP, ACID-SMA-2

Monitoring Constituent	Background for Monitoring
SVOCs	Site history and soil data
Strontium-90	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

9.0 ACID-SMA-2.01

Associated Sites	SWMU 00-030(f)
Receiving Water	Acid Canyon - Tributary to Pueblo Canyon
Drainage Area	0.02 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	AOC 00-030(f): In Progress
2010 Administratively Continued Permit Final Status	Extended Baseline Monitoring
2016–2018 SIP Actions	Based on the March 2018 SIP meeting, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

9.1 2010 Administratively Continued Permit Summary

Following the January 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.

9.2 Site History

00-030(f) (6/12/2017)

AOC 00-030(f) is a former septic system consisting of two parallel septic tanks of unequal size (also referred to as structure #5 in 1947 historical reports), located on private property south of Canyon Road and north of Rose Street, near the United Church school building in former TA-00. A 1943 engineering drawing labels the septic tanks “Septic Tank No. 2.” The tanks connected with sewer inlet drainlines in the “Apartment Area,” and received sanitary waste from a school, a post exchange, and some of the original Los Alamos Ranch School buildings; the septic system did not receive waste from formerTA-01 operations. The outlet drainline ran to the north under Canyon Road and then to the northwest to an outfall in upper Acid Canyon. The septic system was decommissioned when the CWWTP [SWMU 00-019] became operational in 1947. The outfall was not located until 2009. Currently, the two septic tanks are still partially in place and are located beneath existing sidewalks and a retaining wall in a heavily developed area.

For investigation activities refer to “Phase II Investigation Report for Pueblo Canyon Aggregate Area” (LANL 2010, 110864).

9.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 9.2-1.

Table 9.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
00-030(f)	Septic System	Metals and organic chemicals

9.3 Consent Order Soil Data

Decision-level data for AOC 00-030(f) consist of results from samples collected in 2006 and 2010. Analytical results from those samples are presented in Figures 9.3-1 through 9.3-4. The 2010 Phase II IR (LANL 2010, 110864) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

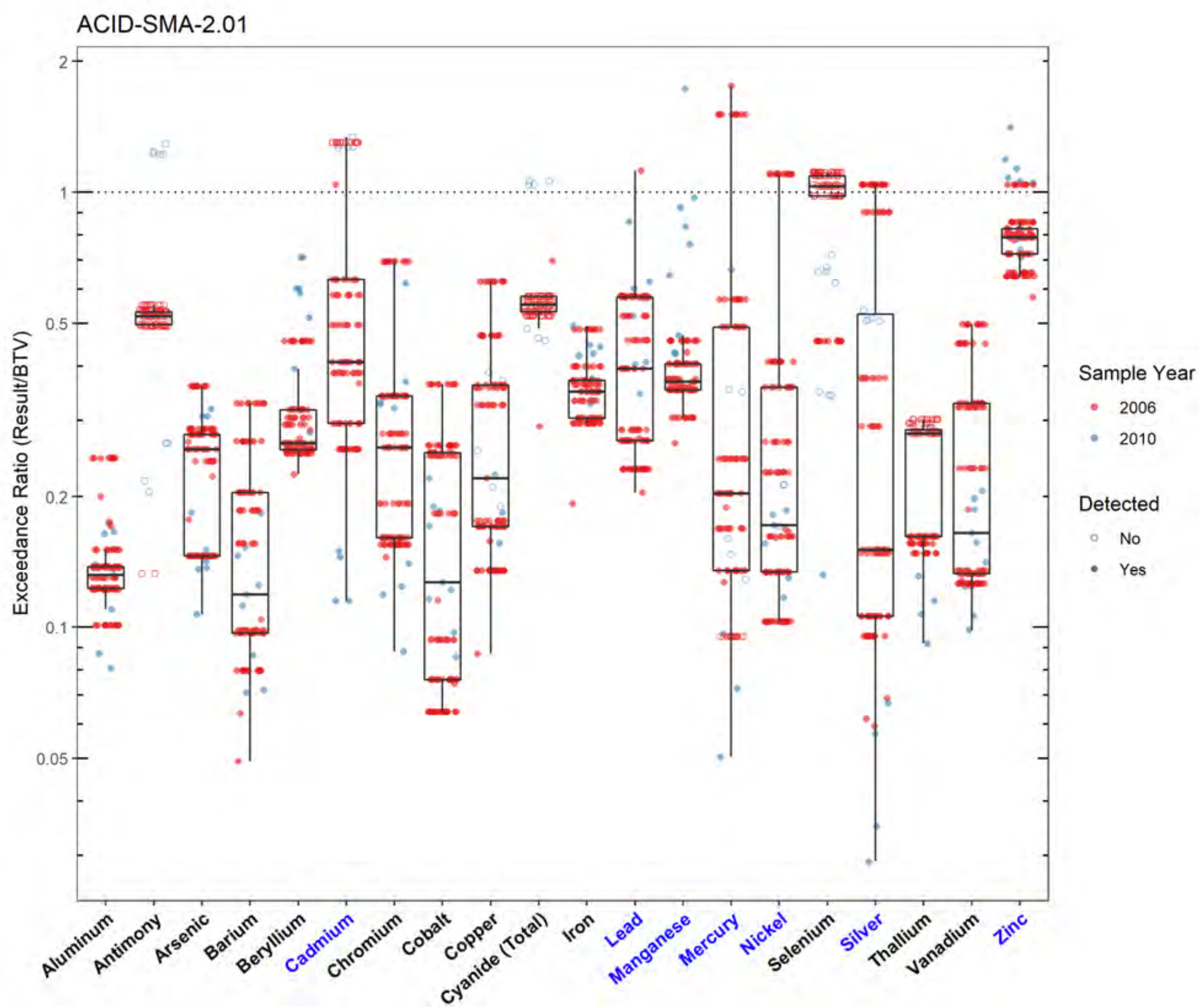

Figure 9.3-1 Inorganics Analytical Results from Soil Samples Associated with ACID-SMA-2.01

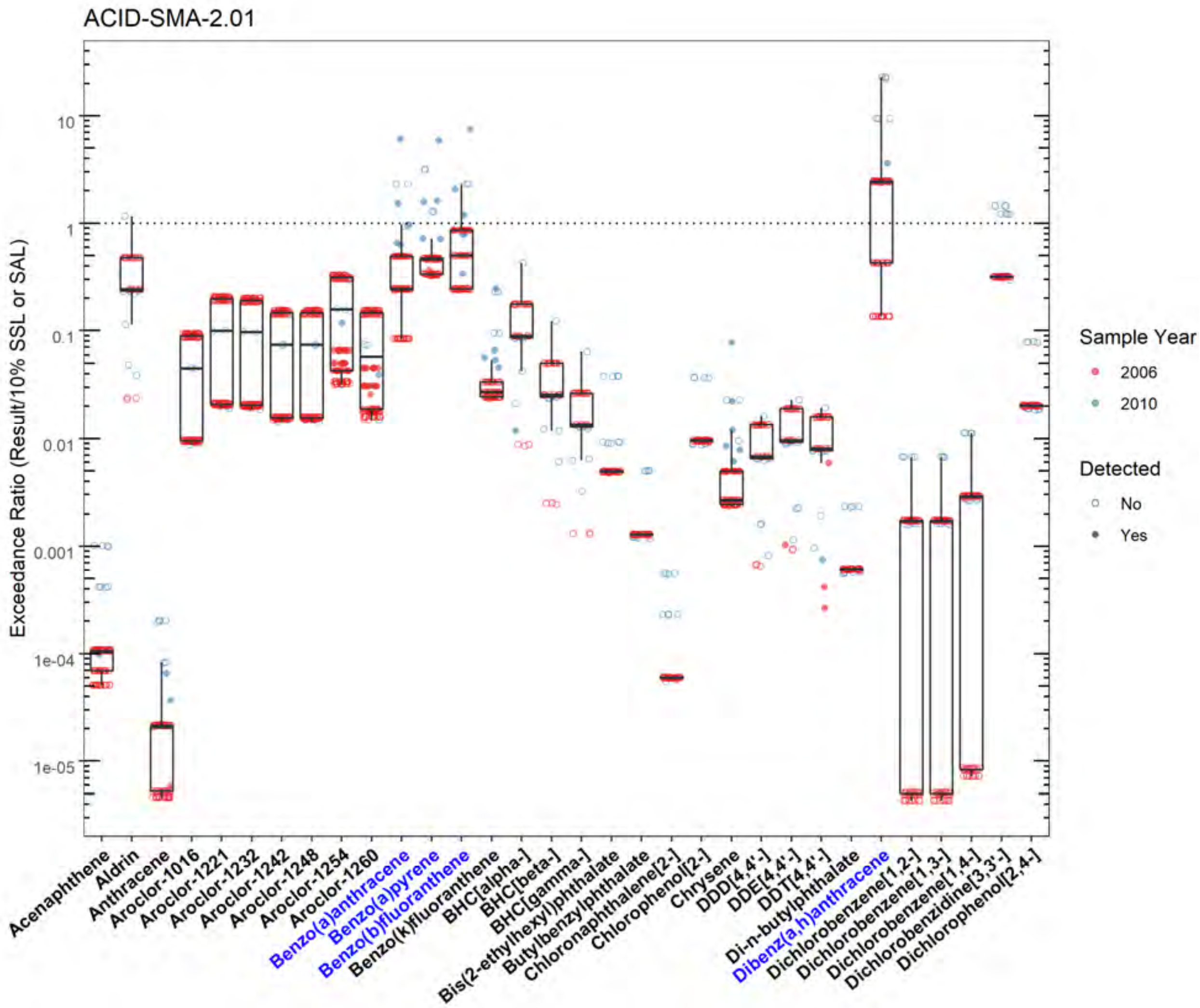

Figure 9.3-2 Organics Analytical Results from Soil Samples Associated with ACID-SMA-2.01 (Plot 1)

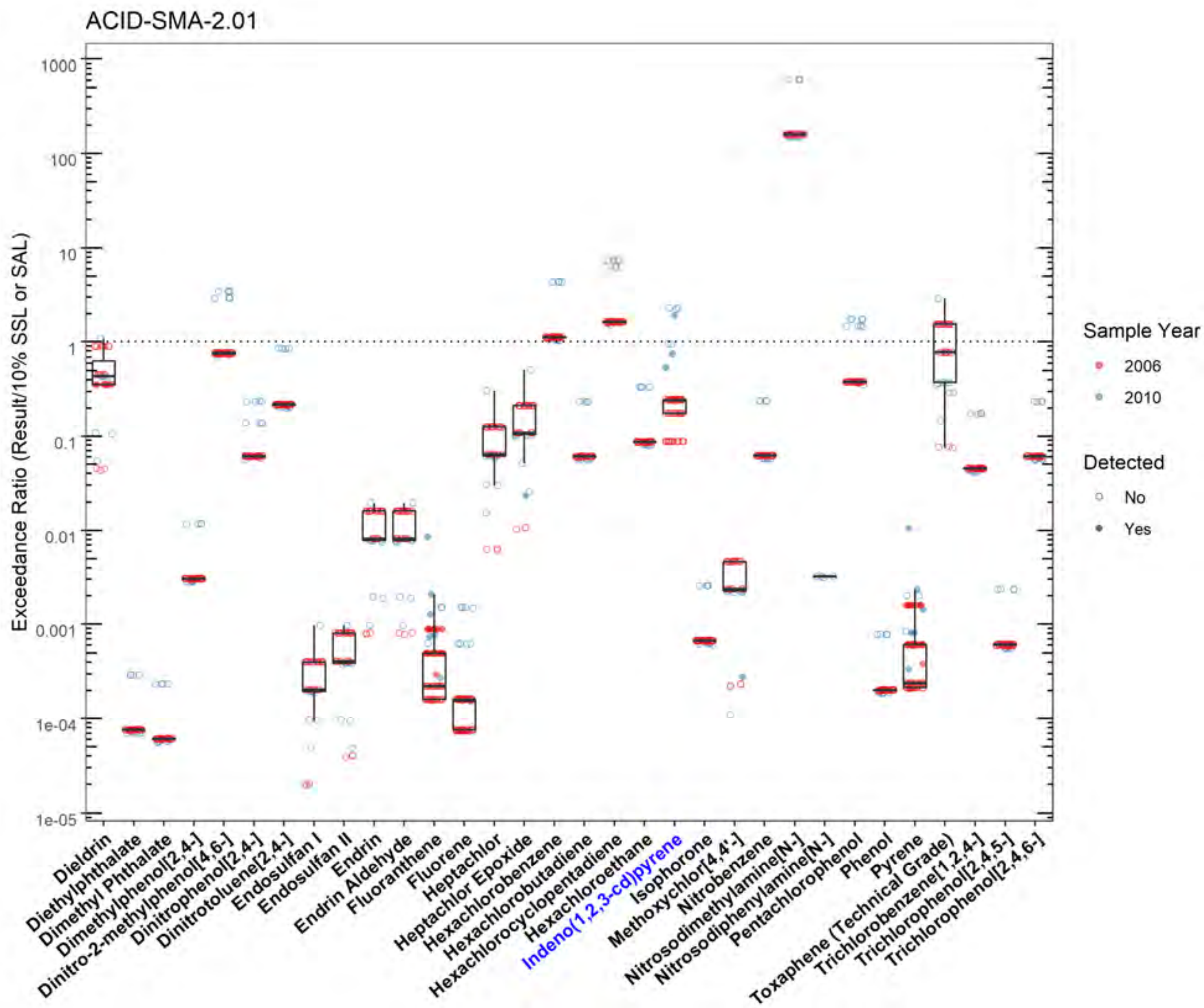

Figure 9.3-3 Organics Analytical Results from Soil Samples Associated with ACID-SMA-2.01 (Plot 2)

ACID-SMA-2.01

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	ACID-SMA-2.01	56-55-3	Y	SSL_0.1	0.153	0.934	2010-03-01
Benzo(a)pyrene	ACID-SMA-2.01	50-32-8	Y	SSL_0.1	0.112	0.657	2010-03-01
Benzo(b)fluoranthene	ACID-SMA-2.01	205-99-2	Y	SSL_0.1	0.153	1.15	2010-03-01
Cadmium	ACID-SMA-2.01	Cd	Y	BTV	0.400	0.415	2006-10-16
Dibenz(a,h)anthracene	ACID-SMA-2.01	53-70-3	Y	SSL_0.1	0.0153	0.0549	2010-03-01
Indeno(1,2,3-cd)pyrene	ACID-SMA-2.01	193-39-5	Y	SSL_0.1	0.153	0.291	2010-03-01
Lead	ACID-SMA-2.01	Pb	Y	BTV	22.3	25.0	2006-10-16
Manganese	ACID-SMA-2.01	Mn	Y	BTV	671	1160	2010-03-01
Mercury	ACID-SMA-2.01	Hg	Y	BTV	0.100	0.176	2006-10-16
Nickel	ACID-SMA-2.01	Ni	Y	BTV	15.4	17.0	2006-08-17
Silver	ACID-SMA-2.01	Ag	Y	BTV	1.00	1.04	2006-07-25
Zinc	ACID-SMA-2.01	Zn	Y	BTV	48.8	68.7	2010-06-28

Figure 9.3-4 Screening-Level Exceedances from Soil Samples Assoicated with ACID-SMA-2.01

9.4 Stormwater Evaluation

9.4.1 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.

9.4.2 Assessment Unit and Stream Impairments

ACID-SMA-2.01 drains to South Fork Acid Canyon (Acid Canyon to headwaters) which has impairments for adjusted gross alpha, PCBs, and dissolved copper. The copper and PCBs impairments may be Site-related, based on the Site history.

9.5 Site-Specific Demonstration

9.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, cadmium, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, lead, manganese, mercury, nickel, silver, and zinc.

9.5.2 Stormwater Data Summary

No confirmation-monitoring data.

9.5.3 2022 Permit Status

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

9.5.4 Sampling and Analysis Plan

Table 9.5-1 is the proposed SAP for ACID-SMA-2.01.

Table 9.5-1 Proposed SAP, ACID-SMA-2.01

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

10.0 ACID-SMA-2.1

Associated Sites	SWMU 01-002(b)-00
Receiving Water	Acid Canyon - Tributary to Pueblo Canyon
Drainage Area	263.08 acres
Landscape Characteristics	21% pervious, 79% impervious
Consent Order Site Status	SWMU 01-002(b)-00: Pending Receipt of Certificate of Completion
2010 Administratively Continued AC Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the field visit in December 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/Corrective Action

10.1 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 2012. Analytical results from this sample initiated corrective action.

Following the October 2016 certification to EPA of enhanced control installation as a corrective action (LANL 2016, 601865.2), corrective action stormwater samples were collected in November 2016 and August 2017. 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 April 2019 (N3B 2019, 700401). No response has been received from EPA, and stormwater monitoring has not occurred since 2017.

10.2 Site History

01-002(b)-00 (6/12/2017)

SWMU 01-002(b)-00 consists of a former TA-01 industrial waste line outfall and drainage area in Acid Canyon. The outfall was located within the boundaries of TA-45, at the head of a small branch of Acid Canyon known as the south fork of Acid Canyon. Untreated RLW generated in laboratories and research facilities in former TA-01 was discharged to this outfall from 1943 until 1951. During this time, approximately 4.8 million gal. of untreated RLW per yr were discharged to the SWMU 01-002(b)-00 outfall. Average plutonium concentrations in the RLW ranged from 1000 to 10,000 pCi/L, resulting in a total estimated discharge of 1.9 g of plutonium. Discharges of untreated RLW ceased when the TA-45 RLW treatment plant began operation in 1951. However, releases of treated RLW continued until 1964.

In 1966, the SWMU 01-002(b)-00 outlet drainline, associated weir box, and contaminated tuff around the outfall and from the canyon cliff and drainage below the outfall, were removed and disposed of at TA-54 as part of the decontamination and demolition of the TA-45 RLW treatment plant. The TA-45 property was transferred to Los Alamos County in September 1967. In 1985, the last remnants of the industrial waste line between TA-01 and the SWMU 01-002(b)-00 outfall were removed and disposed of at TA-54. SWMU 01-002(b)-00 was part of SWMU 01-002, which was split into two units, SWMUs 01-002(a)-00 and 01-002(b)-00, in 2000.

For investigation activities, refer to “Phase II Investigation Report for Pueblo Canyon Aggregate Area” (LANL 2010, 110864).

10.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 10.2-1.

Table 10.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
01-002(b)-00	Outfall associated with TA-01	Plutonium, uranium, americium, thorium, tritium, cesium-137, strontium-90, metals

10.3 Consent Order Soil Data

Decision-level data for SWMU 01-002(b)-00 consist of results from samples collected in 1999, 2000, and 2001. Analytical results from those samples are presented in Figures 10.3-1 through 10.3-5. The 2002 IA completion report concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

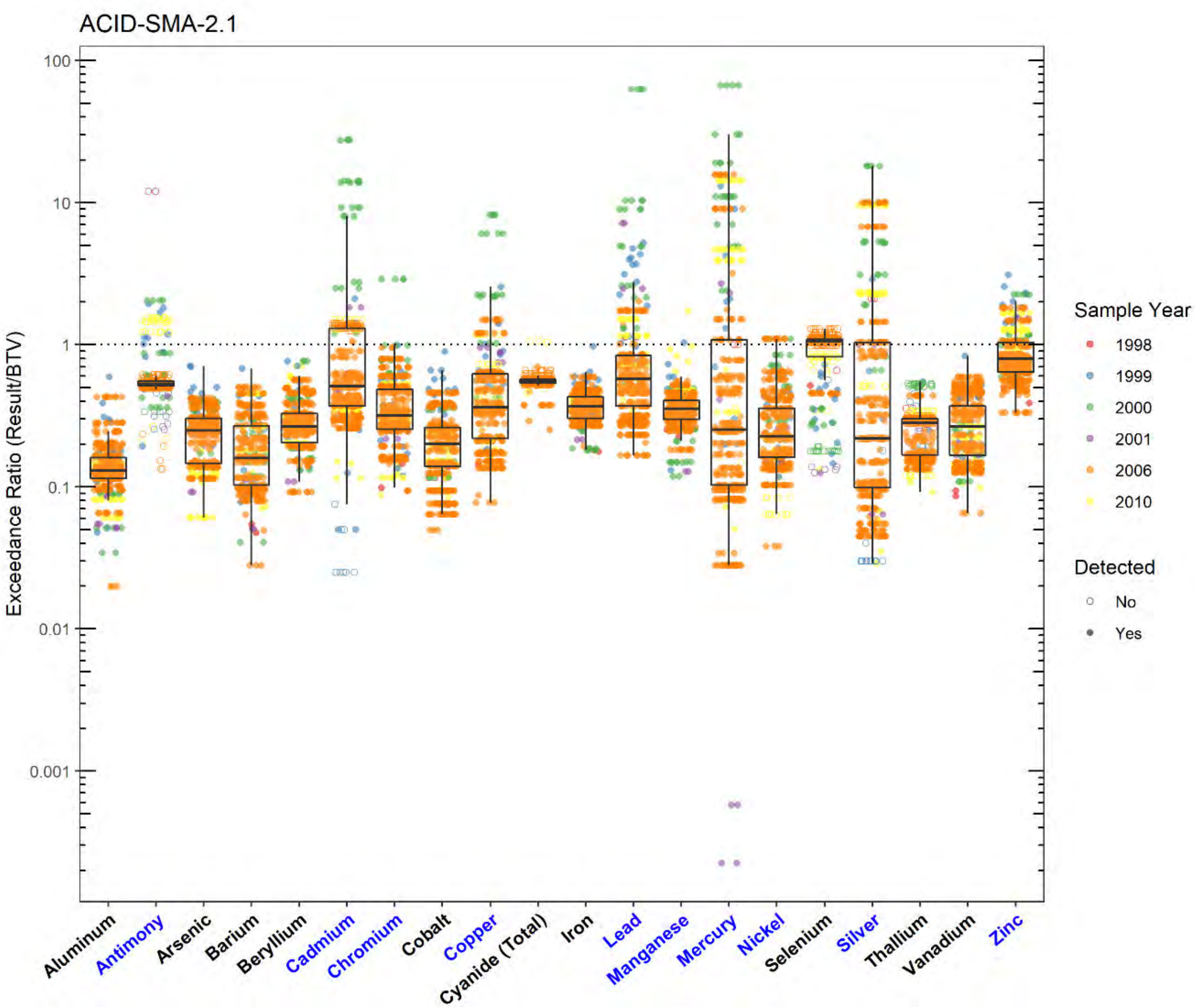

Figure 10.3-1 Inorganics Analytical Results from Soil Samples Associated with ACID-SMA-2.1

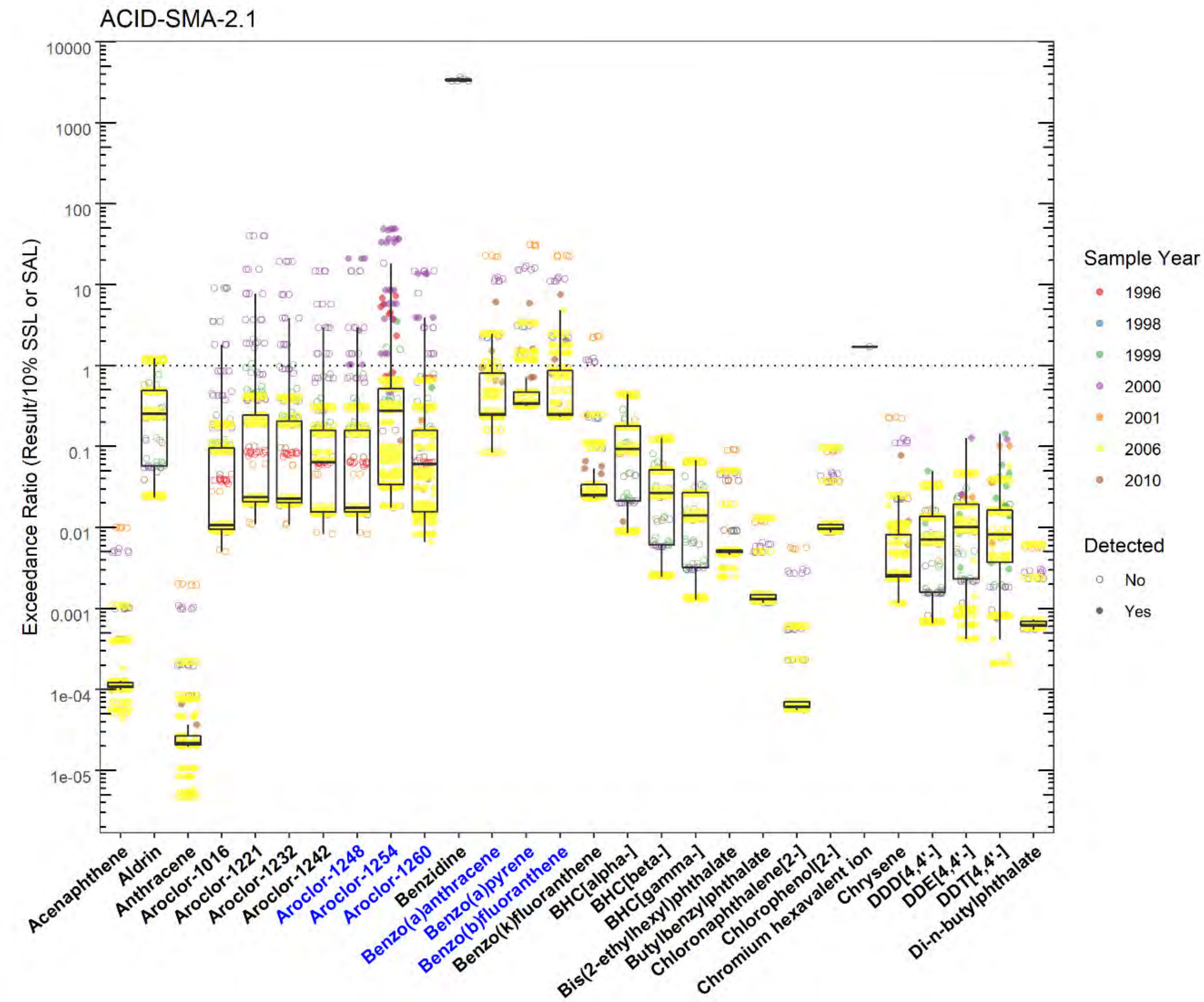

Figure 10.3-2 Organics Analytical Results from Soil Samples Assoicated with ACID-SMA-2.1 (Plot 1)

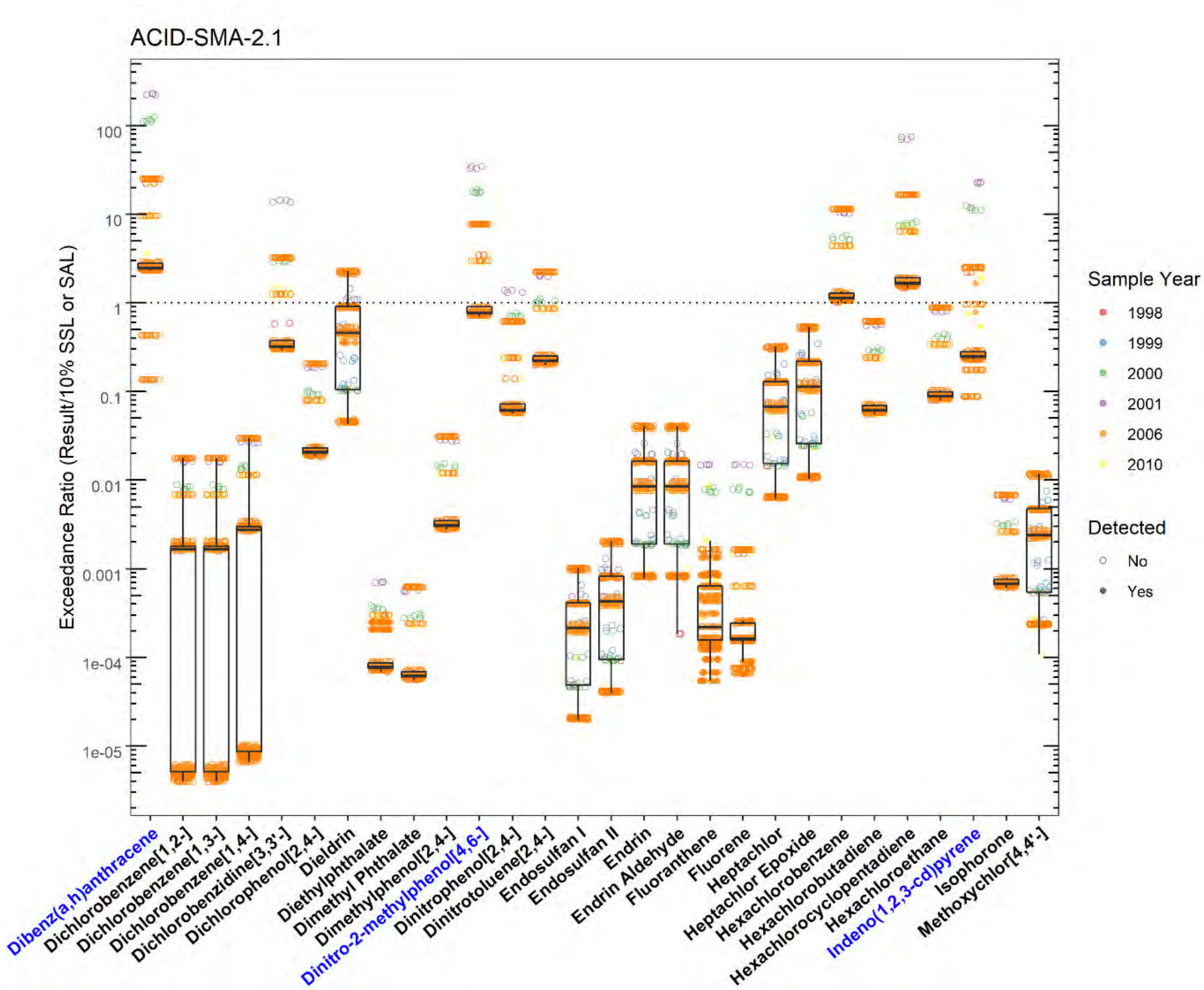

Figure 10.3-3 Organics Analytical Results from Soil Samples Associated with ACID-SMA-2.1 (Plot 2)

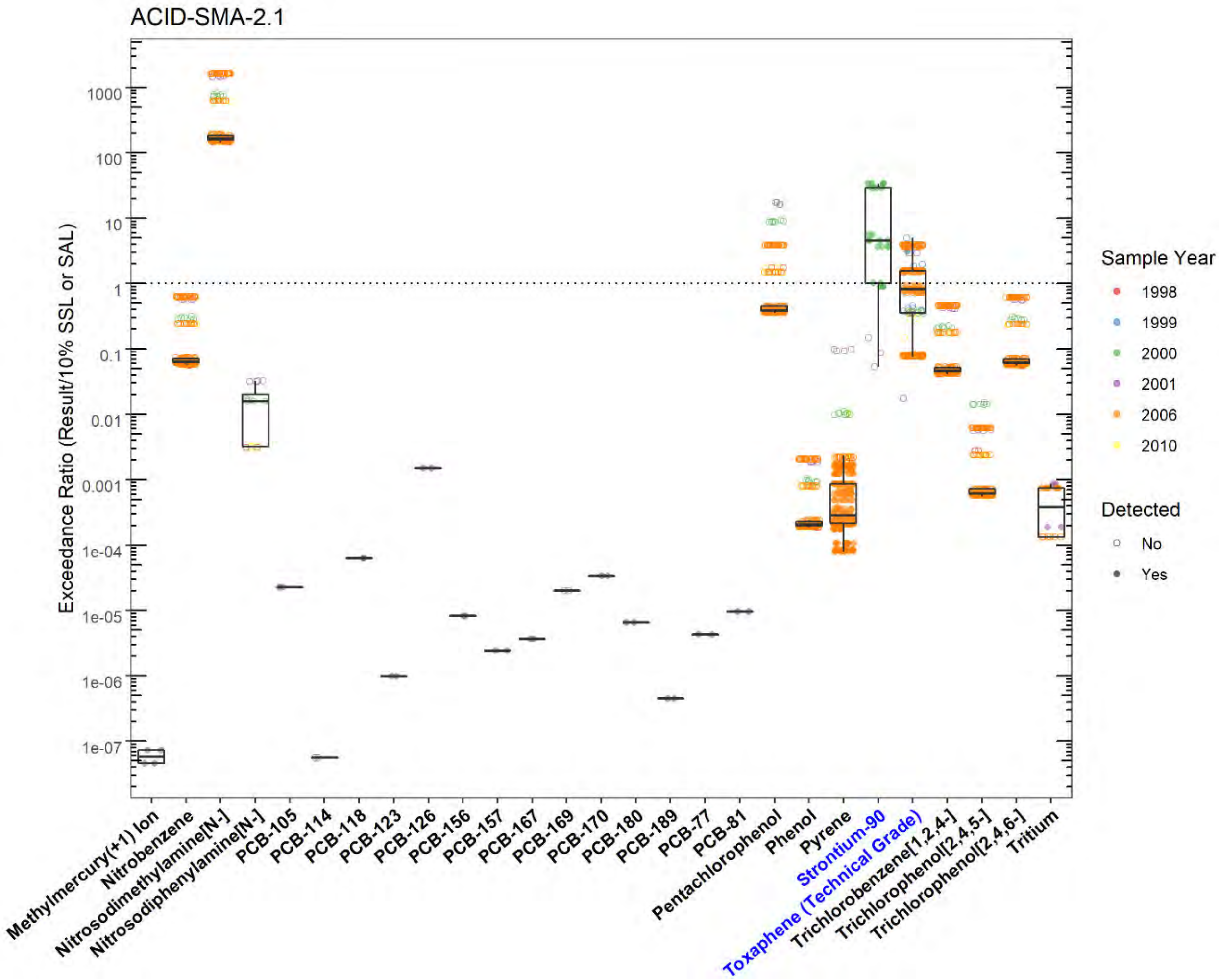

Figure 10.3-4 Organics Analytical Results from Soil Samples Associated with ACID-SMA-2.1 (Plot 3)

ACID-SMA-2.1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	ACID-SMA-2.1	Sb	Y	BTV	0.830	1.70	2000-08-31
Aroclor-1248	ACID-SMA-2.1	12672-29-6	Y	SSL_0.1	0.243	5.10	2000-09-11
Aroclor-1254	ACID-SMA-2.1	11097-69-1	Y	SSL_0.1	0.114	5.60	2000-08-31
Aroclor-1260	ACID-SMA-2.1	11096-82-5	Y	SSL_0.1	0.243	3.30	2000-09-11
Benzo(a)anthracene	ACID-SMA-2.1	56-55-3	Y	SSL_0.1	0.153	0.934	2010-03-01
Benzo(a)pyrene	ACID-SMA-2.1	50-32-8	Y	SSL_0.1	0.112	0.657	2010-03-01
Benzo(b)fluoranthene	ACID-SMA-2.1	205-99-2	Y	SSL_0.1	0.153	1.15	2010-03-01
Cadmium	ACID-SMA-2.1	Cd	Y	BTV	0.400	11.0	2000-08-31
Chromium	ACID-SMA-2.1	Cr	Y	BTV	19.3	56.0	2000-08-31
Copper	ACID-SMA-2.1	Cu	Y	BTV	14.7	120	2000-08-31
Dibenz(a,h)anthracene	ACID-SMA-2.1	53-70-3	Y	SSL_0.1	0.0153	0.0549	2010-03-01
Dinitro-2-methylphenol[4,6-]	ACID-SMA-2.1	534-52-1	Y	SSL_0.1	0.493	3.79	2006-07-25
Indeno(1,2,3-cd)pyrene	ACID-SMA-2.1	193-39-5	Y	SSL_0.1	0.153	0.291	2010-03-01
Lead	ACID-SMA-2.1	Pb	Y	BTV	22.3	1400	2000-08-31
Manganese	ACID-SMA-2.1	Mn	Y	BTV	671	1160	2010-03-01
Mercury	ACID-SMA-2.1	Hg	Y	BTV	0.100	6.70	2000-08-31
Nickel	ACID-SMA-2.1	Ni	Y	BTV	15.4	17.0	2000-08-31; 2006-08-17
Silver	ACID-SMA-2.1	Ag	Y	BTV	1.00	18.0	2000-08-31
Strontium-90	ACID-SMA-2.1	Sr-90	Y	SAL_0.1	1.50	50.2	2000-08-31
Toxaphene (Technical Grade)	ACID-SMA-2.1	8001-35-2	Y	SSL_0.1	0.484	1.50	1999-09-29
Zinc	ACID-SMA-2.1	Zn	Y	BTV	48.8	152	1999-05-04

Figure 10.3-5 Screening-Level Exceedances from Soil Samples Associted with ACID-SMA-2.1

10.4 Stormwater Evaluation

10.4.1 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 November 2016 and August 2017. Analytical results from those samples are presented in Figures 10.4-1 through 10.4-4.

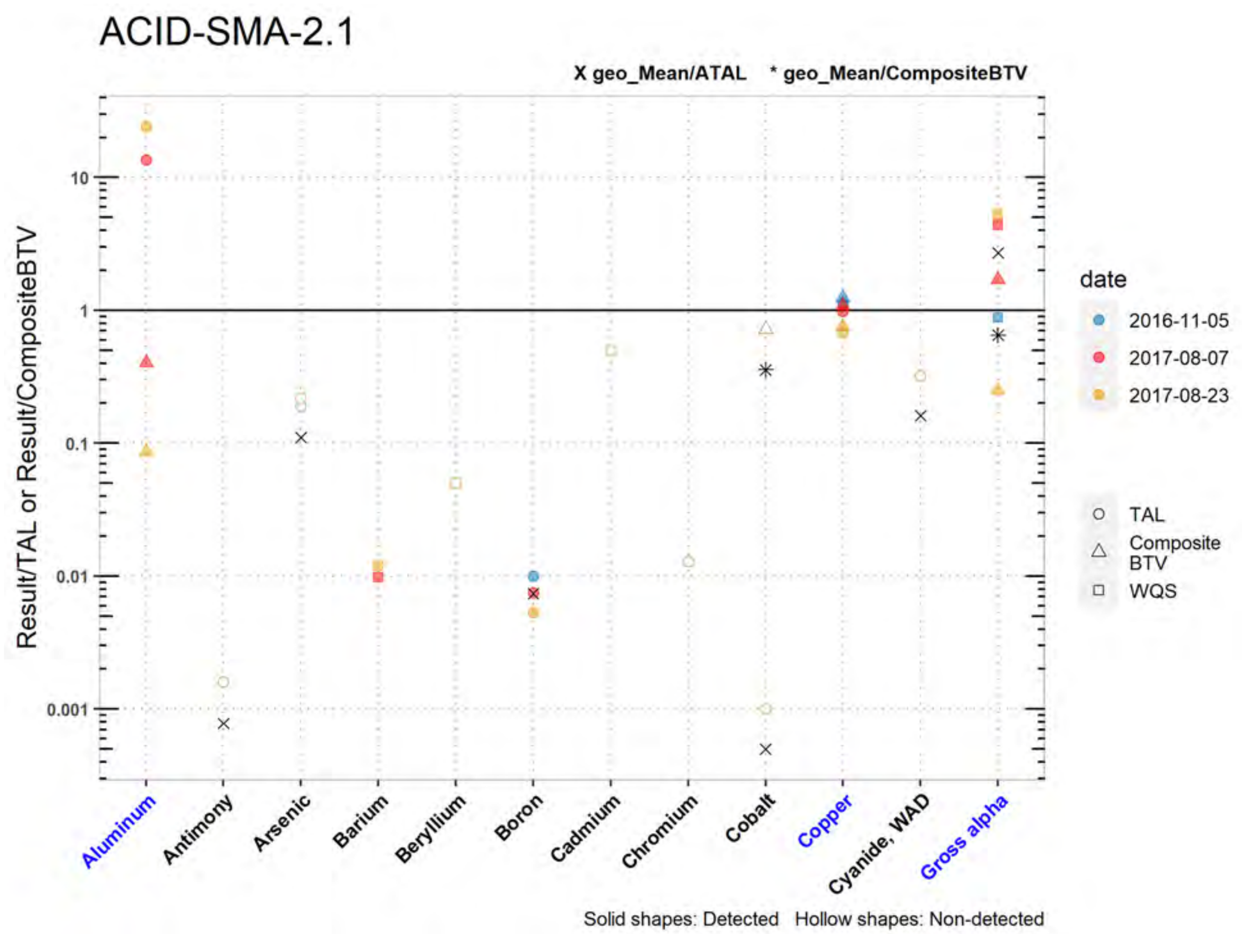

Figure 10.4-1 Analytical Results from Stormwater Samples, ACID-SMA-2.1 (Plot 1)

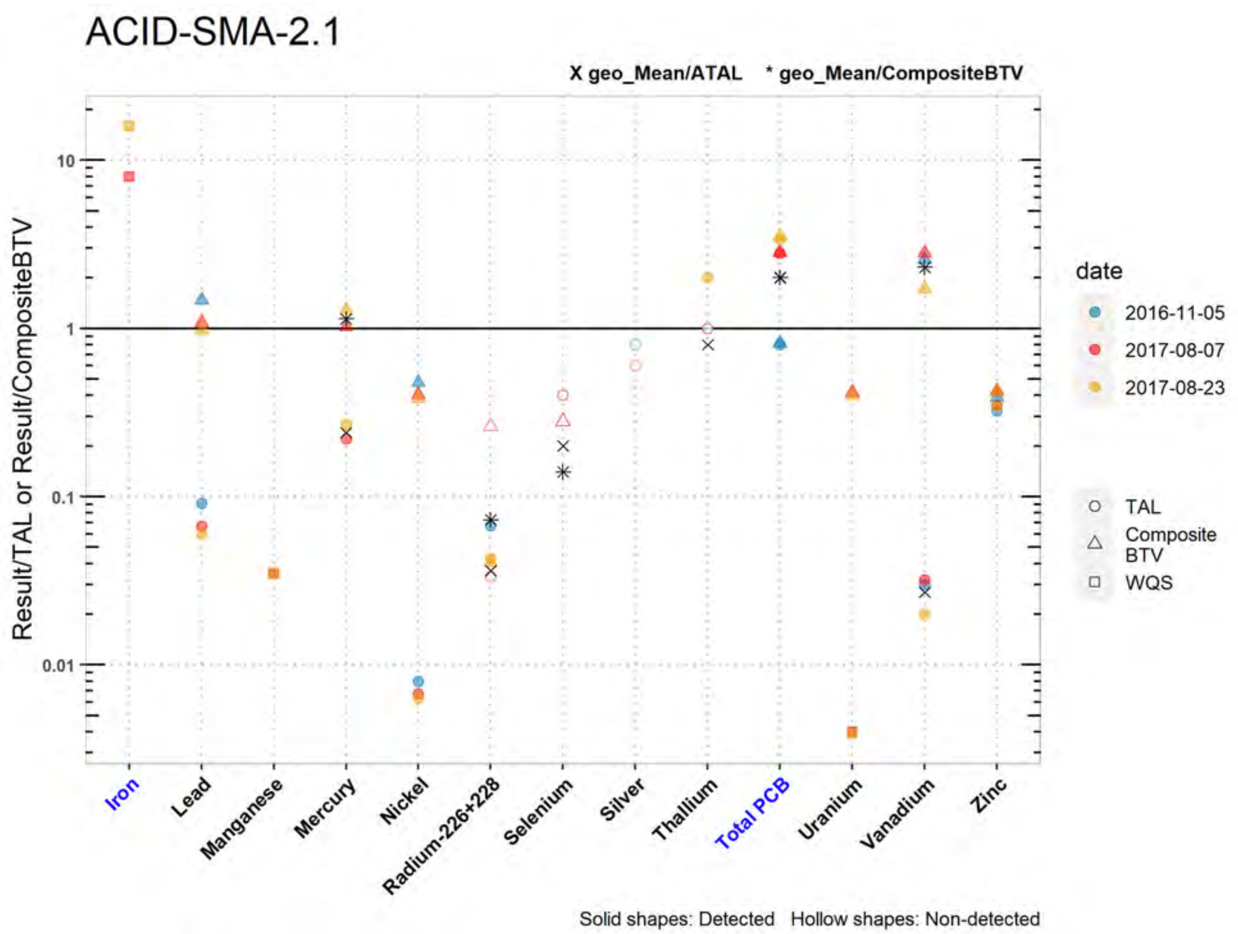

Figure 10.4-2 Analytical Results from Stormwater Samples, ACID-SMA-2.1 (Plot 2)

ACID-SMA-2.1

	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	765	NA	340	NA	NA	NA	0.65	233	NA	4.8	22	NA
Composite_BTV	36700	NA	NA	NA	NA	NA	NA	NA	1.40	4.33	NA	55.6
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*
2016-11-05 result	NA	*1.00*	*1.70*	NA	NA	50.4	*0.300*	*3.00*	*1.00*	5.36	*1.67*	13.2
2016-11-05 dT	NA	NA	NA	NA	NA	0.010	NA	NA	NA	1.12	NA	0.88
2016-11-05 dB	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.24	NA	NA
2017-08-07 result	10300	*1.00*	*2.00*	19.7	*0.200*	37.4	*0.300*	*3.00*	*1.00*	4.69	*1.67*	66.1
2017-08-07 dT	13.5	NA	NA	0.0098	NA	0.0075	NA	NA	NA	0.977	NA	4.4
2017-08-07 dB	0.401	NA	NA	NA	NA	NA	NA	NA	NA	1.08	NA	1.70
2017-08-23 result	18400	*1.00*	*2.00*	23.3	*0.200*	26.4	*0.300*	*3.00*	*1.00*	3.27	*1.67*	80.2
2017-08-23 dT	24.1	NA	NA	0.012	NA	0.0053	NA	NA	NA	0.681	NA	5.3
2017-08-23 dB	0.0864	NA	NA	NA	NA	NA	NA	NA	NA	0.755	NA	0.249
geo_mean/ATAL	NA	0.00078	0.11	NA	NA	0.0074	NA	NA	0.00050	NA	0.161	2.7
geo_mean/B	NA	NA	NA	NA	NA	NA	NA	NA	0.357	NA	NA	0.650

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 10.4-3 Analytical Results from Stormwater Samples, ACID-SMA-2.1 (Table 1)

ACID-SMA-2.1

	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	19.3	NA	NA	186	NA	20	0.49	NA	NA	NA	NA	59.2
Composite_BTV	NA	1.19	NA	0.165	3.10	5.48	7.14	NA	NA	0.0137	0.291	1.16	49.0
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
2016-11-05 result	NA	1.76	NA	NA	1.48	2.01	*2.00*	*0.400*	*0.600*	0.0112	NA	2.99	19.1
2016-11-05 dT	NA	0.0912	NA	NA	0.00796	0.0670	NA	NA	NA	0.80	NA	0.030	0.323
2016-11-05 dB	NA	1.48	NA	NA	0.477	NA	NA	NA	NA	0.818	NA	2.58	0.390
2017-08-07 result	8040	1.29	4.25	0.168	1.25	*1.00*	*2.00*	*0.300*	*0.600*	0.0387	0.121	3.25	20.8
2017-08-07 dT	8.0	0.0668	0.035	0.22	0.00672	NA	NA	NA	NA	2.8	0.0040	0.032	0.351
2017-08-07 dB	NA	1.08	NA	1.02	0.403	NA	NA	NA	NA	2.82	0.416	2.80	0.424
2017-08-23 result	16300	1.16	4.18	0.211	1.18	1.29	*2.00*	*0.300*	0.708	0.0482	0.116	1.99	20.6
2017-08-23 dT	16	0.0601	0.035	0.27	0.00634	0.0430	NA	NA	2	3.4	0.0039	0.020	0.348
2017-08-23 dB	NA	0.975	NA	1.28	0.381	0.0406	NA	NA	NA	3.52	0.399	1.72	0.420
geo_mean/ATAL	NA	NA	NA	0.24	NA	0.0363	0.20	NA	0.8	2.0	NA	0.027	NA
geo_mean/B	NA	NA	NA	1.14	NA	0.0727	0.140	NA	NA	2.01	NA	2.31	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 10.4-4 Analytical Results from Stormwater Samples, ACID-SMA-2.1 (Table 2)

10.4.2 Assessment Unit and Stream Impairments

ACID-SMA-2.1 drains to Acid Canyon (Pueblo Canyon to headwaters), which has impairments for adjusted gross alpha, PCBs, total recoverable aluminum, and dissolved copper. The adjusted gross alpha and metals impairments may be Site-related, based on the Site history.

10.5 Site-Specific Demonstration

10.5.1 Soil Data Summary

Strontium-90 is the only Site-related POC that exceeded the applicable screening value in soil data and has not yet been measured in stormwater.

Toxaphene exceeded the applicable screening value in soil data but is not a Site-related POC and will not be added to the SAP.

Antimony, cadmium, chromium, lead, manganese, mercury, nickel, silver, and zinc exceeded the applicable screening value in soil data, but were previously monitored in stormwater data and did not exceed TALs. Therefore, they will not be added to the SAP.

Copper exceeded the applicable screening value in soil data and exceeded the TAL and BTV in stormwater data, Aroclor-1248, Aroclor-1254, and Aroclor-1260 exceeded the applicable screening value in soil data and total PCBs exceeded the TAL and BTV in stormwater data.

10.5.2 Stormwater Data Summary

Copper and total PCBs exceeded both TALs and BTVs in stormwater. Total aluminum and gross alpha exceeded the TALs, but not the BTVs, therefore they will not be added to the SAP.

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

10.5.3 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.2.b.i) for copper and PCBs. The SMA is also in active monitoring; not all Site-related POCs were analyzed for in past samples.

10.5.4 Sampling and Analysis Plan

Table 10.5-1 is the proposed SAP for ACID-SMA-2.1.

Table 10.5-1 Proposed SAP, ACID-SMA-2.1

Monitoring Constituent	Background for Monitoring
Strontium-90	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

11.0 P-SMA-0.3

Associated Sites	00-018(b)
Receiving Water	Pueblo Canyon
Drainage Area	7.41 acres
Landscape Characteristics	12% impervious, 88% pervious
Consent Order Site Status	AOC 00-018(b): Pending Approval of Permit Modification Request. Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
20162018 SIP Actions	Based on the August 2017 field visits, the sampler will be moved down the drainage past current Site controls located in the drainage channel to include more of the potentially affected area.
2022 Permit Status	Active Monitoring

11.1 2010 Administratively Complete Permit Summary

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

AOC 00-018(b) received a COC under the Consent Order in January 2011. The Permittees submitted a certification of completion of corrective action per Permit part I.E.2(d) for the Site in September 2013 (LANL 2013, 249474). Stormwater monitoring has not occurred since 2013.

11.2 Site History

00-018(b) (no date)

AOC 00-018(b) is the former Bayo Canyon WWTP that was located at the intersection of Pueblo and Bayo Canyons. It was owned and operated by Los Alamos County, began operating in 1963, and was upgraded in 1966. The plant treated the sanitary waste stream that previously was routed to the former central WWTP (SMWU 00-019) and sanitary waste from residences on Barranca Mesa. Most wastes treated at the plant were from businesses and from eastern Los Alamos residences, and Barranca Mesa residences. After the Pueblo Canyon WWTP [SWMU 00-018(a)] was decommissioned in 1992, the remaining northern and western Los Alamos residential sanitary waste streams were routed to the Bayo Canyon WWTP. This plant was the primary supplier of effluent for irrigation at the Los Alamos golf course and recreational ball fields from 1992 until it was decommissioned in 2007. Mercury was historically used to seal and lubricate the hubs of trickling filters at the former WWTP. The Bayo WWTP was demolished by Los Alamos County in 2009 and 2010. Residual mercury was found to be present in the trickling filter seals during demolition.

For investigation activities refer to “Demolition Documentation Report for the Bayo Canyon Wastewater Treatment Plant, Area of Concern 00-018(b)” (LANL 2010, 109193).

11.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 11.2-1.

Table 11.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
00-018(b)	Bayo Canyon WWTP	Beryllium, cadmium, lead, mercury, organic chemicals, uranium

11.3 Consent Order Soil Data

The approved IR (LANL 2008, 103243.34) concluded that the nature and extent have been defined for all chemicals detected at AOC 00-018(b). Analytical results from those samples are presented in Figures 11.3-1 through 11.3-4. All detected chemicals were below residential, industrial, recreational, and construction worker SSLs.

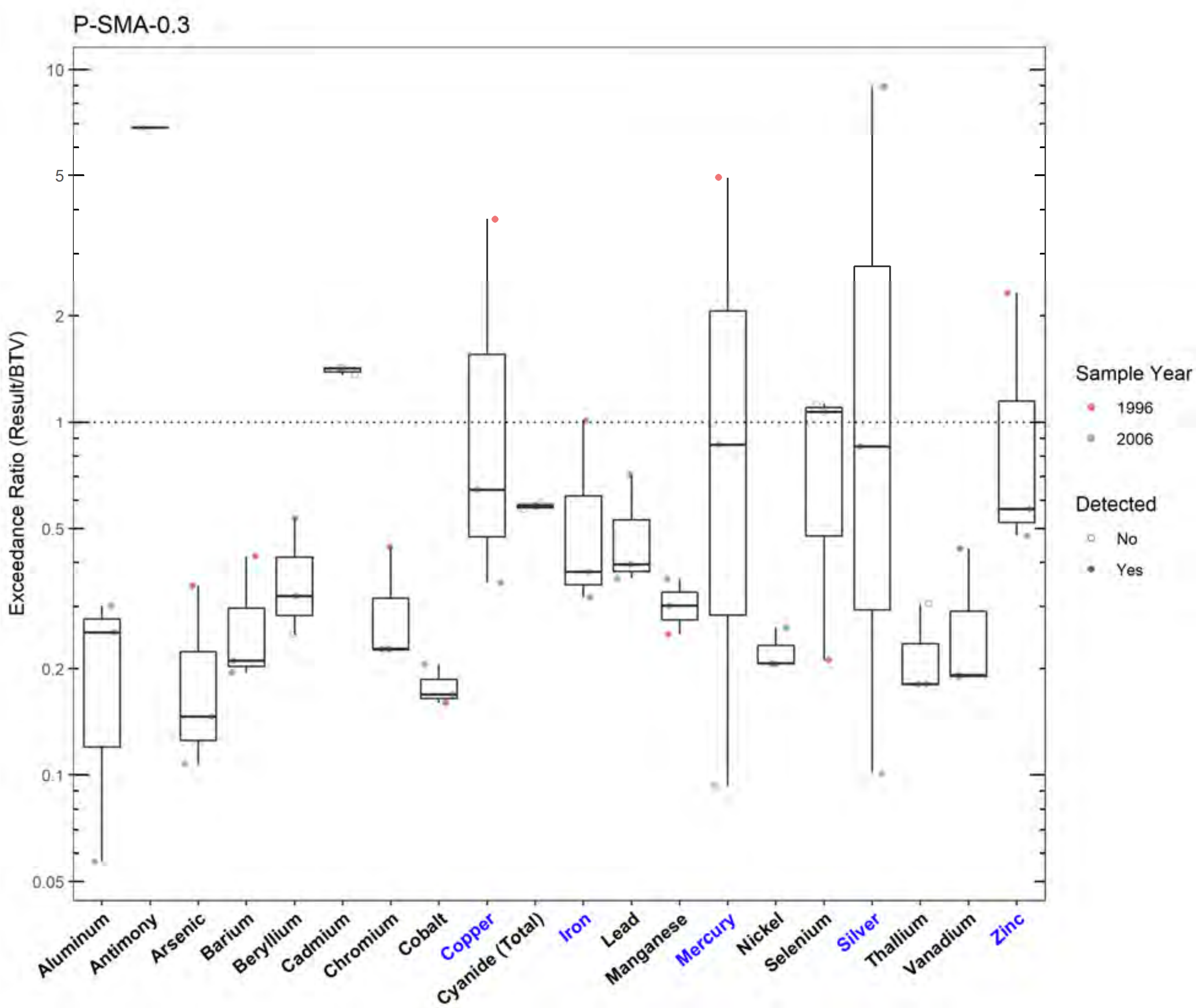

Figure 11.3-1 Inorganics Analytical Results from Soil Samples Assicoated with P-SMA-0.3

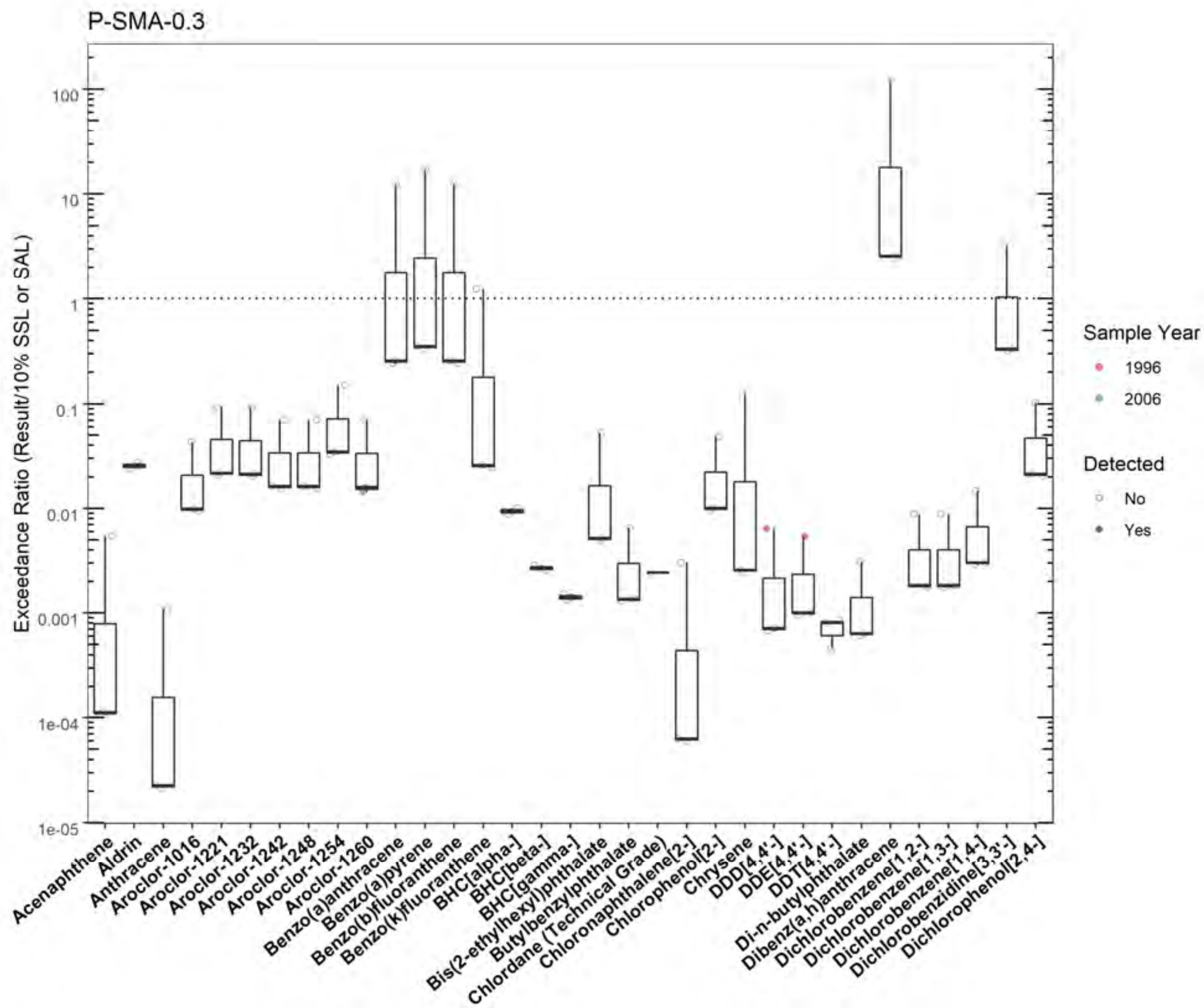

Figure 11.3-2 Organics Analytical Results from Soil Samples Associated with P-SMA-0.3 (Plot 1)

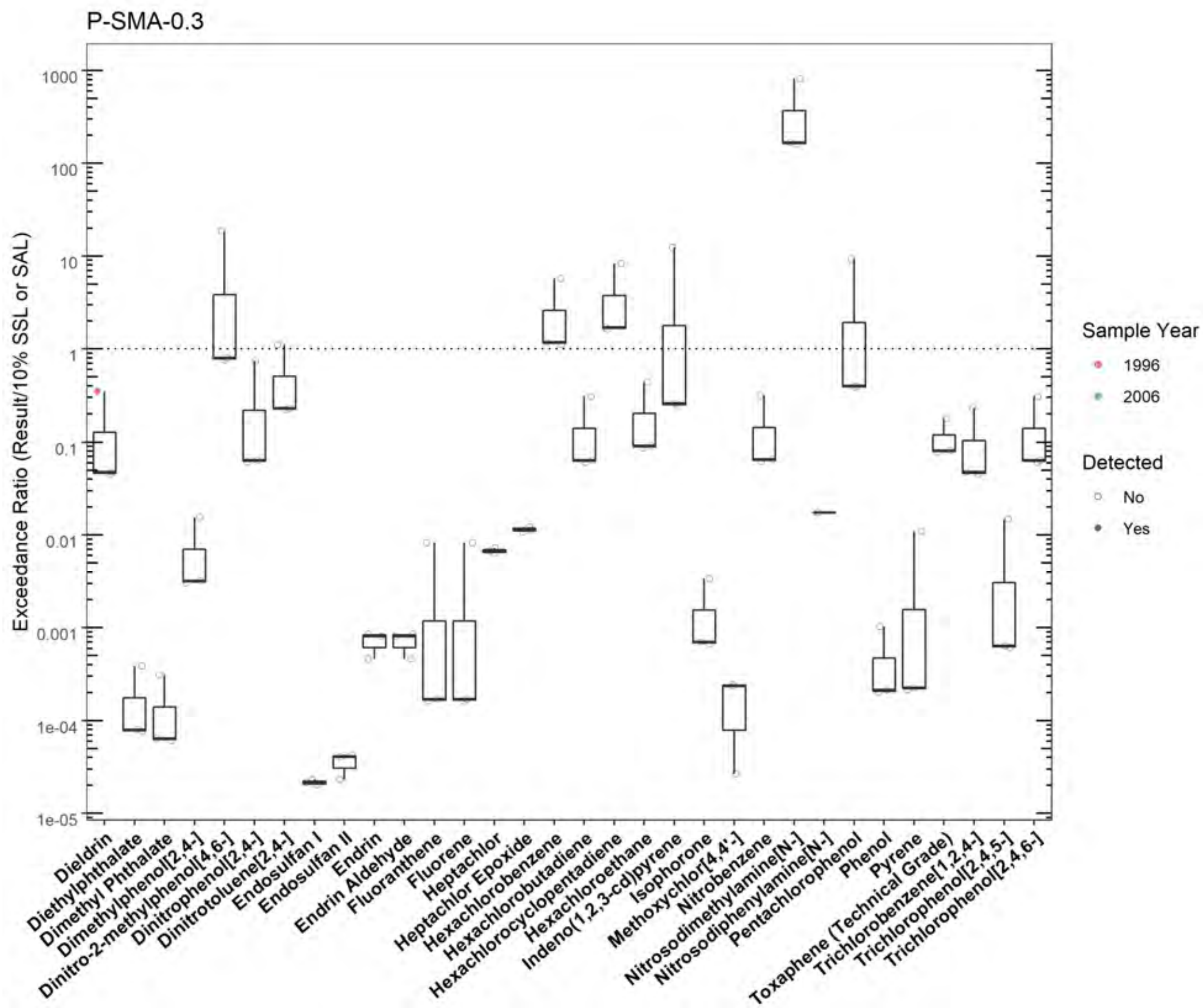

Figure 11.3-3 Organics Analytical Results from Soil Samples Associated with P-SMA-0.3 (Plot 2)

P-SMA-0.3

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Copper	P-SMA-0.3	Cu	Y	BTV	14.7	55.3	1996-11-04
Iron	P-SMA-0.3	Fe	Y	BTV	21500	21700	1996-11-04
Mercury	P-SMA-0.3	Hg	Y	BTV	0.100	0.492	1996-11-04
Silver	P-SMA-0.3	Ag	Y	BTV	1.00	8.96	1996-11-04
Zinc	P-SMA-0.3	Zn	Y	BTV	48.8	113	1996-11-04

Figure 11.3-4 Screening-Level Exceedances from Soil Samples Associated with P-SMA-0.3

11.4 Stormwater Evaluation

11.4.1 Summary of Stormwater Results Compared to 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.

11.4.2 Assessment Unit and Stream Impairments

P-SMA-0.3 drains to Pueblo Canyon (Los Alamos Canyon to Los Alamos WWTP), which has impairments for adjusted gross alpha, total aluminum, PCBs, and total selenium. The adjusted gross alpha and PCB impairments may be Site-related, based on Site history.

11.5 Site-Specific Demonstration

11.5.1 Soil Data Summary

The Site-related POCs mercury and uranium exceeded the applicable screening value in soil data and have not yet been measured in stormwater at the current monitoring location. SVOCs and beryllium are in the Site history but did not exceed the applicable screening value in soil data; therefore, they will not be added to the SAP. The remaining metals that exceeded the applicable screening value in soil data are not Site-related POCs and will not be added to the SAP.

11.5.2 Stormwater Data Summary

No confirmation-monitoring data.

11.5.3 2022 Permit Status

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

11.5.4 Sampling and Analysis Plan

Table 11.5-1 is the proposed SAP for P-SMA-0.3.

Table 11.5-1 Proposed SAP, P-SMA-0.3

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history
Total PCBs	Impairment and Site history
Total mercury	Site history and soil data
Dissolved uranium	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

12.0 P-SMA-1

Associated Sites	73-001(a), 73-004(d)
Receiving Water	Pueblo Canyon
Drainage Area	25.85 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 73-001(a): Pending Receipt of Certificate of Completion. SWMU 73-004(d): Pending Receipt of Certificate of Completion.
2010 AC Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	The August 2017 field visits determined that the sampler does not currently include the channel area. Therefore, the sampler was moved to former NMED-OB sampling location, "Pueblo Below Landfill East," to include more of the potentially affected area.
2022 Permit Status	Active Monitoring

12.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, baseline stormwater monitoring was initiated. In 2015, the monitoring location was relocated to a more representative location after a boundary change for the Site and baseline monitoring was reinitiated. While developing the 2018 sampling SAP, a decision was made to implement the monitoring location move that had been recommended during the 2017 SIP review, and baseline monitoring was reinitiated. To date, stormwater flow has not been sufficient for full-volume sample collection. Monitoring is ongoing until one confirmation sample is collected from this SMA.

12.2 Site History

73-001(a) (6/12/2017)

SWMU 73-001(a) is an inactive municipal landfill within TA-73. The main landfill covers a surface area of approximately 12 acres. This inactive landfill is located on Los Alamos County property at the Los Alamos County Airport. The mesa top has served as an airport facility since the late 1940s. Los Alamos County plans to maintain and operate this airport indefinitely.

The Airport Landfill received municipal waste from the Laboratory and Los Alamos townsite from 1943 until 1973. The landfill was located on the mesa top primarily because it was a secure and convenient location with easy access, and it was in close proximity to the Los Alamos townsite with room to expand the landfill. Solid waste was collected twice weekly from the Laboratory and the townsite, and was burned on the edge of the hanging valley located adjacent to the airport runway. This intentional burning ceased in 1965, when Los Alamos County assumed operation of the landfill. Heavy equipment was used to push the burned residue and ash into whichever permanent disposal area within the landfill was being used at the time. Debris associated with this landfill spilled into at least four drainages leading from the mesa top area down toward the bottom of Pueblo Canyon. Debris found in these drainages along the side slopes of the south side of Pueblo Canyon was composed of tires, car bodies, pieces of concrete and asphalt, empty drums, galvanized steel trash cans, and other miscellaneous debris items.

As more capacity was required, trenches were excavated into the tuff. A hot-mix asphalt batch plant operated in the vicinity of the landfill from the mid-1940s until 1954. Ash and burn residue from an incinerator [SWMU 73-002] were also deposited in the landfill. LAC operated the landfill from 1965 until it closed in 1973. Between 1984 and 1986, the western portion of the landfill was excavated and moved to the debris disposal pit [SWMU 73-001(d)] to allow for the construction of airplane hangars and tie-down areas at the airport. Clean fill was used to backfill the excavated area.

The mesa top area inclusive of the landfill was transferred by the DOE to LAC in 2002. In 2006 and 2007, a MatCon asphalt cap was constructed over the landfill along with five concrete hangar pads. The MatCon cap was replaced with a new evapotranspiration cover system in 2015 and 2016. Los Alamos County operates the county municipal airport located between Los Alamos and Pueblo Canyons. However, maintenance of the landfill remains the responsibility of the DOE, including the maintenance of the landfill cover, stormwater control system, fencing, retaining wall, erosion and sediment control measures, site access, and routine monitoring and reporting of every aspect of the landfill for the foreseeable future.

SWMU 73-004(d) (6/13/2017)

SWMU 73-004(d) consists of a former septic system, installed in 1943, which was located approximately 20 ft northeast of the current Los Alamos County airport terminal building at TA-73. The septic system, which served the former landfill office, consisted of a septic tank, inlet and outlet drainlines, and a leach field. A 4-in.-diameter VCP connected the toilet in the building to the septic tank. The building and septic tank were removed as part of the decommissioning activities implemented in 1973. The former septic system was located within the boundary of the SWMU 73-001(a) landfill, and is no longer identifiable as a discrete unit within the landfill.

For investigation activities for the Sites, refer to “2020–2021 Annual Long-Term Monitoring Status Report (July 2020 through June 2021) for the Los Alamos County Airport Landfill Cover System Replacement, Solid Waste Management Units 73-001(a, d) in Technical Area 73” (N3B 2021, 701559).

12.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 12.2-1.

Table 12.2-1 POCs Known or Suspected to be Used Historically at the Sites

Site	Potential POC Source	Potential POCs
73-001(a)	Landfill	Metals, organic chemicals, PCBs, uranium, pesticides
73-004(d)	Soil Contamination from former Septic Tank	Metals, organic chemicals

12.3 Consent Order Soil Data

Decision-level data for SWMU 73-001(a), which includes SWMU 73-004(d), consist of results from samples collected in 2003. Analytical results from those samples are presented in Figures 12.3-1 through 12.3-4. The 2004 IM report concluded that the nature and extent of contamination in the drainages north of the landfill have been defined and no further sampling for extent is warranted.

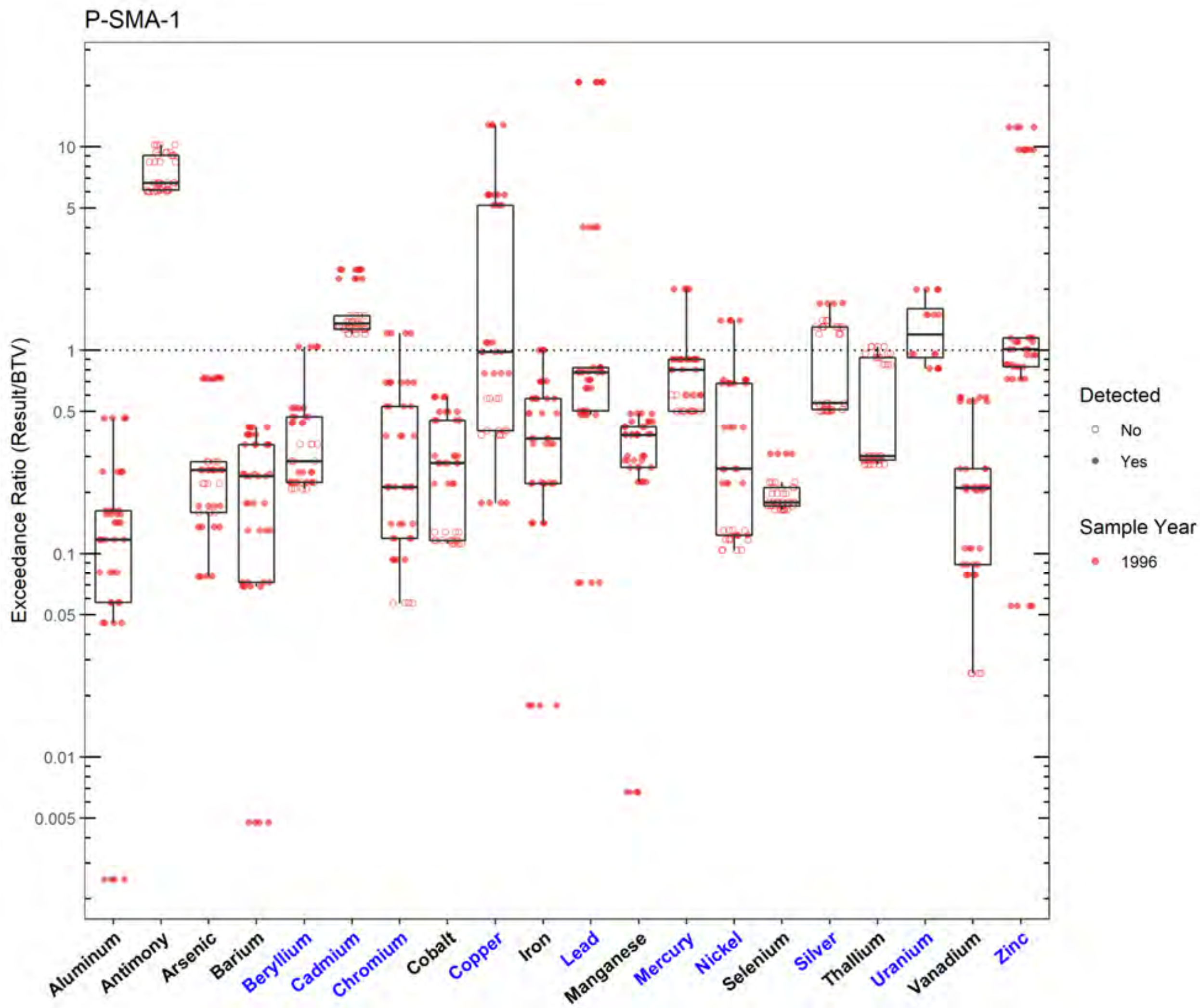

Figure 12.3-1 Inorganics Analytical Results from Soil Samples Associated with P-SMA-1

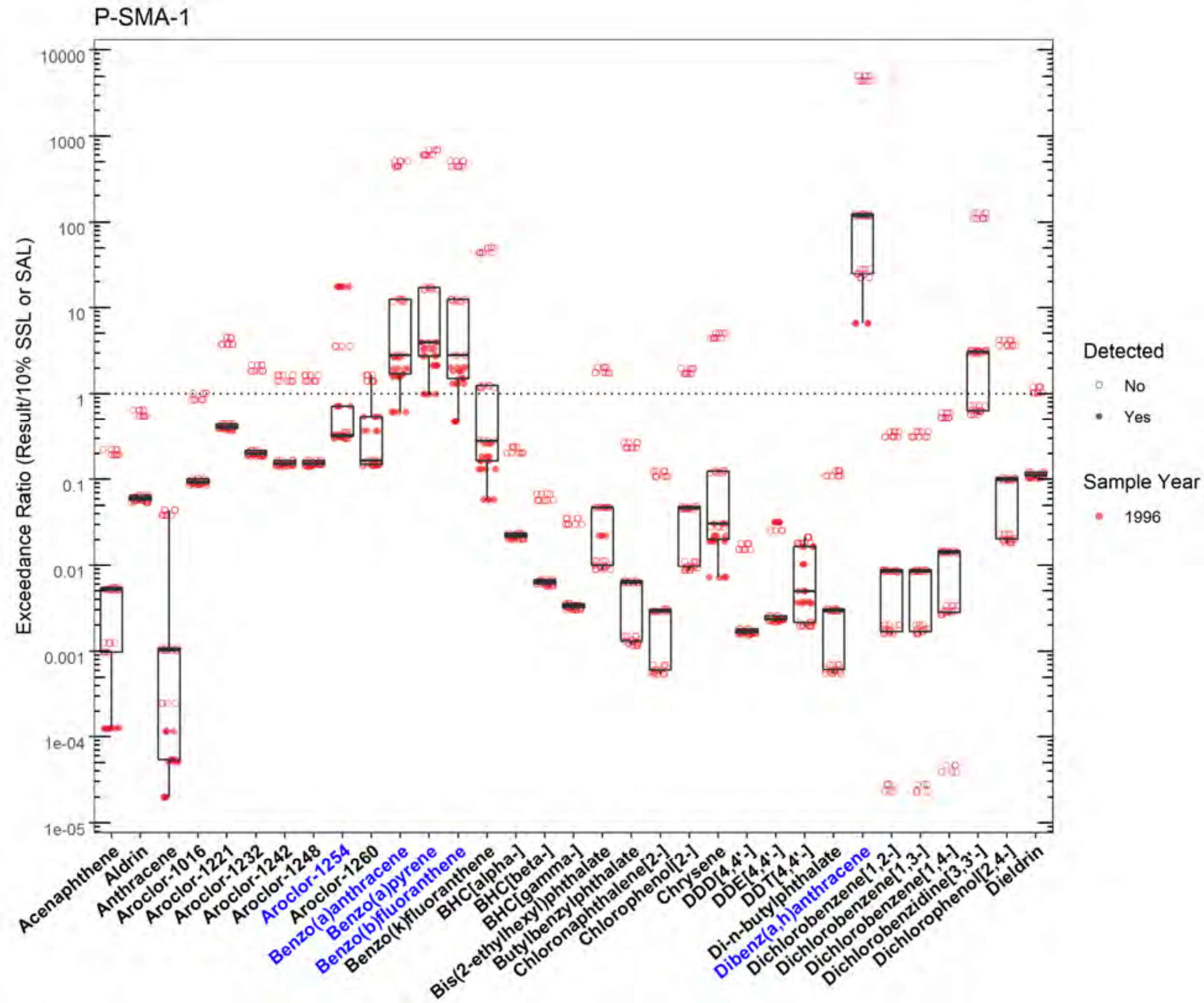

Figure 12.3-2 Organics Analytical Results from Soil Samples Associated with P-SMA-1 (Plot 1)

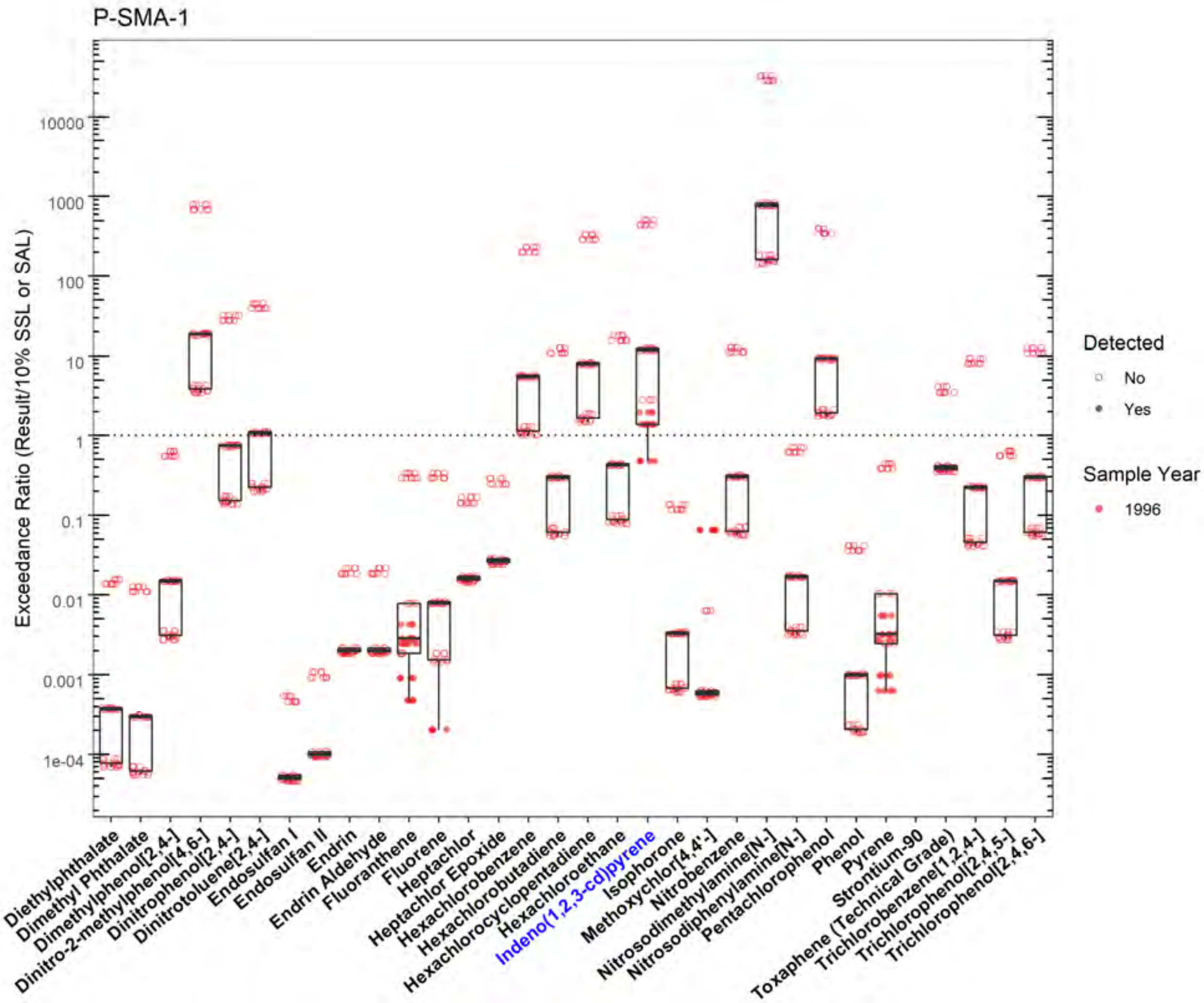

Figure 12.3-3 Organics Analytical Results from Soil Samples Associated with P-SMA-1 (Plot 2)

P-SMA-1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	P-SMA-1	11097-69-1	Y	SSL_0.1	0.114	2.00	1996-04-03
Benzo(a)anthracene	P-SMA-1	56-55-3	Y	SSL_0.1	0.153	0.410	1996-04-03
Benzo(a)pyrene	P-SMA-1	50-32-8	Y	SSL_0.1	0.112	0.440	1996-04-03
Benzo(b)fluoranthene	P-SMA-1	205-99-2	Y	SSL_0.1	0.153	0.310	1996-03-28
Beryllium	P-SMA-1	Be	Y	BTV	1.83	1.90	1996-03-28
Cadmium	P-SMA-1	Cd	Y	BTV	0.400	1.00	1996-04-03
Chromium	P-SMA-1	Cr	Y	BTV	19.3	23.3	1996-04-03
Copper	P-SMA-1	Cu	Y	BTV	14.7	188	1996-04-03
Dibenz(a,h)anthracene	P-SMA-1	53-70-3	Y	SSL_0.1	0.0153	0.100	1996-03-28
Indeno(1,2,3-cd)pyrene	P-SMA-1	193-39-5	Y	SSL_0.1	0.153	0.300	1996-04-03
Lead	P-SMA-1	Pb	Y	BTV	22.3	463	1996-04-03
Mercury	P-SMA-1	Hg	Y	BTV	0.100	0.200	1996-04-03
Nickel	P-SMA-1	Ni	Y	BTV	15.4	21.5	1996-04-03
Silver	P-SMA-1	Ag	Y	BTV	1.00	1.70	1996-04-03
Uranium	P-SMA-1	U	Y	BTV	1.82	3.62	1996-03-28
Zinc	P-SMA-1	Zn	Y	BTV	48.8	608	1996-04-03

Figure 12.3-4 Screening-Level Exceedances from Soil Samples Associated with P-SMA-1

12.4 Stormwater Evaluation

12.4.1 Summary of Stormwater Results Compared to 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.

12.4.2 Assessment Unit and Stream Impairments

P-SMA-1 drains to Pueblo Canyon (Los Alamos WWTP to Acid Canyon) which has impairments for adjusted gross alpha and PCBs. The impairments may be Site-related, based on Site history.

12.5 Site-Specific Demonstration

12.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable 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, copper, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, lead, mercury, nickel, silver, uranium and zinc.

12.5.2 Stormwater Data Summary

No confirmation-monitoring data.

12.5.3 2022 Permit Status

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

12.5.4 Sampling and Analysis Plan

Table 12.5-1 is the proposed SAP for P-SMA-1.

Table 12.5-1 Proposed SAP, P-SMA-1

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment, Site history, and soil data
Gross alpha	Impairment and Site history
Dissolved beryllium, cadmium, chromium, copper, lead, nickel, silver, uranium, and zinc	Site history and soil data
Total mercury	Site history and soil data
SVOCs	Site history and soil data
Pesticides	Site history
DOC	Permit requirement
SSC	Permit requirement

13.0 P-SMA-2

Associated Sites	73-002, 73-006
Receiving Water	Pueblo Canyon
Drainage Area	2.64-acre
Landscape Characteristics	2% impervious, 98% pervious
Consent Order Site Status	SWMU 73-002: Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls SWMU 73-006: Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls
2010 AC Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	The August 2017 field visits determined that the current sampler is located upslope from the highest detection of dioxin/furans in soil (73-25599). In addition, the western drainage area, where there are high detections of metals in soil (73-27297 copper, 73-25605 silver), is not currently monitored. Therefore, the current sampler will be moved approximately 20 ft. downgradient of soil sampling location 73-25599 to include more of the potentially affected area.
2022 Permit Status	Active Monitoring

13.1 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 2014. Analytical results from this sample initiated corrective action.

SWMUs 73-002 and 73-006 received COCs under the Consent Order in August 2007. The Permittees submitted a certification of completion of corrective action per Permit part I.E.2(d) for the Sites in April 2015 (LANL 2015, 600370) and resubmitted in February 2022 (N3B 2022, 701897). Stormwater monitoring has not occurred since 2014.

13.2 Site History

73-002 (no date)

SWMU 73-002 consists of a former inactive incinerator that was located in building 73-2, and a former associated ash pile located at TA-73, west of the Los Alamos Airport terminal and on the south rim of Pueblo Canyon. A 6-ft-diameter stack was located on the north side of the building. The incinerator was originally used to destroy classified documents from LANL; however, this practice was discontinued after a short period because combustion was incomplete. The incinerator was then used to burn municipal trash.

Ash and debris were deposited over the edge of the mesa, which resulted in an ash pile that was approximately 150 ft wide × 160 ft long and up to 8 ft deep. Incinerator operations ceased in 1973, and the incinerator equipment and stack were removed. The ash pile and the associated incinerator debris were removed between 2005 and 2007. Building 73-2 remains in place.

73-006 (no date)

SWMU 73-006 consists of two former cast-iron drainlines that discharged to Pueblo Canyon from the former incinerator building (structure 73-2), located west of the airport terminal building at TA-73. The west drainline originated from two floor drains within the west side of the building, and the east drainline originated from drains located on the east side of the building. The drainlines discharged directly onto the ash pile (SWMU 73-002). The floor drains were plugged in 1973 when incinerator operations ceased. The west drainline was removed during the 1997 RFI; the east drainline could not be located.

For investigation activities at the Sites, refer to "Investigation Report for Consolidated Unit 73-002-99 and Corrective Action of Solid Waste Management Unit 73-002 at Technical Area 73" (LANL 2007, 098194).

13.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 13.2-1.

Table 13.2-1 POCs Known or Suspected to be Used Historically at the Sites

Site	Potential POC Source	Potential POCs
73-002	Incinerator surface disposal	Metals, tetrachlorodibenzodioxin[2,3,7,8-], PAHs, PCBs, radionuclides, pesticides
73-006	Airport building outfalls	Inorganic and organic chemicals, tetrachlorodibenzodioxin[2,3,7,8-]

13.3 Consent Order Soil Data

Decision-level data consist of the results from samples collected from SWMU 73-002 and SWMU 73-006. Analytical results from those samples are presented in Figures 13.3-1 through 13.3-4. The approved IR (LANL 2007, 098194) concluded that the nature and extent have been defined for all chemicals detected at SWMU 73-002 and SWMU 73-006.

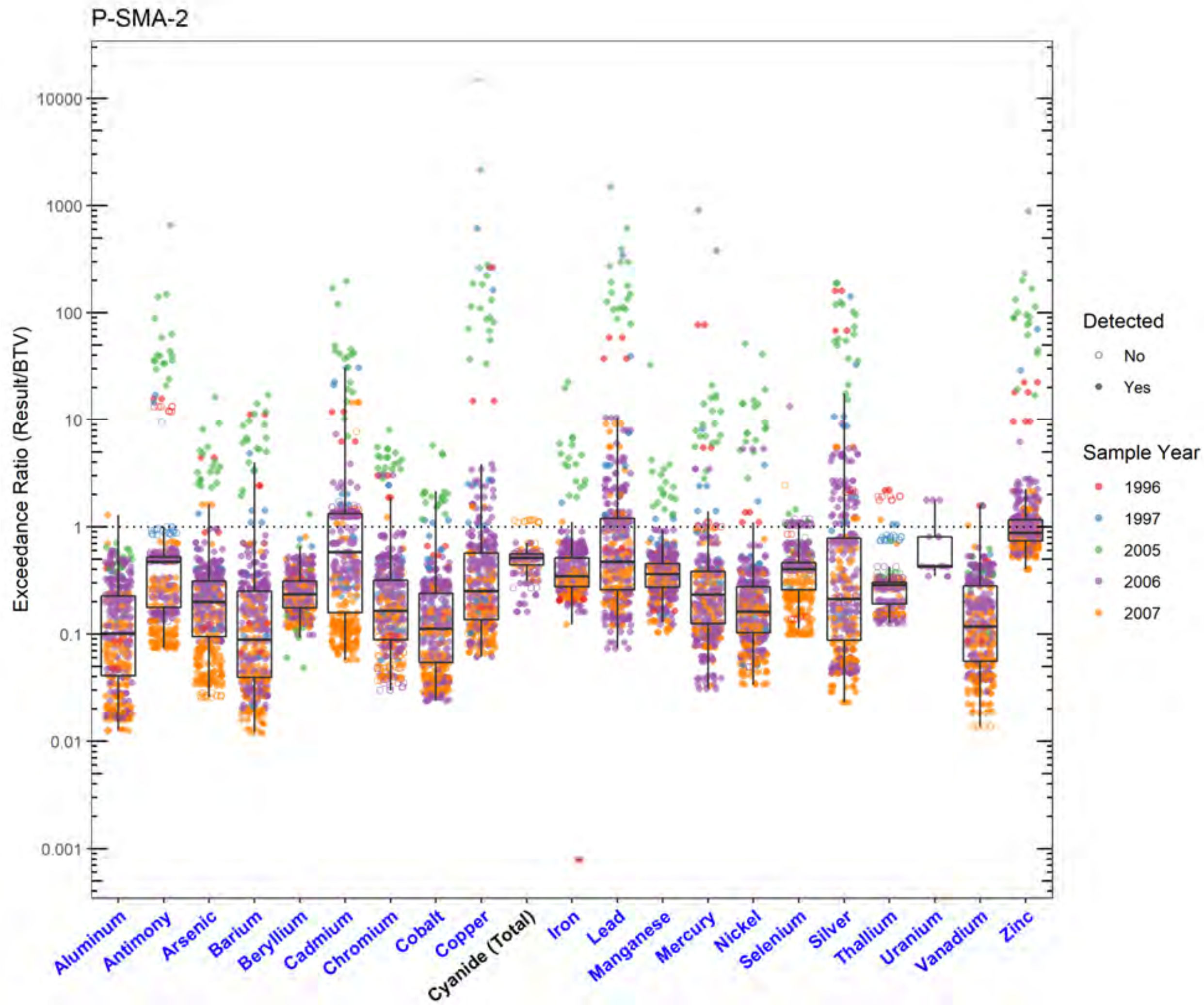

Figure 13.3-1 Inorganics Analytical Results from Soil Samples Associated with P-SMA-2

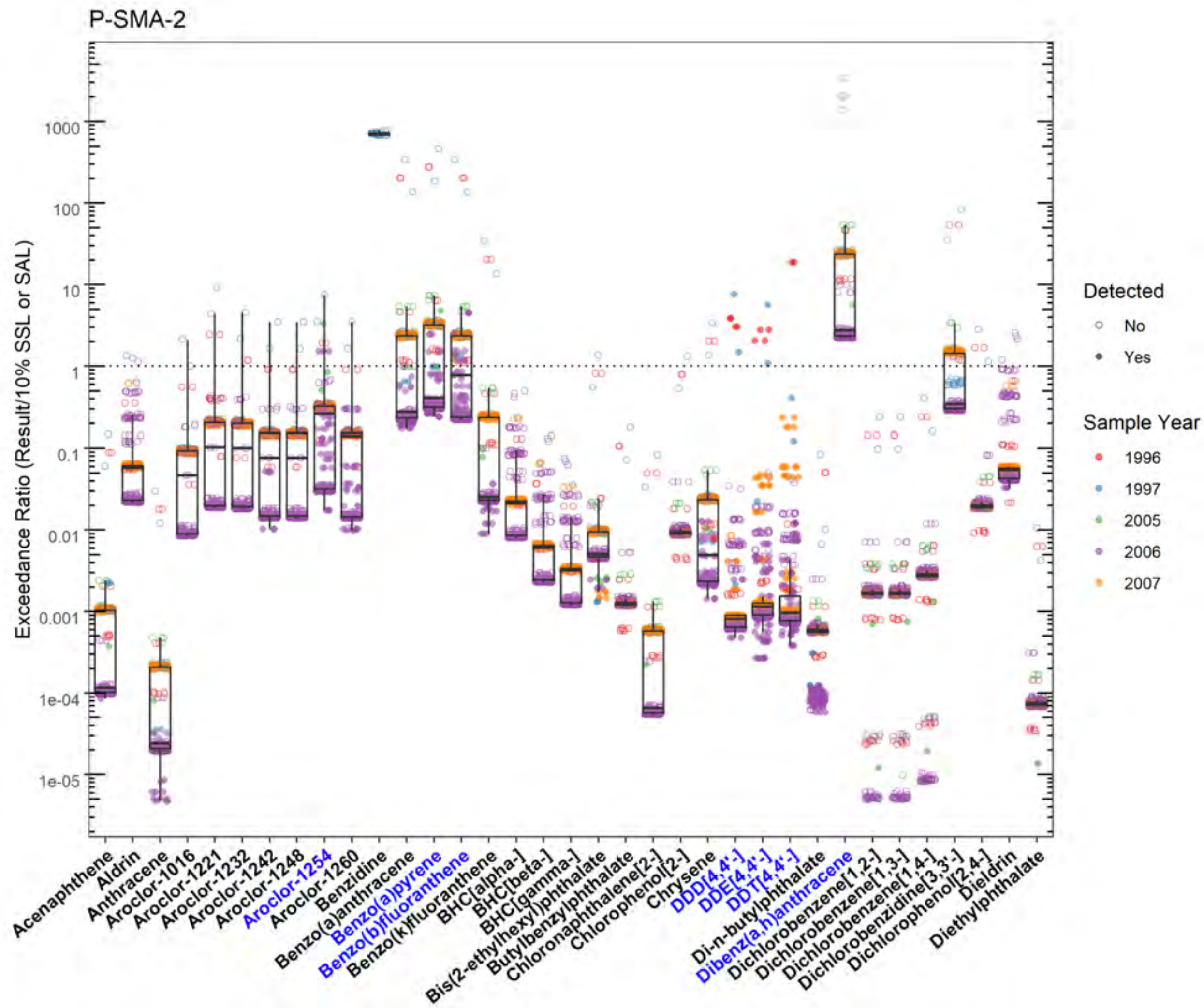

Figure 13.3-2 Organics Analytical Results from Soil Samples Associated with P-SMA-2 (Plot 1)

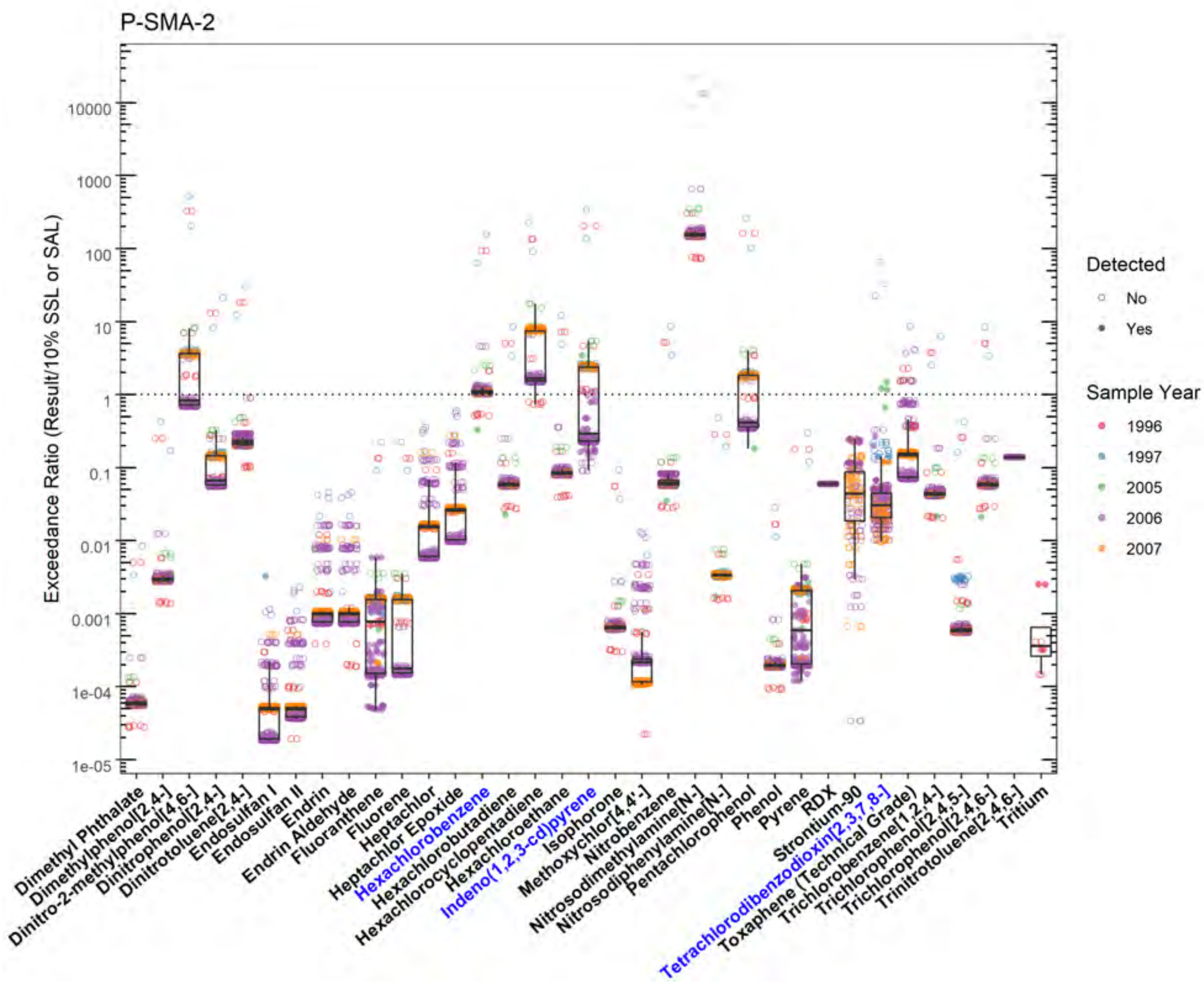

Figure 13.3-3 Organics Analytical Results from Soil Samples Associated with P-SMA-2 (Plot 2)

P-SMA-2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aluminum	P-SMA-2	Al	Y	BTV	29200	37700	2007-01-04
Antimony	P-SMA-2	Sb	Y	BTV	0.830	543	2005-04-19
Aroclor-1254	P-SMA-2	11097-69-1	Y	SSL_0.1	0.114	0.380	2005-04-20
Arsenic	P-SMA-2	As	Y	BTV	8.17	133	2005-04-19
Barium	P-SMA-2	Ba	Y	BTV	295	5030	2005-04-19
Benzo(a)pyrene	P-SMA-2	50-32-8	Y	SSL_0.1	0.112	0.540	2005-04-19
Benzo(b)fluoranthene	P-SMA-2	205-99-2	Y	SSL_0.1	0.153	0.693	2006-03-24
Beryllium	P-SMA-2	Be	Y	BTV	1.83	2.40	2005-04-19
Cadmium	P-SMA-2	Cd	Y	BTV	0.400	78.5	2005-04-19
Chromium	P-SMA-2	Cr	Y	BTV	19.3	154	2005-04-19
Cobalt	P-SMA-2	Co	Y	BTV	8.64	49.7	2005-04-19
Copper	P-SMA-2	Cu	Y	BTV	14.7	219000	2005-04-19
DDD[4,4'-]	P-SMA-2	72-54-8	Y	SSL_0.1	2.22	17.0	1997-07-22
DDE[4,4'-]	P-SMA-2	72-55-9	Y	SSL_0.1	1.57	8.80	1997-07-22
DDT[4,4'-]	P-SMA-2	50-29-3	Y	SSL_0.1	1.87	35.4	1996-07-01
Dibenz(a,h)anthracene	P-SMA-2	53-70-3	Y	SSL_0.1	0.0153	0.0860	2005-04-19
Hexachlorobenzene	P-SMA-2	118-74-1	Y	SSL_0.1	0.333	0.450	2005-04-19
Indeno(1,2,3-cd)pyrene	P-SMA-2	193-39-5	Y	SSL_0.1	0.153	0.530	2005-04-19
Iron	P-SMA-2	Fe	Y	BTV	21500	486000	2005-04-19
Lead	P-SMA-2	Pb	Y	BTV	22.3	33000	2005-04-19
Manganese	P-SMA-2	Mn	Y	BTV	671	21800	2005-04-19
Mercury	P-SMA-2	Hg	Y	BTV	0.100	90.0	1997-07-23
Nickel	P-SMA-2	Ni	Y	BTV	15.4	792	2005-04-20
Selenium	P-SMA-2	Se	Y	BTV	1.52	20.4	2006-03-17
Silver	P-SMA-2	Ag	Y	BTV	1.00	190	2005-04-19
Tetrachlorodibenzodioxin[2,3,7,8-]	P-SMA-2	1746-01-6	Y	SSL_0.1	0.00000490	0.00000720	2005-04-19
Thallium	P-SMA-2	Tl	Y	BTV	0.730	1.60	1996-06-13
Uranium	P-SMA-2	U	Y	BTV	1.82	3.22	2006-11-17
Vanadium	P-SMA-2	V	Y	BTV	39.6	62.4	1997-07-22
Zinc	P-SMA-2	Zn	Y	BTV	48.8	43000	2005-04-19

Figure 13.3-4 Screening-Level Exceedances from Soil Samples Associated with P-SMA-2

13.4 Stormwater Evaluation

13.4.1 Summary of Stormwater Results Compared to TALs and BTVs

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

13.4.2 Assessment Unit and Stream Impairments

P-SMA-2 drains to Pueblo Canyon (Los Alamos WWTP to Acid Canyon) which has impairments for adjusted gross alpha and PCBs. The impairments may be Site-related, based on Site history.

13.5 Site-Specific Demonstration

13.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater at the current monitoring location: aluminum, antimony, Aroclor-1254, arsenic, barium, benzo(a)pyrene, benzo(b)fluoranthene, beryllium, cadmium, chromium, cobalt, copper, DDD[4,4'-]; DDE[4,4'-], DDT[4,4'-], dibenz(a,h)anthracene, hexachlorobenzine, indeno(1,2,3-cd)pyrene, iron, lead, manganese, mercury, nickel, selenium, silver, tetrachlorodibenzodioxin [2,3,7,8-], thallium, uranium, vanadium, and zinc.

13.5.2 Stormwater Data Summary

No confirmation-monitoring data.

13.5.3 2022 Permit Status

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

13.5.4 Sampling and Analysis Plan

Table 13.5-1 is the proposed SAP for P-SMA-2.

Table 13.5-1 Proposed SAP, P-SMA-2

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history
Total PCBs	Impairment, Site history, and soil data
Tetrachlorodibenzodioxin [2,3,7,8-]	Site history and soil data
Dissolved antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, silver, thallium, uranium, vanadium, and zinc.	Site history (metals) and soil data
Total aluminum, mercury, iron and selenium	Site history (metals) and soil data
Radium-226 and radium-228	Site history (radionuclides)
Tritium	Site history (radionuclides)
SVOCs	Site history (organic chemicals) and soil data
Pesticides	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

14.0 P-SMA-2.15

Associated Sites	31-001
Receiving Water	Pueblo Canyon
Drainage Area	11.24 acres
Landscape Characteristics	11% impervious, 89% impervious
Consent Order Site Status	SWMU 31-001: In Progress
2010 AC Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the August 2017 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

14.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, baseline stormwater monitoring was initiated. To date, stormwater flow has not been sufficient for full-volume sample collection at P-SMA-2.15. Baseline monitoring is ongoing until one confirmation sample is collected from this SMA.

14.2 Site History

31-001 (6/12/2017)

SWMU 31-001 is a former septic system located at TA-31 in what is now the eastern residential area of Los Alamos, immediately west of the Los Alamos County Airport. This system consisted of a septic tank (structure ULR-7 or 0-7), two sanitary sewer manholes (structures ULR-41 and -42), associated inlet and outlet drainline, and an outfall. TA-31 served as the receiving area for all truck shipments to the Laboratory from 1945 to 1954. In 1949, six hutments that made up warehouse 31-2 were removed to make room for a more permanent warehouse, building 31-7. The SWMU 31-001 septic system was installed at the same time to serve building 31-7.

The septic tank (structure 0-7) was constructed of reinforced concrete. It measured 4 ft × 3 ft and was several feet deep. The inlet line ran to the north from building 31-7 to the septic tank. The septic tank was located aboveground on a small bench above the rim of Pueblo Canyon, and it discharged through a 4-in.-diameter outlet drainline to an outfall in Pueblo Canyon. The septic system operated until 1954, when TA-31 was abandoned and the buildings were removed. The septic system remained in place until its removal in 1988. The inlet and outlet drainlines were not encountered when the septic tank was removed in 1988.

Data from samples collected from the tank contents showed no detectable concentrations of hazardous constituents; the tank was disposed of at the Los Alamos County landfill.

For investigation activities refer to “Phase II Investigation Report for Pueblo Canyon Aggregate Area” (LANL 2010, 110864).

14.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 14.2-1.

Table 14.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
31-001	Soil contamination from former septic tank	Inorganic and organic chemicals

14.3 Consent Order Soil Data

Decision-level data for SWMU 31-001 consist of results from samples collected in 2006 and 2010. Analytical results from those samples are presented in Figures 14.3-1 through 14.3-4. The 2010 Phase II IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

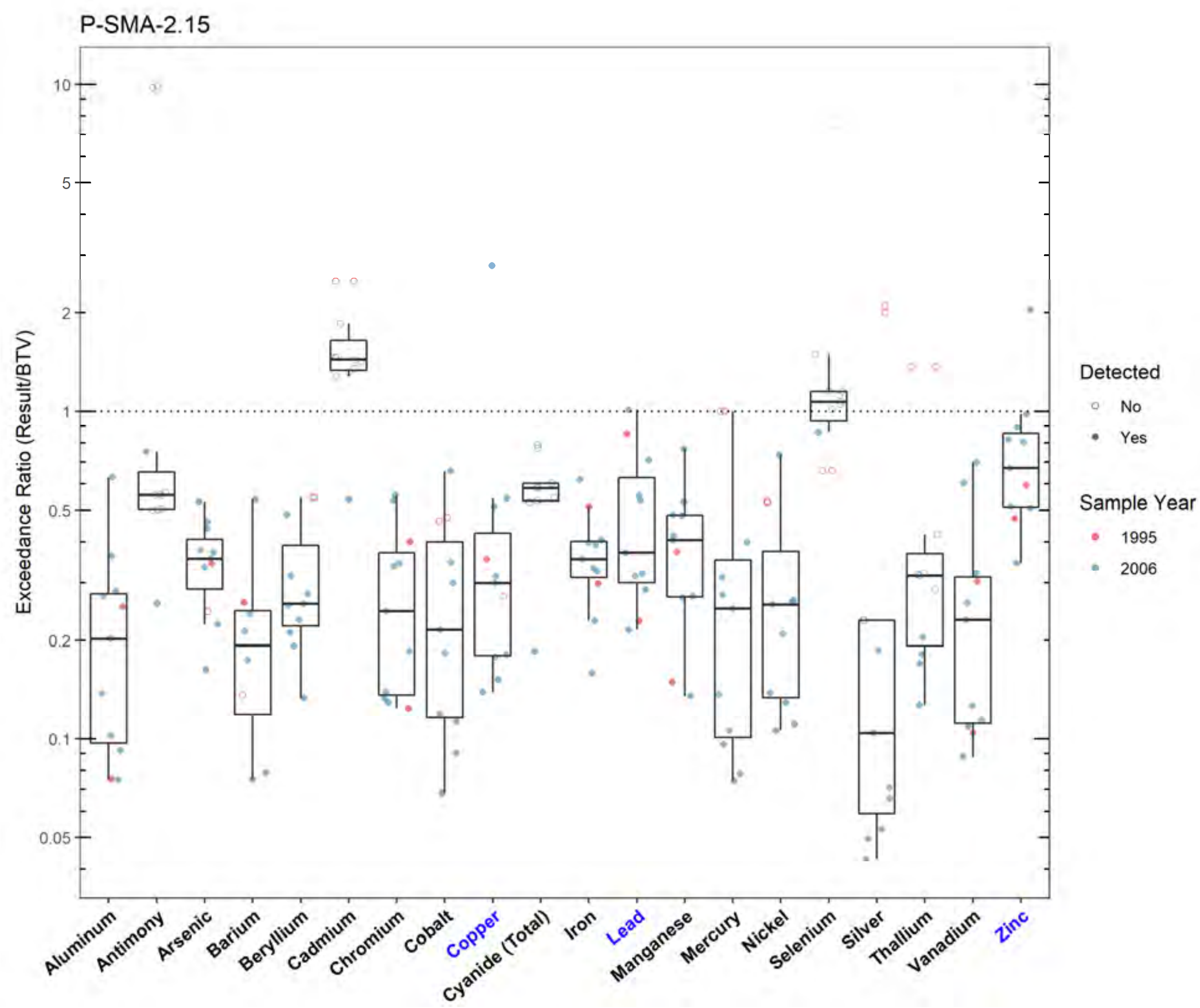

Figure 14.3-1 Inorganics Analytical Results from Soil Samples Associated with P-SMA-2.15

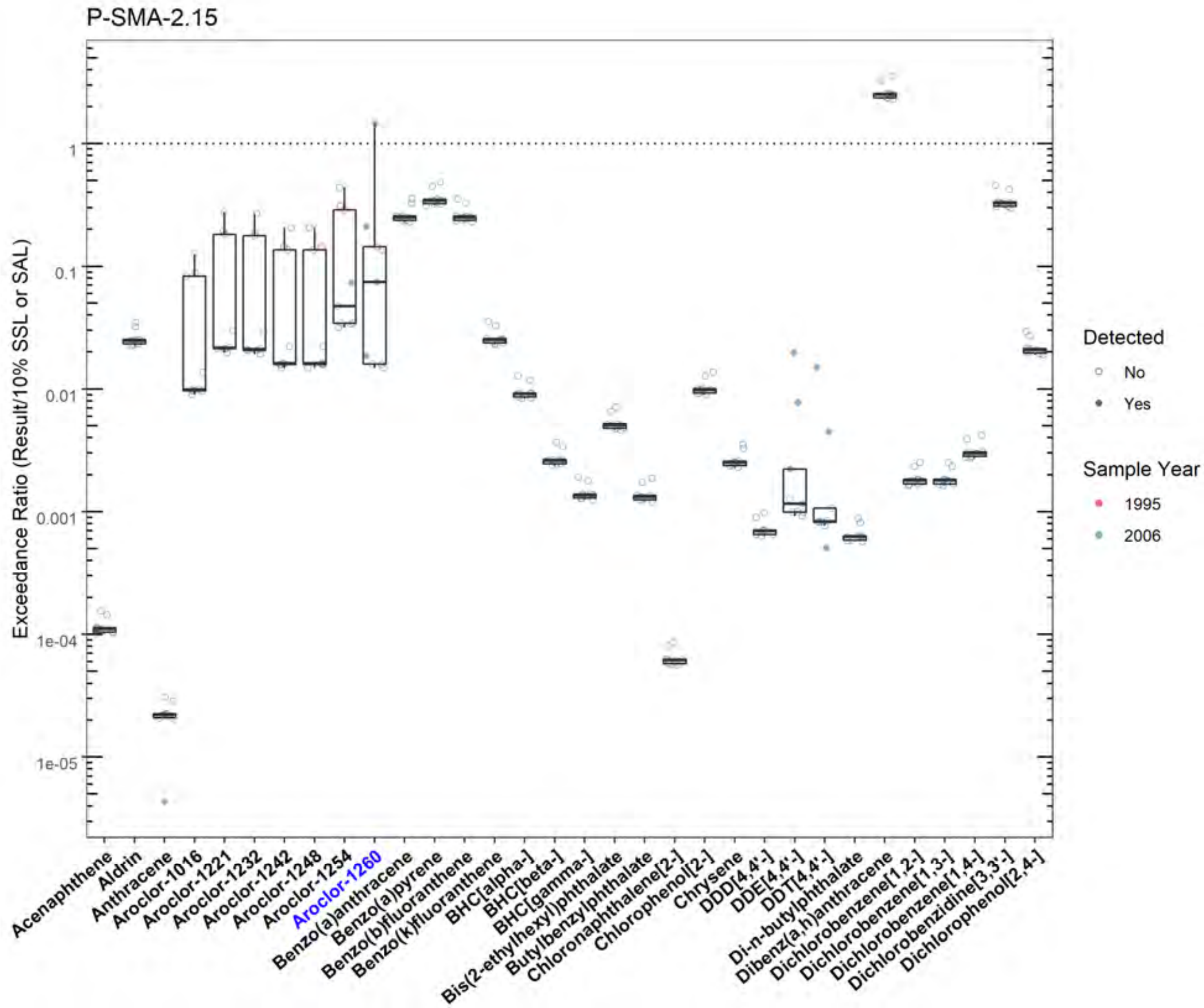

Figure 14.3-2 Organics Analytical Results from Soil Samples Associated with P-SMA-2.15 (Plot 1)

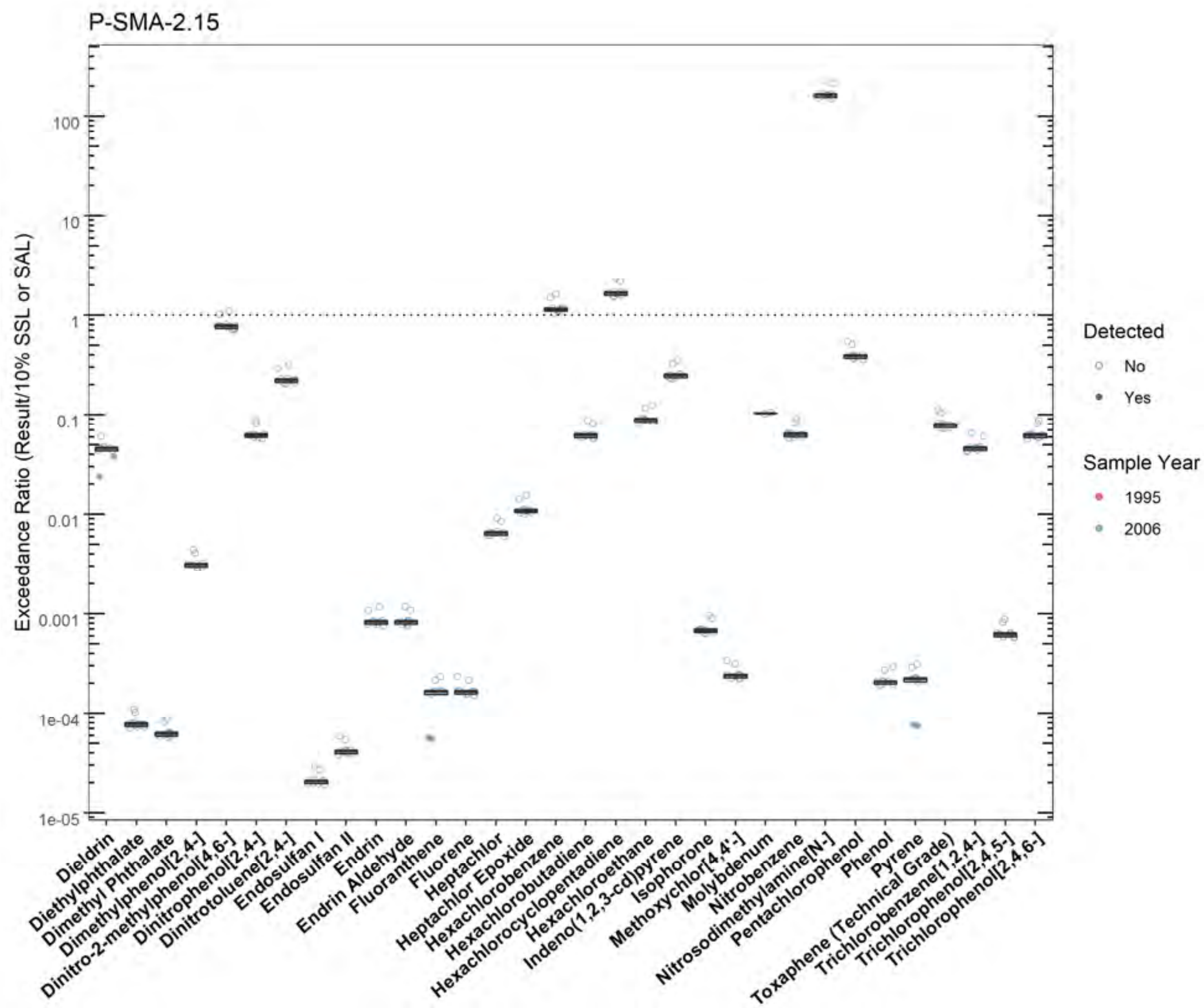

Figure 14.3-3 Organics Analytical Results from Soil Samples Associated with P-SMA-2.15 (Plot 2)

P-SMA-2.15

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1260	P-SMA-2.15	11096-82-5	Y	SSL_0.1	0.243	0.355	2006-09-11
Copper	P-SMA-2.15	Cu	Y	BTV	14.7	41.0	2006-09-11
Lead	P-SMA-2.15	Pb	Y	BTV	22.3	22.6	2006-09-11
Zinc	P-SMA-2.15	Zn	Y	BTV	48.8	99.5	2006-09-11

Figure 14.3-4 Screening-Level Exceedances from Soil Samples Associated with P-SMA-2.15

14.4 Stormwater Evaluation

14.4.1 Summary of Stormwater Results Compared to 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.

14.4.2 Assessment Unit and Stream Impairments

P-SMA-2.15 drains to Pueblo Canyon (Los Alamos WWTP to Acid Canyon), which has impairments for adjusted gross alpha and PCBs. The PCB impairment may be Site-related, based on Site history.

14.5 Site-Specific Demonstration

14.5.1 Soil Data Summary

The Site-related POCs Aroclor-1260, copper, lead, and zinc exceeded the applicable screening value in soil data and have not yet been measured in stormwater.

14.5.2 Stormwater Data Summary

No confirmation-monitoring data.

14.5.3 2022 Permit Status

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

14.5.4 Sampling and Analysis Plan

Table 14.5-1 is the proposed SAP for P-SMA-2.15.

Table 14.5-1 Proposed SAP, P-SMA-2.15

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment, Site history, and soil data
SVOCs	Site history (organic chemicals)
Dissolved copper, lead, and zinc	Site history (inorganic chemicals) and soil data
DOC	Permit requirement
SSC	Permit requirement

15.0 P-SMA-2.2

Associated Sites	00-019
Receiving Water	Pueblo Canyon
Drainage Area	3.7 acres
Landscape Characteristics	14% impervious, 86% pervious
Consent Order Site Status	SWMU 00-019: Pending LANL Administrative Action
2010 AC Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the August 2017 field visits, the sampler was moved down the drainage past soil location 00-10256 (elevated detections of metals and PCBs) to include more of the potentially affected area.
2022 Permit Status	Active Monitoring

15.1 2010 Administratively Continued Permit Summary

Following the May 2011 submittal of certification of baseline control installation to EPA, baseline monitoring was initiated. In 2013, the monitoring location was relocated to a more representative location after a boundary change for SWMU 00-019 was implemented. Baseline monitoring was re-initiated at this location with stormwater not being sufficient for full-volume sample collection. While developing the 2018 SAP, a decision was made to implement the monitoring location move that had been recommended during the 2017 SIP review. Baseline monitoring was re-initiated at the new location in 2018, and a baseline sample was collected in July 2019. Analytical results from this sample initiated corrective action.

Following a 2019 SIP review revision and the December 2020 certification to EPA of enhance control installation as a corrective action (N3B 2020, 701161), corrective action stormwater sampling was initiated at a new monitoring location more representative of the Site after the control installations. Since that time, stormwater flow has not been sufficient for full-volume sample collection; monitoring is ongoing at this location until at least one confirmation-monitoring sample is collected from this SMA.

15.2 Site History

00-019 (6/12/2017)

SWMU 00-019 is the former CWWTP, which was first installed to replace a series of septic tanks serving original Laboratory facilities and some residential areas of the Los Alamos townsite in former TA-00. The Site is located in the eastern portion of the Los Alamos townsite at the current location of the Sombrillo assisted-living facility, at the northern edge of Townsite Mesa above Graduation Canyon, a hanging tributary canyon of Pueblo Canyon. The CWWTP used conventional wastewater treatment processes, including primary settling, activated sludge digestion, sludge drying beds, trickling filtration, final clarification, and chlorination. CWWTP components included a primary settling tank, sludge digestion tank, final settling tank, trickling filter, chlorine contact tank, clarifier, pump house, two sludge drying beds, two outfall areas, manholes, and associated underground piping.

The CWWTP was constructed and began operating in 1947. The plant was used to treat sanitary sewage from laboratory buildings and residential areas, including wastewater from sanitary drains at former TA-01 buildings, residences, and local businesses. The treated waste was discharged to the eastern outfall into Graduation Canyon. The Laboratory operated the CWWTP from 1947 to 1961. Beginning in 1948, the treated effluent was diverted via a pipeline along Canyon Road to the Los Alamos Golf Course.

Beginning in 1951, most of the effluent from the CWWTP was used as makeup water for the cooling towers at TA-03 and was no longer discharged via the outfalls.

The pump house, which connected the primary settling tank to the sludge digestion tank, was built of cinder block and concrete, measured 22 ft × 28 ft wide × 15 ft high, and extended 30 ft bgs. Numerous other process lines, overflow lines, and drainlines, ranging from 4 to 16 in. in diameter, connected the various former tanks.

The two CWWTP outfall discharge pipes employed gravity flow from the inlet manhole (western outfall) and the final chlorine contact tank (eastern outfall). The outfalls discharged at the north edge of the mesa into Graduation Canyon.

The western outfall drainline consisted of an 8-in.-diameter VCP with a concrete discharge apron. The western outfall accommodated overflow from the inlet manhole and may have discharged untreated sewage in the event of over-capacity flow events at the CWWTP.

The eastern outfall was located 170 ft east of the western outfall; a 12-in.-diameter VCP channeled effluent to an exposed section of corrugated metal pipe that discharged treated effluent. The eastern outfall initially discharged treated effluent from the final settling tank. Once the CWWTP was renovated to provide supplemental irrigation water for the Los Alamos golf course, the eastern outfall received overflow from the chlorine contact tank. A second 6-in.-diameter VCP also discharged to the eastern outfall; this drainline was connected to floor drains in the pump house. The eastern outfall may have discharged untreated and/or partially treated wastewater and/or sludge from the pump house in the event of leaks or pipe breaks in the pump house.

No records are available regarding wastewater volumes discharged to the CWWTP outfalls.

The CWWTP ceased operating and was initially decommissioned in 1961. In 1967, the site was transferred intact but out of service to Los Alamos County. Although Los Alamos County never operated the plant as a wastewater treatment plant, the site was used for various activities, and over time Los Alamos County removed portions of the former treatment plant structures. Los Alamos County used the mesa-top portion of the site for various maintenance-related activities, primarily to house the LAC roads and grounds headquarters and a storage area. As a result, the mesa top was heavily reworked by the County over more than 30 yr of ownership. Only the former pump house, outfalls, and an unknown portion of the underground drainlines were known to remain in the late 1990s. Construction of a senior-citizen assisted-living facility was completed in 2004 over the Site.

For investigation activities, refer to “Voluntary Corrective Action Completion Report for Potential Release Site 00-019 (former Central Waste Water Treatment Plant)” (LANL 2001, 240519).

15.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 15.2-1.

Table 15.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
00-019	Central WWTP	Inorganic and organic chemicals, radionuclides

15.3 Consent Order Soil Data

Decision-level data for SWMU 00-019 consist of results from samples collected in 1996, 1997, 1999, 2000, and 2001. Analytical results from those samples are presented in Figures 15.3-1 through 15.3-4. The 2001 VCA report concluded that the nature and extent of contamination have been defined, and no further sampling for extent is warranted.

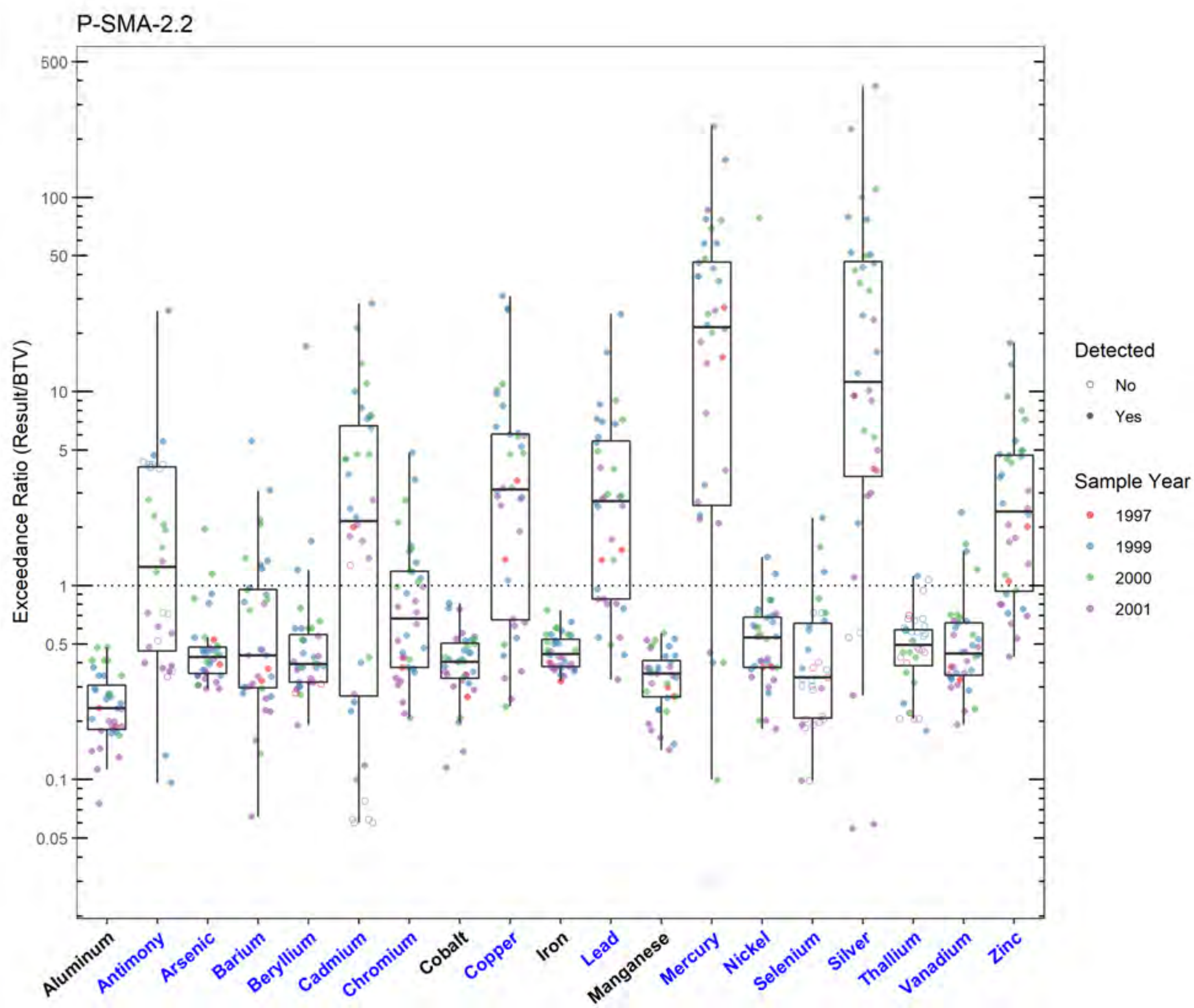

Figure 15.3-1 Inorganics Analytical Results from Soil Samples Associated with P-SMA-2.2

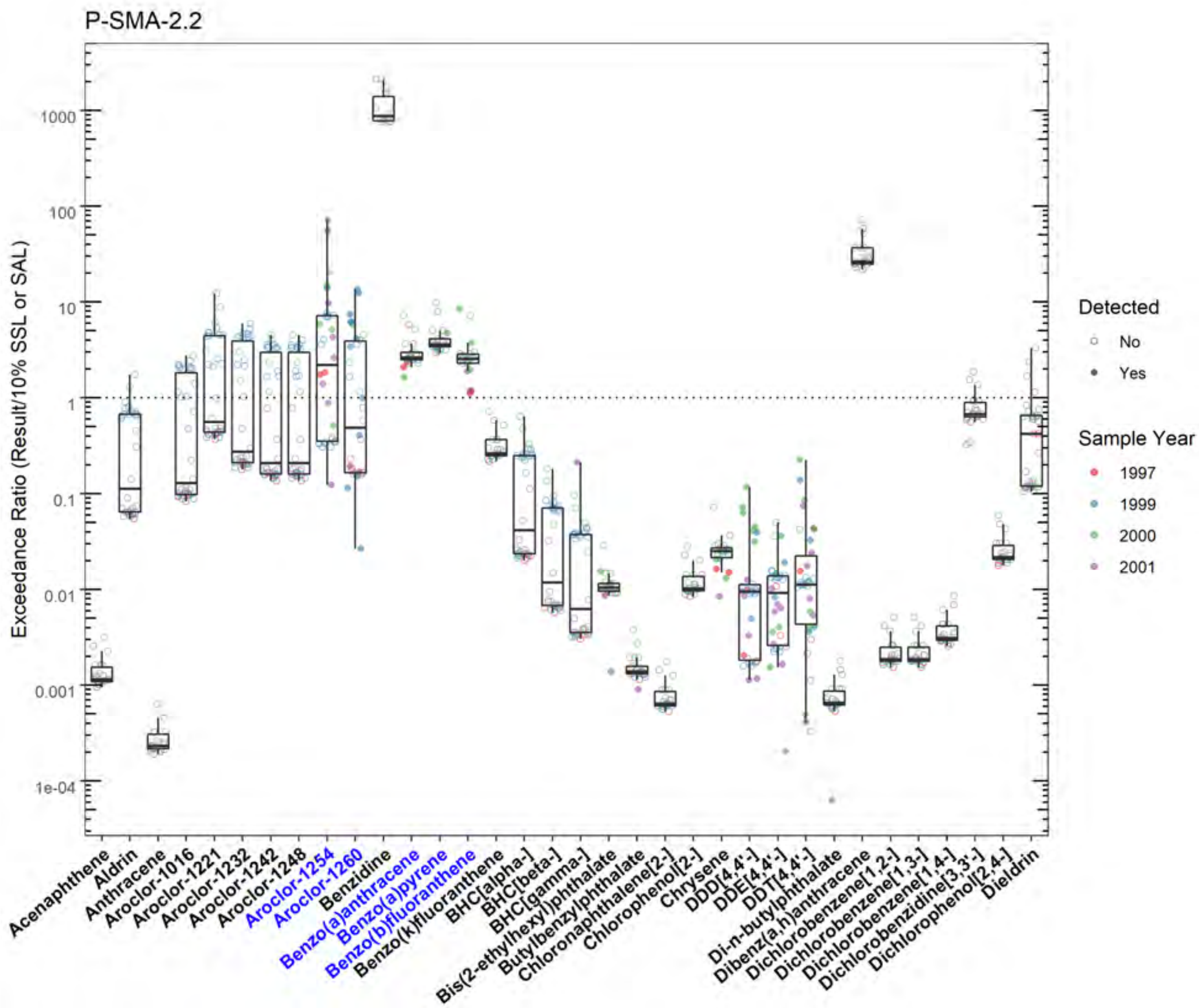

Figure 15.3-2 Organics Analytical Results from Soil Samples Associated with P-SMA-2.2 (Plot 1)

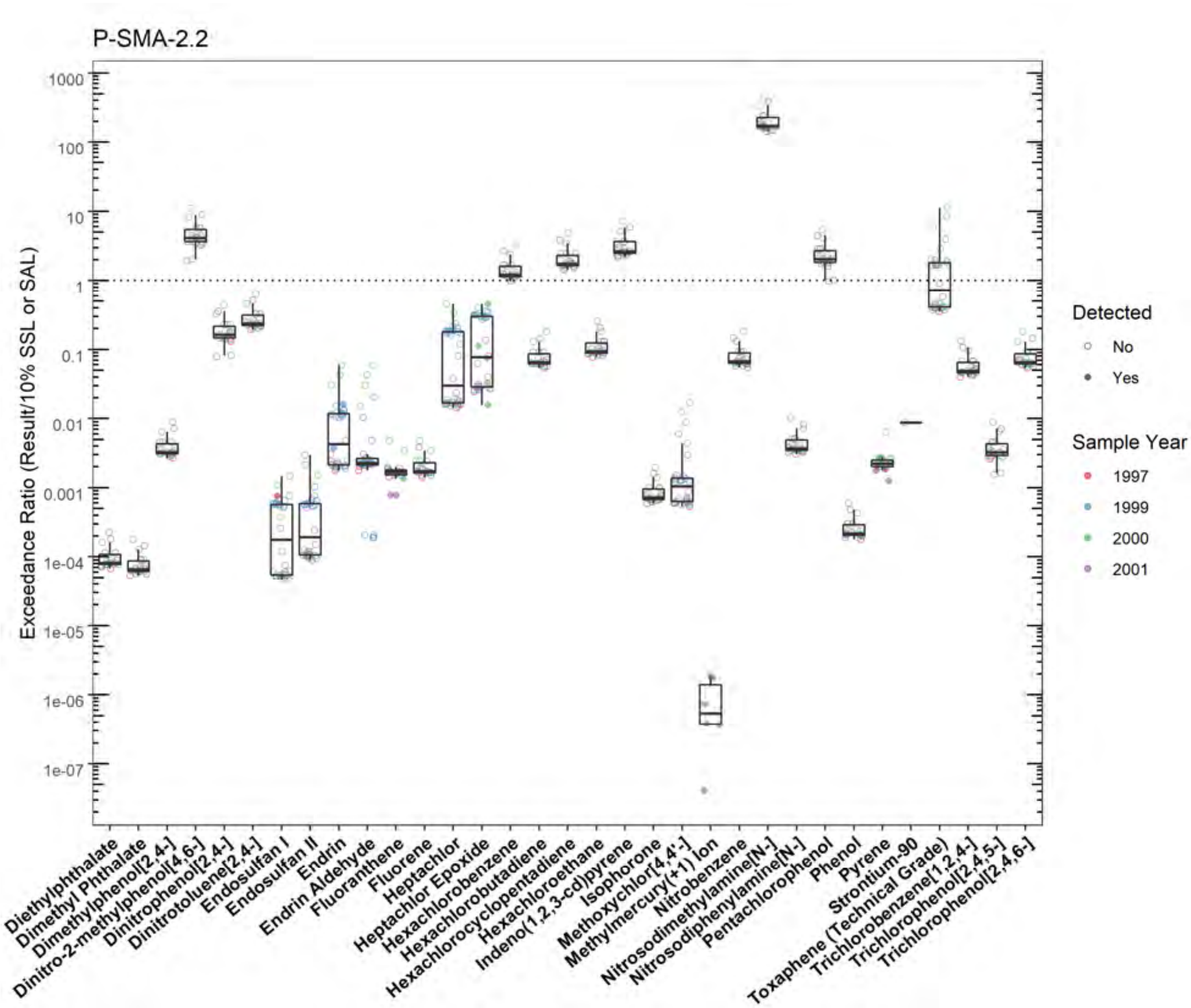

Figure 15.3-3 Organics Analytical Results from Soil Samples Associated with P-SMA-2.2 (Plot 2)

P-SMA-2.2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	P-SMA-2.2	Sb	Y	BTV	0.830	21.7	1999-06-16
Aroclor-1254	P-SMA-2.2	11097-69-1	Y	SSL_0.1	0.114	8.20	1999-06-16
Aroclor-1260	P-SMA-2.2	11096-82-5	Y	SSL_0.1	0.243	3.30	1999-06-16
Arsenic	P-SMA-2.2	As	Y	BTV	8.17	16.0	2000-01-26
Barium	P-SMA-2.2	Ba	Y	BTV	295	1640	1999-06-16
Benzo(a)anthracene	P-SMA-2.2	56-55-3	Y	SSL_0.1	0.153	0.360	1997-03-19
Benzo(a)pyrene	P-SMA-2.2	50-32-8	Y	SSL_0.1	0.112	0.530	2000-01-25
Benzo(b)fluoranthene	P-SMA-2.2	205-99-2	Y	SSL_0.1	0.153	1.30	2000-01-25
Beryllium	P-SMA-2.2	Be	Y	BTV	1.83	31.3	2001-03-29
Cadmium	P-SMA-2.2	Cd	Y	BTV	0.400	11.4	1999-06-16
Chromium	P-SMA-2.2	Cr	Y	BTV	19.3	93.5	1999-06-16
Copper	P-SMA-2.2	Cu	Y	BTV	14.7	457	1999-06-16
Lead	P-SMA-2.2	Pb	Y	BTV	22.3	557	1999-06-16
Mercury	P-SMA-2.2	Hg	Y	BTV	0.100	23.4	1999-06-16
Nickel	P-SMA-2.2	Ni	Y	BTV	15.4	1200	2000-01-26
Selenium	P-SMA-2.2	Se	Y	BTV	1.52	3.40	1999-06-16
Silver	P-SMA-2.2	Ag	Y	BTV	1.00	375	1999-06-16
Thallium	P-SMA-2.2	Tl	Y	BTV	0.730	0.820	1999-07-07
Vanadium	P-SMA-2.2	V	Y	BTV	39.6	94.6	1999-06-16
Zinc	P-SMA-2.2	Zn	Y	BTV	48.8	871	1999-06-16

Figure 15.3-4 Screening-Level Exceedances from Soil Samples Associated with P-SMA-2.2

15.4 Stormwater Evaluation

15.4.1 Summary of Stormwater Results Compared to TALs and BTVs

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

15.4.2 Assessment Unit and Stream Impairments

P-SMA-2.2 drains to Graduation Canyon (Pueblo Canyon to headwaters), which has impairments for dissolved copper and PCBs. The impairments may be Site-related, based on Site history.

15.5 Site-Specific Demonstration

15.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater at the current monitoring location: antimony, Aroclor-1254, Aroclor-1260, arsenic, barium, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, vanadium, and zinc.

15.5.2 Stormwater Data Summary

No confirmation-monitoring data.

15.5.3 2022 Permit Status

The SMA is in active monitoring; no corrective action samples have been collected at the current location.

15.5.4 Sampling and Analysis Plan

Table 15.5-1 is the proposed SAP for P-SMA-2.2.

Table 15.5-1 Proposed SAP, P-SMA-2.2

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment, sampler move, Site history, and soil data
Dissolved antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, nickel, silver, thallium, vanadium, and zinc	Impairment (copper), Site history (inorganic chemicals), sampler move, and soil data
Gross alpha	Site history and stormwater data
Tritium	Site history (radionuclides)
SVOCs	Site history, sampler move, and soil data
Total mercury and selenium	Site history (inorganic chemicals), sampler move, and soil data
DOC	Permit requirement
SSC	Permit requirement

16.0 P-SMA-3.05

Associated Sites	00-018(a)
Receiving Water	Pueblo Canyon
Drainage Area	0.4 acres
Landscape Characteristics	9% impervious, 91% pervious
Consent Order Site Status	SWMU 00-018(a): Pending Approval of Permit Modification Request. Certificate of Completion Received Without Controls
2010 AC Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	The August 2017 field visit determined that a berm should be added to the east of the sampling location 00-25529 (highest detection of silver) to capture any runoff from this area.
2022 Permit Status	Active Monitoring/Corrective Action

16.1 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. Stormwater monitoring has not occurred since 2013.

SWMU 00-018(a) received a COC under the Consent Order in January 2015. The Permittees submitted a certification of completion of corrective action per Permit part I.E.2(d) for the Site in April 2015 (LANL 2015, 600370).

16.2 Site History

00-018(a) (no date)

SWMU 00-018(a) consists of the decommissioned Pueblo Canyon WWTP, located at the end of Olive Street in Pueblo Canyon on Los Alamos County property. The plant, which was built between 1946 and 1948, began operating in 1951 and received waste from HRL at TA-43 until 1983, and from Los Alamos business and residential customers until 1991. From 1983 to 1991, the plant received only sanitary waste from Los Alamos businesses and residences. The plant was the primary supplier of irrigation water for the Los Alamos golf course and recreational ball fields.

From 1953 to 1983, this WWTP received laboratory waste (less than 10 L/month) from the HRL at TA-43, the only known laboratory contributor to the waste stream at the plant. The HRL generated chemical and radioactive wastes, but LANL policy required that radioactive wastes not be discharged to the drains. In the early 1960s, Los Alamos County assumed control of the WWTP and decommissioned it in 1992.

For investigation activities refer to “Phase II Investigation Report for Pueblo Canyon Aggregate Area” (LANL 2010, 110864).

16.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 16.2-1.

Table 16.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
00-018(a)	Pueblo Canyon WWTP	Beryllium, cadmium, lead, mercury, organic chemicals, uranium

16.3 Consent Order Soil Data

Decision-level data for SWMU 00-018(a) consist of results from samples collected in 1996, 2006, and 2010. Analytical results from those samples are presented in Figures 16.3-1 through 16.3-4. The lateral and vertical extent for all detected chemicals and radionuclides at SWMU 00-018(a) have been defined, including the extent of contaminant migration downslope towards Pueblo Canyon.

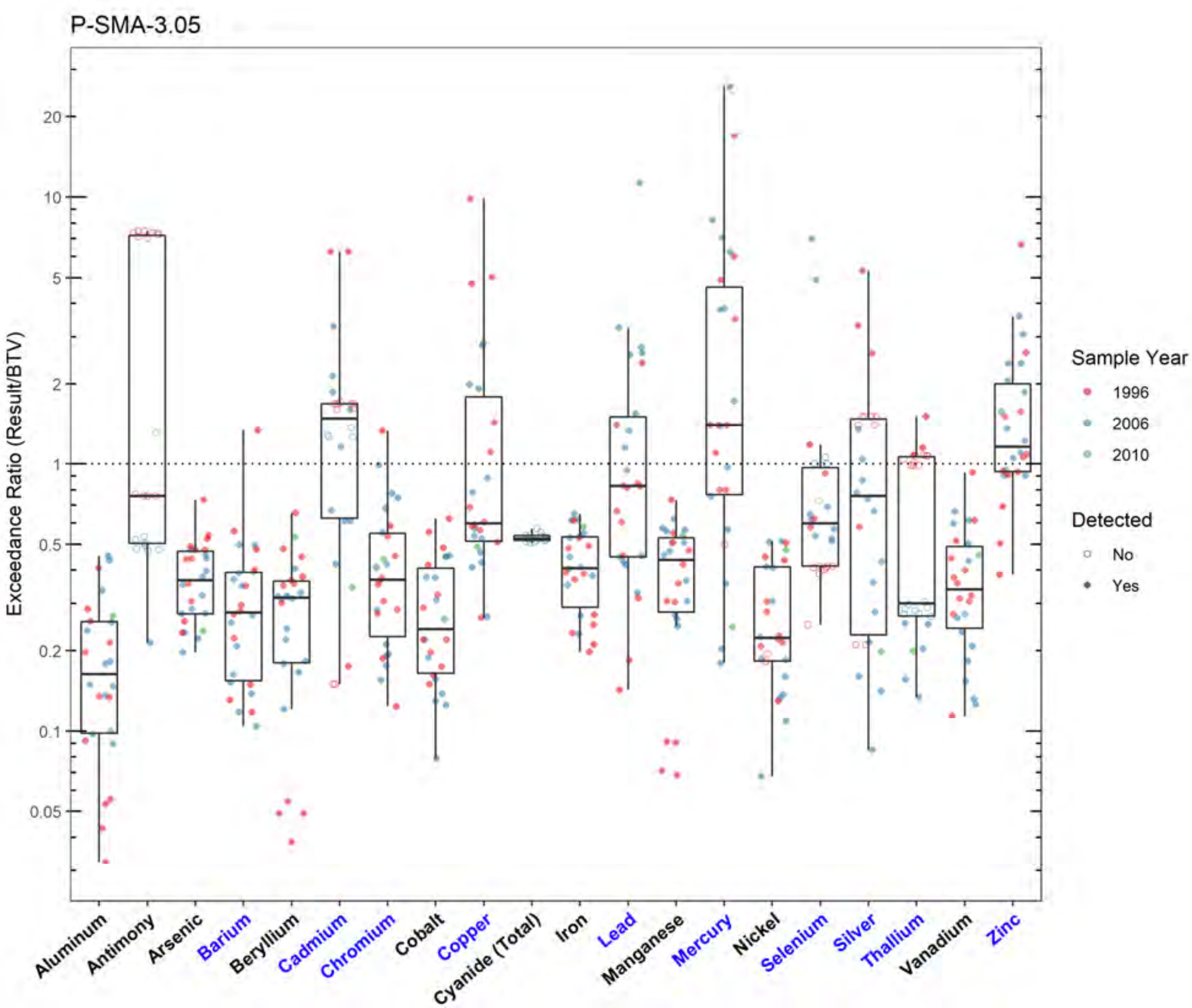

Figure 16.3-1 Inorganics Analytical Results from Soil Samples Associated with P-SMA-3.05

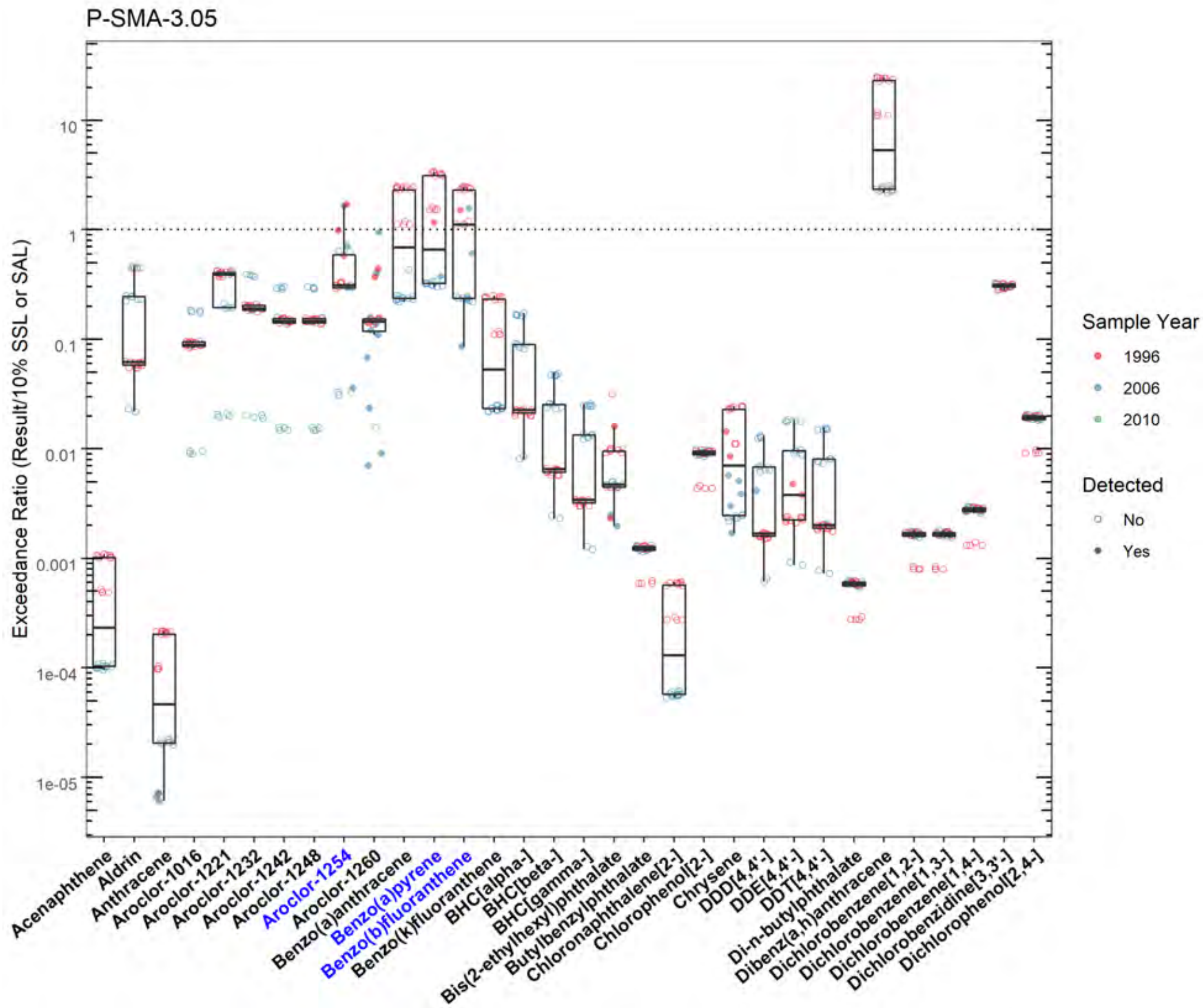

Figure 16.3-2 Organics Analytical Results from Soil Samples Associated with P-SMA-3.05 (Plot 1)

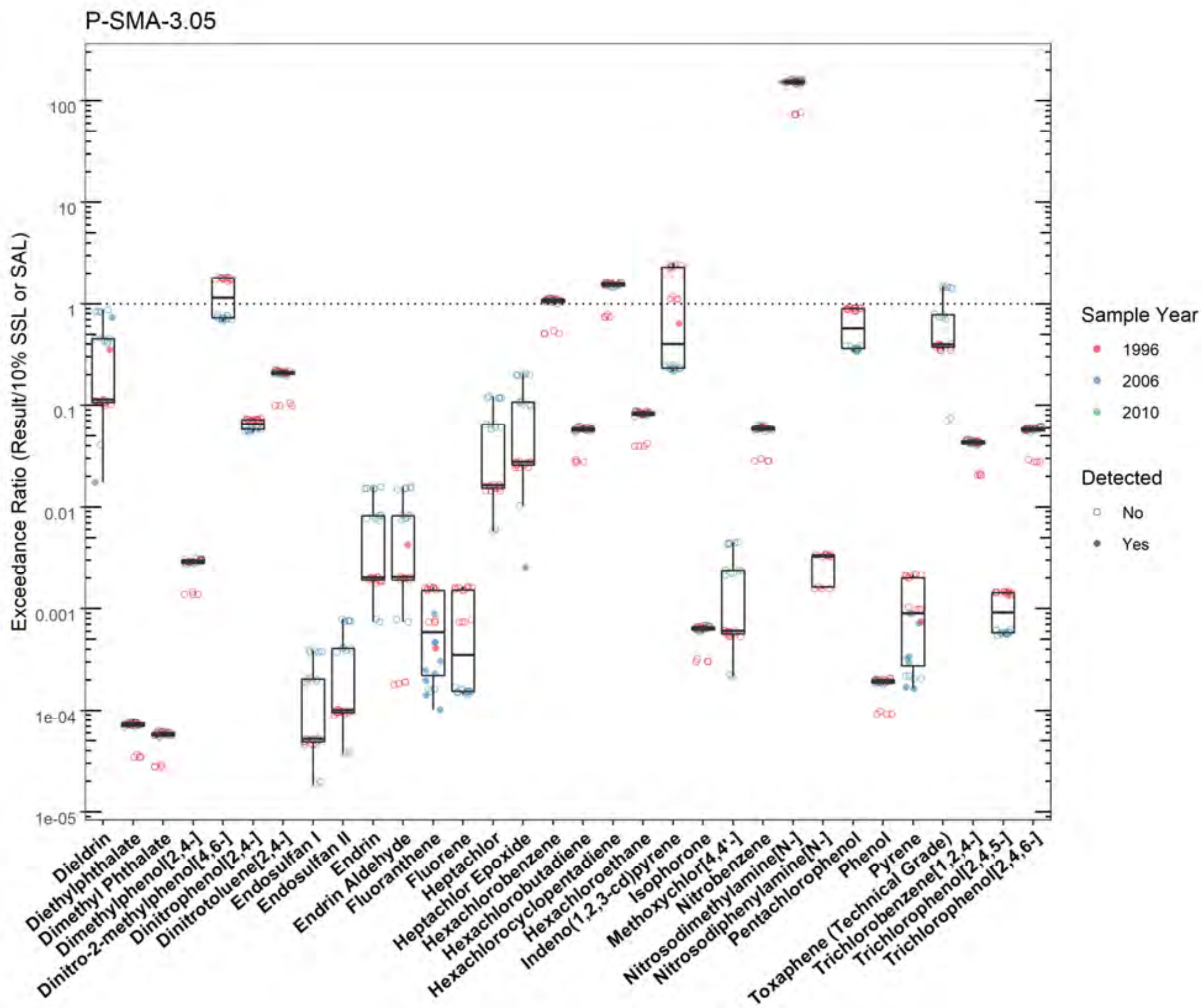

Figure 16.3-3 Organics Analytical Results from Soil Samples Associated with P-SMA-3.05 (Plot 2)

P-SMA-3.05

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	P-SMA-3.05	11097-69-1	Y	SSL_0.1	0.114	0.194	1996-09-17
Barium	P-SMA-3.05	Ba	Y	BTV	295	394	1996-09-17
Benzo(a)pyrene	P-SMA-3.05	50-32-8	Y	SSL_0.1	0.112	0.130	1996-09-17
Benzo(b)fluoranthene	P-SMA-3.05	205-99-2	Y	SSL_0.1	0.153	0.240	2006-07-27
Cadmium	P-SMA-3.05	Cd	Y	BTV	0.400	2.50	1996-09-11; 1996-09-17
Chromium	P-SMA-3.05	Cr	Y	BTV	19.3	25.6	1996-09-17
Copper	P-SMA-3.05	Cu	Y	BTV	14.7	145	1996-09-17
Lead	P-SMA-3.05	Pb	Y	BTV	22.3	251	2006-07-27
Mercury	P-SMA-3.05	Hg	Y	BTV	0.100	2.60	1996-09-17
Selenium	P-SMA-3.05	Se	Y	BTV	1.52	10.6	2006-08-02
Silver	P-SMA-3.05	Ag	Y	BTV	1.00	5.30	1996-09-17
Thallium	P-SMA-3.05	Tl	Y	BTV	0.730	1.10	1996-09-17
Zinc	P-SMA-3.05	Zn	Y	BTV	48.8	324	1996-09-17

Figure 16.3-4 Screening-Level Exceedances from Soil Samples Associated with P-SMA-3.05

16.4 Stormwater Evaluation

16.4.1 Summary of Stormwater Results Compared to 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 of this sampling are presented in Figures 16.4-1 and 16.4-2.

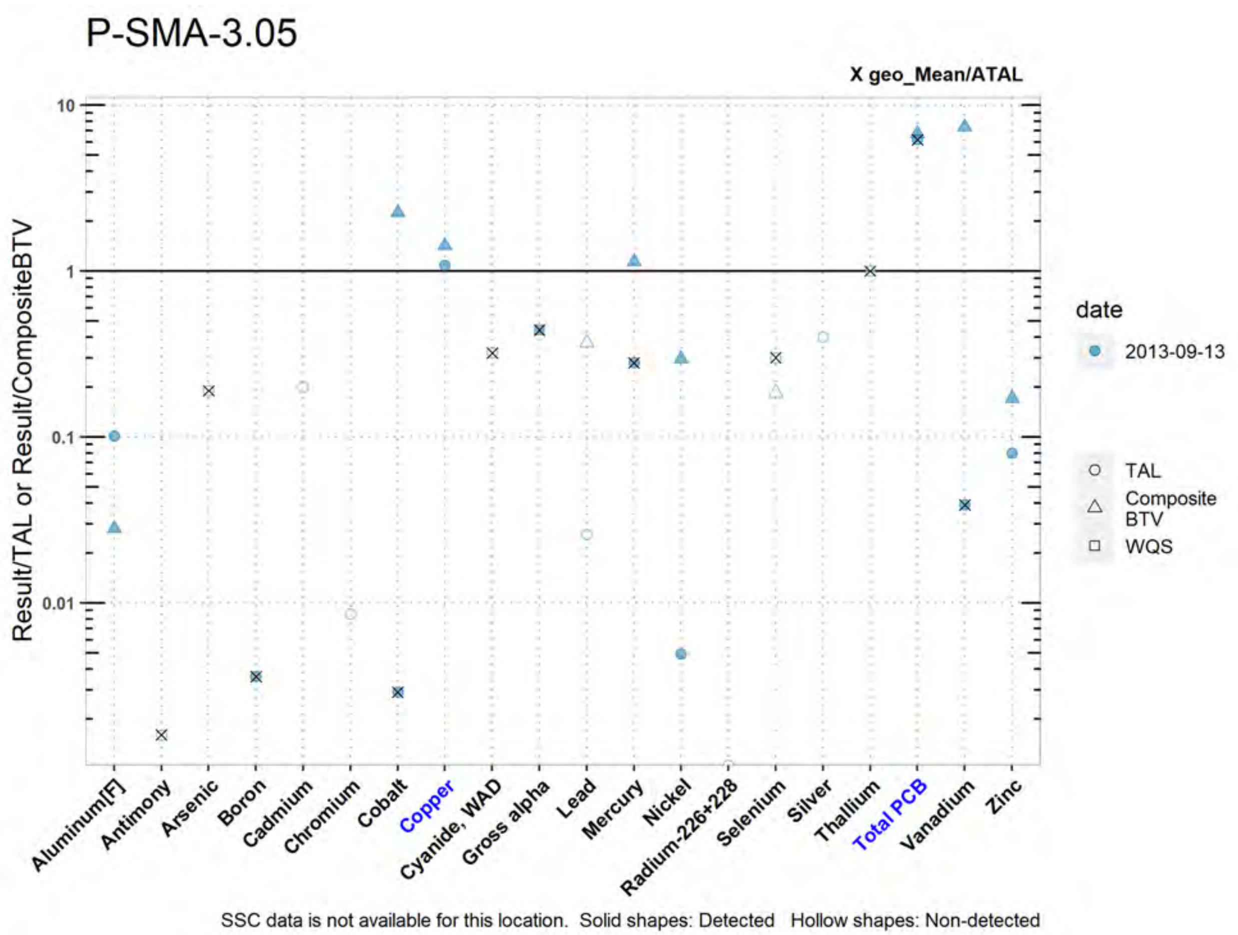

Figure 16.4-1 Analytical Results from Stormwater Sample, P-SMA-3.05 (Plot)

P-SMA-3.05

	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	0.65	233	NA	4.8	22	NA	19.3	NA	186	NA	20	0.49	NA	NA	NA	59.2
Composite_BTV	2690	NA	NA	NA	NA	NA	1.28	3.67	NA	56.5	1.36	0.189	3.10	4.79	8.14	NA	NA	0.0129	0.526	27.7
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
2013-09-13 result	75.6	*1.00*	*1.70*	18.1	*0.110*	*2.00*	2.87	5.20	*1.67*	6.64	*0.500*	0.216	0.914	*NA*	*1.50*	*0.200*	*0.450*	0.0868	3.87	4.73
2013-09-13 dT	0.101	NA	NA	0.0036	NA	NA	0.0029	1.08	NA	0.44	NA	0.28	0.00491	NA	NA	NA	NA	6.2	0.039	0.0799
2013-09-13 dB	0.0281	NA	NA	NA	NA	NA	2.24	1.42	NA	NA	NA	1.14	0.295	NA	NA	NA	NA	6.73	7.36	0.171
geo_mean/ATAL	NA	0.0016	0.19	0.0036	NA	NA	0.0029	NA	0.321	0.44	NA	0.28	NA	NA	0.30	NA	1	6.2	0.039	NA

Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 16.4-2 Analytical Results from Stormwater Sample, P-SMA-3.05 (Table)

16.4.2 Assessment Unit and Stream Impairments

P-SMA-3.05 drains to Pueblo Canyon (Acid Canyon to headwaters), which has impairments for adjusted gross alpha, total aluminum, dissolved copper, and PCBs. The adjusted gross alpha and PCB impairments may be Site-related, based on Site history.

16.5 Site-Specific Demonstration

16.5.1 Soil Data Summary

The Site-related POCs benzo(a)pyrene and benzo(b)fluoranthene exceeded the applicable screening value in soil data and have not yet been measured in stormwater.

Barium exceeded the applicable screening value in soil data but is not a Site-related POC and will not be added to the SAP. With the exception of copper, the remaining metals that exceeded the applicable 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.

Copper and Aroclor-1254 exceeded the applicable screening value in soil data and will continue to be monitored in stormwater data.

16.5.2 Stormwater Data Summary

Copper and PCBs exceeded TALs and BTVs in 2013 stormwater data.

16.5.3 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.2.b.i) for copper and PCBs. The SMA is also in active monitoring; not all Site-related POCs were analyzed for in past samples.

16.5.4 Sampling and Analysis Plan

Table 16.5-1 is the proposed SAP for P-SMA-3.05.

Table 16.5-1 Proposed SAP, P-SMA-3.05

Monitoring Constituent	Background for Monitoring
SVOCs	Site history and soil data
Dissolved uranium	Stormwater data and Site history
DOC	Permit requirement
SSC	Permit requirement

17.0 LA-SMA-0.85

Associated Sites	03-055(c)
Receiving Water	Los Alamos Canyon
Drainage Area	4.34 acres
Landscape Characteristics	45% impervious, 55% pervious
Consent Order Site Status	SWMU 03-055(c): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls
2010 AC Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the February 2018 field visit, all parties agreed that the current sampler location and boundary are the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring/Corrective Action

17.1 2010 Administratively Continued Permit Summary

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

Following the October 2012 submittal of certification of enhanced control installation as a corrective action (LANL 2012, 228782) to EPA, the sampler was relocated to a more representative location and corrective-action monitoring was initiated. Stormwater samples were collected in November 2012 and May 2013. Analytical results from these samples initiated corrective action.

SWMU 03-055(c) received a COC under the Consent Order in September 2019. The Permittees submitted a certification of completion of corrective action for the Site to EPA per Permit part I.E.2(d) in December 2019 (N3B 2019, 700724). Stormwater monitoring has not occurred since 2013.

17.2 Site History

03-055(c) (9/28/2021)

SWMU 03-055(c) is an outfall and associated storm drain located north of the fire station (building 03-41) in the northeast corner of TA-03. Stormwater is channeled toward Los Alamos Canyon through a galvanized CMP to the SWMU 03-055(c) outfall. From the early 1960s until 1991, floor drains in the fire station (building 03-41) were tied into the SWMU 03-055(c) storm drain. In 1992, the fire station floor drains were rerouted to the TA-03 sanitary sewer system. Currently, the storm drain collects and channels only stormwater runoff from parking lots located in the northern portion of TA-03 to the SWMU 03-055(c) outfall. The Site is currently an undeveloped wooded area north of fire station 03-41 on DOE property.

For investigation activities, refer to “Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area, Revision 1” (N3B 2021, 701261).

17.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 17.2-1.

Table 17.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
03-055(c)	Outfall	Inorganic and organic chemicals

17.3 Consent Order Soil Data

Decision-level data for SWMU 03-055(c) consist of results from samples collected in 2007 and 2011. Analytical results from those samples are presented in Figures 17.3-1 through 17.3-4. Revision 1 of "Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area, Revision 1" (N3B 2021, 701261) concluded that the nature and extent of contamination have been defined, and no further sampling for extent is warranted.

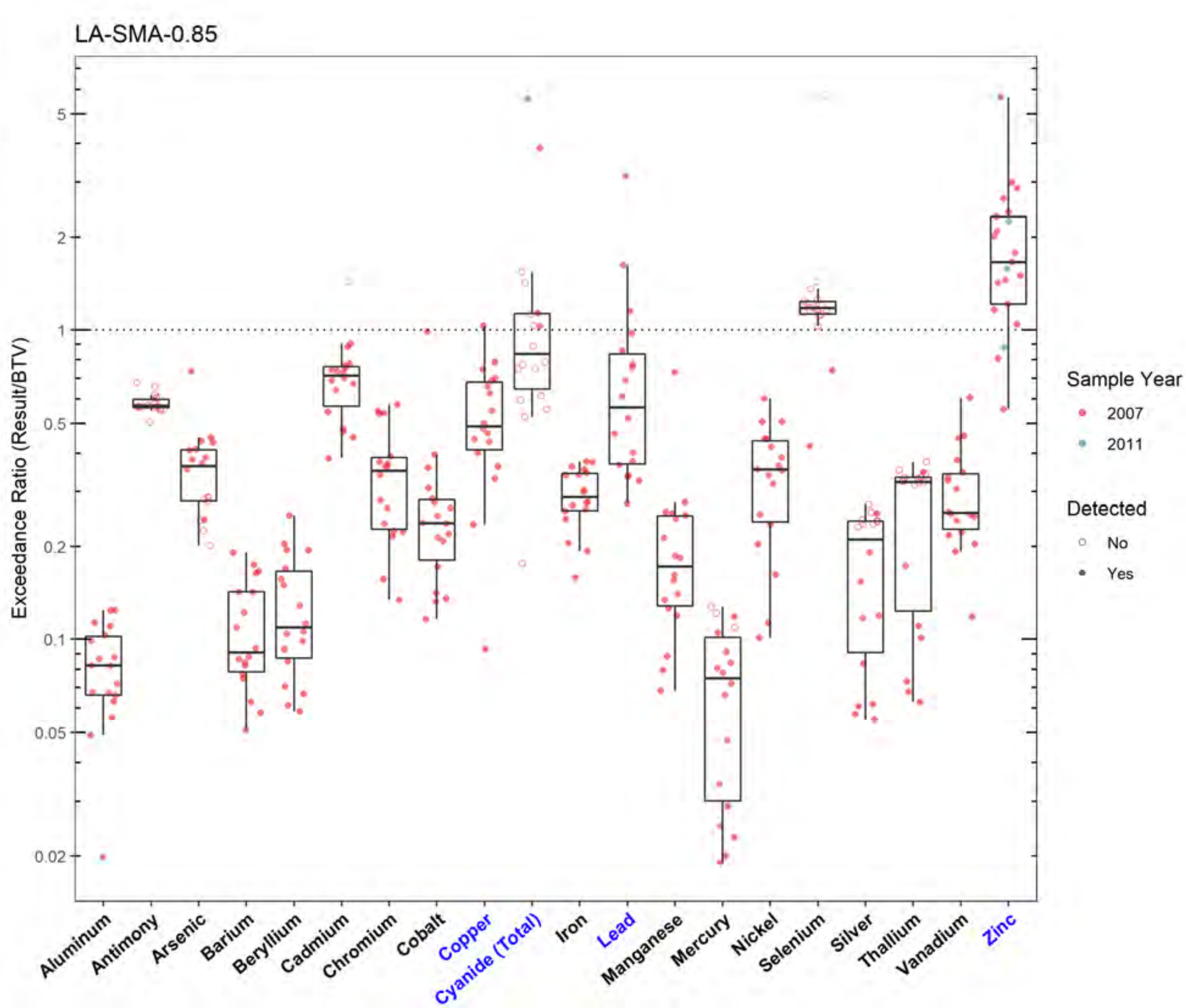

Figure 17.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-0.85

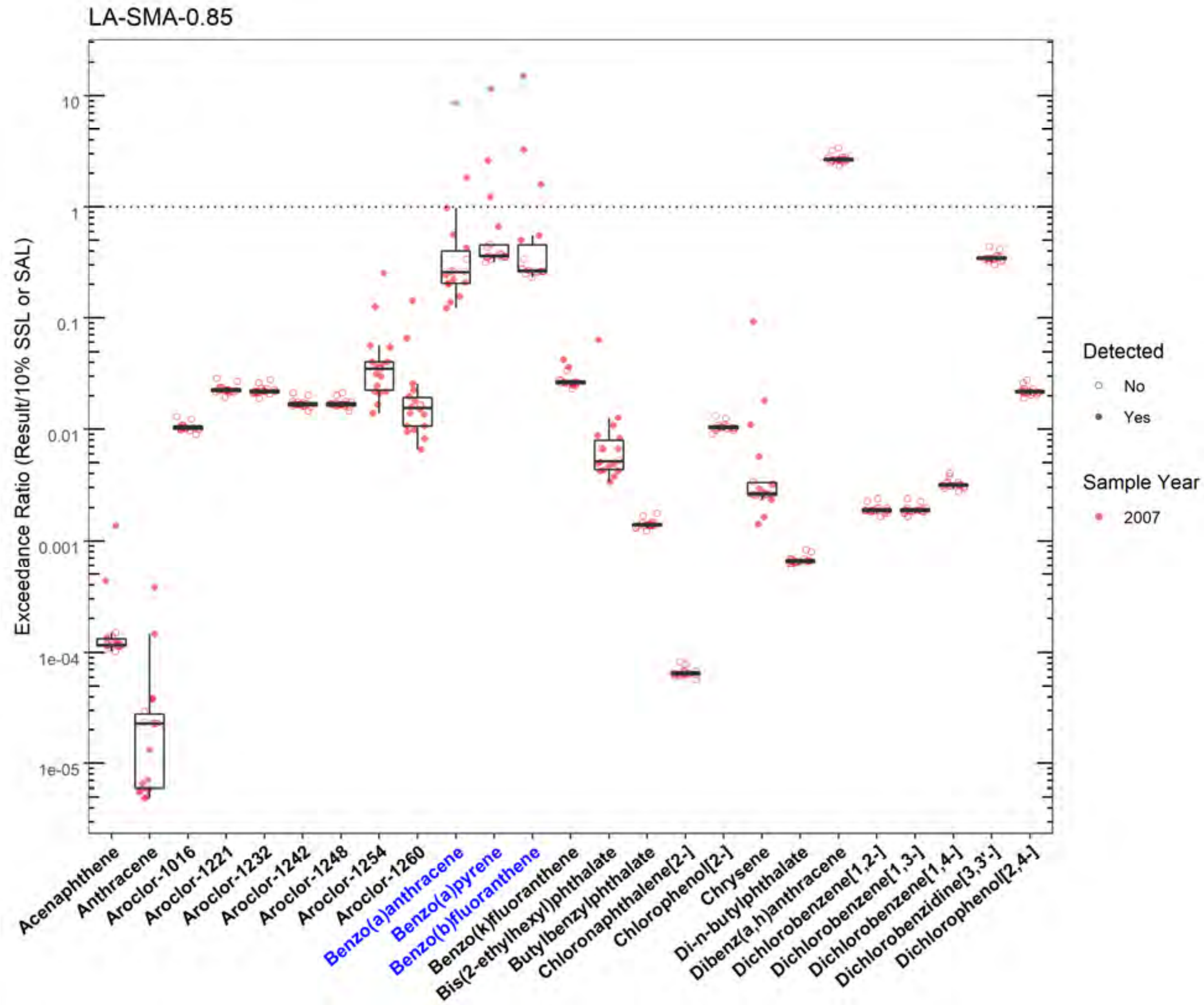

Figure 17.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-0.85 (Plot 1)

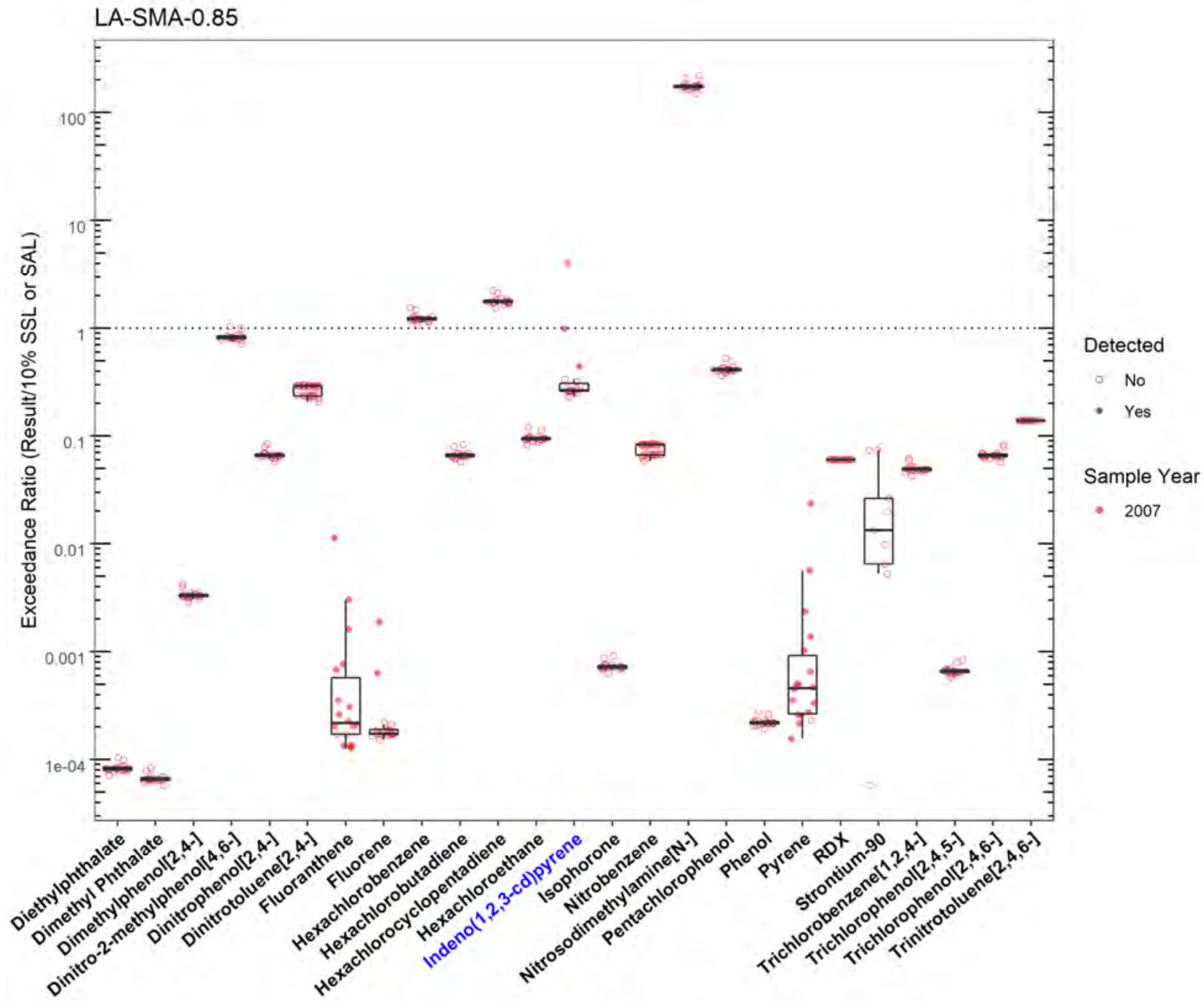

Figure 17.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-0.85 (Plot 2)

LA-SMA-0.85

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	LA-SMA-0.85	56-55-3	Y	SSL_0.1	0.153	1.31	2007-12-05
Benzo(a)pyrene	LA-SMA-0.85	50-32-8	Y	SSL_0.1	0.112	1.30	2007-12-05
Benzo(b)fluoranthene	LA-SMA-0.85	205-99-2	Y	SSL_0.1	0.153	2.29	2007-12-05
Copper	LA-SMA-0.85	Cu	Y	BTV	14.7	15.1	2007-12-05
Cyanide (Total)	LA-SMA-0.85	CN(TOTAL)	Y	BTV	0.500	2.79	2007-12-05
Indeno(1,2,3-cd)pyrene	LA-SMA-0.85	193-39-5	Y	SSL_0.1	0.153	0.606	2007-12-05
Lead	LA-SMA-0.85	Pb	Y	BTV	22.3	70.0	2007-12-05
Zinc	LA-SMA-0.85	Zn	Y	BTV	48.8	276	2007-12-05

Figure 17.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-0.85

17.4 Stormwater Evaluation

17.4.1 Summary of Stormwater Results Compared to TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Corrective action stormwater samples were collected in November 2012 and May 2013. Analytical results from those samples presented in Figures 17.4-1 and 17.4-2.

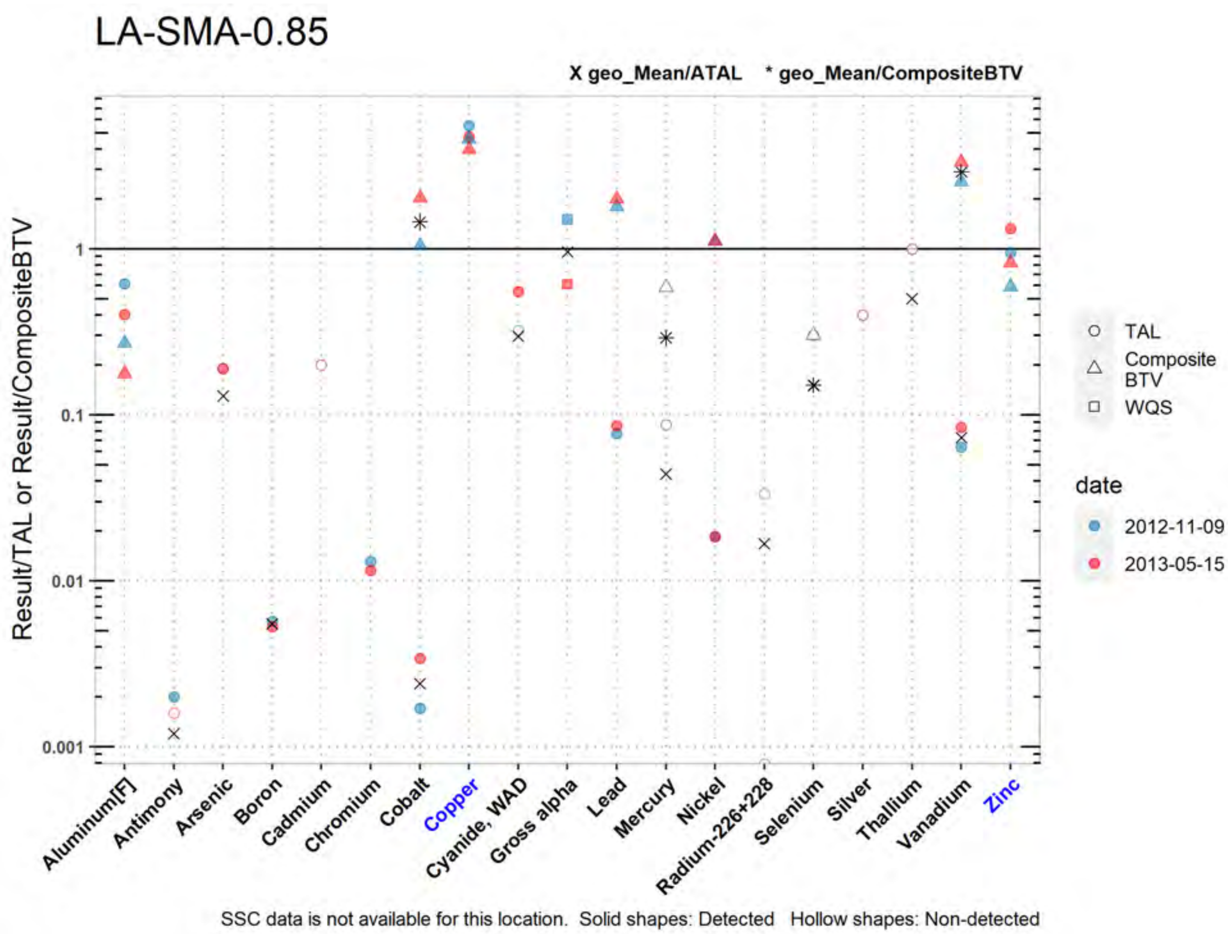

Figure 17.4-1 Analytical Results from Stormwater Samples, LA-SMA-0.85 (Plot)

LA-SMA-0.85

	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	0.65	233	NA	4.8	22	NA	19.3	NA	186	NA	20	0.49	NA	NA	59.2
Composite_BTV	1710	NA	NA	NA	NA	NA	1.66	5.76	NA	53.8	0.829	0.115	3.10	6.98	4.97	NA	NA	2.52	94.9
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
2012-11-09 result	462	1.28	*1.70*	28.4	*0.110*	3.04	1.73	26.4	*1.67*	22.9	1.48	*0.0670*	3.44	*1.00*	*1.50*	*0.200*	*0.450*	6.40	56.1
2012-11-09 dT	0.616	0.0020	NA	0.0057	NA	0.0130	0.0017	5.50	NA	1.5	0.0767	NA	0.0185	NA	NA	NA	NA	0.064	0.948
2012-11-09 dB	0.270	NA	NA	NA	NA	NA	1.04	4.58	NA	NA	1.79	NA	1.11	NA	NA	NA	NA	2.54	0.591
2013-05-15 result	302	*1.00*	1.71	26.4	*0.110*	2.67	3.35	22.8	2.86	9.10	1.65	*0.0670*	3.44	*NA*	*1.50*	*0.200*	*0.450*	8.37	78.2
2013-05-15 dT	0.403	NA	0.19	0.0053	NA	0.0115	0.0034	4.75	0.550	0.61	0.0855	NA	0.0185	NA	NA	NA	NA	0.084	1.32
2013-05-15 dB	0.177	NA	NA	NA	NA	NA	2.02	3.96	NA	NA	1.99	NA	1.11	NA	NA	NA	NA	3.32	0.824
geo_mean/ATAL	NA	0.0012	0.13	0.0055	NA	NA	0.0024	NA	0.297	0.96	NA	0.044	NA	0.0167	0.15	NA	0.5	0.073	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	1.45	NA	NA	NA	NA	0.291	NA	NA	0.151	NA	NA	2.90	NA

Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV, geo_mean/B=geo_mean/composite_BTV

Figure 17.4-2 Analytical Results from Stormwater Samples, LA-SMA-0.85 (Table)

17.4.2 Assessment Unit and Stream Impairments

LA-SMA-0.85 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. These impairments may be Site-related, based on Site history with the exception of gross alpha.

17.5 Site-Specific Demonstration

17.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, benzo(b)Fluoranthene, and indeno(1,2,3-cd)pyrene.

Copper exceeded the applicable screening value in soil data and in stormwater, and will be added to the SAP. Lead and zinc exceeded the applicable screening value in soil data and were previously measured in stormwater data and did not exceed TAL and/or BTV, therefore they will not be added to the SAP.

17.5.2 Stormwater Data Summary

Copper exceeded the TAL and BTV, while zinc exceed the TAL but not the BTV.

17.5.3 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.2.b.i) for copper. The SMA is also in active monitoring; not all Site-related POCs were analyzed for in past samples.

17.5.4 Sampling and Analysis Plan

Table 17.5-1 is the proposed SAP for LA-SMA-0.85.

Table 17.5 Proposed SAP, LA-SMA-0.85

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment and Site history (organic chemicals)
SVOCs	Site history (organic chemicals) and soil data
DOC	Permit requirement
SSC	Permit requirement

18.0 LA-SMA-0.9

Associated Sites	00-017, C-00-044
Receiving Water	Los Alamos Canyon
Drainage Area	0.06 acres
Landscape Characteristics	20% impervious, 80% pervious
Consent Order Site Status	SWMU 00-017: In Progress AOC C-00-044: Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 AC Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the October 2017 field visit, the sampler could be moved to a better location to increase the chance of collecting a sample. Therefore, the sampler was moved.
2022 Permit Status	Active Monitoring

18.1 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 2018 SAP, a decision was made to implement the monitoring location move that had been recommended during the 2017 SIP review. 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.

18.2 Site History

00-017 (9/28/2021)

SWMU 00-017 consists of inactive industrial waste lines within the Los Alamos townsite that are not incorporated into other SWMUs and AOCs. The portion of SWMU 00-017 within Upper Los Alamos Canyon Aggregate Area includes former industrial waste line 167, former manhole ULR 33, and former industrial waste lines 170 and 171. Former waste line 167 and former manhole ULR-33 were removed before 1985, except for the concrete anchors and sections of drainline encased in the anchors. Lines 170 and 171 are the only sections of industrial waste line known to remain in Los Alamos townsite. The site of former waste line 167 and former manhole ULR-33 under the Omega Bridge in Los Alamos Canyon remains undeveloped. Nine concrete anchors and 3-ft-long sections of drainpipe encased in each of the anchors remain at the Site. Other portions of SWMU 00-017 are within Pueblo Canyon Aggregate Area.

The SWMU 00-017 waste lines received industrial waste from SWMUs 03-038(a) and 03-038(b), a former pump house with two concrete underground tanks and a former 28,500-gal. steel waste-holding tank, respectively. The estimated operation period for the majority of these waste lines was from the 1950s to the 1970s. Phased decommissioning and removal of the waste lines began in 1964, and various removal projects were completed through 1986.

Currently, the former location of line 167 on the canyon wall beneath the Omega Bridge is undeveloped. The location of line 170 is covered with asphalt parking lots and narrow landscaped areas in the parking lot medians. The location of line 171 is entirely covered by the parking lot and the Los Alamos Medical Center (LAMC). Both remaining waste-line sections are 15 to 20 ft bgs.

C-00-044 (9/28/2021)

AOC C-00-044 consists of surface contamination resulting from the historical use of lead-based paint on the Omega Bridge. The bridge was constructed in 1951 and is located in both TA-00 and TA-03. This AOC was identified in 1999 during RFI activities conducted at SWMU 00-017. Elevated lead concentrations were detected in surface samples collected from locations in Los Alamos Canyon under the north and south ends of the Omega Bridge during the investigation of SWMU 00-017. The lead could not reasonably be attributed to SWMU 00-017, an inactive underground industrial waste line. Further research, and interviews with Los Alamos County and Laboratory maintenance staff, established that lead paint chips had been deposited beneath the bridge on the north and south slopes of Los Alamos Canyon as a result of periodic bridge maintenance activities, including scraping and chipping old lead-based paint before new paint was applied. The use of lead-based paint has been discontinued.

For investigation activities for the Sites, refer to “Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area, Revision 1” (N3B 2021, 701261).

18.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 18-2-1.

Table 18.2-1 POCs Known or Suspected to be Used Historically at the Sites

Site	Potential POC Source	Potential POCs
00-017	Industrial waste lines (components of RLW)	Radionuclides
C-00-044	Surface contamination (lead paint on Omega Bridge)	Lead

18.3 Consent Order Soil Data

Decision-level data at SWMU 00-017 consist of results from samples collected in 1998–1999, 2009, and 2012. “Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area, Revision 1” (N3B 2021, 701261) concluded that the lateral and vertical extent of contamination are defined, and no further sampling for extent is warranted within the areas of SWMU 00-017 that have been sampled.

Decision-level data for AOC C-00-044 consist of results from samples collected in 2011 and 2013. “Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area, Revision 1” (N3B 2021, 701261) concluded that the lateral and vertical extent of inorganic and organic contamination have been defined, or no further sampling for extent is warranted.

Analytical results from all decision-level soil samples collected for LA-SMA-0.9 are presented in Figures 18.3-1 through 18.3-4.

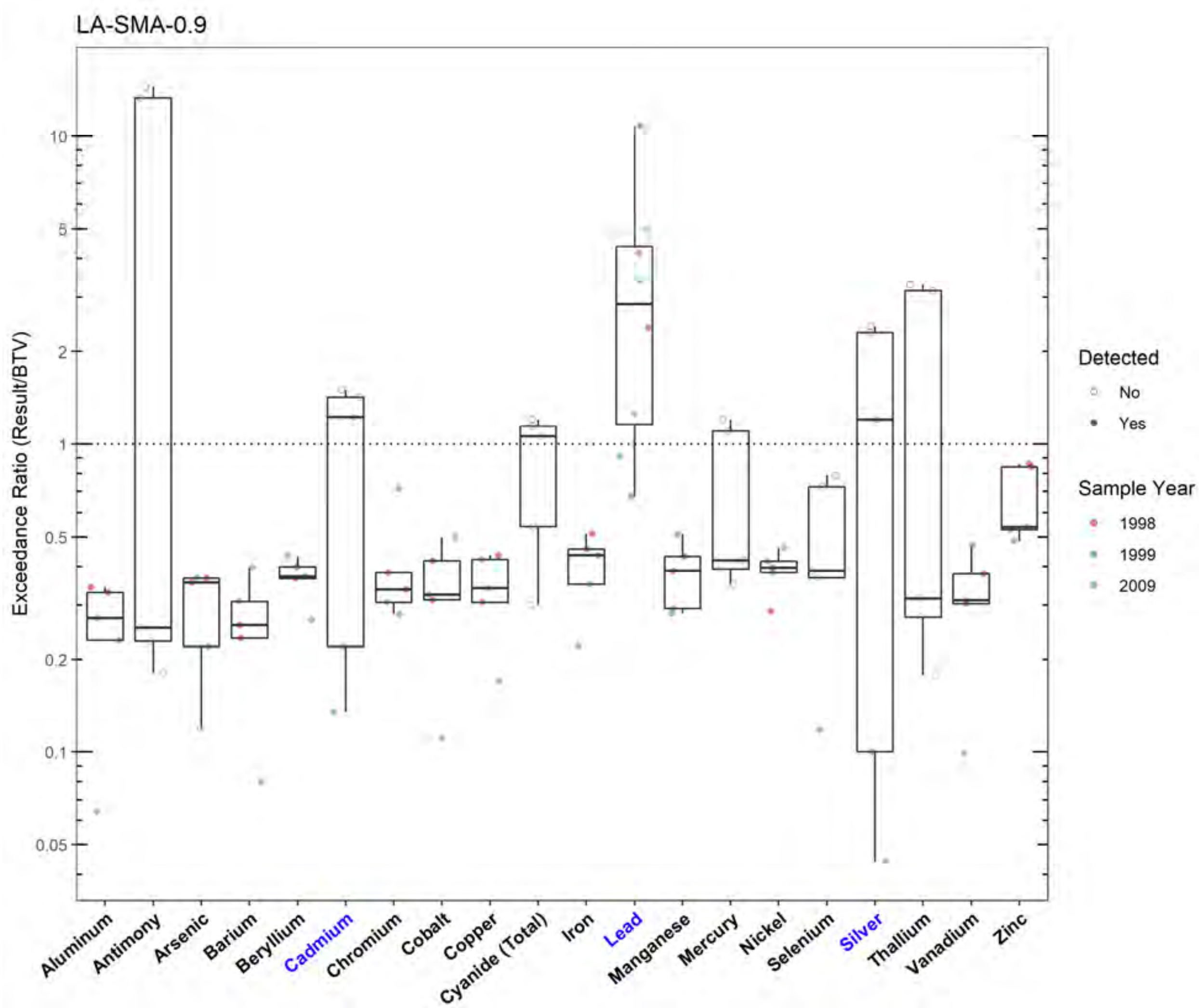

Figure 18.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-0.9

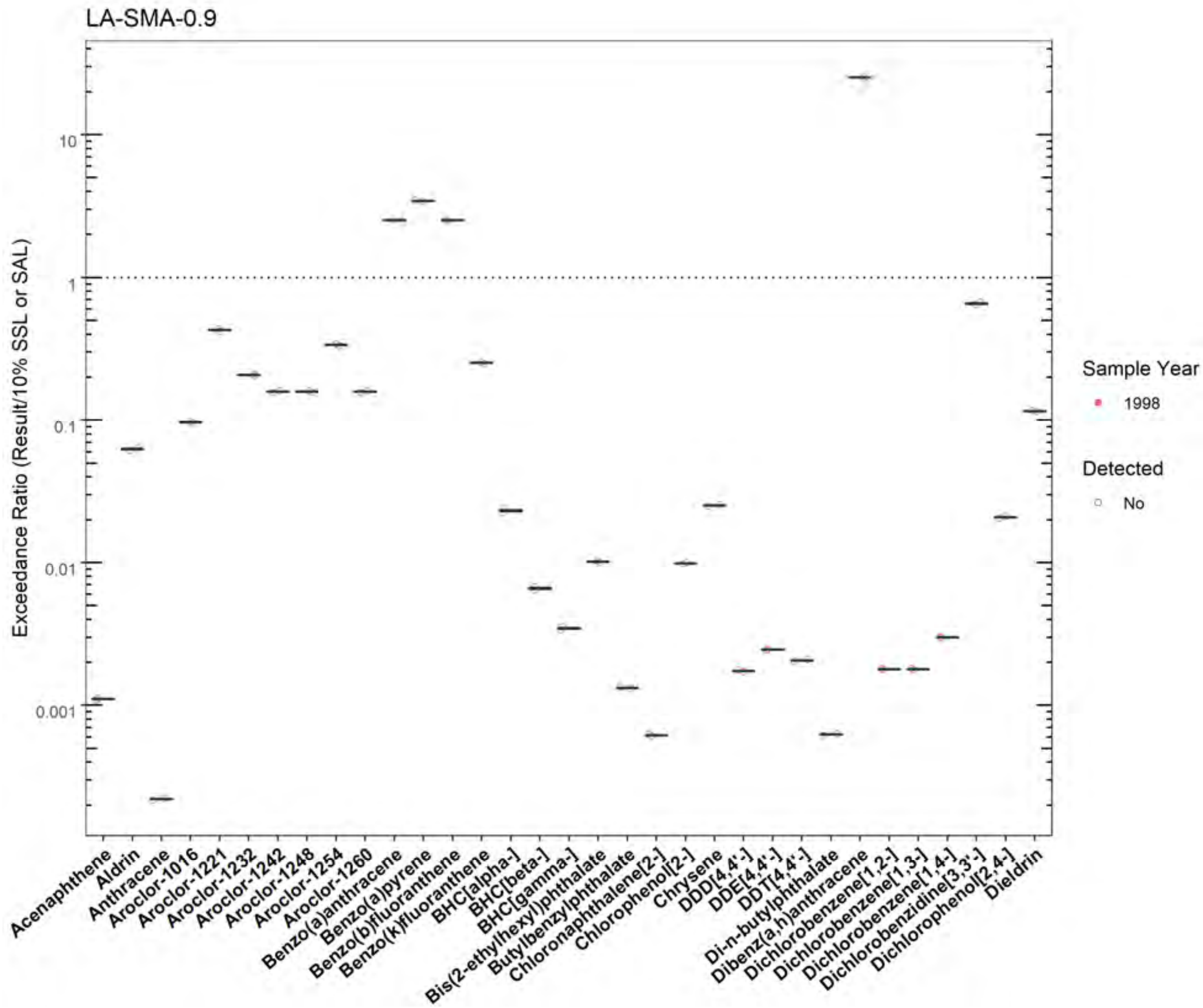

Figure 18.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-0.9 (Plot 1)

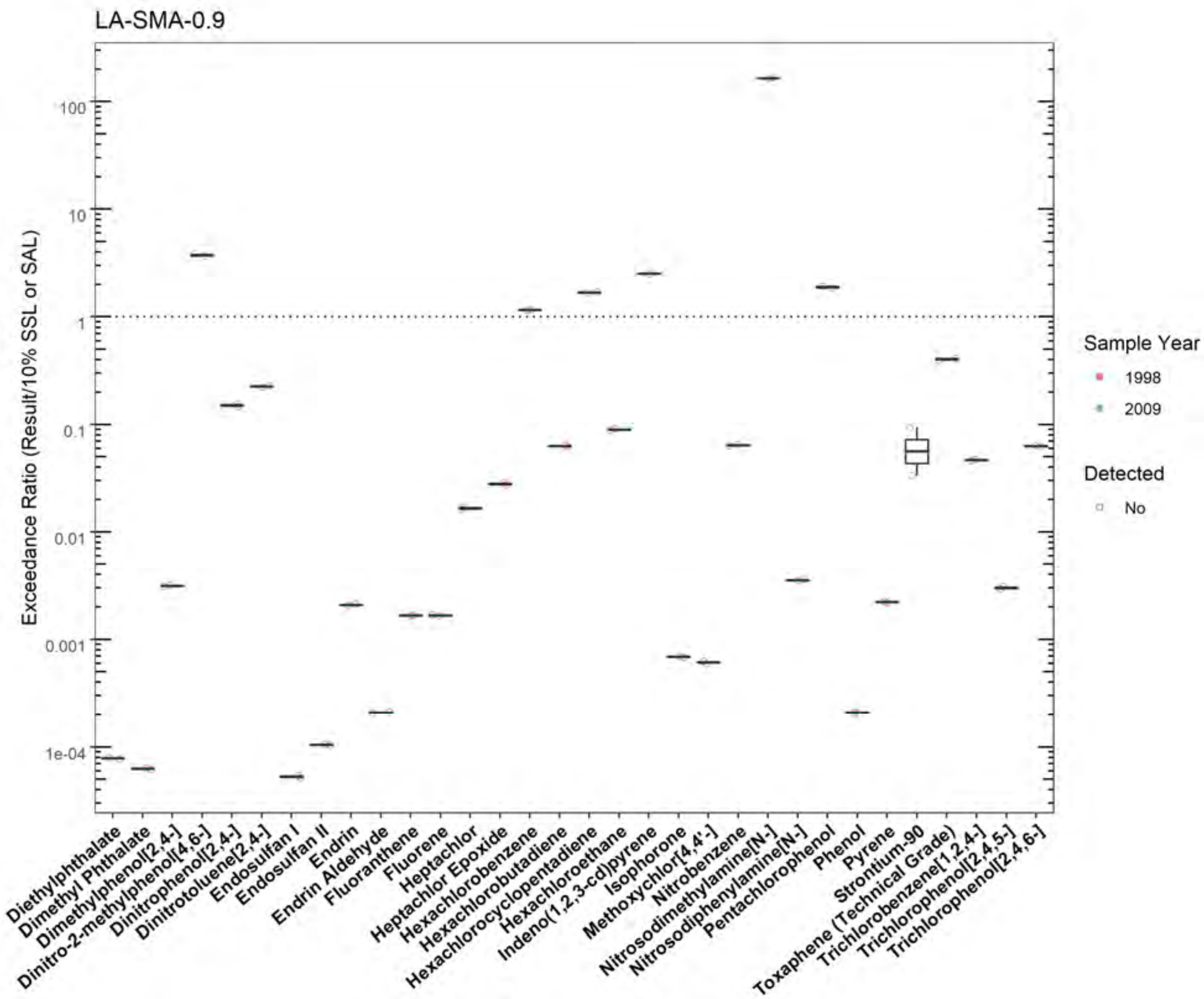

Figure 18.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-0.9 (Plot 2)

LA-SMA-0.9

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Cadmium	LA-SMA-0.9	Cd	Y	BTV	0.400	0.490	2009-01-21
Lead	LA-SMA-0.9	Pb	Y	BTV	22.3	240	1999-01-20
Silver	LA-SMA-0.9	Ag	Y	BTV	1.00	1.20	2009-01-21

Figure 18.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-0.9

18.4 Stormwater Evaluation

18.4.1 Summary of Stormwater Results Compared to TALs and BTVs

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

18.4.2 Assessment Unit and Stream Impairments

LA-SMA-0.9 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The adjusted gross alpha impairment may be Site-related, based on Site history.

18.5 Site-Specific Demonstration

18.5.1 Soil Data Summary

Lead is the only Site-related POC that exceeded the applicable screening value in soil data and has not yet been measured in stormwater. Cadmium and silver exceeded the applicable screening value in soil data but are not Site-related POCs and will not be added to the SAP.

18.5.2 Stormwater Data Summary

No confirmation-monitoring data.

18.5.3 2022 Permit Status

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

18.5.4 Sampling and Analysis Plan

Table 18.5-1 is the proposed SAP for LA-SMA-0.9.

Table 18.5-1 Proposed SAP, LA-SMA-0.9

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history (radionuclides)
Radium-226 and radium-228	Site history (radionuclides)
Tritium	Site history (radionuclides)
Dissolved lead	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

19.0 LA-SMA-1

Associated Sites	00-017, C-00-044
Receiving Water	Los Alamos Canyon
Drainage Area	0.93 acres
Landscape Characteristics	38% impervious, 62% pervious
Consent Order Site Status	SWMU 00-017: In Progress AOC C-00-044: Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 AC Permit Final Status	Corrective Action Complete/Alternative Compliance Requested
2016–2018 SIP Actions	Based on the October 2017 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Sites.
2022 Permit Status	Corrective Action

19.1 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 December 2012 submittal of certification of enhanced control installation as a corrective action to EPA (LANL 2012, 232349), the sampler was relocated to a more representative location and corrective-action monitoring was initiated. Stormwater samples were collected in September 2013 and July 2014. Analytical results from these samples initiated corrective action.

The Permittees submitted a request for alternative compliance to EPA per permit Part I.E.3 in May 2015 for AOC C-00-044 (LANL 2015, 600418). No response has been received from EPA and stormwater monitoring has not occurred for this Site since 2014.

Following the September 2015 submittal to EPA of certification of a no exposure condition (LANL 2015, 600932), corrective-action monitoring was initiated for SWMU 00-017 and an investigation sample was collected in July 2017. The Permittees submitted a completion of corrective action per Permit part I.E.1(b) for the Site in November 2017 (LANL 2017, 602741). Stormwater monitoring has not occurred for this Site since 2017.

19.2 Site History

00-017 (9/28/2021)

SWMU 00-017 consists of inactive industrial waste lines within the Los Alamos townsite that are not incorporated into other SWMUs and AOCs. The portion of SWMU 00-017 within Upper Los Alamos Canyon Aggregate Area includes former industrial waste line 167, former manhole ULR-33, and former industrial waste lines 170 and 171. Former waste line 167 and former manhole ULR-33 were removed before 1985, except for the concrete anchors and sections of drainline encased in the anchors. Lines 170 and 171 are the only sections of industrial waste line known to remain in Los Alamos townsite. The site of former waste line 167 and former manhole ULR-33 under the Omega Bridge in Los Alamos Canyon remains undeveloped. Nine concrete anchors and 3-ft-long sections of drainpipe encased in each of the anchors remain at the Site. Other portions of SWMU 00-017 are within Pueblo Canyon Aggregate Area.

The SWMU 00-017 waste lines received industrial waste from SWMUs 03-038(a) and 03-038(b), a former pump house with two concrete underground tanks and a former 28,500-gal. steel waste-holding tank, respectively. The estimated operation period for the majority of these waste lines was from the 1950s to the 1970s. Phased decommissioning and removal of the waste lines began in 1964, and various removal projects were completed through 1986.

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C-00-044 (9/28/2021)

AOC C-00-044 consists of surface contamination resulting from the historical use of lead-based paint on the Omega Bridge. The bridge was constructed in 1951 and is located in both TA-00 and TA-03. This AOC was identified in 1999 during RFI activities conducted at SWMU 00-017. Elevated lead concentrations were detected in surface samples collected from locations in Los Alamos Canyon under the north and south ends of the Omega Bridge during the investigation of SWMU 00-017. The lead could not reasonably be attributed to SWMU 00-017, an inactive underground industrial waste line. Further research, and interviews with Los Alamos County and Laboratory maintenance staff, established that lead paint chips had been deposited beneath the bridge on the north and south slopes of Los Alamos Canyon as a result of periodic bridge maintenance activities, including scraping and chipping old lead-based paint before new paint was applied. The use of lead-based paint has been discontinued.

For investigation activities for the Sites, refer to “Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area, Revision 1” (N3B 2021, 701261).

19.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 19.2-1.

Table 19.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
00-017	Industrial waste lines (components of RLW)	Radionuclides
C-00-044	Surface Contamination (lead paint on Omega Bridge)	Lead

19.3 Consent Order Soil Data

Decision-level data at SWMU 00-017 consist of results from samples collected in 1998–1999, 2009, and 2012. Revision 1 of the 2021 Phase II IR concluded that the lateral and vertical extent of contamination are defined, and no further sampling for extent is warranted within the areas of SWMU 00-017 that have been sampled.

Decision-level data for AOC C-00-044 consist of results from samples collected in 2011 and 2013. Revision 1 of the 2021 Phase II IR concluded that the lateral and vertical extent of inorganic and organic contamination have been defined, and no further sampling for extent is warranted.

Analytical results from all decision-level soil samples collected for LA-SMA-1 are presented in Figures 19.3-1 through 19.3-4.

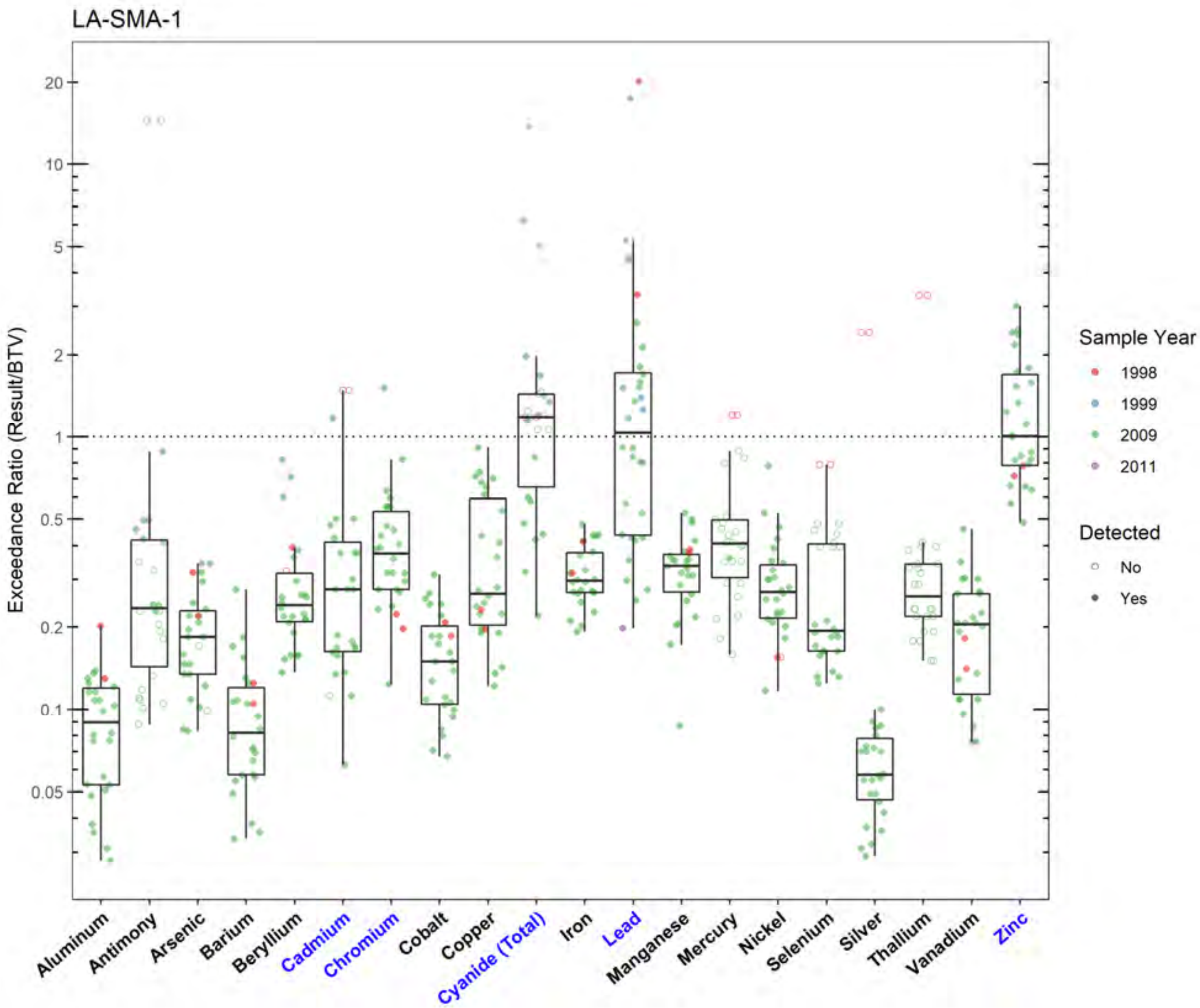


Figure 19.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-1

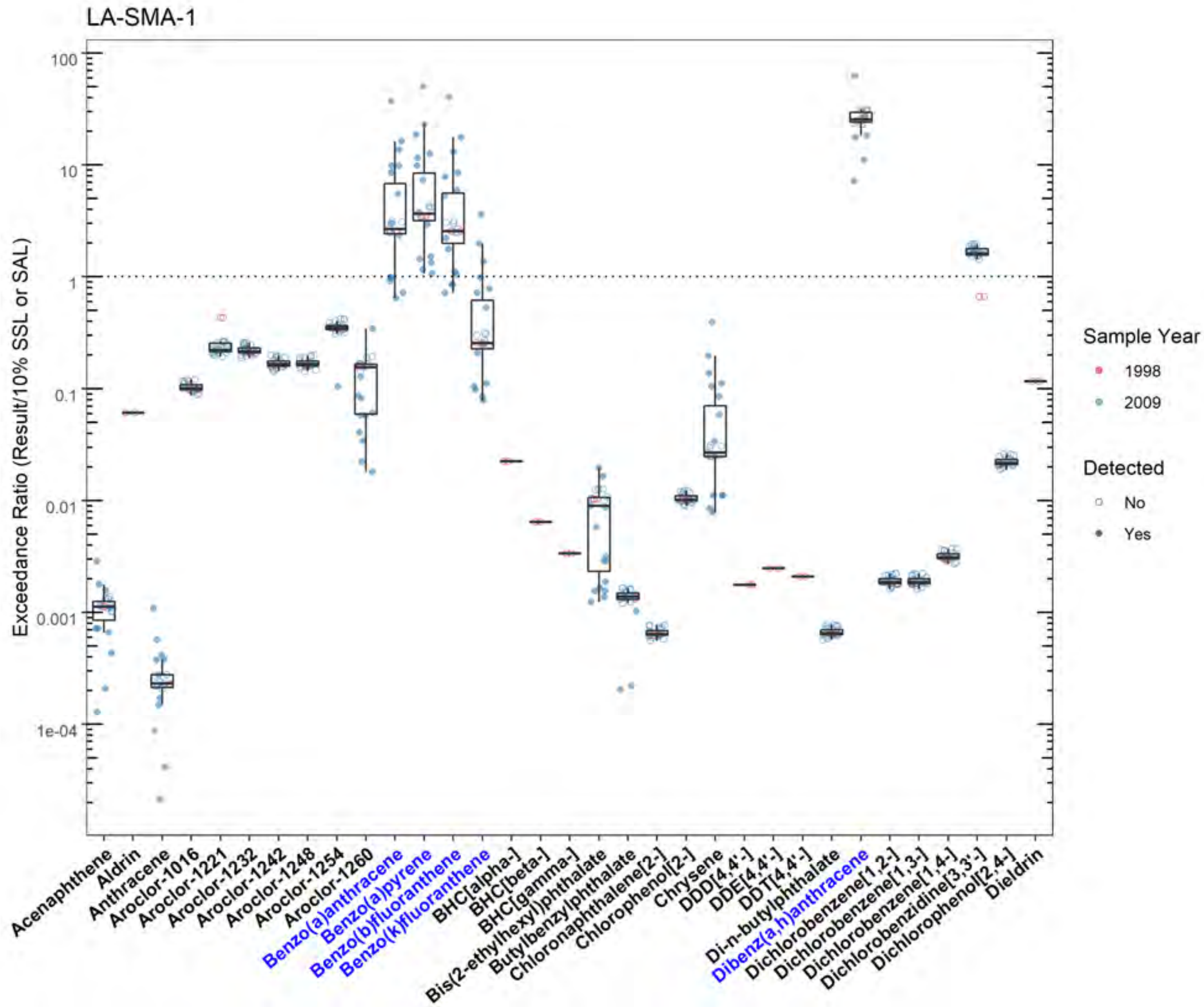


Figure 19.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-1 (Plot 1)

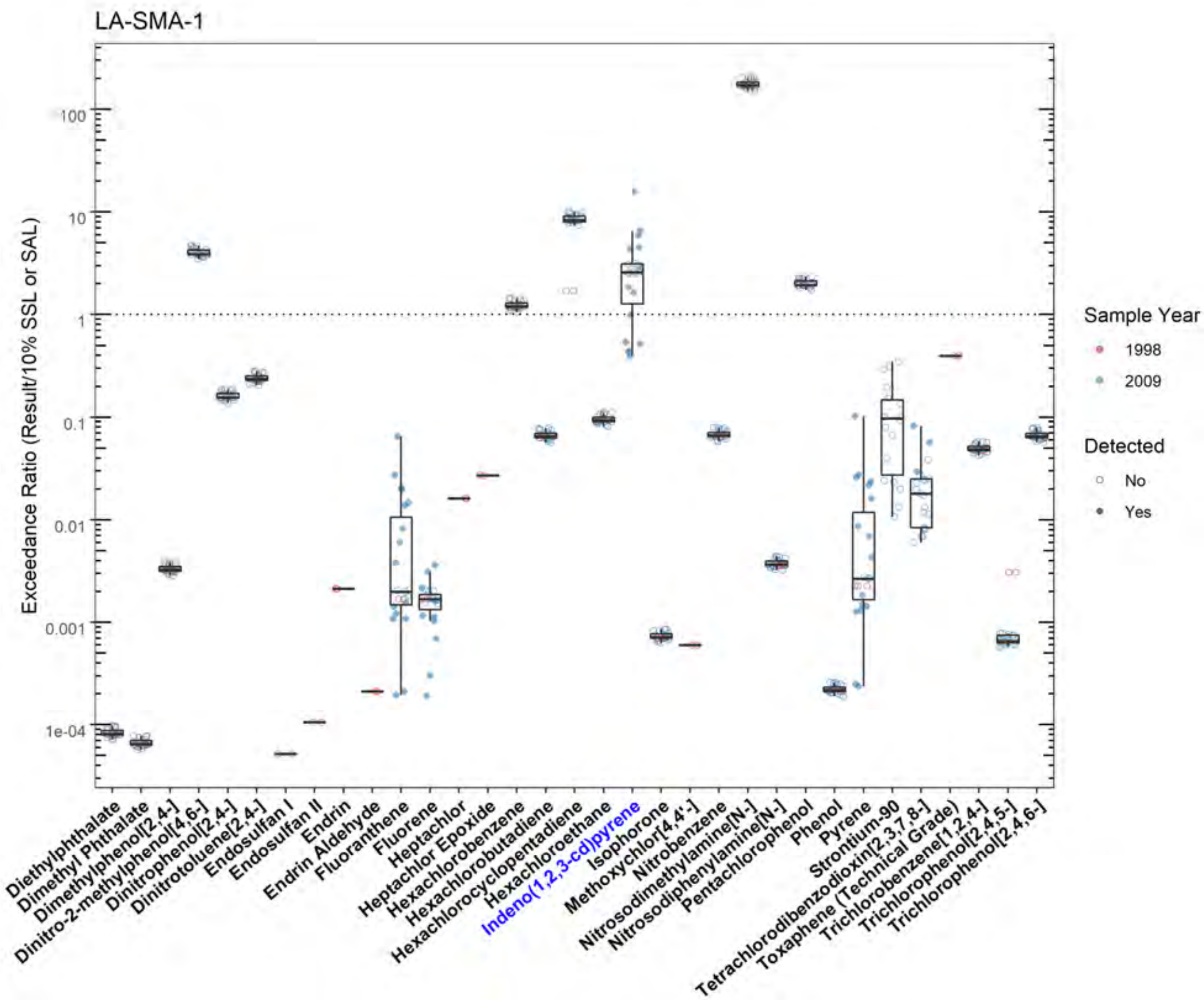


Figure 19.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-1 (Plot 2)

LA-SMA-1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	LA-SMA-1	56-55-3	Y	SSL_0.1	0.153	5.70	2009-01-16
Benzo(a)pyrene	LA-SMA-1	50-32-8	Y	SSL_0.1	0.112	5.60	2009-01-16
Benzo(b)fluoranthene	LA-SMA-1	205-99-2	Y	SSL_0.1	0.153	6.20	2009-01-16
Benzo(k)fluoranthene	LA-SMA-1	207-08-9	Y	SSL_0.1	1.53	5.50	2009-01-16
Cadmium	LA-SMA-1	Cd	Y	BTV	0.400	0.470	2009-01-19
Chromium	LA-SMA-1	Cr	Y	BTV	19.3	29.1	2009-01-19
Cyanide (Total)	LA-SMA-1	CN(TOTAL)	Y	BTV	0.500	6.90	2009-01-16
Dibenz(a,h)anthracene	LA-SMA-1	53-70-3	Y	SSL_0.1	0.0153	0.960	2009-01-16
Indeno(1,2,3-cd)pyrene	LA-SMA-1	193-39-5	Y	SSL_0.1	0.153	2.40	2009-01-16
Lead	LA-SMA-1	Pb	Y	BTV	22.3	450	1998-11-11
Zinc	LA-SMA-1	Zn	Y	BTV	48.8	147	2009-01-16

Figure 19.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-1

19.4 Stormwater Evaluation

19.4.1 Summary of Stormwater Results Compared to 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 19.4-1 through 19.4-4.

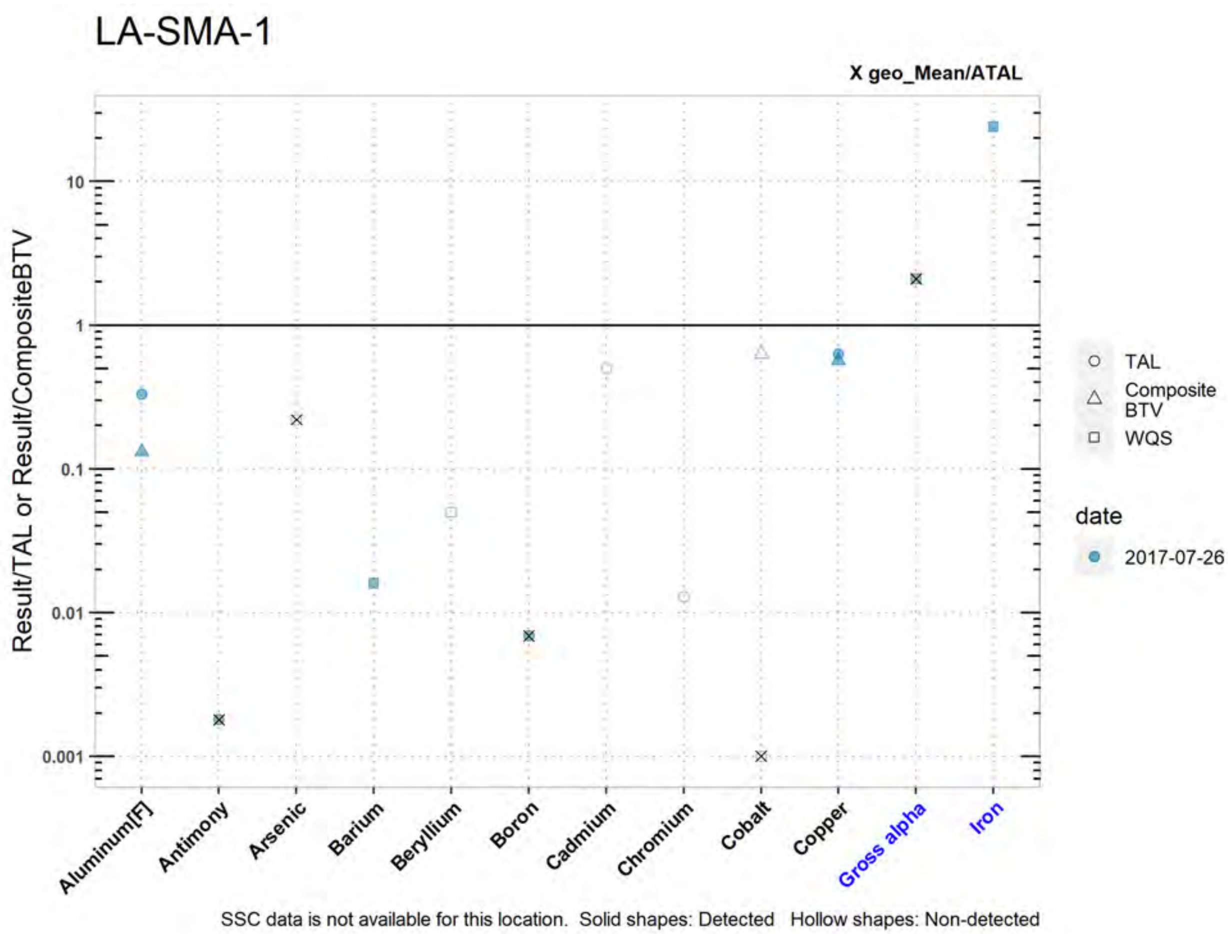


Figure 19.4-1 Analytical Results from Stormwater Sample, LA-SMA-1 (Plot 1)

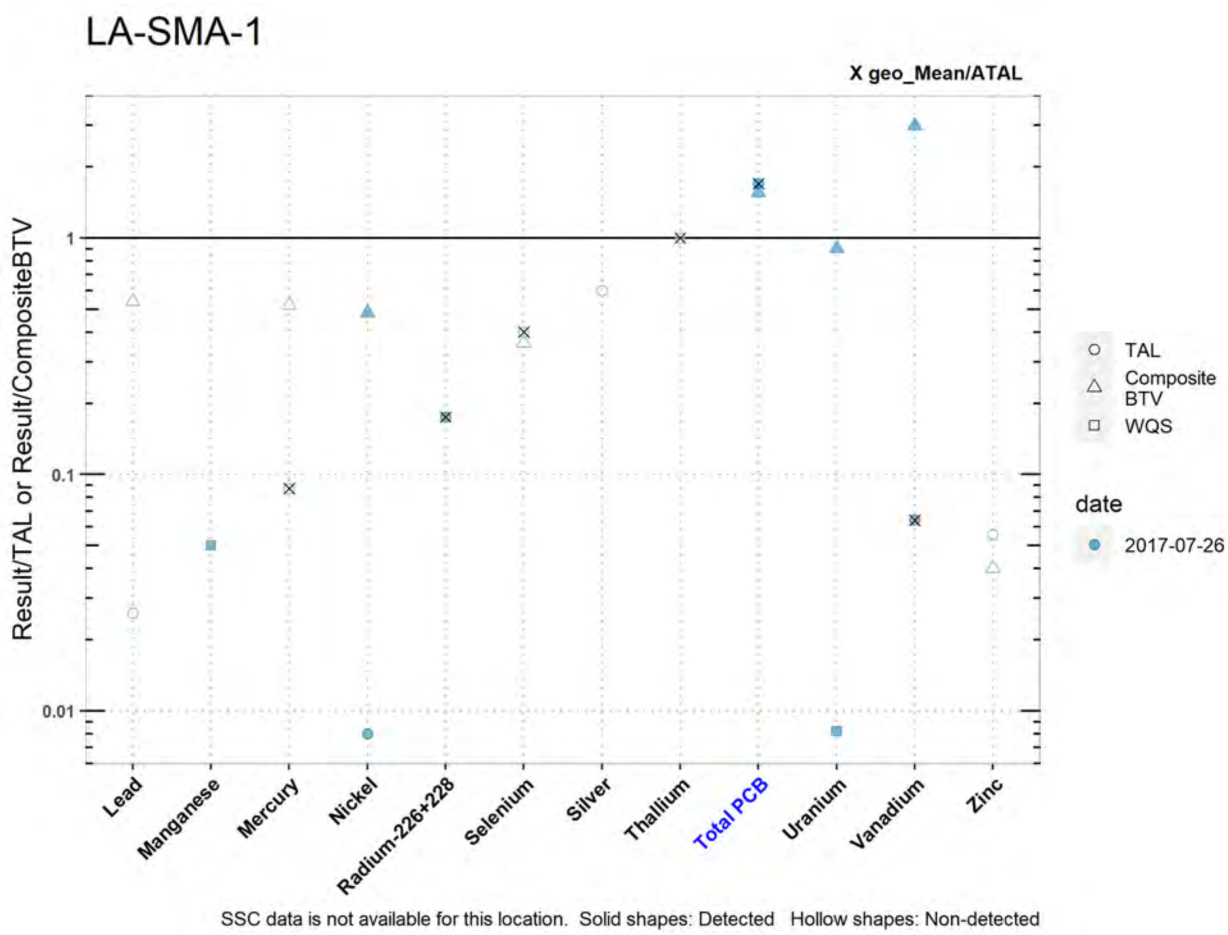


Figure 19.4-2 Analytical Results from Stormwater Sample, LA-SMA-1 (Plot 2)

LA-SMA-1

	Aluminum [F]	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Gross alpha	Iron
MQL	2.5	1	0.5	NA	NA	100	1	10	50	0.5	NA	NA
ATAL	NA	640	9	NA	NA	5000	NA	NA	1000	NA	15	NA
MTAL	750	NA	340	NA	NA	NA	0.65	233	NA	4.8	NA	NA
Composite_BTV	1890	NA	NA	NA	NA	NA	NA	NA	1.59	5.38	54.3	NA
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
2017-07-26 result	248	1.14	*2.00*	31.9	*0.200*	34.4	*0.300*	*3.00*	*1.00*	3.03	31.1	23700
2017-07-26 dT	0.331	0.0018	NA	0.016	NA	0.0069	NA	NA	NA	0.631	2.1	24
2017-07-26 dB	0.131	NA	NA	NA	NA	NA	NA	NA	NA	0.563	NA	NA
geo_mean/ATAL	NA	0.0018	0.22	NA	NA	0.0069	NA	NA	0.0010	NA	2.1	NA

Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 19.4-3 Screening Results from Stormwater Sample, LA-SMA-1 (Table 1)

LA-SMA-1

	Lead	Manganese	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Total PCB	Uranium	Vanadium	Zinc
MQL	0.5	NA	0.005	0.5	NA	5	0.5	0.5	0.2	NA	50	20
ATAL	NA	NA	0.77	NA	30	5	NA	0.47	0.014	NA	100	NA
MTAL	19.3	NA	NA	186	NA	20	0.49	NA	NA	NA	NA	59.2
Composite_BTV	0.927	NA	0.129	3.10	6.57	5.55	NA	NA	0.0150	0.271	2.15	82.6
unit	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2017-07-26 result	*0.500*	5.97	*0.0670*	1.49	5.26	*2.00*	*0.300*	*0.600*	0.0232	0.245	6.41	*3.30*
2017-07-26 dT	NA	0.050	NA	0.00801	0.175	NA	NA	NA	1.7	0.0082	0.064	NA
2017-07-26 dB	NA	NA	NA	0.481	NA	NA	NA	NA	1.55	0.904	2.98	NA
geo_mean/ATAL	NA	NA	0.087	NA	0.175	0.40	NA	1	1.7	NA	0.064	NA

Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 19.4-4 Screening Results from Stormwater Sample, LA-SMA-1 (Table 2)

19.4.2 Assessment Unit and Stream Impairments

LA-SMA-1 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The adjusted gross alpha impairment may be Site-related, based on Site history.

19.5 Site-Specific Demonstration

19.5.1 Soil Data Summary

Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd) exceeded the applicable screening value in soil data, but are not Site-related POCs and will not be added to the SAP.

All Site-related POCs which exceeded the applicable screening value in soil data have been previously measured in stormwater data and did not exceed TALs. Therefore, they will not be added to the SAP.

19.5.2 Stormwater Data Summary

Gross alpha and total aluminum results exceeded TALs in 2017 stormwater data; there was no paired SSC value to confirm whether the results were below BTVs. PCBs also exceeded their TAL and BTV.

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

19.5.3 2022 Permit Status

Due to the exceedance of a composite BTV and/or TAL, corrective action will be initiated at this SMA for PCBs (Part I.C.2)

20.0 LA-SMA-1.1

Associated Sites	43-001(b2)
Receiving Water	Los Alamos Canyon
Drainage Area	1.34 acres
Landscape Characteristics	36% impervious, 64% pervious
Consent Order Site Status	AOC 43-001(b2): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls
2010 AC Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the February 2018 field visit, the current sampler location does not adequately monitor the affected area. Therefore, the sampler will be moved downgradient in the drainage.
2022 Permit Status	Active Monitoring

20.1 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 and August 2011. Analytical results from these samples initiated corrective action. Stormwater monitoring has not occurred since 2012.

AOC 43-001(b2) received a COC under the Consent Order in September 2010. The Permittees submitted a certification of completion of corrective action for the Site to EPA per Permit part I.E.2(d) in November 2012 LANL (2012/2013, 232273) and resubmitted in August 2013 (LANL 2013, 250035).

20.2 Site History

43-001(b2) (3/28/2022)

AOC 43-001(b2) is a storm drain outfall and associated outlet drainline that served the HRL (building 43-1) at TA-43. The outfall received effluent from 6 floor drains in the subbasement of building 43-1, blowdown from an evaporative cooler, and stormwater from 13 roof drains on the west side of HRL. The effluent was discharged west of HRL through a 130-ft-long, 12-in.-diameter CMP to Los Alamos Canyon. The outfall was permitted in the mid-to-late 1970s under the LANL NPDES permit as EPA 03A040.

Discharges from the evaporative cooler ceased and the floor drains were plugged in 1998; outfall EPA 03A040 was removed from the NPDES Permit on January 11, 1999. The outfall may have historically discharged radioactively-contaminated wastewater and/or once-through and treated cooling water. No historical quantitative information is available regarding potential residual contamination as a result of the discharges from this outfall. The outfall is located on the undeveloped slope west of HRL and still receives stormwater discharges from the building roof drains.

For investigation activities, refer to "Investigation Report for Upper Los Alamos Canyon Aggregate Area, Revision 1" (LANL 2010, 108528).

20.2.1 Known or Potential Use of PPOCs

POCs known to be managed or potentially used at the Site are listed in Table 20.2-1.

Table 20.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
43-001(b2)	Outfall	Radionuclides

20.3 Consent Order Soil Data

Decision-level data for AOC 43-001(b2) consist of results from samples collected in 2009. Analytical results from those samples are presented in Figures 20.3-1 through 20.3-4. Revision 1 of the 2010 IR concluded that the nature and extent of contamination have been defined.

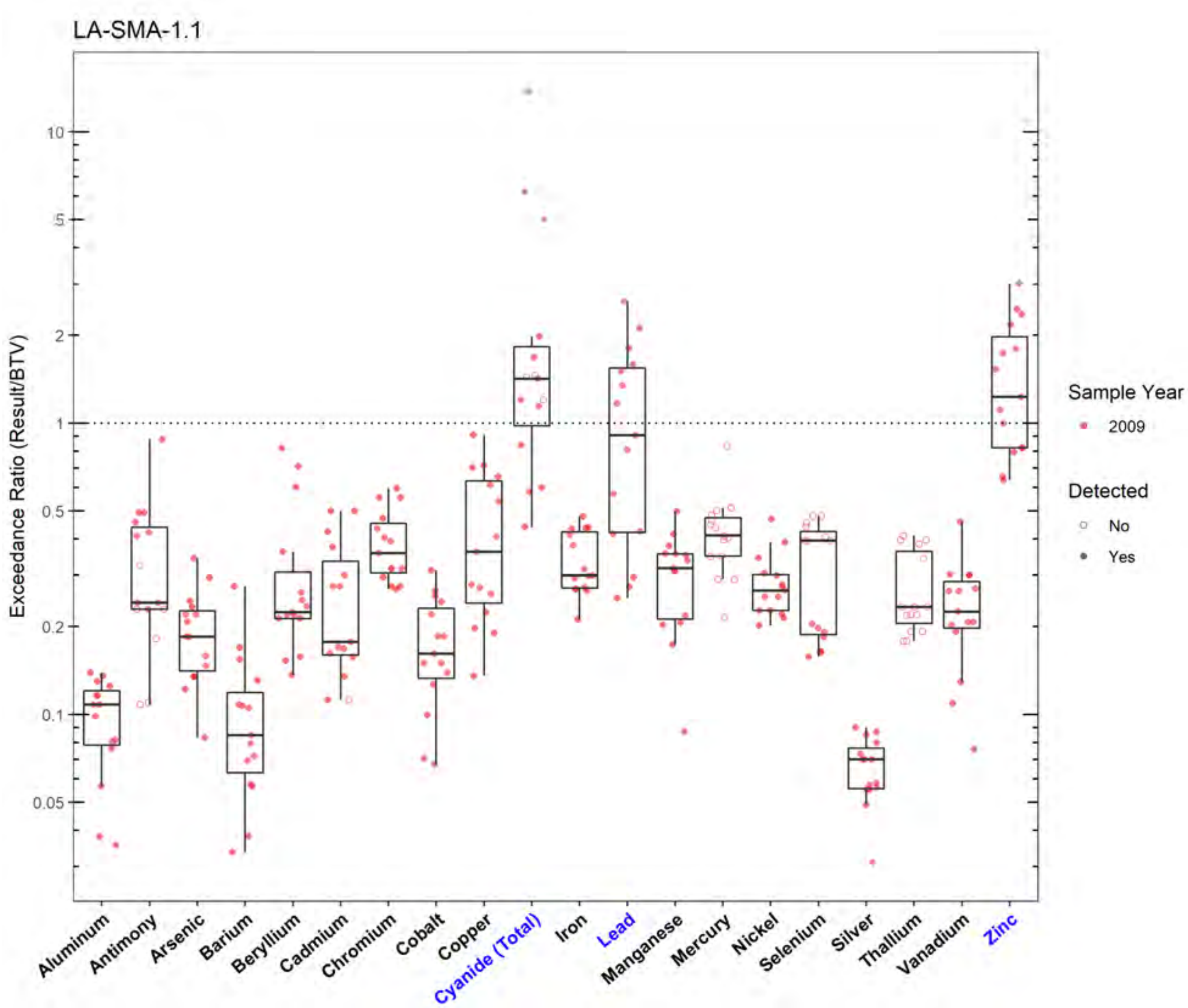


Figure 20.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-1.1

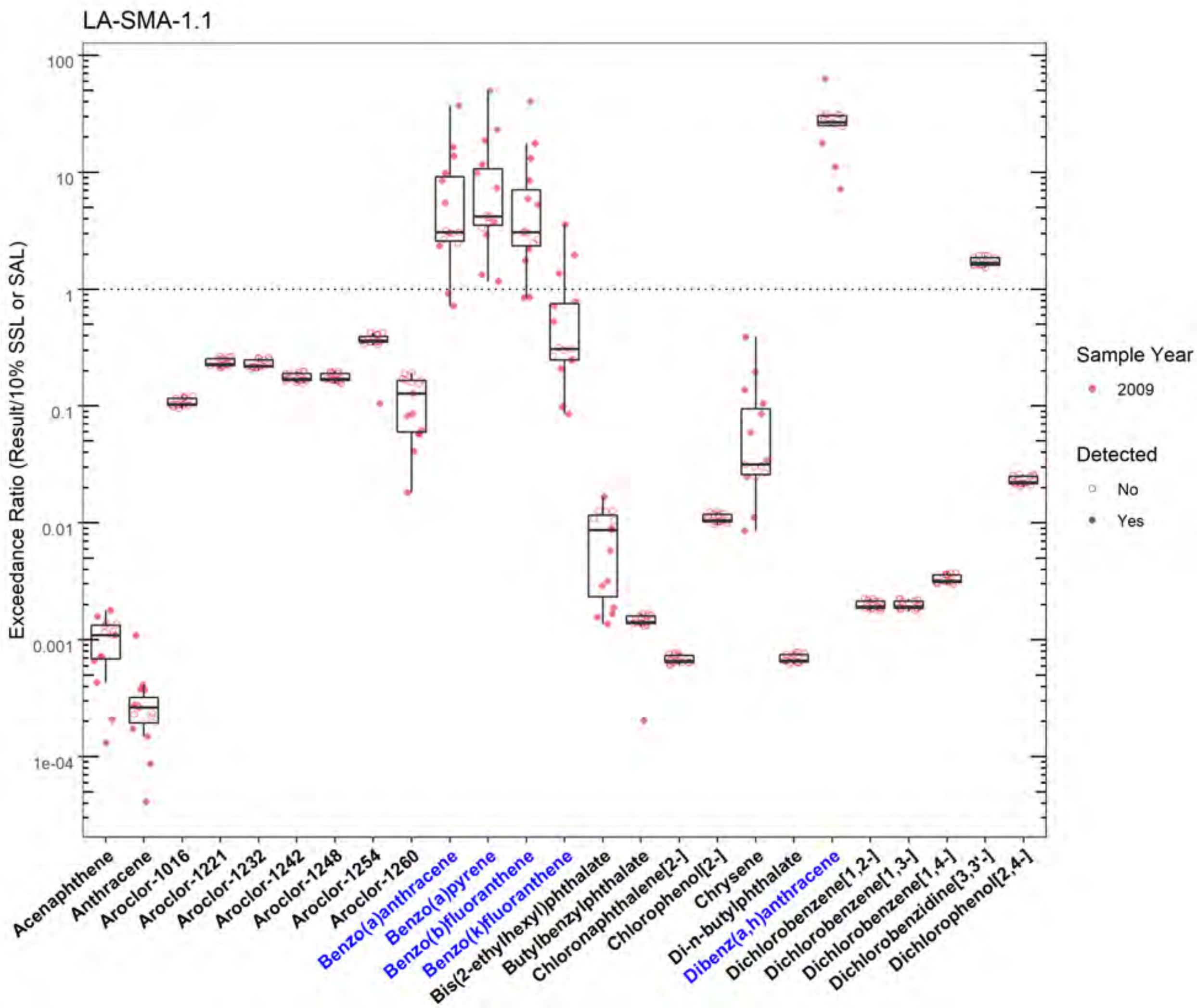


Figure 20.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-1.1 (Plot 1)

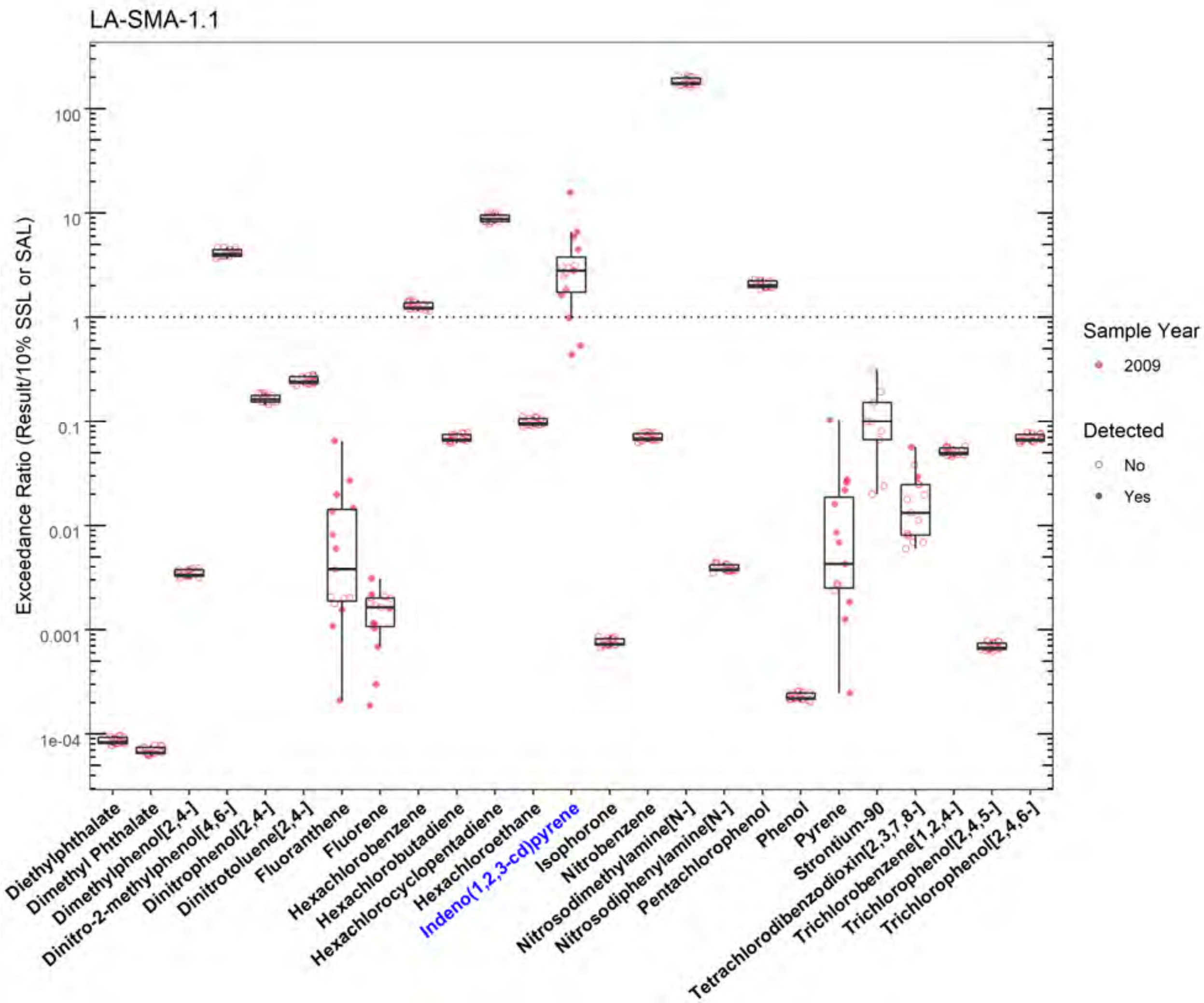


Figure 20.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-1.1 (Plot 2)

LA-SMA-1.1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	LA-SMA-1.1	56-55-3	Y	SSL_0.1	0.153	5.70	2009-01-16
Benzo(a)pyrene	LA-SMA-1.1	50-32-8	Y	SSL_0.1	0.112	5.60	2009-01-16
Benzo(b)fluoranthene	LA-SMA-1.1	205-99-2	Y	SSL_0.1	0.153	6.20	2009-01-16
Benzo(k)fluoranthene	LA-SMA-1.1	207-08-9	Y	SSL_0.1	1.53	5.50	2009-01-16
Cyanide (Total)	LA-SMA-1.1	CN(TOTAL)	Y	BTV	0.500	6.90	2009-01-16
Dibenz(a,h)anthracene	LA-SMA-1.1	53-70-3	Y	SSL_0.1	0.0153	0.960	2009-01-16
Indeno(1,2,3-cd)pyrene	LA-SMA-1.1	193-39-5	Y	SSL_0.1	0.153	2.40	2009-01-16
Lead	LA-SMA-1.1	Pb	Y	BTV	22.3	58.1	2009-01-16
Zinc	LA-SMA-1.1	Zn	Y	BTV	48.8	147	2009-01-16

Figure 20.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-1.1

20.4 Stormwater Evaluation

20.4.1 Summary of Stormwater Results Compared to 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.

20.4.2 Assessment Unit and Stream Impairments

LA-SMA-1.1 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The adjusted gross alpha impairment may be Site-related, based on Site history.

20.5 Site-Specific Demonstration

20.5.1 Soil Data Summary

No Site-related POCs exceeded BVs or 10% of the SSL in soil data. Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, lead, and zinc exceeded the applicable screening value in soil data, but are not Site-related POCs and will not be added to the SAP.

20.5.2 Stormwater Data Summary

No confirmation-monitoring data.

20.5.3 2022 Permit Status

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

20.5.4 Sampling and Analysis Plan

Table 20.5-1 is the proposed SAP for LA-SMA-1.1.

Table 20.5-1 Proposed SAP, LA-SMA-1.1

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history (radionuclides)
Radium-226 and radium-228	Site history (radionuclides)
Tritium	Site history (radionuclides)
DOC	Permit requirement
SSC	Permit requirement

21.0 LA-SMA-1.25

Associated Sites	C-43-001
Receiving Water	Los Alamos Canyon
Drainage Area	1.41 acres
Landscape Characteristics	50% impervious, 50% pervious
Consent Order Site Status	AOC C-43-001: Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 AC Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the February 2018 field visit, it was determined that the current sampler location does not adequately monitor the affected area. Therefore, the sampler will be moved down the drainage.
2022 Permit Status	Active Monitoring

21.1 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 and August 2011. Analytical results from these samples initiated corrective action.

Following the September 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 227785), the sampler was relocated to be in a more representative location and corrective-action monitoring was initiated. Stormwater samples were collected in September and October 2012. Analytical results from these samples initiated corrective action.

The Permittees submitted a request for alternative compliance for the Site to EPA 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 2012.

21.2 Site History

C-43-001 (9/28/2021)

AOC C-43-001 is a storm drain system and outfall that discharges to Los Alamos Canyon in TA-43. The storm drain system collects stormwater runoff from the HRL (building 43-1) loading dock and also functions as the overflow for a sanitary lift station (structure 43-10). The overflow line is an 8-in.-diameter VCP that extends from structure 43-10 130 ft south to a manhole. A 12-in.-diameter CMP, which receives stormwater from two storm drains and any effluent from the overflow, flows southwest for 160 ft and discharges into Los Alamos Canyon south of the HRL. The sanitary waste lines for the HRL [SWMU 43-001(a1) and AOC 43-001(a2)] may have become clogged on occasion, causing an overflow at the lift station. Any sanitary waste carried through the sewer lines could have discharged to the storm drain system. Although no documentation was found to confirm any routine releases to the storm drains, the outfall may have received radioactive, nonsanitary cooling water. Currently, the outfall is located on the undeveloped north slope of Los Alamos Canyon on DOE property.

For investigation activities, refer to “Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area, Revision 1” (N3B 2021, 701261).

21.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 21.2-1.

Table 21.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
C-43-001	Outfall	Metals, radionuclides, tritium

21.3 Consent Order Soil Data

Decision-level data for AOC C-43-001 consist of results from samples collected in 2009, 2011, 2013, and 2015. Analytical results from those samples are presented in Figures 21.3-1 through 21.3-4. Revision 1 of the 2021 Phase II IR concluded that the nature and extent of contamination have been defined, and no further sampling for extent is warranted.

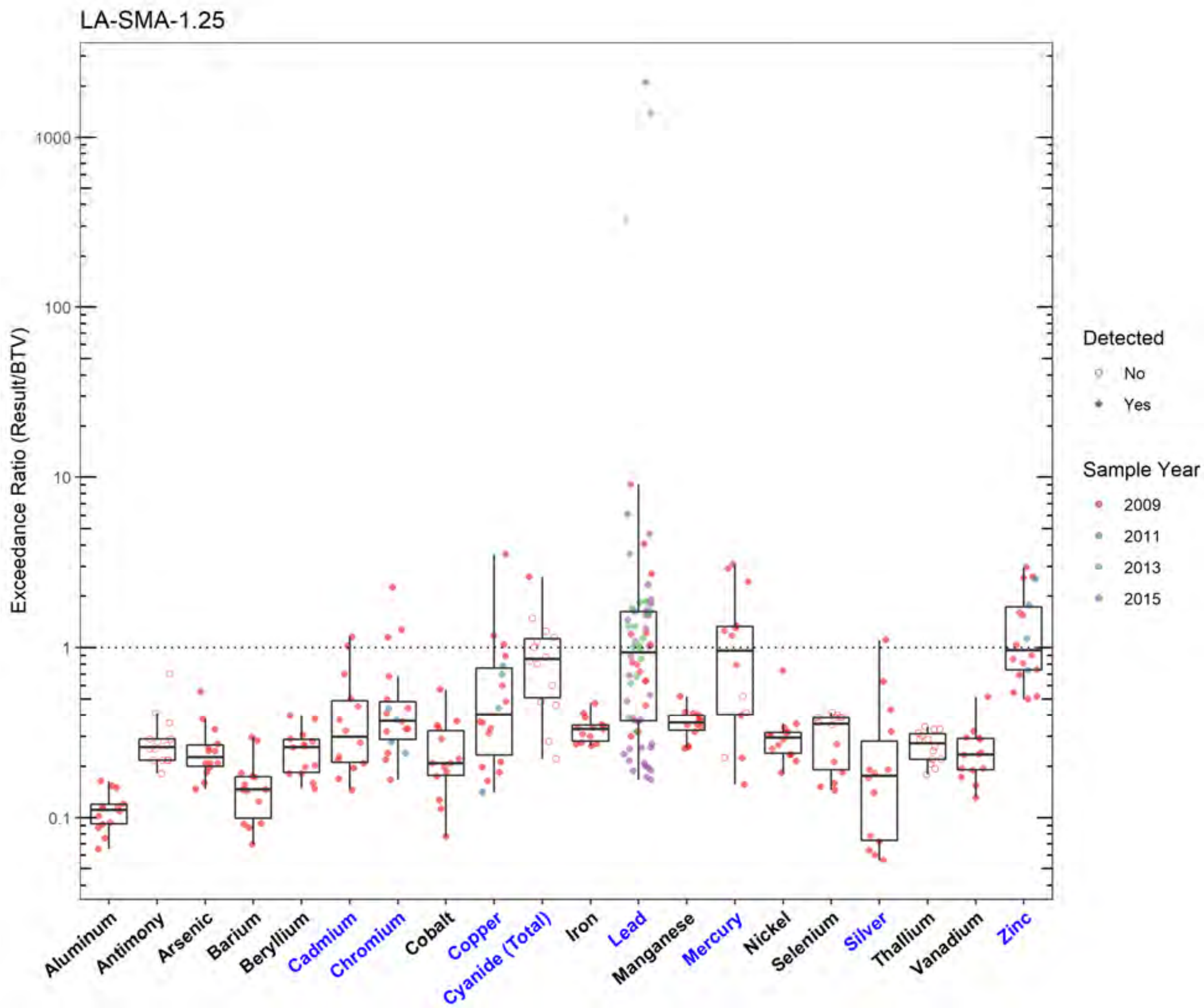


Figure 21.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-1.25

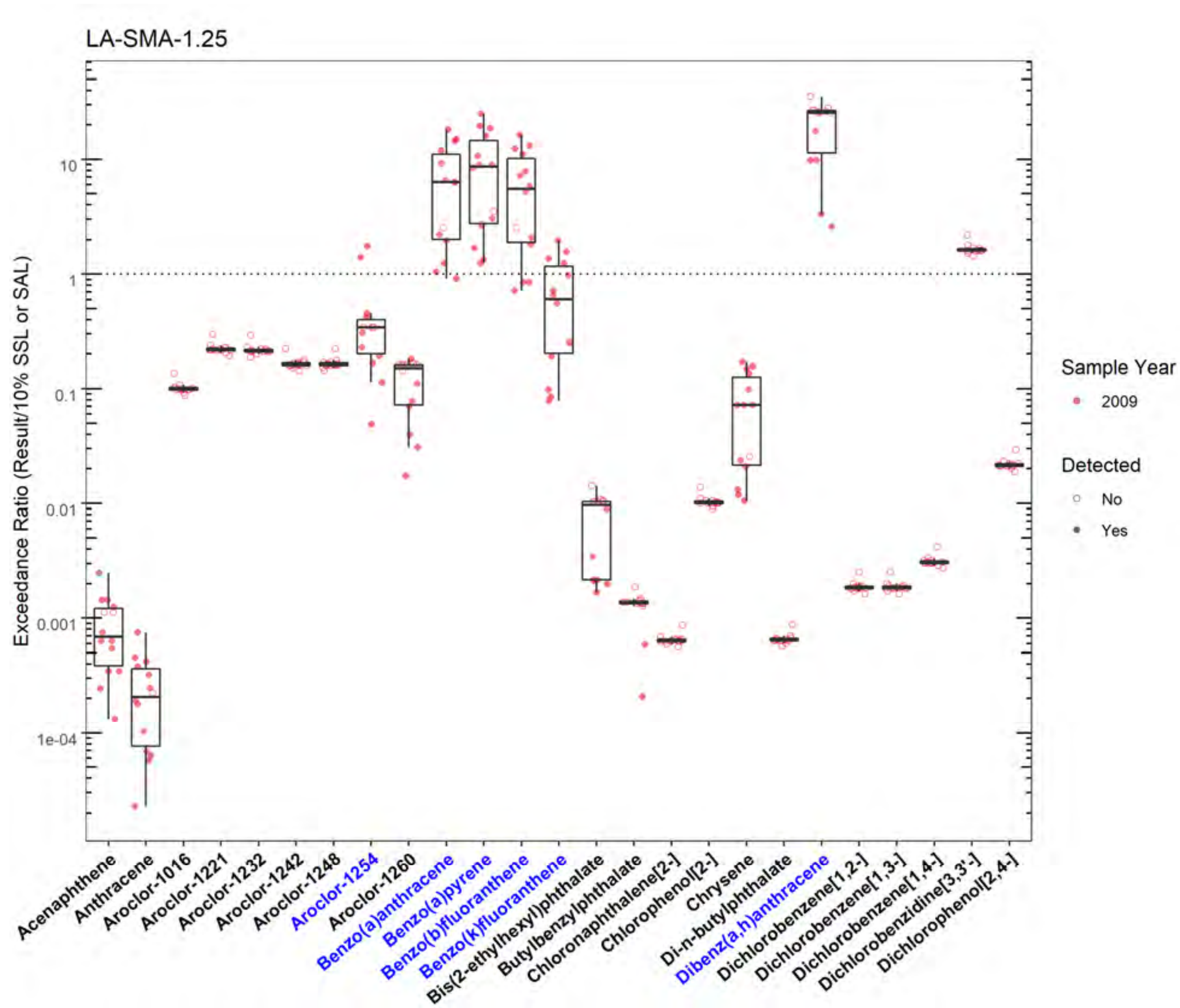


Figure 21.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-1.25 (Plot 1)

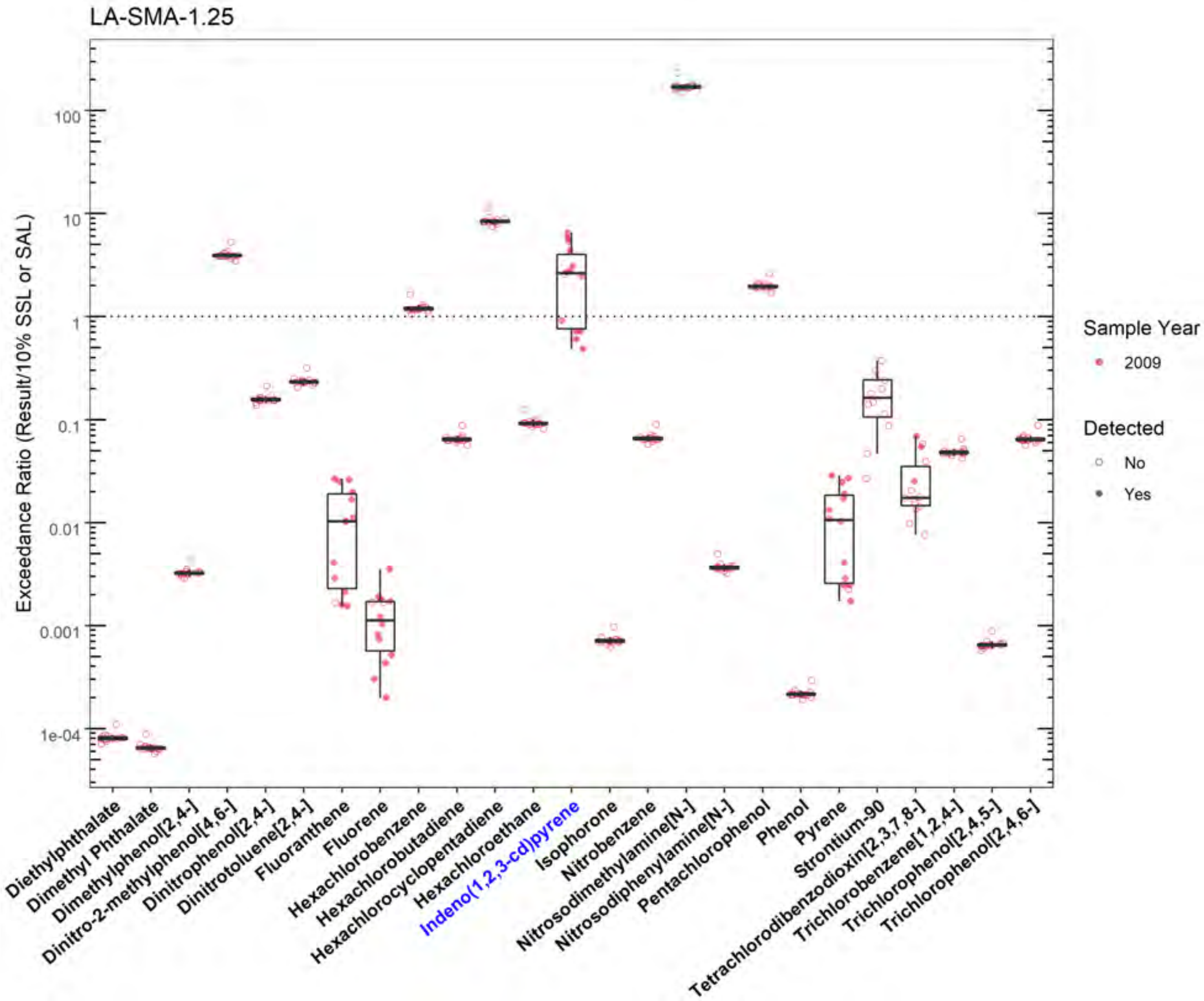


Figure 21.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-1.25 (Plot 2)

LA-SMA-1.25

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	LA-SMA-1.25	11097-69-1	Y	SSL_0.1	0.114	0.200	2009-03-19
Benzo(a)anthracene	LA-SMA-1.25	56-55-3	Y	SSL_0.1	0.153	2.80	2009-01-16
Benzo(a)pyrene	LA-SMA-1.25	50-32-8	Y	SSL_0.1	0.112	2.80	2009-01-16
Benzo(b)fluoranthene	LA-SMA-1.25	205-99-2	Y	SSL_0.1	0.153	2.50	2009-01-16
Benzo(k)fluoranthene	LA-SMA-1.25	207-08-9	Y	SSL_0.1	1.53	3.00	2009-01-16
Cadmium	LA-SMA-1.25	Cd	Y	BTV	0.400	0.460	2009-03-19
Chromium	LA-SMA-1.25	Cr	Y	BTV	19.3	43.5	2009-03-19
Copper	LA-SMA-1.25	Cu	Y	BTV	14.7	52.0	2009-01-16
Cyanide (Total)	LA-SMA-1.25	CN(TOTAL)	Y	BTV	0.500	1.30	2009-01-16
Dibenz(a,h)anthracene	LA-SMA-1.25	53-70-3	Y	SSL_0.1	0.0153	0.270	2009-03-19
Indeno(1,2,3-cd)pyrene	LA-SMA-1.25	193-39-5	Y	SSL_0.1	0.153	1.00	2009-01-16
Lead	LA-SMA-1.25	Pb	Y	BTV	22.3	47200	2011-10-20
Mercury	LA-SMA-1.25	Hg	Y	BTV	0.100	0.308	2009-01-16
Silver	LA-SMA-1.25	Ag	Y	BTV	1.00	1.10	2009-03-19
Zinc	LA-SMA-1.25	Zn	Y	BTV	48.8	144	2009-01-16

Figure 21.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-1.25

21.4 Stormwater Evaluation

21.4.1 Summary of Stormwater Results Compared to 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 monitoring location at the SMA.

21.4.2 Assessment Unit and Stream Impairments

LA-SMA-1.25 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The adjusted gross alpha and metals impairments may be Site-related, based on Site history.

21.5 Site-Specific Demonstration

21.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater at the current monitoring location: cadmium, chromium, copper, lead, mercury, silver and zinc.

The SVOCs, Aroclor-1254, and cyanide that exceeded the applicable screening value in soil data are not Site-related POCs and will not be added to the SAP.

21.5.2 Stormwater Data Summary

No confirmation-monitoring data.

21.5.3 2022 Permit Status

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

21.5.4 Sampling and Analysis Plan

Table 21.5-1 is the proposed SAP for LA-SMA-1.25.

Table 21.5-1 Proposed SAP, LA-SMA-1.25

Monitoring Constituent	Background for Monitoring
Total mercury and selenium	Impairment, Site history (metals), and soil data
Gross alpha	Impairment and Site history (radionuclides)
Tritium	Site history (radionuclides)
Radium-226 and radium-228	Site history (radionuclides)
Dissolved cadmium, chromium, copper, lead, silver and zinc	Site history (metals) and soil data
DOC	Permit requirement
SSC	Permit requirement

22.0 LA-SMA-2.1

Associated Sites	01-001(f)
Receiving Water	Los Alamos Canyon
Drainage Area	14.25 acres
Landscape Characteristics	36% impervious, 64% pervious
Consent Order Site Status	SWMU 01-001(f): In Progress
2010 AC Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the February 2018 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

22.1 2010 Administratively Continued Permit Summary

Following the May 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 September 2014 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2014, 261903), corrective-action monitoring was initiated. The sampler was relocated in 2017 to a more representative location after a change in condition at the SMA and monitoring was reinitiated. Since that time, stormwater flow has not been sufficient for full-volume corrective-action sample collection, and monitoring is ongoing.

22.2 Site History

01-001(f) (9/28/2021)

SWMU 01-001(f) is the former location of septic tank 140 (former structure 01-140), its associated inlet and outlet drainlines, and a former outfall in former TA-01. Septic tank 140 measured approximately 5 ft × 10 ft × 6 ft deep, and was constructed of reinforced concrete in 1945. The tank was located west of former K-1 Building (building 01-98) and served HT Building (01-29) [SWMU 01-007(p)] and FP Building (01-20). The septic system outfall discharged into Los Alamos Canyon to an area later designated as Hillside 140, which is situated in TA-43 downslope from former TA-01. HT Building was used to heat-treat and machine natural and enriched uranium. FP Building was a foundry for nonradioactive and nonferrous metals and was not radiologically contaminated. The heat-treatment and machining operations likely resulted in discharges of radioactive waste to the tank and outfall, and the machining operations were likely the source of the PCBs found in the SWMU 01-001(f) outfall and drainage below.

In 1946, low levels of plutonium and polonium were detected in the drain to the waste line from HT Building. Buildings 01-98 and 01-29 were decommissioned and removed in 1965 as part of the relocation of all TA-01 activities to new Laboratory TAs south of the Los Alamos townsite. HT Building was found to be radioactively-contaminated during its D&D and was disposed of at an unspecified MDA. Use of the SWMU 01-001(f) septic system ceased in 1965 and the tank was removed in 1976.

During the 1975–1976 Ahlquist Radiological Survey conducted at SWMU 01-001(f), septic tank 140 was found to be filled with sludge with high levels of uranium activity. Both inlet and outlet lines were contaminated. The septic tank, all inlet and outlet drainlines, and approximately 351 yd^3 of contaminated soil were removed in 1976. Although the mesa-top portion of SWMU 01-001(f) was determined to be decontaminated, steep terrain prevented the removal of all known contamination on the hillside south and west of the outlet excavation.

Currently, the mesa-top area of SWMU 01-001(f) is developed; former drainline locations are under pavement and buildings in the Ridge Park Village residential development. The location of former septic tank 140 is partially covered by a building. The outfall location and the hillside drainage into which it discharged are located on undeveloped land owned by the DOE.

Two surface water retention basins were constructed at the bottom of the drainage in 2010. Installation of controls to divert run-on away from the SWMU 01-001(f) outfall, and stabilize the hillside drainage portion of the site, was completed in 2015. Stormwater runoff from the area above the drainage is currently being collected via a drop inlet and piping system, and discharged directly into the stream channel below the drainage.

For investigation activities, refer to "Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area, Revision 1" (N3B 2021, 701261).

22.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 22.2-1.

Table 22.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
01-001(f)	Septic Tank 140	Metals, organic chemicals, radionuclides

22.3 Consent Order Soil Data

Decision-level data for SWMU 01-001(f) consist of results from samples collected between 2008 and 2013. These data include those samples from 2008–2013 that were not excavated during cleanup activities. Analytical results from those samples are presented in Figures 22.3-1 through 22.3-4. Revision 1 of the 2021 Phase II IR concluded that the nature and extent of contamination have been defined, and no further sampling for extent is warranted.

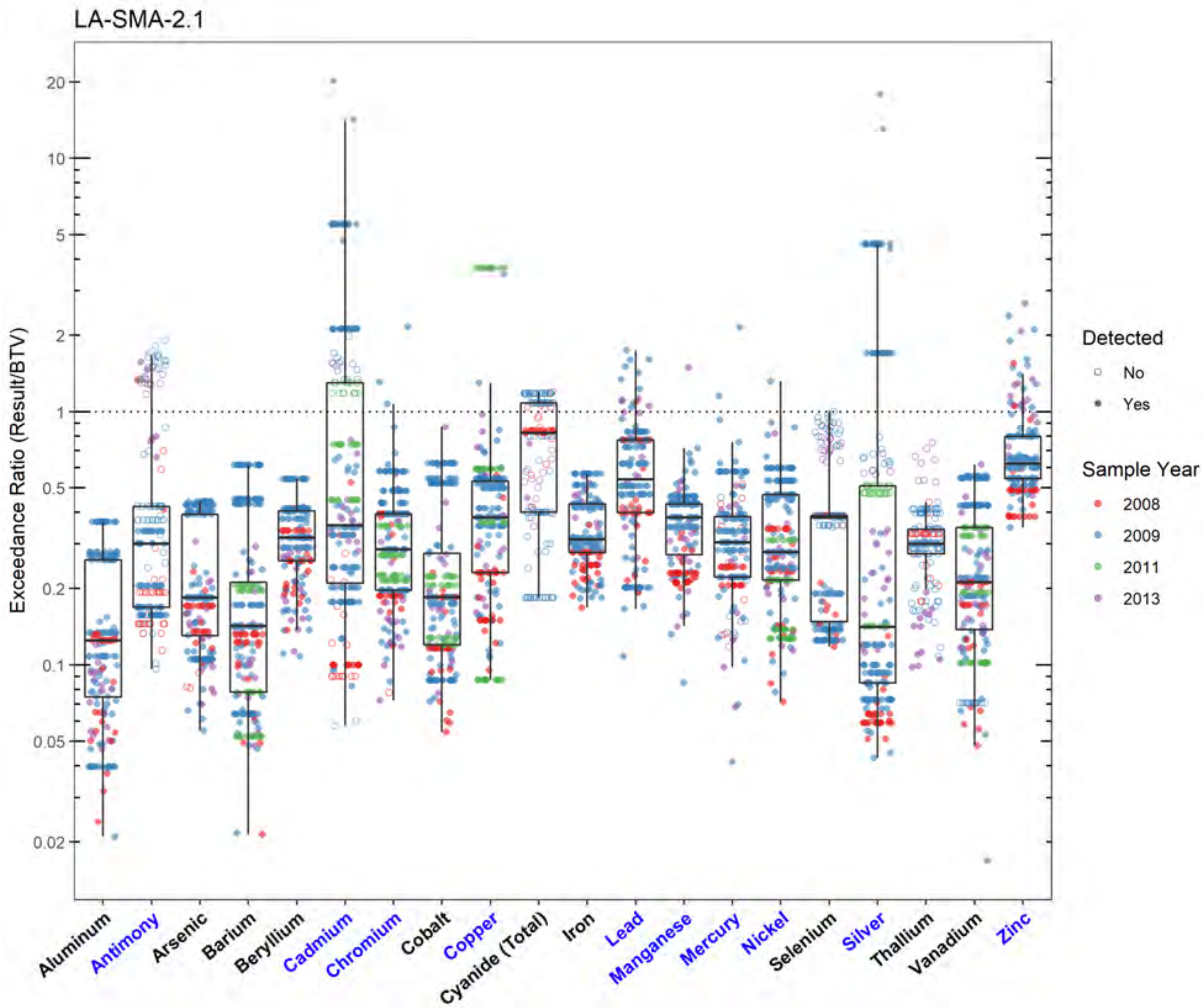


Figure 22.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-2.1

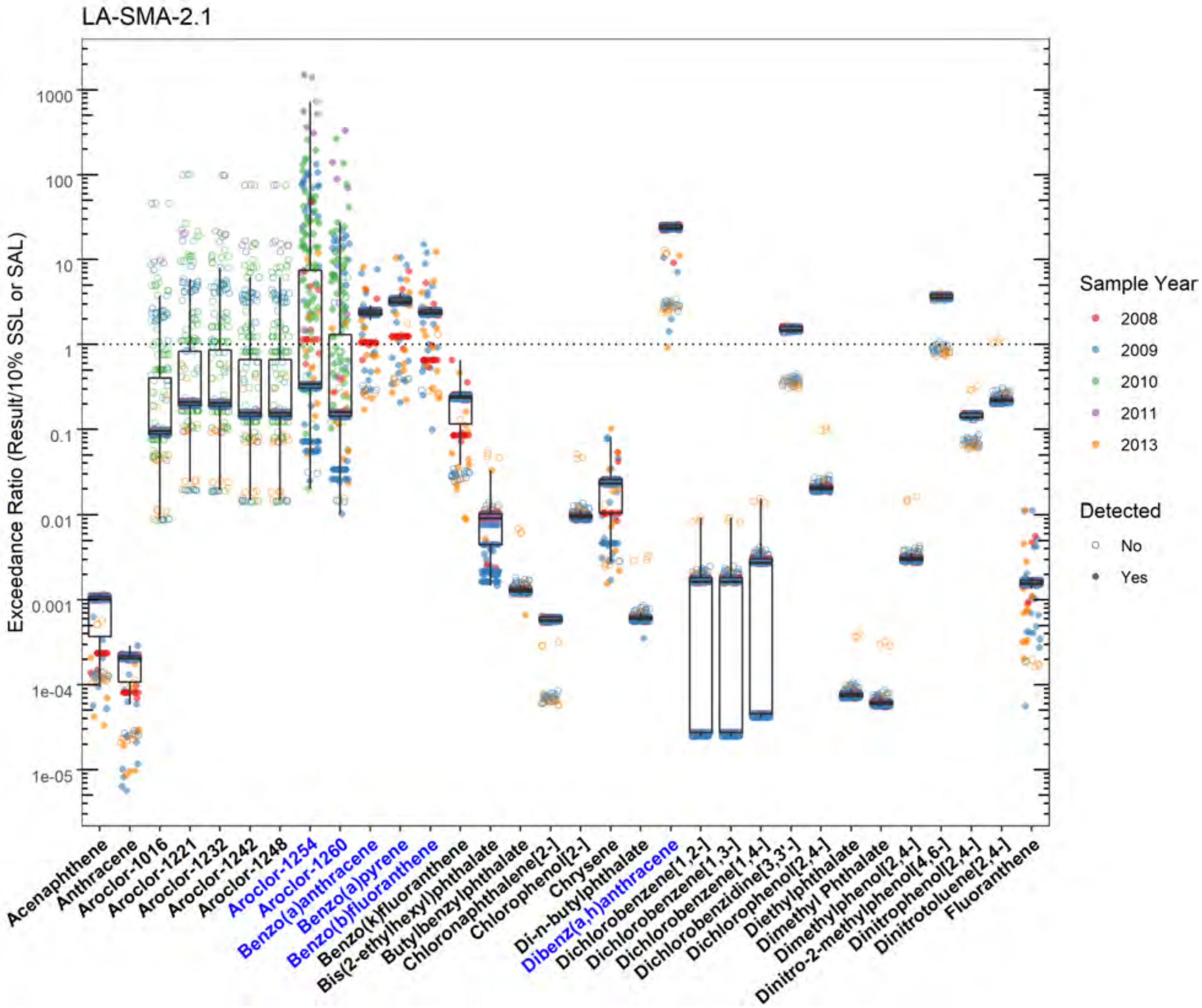


Figure 22.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-2.1 (Plot 1)

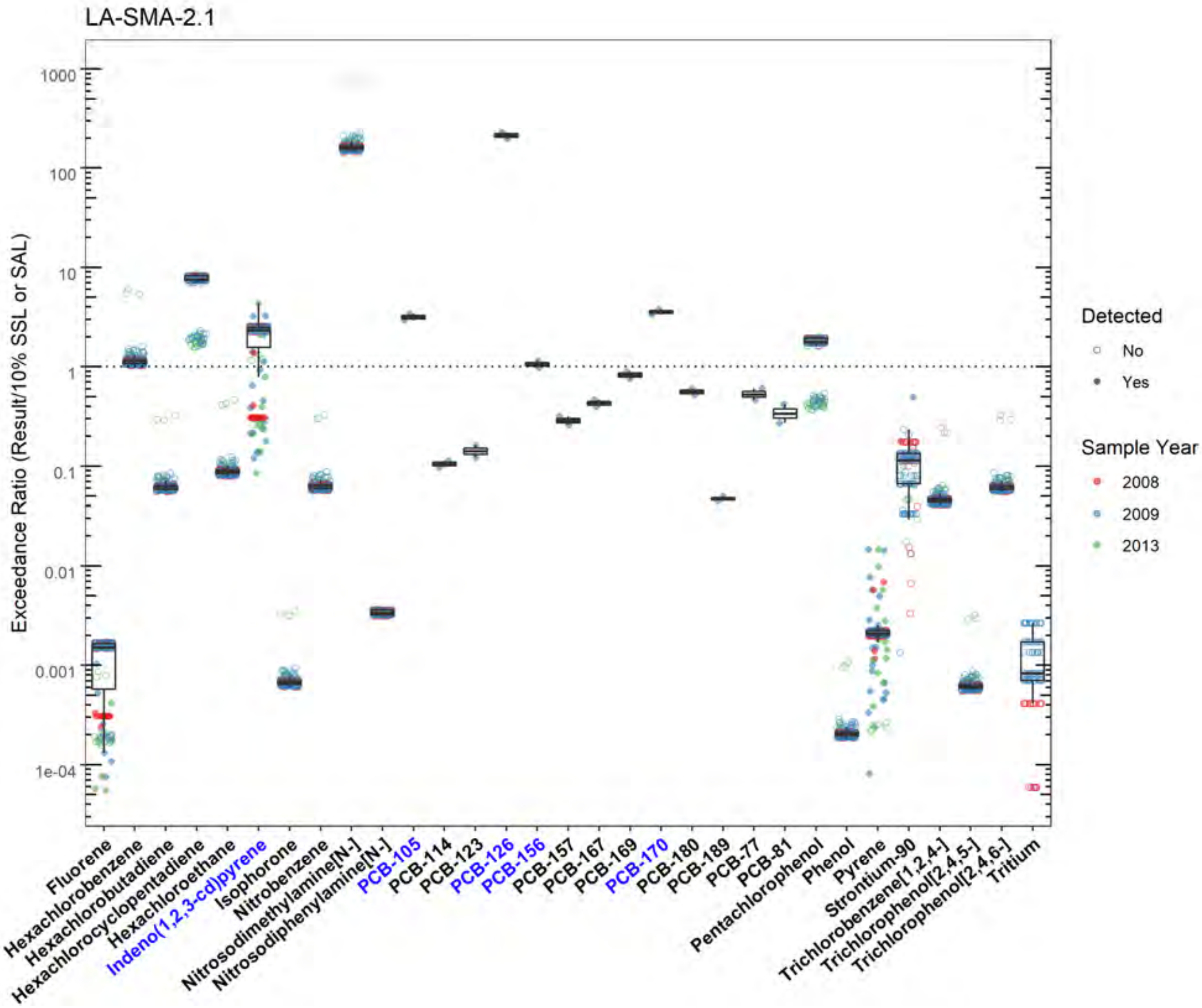


Figure 22.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-2.1 (Plot 2)

LA-SMA-2.1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	LA-SMA-2.1	Sb	Y	BTV	0.830	1.30	2013-08-07
Aroclor-1254	LA-SMA-2.1	11097-69-1	Y	SSL_0.1	0.114	170	2011-09-07
Aroclor-1260	LA-SMA-2.1	11096-82-5	Y	SSL_0.1	0.243	80.0	2011-09-07
Benzo(a)anthracene	LA-SMA-2.1	56-55-3	Y	SSL_0.1	0.153	1.24	2013-08-09
Benzo(a)pyrene	LA-SMA-2.1	50-32-8	Y	SSL_0.1	0.112	1.18	2009-07-31
Benzo(b)fluoranthene	LA-SMA-2.1	205-99-2	Y	SSL_0.1	0.153	2.31	2009-07-31
Cadmium	LA-SMA-2.1	Cd	Y	BTV	0.400	8.10	2009-01-21
Chromium	LA-SMA-2.1	Cr	Y	BTV	19.3	41.7	2009-01-05
Copper	LA-SMA-2.1	Cu	Y	BTV	14.7	54.3	2011-11-17
Dibenz(a,h)anthracene	LA-SMA-2.1	53-70-3	Y	SSL_0.1	0.0153	0.171	2013-08-09
Indeno(1,2,3-cd)pyrene	LA-SMA-2.1	193-39-5	Y	SSL_0.1	0.153	0.662	2013-08-09
Lead	LA-SMA-2.1	Pb	Y	BTV	22.3	38.8	2009-07-31
Manganese	LA-SMA-2.1	Mn	Y	BTV	671	1000	2013-08-07
Mercury	LA-SMA-2.1	Hg	Y	BTV	0.100	0.215	2009-01-06
Nickel	LA-SMA-2.1	Ni	Y	BTV	15.4	20.4	2009-01-05
PCB-105	LA-SMA-2.1	32598-14-4	Y	SSL_0.1	0.125	0.426	2009-11-16
PCB-126	LA-SMA-2.1	57465-28-8	Y	SSL_0.1	0.0000375	0.00857	2009-11-16
PCB-156	LA-SMA-2.1	38380-08-4	Y	SSL_0.1	0.125	0.142	2009-11-16
PCB-170	LA-SMA-2.1	35065-30-6	Y	SSL_0.1	0.0375	0.142	2009-11-16
Silver	LA-SMA-2.1	Ag	Y	BTV	1.00	17.9	2009-01-21
Zinc	LA-SMA-2.1	Zn	Y	BTV	48.8	131	2013-08-07

Figure 22.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-2.1

22.4 Stormwater Evaluation

22.4.1 Summary of Stormwater Results Compared to 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 location at the SMA.

22.4.2 Assessment Unit and Stream Impairments

LA-SMA-2.1 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The adjusted gross alpha, metals, and PCB impairments may be Site-related, based on Site history.

22.5 Site-Specific Demonstration

22.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater data: Aroclor-1254, Aroclor-1260, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, PCB-105, PCB-126, PCB-170, and PCB-156.

22.5.2 Stormwater Data Summary

No confirmation-monitoring data.

22.5.3 2022 Permit Status

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

22.5.4 Sampling and Analysis Plan

Table 22.5-1 is the proposed SAP for LA-SMA-2.1.

Table 22.5-1 Proposed SAP, LA-SMA-2.1

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment, Site history (radionuclides), and stormwater data
Total PCBs	Impairment, Site history (organics), stormwater data, and soil data
Total mercury and selenium	Impairment, Site history (metals)
SVOCs	Site history (organics) and soil data
Dissolved copper	Site history (metals) and stormwater data
DOC	Permit requirement
SSC	Permit requirement

23.0 LA-SMA-2.3

Associated Sites	01-001(b)
Receiving Water	Los Alamos Canyon
Drainage Area	0.16 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 01-001(b): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls
2010 AC Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the February 2018 field visit, the current sampler location does not adequately monitor runoff from this Site. Therefore, the sampler will be moved west to the area where the Site discharged.
2022 Permit Status	Active Monitoring

23.1 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.

SWMU 01-001(b) received a COC under the Consent Order in September 2010. The Permittees submitted a certification of completion of corrective action for the Site to EPA per Permit part I.E.2(d) in November 2012 (LANL 2012/2013, 232273) and resubmitted in August 2013 (LANL 2013, 250035). Stormwater monitoring has not occurred since 2012.

23.2 Site History

SWMU 01-001(b) is the location of a former septic tank (structure 01-135) southwest of Oppenheimer Drive in the Los Alamos townsite at former TA-01. The septic system served former FP and M-1 Buildings through a single sanitary waste line connection, and discharged to Los Alamos Canyon.
Septic tank 01-135 measured 7 ft × 3.5 ft × 5 ft deep. It was installed in 1950 and removed in 1975 during the 1974–1976 radiological survey and D&D of TA-01; the inlet and outlet drainlines were left in place.

FP Building was constructed in November 1945 and was a foundry for nonradioactive and nonferrous metals. The building was determined to be free of radioactive contamination before D&D. M-1 Building was completed in June 1950 and originally was used to machine lithium and later to machine uranium-238. The building superstructure was determined to be free of contamination in 1964, but the floor drains were suspected to be radioactively contaminated from the uranium-238 machining conducted in M-1 Building. Currently, the locations of the inactive drainlines are under pavement and the buildings of Ridge Park Village.

For investigation activities, refer to “Response to the Notice of Disapproval for the Investigation Report for Upper Los Alamos Canyon Aggregate Area, Los Alamos National Laboratory” (LANL 2010, 108536).

23.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 23.2-1.

Table 23.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
01-001(b)	Septic Tank 135	Uranium-238, metals, inorganic and organic chemicals

23.3 Consent Order Soil Data

Decision-level data for SWMU 01-001(b) consist of results from samples collected in 2008. Analytical results from those samples are presented in Figures 23.3-1 through 23.3-4. Revision 1 of the 2010 IR concluded that the nature and extent of contamination are defined.

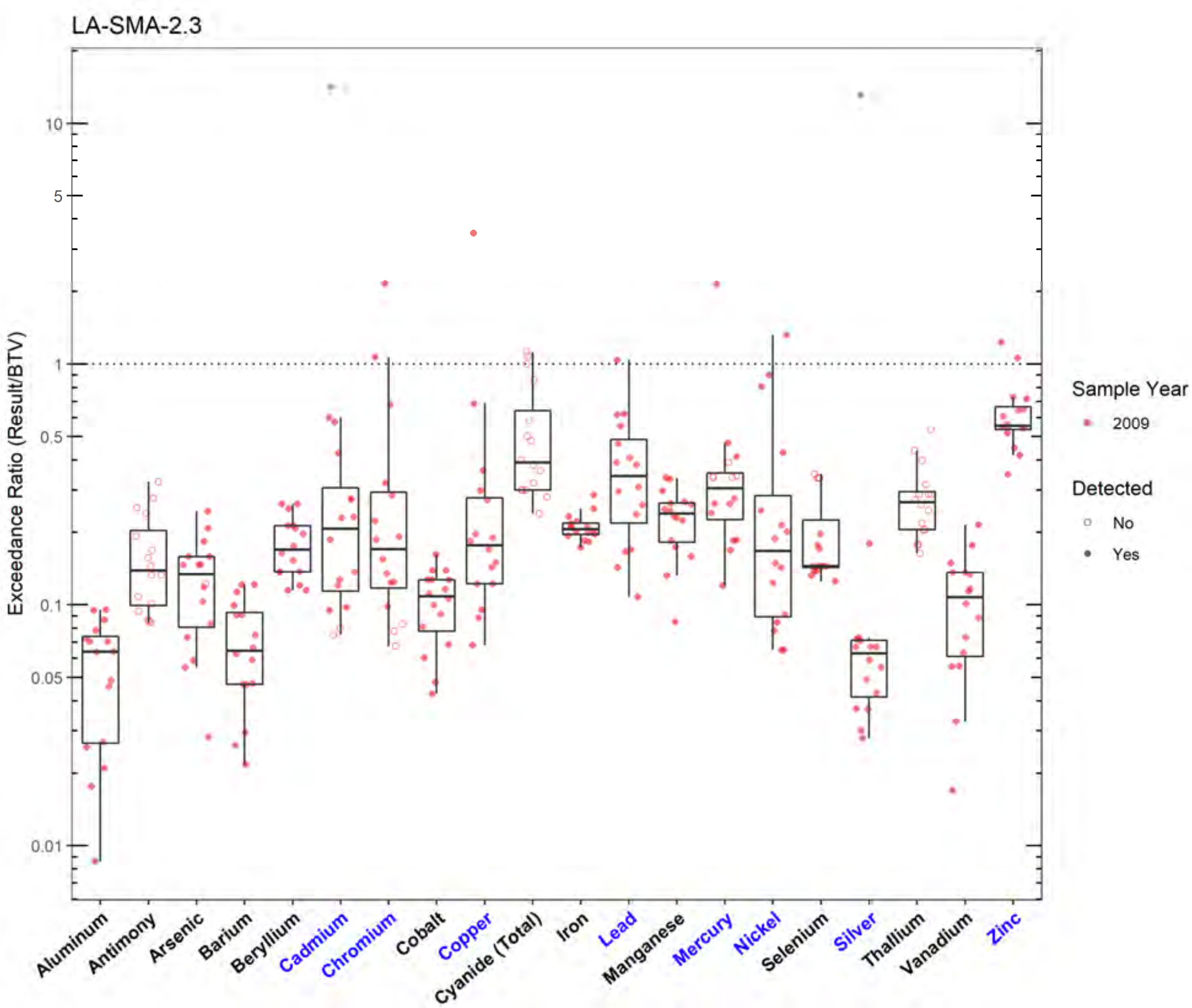


Figure 23.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-2.3

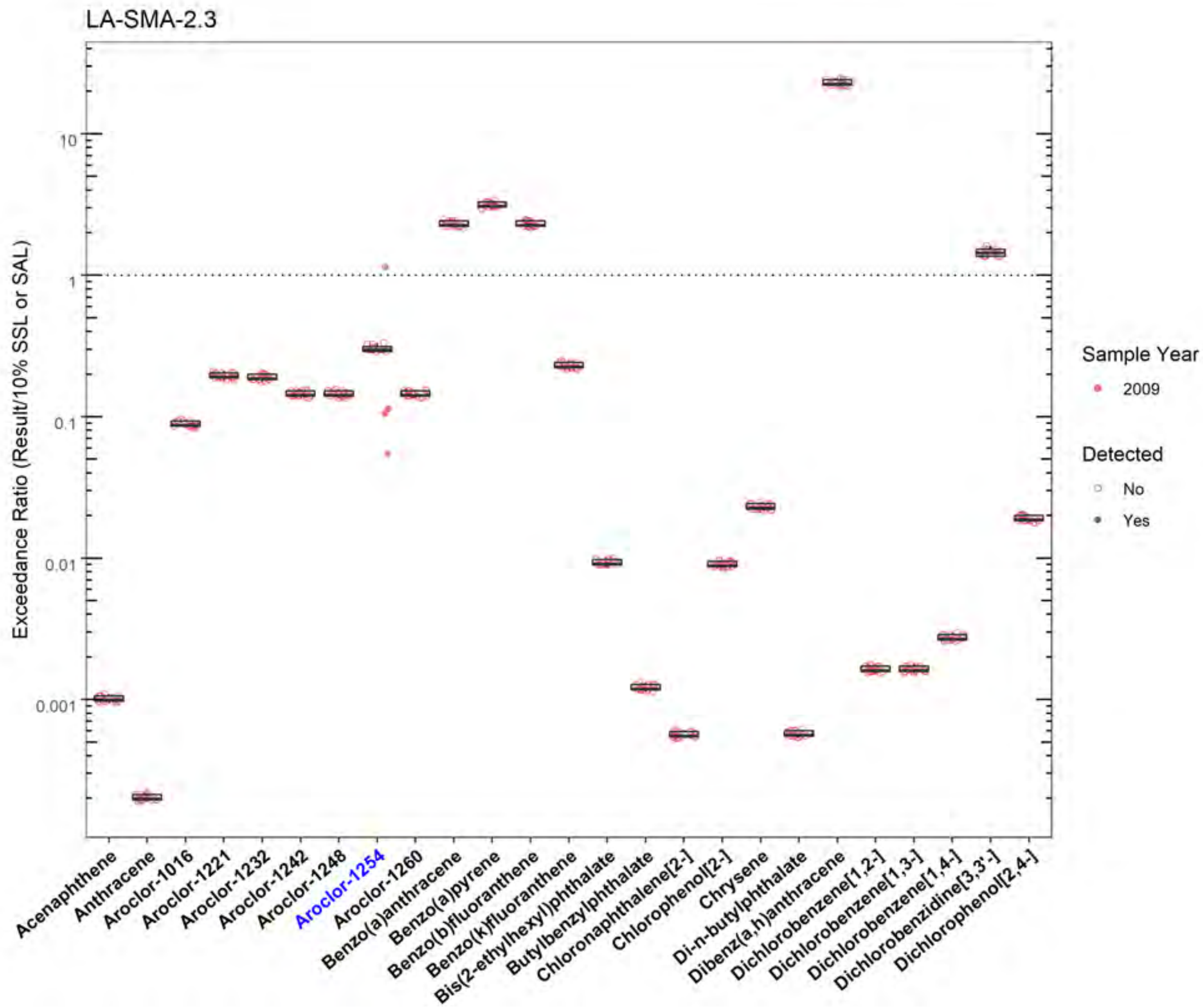


Figure 23.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-2.3 (Plot 1)

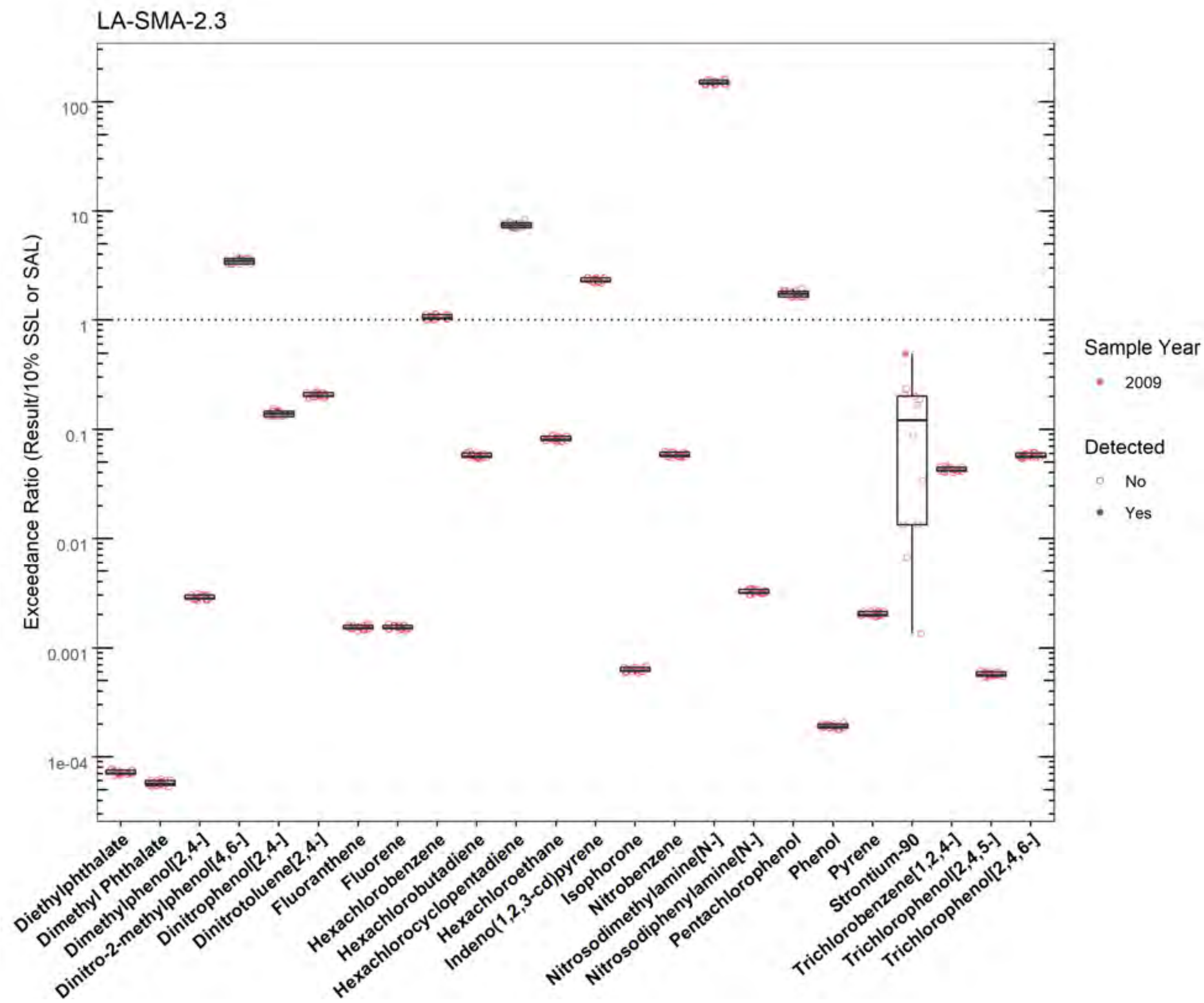


Figure 23.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-2.3 (Plot 2)

LA-SMA-2.3

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	LA-SMA-2.3	11097-69-1	Y	SSL_0.1	0.114	0.130	2009-01-06
Cadmium	LA-SMA-2.3	Cd	Y	BTV	0.400	5.70	2009-01-20
Chromium	LA-SMA-2.3	Cr	Y	BTV	19.3	41.7	2009-01-05
Copper	LA-SMA-2.3	Cu	Y	BTV	14.7	51.3	2009-01-20
Lead	LA-SMA-2.3	Pb	Y	BTV	22.3	23.1	2009-01-06
Mercury	LA-SMA-2.3	Hg	Y	BTV	0.100	0.215	2009-01-06
Nickel	LA-SMA-2.3	Ni	Y	BTV	15.4	20.4	2009-01-05
Silver	LA-SMA-2.3	Ag	Y	BTV	1.00	13.1	2009-01-20
Zinc	LA-SMA-2.3	Zn	Y	BTV	48.8	59.8	2009-01-20

Figure 23.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-2.3

23.4 Stormwater Evaluation

23.4.1 Summary of Stormwater Results Compared to TALs and BTVs

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

23.4.2 Assessment Unit and Stream Impairments

LA-SMA-2.3 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The impairments may be Site-related, based on Site history.

23.5 Site-Specific Demonstration

23.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater at the current monitoring location: Aroclor-1254, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc.

23.5.2 Stormwater Data Summary

No confirmation-monitoring data.

23.5.3 2022 Permit Status

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

23.5.4 Sampling and Analysis Plan

Table 23.5-1 is the proposed SAP for LA-SMA-2.3.

Table 23.5-1 Proposed SAP, LA-SMA-2.3

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment, Site history (uranium-238), and stormwater data
Total PCBs	Impairment, Site history (organics), and soil data
Total mercury and selenium	Impairment, Site history (metals), and soil data
Cyanide	Impairment and Site history (inorganics)
Dissolved cadmium, chromium, copper, lead, nickel, silver, and zinc	Site history (metals) and soil data
SVOCs	Site history (organics)
DOC	Permit requirement
SSC	Permit requirement

24.0 LA-SMA-3.1

Associated Sites	01-001(e), 01-003(a)
Receiving Water	Los Alamos Canyon
Drainage Area	13.82 acres
Landscape Characteristics	39% impervious, 61% pervious
Consent Order Site Status	SWMU 01-001(e): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls SWMU 01-003(a): In Progress
2010 AC Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the February 2018 field visit, the current sampler location does not adequately monitor the affected area. Therefore, the sampler was moved downgradient in the drainage.
2022 Permit Status	Active Monitoring

24.1 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 2018 SAP, a decision was made to implement the monitoring location move recommended during the 2018 SIP review. Monitoring was reinitiated and a baseline stormwater sample was collected in October 2018. Analytical results from this sample initiated corrective action.

The Permittees submitted a request for alternative compliance for the Sites to EPA per permit Part I.E.3 in April 2019 (N3B 2022, 701992). No response has been received from EPA, and stormwater monitoring has not occurred since 2018.

24.2 Site History

01-001(e) (3/28/2022)

SWMU 01-001(e) is the location of a former septic system that consisted of former septic tank 01-139, associated inlet and outlet drainlines, and a former outfall at former TA-01. The outfall discharged southeast of I Building and the D-5 Sigma vault, at the head of Bailey Bridge Canyon [SWMU 01-003(a)]. Septic tank 139 was constructed in 1944 of reinforced concrete and measured 3 ft × 6 ft × 5 ft deep and served the D-5 Sigma vault, I Building, and Delta Building. D-5 Sigma vault was used to store plutonium-239 and uranium-235. I Building was used to store and machine beryllium between 1947 and 1958. Delta Building was used as a meeting place and a laboratory where fission-product tracers were used. The septic system was reportedly decommissioned and abandoned in place in 1965. However, the septic tank was not found during the 1974–1976 radiological survey of TA-01, nor was it found when the area was developed for residential use. Currently, the SWMU location is on private property under Oppenheimer Drive, various residential buildings, and adjacent yards, driveways, and sidewalks.

For investigation activities, refer to “Response to the Notice of Disapproval for the Investigation Report for Upper Los Alamos Canyon Aggregate Area, Los Alamos National Laboratory” (LANL 2010, 108536).

01-003(a) (9/28/2021)

SWMU 01-003(a) is the inactive Bailey Bridge landfill located at the head of Bailey Bridge Canyon at former TA-01. Demolition debris from former TA-01 structures was placed on the hillsides in the drainage at the head of Bailey Bridge Canyon between 1959 and 1978. The area measured approximately 200 ft × 100 ft × 100 ft deep.

A September 1964 Zia Company memorandum regarding disposal of former TA-01 debris from demolition activities specified that concrete walls and flooring from the former Sigma Building (structure 01-56) with radioactivity levels below 2500 cpm of surface alpha contamination were to be broken up and disposed of in Bailey Bridge Canyon; the disposed concrete was covered with 4 ft of earthen fill. Demolition debris with less than 2500 cpm surface alpha contamination from several other buildings (the D-5 vault [01-11], HT [01-29], warehouse 19 [01-103], and the sheet metal shop [structure 01-104]) located in the western portion of former TA-01 was also disposed of in Bailey Bridge Canyon and covered with soil. Additional fill was placed over the landfill and the area regraded before the area was developed for residential housing.

The debris and fill placed at the head of Bailey Bridge Canyon extended the canyon edge to the south by approximately 100 ft. The mesa-top portion of SWMU 01-003(a) is currently under pavement and one building of the Los Arboles townhouses. The area downslope of the landfill is undeveloped DOE land.

For investigation activities, refer to “Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area, Revision 1” (N3B 2021, 701261).

24.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 24.2-1.

Table 24.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
01-001(e)	Septic Tank 139	Beryllium, fission tracers, uranium and plutonium
01-003(a)	Landfill	Metals, organic chemicals, radionuclides

24.3 Consent Order Soil Data

Decision-level data for SWMU 01-001(e) consist of results from samples collected in 2008. Revision 1 of the 2010 IR concluded that the nature and extent of contamination are defined.

Decision-level data for SWMU 01-003(a) consist of results from samples collected in 2008, 2012, 2013, and 2016. Revision 1 of the 2018 Phase II IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results from all decision-level soil samples collected for LA-SMA-3.1 are presented in Figures 24.3-1 through 24.3-3.

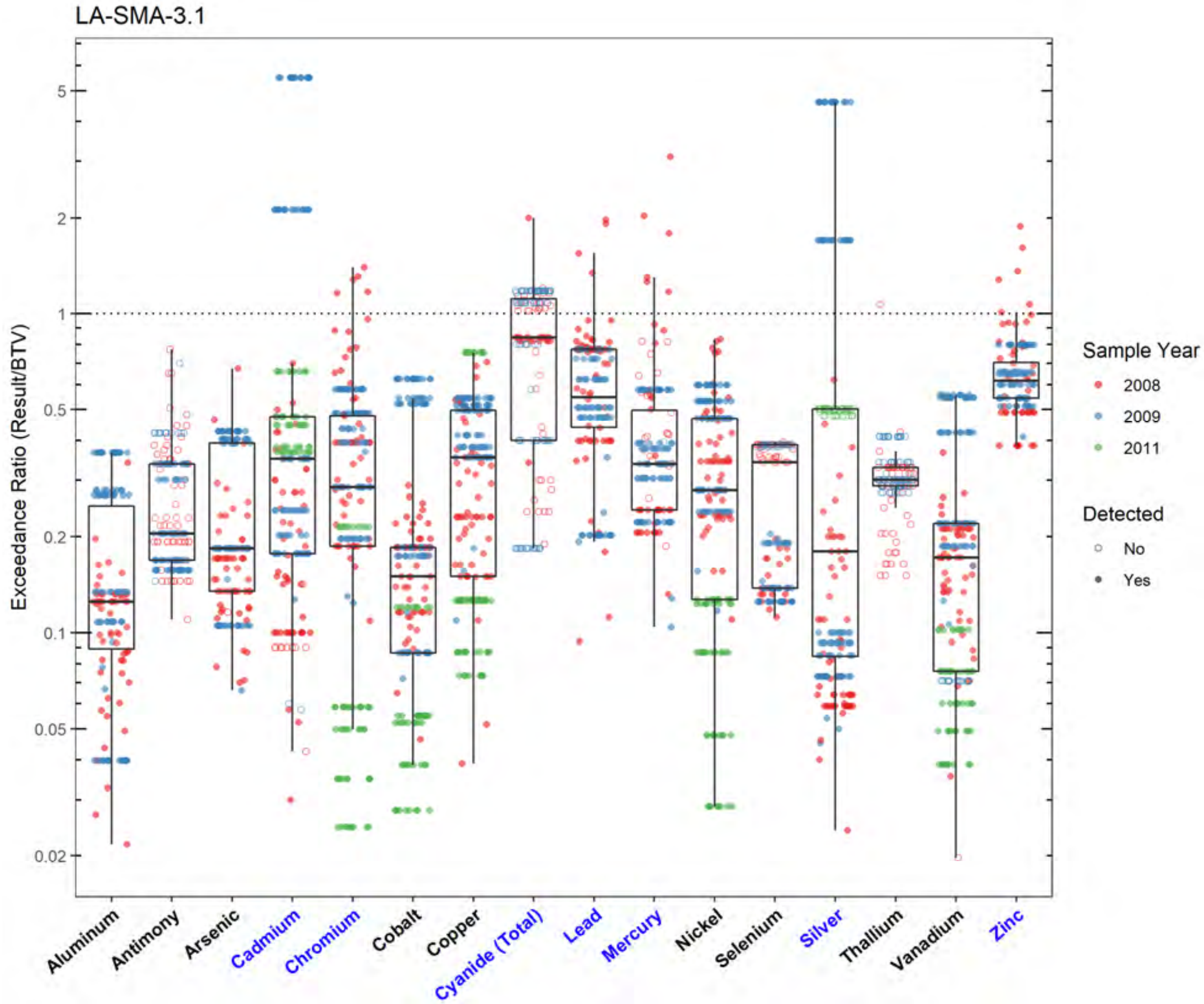


Figure 24.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-3.1

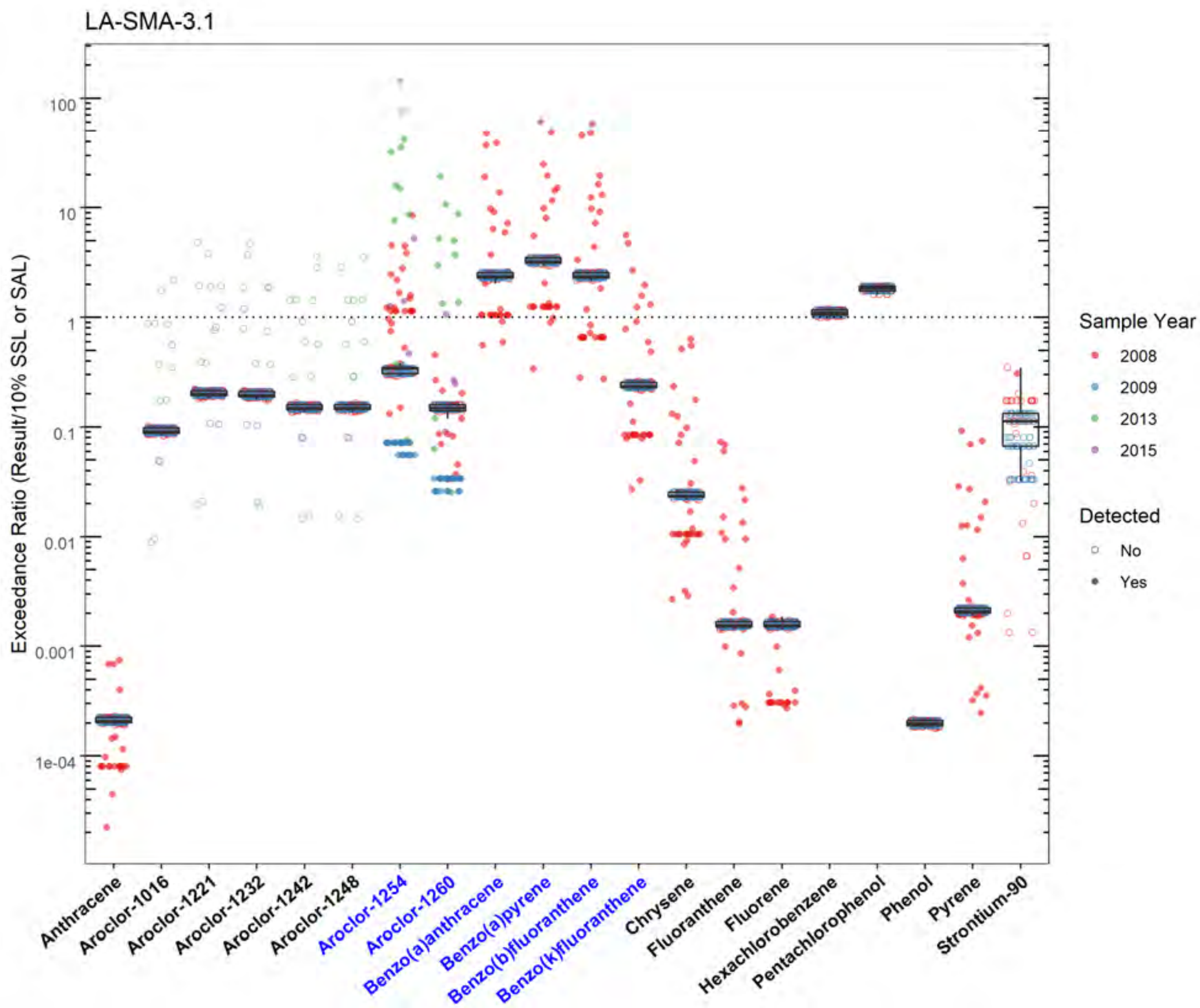


Figure 24.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-3.1

LA-SMA-3.1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	LA-SMA-3.1	11097-69-1	Y	SSL_0.1	0.114	16.3	2013-08-26
Aroclor-1260	LA-SMA-3.1	11096-82-5	Y	SSL_0.1	0.243	4.66	2013-08-26
Benzo(a)anthracene	LA-SMA-3.1	56-55-3	Y	SSL_0.1	0.153	7.30	2008-11-11
Benzo(a)pyrene	LA-SMA-3.1	50-32-8	Y	SSL_0.1	0.112	6.80	2008-11-11
Benzo(b)fluoranthene	LA-SMA-3.1	205-99-2	Y	SSL_0.1	0.153	8.90	2008-11-11
Benzo(k)fluoranthene	LA-SMA-3.1	207-08-9	Y	SSL_0.1	1.53	8.60	2008-11-11
Cadmium	LA-SMA-3.1	Cd	Y	BTV	0.400	2.20	2009-01-21
Chromium	LA-SMA-3.1	Cr	Y	BTV	19.3	27.1	2008-11-12
Cyanide (Total)	LA-SMA-3.1	CN(TOTAL)	Y	BTV	0.500	1.00	2008-11-12
Lead	LA-SMA-3.1	Pb	Y	BTV	22.3	44.0	2008-11-12
Mercury	LA-SMA-3.1	Hg	Y	BTV	0.100	0.310	2008-11-13
Silver	LA-SMA-3.1	Ag	Y	BTV	1.00	4.60	2009-01-21
Zinc	LA-SMA-3.1	Zn	Y	BTV	48.8	91.9	2008-11-11

Figure 24.3-3 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-3.1

24.4 Stormwater Evaluation

24.4.1 Summary of Stormwater Results Compared to TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective action stormwater sample was collected in October 2018. Analytical results from that sample are presented in Figures 24.4-1 through 24.4-4.

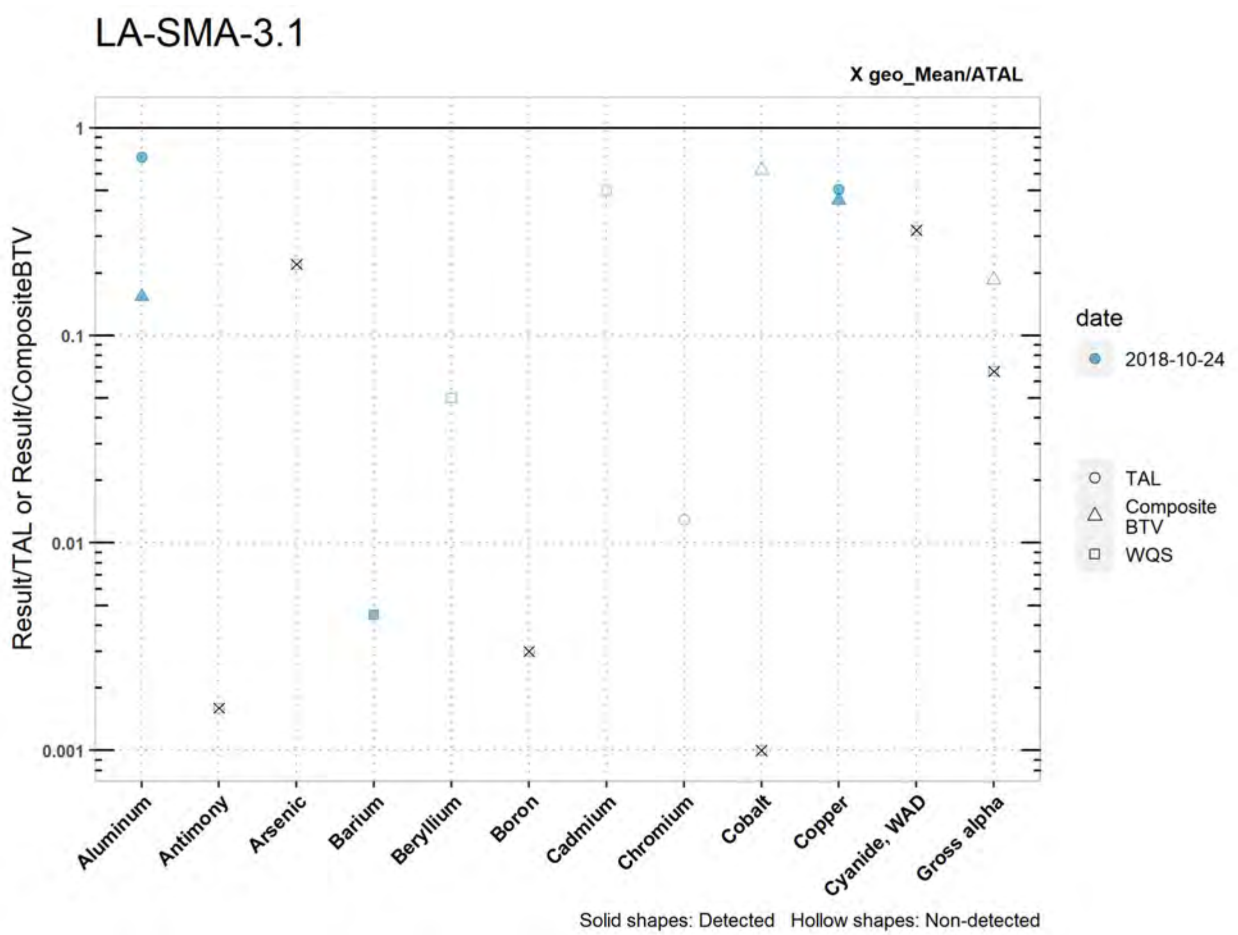


Figure 24.4-1 Analytical Results from Stormwater Sample, LA-SMA-3.1 (Plot 1)

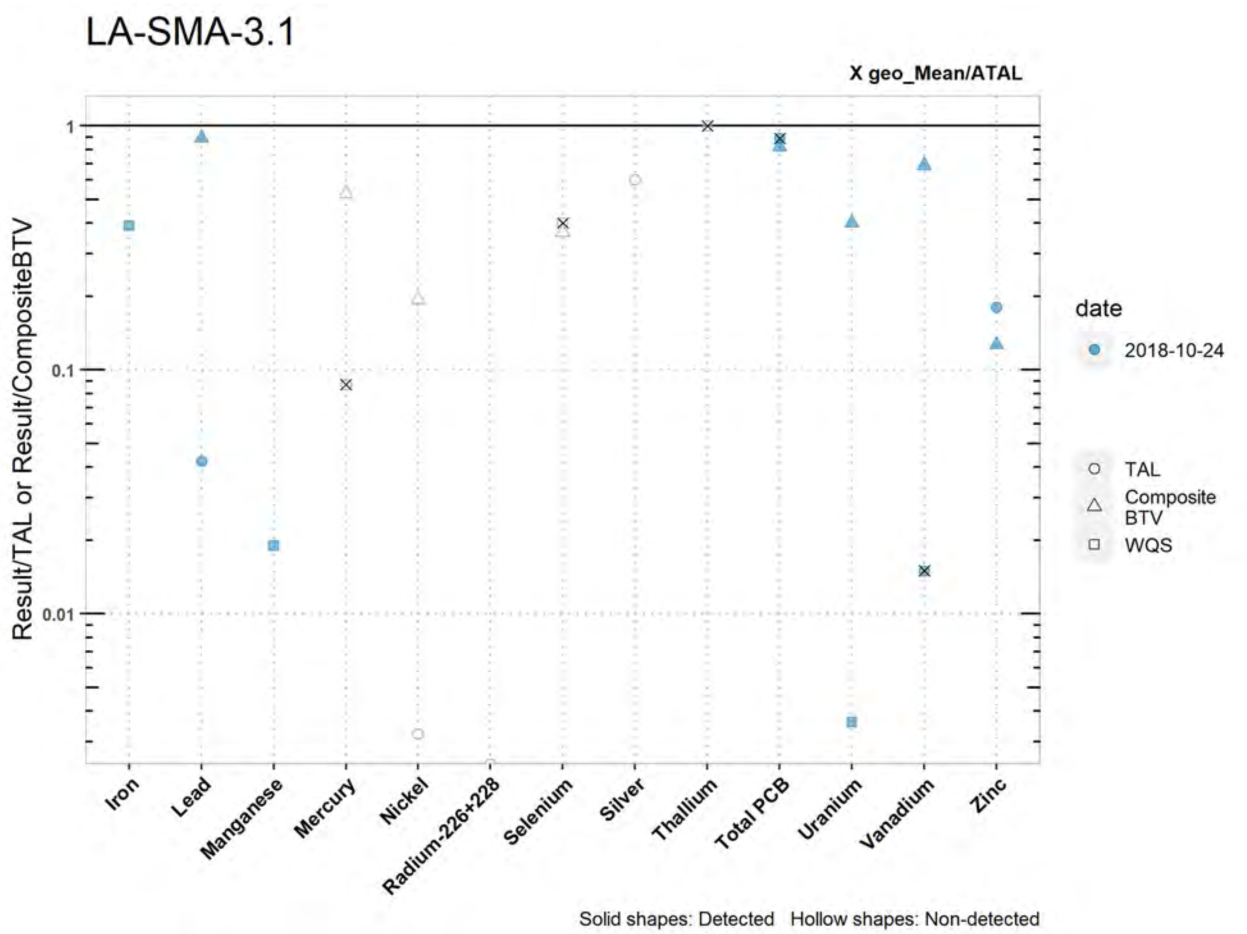


Figure 24.4-2 Analytical Results from Stormwater Sample, LA-SMA-3.1 (Plot 2)

LA-SMA-3.1

	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	765	NA	340	NA	NA	NA	0.65	233	NA	4.8	22	NA
Composite_BTV	36000	NA	NA	NA	NA	NA	NA	NA	1.60	5.43	NA	54.2
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*
2018-10-24 result	555	*1.00*	*2.00*	9.08	*0.200*	*15.0*	*0.300*	*3.00*	*1.00*	2.43	*1.67*	*1.00*
2018-10-24 dT	0.725	NA	NA	0.0045	NA	NA	NA	NA	NA	0.506	NA	NA
2018-10-24 dB	0.154	NA	NA	NA	NA	NA	NA	NA	NA	0.448	NA	NA
geo_mean/ATAL	NA	0.0016	0.22	NA	NA	0.0030	NA	NA	0.0010	NA	0.321	0.067

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 24.4-3 Analytical Results from Stormwater Sample, LA-SMA-3.1 (Table 1)

LA-SMA-3.1

	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	19.3	NA	NA	186	NA	20	0.49	NA	NA	NA	NA	59.2
Composite_BTV	NA	0.914	NA	0.127	3.10	6.63	5.47	NA	NA	0.0151	0.270	2.21	84.3
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
2018-10-24 result	387	0.814	2.32	*0.0670*	*0.600*	*NA*	*2.00*	*0.300*	*0.600*	0.0124	0.108	1.52	10.7
2018-10-24 dT	0.39	0.0422	0.019	NA	NA	NA	NA	NA	NA	0.89	0.0036	0.015	0.181
2018-10-24 dB	NA	0.891	NA	NA	NA	NA	NA	NA	NA	0.821	0.400	0.688	0.127
geo_mean/ATAL	NA	NA	NA	0.087	NA	NA	0.40	NA	1	0.89	NA	0.015	NA

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

Figure 24.4-4 Analytical Results from Stormwater Sample, LA-SMA-3.1 (Table 2)

24.4.2 Assessment Unit and Stream Impairments

LA-SMA-3.1 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The adjusted gross alpha, metals, and PCB impairments may be Site-related, based on Site history.

24.5 Site-Specific Demonstration

24.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

PCBs, as Aroclor-1254 and Aroclor-1260, exceeded the applicable screening value in soil data but were measured in stormwater and did not exceed TAL. Cyanide, cadmium, chromium, lead, mercury, and zinc also exceeded the applicable screening value in soil data but were below TAL in stormwater data.

24.5.2 Stormwater Data Summary

There were no stormwater data exceedances.

24.5.3 2022 Permit Status

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

24.5.4 Sampling and Analysis Plan

Table 24.5-1 is the proposed SAP for LA-SMA-3.1.

Table 24.5-1 Proposed SAP, LA-SMA-3.1

Monitoring Constituent	Background for Monitoring
Total PCBs (1)	Impairment, soil data, and Site history (organics)
Total mercury (1) and selenium (1)	Impairment and Site history
SVOCs	Soil data and Site history (organics)
Tritium	Site history (radionuclides)
DOC	Permit requirement
SSC	Permit requirement

25.0 LA-SMA-3.9

Associated Sites	01-001(g), 01-006(a)
Receiving Water	Los Alamos Canyon
Drainage Area	0.30 acres
Landscape Characteristics	30% impervious, 70% pervious
Consent Order Site Status	SWMU 01-001(g): In Progress SWMU 01-006(a): In Progress
2010 AC Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the February 2018 field visit, the SIP team agreed that 2017 consent order soil sampling data from Upper Los Alamos Canyon would be considered prior to deciding if a sampler move was warranted. After review of the 2018 Consent Order Upper Los Alamos Canyon IR, the SIP team determined that the current SMA sampler does not adequately monitor the affected area and the current location is not representative. Therefore the sampler was moved downgradient in the drainage.
2022 Permit Status	Active Monitoring

25.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, baseline stormwater monitoring was initiated. While developing the 2019 SAP, a decision was made to implement the monitoring location move recommended during the 2018 SIP review. To date, stormwater flow has not been sufficient for full-volume sample collection at LA-SMA-3.9. Baseline monitoring is ongoing until one confirmation sample is collected from this SMA.

25.2 Site History

01-001(g) (9/28/2021)

SWMU 01-001(g) consists of a former sanitary septic system that included septic tank 141 (former structure 01-141), inlet and outlet drainlines and an outfall at former TA-01. Former septic tank 141 was a cylindrical steel tank, measuring approximately 4 ft in diameter and 4 ft deep, that was installed in 1943. The septic tank was located south of former X Building (former building 01-79), near the edge of Los Alamos Canyon, and received sanitary waste from former X Building through a single sanitary waste line. Former X Building housed a cyclotron (accelerator) in which radioactive targets were tested. Waste water from the septic tank flowed through an outlet line and discharged to an outfall on the rim of Los Alamos Canyon.

X Building was decommissioned and removed in 1954 as part of the relocation of all TA-01 activities to new Laboratory TAs south of the Los Alamos townsite. Use of the SWMU 01-001(g) septic system ceased in 1965 and septic tank 141 was removed during the Ahlquist Radiological Survey in 1975. The tank, its contents, and surrounding soil had no evidence of radiological contamination and were disposed of at an unnamed MDA. Currently, the location of the former inlet drainline is under one of the Los Arboles condominium buildings, and the outfall location is on undeveloped land owned by the DOE.

01-006(a) (9/28/2021)

SWMU 01-006(a) consists of a former drainline and outfall that served cooling tower 80 (former structure 01-80) at former TA-01. The drainline and outfall were located on the east side of former cooling tower 01-80 and south of X Building (former structure 01-79), near the north rim of Los Alamos Canyon. Cooling tower 01-80 was installed in 1944 and removed in 1954; the outlet drainline was left in place. Biocides containing chromium may have been added to the cooling tower, as was standard practice at the time.

Currently, the location of the former drainline is under one of the Los Arboles condominium buildings. Although no record can be found on the removal of the drainline, it was likely removed during the construction of the residential building.

For investigation activities for these Sites, refer to "Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area, Revision 1" (N3B 2021, 701261).

25.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 25.2-1.

Table 25.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
01-001(g)	Septic Tank 141	Metals, organic chemicals, radionuclides
01-006(a)	Drainlines and outfall	Metals

25.3 Consent Order Soil Data

Decision-level data for SWMU 01-001(g) consist of results from samples collected between 2008 and 2016. Revision 1 of the 2021 Phase II IR concluded that the nature and extent of contamination in the accessible area of the Site have been defined and no further sampling for extent is warranted.

Decision-level data for SWMU 01-006(a) consist of results from samples collected in 2008 and 2012. Revision 1 of the 2021 Phase II IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results from all decision-level soil samples collected from LA-SMA-3.9 are presented in Figures 20.3-1 through 20.3-4.

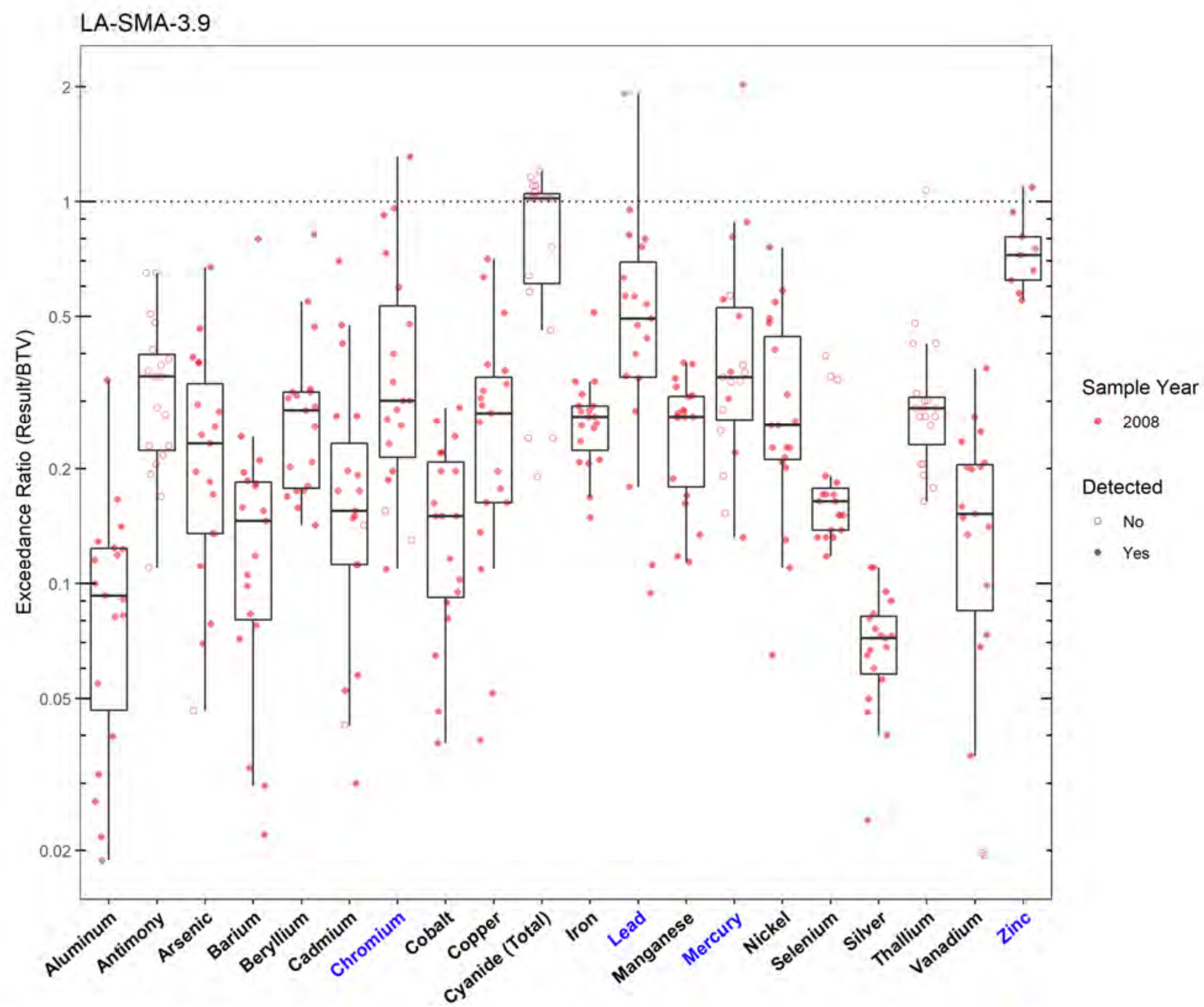


Figure 25.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-3.9

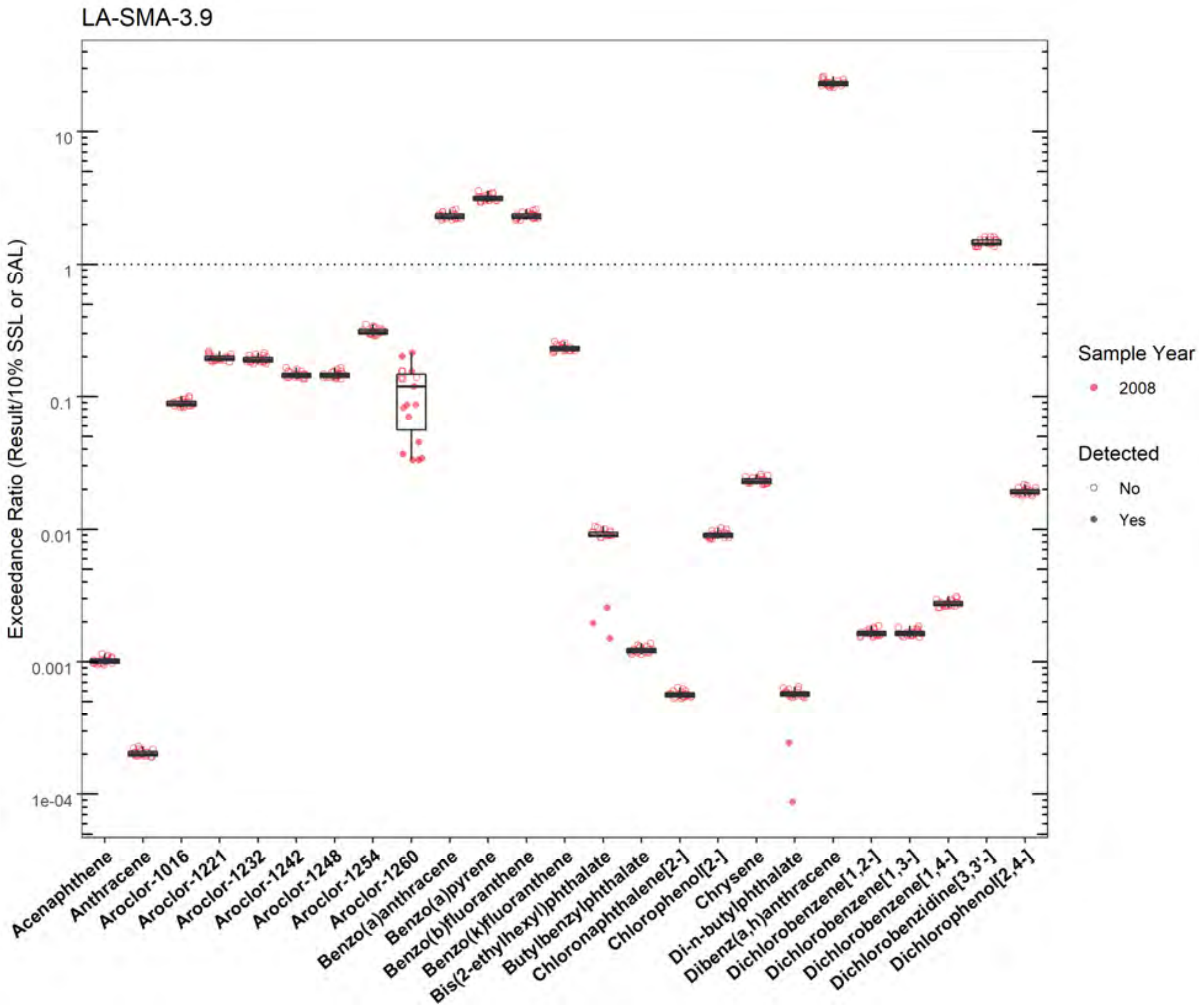


Figure 25.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-3.9 (Plot 1)

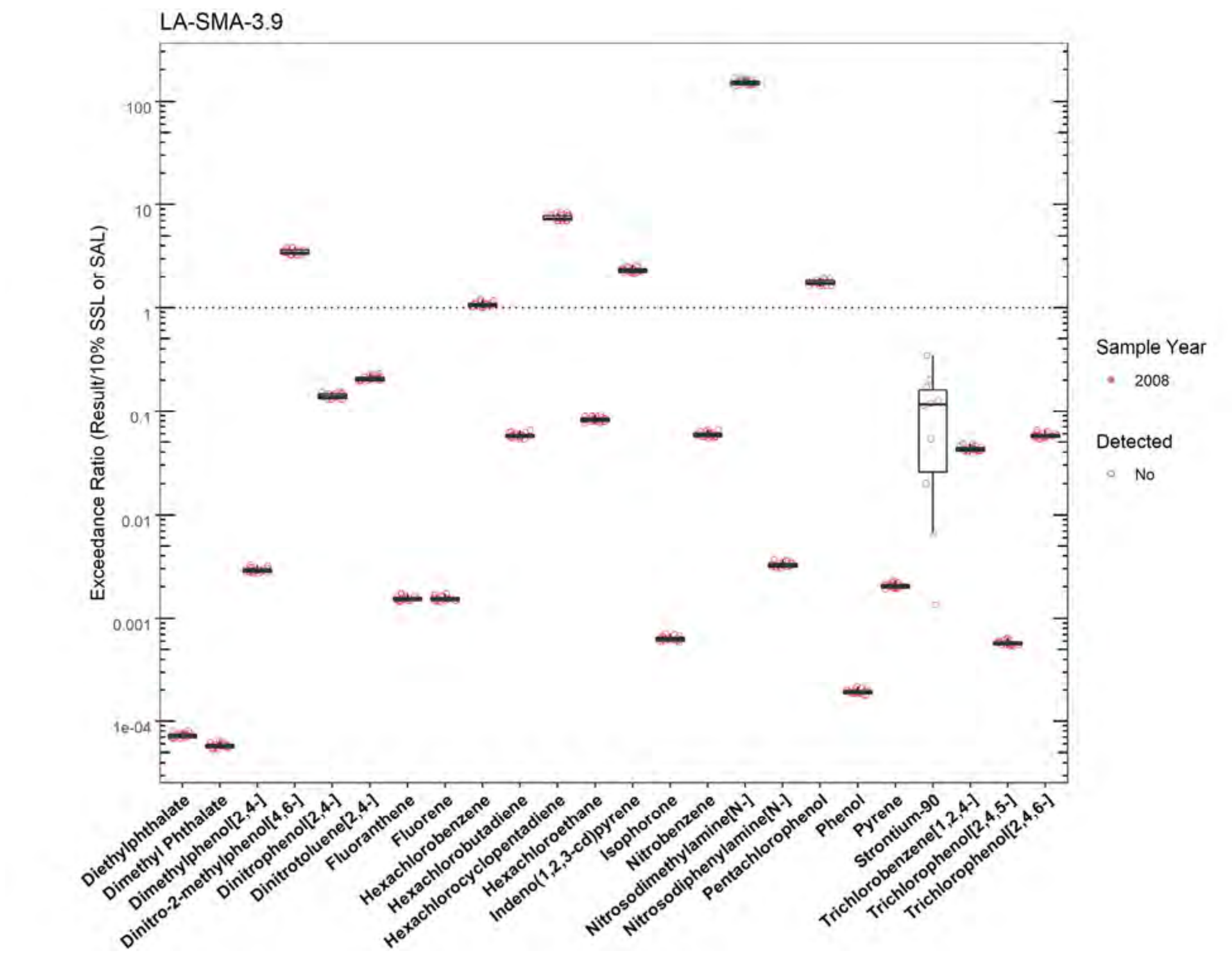


Figure 25.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-3.9 (Plot 2)

LA-SMA-3.9

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Chromium	LA-SMA-3.9	Cr	Y	BTV	19.3	25.3	2008-12-12
Lead	LA-SMA-3.9	Pb	Y	BTV	22.3	42.8	2008-12-10
Mercury	LA-SMA-3.9	Hg	Y	BTV	0.100	0.203	2008-12-17
Zinc	LA-SMA-3.9	Zn	Y	BTV	48.8	53.2	2008-12-11

Figure 25.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-3.9

25.4 Stormwater Evaluation

25.4.1 Summary of Stormwater Results Compared to TALs and BTVs

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

25.4.2 Assessment Unit and Stream Impairments

LA-SMA-3.9 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The adjusted gross alpha, metals, and PCB impairments may be Site-related, based on Site history.

25.5 Site-Specific Demonstration

25.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: chromium, lead, mercury, and zinc.

25.5.2 Stormwater Data Summary

No confirmation-monitoring data.

25.5.3 2022 Permit Status

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

25.5.4 Sampling and Analysis Plan

Table 25.5-1 is the proposed SAP for LA-SMA-3.9.

Table 25.5-1 Proposed SAP, LA-SMA-3.9

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history (radionuclides)
Total mercury and selenium	Impairment, Site history (metals), and soil data
Total PCBs	Impairment and Site history (organics)
Dissolved chromium, lead, and zinc	Site history (metals) and soil data
SVOCS	Site history (organics)
Radium-226 and radium-228	Site history (radionuclides)
Tritium	Site history (radionuclides)
DOC	Permit requirement
SSC	Permit requirement

26.0 LA-SMA-4.1

Associated Sites	01-003(b1), 01-003(b2), 01-006(b)
Receiving Water	Los Alamos Canyon
Drainage Area	4.5 acres
Landscape Characteristics	15% impervious, 85% pervious
Consent Order Site Status	AOC 01-003(b1): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls AOC 01-003(b2): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 01-006(b): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 AC Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the February 2018 field visit, all parties agreed that the current SMA sampling location and SMA boundary was the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring/Corrective Action

26.1 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.

The Permittees submitted a request for alternative compliance for the Sites to EPA 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 2011.

26.2 Site History

01-003(b1) (5/22/2017)

AOC 01-003(b1) is the approximately 20 ft x 20 ft northeast portion of a suspected surface disposal site [former AOC 01-003(b)], reported to be located below the north rim of Los Alamos Canyon approximately 450 ft east of Bailey Bridge Canyon. AOC 01-003(b1) is the portion of the reported surface disposal area located within the southwest corner of the former Los Alamos Inn property. Evidence of the reported disposal area was not observed during several site visits conducted between the late 1980s and late 1990s. Several pieces of metal piping were found, a few objects were found scattered over more than an acre on the hillside, and the portable beta/gamma instruments used to screen each object registered only background radiation. Currently, the location of the area now designated as AOC 01-003(b1) is undeveloped.

AOC 01-003(b1) was originally part of AOC 01-003(b), which was split into AOCs 01-003(b1) and 01-003(b2) in a request for modification of the LANL Hazardous Waste Facility Permit approved by NMED on November 9, 2016. LANL proposed to split former AOC 01-003(b) into two newly designated AOCs because the components of the AOC are located on property owned by different entities.

For investigation activities, refer to “Investigation Report for the Former Los Alamos Inn Property Sites within the Upper Los Alamos Canyon Aggregate Area, Revision 1” (LANL 2017, 602404.2).

01-003(b2) (9/28/2021)

AOC 01-003(b2) is the primary portion of a suspected surface disposal site [former AOC 01-003(b)], reported to be located below the north rim of Los Alamos Canyon, approximately 450 ft east of Bailey Bridge Canyon. AOC 01-003(b2) includes all of former AOC 01-003(b) located on DOE property, except the northeast area, now designated as AOC 01-003(b1), which is located within the southwest corner of the former Los Alamos Inn property. Evidence of the reported disposal area was not observed during several site visits conducted between the late 1980s and late 1990s. Several pieces of metal piping were found, a few objects were found scattered over more than an acre on the hillside, and the portable beta/gamma instruments used to screen each object registered only background radiation. Currently, the location of the area now designated as AOC 01-003(b2) is undeveloped.

AOC 01-003(b2) was originally part of former AOC 01-003(b), which was split into AOCs 01-003(b1) and 01-003(b2) in a request for modification of the LANL Hazardous Waste Facility Permit approved by the NMED on November 9, 2016. The Laboratory proposed to split former AOC 01-003(b) into two newly designated sites because the components of the AOC are located on property owned by different entities.

For investigation activities refer to “Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area, Revision 1” (N3B 2021, 701261).

01-006(b) (9/3/2019)

SWMU 01-006(b) consists of a former drainline and outfall (01-6) that served former Building D, which housed plutonium and uranium processing operations at former TA-01. The drainline exited the southwest side of Building D, and extended southwest and then south before discharging into Los Alamos Canyon. The types and quantities of effluent discharged to this drainline and outfall are not known. Building D was removed in 1954. During the Ahlquist radiological survey, contaminated soil was excavated in the areas of former Buildings D and D-2 in 1975–1976. Approximately 9400 yd^3 of soil and tuff exhibiting elevated levels of radioactivity was removed from areas in and around former Buildings D and D-2, along with all drainlines including the SWMU 01-006(b) drainline. The excavated areas were backfilled with clean fill. Currently, this area is undeveloped. The former drainline and outfall of SWMU 01-006(b) are entirely within the boundary of SWMU 01-007(a).

For investigation activities, refer to “Investigation Report for the Former Los Alamos Inn Property Sites within the Upper Los Alamos Canyon Aggregate Area, Revision 1” (LANL 2017, 602404.2).

26.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 26.2-1.

Table 26.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
01-003(b1) and 01-003(b2)	Surface disposal site	Metals, organic chemicals
01-006(b)	Drainlines and outfall	Radionuclides (plutonium), inorganic and organic chemicals

26.3 Consent Order Soil Data

Decision-level data for AOC 01-003(b1) consist of results from samples collected in 2016. The 2017 IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for AOC 01-003(b2) consist of results from samples collected in 2009, 2012, 2013, and 2016. Revision 1 of the 2021 Phase II IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for SWMU 01-006(b) consist of results from samples collected in 2009, 2012, 2013, and 2016. The 2017 IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results from all decision-level soil samples collected for LA-SMA-4.1 are presented in Figures 26.3-1 through 26.3-4.

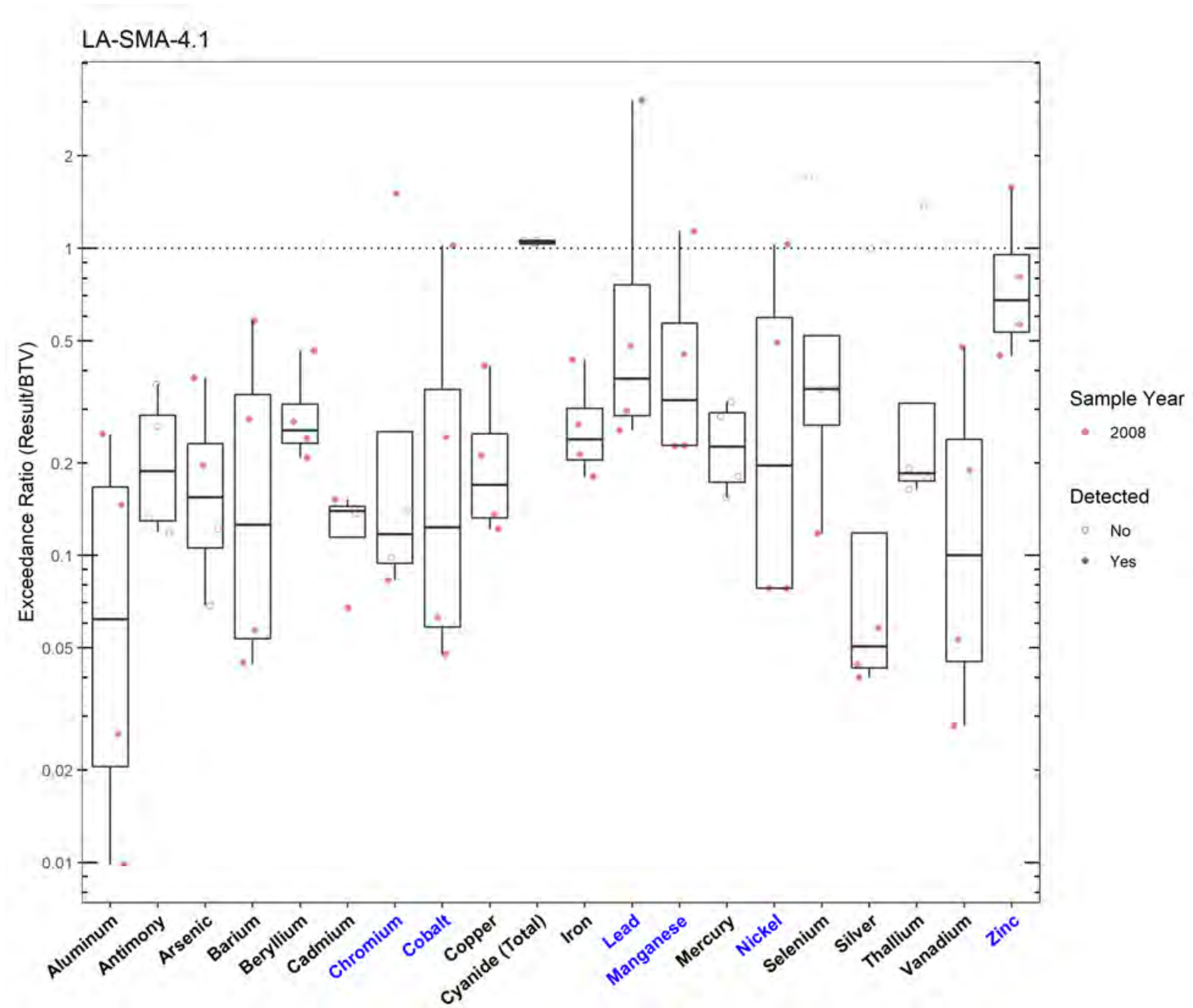


Figure 26.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-4.1

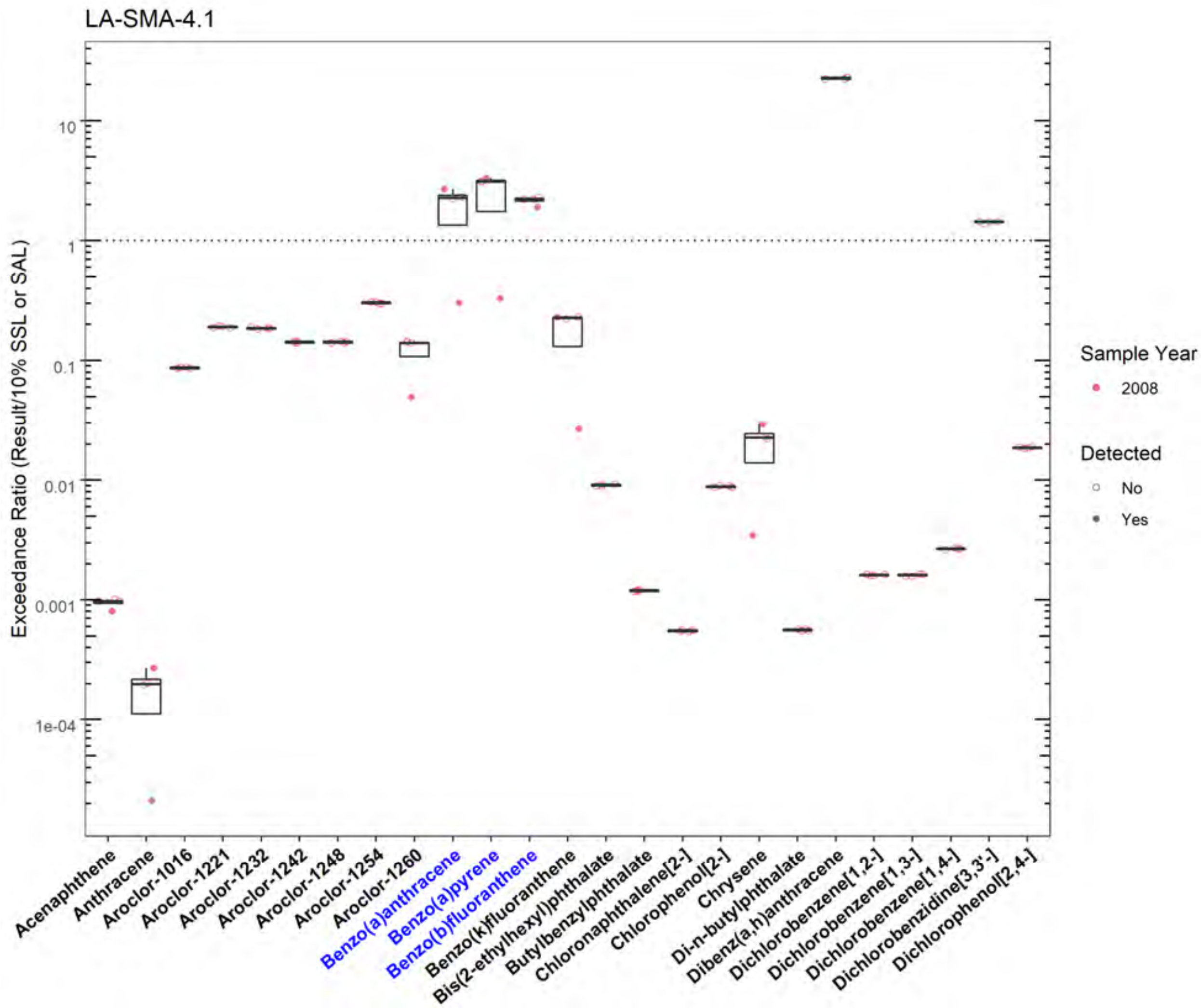


Figure 26.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-4.1 (Plot 1)

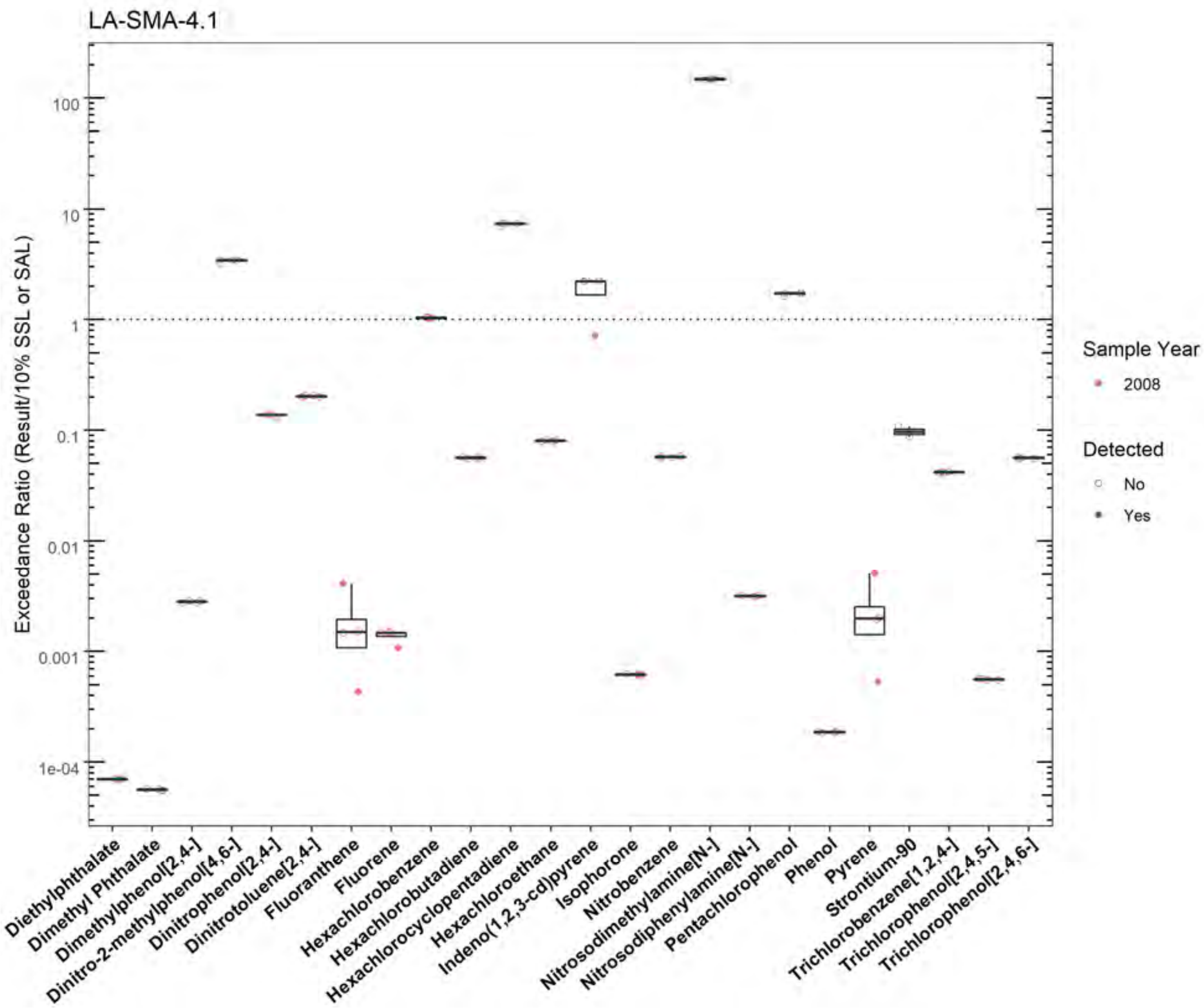


Figure 26.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-4.1 (Plot 2)

LA-SMA-4.1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	LA-SMA-4.1	56-55-3	Y	SSL_0.1	0.153	0.410	2008-11-20
Benzo(a)pyrene	LA-SMA-4.1	50-32-8	Y	SSL_0.1	0.112	0.370	2008-11-20
Benzo(b)fluoranthene	LA-SMA-4.1	205-99-2	Y	SSL_0.1	0.153	0.290	2008-11-20
Chromium	LA-SMA-4.1	Cr	Y	BTV	19.3	29.2	2008-11-20
Cobalt	LA-SMA-4.1	Co	Y	BTV	8.64	8.80	2008-11-20
Lead	LA-SMA-4.1	Pb	Y	BTV	22.3	67.9	2008-11-20
Manganese	LA-SMA-4.1	Mn	Y	BTV	671	764	2008-11-20
Nickel	LA-SMA-4.1	Ni	Y	BTV	15.4	15.8	2008-11-20
Zinc	LA-SMA-4.1	Zn	Y	BTV	48.8	76.7	2008-11-20

Figure 26.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-4.1

26.4 Stormwater Evaluation

26.4.1 Summary of Stormwater Results Compared to 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 those samples are presented in Figures 26.4-1 and 26.4-2.

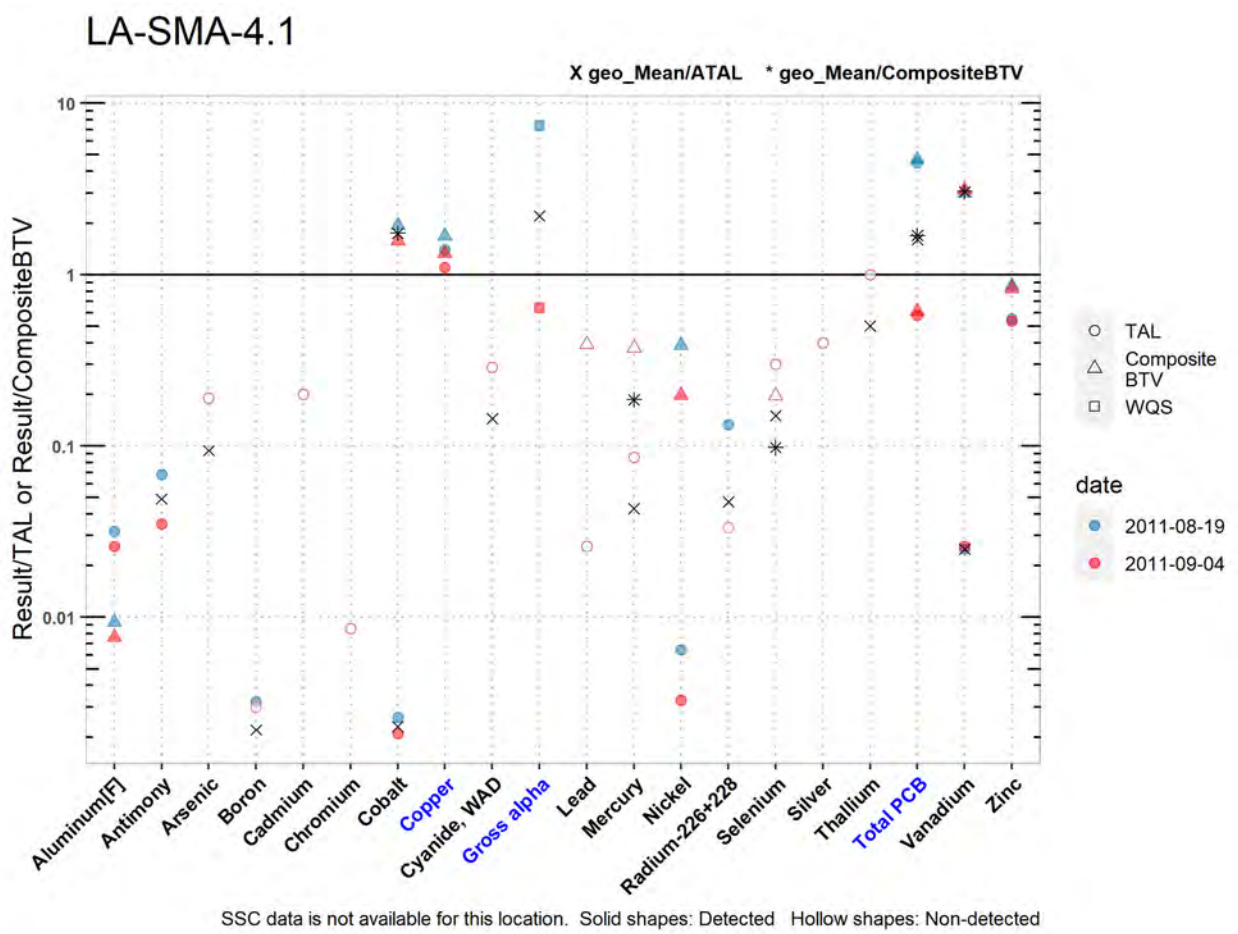


Figure 26.4-1 Analytical Results from Stormwater Samples, LA-SMA-4.1 (Plot)

LA-SMA-4.1

	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	0.65	233	NA	4.8	22	NA	19.3	NA	186	NA	20	0.49	NA	NA	NA	59.2
Composite_BTV	2540	NA	NA	NA	NA	NA	1.34	3.99	NA	56.1	1.28	0.177	3.10	5.13	7.65	NA	NA	0.0133	0.835	38.1
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
2011-08-19 result	23.8	43.7	*1.70*	16.2	*0.110*	*2.00*	2.60	6.70	*1.50*	111	*0.500*	*0.0660*	1.20	4.00	*1.50*	*0.200*	*0.450*	0.0625	2.50	32.7
2011-08-19 dT	0.0317	0.068	NA	0.0032	NA	NA	0.0026	1.40	NA	7.4	NA	NA	0.00645	0.133	NA	NA	NA	4.5	0.025	0.552
2011-08-19 dB	0.00937	NA	NA	NA	NA	NA	1.94	1.68	NA	NA	NA	NA	0.387	NA	NA	NA	NA	4.70	2.99	0.858
2011-09-04 result	19.4	22.1	*1.70*	*15.0*	*0.110*	*2.00*	2.10	5.30	*1.50*	9.63	*0.500*	*0.0660*	0.610	*1.00*	*1.50*	*0.200*	*0.450*	0.00810	2.60	31.6
2011-09-04 dT	0.0259	0.035	NA	NA	NA	NA	0.0021	1.10	NA	0.64	NA	NA	0.00328	NA	NA	NA	NA	0.58	0.026	0.534
2011-09-04 dB	0.00764	NA	NA	NA	NA	NA	1.57	1.33	NA	NA	NA	NA	0.197	NA	NA	NA	NA	0.609	3.11	0.829
geo_mean/ATAL	NA	0.049	0.094	0.0022	NA	NA	0.0023	NA	0.144	2.2	NA	0.043	NA	0.0471	0.15	NA	0.5	1.6	0.025	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	1.74	NA	NA	NA	NA	0.186	NA	NA	0.0980	NA	NA	1.69	3.05	NA

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

Figure 26.4-2 Analytical Results from Stormwater Samples, LA-SMA-4.1 (Table)

26.4.2 Assessment Unit and Stream Impairments

LA-SMA-4.1 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The impairments may be Site-related, based on Site history.

26.5 Site-Specific Demonstration

26.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene.

The metals, excluding copper, that exceeded the applicable screening value in soil data had previously been monitored in stormwater data and did not exceed the TAL. Copper exceed the TAL and the applicable screening value in soil data and will be added to the SAP.

26.5.2 Stormwater Data Summary

Copper and PCBs exceeded TALs and BTVs. Gross alpha exceeded TAL and there was no paired SSC result to confirm whether it was below BTVs. Therefore, it will be added to the SAP.

26.5.3 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.2.b.i) for copper and PCBs. The SMA is also in active monitoring; not all Site-related POCs were analyzed for in past samples.

26.5.4 Sampling and Analysis Plan

Table 26.5-1 is the proposed SAP for LA-SMA-4.1.

Table 26.5-1 Proposed SAP, LA-SMA-4.1

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment, Site history, and stormwater data
SVOCs	Site history (organics), soil data
DOC	Permit requirement
SSC	Permit requirement

27.0 LA-SMA-4.2

Associated Sites	01-001(c), 01-006(c), 01-006(d)
Receiving Water	Los Alamos Canyon
Drainage Area	0.27 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 01-001(c): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls SWMU 01-006(c): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 01-006(d): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 AC Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the February 2018 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

27.1 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 at LA-SMA-4.2. Baseline monitoring is ongoing until one confirmation sample is collected from this SMA.

27.2 Site History

01-001(c) (3/8/2022)

SWMU 01-001(c) is the location of a former septic system that consisted of a septic tank (former structure 01-137), associated inlet and outlet drainlines, and an outfall at former TA-01. The cylindrical metal septic tank measured 3 ft diameter by 6 ft long by 5 ft deep. It was installed in 1945 and removed in 1975.

The septic system served former D-2 Building, which originally operated as a laundry for radioactively-contaminated clothing and recyclable equipment. The building was converted to an electronics shop after laundry operations were relocated to TA-21 in 1945. Septic tank 01-137 was identified as a potential source of plutonium contamination in the runoff area below the septic tank outfall pipe. The outfall discharged over the canyon rim and onto the canyon hillside now designated as Hillside 137 within Upper Los Alamos Canyon. Septic tank 01-137 and the inlet and outlet drainlines were removed in 1975 and disposed of at MDA G at TA-54. High levels of radiological activity were detected in the sidewalls of the septic tank excavation. Soil was removed from the excavation until gross-alpha activity levels were below 25 pCi/g. Clean soil was used to backfill the excavation.

For investigation activities, refer to “Response to the Notice of Disapproval for the Investigation Report for Upper Los Alamos Canyon Aggregate Area, Los Alamos National Laboratory” (LANL 2010, 108536).

01-006(c) (9/3/2019)

SWMU 01-006(c) consists of two former drainlines and outfalls that served former Building D-2 at former TA-01. Former Building D-2 served as the facility for laundering radioactively contaminated clothing and recyclable equipment for the entire TA from 1943 to 1945. Two drainlines and outfalls were shown on an engineering drawing at the southeast end of former Building D-2 and would have discharged directly onto Hillside 137 in Los Alamos Canyon.

Building D-2 was removed in 1953. During the Ahlquist radiological survey, contaminated soil was excavated in the areas of former Buildings D and D-2 in 1975–1976. Approximately 9400 yd^3 of soil and tuff exhibiting elevated levels of radioactivity was removed from areas in and around former Buildings D and D-2, along with all drainlines. The two drainlines and outfalls shown on the engineering drawing at the southeast end of former Building D-2 were not located when trenching was conducted in the Building D-2 area. However, two drainlines and outfalls at the southwest end of the building were encountered during trenching and were removed. These drainlines would have discharged directly onto Hillside 137 in Los Alamos Canyon. The excavated areas were backfilled with clean fill. Currently, the site is covered with fill material and is undeveloped. SWMU 01-006(c) lies entirely within SWMU 01-007(b).

For investigation activities, refer to "Investigation Report for the Former Los Alamos Inn Property Sites within the Upper Los Alamos Canyon Aggregate Area, Revision 1" (LANL 2017, 602404.2).

01-006(d) (3/28/2022)

SWMU 01-006(d) is a former outlet drainline and outfall that served former D-3 Building and discharged to Los Alamos Canyon hillside at the former TA-01. The outfall is located on Hillside 137, in the same area as the outfall from an outlet drainline from former Building D-2 [SWMU 01-006(c)]. Activities conducted at Building D-3 included counting radioactive filter papers from Building H-1. During the D&D of Buildings D and D-2, all drainlines were removed along with soil exhibiting areas of elevated radioactivity. Because the main portion of the outlet drainline from Building D-3 was located in close proximity to Building D-2, this drainline was likely removed during the excavation of contaminated soils beneath and around Buildings D and D-2. Clean soil was used to backfill the excavations. Currently, the location of SWMU 01-006(d) is undeveloped and privately owned.

For investigation activities refer to "Response to the Notice of Disapproval for the Investigation Report for Upper Los Alamos Canyon Aggregate Area, Los Alamos National Laboratory" (LANL 2010, 108536).

27.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 27.2-1.

Table 27.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
01-001(c)	Septic Tank 137	Metals, organics, radionuclides (plutonium, tritium)
01-006(c)	Drainlines and outfall	Metals, organics, radionuclides
01-006(d)	Drainlines and outfall	Radionuclides

27.3 Consent Order Soil Data

Decision-level data for SWMU 01-001(c) consist of results from samples collected in 2008. Revision 1 of the 2010 IR concluded that the nature and extent of contamination are defined.

Decision-level data for SWMU 01-006(c) consist of results from samples collected in 2008 and 2012. The 2017 IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for SWMU 01-006(d) consist of results from samples collected in 2008. Revision 1 of the 2010 IR concluded that the nature and extent of contamination have been defined.

Analytical results from all decision-level soil samples collected for LA-SMA-4.2 are presented in Figures 27.3-1 through 27.3-4.

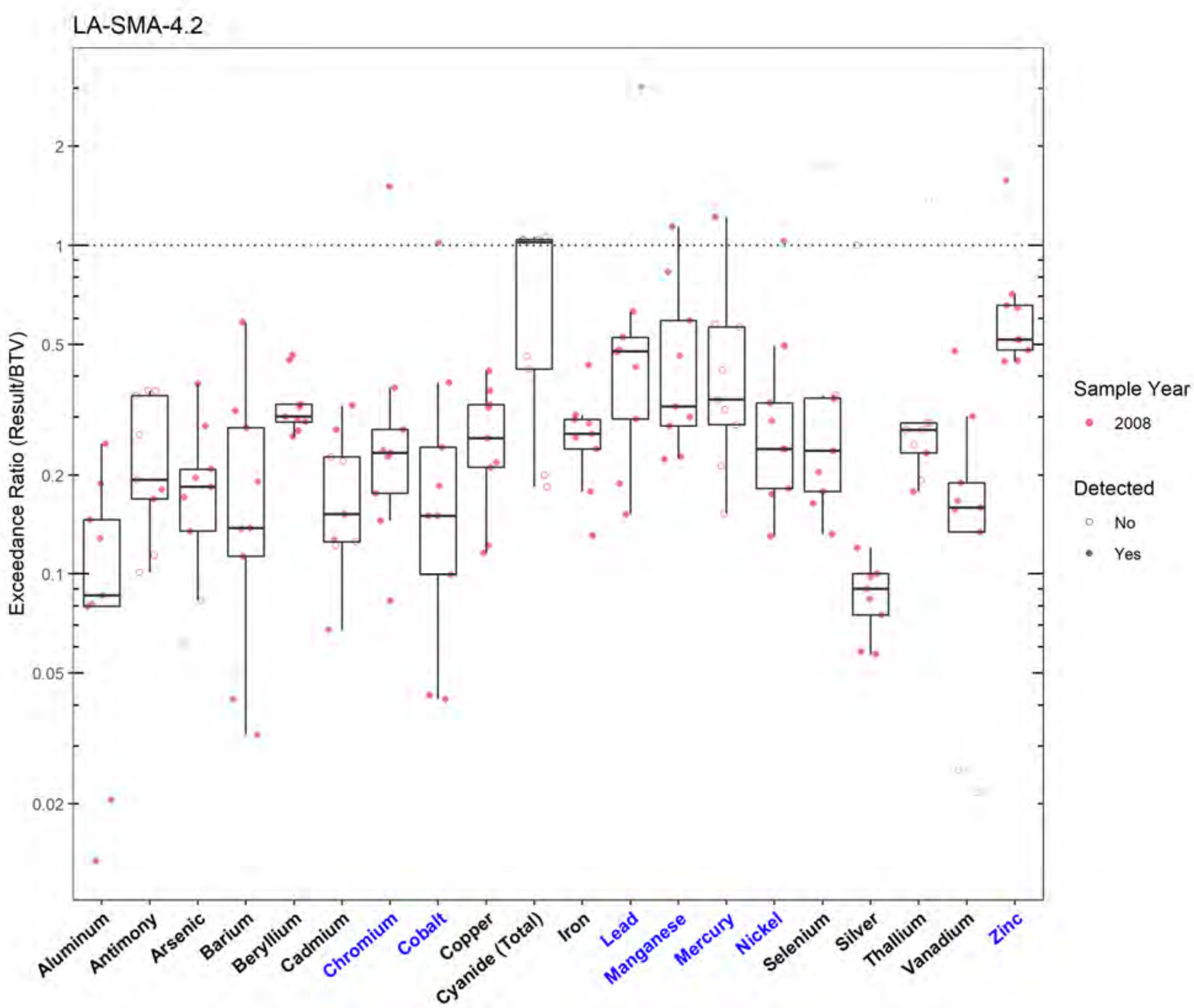


Figure 27.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-4.2

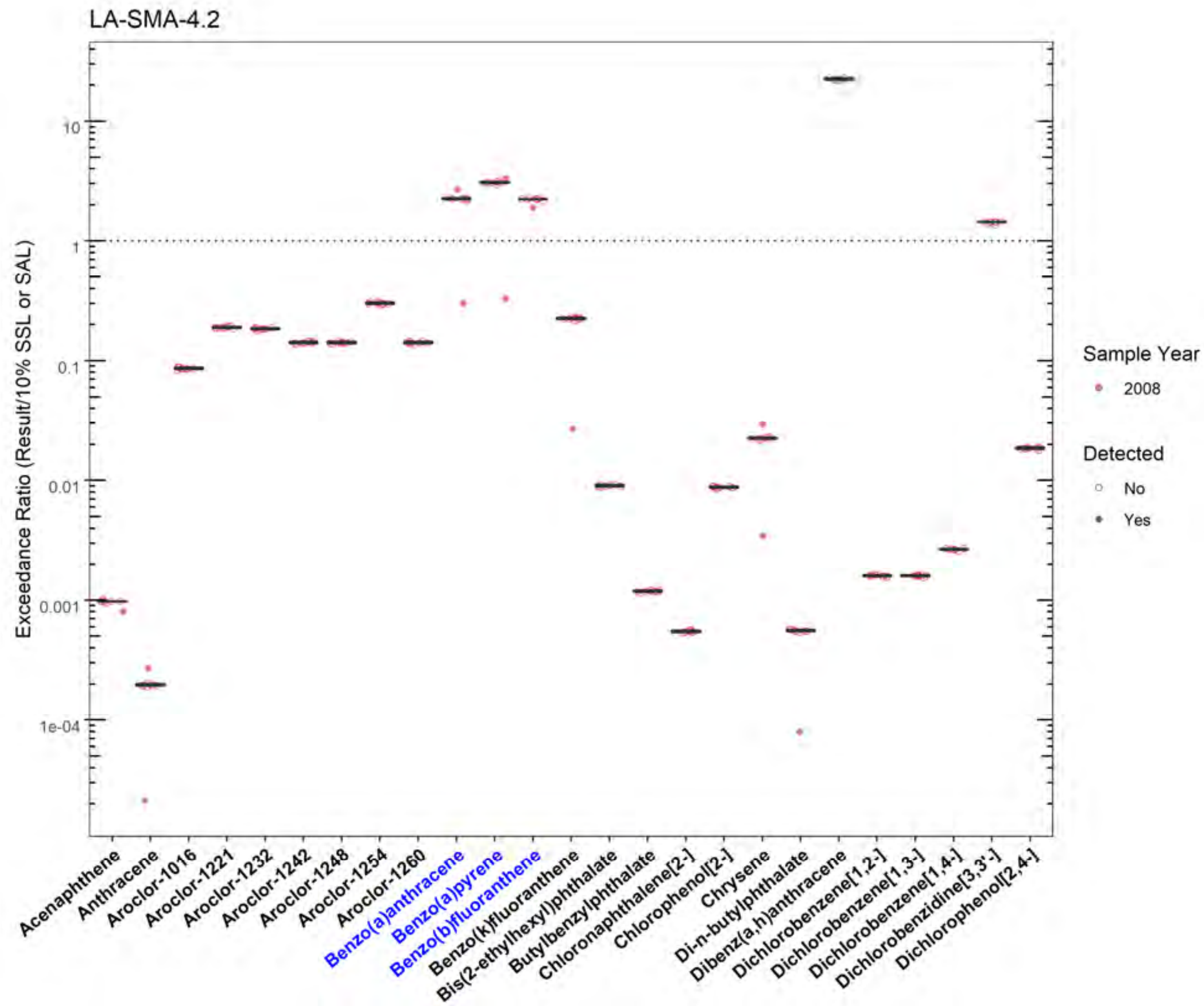


Figure 27.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-4.2 (Plot 1)

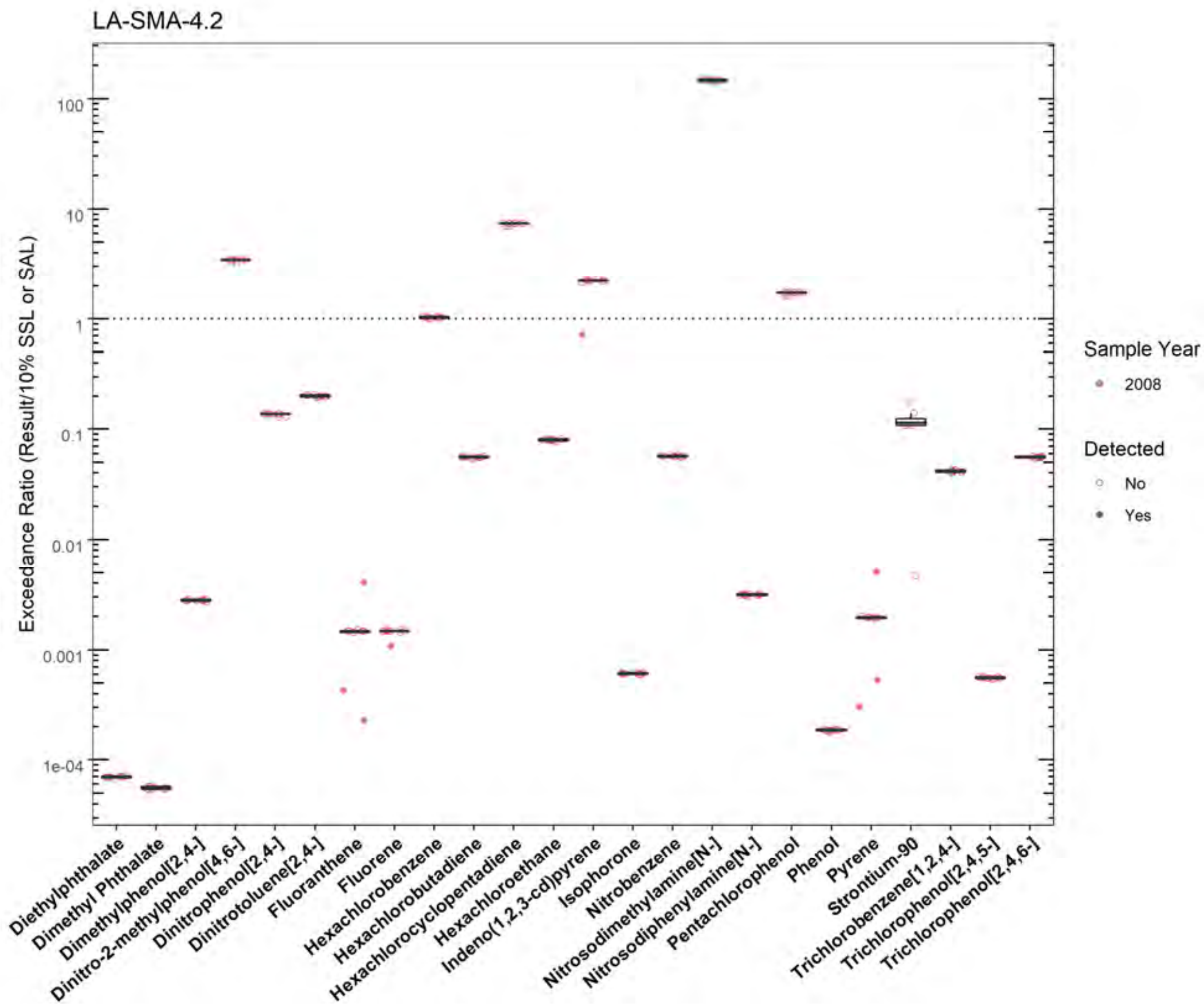


Figure 27.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-4.2 (Plot 2)

LA-SMA-4.2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	LA-SMA-4.2	56-55-3	Y	SSL_0.1	0.153	0.410	2008-11-20
Benzo(a)pyrene	LA-SMA-4.2	50-32-8	Y	SSL_0.1	0.112	0.370	2008-11-20
Benzo(b)fluoranthene	LA-SMA-4.2	205-99-2	Y	SSL_0.1	0.153	0.290	2008-11-20
Chromium	LA-SMA-4.2	Cr	Y	BTV	19.3	29.2	2008-11-20
Cobalt	LA-SMA-4.2	Co	Y	BTV	8.64	8.80	2008-11-20
Lead	LA-SMA-4.2	Pb	Y	BTV	22.3	67.9	2008-11-20
Manganese	LA-SMA-4.2	Mn	Y	BTV	671	764	2008-11-20
Mercury	LA-SMA-4.2	Hg	Y	BTV	0.100	0.122	2008-11-20
Nickel	LA-SMA-4.2	Ni	Y	BTV	15.4	15.8	2008-11-20
Zinc	LA-SMA-4.2	Zn	Y	BTV	48.8	76.7	2008-11-20

Figure 27.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-4.2

27.4 Stormwater Evaluation

27.4.1 Summary of Stormwater Results Compared to TALs and BTVs

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

27.4.2 Assessment Unit and Stream Impairments

LA-SMA-4.2 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The adjusted gross alpha, metals, and PCB impairments may be Site-related, based on Site history.

27.5 Site-Specific Demonstration

27.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, cobalt, chromium, lead, manganese, mercury, nickel, and zinc.

27.5.2 Stormwater Data Summary

No confirmation-monitoring data.

27.5.3 2022 Permit Status

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

27.5.4 Sampling and Analysis Plan

Table 27.5-1 is the proposed SAP for LA-SMA-4.2.

Table 27.5-1 Proposed SAP, LA-SMA-4.2

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history
Total mercury and selenium	Impairment, Site history (metals), and soil data
Total PCBs	Impairment and Site history
Dissolved cobalt, chromium, manganese, nickel, lead, and zinc	Site history (metals) and soil data
Radium-226 and radium-228	Site history (radionuclides)
SVOCs	Site history (organics) and soil data
Tritium	Site history (radionuclides)
DOC	Permit requirement
SSC	Permit requirement

28.0 LA-SMA-5.01

Associated Sites	01-001(d1), 01-001(d2), 01-001(d3), 01-006(h1), 01-006(h2), 01-006(h3)
Receiving Water	Los Alamos Canyon
Drainage Area	0.65 acres
Landscape Characteristics	11% impervious, 89% pervious
Consent Order Site Status	SWMU 01-001(d1): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 01-001(d2): In Progress SWMU 01-001(d3): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls SWMU 01-006(h1): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 01-006(h2): In Progress SWMU 01-006(h3): In Progress
2010 AC Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the February 2018 field visit, the SIP team agreed that 2017 consent order soil sampling data from Upper Los Alamos Canyon would be considered prior to deciding if a sampler move was warranted. After review of the 2018 Consent Order Upper Los Alamos Canyon IR, the SIP team determined that the current SMA sampler does not adequately monitor the affected area. Therefore, the sampler was moved slightly downgradient in the drainage.
2022 Permit Status	Active Monitoring

28.1 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 at LA-SMA-5.01. Baseline monitoring is ongoing until one confirmation sample is collected from this SMA.

28.2 Site History

01-001(d1) (9/3/2019)

SWMU 01-001(d1) is the inactive sanitary waste line that connected former Buildings K, V, and Y to former septic tank 138 [SWMU 01-001(d2)] at former TA-01. Former septic tank 138 was installed in 1943 and located southeast of former Building Y. Building K was a chemical stock room that contained a still for repurifying mercury. Records indicate that mercury spills from the still occurred periodically. Building V housed the original Laboratory uranium and beryllium machine shop. Dry-grinding of boron was also conducted in Building V. Building Y housed a cryogenic and physics laboratory that handled tritium, uranium-238, and polonium-210.

In addition, a cooling tower (former structure 01-82) was associated with Building Y and was removed in June 1956. Because no drainline or outfall was directly associated with the former cooling tower, blowdown could have been discharged to septic tank 138 through an existing drainline [e.g., SWMU 01-001(d1)] associated with Building Y.

The SWMU 01-001(d1) sanitary waste line is currently located on private property and commercially-developed land with an asphalt parking lot. A portion of the waste line was located under commercial buildings, but is now accessible following removal of the buildings.

The SWMU 01-001(d2) septic tank and surrounding soil were removed during the Ahlquist radiological survey conducted at former TA-01 between 1974 and 1976. No radiological contamination was found in the septic tank, broken pipe shards from the inlet line, or in the outlet line; therefore, the section of the SWMU 01-001(d1) inlet line located beneath an office building was left in place. The septic tank outfall [new SWMU 01-001(d3)] was located east of former Building Y and discharged over the rim of Los Alamos Canyon. This outfall area is known as Hillside 138.

SWMU 01-001(d1) was originally part of former SWMU 01-001(d), which was split into SWMUs 01-001(d1), 01-001(d2), and 01-001(d3) in a request for modification of the LANL HWFP approved by the NMED on November 9, 2016. LANL proposed to split SWMU 01-001(d) into three newly designated SWMUs because the components of the SWMU are located on property owned by different entities.

For investigation activities refer to "Investigation Report for the Former Los Alamos Inn Property Sites within the Upper Los Alamos Canyon Aggregate Area, Revision 1" (LANL 2017, 602404.2).

01-001(d2) (9/28/2021)

SWMU 01-001(d2) consists of soil contamination associated with former septic tank 138 that was connected to former Buildings K, V, and Y by a sanitary waste line [SWMU 01-001(d1)] and the portion of the former outlet drainline located on private property directly north of DOE Property at TA-01. The septic tank was a cylindrical metal tank measuring 4 ft diameter × 4 ft high, installed in 1943, and located southeast of former Building Y. Building K was a chemical stock room that contained a still for re-purifying mercury. Records indicate that mercury spills from the still occurred periodically. Building V housed the original uranium and beryllium machine shop. Dry-grinding of boron was also conducted in Building V. Building Y housed a cryogenics and physics laboratory that handled tritium, uranium-238, and polonium-210.

In addition, a cooling tower (former structure 01-82) was associated with Building Y and was removed in June 1956. Because no drainline or outfall was directly associated with the former cooling tower, blowdown could have been discharged to septic tank 138 through an existing drainline [e.g., new SWMU 01-001(d1)] associated with Building Y.

The former septic tank outfall was located east of former Building Y and discharged over the rim of Los Alamos Canyon. This outfall area and former location of the outlet drainline located on DOE property is known as Hillside 138 [new SWMU 01-001(d3)].

The SWMU 01-001(d2) septic tank and surrounding soil (approximately 1 ft around the entire tank) were removed in 1975 during the Ahlquist radiological survey conducted at TA-01. No radiological contamination was found in the septic tank, in the broken pipe shards from the inlet line, or in the outlet line; therefore, the section of the inlet line located beneath an office building was left in place. That portion of the waste line that was located under commercial buildings is now accessible following removal of the buildings.

SWMU 01-001(d2)] was originally part of former SWMU 01-001(d), which was split into SWMUs 01-001(d1), 01-001(d2), and 01-001(d3) in a request for modification of the LANL HWFP approved by the NMED on November 9, 2016. The Laboratory proposed to split SWMU 01-001(d) into three newly-designated SWMUs because the components of the SWMU are located on property owned by different entities. SWMU 01-001(d2) is beneath a structure on private property and is therefore currently inaccessible.

No investigation activities have been conducted at SWMU 01-001(d2).

01-001(d3) (9/28/2021)

SWMU 01-001(d3) consists of a portion of the former outlet line from former septic tank 138 [new SWMU 01-001(d2)] and the outfall through which wastewater from the tank discharged onto the canyon rim and north slope of Los Alamos Canyon. This outfall area, known as Hillside 138, is located on DOE-owned property in TA-41. The septic tank was a cylindrical metal tank measuring 4 ft diameter × 4 ft high, installed in 1943, located southeast of former Building Y, and was connected to former Buildings K, V, and Y by a sanitary waste line [SWMU 01-001(d1)]. Building K was a chemical stock room that housed a mercury still. Building V housed the original uranium and beryllium machine shop. Dry-grinding of boron was also conducted in Building V. Building Y housed a physics laboratory that handled tritium, uranium-238, and polonium-210.

In addition, a cooling tower (former structure 01-82) was associated with Building Y and was removed in June 1956. Because no drainline or outfall was directly associated with the former cooling tower, blowdown could have been discharged to septic tank 138 through an existing drainline [e.g., SWMU 01-001(d1)] associated with Building Y. The corrective action for SWMU 01-001(d1) was completed in the investigation of the former Los Alamos Inn property.

The SWMU 01-001(d2) septic tank and surrounding soil were removed in 1975 during the Ahlquist radiological survey conducted at TA-01. No radiological contamination was found in the septic tank, broken pipe shards from the inlet line, or in the outlet line; therefore, the section of the SWMU 01-001(d1) inlet line located beneath an office building was left in place. That portion of the waste line located under commercial buildings is now accessible following removal of the buildings. The septic tank outfall [new SWMU 01-001(d3)] was located east of former Building Y and discharged over the rim of Los Alamos Canyon. This outfall area is known as Hillside 138. Samples collected from Hillside 138 indicated elevated levels of plutonium-239 and cesium-137; however, the hillside was not decontaminated during the survey because it was inaccessible. The area was fenced to prevent public access from the mesa top.

SWMU 01-001(d3) was originally part of former SWMU 01-001(d), which was split into SWMUs 01-001(d1), 01-001(d2), and 01-001(d3) in a request for modification of the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit approved by the New Mexico Environment Department (NMED) on November 9, 2016. The Laboratory proposed to split SWMU 01-001(d) into three newly designated SWMUs because the components of the SWMU are located on property owned by different entities.

For investigation activities refer to “Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area, Revision 1” (N3B 2021, 701261).

01-006(h1) (5/18/2020)

SWMU 01-006(h1) is the middle section of the former stormwater drainage system and outfall that served the northwest side of former Building R and the east side of former Building Y at former TA-01. SWMU 01-006(h1) is the portion of the stormwater drainage system within the former LA Inn property boundary. Former Building R (former building 01-50) housed model, glass, carpentry, and plumbing shops. Former Building Y (former building 01-81) housed a physics laboratory that handled tritium, uranium-238, and polonium-210. The outfall for this stormwater drainage system was located 25 ft south of former Building Y on the north rim of Los Alamos Canyon. During the 1972–1974 Ahlquist radiological survey, no radioactivity was detected in and adjacent to components of the stormwater drainage areas near former Buildings R and Y; the drainlines were removed. Currently, the location of SWMU 01-006(h1) is on privately owned and commercially developed land.

SWMU 01-006(h1) was originally part of former SWMU 01-006(h), which was split into SWMUs 01-006(h1), 01-006(h2), and 01-006(h3) in a request for modification of the LANL HWFP approved by the NMED on November 9, 2016. LANL proposed to split SWMU 01-006(h) into three newly designated SWMUs because the components of former SWMU 01-006(h) are located on property owned by different entities.

For investigation activities refer to “Investigation Report for the Former Los Alamos Inn Property Sites within the Upper Los Alamos Canyon Aggregate Area, Revision 1” (LANL 2017, 602404.2).

01-006(h2) (9/28/2021)

SWMU 01-006(h2) is the southernmost section of the former stormwater drainage system, including the outfall at former TA-01, which discharged to Los Alamos Canyon. Former SWMU 01-006(h) is the former stormwater drainage system that served the northwest side of former Building R (01-50) and the east side of former Building Y (01-81). Former Building R housed model, glass, carpentry, and plumbing shops, and former Building Y housed a physics laboratory that handled tritium, uranium-238, and polonium-210. The drainage system discharged to an outfall [SWMU 01-006(h2)] located 25 ft south of former Building Y on the north rim of Los Alamos Canyon, immediately west of Hillside 138 [new SWMUs 01-001(d2) and 01-001(d3)]. During the 1972–1974 Ahlquist radiological survey, no radioactivity was detected in or adjacent to components of the stormwater drainage areas near former Buildings R and Y; the drainlines were removed.

Currently, the location of the southernmost section of the former stormwater drainage system, including the outfall [SWMU 01-006(h2)], is on privately-owned and commercially-developed land. SWMU 01-006(h2) is currently located beneath a building.

SWMU 01-006(h2) was originally part of former SWMU 01-006(h), which was split into SWMUs 01-006(h1), 01-006(h2), and 01-006(h3) in a request for modification of the LANL HWFP approved by the NMED on November 9, 2016. The Laboratory proposed to split SWMU 01-006(h) into three newly-designated SWMUs because the components of the SWMU are located on property owned by different entities.

For investigation activities, refer to “Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area, Revision 1” (N3B 2021, 701261).

01-006(h3) (9/28/2021)

SWMU 01-006(h3) is the northernmost section of the former stormwater drainage system at former TA-01. Former SWMU 01-006(h) is the stormwater drainage system that served the northwest side of former Building R (01-50) and the east side of former Building Y (01-81). Former Building R housed model, glass, carpentry, and plumbing shops, and former Building Y housed a physics laboratory that handled tritium, uranium-238, and polonium-210. The drainage system discharged to an outfall located 25 ft south of former Building Y on the north rim of Los Alamos Canyon [new SWMU 01- 006(h2)], immediately west of Hillside 138 [new SWMUs 01-001(d2) and 01-001(d3)]. During the 1972–1974 Ahlquist radiological survey, no radioactivity was detected in or adjacent to components of the stormwater drainage areas near former Buildings R and Y.

Currently, the location of the northernmost section of the former stormwater drainage system is on privately-owned and commercially-developed land. SWMU 01-006(h3) is currently located beneath a building.

SWMU 01-006(h3) was originally part of former SWMU 01-006(h), which was split into SWMUs 01-006(h1), 01-006(h2), and 01-006(h3) in a request for modification of the LANL HWFP approved by the NMED on November 9, 2016. The Laboratory proposed to split SWMU 01-006(h) into three newly designated SWMUs because the components of the SWMU are located on property owned by different entities.

For investigation activities refer to "Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area, Revision 1" (N3B 2021, 701261).

28.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 28.2-1.

Table 28.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
01-001(d1), 01-001(d2), 01-001(d3)	Septic Tank 138	Metals, organics, mercury, plutonium, uranium, beryllium, boron, tritium, polonium
01-006(h1), 01-006(h2), 01-006(h3)	Drainlines and outfall	No known POCs

28.3 Consent Order Soil Data

Decision-level data for SWMU 01-001(d1) consist of results from samples collected in 2008 and 2016. The 2017 IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data are not available for SWMU 01-001(d2).

Decision-level data for SWMU 01-001(d3) consist of results from samples collected in 2008–2009, 2011–2012, 2013, and 2017. Revision 1 of the 2021 Phase II IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for SWMU 01-006(h1) consist of results from samples collected in 2016. The 2017 IR, Revision 1, concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data are not available for the drainage system portion of SWMU 01-006(h2).

Decision-level data for the outfall portion of SWMU 01-006(h2) consist of results from samples collected in 2008–2009, 2011–2012, 2013, and 2017 in conjunction with the investigation of SWMU 01-001(d3). Revision 1 of the 2021 Phase II IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted for the outfall portion of the Site.

Decision-level data are not available for SWMU 01-006(h3).

Analytical results from all decision-level soil samples collected for LA-SMA-5.01 are presented in Figures 20.3-1 through 20.3-4.

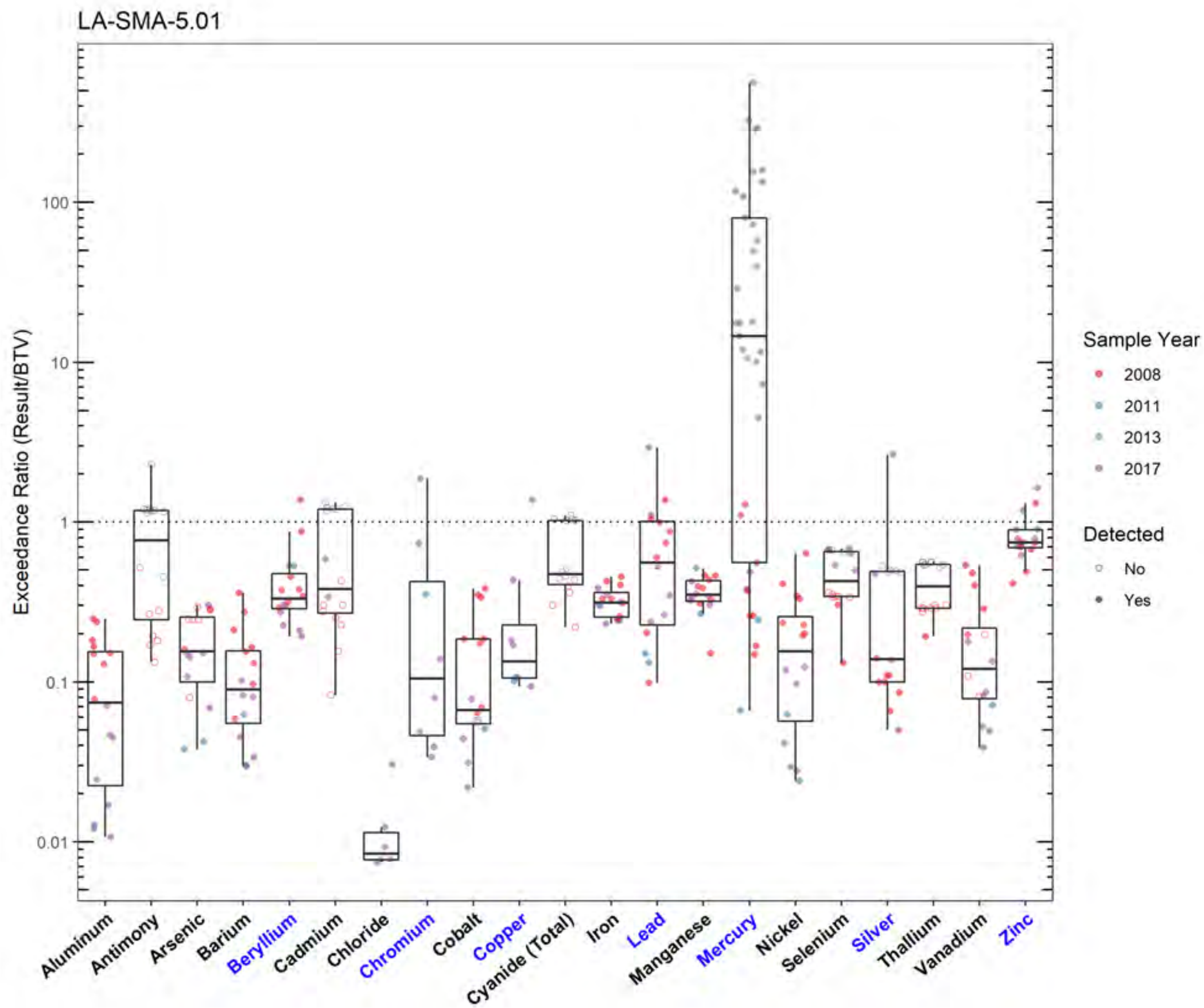


Figure 28.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-5.01

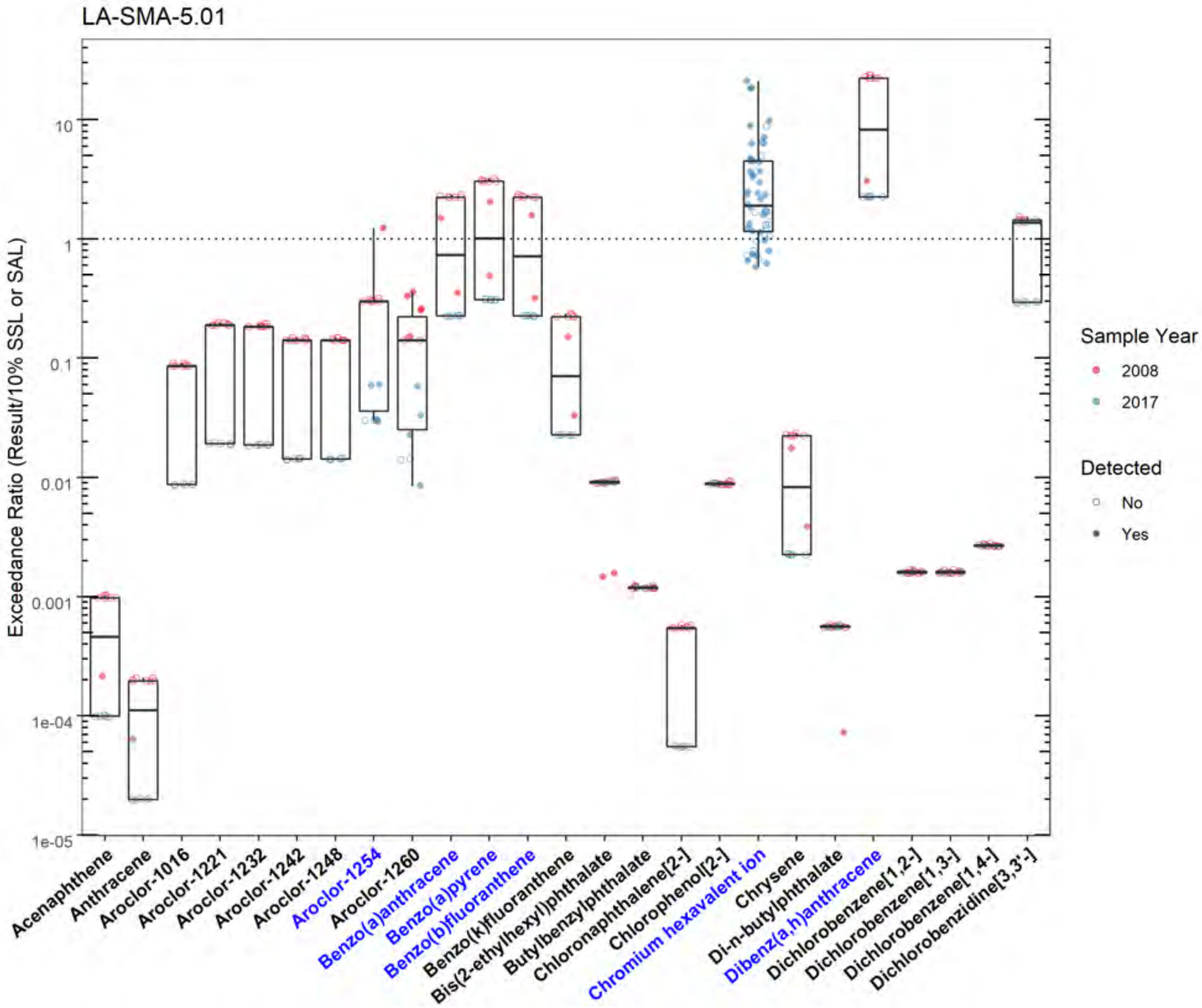


Figure 28.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.01 (Plot 1)

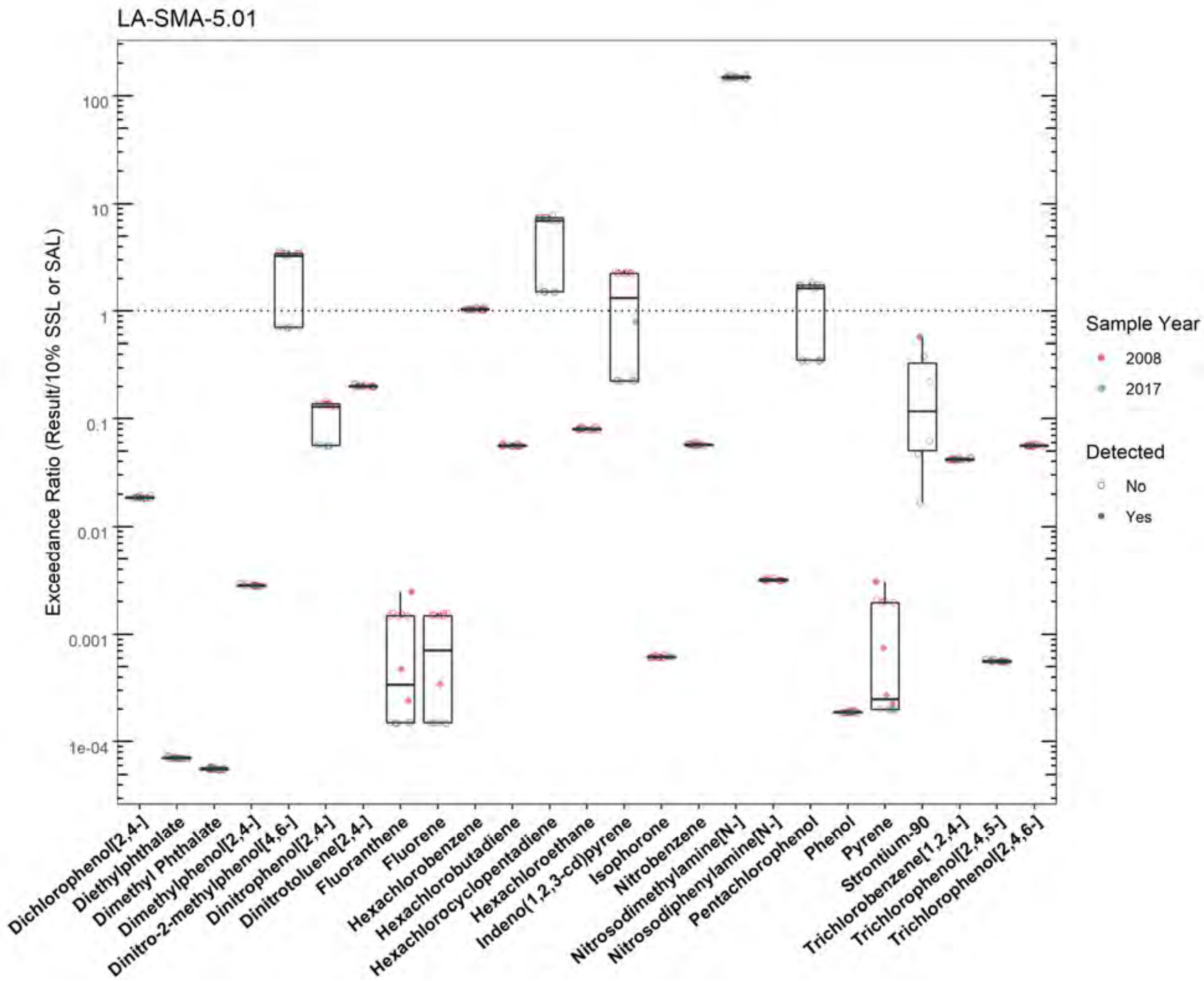


Figure 28.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.01 (Plot 2)

LA-SMA-5.01

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	LA-SMA-5.01	11097-69-1	Y	SSL_0.1	0.114	0.140	2008-10-08
Benzo(a)anthracene	LA-SMA-5.01	56-55-3	Y	SSL_0.1	0.153	0.230	2008-10-07
Benzo(a)pyrene	LA-SMA-5.01	50-32-8	Y	SSL_0.1	0.112	0.230	2008-10-07
Benzo(b)fluoranthene	LA-SMA-5.01	205-99-2	Y	SSL_0.1	0.153	0.240	2008-10-07
Beryllium	LA-SMA-5.01	Be	Y	BTV	1.83	2.50	2008-10-08
Chromium	LA-SMA-5.01	Cr	Y	BTV	19.3	36.1	2017-05-08
Chromium hexavalent ion	LA-SMA-5.01	Cr(VI)	Y	SSL_0.1	0.305	6.45	2017-06-16
Copper	LA-SMA-5.01	Cu	Y	BTV	14.7	20.1	2017-05-08
Dibenz(a,h)anthracene	LA-SMA-5.01	53-70-3	Y	SSL_0.1	0.0153	0.0470	2008-10-07
Lead	LA-SMA-5.01	Pb	Y	BTV	22.3	65.3	2017-05-08
Mercury	LA-SMA-5.01	Hg	Y	BTV	0.100	56.2	2017-06-12
Silver	LA-SMA-5.01	Ag	Y	BTV	1.00	2.64	2017-05-08
Zinc	LA-SMA-5.01	Zn	Y	BTV	48.8	80.1	2017-05-08

Figure 28.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-5.01

28.4 Stormwater Evaluation

28.4.1 Summary of Stormwater Results Compared to TALs and BTVs

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

28.4.2 Assessment Unit and Stream Impairments

LA-SMA-5.01 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The adjusted gross alpha, metals, and PCB impairments may be Site-related, based on Site history.

28.5 Site-Specific Demonstration

28.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable 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, chromium, chromium (hexavalent ion), copper, dibenz(a,h)anthracene, lead, mercury, silver, and zinc.

28.5.2 Stormwater Data Summary

No confirmation-monitoring data.

28.5.3 2022 Permit Status

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

28.5.4 Sampling and Analysis Plan

Table 28.5-1 is the proposed SAP for LA-SMA-5.01.

Table 28.5-1 Proposed SAP, LA-SMA-5.01

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history
Total mercury and selenium	Impairment, Site history (metals), and soil data
Total PCBs	Impairment, Site history (organics), and soil data
Dissolved beryllium, silver, chromium, copper, lead, zinc	Site history (metals) and soil data
SVOCs	Site history (organics) and soil data
Tritium	Site history
DOC	Permit requirement
SSC	Permit requirement

29.0 LA-SMA-5.02

Associated Sites	01-003(e)
Receiving Water	Los Alamos Canyon
Drainage Area	0.16 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 01-003(e): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 AC Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the February 2018 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring/Corrective Action

29.1 2010 Administratively Continued Permit Summary

Following the May 2011 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.

AOC 43-001(b2) received a COC under the Consent Order in September 2010. The Permittees submitted a certification of completion of corrective action for the Site to EPA per Permit part I.E.2(d) in November 2012 (LANL 2012/2013, 232273) and resubmitted in August 2013 (LANL 2013, 250035). Stormwater monitoring has not occurred since 2012.

29.2 Site History

01-003(e) (03/28/2022)

SWMU 01-003(e) was a surface disposal area located on the mesa top and on the north hillside of Los Alamos Canyon, southeast of the former Los Alamos Inn at former TA-01. Demolition debris from former TA-01 was placed at this site in the 1950s. Surface debris on the hillside of SWMU 01-003(e) consisted primarily of concrete construction debris, but also included utility boxes, piping, and other miscellaneous debris.

Review of historical aerial photographs from the 1950s and 1960s indicates that when the buildings in the eastern portion of former TA-01 underwent D&D in the 1950s, debris from the 1940s-era buildings was placed at the head of the canyon, and some of the debris was pushed down the hillside. Review of historical aerial photographs from the mid-1970s shows that additional fill was placed over the mesa-top portion of this SWMU by a private land owner to extend the canyon rim farther south during construction of the Los Alamos Inn. At this time, adjacent professional buildings and associated parking lots were also constructed. Currently, a major portion of this site is under the fill material, and the mesa-top portion of the Site is paved with asphalt and does not contain any of the previously discarded materials; the professional buildings remain in place.

For investigation activities refer to “Response to the Notice of Disapproval for the Investigation Report for Upper Los Alamos Canyon Aggregate Area, Los Alamos National Laboratory,” (LANL 2010, 108536).

29.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 29.2-1.

Table 29.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
01-003(e)	Surface disposal site	Metals, SVOCs

29.3 Consent Order Soil Data

Decision-level data for SWMU 01-003(e) consist of results from samples collected in 2008. Analytical results from those samples are presented in Figures 29.3-1 through 29.3-4. Revision 1 of the 2010 IR concluded that the nature and extent of contamination are defined.

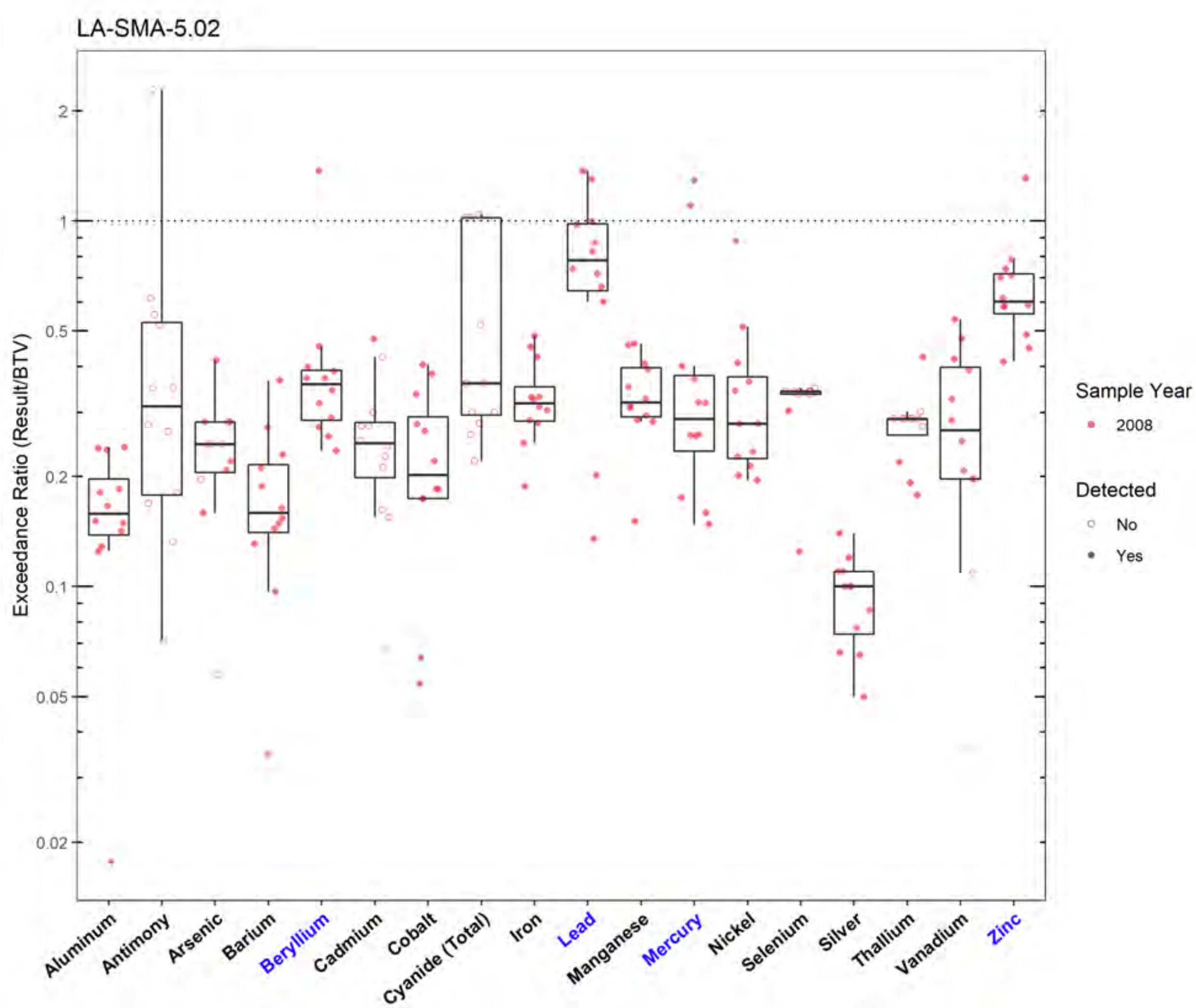


Figure 29.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-5.02

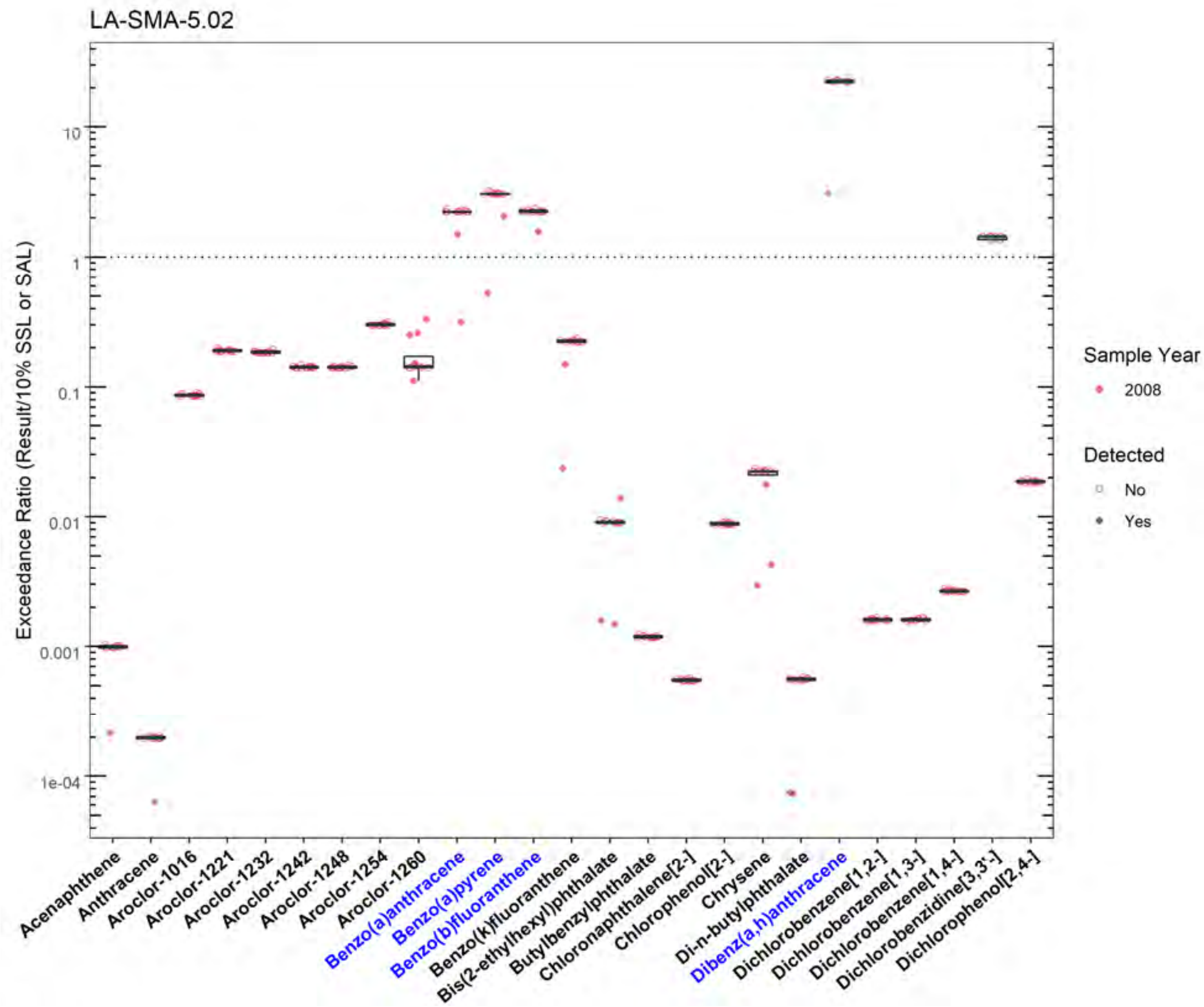


Figure 29.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.02 (Plot 1)

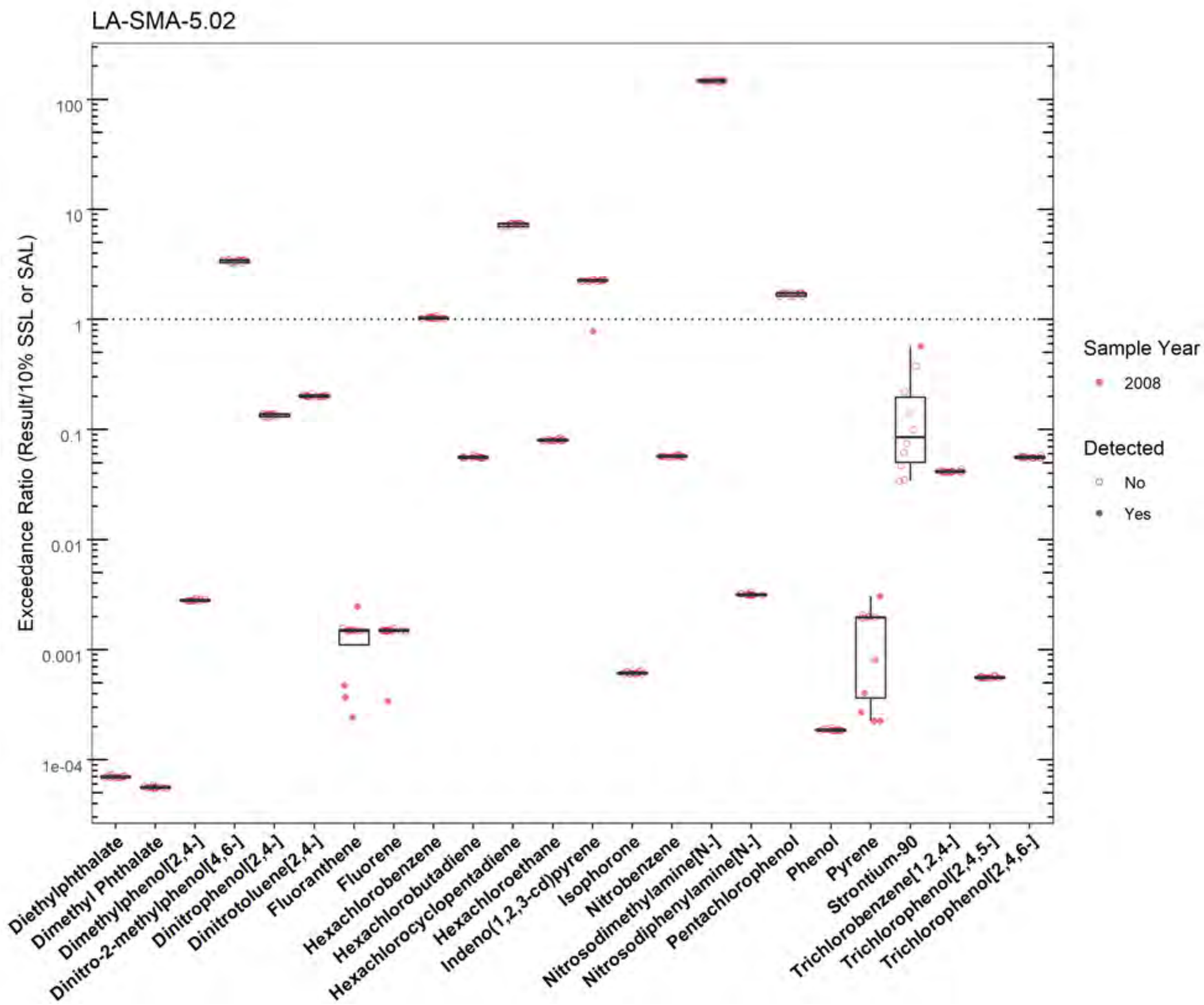


Figure 29.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.02 (Plot 2)

LA-SMA-5.02

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	LA-SMA-5.02	56-55-3	Y	SSL_0.1	0.153	0.230	2008-10-07
Benzo(a)pyrene	LA-SMA-5.02	50-32-8	Y	SSL_0.1	0.112	0.230	2008-10-07
Benzo(b)fluoranthene	LA-SMA-5.02	205-99-2	Y	SSL_0.1	0.153	0.240	2008-10-07
Beryllium	LA-SMA-5.02	Be	Y	BTV	1.83	2.50	2008-10-08
Dibenz(a,h)anthracene	LA-SMA-5.02	53-70-3	Y	SSL_0.1	0.0153	0.0470	2008-10-07
Lead	LA-SMA-5.02	Pb	Y	BTV	22.3	30.6	2008-10-08
Mercury	LA-SMA-5.02	Hg	Y	BTV	0.100	0.129	2008-10-08
Zinc	LA-SMA-5.02	Zn	Y	BTV	48.8	63.8	2008-10-08

Figure 29.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-5.02

29.4 Stormwater Evaluation

29.4.1 Summary of Stormwater Results Compared to TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Corrective action stormwater samples were collected in August 2011. Analytical results from those samples are presented in Figures 29.4-1 and 29.4-2.

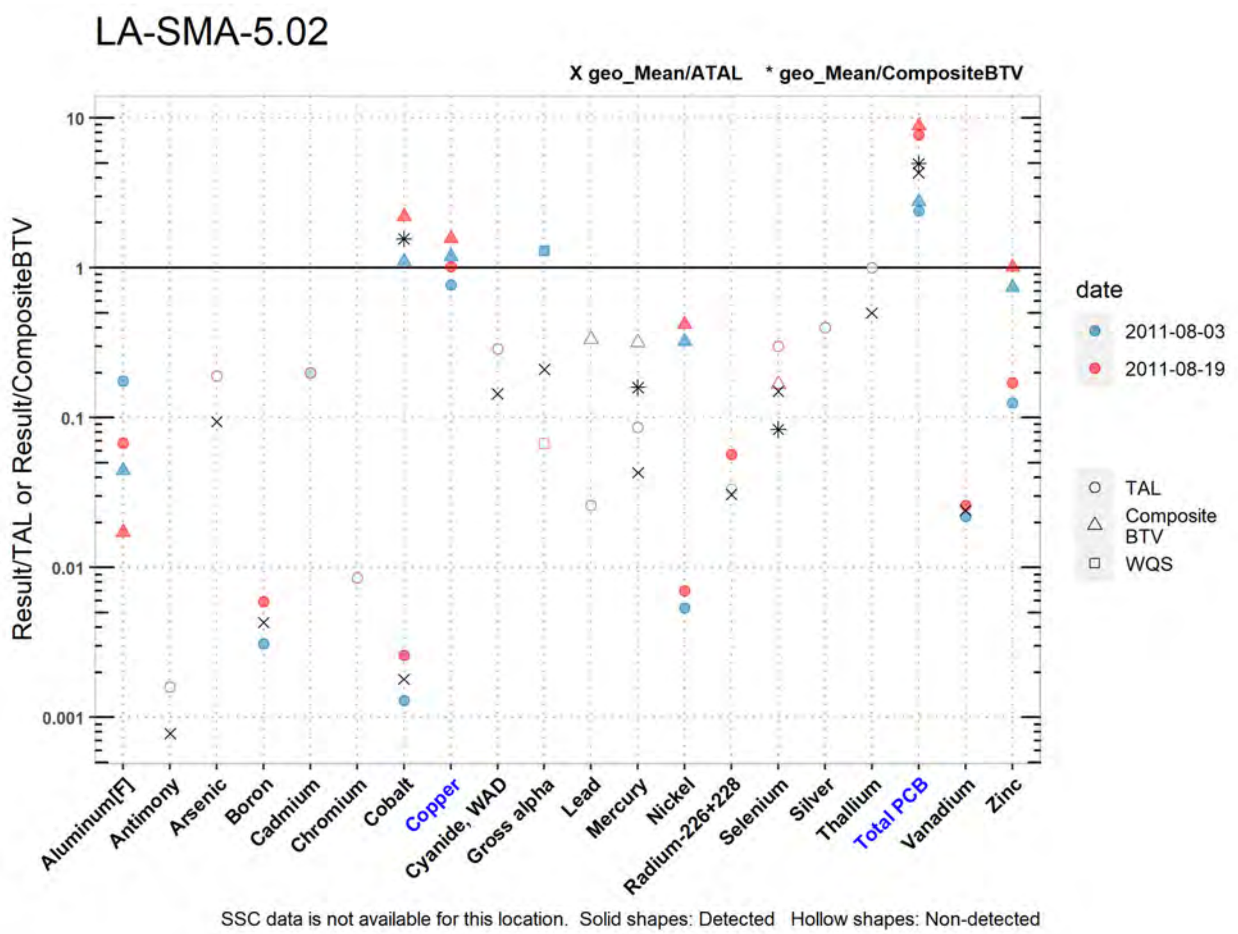


Figure 29.4-1 Analytical Results from Stormwater Samples, LA-SMA-5.02 (Plot)

LA-SMA-5.02

	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	0.65	233	NA	4.8	22	NA	19.3	NA	186	NA	20	0.49	NA	NA	NA	59.2
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	0.0122	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
2011-08-03 result	131	*1.00*	*1.70*	15.3	0.130	*2.00*	1.30	3.70	*1.50*	19.7	*0.500*	*0.0660*	1.00	*1.00*	*1.50*	*0.200*	*0.450*	0.0337	2.20	7.40
2011-08-03 dT	0.175	NA	NA	0.0031	0.2	NA	0.0013	0.771	NA	1.3	NA	NA	0.00538	NA	NA	NA	NA	2.4	0.022	0.125
2011-08-03 dB	0.0444	NA	NA	NA	NA	NA	1.10	1.19	NA	NA	NA	NA	0.323	NA	NA	NA	NA	2.76	NA	0.740
2011-08-19 result	50.8	*1.00*	*1.70*	29.6	*0.110*	*2.00*	2.60	4.90	*1.50*	*1.00*	*0.500*	*0.0660*	1.30	1.71	*1.50*	*0.200*	*0.450*	0.108	2.60	10.1
2011-08-19 dT	0.0677	NA	NA	0.0059	NA	NA	0.0026	1.02	NA	NA	NA	NA	0.00699	0.0570	NA	NA	NA	7.7	0.026	0.171
2011-08-19 dB	0.0172	NA	NA	NA	NA	NA	2.20	1.57	NA	NA	NA	NA	0.419	NA	NA	NA	NA	8.85	NA	1.01
geo_mean/ATAL	NA	0.00078	0.094	0.0043	NA	NA	0.0018	NA	0.144	0.21	NA	0.043	NA	0.0308	0.15	NA	0.5	4.3	0.024	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	1.56	NA	NA	NA	NA	0.159	NA	NA	0.0835	NA	NA	4.95	NA	NA

Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV, geo_mean/B=geo_mean/composite_BTV

Figure 29.4-2 Analytical Results from Stormwater Samples, LA-SMA-5.02 (Table)

29.4.2 Assessment Unit and Stream Impairments

LA-SMA-5.02 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The metals impairments may be Site-related, based on Site history.

29.5 Site-Specific Demonstration

29.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, beryllium, and dibenz(a,h)anthracene.

Lead, mercury, and zinc exceeded the applicable screening value in soil data but did not exceed TALs in stormwater. Therefore, they will not be added to the SAP.

29.5.2 Stormwater Data Summary

Copper and PCBs exceeded TALs and BTVs in stormwater data.

29.5.3 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.2.b.i) for copper and PCBs. The SMA is also in active monitoring; not all Site-related POCs were analyzed for in past samples.

29.5.4 Sampling and Analysis Plan

Table 29.5-1 is the proposed SAP for LA-SMA-5.02.

Table 29.5-1 Proposed SAP, LA-SMA-5.02

Monitoring Constituent	Background for Monitoring
SVOCs	Soil data and Site history (SVOCs)
Dissolved beryllium	Stormwater data, Site history, and soil data
DOC	Permit requirement
SSC	Permit requirement

30.0 LA-SMA-5.2

Associated Sites	01-003(d)
Receiving Water	Los Alamos Canyon
Drainage Area	0.46 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 01-003(d): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls
2010 AC Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the 2018 field visit, the SIP team agreed that 2017 Consent Order soil sampling data from Upper Los Alamos Canyon would be considered prior to deciding if a sampler move was warranted. After review of the 2018 Consent Order Upper Los Canyon IR, the SIP team determined that the current SMA sampler may not encompass stormwater from areas where industrial materials were known or potentially managed at this Site. A new location was not recommended, therefore, the sampler will not be moved.
2022 Permit Status	Active Monitoring

30.1 2010 Administratively Continued Permit Summary

Following the May 2011 submittal of certification of baseline control installation to EPA, baseline stormwater monitoring was initiated. In 2013, the sampler location was relocated to a more representative location for the Site after changes in drainage pattern of Los Alamos Canyon slopes were observed. A baseline stormwater sample was collected in July 2019. Analytical results from this sample initiated corrective action.

Following the July 2021 submittal to EPA of certification of enhanced control installation (N3B 2021, 701533), corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume corrective action sample collection, and monitoring is ongoing.

30.2 Site History

01-003(d) (9/28/2021)

SWMU 01-003(d), also known as the Can Dump Site, is located on the undeveloped hillside of Los Alamos Canyon south of the current CenturyLink communications building and Trinity Drive. It was used for the surface disposal of empty solvent and paint cans during Zia Company operations at former TA-01. The Zia Company operated several warehouses on the mesa top between Trinity Drive and Los Alamos Canyon from the early 1940s to the late 1950s, in support of TA-01 operations. The Zia Company warehouses formerly located in this area were used as paint, carpentry, furniture repair, and sign shops, and were likely the source of the waste at the former Can Dump Site. No radioactive materials were handled in these warehouses because they were outside the TA-01 security fence. Currently, the area is located on undeveloped DOE land.

For investigation activities, refer to “Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area, Revision 1” (N3B 2021, 701261).

30.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 30.2-1.

Table 30.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
01-003(d)	Surface disposal site	Metals, lead

30.3 Consent Order Soil Data

Decision-level data for SWMU 01-003(d) consist of results from samples collected in 2008, 2012, 2013, and 2017. Analytical results from those samples are presented in Figures 30.3-1 through 30.3-4. Revision 1 of the 2021 Phase II IR concluded the nature and extent of contamination have been defined and no further sampling for extent is warranted.

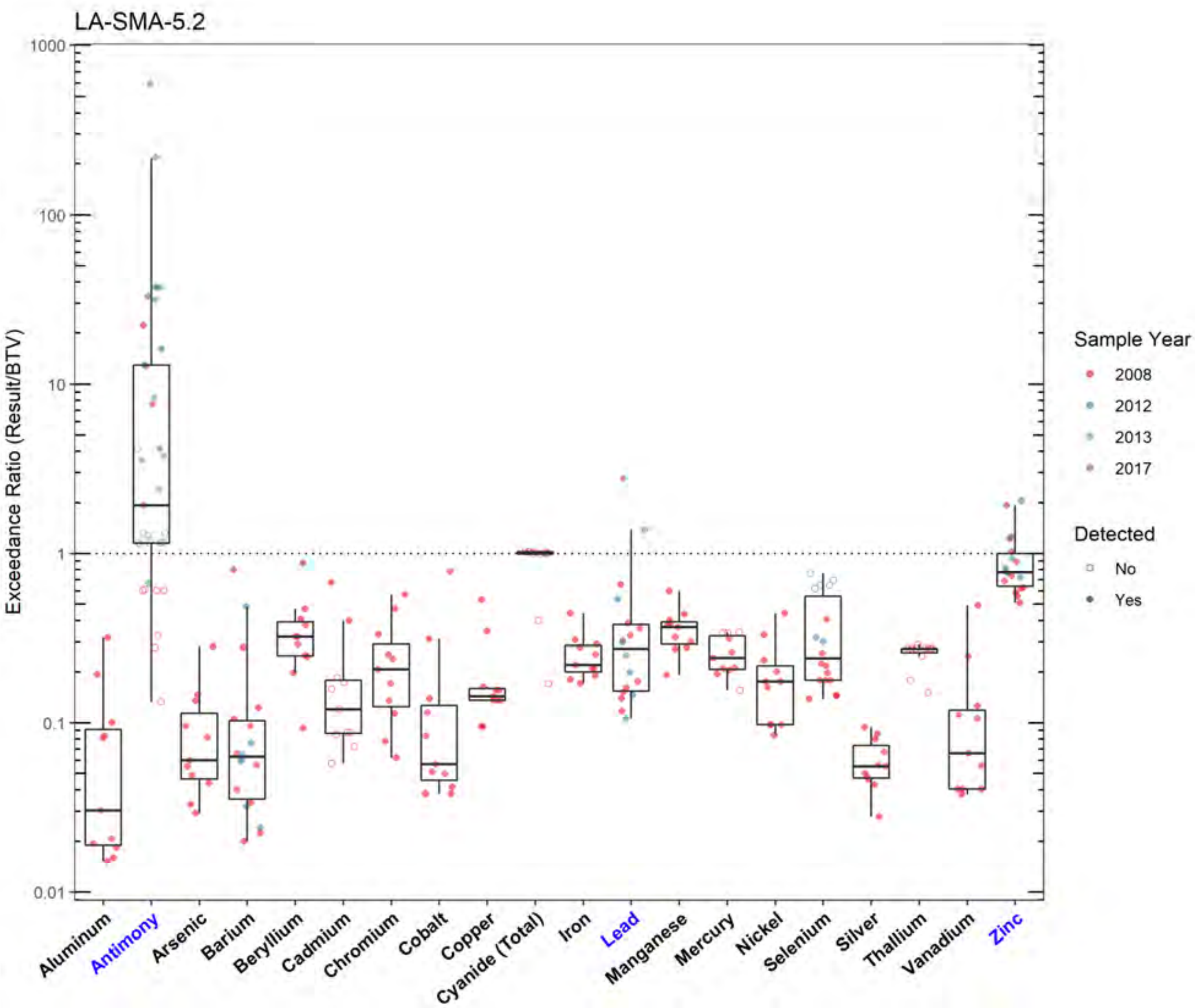


Figure 30.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-5.2

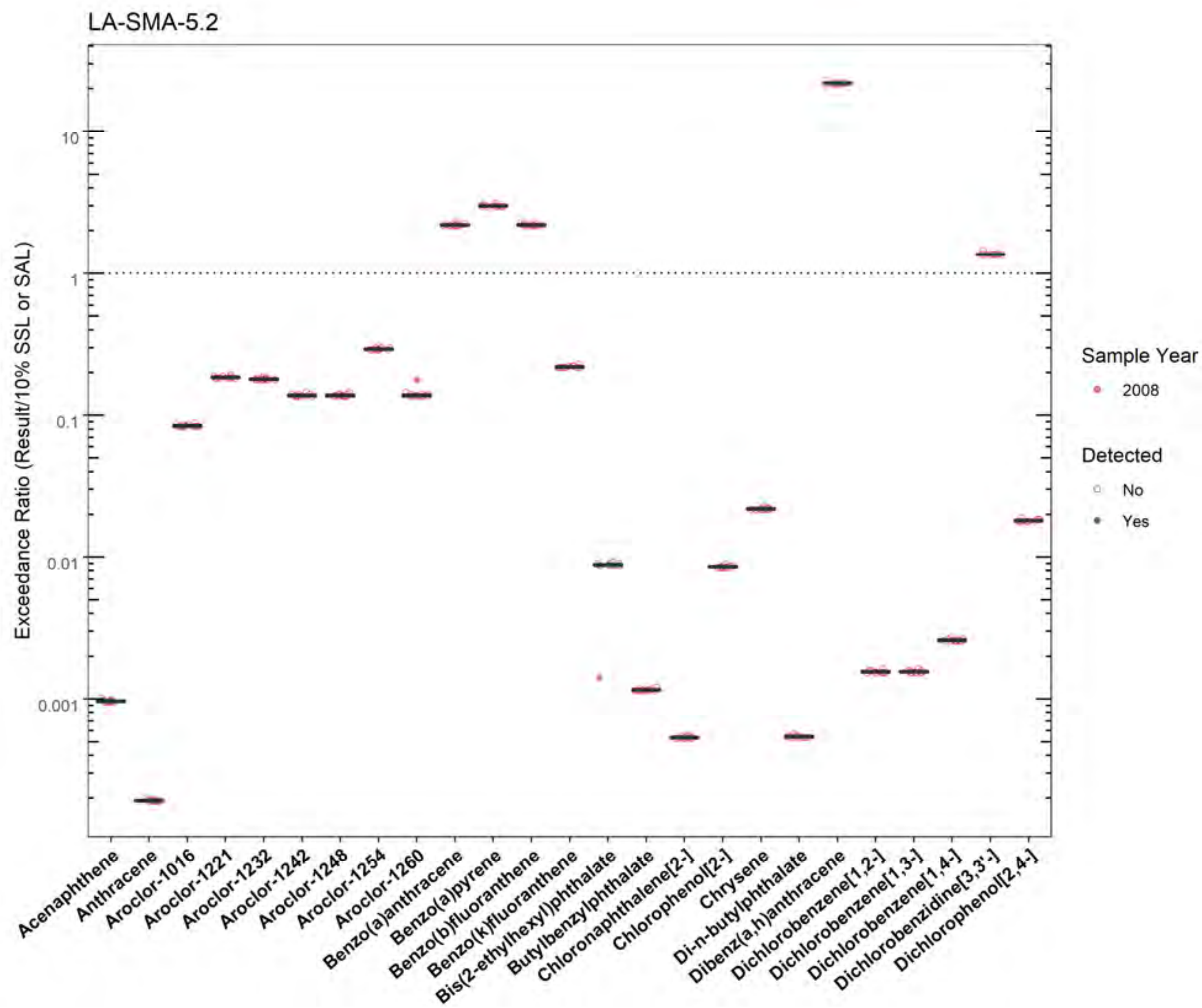


Figure 30.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.2 (Plot 1)

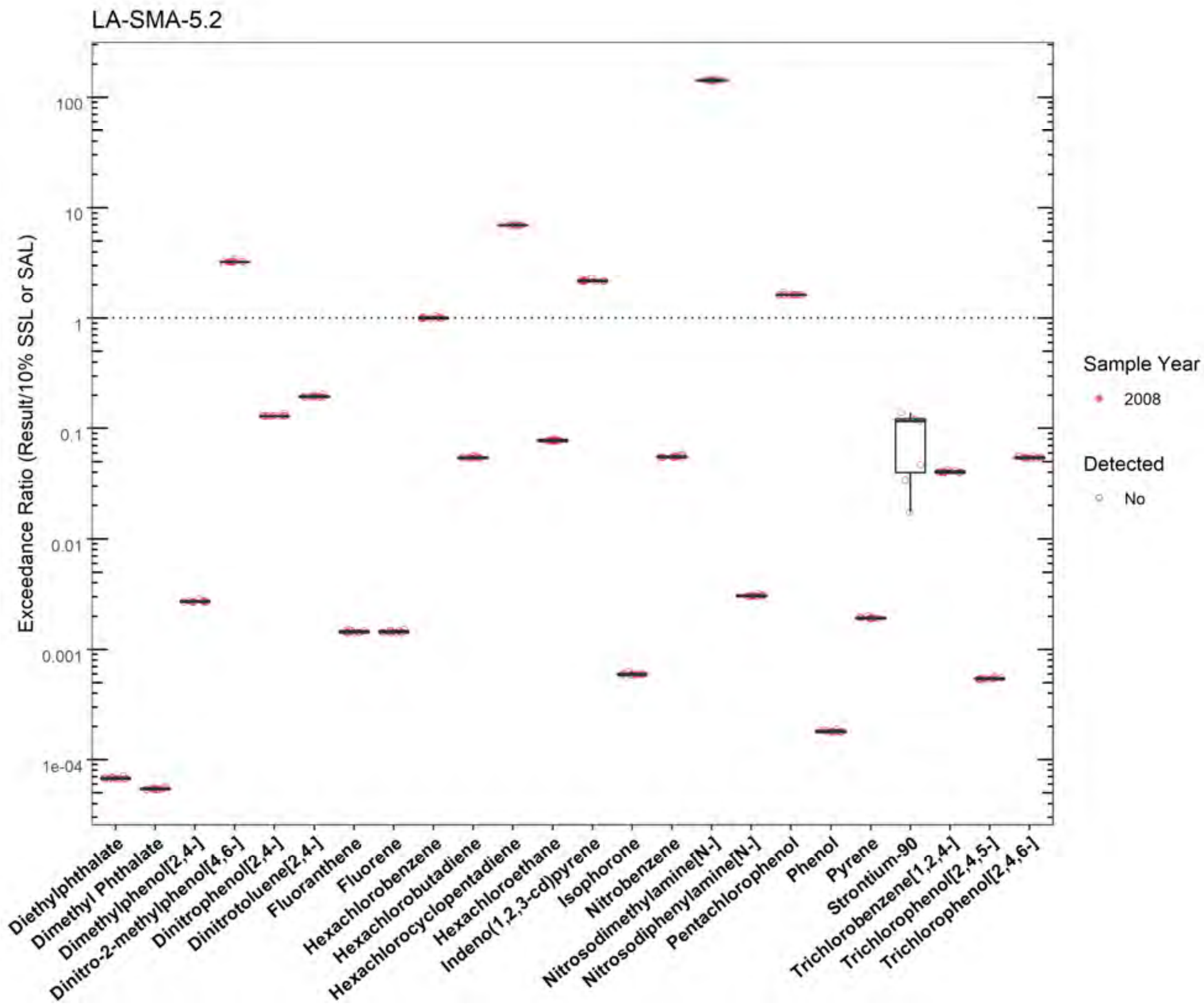


Figure 30.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.2 (Plot 2)

LA-SMA-5.2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	LA-SMA-5.2	Sb	Y	BTV	0.830	497	2017-03-31
Lead	LA-SMA-5.2	Pb	Y	BTV	22.3	62.1	2008-10-06
Zinc	LA-SMA-5.2	Zn	Y	BTV	48.8	100	2012-01-09

Figure 30.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-5.2

30.4 Stormwater Evaluation

30.4.1 Summary of Stormwater Results Compared to TALs and BTVs

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

30.4.2 Assessment Unit and Stream Impairments

LA-SMA-5.2 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The metals impairments may be Site-related, based on Site history.

30.5 Site-Specific Demonstration

30.5.1 Soil Data Summary

Antimony, lead, and zinc exceeded the applicable screening value in soil data. These metals were previously monitored in stormwater data and did not exceed the TAL, so they will not be added to the SAP.

30.5.2 Stormwater Data Summary

No data for the current monitoring stage have been collected.

Aluminum, gross alpha, and radium-226 and radium-228 exceeded TAL in the previous monitoring stage, but not composite BTV; therefore, they will not be added to the SAP. Arsenic, selenium, and zinc exceeded TAL and composite BTV and will be added to the SAP.

30.5.3 2022 Permit Status

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

30.5.4 Sampling and Analysis Plan

Table 30.5-1 is the proposed SAP for LA-SMA-5.2.

Table 30.5-1 Proposed SAP, LA-SMA-5.2

Monitoring Constituent	Background for Monitoring
Total selenium	Impairment, stormwater data, and Site history (metals)
Dissolved arsenic and zinc	Stormwater data and Site history (metals)
DOC	Permit requirement
SSC	Permit requirement

31.0 LA-SMA-5.31

Associated Sites	41-002(c)
Receiving Water	Los Alamos Canyon
Drainage Area	0.04 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 41-002(c): In Progress Deferred per Consent Order
2010 AC Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the January 2018 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3 criterion

31.1 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 August 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 225367), corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume corrective action sample collection and monitoring is ongoing.

31.2 Site History

41-002(c) (5/24/2017)

SWMU 41-002(c) consists of an inactive sludge drying bed (41-9), a component of a small sanitary sewage treatment plant at TA-41 [along with SWMU 41-002(a)], an Imhoff tank and 10 ft × 8 ft × 10 ft chlorinator (structure 41-7), and SWMU 41-002(b), a chlorine contact tank (structure 41-8). These SWMUs are all components of the former treatment plant and are interconnected by a network of drainlines, and are completely inactive. The treatment plant was built in 1951 and received sanitary waste from TA-41 until 1987, and received sanitary waste from TA-02 from the early 1970s until 1987. Between 1987 and 1992, sanitary wastes were pumped to the TA-03 Sanitary WWTP for treatment. Beginning in 1992, all sanitary wastes were pumped to the TA-46 SWSC plant.

When operational, the TA-41 sanitary sewage treatment plant discharged treated effluent to Los Alamos Canyon via LANL NPDES-permitted outfall SSS06S (removed from the LANL NPDES permit effective December 14, 1990). After it was shut down, the TA-41 treatment plant was retained as a standby unit in the event of failure of the lift pump. Currently, the sewage treatment plant is located on DOE property behind locked gates. The SWMU 41-002(c) was abandoned in place.

TA-41 has been continuously used from the early 1940s for testing, monitoring, assembling, and storing nuclear weapon components, weapons subsystems and boosting systems development, and for long-term studies on weapons subsystems. Isotopic analyses were conducted on uranium and plutonium samples. Operations at TA-41 required the use of radioactive materials, toxic gases, metals, and organic chemicals.

For investigation activities, refer to "Response to the Notice of Disapproval for the Investigation Report for Upper Los Alamos Canyon Aggregate Area, Los Alamos National Laboratory," (LANL 2010, 108536).

31.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 31.2-1.

Table 31.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
41-002(c)	Sludge drying bed	Inorganic and organic chemicals, metals, radionuclides

31.3 Consent Order Soil Data

Decision-level data for SWMU 41-002(c) consist of results from samples collected in 1995. Analytical results from those samples are presented in Figures 31.3-1 through 31.3-4. The 2006 IWP concluded that the nature and extent of contamination are not defined. No sampling activities were proposed in the approved IWP for SWMU 41-002(c). Site characterization and investigation are deferred until the future D&D of the sewage treatment plant.

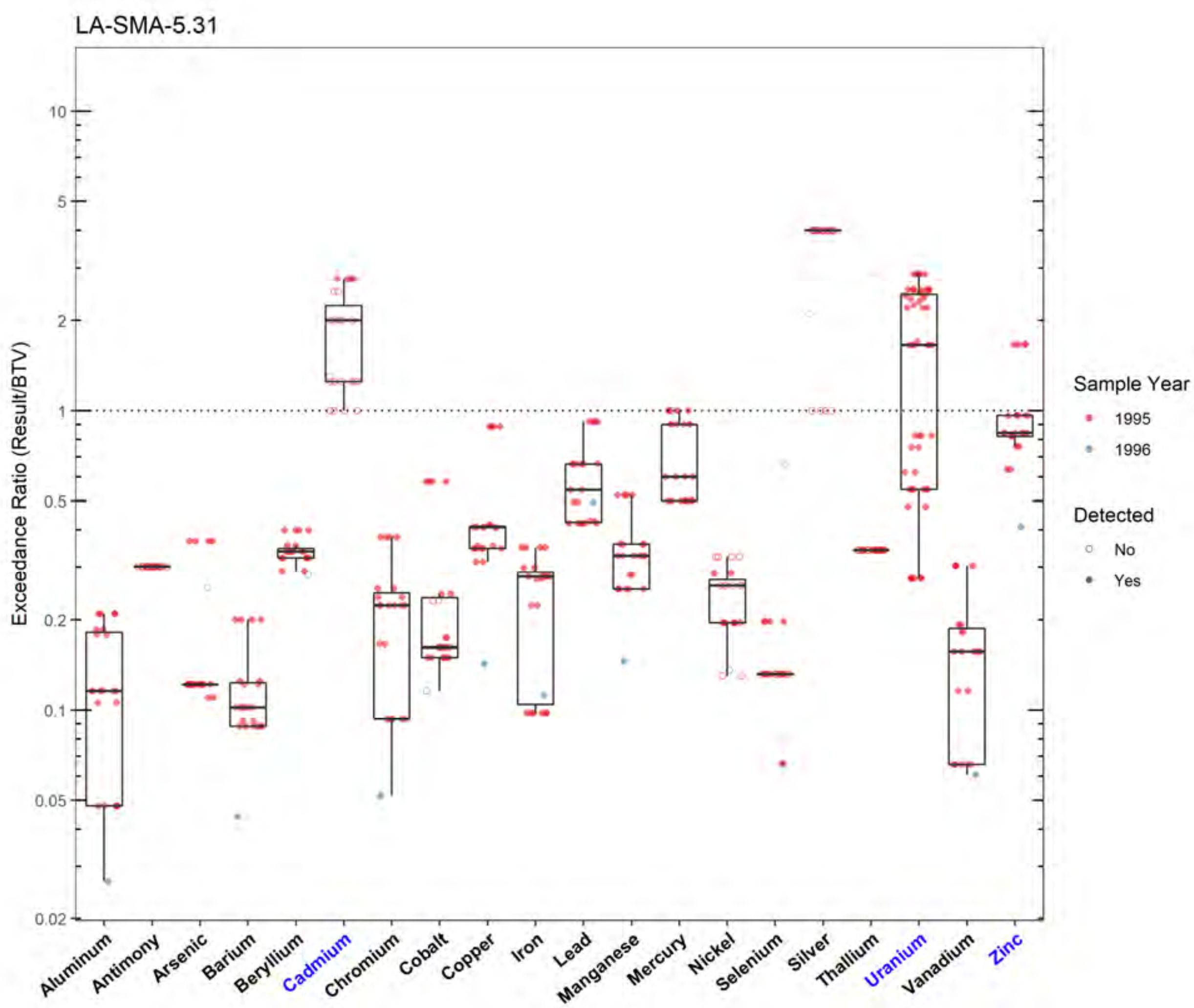


Figure 31.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-5.31

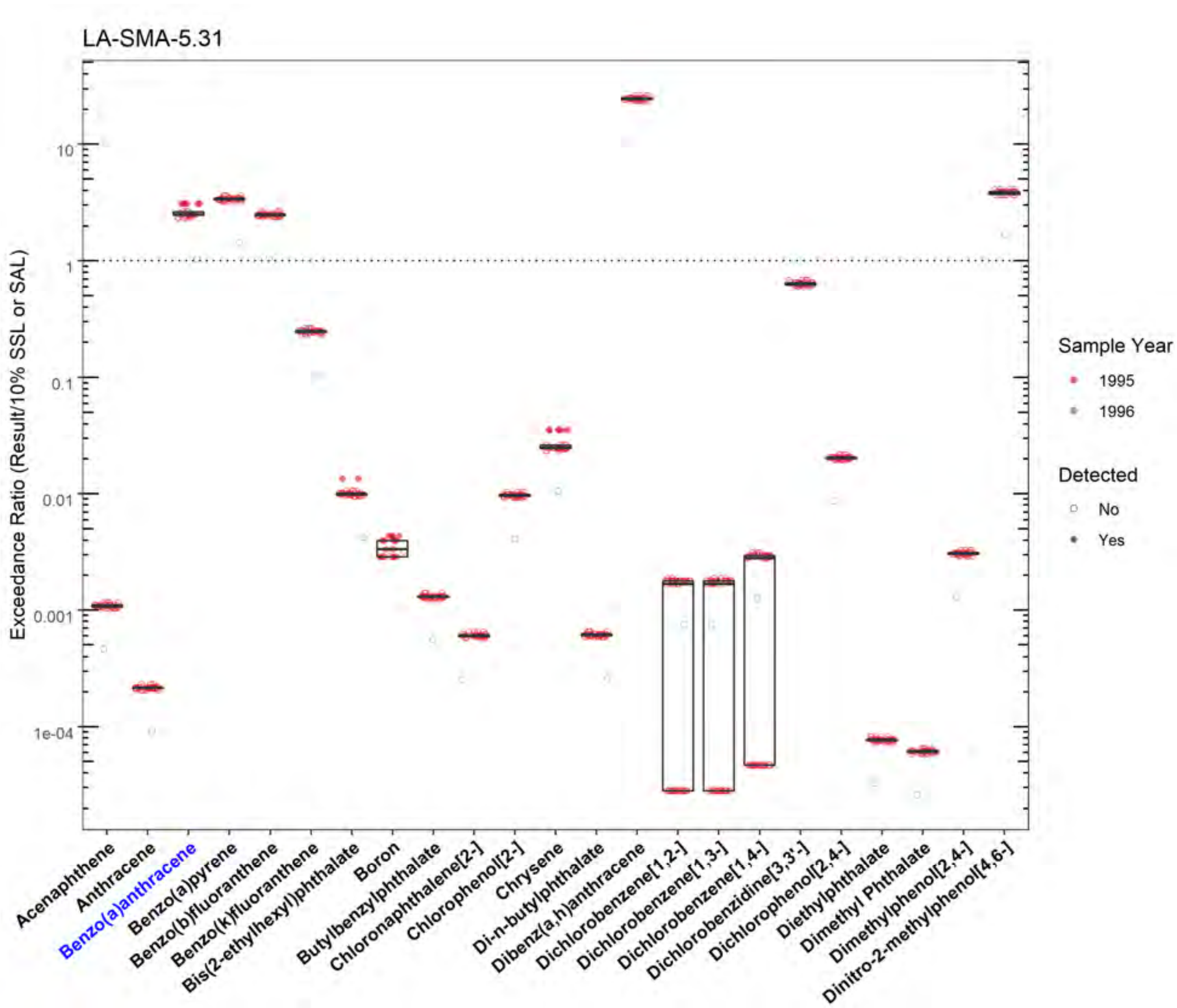


Figure 31.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.31 (Plot 1)

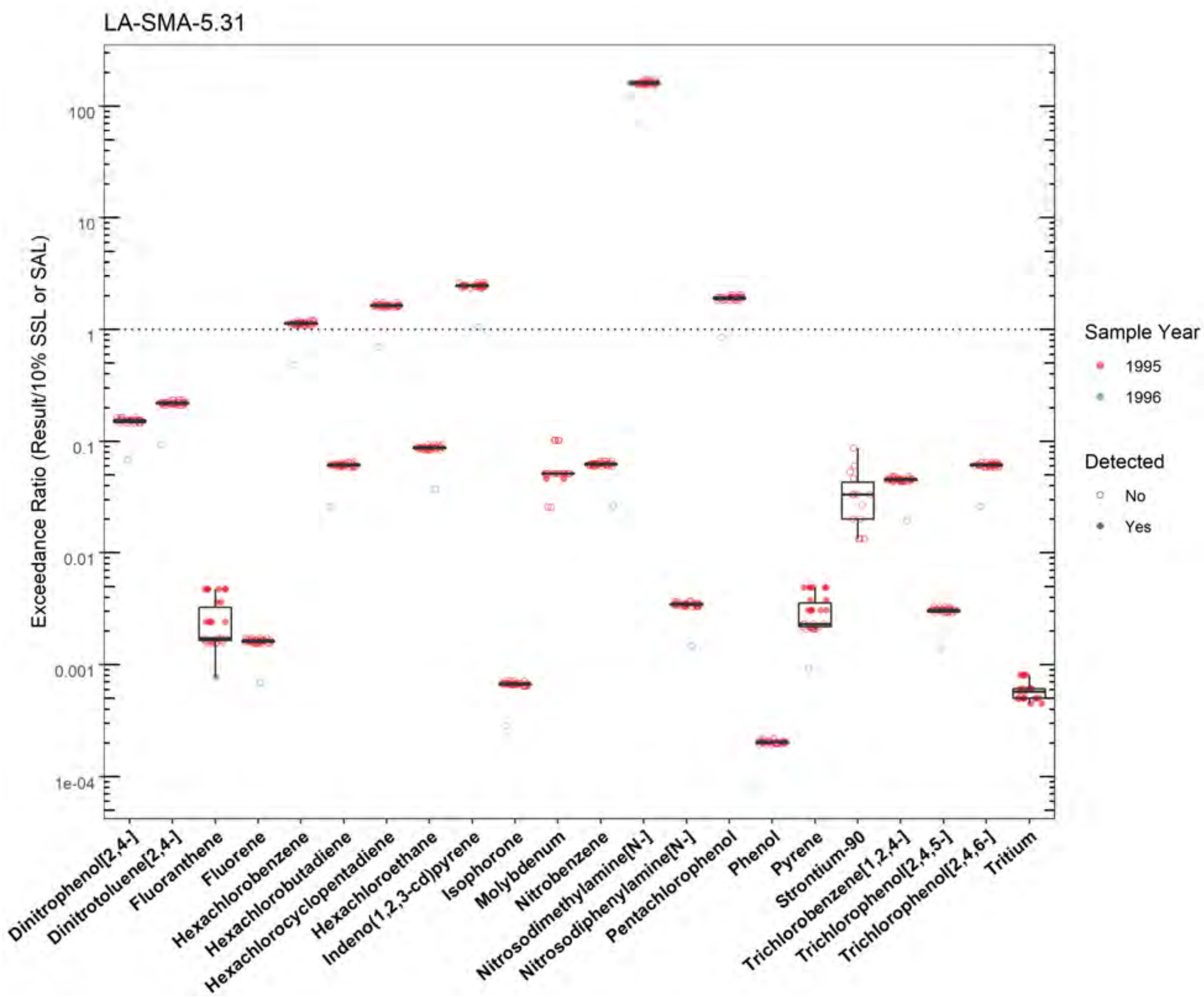


Figure 31.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.31 (Plot 2)

LA-SMA-5.31

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	LA-SMA-5.31	56-55-3	Y	SSL_0.1	0.153	0.470	1995-03-08
Cadmium	LA-SMA-5.31	Cd	Y	BTV	0.400	1.10	1995-03-07
Uranium	LA-SMA-5.31	U	Y	BTV	1.82	5.20	1995-02-27; 1995-03-07
Zinc	LA-SMA-5.31	Zn	Y	BTV	48.8	81.0	1995-03-07

Figure 31.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-5.31

31.4 Stormwater Evaluation

31.4.1 Summary of Stormwater Results Compared to 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.

31.4.2 Assessment Unit and Stream Impairments

LA-SMA-5.31 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. These impairments may be Site-related, based on Site history.

31.5 Site-Specific Demonstration

31.5.1 Soil Data Summary

Benzo(a)anthracene and uranium are the only Site-related POCs that exceeded the applicable screening value in soil data; they have not yet been measured in stormwater.

31.5.2 Stormwater Data Summary

No confirmation-monitoring data.

31.5.3 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.

32.0 LA-SMA-5.33

Associated Sites	32-004
Receiving Water	Los Alamos Canyon
Drainage Area	0.01 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	AOC 32-004: Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls
2010 AC Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the October 2017 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

32.1 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.

AOC 32-004 received a COC under the Consent Order in December 2012. The Permittees submitted a certification of completion of corrective action for the Site to EPA per Permit part I.E.2(d) in March 2013 (LANL 2013, 237753). Stormwater monitoring has not occurred since 2012.

32.2 Site History

32-004 (3/28/2022)

AOC 32-004 consists of a former drainline and outfall that served former building 32-3 in former TA-32, and discharged to Upper Los Alamos Canyon. Building 32-3 was an office building that housed a vault room where a radioactive source was stored. The drainline at AOC 32-004 led directly to an outfall at the edge of the mesa without passing through a septic tank. Building 32-3 was removed when TA-32 was decommissioned in 1954.

During the 1996 Phase II RFI and VCA conducted at AOC 32-004, the 37.5-ft section of the drainline located on Los Alamos County property was removed. Because the drainline was found not to be contaminated, the portion of the drainline located on DOE property was left in place and grouted at both ends.

For investigation activities, refer to “Supplemental Remedy Completion Report for Upper Los Alamos Canyon Aggregate Area, Former Technical Area 32” (LANL 2012, 226638).

32.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 32.2-1.

Table 32.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
32-004	Drainline and outfall	Radionuclides

32.3 Consent Order Soil Data

Decision-level data for AOC 32-004 consist of results from samples collected in 1996, 2008, and 2010. Analytical results from those samples are presented in Figures 32.3-1 through 32.3-4. Revision 1 of the 2011 remedy completion report concluded the nature and extent of contamination are defined.

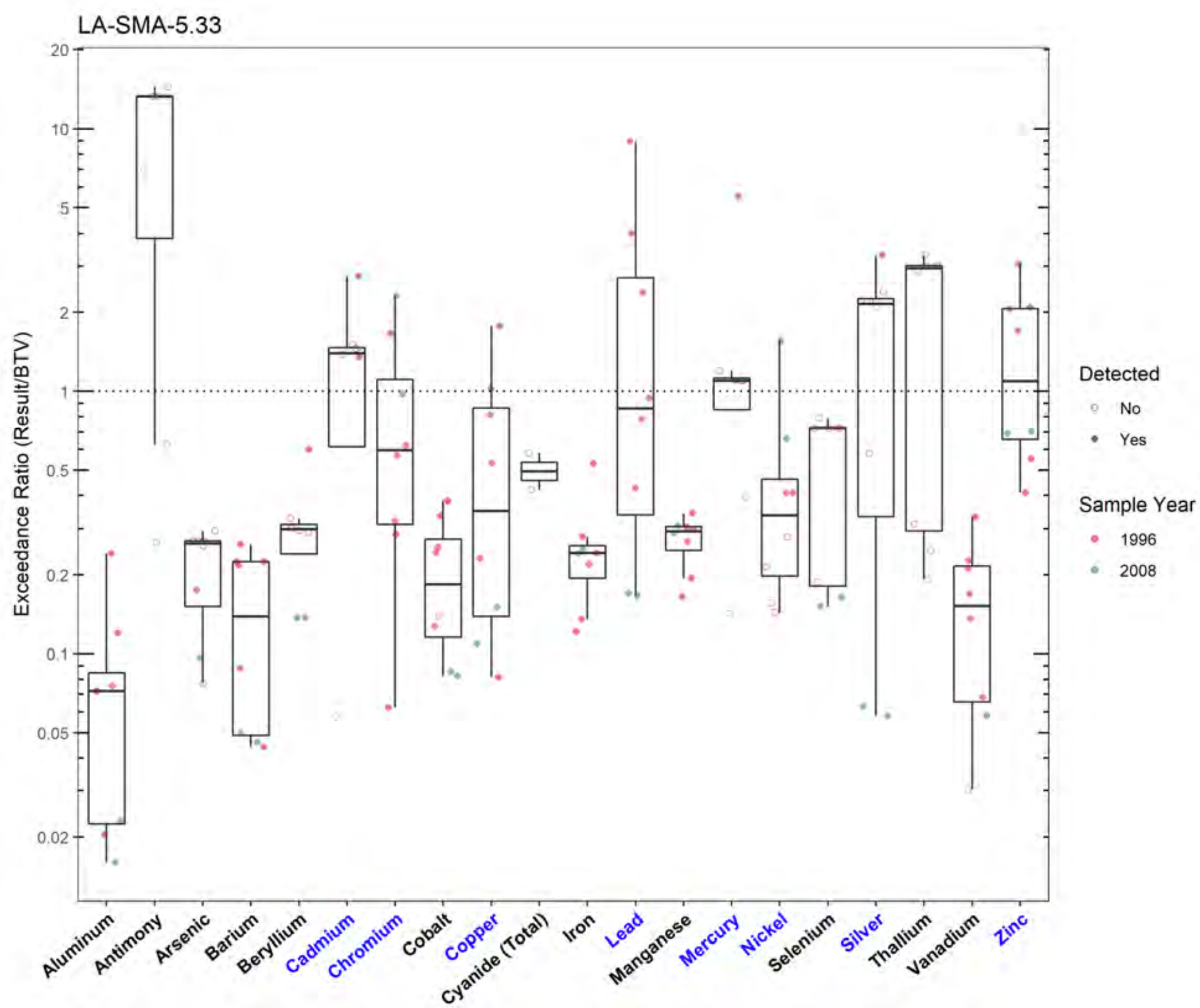


Figure 32.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-5.33

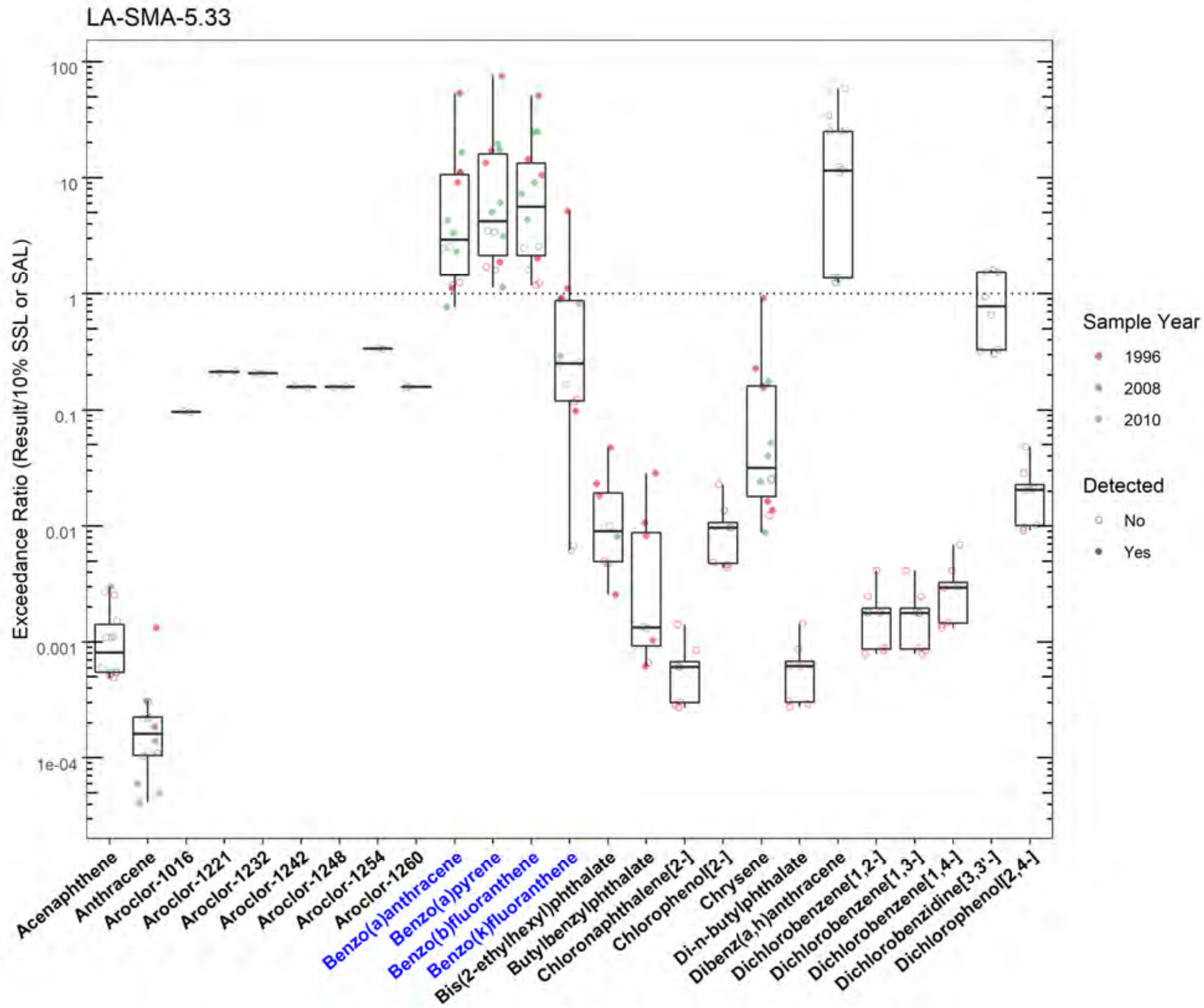


Figure 32.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.33 (Plot 1)

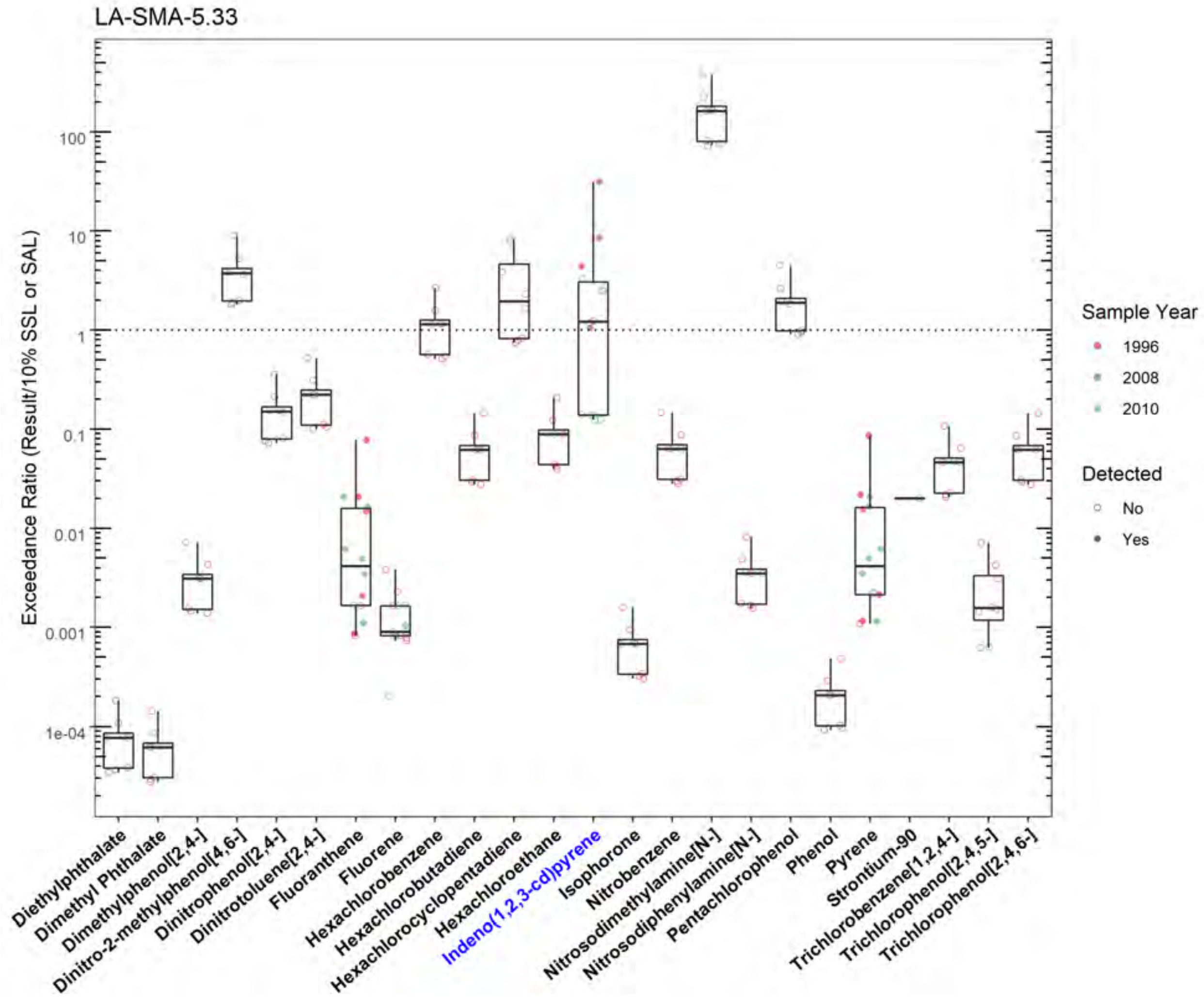


Figure 32.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.33 (Plot 2)

LA-SMA-5.33

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	LA-SMA-5.33	56-55-3	Y	SSL_0.1	0.153	8.20	1996-04-01
Benzo(a)pyrene	LA-SMA-5.33	50-32-8	Y	SSL_0.1	0.112	8.40	1996-04-01
Benzo(b)fluoranthene	LA-SMA-5.33	205-99-2	Y	SSL_0.1	0.153	7.80	1996-04-01
Benzo(k)fluoranthene	LA-SMA-5.33	207-08-9	Y	SSL_0.1	1.53	7.90	1996-04-01
Cadmium	LA-SMA-5.33	Cd	Y	BTV	0.400	1.10	1996-04-01
Chromium	LA-SMA-5.33	Cr	Y	BTV	19.3	44.6	2008-09-24
Copper	LA-SMA-5.33	Cu	Y	BTV	14.7	26.0	1996-04-01
Indeno(1,2,3-cd)pyrene	LA-SMA-5.33	193-39-5	Y	SSL_0.1	0.153	4.80	1996-04-01
Lead	LA-SMA-5.33	Pb	Y	BTV	22.3	200	1996-04-01
Mercury	LA-SMA-5.33	Hg	Y	BTV	0.100	0.550	1996-04-19
Nickel	LA-SMA-5.33	Ni	Y	BTV	15.4	24.1	2008-09-24
Silver	LA-SMA-5.33	Ag	Y	BTV	1.00	3.30	1996-04-01
Zinc	LA-SMA-5.33	Zn	Y	BTV	48.8	150	1996-04-01

Figure 32.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-5.33

32.4 Stormwater Evaluation

32.4.1 Summary of Stormwater Results Compared to TALs and BTVs

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

32.4.2 Assessment Unit and Stream Impairments

LA-SMA-5.33 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The adjusted gross alpha impairment may be Site-related, based on Site history.

32.5 Site-Specific Demonstration

32.5.1 Soil Data Summary

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

32.5.2 Stormwater Data Summary

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

32.5.3 2022 Permit Status

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

32.5.4 Sampling and Analysis Plan

Table 32.5-1 is the proposed SAP for LA-SMA-5.33.

Table 32.5-1 Proposed SAP, LA-SMA-5.33

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment, Site history, and stormwater data
Tritium	Site history (radionuclides)
DOC	Permit requirement
SSC	Permit requirement

33.0 LA-SMA-5.35

Associated Sites	C-41-004
Receiving Water	Los Alamos Canyon
Drainage Area	0.01 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	AOC C-41-004: In Progress Deferred per Consent Order
2010 AC Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the January 2018 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3 criterion

33.1 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 December 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 232349), corrective-action monitoring was initiated and stormwater samples were collected in June and July 2014. Analytical results from these samples initiated corrective action.

The Permittees submitted a request for alternative compliance for the Site to EPA per permit Part I.E.3 in May 2015 044 (LANL 2015, 600418). No response has been received from EPA, and stormwater monitoring has not occurred since 2014.

33.2 Site History

C-41-004 (5/24/2017)

AOC C-41-004 is the active storm drain system around laboratory building 41-4 at TA-41. The system consists of seven catchment basins and/or manholes (structures 41-22 through 41-28) and connecting drainlines that collect stormwater from paved areas around building 41-4 and discharge the stormwater through an outfall to the Los Alamos Canyon drainage channel. There are no indications of contaminant releases to the system; however, no monitoring of the storm drains or outfalls has been conducted. Deposition from historical stack emissions between building 41-4 and 41-30 (an office building) may have resulted in surface tritium contamination of the storm drain system. Building 41-4 is currently in use, and the catchment basins/manholes and connecting drainlines are located within and under the asphalt pavement around the building.

TA-41 has been continuously used from the early 1940s for testing, monitoring, assembling, and storing nuclear weapon components, development of weapons subsystems and boosting systems, and for long-term studies on weapons subsystems. Isotopic analyses were conducted on uranium and plutonium samples. Operations at TA-41 required the use of radioactive materials, toxic gases, metals, and organic chemicals.

For investigation activities, refer to “Response to the Notice of Disapproval for the Investigation Report for Upper Los Alamos Canyon Aggregate Area, Los Alamos National Laboratory” (LANL 2010, 108536).

33.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 33.2-1.

Table 33.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
C-41-004	Storm drains	Tritium, uranium, plutonium, beryllium, lead, mercury

33.3 Consent Order Soil Data

Decision-level data for AOC C-41-004 consist of results from one sample collected at one location in 1995. Analytical results from this sample are presented in Figures 33.3-1 through 33.3-3. The 2006 IWP (LANL 2006, 091916) concluded that the nature and extent of contamination are not defined.

No sampling activities were proposed in the approved IWP for AOC C-41-004. Site characterization and investigation are deferred until the future D&D of building 41-4 and the remainder of structures in TA-41, when structures are removed to facilitate access to the Site with a drill rig.

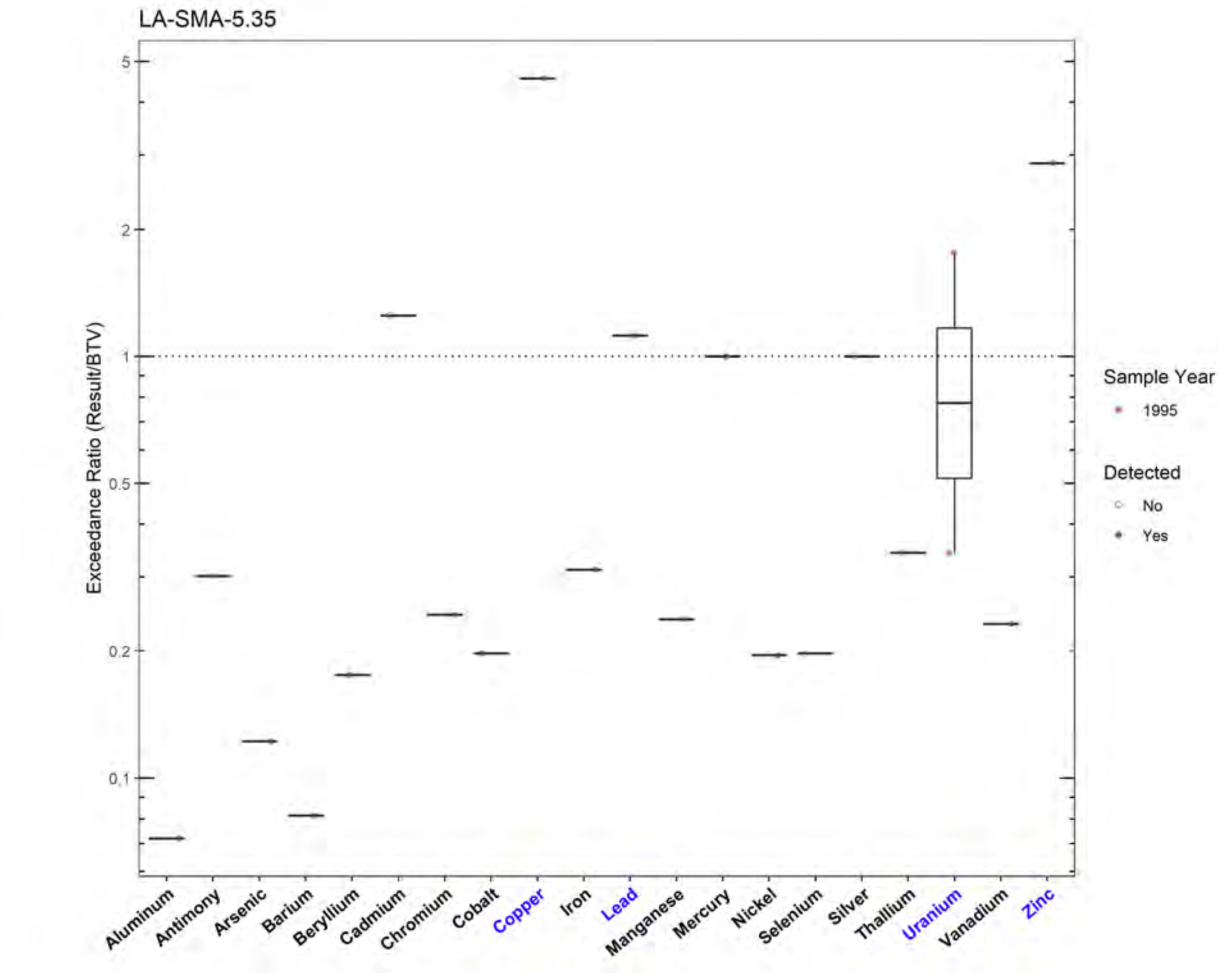


Figure 33.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-5.35 (Plot 1)

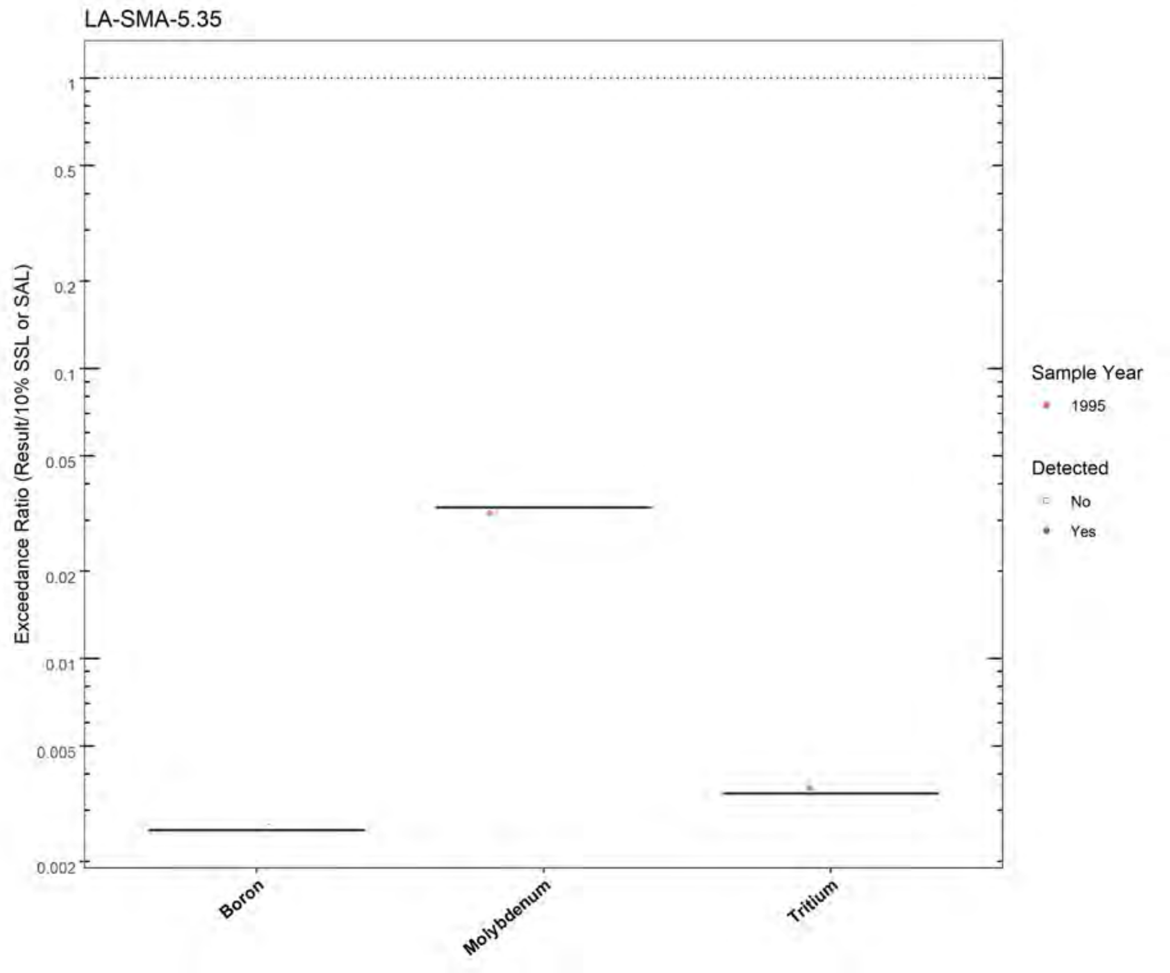


Figure 33.3-2 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-5.35 (Plot 2)

LA-SMA-5.35

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Copper	LA-SMA-5.35	Cu	Y	BTV	14.7	67.0	1995-02-27
Lead	LA-SMA-5.35	Pb	Y	BTV	22.3	24.9	1995-02-27
Uranium	LA-SMA-5.35	U	Y	BTV	1.82	3.20	1995-02-27
Zinc	LA-SMA-5.35	Zn	Y	BTV	48.8	140	1995-02-27

Figure 33.3-3 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-5.35

33.4 Stormwater Evaluation

33.4.1 Summary of Stormwater Results Compared to TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Corrective-action stormwater samples were collected in June and July 2014; analytical results from those samples are presented in Figures 33.4-1 and 33.4-2.

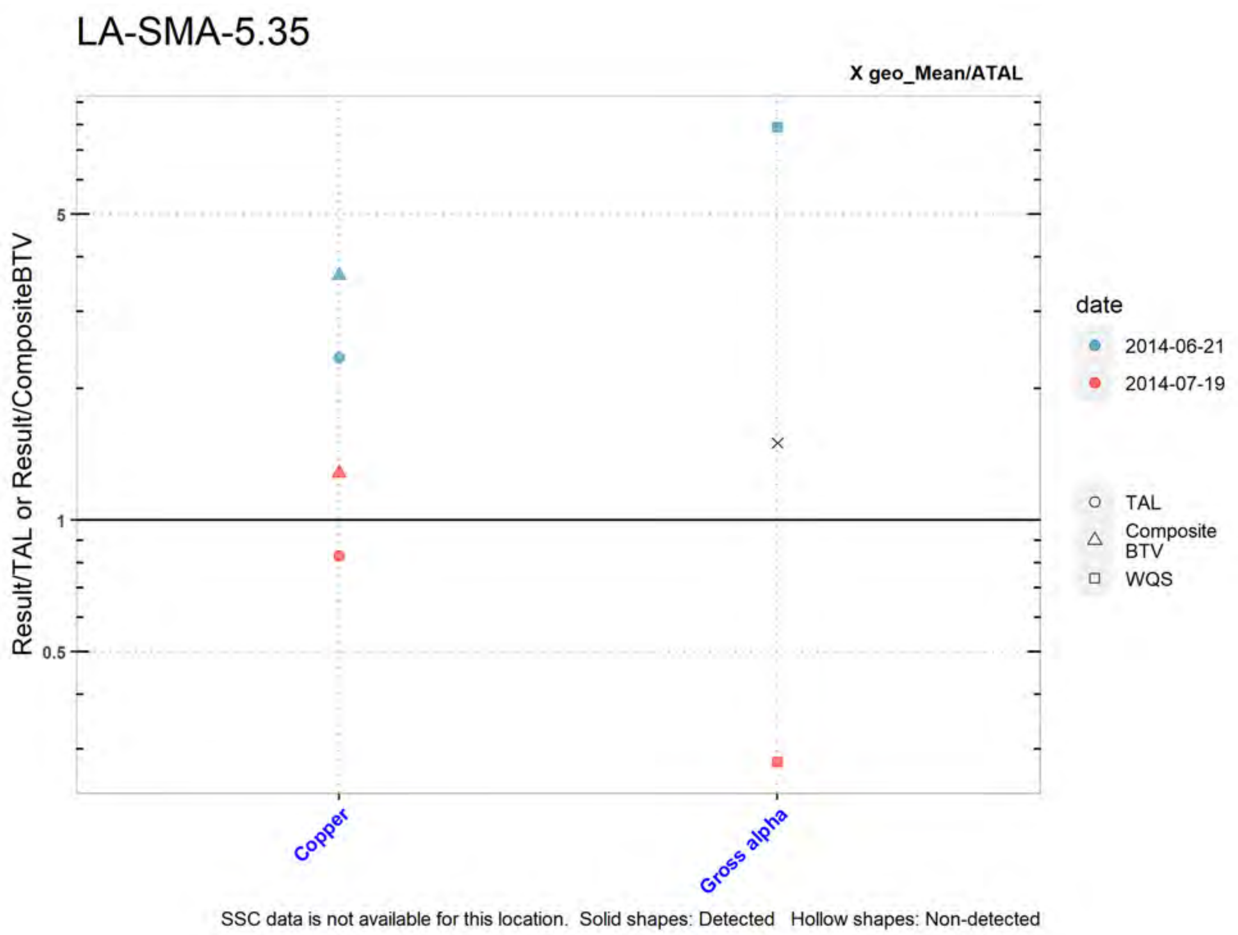


Figure 33.4-1 Analytical Results from Stormwater Samples, LA-SMA-5.35 (Plot)

LA-SMA-5.35

	Copper	Gross alpha
MQL	0.5	NA
ATAL	NA	15
MTAL	4.8	NA
Composite_BTV	3.12	57.2
unit	ug/L	pCi/L
2014-06-21 result	11.3	118
2014-06-21 dT	2.35	7.9
2014-06-21 dB	3.62	NA
2014-07-19 result	3.98	4.27
2014-07-19 dT	0.829	0.28
2014-07-19 dB	1.28	NA
geo_mean/ATAL	NA	1.5
geo_mean/B	NA	NA

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

Figure 33.4-2 Analytical Results from Stormwater Samples, LA-SMA-5.35 (Table)

33.4.2 Assessment Unit and Stream Impairments

LA-SMA-5.35 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The gross alpha and mercury impairments may be Site-related, based on Site history.

33.5 Site-Specific Demonstration

33.5.1 Soil Data Summary

Copper, lead, uranium and zinc exceeded the applicable screening values in soil data. Zinc and lead had previously been monitored for in stormwater and did not exceed the TAL. Copper had previously been monitored in stormwater and did exceed the TAL and BTV, while uranium had not been previously monitored in stormwater; when the Site is un-deferred, copper and uranium will be added to the SAP.

33.5.2 Stormwater Data Summary

Copper exceeded both TAL and BTV. Gross alpha exceeded TAL, and there was no paired SSC data to determine if the result was below BTV.

33.5.3 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.

34.0 LA-SMA-5.361

Associated Sites	32-002(b1), 32-002(b2)
Receiving Water	Los Alamos Canyon
Drainage Area	2.09 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 32-002(b1): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls SWMU 32-002(b2): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 AC Permit Final Status	Corrective Action Complete/Alternative Compliance Requested
2016–2018 SIP Actions	The October 2017 field visit determined that more of the impacted area should be included in the SMA. Therefore, the sampler was moved.
2022 Permit Status	Active Monitoring/Corrective Action

34.1 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 2018 SAP, a decision was made to implement the monitoring location move recommended during the 2017 SIP review. Baseline monitoring was reinitiated and a baseline stormwater sample was collected in August 2019. Analytical results from this sample initiated corrective action.

SWMU 32-002(b1) received a COC under the Consent Order in December 2012. The Permittees submitted a certification of completion of corrective action for the Site to EPA per Permit part I.E.2(d) in December 2019 (N3B 2019, 700724).

The Permittees submitted a request for alternative compliance for SWMU 32-002(b2) to EPA per permit Part I.E.3 in October 2020 (N3B 2020, 701098). No response has been received from EPA, and stormwater monitoring has not occurred since 2019.

34.2 Site History

32-002(b1) (3/28/2022)

Former SWMU 32-002(b) is a septic system that served former buildings 32-1 and 32-2 in former TA-32. It was split into separate new SWMUs 32-002(b1 and b2) in December 2012 to expedite completion of corrective actions on the portion of the site owned by the Los Alamos School Board. SWMU 32-002(b1) is the portion of the former septic system that is located on property currently owned by the Los Alamos School Board, while the remainder of the septic system, SWMU 32-002(b2), is located on property owned by the DOE. The septic system was installed directly northwest and slightly upgradient of the SWMU 32-002(a) septic tank, near the edge of Los Alamos Canyon, when the SWMU 32-002(a) septic system could no longer meet the usage requirement of the laboratory (building 32-1).

The inlet drainline from the SWMU 32-002(a) septic system was diverted to the SWMU 32-002(b) septic system, which also received effluent from building 32-2, the medical research annex. The former septic system consisted of a reinforced concrete tank (former structure 32-8) measuring 9 ft × 5 ft × 6 ft, with an outlet drainline that discharged to an outfall at the edge of Los Alamos Canyon, approximately 15 ft southwest of the SWMU 32-002(a) outfall.

Former building 32-1 operated as a research laboratory from 1944 to 1954. Research activities in former building 32-1 involved radionuclides along with inorganic and organic chemicals. Because no industrial waste line served former TA-32, chemical and radioactive wastes may have been disposed of in sinks and drains connected to the septic system at SWMU 32-002(b1).

TA-32 was decommissioned in 1954. The septic tank was removed in 1988 and disposed of at MDA G at TA-54, and the inlet drainline was removed during a VCA in 1996.

Former TA-32 is located within the Los Alamos townsite. Los Alamos County and the Los Alamos School Board own the mesa-top portion of former TA-32. The area was recently used by Los Alamos County to store equipment and materials for roadwork and maintenance. The County demolished all structures at the site in 2010 and is developing the area for commercial use. This site is currently under an asphalt parking lot.

For investigation activities, refer to “Supplemental Remedy Completion Report for Upper Los Alamos Canyon Aggregate Area, Former Technical Area 32, Revision 1” (LANL 2013, 233950).

32-002(b2) (9/28/2021)

Former SWMU 32-002(b), a former septic system located at the edge of Los Alamos Canyon that served former buildings 32-1 and 32-2, was split into two new SWMUs [SWMUs 32-002(b1) and 32-002(b2)] in December 2012 to expedite completion of corrective actions on the mesa-top portion of the site owned by Los Alamos Public Schools. SWMU 32-002(b1) is the portion of the former septic system that is located on property currently owned by Los Alamos Public Schools. The remainder of the septic system is located on property owned by DOE and is designated as SWMU 32-002(b2).

SWMU 32-002(b2) includes the section of a former septic system, located at the edge of Los Alamos Canyon that served former buildings 32-1 and 32-2, consisting of a former inlet pipe, former septic tank 32-8, and the former outlet drainline located on a high-angle slope south of the Smiths Marketplace parking lot on property owned by DOE in former TA-32.

The former SWMU 32-002(b) septic system was installed between 1948 and 1950, directly northwest and slightly upgradient of the SWMU 32-002(a) septic tank, near the edge of Los Alamos Canyon. The SWMU 32-002(b) septic system consisted of a reinforced concrete tank (former structure 32-8) measuring 9 ft × 5 ft × 6 ft, inlet drainlines from former buildings 32-1 and 32-2, and an outlet drainline that discharged to an outfall at the edge of Los Alamos Canyon. This system was installed when the SWMU 32-002(a) septic system could no longer meet the usage requirement of the laboratory in former building 32-1. The influent line from the SWMU 32-002(a) septic system was diverted to the former SWMU 32-002(b) septic system, which also received effluent from former building 32-2, the medical research annex. The outfall of SWMU 32-002(b) was located at the edge of Los Alamos Canyon, approximately 15 ft southwest of the SWMU 32-002(a) outfall. The septic tank was removed in 1988, and the influent drainline was removed in 1996 and disposed of at TA-54, MDA G.

Research activities in former building 32-1 involved radionuclides; inorganic and organic chemicals may also have been used. Because no industrial waste line served former TA-32, it is possible chemical and radioactive wastes may have been disposed of in sinks and drains connected to the former SWMU 32-002(b) septic system.

For investigation activities, refer to “Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area, Revision 1” (N3B 2021, 701261).

34.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 34.2-1.

Table 34.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
32-002(b1)	Septic system	Inorganic and organic chemicals, radionuclides
32-002(b2)	Septic system	Inorganic and organic chemicals, radionuclides

34.3 Consent Order Soil Data

Decision-level data for SWMU 32-002(b1) consist of results from samples collected in 1996, 2008, and 2010. Revision 1 of the 2013 supplemental remedy completion report concluded the nature and extent of contamination are defined.

Decision-level data for SWMU 32-002(b2) consist of results from samples collected in 2008, 2010, 2011, 2013, and 2015. Revision 1 of the 2021 Phase II IR concluded the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results from all decision-level soil samples collected for LA-SMA-5.361 are presented in Figures 34.3-1 through 34.3-4.

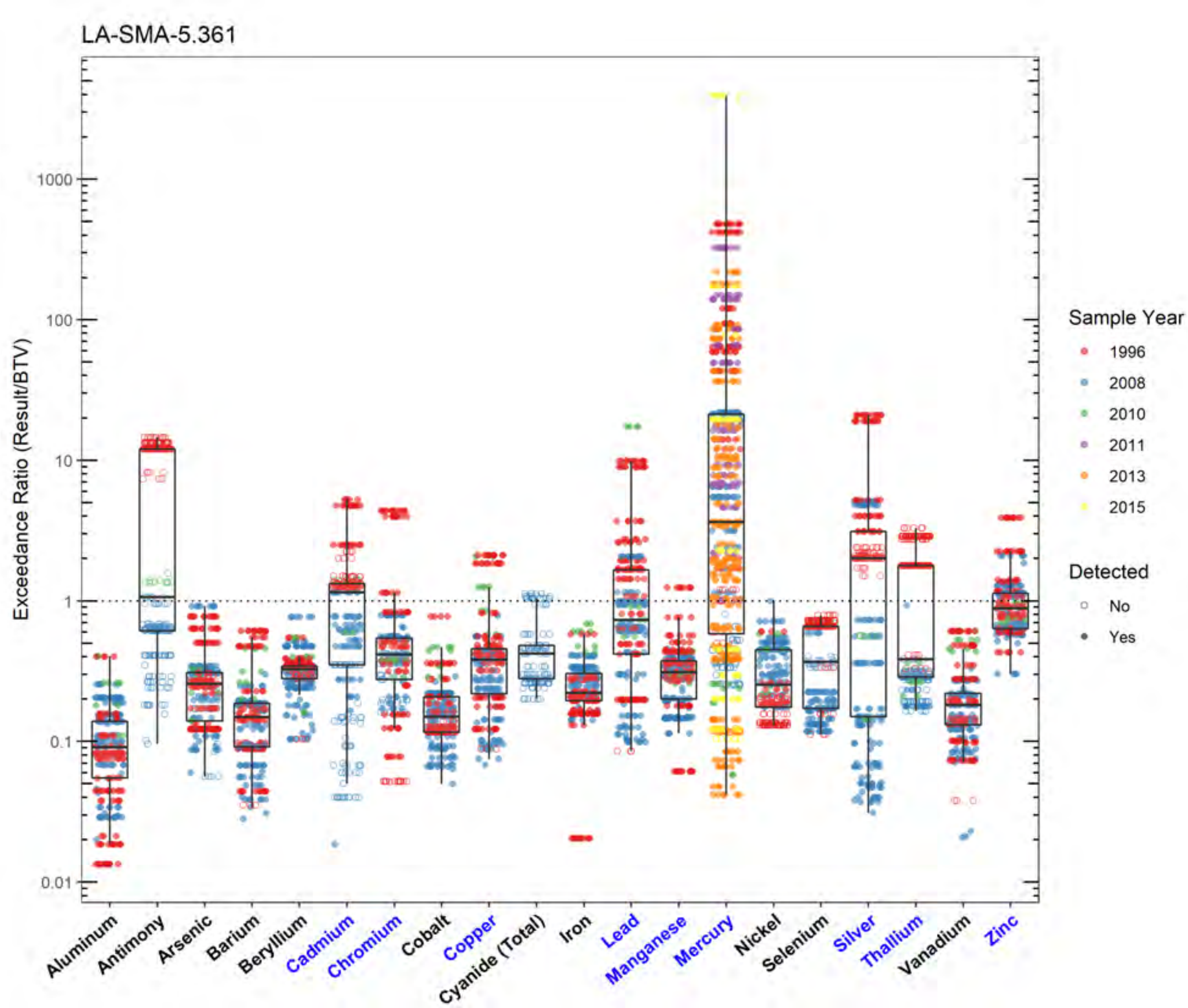


Figure 34.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-5.361

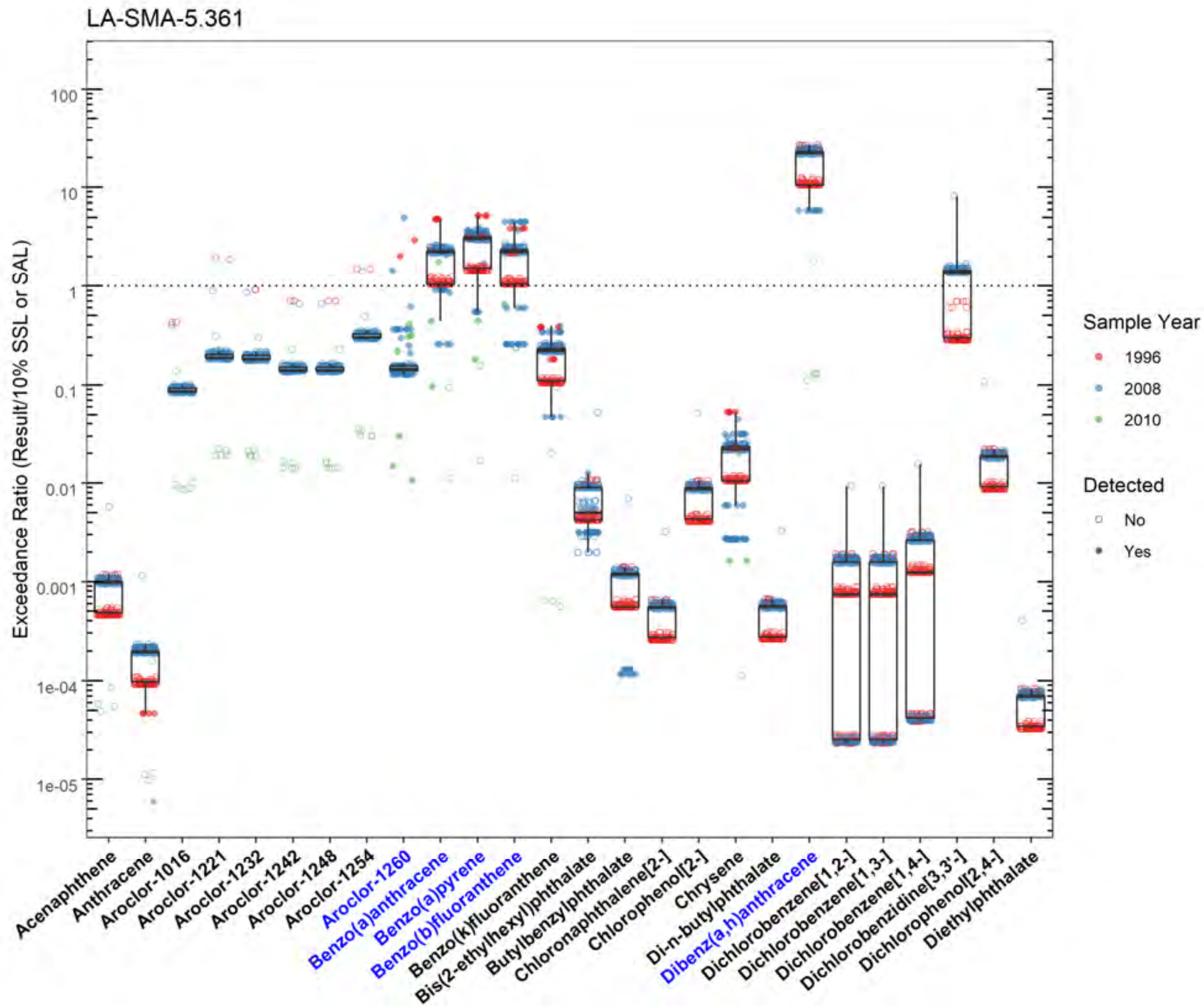


Figure 34.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.361 (Plot 1)

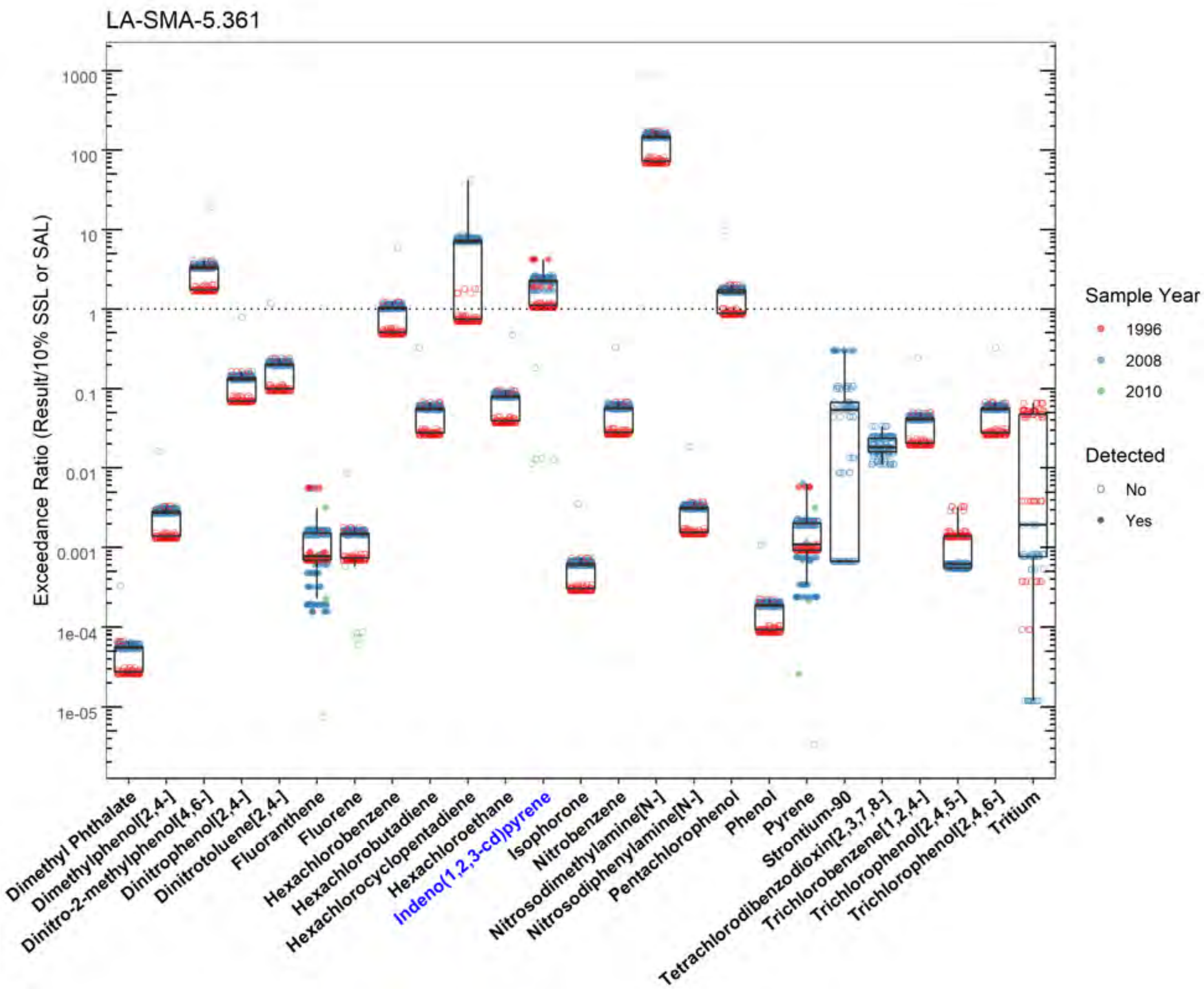


Figure 34.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.361 (Plot 2)

LA-SMA-5.361

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1260	LA-SMA-5.361	11096-82-5	Y	SSL_0.1	0.243	1.20	2008-09-30
Benzo(a)anthracene	LA-SMA-5.361	56-55-3	Y	SSL_0.1	0.153	0.730	1996-05-02
Benzo(a)pyrene	LA-SMA-5.361	50-32-8	Y	SSL_0.1	0.112	0.580	1996-05-02
Benzo(b)fluoranthene	LA-SMA-5.361	205-99-2	Y	SSL_0.1	0.153	0.690	2008-09-25
Cadmium	LA-SMA-5.361	Cd	Y	BTV	0.400	2.10	1996-05-06
Chromium	LA-SMA-5.361	Cr	Y	BTV	19.3	84.0	1996-03-28
Copper	LA-SMA-5.361	Cu	Y	BTV	14.7	31.0	1996-03-28
Dibenz(a,h)anthracene	LA-SMA-5.361	53-70-3	Y	SSL_0.1	0.0153	0.0900	2008-09-25
Indeno(1,2,3-cd)pyrene	LA-SMA-5.361	193-39-5	Y	SSL_0.1	0.153	0.640	1996-04-26
Lead	LA-SMA-5.361	Pb	Y	BTV	22.3	386	2010-03-02
Manganese	LA-SMA-5.361	Mn	Y	BTV	671	830	1996-05-06
Mercury	LA-SMA-5.361	Hg	Y	BTV	0.100	395	2015-05-05
Silver	LA-SMA-5.361	Ag	Y	BTV	1.00	21.0	1996-03-28
Thallium	LA-SMA-5.361	Tl	Y	BTV	0.730	1.30	1996-05-06
Zinc	LA-SMA-5.361	Zn	Y	BTV	48.8	190	1996-03-28

Figure 34.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-5.361

34.4 Stormwater Evaluation

34.4.1 Summary of Stormwater Results Compared to TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective action stormwater sample was collected in August 2019. Analytical results from this sampling are presented in Figures 34.4-1 through 34.4-4.

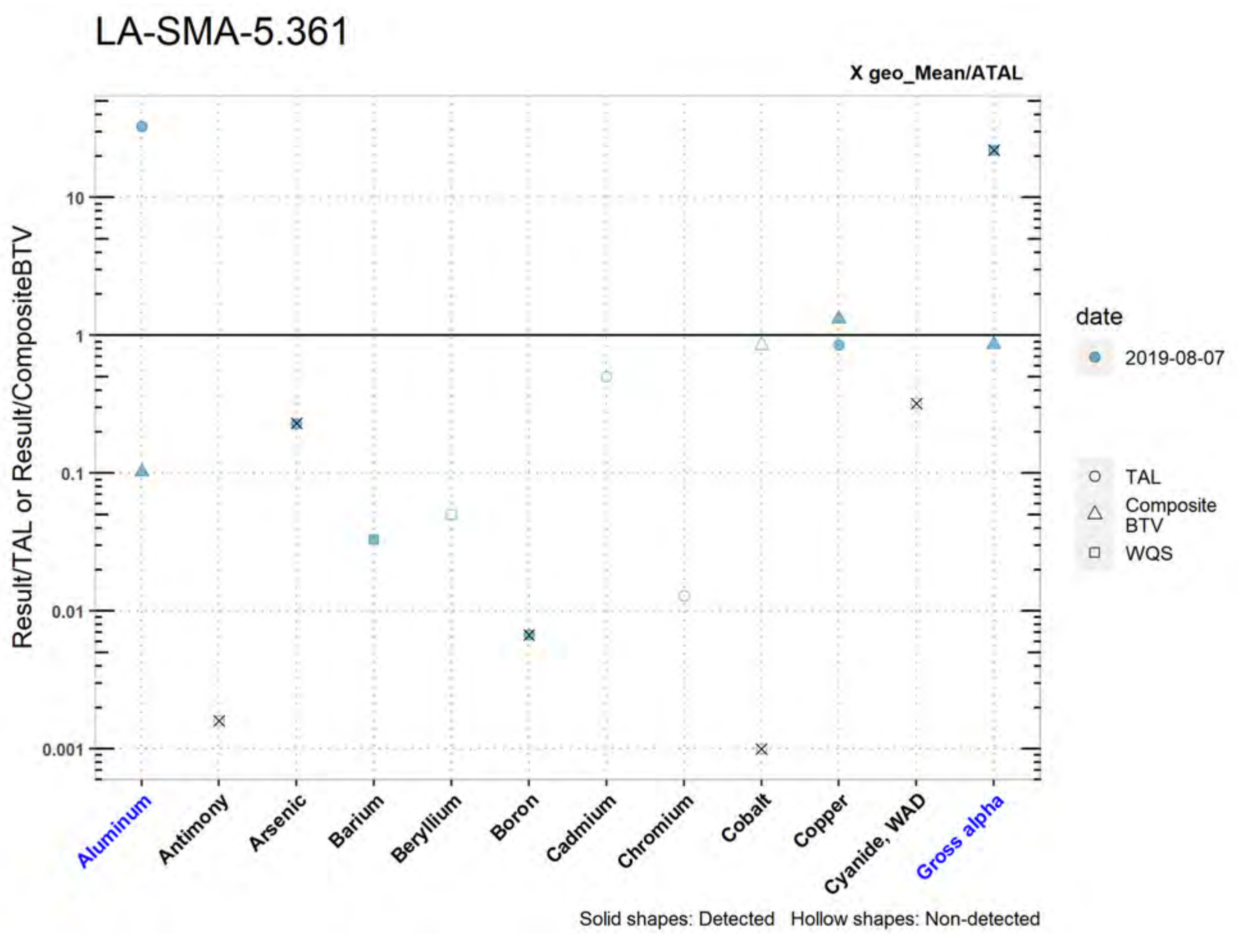


Figure 34.4-1 Analytical Results from Stormwater Sample, LA-SMA-5.361 (Plot 1)

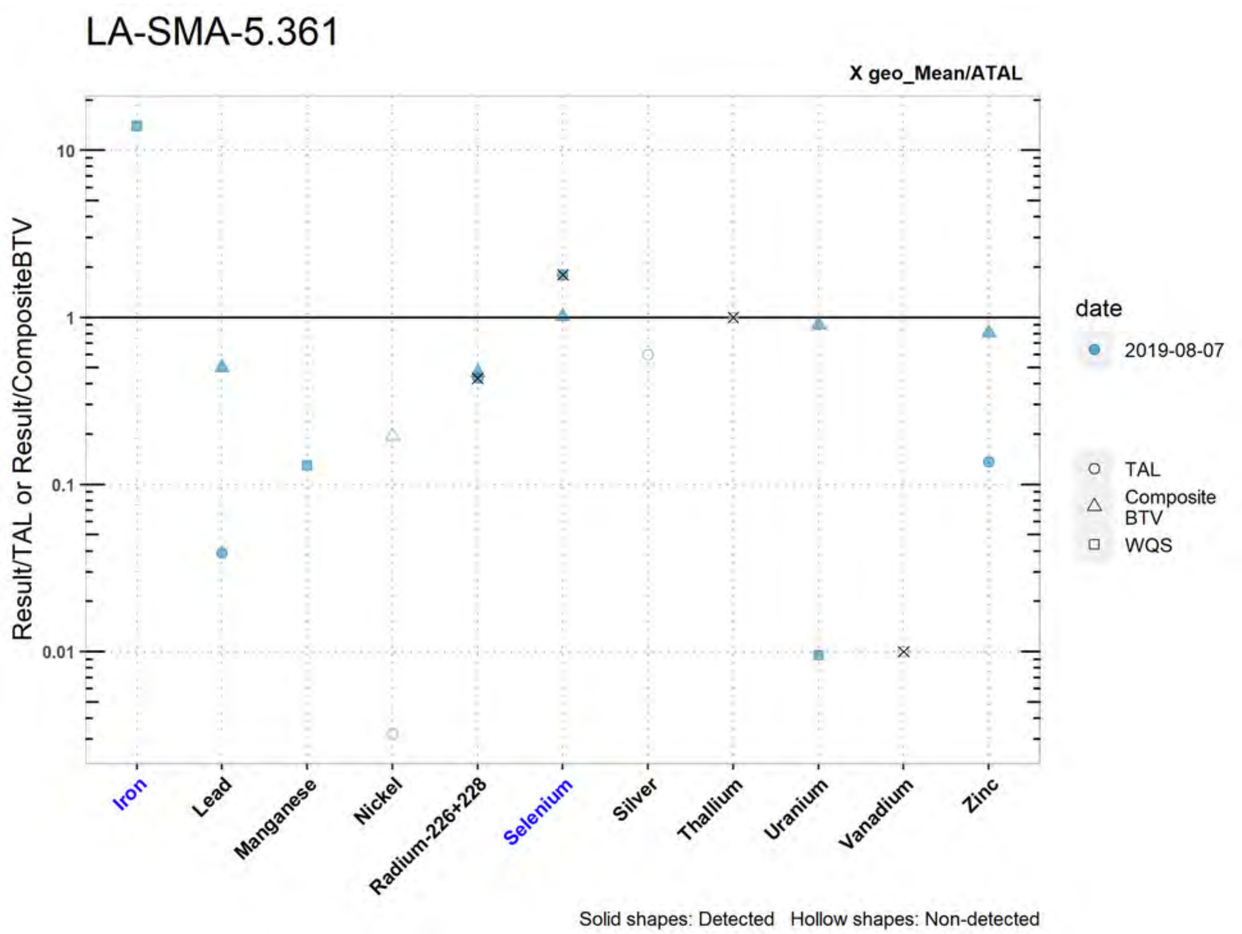


Figure 34.4-2 Analytical Results from Stormwater Sample, LA-SMA-5.361 (Plot 2)

LA-SMA-5.361

	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	765	NA	340	NA	NA	NA	0.65	233	NA	4.8	22	NA
Composite_BTV	37400	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	pCi/L*
2019-08-07 result	25100	*1.00*	2.08	65.5	*0.200*	33.7	*0.300*	*3.00*	*1.00*	4.08	*1.67*	325
2019-08-07 dT	32.8	NA	0.23	0.033	NA	0.0067	NA	NA	NA	0.850	NA	22
2019-08-07 dB	0.102	NA	NA	NA	NA	NA	NA	NA	NA	1.31	NA	0.861
geo_mean/ATAL	NA	0.0016	0.23	NA	NA	0.0067	NA	NA	0.0010	NA	0.321	22

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 34.4-3 Analytical Results from Stormwater Sample, LA-SMA-5.361 (Table 1)

LA-SMA-5.361

	Iron	Lead	Manganese	Nickel	Radium-226+228	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc
MQL	NA	0.5	NA	0.5	NA	5	0.5	0.5	NA	50	20
ATAL	NA	NA	NA	NA	30	5	NA	0.47	NA	100	NA
MTAL	NA	19.3	NA	186	NA	20	0.49	NA	NA	NA	59.2
Composite_BTV	NA	1.50	NA	3.10	4.21	8.98	NA	NA	0.315	NA	10.0
unit	ug/L	ug/L	ug/L	ug/L	pCi/L*	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2019-08-07 result	13800	0.752	15.4	*0.600*	13.0	9.03	*0.300*	*0.600*	0.285	*1.00*	8.10
2019-08-07 dT	14	0.0390	0.13	NA	0.433	1.8	NA	NA	0.0095	NA	0.137
2019-08-07 dB	NA	0.501	NA	NA	0.468	1.01	NA	NA	0.905	NA	0.810
geo_mean/ATAL	NA	NA	NA	NA	0.433	1.8	NA	1	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 34.4-4 Analytical Results from Stormwater Sample, LA-SMA-5.361 (Table 2)

34.4.2 Assessment Unit and Stream Impairments

LA-SMA-5.361 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The impairments may be Site-related, based on Site history.

34.5 Site-Specific Demonstration

34.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: Aroclor-1260, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene, and mercury. The remaining metals, which exceeded the applicable screening value in soil data, were previously monitored in stormwater data and did not exceed the TAL.

34.5.2 Stormwater Data Summary

Aluminum and gross alpha exceeded TALs but were below BTVs. Selenium exceeded both TAL and BTV.

34.5.3 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.2.b.i) for selenium. The SMA is also in active monitoring; not all Site-related POCs were analyzed for in past samples.

34.5.4 Sampling and Analysis Plan

Table 34.5-1 is the proposed SAP for LA-SMA-5.361.

Table 34.5-1 Proposed SAP, LA-SMA-5.361

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

35.0 LA-SMA-5.362

Associated Sites	32-003
Receiving Water	Los Alamos Canyon
Drainage Area	0.02 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	AOC 32-003: Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 AC Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	The October 2017 field visit determined that the current sampling location did not adequately address runoff from the SWMU (specifically PCB contamination at soil location 32-603602). A follow-up visit determined that the best solution would be to add gravel bags to direct flow towards the current sampler location. The gravel bags were installed in November 2018.
2022 Permit Status	Active Monitoring

35.1 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 at LA-SMA-5.362. Baseline monitoring is ongoing until one confirmation sample is collected from this SMA.

35.2 Site History

32-003 (3/28/2022)

AOC 32-003 is the location of a former transformer station (former structure 32-10), which consisted of three transformers, suspended approximately 20 ft off the ground on poles, on a wooden platform at former TA-32. AOC 32-003 was discovered northwest of the former SWMU 32-002(b) septic tank and directly south of former building 32-1 during the 1993 Phase I RFI at former TA-32. The pile of wood debris at this location was initially thought to be the location of the SWMU 32-002(a) wood-frame septic tank, but was determined to be from the wooden transformer platform. Contaminated soil was excavated during a 1996 VCA and the Site was backfilled with clean soil.

For investigation activities, refer to “Supplemental Remedy Completion Report for Upper Los Alamos Canyon Aggregate Area, Former Technical Area 32” (LANL 2012, 226638).

35.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 35.2-1.

Table 35.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
32-003	Transformer site (former location)	PCBs

35.3 Consent Order Soil Data

Decision-level data for AOC 32-003 consist of results from samples collected in 2008 and 2010. Analytical results from those samples are presented in Figures 35.3-1 through 35.3-4. Revision 1 of the 2011 remedy completion report concluded that the nature and extent of contamination are defined.

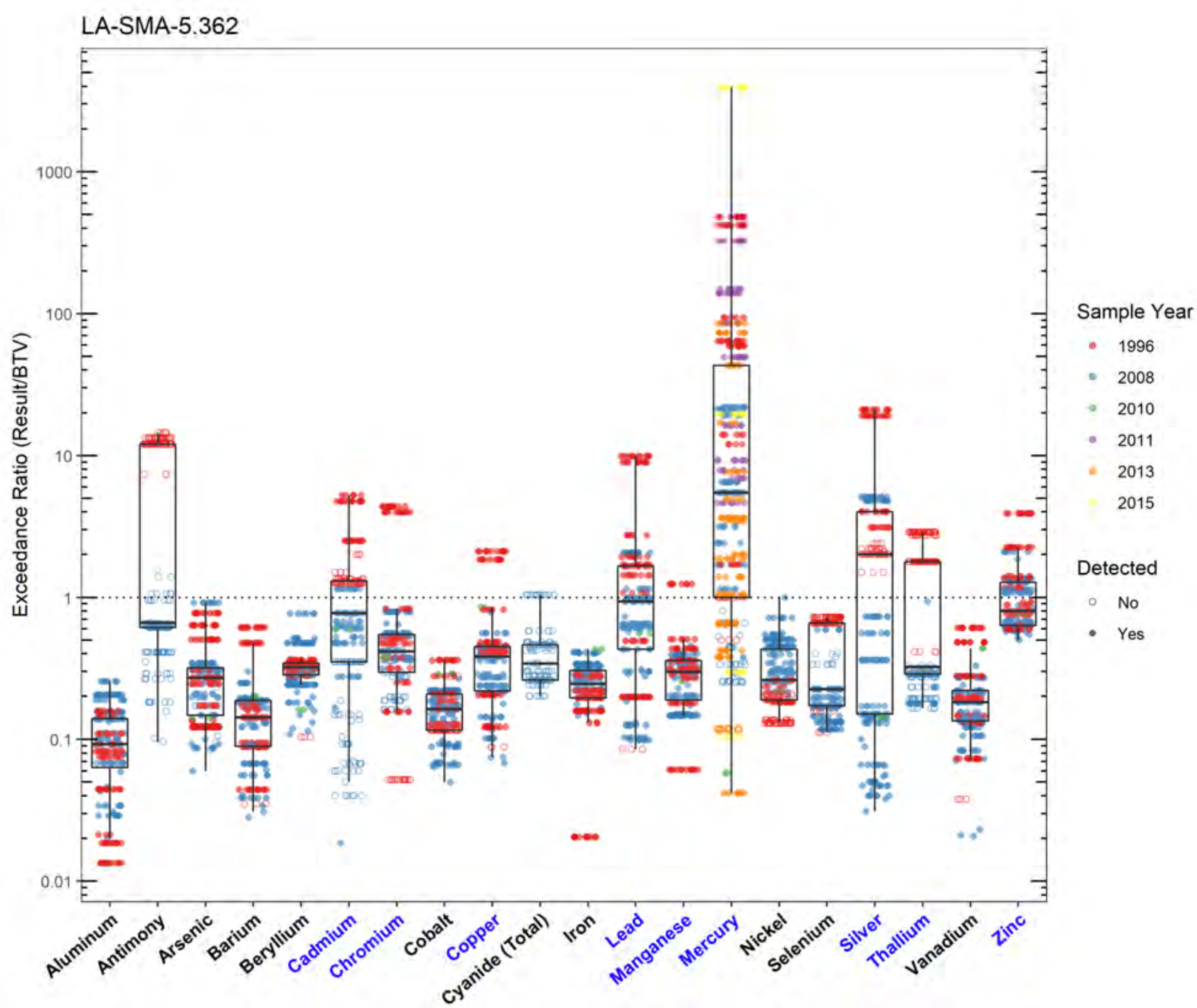


Figure 35.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-5.362

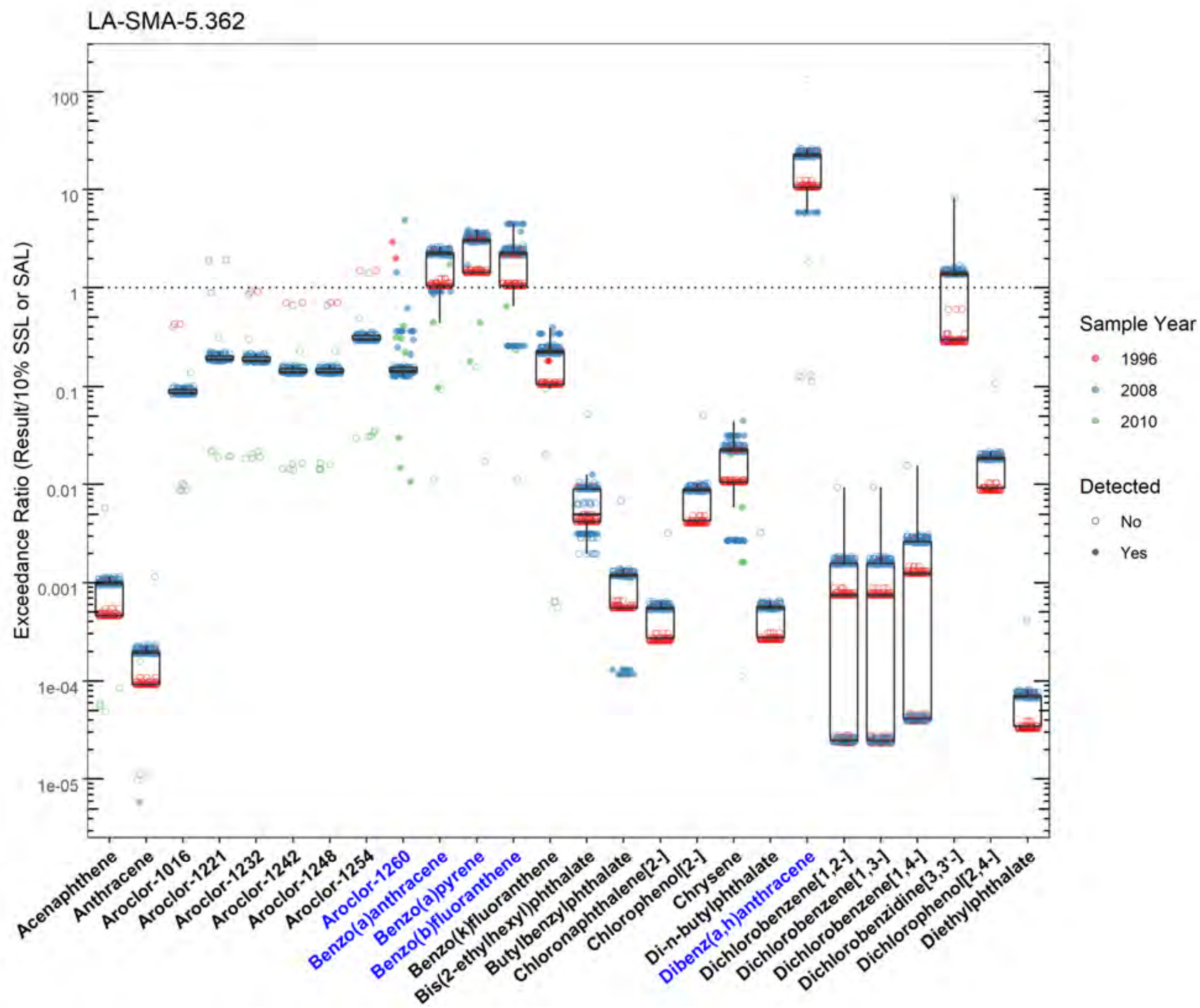


Figure 35.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.362 (Plot 1)

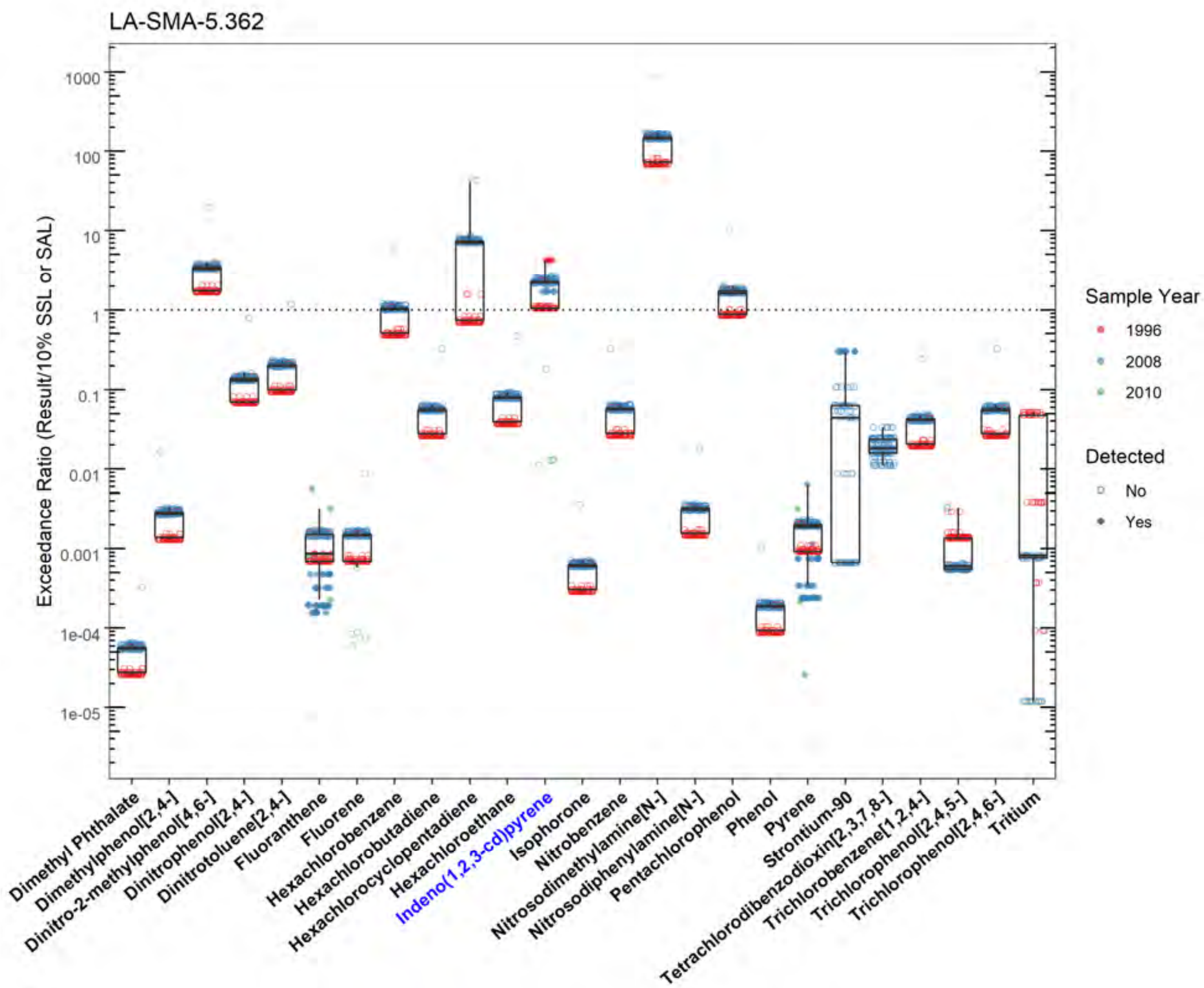


Figure 35.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.362 (Plot 2)

LA-SMA-5.362

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1260	LA-SMA-5.362	11096-82-5	Y	SSL_0.1	0.243	1.20	2008-09-30
Benzo(a)anthracene	LA-SMA-5.362	56-55-3	Y	SSL_0.1	0.153	0.320	2008-09-30
Benzo(a)pyrene	LA-SMA-5.362	50-32-8	Y	SSL_0.1	0.112	0.440	2008-09-30
Benzo(b)fluoranthene	LA-SMA-5.362	205-99-2	Y	SSL_0.1	0.153	0.690	2008-09-25
Cadmium	LA-SMA-5.362	Cd	Y	BTV	0.400	2.10	1996-05-06
Chromium	LA-SMA-5.362	Cr	Y	BTV	19.3	84.0	1996-03-28
Copper	LA-SMA-5.362	Cu	Y	BTV	14.7	31.0	1996-03-28
Dibenz(a,h)anthracene	LA-SMA-5.362	53-70-3	Y	SSL_0.1	0.0153	0.0900	2008-09-25
Indeno(1,2,3-cd)pyrene	LA-SMA-5.362	193-39-5	Y	SSL_0.1	0.153	0.640	1996-04-26
Lead	LA-SMA-5.362	Pb	Y	BTV	22.3	220	1996-03-28
Manganese	LA-SMA-5.362	Mn	Y	BTV	671	830	1996-05-06
Mercury	LA-SMA-5.362	Hg	Y	BTV	0.100	395	2015-05-05
Silver	LA-SMA-5.362	Ag	Y	BTV	1.00	21.0	1996-03-28
Thallium	LA-SMA-5.362	Tl	Y	BTV	0.730	1.30	1996-05-06
Zinc	LA-SMA-5.362	Zn	Y	BTV	48.8	190	1996-03-28

Figure 35.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-5.362

35.4 Stormwater Evaluation

35.4.1 Summary of Stormwater Results Compared to 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.

35.4.2 Assessment Unit and Stream Impairments

LA-SMA-5.362 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The PCB impairment may be Site-related, based on Site history.

35.5 Site-Specific Demonstration

35.5.1 Soil Data Summary

Aroclor-1260 is the only Site-related POC that exceeded the applicable screening value in soil data; it has not yet been measured in stormwater. The remaining exceedances of the applicable screening value in soil data are not Site-related POCs and will not be added to the SAP.

35.5.2 Stormwater Data Summary

No confirmation-monitoring data.

35.5.3 2022 Permit Status

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

35.5.4 Sampling and Analysis Plan

Table 35.5-1 is the proposed SAP for LA-SMA-5.362.

Table 35.5-1 Proposed SAP, LA-SMA-5.362

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment, Site history, soil data
DOC	Permit requirement
SSC	Permit requirement

36.0 LA-SMA-5.51

Associated Sites	02-003(a), 02-003(e), 02-004(a), 02-005, 02-006(b), 02-006(c), 02-006(d), 02-006(e), 02-008(a), 02-009(b), 02-011(a), 02-011(b), 02-011(c), 02-011(d), 02-014
Receiving Water	Los Alamos Canyon
Drainage Area	9.6 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	AOC 02-003(a): In Progress AOC 02-003(e): In Progress AOC 02-004(a): In Progress SWMU 02-005: In Progress AOC 02-006(b): In Progress AOC 02-006(c): In Progress SWMU 02-006(d): In Progress SWMU 02-006(e): In Progress SWMU 02-008(a): In Progress SWMU 02-009(b): In Progress AOC 02-011(a): In Progress AOC 02-011(b): In Progress AOC 02-011(c): In Progress AOC 02-011(d): In Progress SWMU 02-014: In Progress
2010 AC Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	The October 2017 field visit determined that PCB contamination in soil was not being monitored by the current SMA location (west of the reactor area, soil sampling locations 02-613291, 02-612376, 02-613290, 02-600561, 02-612377, 02-612376, 02-613622, and 02-612379); however, no sampler move was recommended.
2022 Permit Status	Active Monitoring

36.1 2010 Administratively Continued Permit Summary

Following the April 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 July 2014 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2014, 257905), corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume corrective action sample collection; monitoring is ongoing.

36.2 Site History

02-003(a) (9/3/2019)

AOC 02-003(a) was the site of the stack-gas valve house (former structure 02-19) and associated gaseous effluent vent lines (former lines 117, 118, and 119), as shown on engineering drawing C-1718. Line 117 was a 4-in. cast-iron line through which three other lines passed. Line 118 was a smaller diameter stainless-steel line that served a temporary gas vent or sampling line. Line 119 was a 3-in.

stainless-steel line which carried gaseous effluent from building 02-19 to the intersection with the Omega West Reactor vent line. This system was associated with the WBR, a homogeneous liquid-fueled reactor at TA-02 which was fueled by an enriched uranyl-salt compound. The stack-gas valve house and gaseous effluent vent lines were installed in 1944 and received off-gas from the WBR. The off-gas contained fission products, including cesium-137, strontium-90, technetium-99, and iodine-131.

The stack-gas valve house was primarily aboveground and was constructed of reinforced concrete, 11 ft x 9 ft x 10 ft high, with 18-in.-thick walls. From 1944 to 1948, gaseous effluent entered the stack-gas valve house from line 117 and was directed via line 118 to the southeast. Line 118 was used as a temporary gas vent until July 1948, when the condensate trap and line 119 [AOC 02-003(b)] became operational. Line 118 was left in place from 1948 until its removal in 1985. Lines 117 and 119, and the stack-gas valve house, remained in use until 1974 when they became inactive. They were removed and disposed of during D&D efforts in 1985 and 1986.

02-003(e) (9/3/2019)

AOC 02-003(e) is the former location of an Alloy 800-L holding tank (former structure 02-62) that was located near the former WBR at TA-02. The tank was installed in approximately 1944, adjacent to the stack-gas valve house (former structure 02-19), to collect reactor cooling water in the event of a cooling-coil breach.

The tank was housed in a 6 ft × 4 ft × 3 ft wooden shed and was operational until approximately 1974, when the WBR was placed in safe-shutdown mode. The holding tank was removed and disposed of during D&D activities in 1985 and 1986. During D&D, the tank reportedly showed no sign of having been used. However, reports of a surge tank overflowing indicate that an original tank may have been used and replaced during its active life.

02-004(a) (9/3/2019)

AOC 02-004(a) is the former OWR facility (building 02-01), and comprises the former OWR fuel handling area, cooling-liquid recirculating piping, gaseous effluent vent lines, the OWR material storage area, and the WBR at TA-02. The description of AOC 02-004(a) is divided into the following four areas: OWR, Fuel-Handling Area, Cooling-Liquid Recirculating Piping, and Gaseous Effluent Vent Line.

A 25-kilowatt fast-neutron research reactor, Clementine, was formerly located in the western third of building 02-01. The reactor was self-contained and operated from 1946 to 1953. Clementine was the precursor to the OWR and was dismantled in 1954. The OWR was built above the former Clementine Site in the western third of building 02-01. The OWR was an 8-megawatt water-cooled tank-type research reactor fueled by enriched solid uranium. It was put online in 1956 and operated until it was put on standby status in 1993. The reactor remained inactive until it was decommissioned, removed, and disposed of in 2003.

The OWR fuel-handing area consisted of a fuel pit and a closed recirculating system that serviced only the fuel pit. It was located adjacent to the OWR and was used for temporary storage of fuel rods before they were recycled.

The OWR operated with a cooling-liquid recirculating system that consisted of a series of closed-loop pipes in a 100-ft-long corridor that extended from the OWR west to the reactor facility equipment building [building 02-44, AOC 02-004(f)]. The water was routed through pumps, filters, and chillers in the reactor facility equipment building and returned to the reactor. The cooling tower (structure 02-49) was added in 1959 to supplement the building 02-44 chillers in this closed system. The recirculating system was active from 1956 to 1993, when it was put on standby status during the OWR shutdown.

Off-gas from the OWR was routed through the gaseous effluent vent line to a connection into line 119 on the east side of TA-02, where the effluent continued up to the mesa-top stack [structure 02-09, SWMU) 02-006(a)]. The gaseous effluent vent line teed off from the piping corridor between the OWR and OWR equipment building (02-44), as shown on engineering drawing C-10473.

OWR Material Storage Area

Operation of the OWR included the temporary storage of material (isotope columns, throughput port metal sleeves, etc.) that became activated during contact in the reactor neutron flux field. The material was stored in a structure adjacent to the guard quarters (building 02-04), located south of the reactor, to await final disposition. The material storage structure was present in as-built engineering drawing R-391 in 1958 and was removed in 2000.

WBR

WBR was the name collectively used to describe a series of three small research reactors (LOPO, HYPO, and SUPO), each progressively stronger in power output, located in the eastern third of the OWR building (02-01). The reactors each consisted generally of a 1-ft-diameter sphere filled with liquid fuel, and each was surrounded with neutron-reflecting blocks on a graphite base. The LOPO reactor became functional in May 1944, and was dismantled, removed, and disposed of in September 1944. The HYPO reactor became operational in December 1944 and was later upgraded to SUPO, which became operational in 1951. The SUPO was decommissioned, removed, and disposed of in 1990.

The reactors were surrounded by a 15-ft × 15-ft × 11-ft concrete biological shield. A shallow sand pit and a utility trench beneath the reactor sphere were used to collect liquids and gases from the reactor and transport them to support structures on the east side of building 02-01. Six external concrete structures and 435 ft of contaminated underground piping associated with the gaseous effluent vent line system were dismantled, removed, and disposed of in 1986. Cesium-137 contamination was found in the OWR building (02-01) near the sand pit and the utility trench during D&D activities. The soil was removed and disposed of during D&D activities.

At peak operation, the WBR generated approximately 0.25 L/min of excess gas containing some fission products. These gases were managed through the WBR gaseous effluent vent line system. Some radionuclides may have been deposited on the ground surface as gaseous effluent drifted from this system, and condensate from the gaseous effluent may have leaked from portions of the vent line system. These releases are identified as AOCs 02-003(a, b, c, and d).

The OWR experienced a cooling system water leak in January 1993. As a result, the reactor was put on standby status in 1993 and remained inactive until it was decommissioned in 2003.

02-005 (9/3/2019)

SWMU 02-005 consists of an area of potential soil contamination from airborne drift of potassium dichromate that was used to inhibit corrosion in the OWR cooling tower (former structure 02-49) at TA-02. SWMU 02-005 is located north and upgradient of all the former TA-02 structures. The cooling tower was installed and became operational in 1957. It was constructed with aluminum heat exchangers prone to corrosion, so potassium dichromate was added to the make-up water as a corrosion inhibitor. Stainless-steel heat exchangers were installed in 1975 to eliminate the use of potassium dichromate.

The cooling tower operated until the OWR was shut down in 1993; the cooling tower was decommissioned in 1995. In 2000, the cooling tower structure and equipment were removed and disposed of at TA-54. The remaining buried drainlines and drains were removed and disposed of at TA-54 or Envirocare in 2003.

02-006(b) (9/3/2019)

SWMU 02-006(b) was an acid-waste line that carried effluent from several laboratories in the center of the former OWR Building (former building 02-01) south to an outfall in Los Alamos Creek at TA-02. Construction of the OWR Building and associated laboratory rooms, sinks, and the acid-waste line [SWMU 02-006(b)] was completed in 1946 and became operational in 1956. The acid-waste line was a 95-ft long, 4-in.-diameter Durion pipe with Ookum fittings and lead joints. The outfall in Los Alamos Creek was covered with a 0.25-in. × 0.25-in. mesh rodent screen as shown in Engineering Drawings 4-C-701 and C-1750. The acid-waste line was reportedly taken out of service in the 1960s; however, there is no record of its removal at that time. The SWMU 02-006(b) waste line and all connecting lines were removed and disposed of during D&D activities in 2003.

A 1990 Environmental Safety and Health Division memorandum indicates that the OWR acid-waste line was proposed to be connected to the new RLW line that would connect the drains from south side of the OWR directly to the acid pit/transfer pump [former structure 02-53, AOC 02-004(e)] for transfer to the TA-50 RLWTF for treatment. There is no documentation confirming that this was done.

02-006(c) (9/3/2019)

AOC 02-006(c) was a sanitary sewer line that served office areas in the OWR Building (former building 02-01) to the septic tank (structure 02-43, SWMU 02-007 at TA-02. The 1990 SWMU Report identified AOC 02-006(c) as a drainline that was connected to the chemical room in the OWR Building (former building 02-01) and several OWR laboratories. This was incorrect; closer review of the available engineering drawings, including C-1703 and C-1750, showed that AOC 02-006(c) was the sanitary sewer line that served the office or central portion of the OWR Building, 02-01 to the septic tank (structure 02-43, SWMU 02-007 at TA-02. This drainline was separate from the OWR acid-waste line [SWMU 02-006(b)] that connected to the OWR laboratories.

The AOC 02-006(c) sanitary sewer line was a 6-in. clay drainline that received discharges from the evaporative cooler and drinking fountain associated with the control room, restrooms, office areas, and groundwater seepage from a sump in the building 02-01 basement, and discharged to the AOC 02-007 septic system west of the OWR Building. In the mid-1970s, sanitary discharges associated with AOC 02-006(c) were tied into the TA-41 WWTP west of TA-02; however, the drainline continued to discharge groundwater seepage from the OWR Building basement to the AOC 02-007 septic system.

During the Phase I D&D activities conducted at TA-02 in 1985 and 1986, the 6-in. clay drainline [AOC 02-006(c)] was disconnected from septic tank 02-43 (AOC 02-007) as the tank was being removed. The AOC 02-006(c) drainline was tied into a new 6-in. PVC outlet drainline and continued to discharge seepage from the OWR Building basement to a new outfall into the Los Alamos Creek [AOC 02-008(c)(i)].

The OWR experienced a cooling-system water leak in January 1993. As a result, the reactor was put on standby status in 1993 and remained inactive until it was decommissioned in 2003. The AOC 02-006(c) sewer line was removed and disposed of during D&D activities in 2003.

02-006(d) (4/12/2017)

AOC 02-006(d) is a duplicate of 02-006(c).

02-006(e) (9/3/2019)

AOC 02-006(e) was a sump (former structure 02-26) and outlet drainline that received effluent from the OWR Building (former building 02-01) reactor room floor drains and mezzanine and discharged to an outfall Los Alamos Creek at TA-02. The AOC 02-006(e) drainline became operational in 1944. A second collection sump (former structure 02-82) was added to the AOC 02-006(e) drainline in 1990, as shown on engineering drawing C-45924. A drainline from the structure 02-82 sump was connected directly to the AOC 02-004(e) acid pit/transfer sump (former structure 02-53), possibly replacing the AOC 02-006(e) direct discharge to Los Alamos Creek. The AOC 02-006(e) drainlines and sumps were located south of the OWR Building, in close proximity to the AOC 02-011(a)(vii) drainline and outfall.

The OWR experienced a cooling-system water leak in January 1993. As a result, the reactor was put on standby status in 1993 and remained inactive until it was decommissioned in 2003. The original sump (former structure 02-26) and the original drainline remained in place until they were removed and disposed of during D&D activities in 2003. The second sump (former structure 02-82) and the drainline to former structure 02-53 [AOC 02-004(e)] were also removed during D&D activities in 2003.

02-008(a) (9/3/2019)

SWMU 02-008(a) is a former NPDES-permitted outfall (EPA 03A020) and associated drainline that discharged cooling water blowdown from the OWR cooling tower (structure 02-49) to an outfall [AOC 02-011(e)] in Los Alamos Creek at TA-02. Equipment building 02-44, which became operational in 1954, had floor drains that discharged to Los Alamos Creek through the SWMU 02-008(a) outfall. Modifications to the OWR cooling water system, with the addition of the cooling tower (former structure 02-49), were made in 1957, as shown on engineering drawing C-21327. The drain from the OWR equipment building was connected to the cooling tower outfall in 1959, as shown on engineering drawing C-48768. The outfalls in Los Alamos Creek were physically the same [location of SWMU 02-008(a)]. The cooling tower facility began use of potassium dichromate to control corrosion of aluminum heat exchangers in 1959. The aluminum heat exchangers were replaced by stainless-steel exchangers in 1975, eliminating the use of potassium dichromate. The shutdown of the OWR in 1993 placed the cooling tower on standby status; in 1995, all liquid waste was drained from the system. In 2000, the cooling tower structure and equipment were decommissioned and removed. In 2003, the remaining buried pipes and drains were removed. The outfall (EPA 03A020) was removed from the LANL NPDES permit in July 1990.

02-009(b) (9/3/2019)

SWMU 02-009(b) is an area of radioactively contaminated soil (beta/gamma radiation) located north of the former stack-gas valve house (structure 02-19) and the east bridge at TA-02. SWMU 02-009(b) was identified during radiological surveys conducted across the area during the 1985–1986 D&D of the WBR and associated facilities. Detectable beta/gamma radioactivity was identified in the area used for truck staging during the D&D activities and within a fenced area north of former building 02-19.

02-011(a) (9/3/2019)

AOC 02-011(a) consists of 11 inactive drains, drainline segments, and associated former outfalls at TA-02. These drains and drainlines discharged either directly or indirectly to Los Alamos Creek, and were associated with former building 02-01, the former OWR facility. AOC 02-011(a) consists of the following subunits:

i. An approximately 50-ft-long concrete storm drain (also described as a concrete flume), located northwest of the former OWR (building 02-01), that drained into a drop inlet/catch basin (structure 02-36), as shown on engineering drawing R-5102, sheet 2 of 2. There is no information indicating that the drain handled anything but stormwater.

ii. A 24-in.-diameter, 8-ft-long underground CMP between catch basin 02-36 and catch basin 02-27. There is no information that this drain line handled anything but stormwater.

iii. An 85-ft-long concrete storm drain (e.g., concrete flume), located northwest of the former OWR (building 02-01), that drains into catch basin 02-27. The drain was reportedly used periodically for discharge of water from the fuel transfer pit. Contaminated aluminum shards were commonly discharged with the water and settled into the drain. The storm drain was reportedly cleaned out in 1970.

iv. A 15-in.-diameter, 15-ft-long concrete storm drain west of the former OWR (building 02-01) that drains into catch basin 02-28 (surface inlet). There is no information that the drain handled anything but stormwater.

v. A 24-in.-diameter, 30-ft-long concrete storm drain between catch basins 02-27 and 02-28. This drain may have handled the fuel transfer pit water coming from the concrete flume, with associated contaminated aluminum shards.

vi. A 30-in.-diameter, 75-ft-long CMP between a catch basin (structure 02-28) and Los Alamos Creek. This drainline may have handled the fuel transfer pit water coming from the concrete flume, with associated contaminated aluminum shards.

vii. AOC 02-011(a)(vii), a 6-in.-diameter, 18-ft-long pipe between the OWR Building and the salvage basin (structure 02-026) and Los Alamos Creek, is a duplicate of AOC 02-006(e), as noted in the 1990 SWMU report.

viii. An 18-in.-diameter, 75-ft-long CMP between the former OWR (building 02-01) catch basin (unnumbered structure within building 02-01) and Los Alamos Creek. There is no information that this drainline handled anything but stormwater runoff. The AOC 02-011(a)(viii) storm drain was removed in 2003.

ix. A 3-in.-diameter, 75-ft-long drainline between the former OWR (building 02-01) and the outfall to Los Alamos Creek. Wastewater system design memoranda indicate that floor drains from the eastern side of the WBR area drained to this outfall before 1990. The AOC 02-011(a)(ix) drainline was removed in 2003.

x. A 12-in.-diameter, 30-ft-long concrete storm drain located northeast of the former OWR (building 02-01) that discharged to Los Alamos Creek through a series of concrete ditches and a CMP along the east side of the former OWR Building. The total length of the drain and ditches to Los Alamos Creek is approximately 130 ft. There is no information that this rain handled anything but stormwater. The AOC 02-011(a)(x) storm drains and concrete ditches were removed in 2003

xi. AOC 02-011(a)(xi), a 4-in.-diameter, 95-ft-long drainline between the former OWR (building 02-01) and Los Alamos Creek, is a duplicate of the OWR acid-waste line[SWMU 02-006(b)].

The AOC 02-011(a) drains and drainlines date from approximately the time of construction of the reactor building in 1944. Drains and drainlines from operational areas of the facility may have received effluent until the 2003 decontamination and decommissioning (D&D) of the OWR facility; however, the reactor was inactive from 1993 to 2003. The AOC 02-011(a)(viii) drainline, (ix) drainline, and (x) storm drain were removed during 2003 D&D activities; the remaining storm drains, drainlines, or some portion of them, remain in place.

02-011(b) (9/3/2019)

AOC 02-011(b) consists of two drains, drainlines, and associated outfalls associated with the former stack-gas valve house [former structure 02-19 (AOC 02-003(a)] at TA-02. One drainline was a 9-ft-long ×

15-in.-diameter CMP between the stack-gas valve house and the catch basin (structure 02-35). The other drainline was a 9-ft-long × 24-in.-diameter CMP that drained from the catch basin (structure 02-35) to Los Alamos Creek outside the east fence around the former facility. The drains, drainlines, and associated outfalls were presumably installed in 1944 when the stack-gas valve house [AOC 02-003(a)] was constructed. The stack-gas valve house operated through 1974 when it was deactivated; the structure was subsequently removed during 1985 D&D activities. The actual purpose of the drainlines and catch basin is not documented; however, there is no information to indicate these drains and drainlines handled anything but stormwater. The drains and drainlines were removed in 2003.

02-011(c) (9/3/2019)

AOC 02-011(c) consists of two drains, drainlines, and associated outfalls associated with the former stack-gas valve house [former structure 02-19 (AOC 02-003(a)] at TA-02. One drainline was a 9-ft-long × 15-in.-diameter CMP between the stack-gas valve house and the catch basin (structure 02-35). The second drain line was a 9-ft-long × 24-in.-diameter CMP that drained from the catch basin (structure 02-35) to Los Alamos Creek outside the east fence around the former facility. The drains, drainlines, and associated outfalls were presumably installed in 1944 when the stack-gas valve house [AOC 02-003(a)] was constructed. The stack-gas valve house operated through 1974 when it was deactivated; the structure was subsequently removed during 1985 D&D activities. The actual purpose of the drainlines and catch basin is not documented; however, there is no information to indicate these drains and drainlines handled anything but stormwater. The drains and drainlines were removed in 2003.

02-011(d) (9/3/2019)

AOC 02-011(d) is a former NPDES-permitted outfall and associated drainline that discharged effluent from the former OWR equipment building [former building 02-44, AOC 02-004(f)] to Los Alamos Creek at TA-02. The discharge consisted primarily of regenerate water from the ion-exchange system. The outfall drainline ran from the equipment building south-southwest, past the west side of the cooling tower (former structure 02-49), to Los Alamos Creek. The outfall at AOC 02-011(d) became operational in 1949. The AOC 02-011(d) drainline was rerouted to discharge through the former OWR RLW storage tanks 02-53, 02-54, and 02-55 [AOCs 02-004(b,c,d)], which discharged to the liquid acid-waste line tied to the TA-50 RLWTF, beginning in 1963. The outfall was removed from the NPDES permit in 1995. The drainline was removed and disposed of offsite during the 2003 Omega West decommissioning project.

02-014 (6/3/2021)

SWMU 02-014 consists of three former electrical transformer stations (former structures 02-31, 02-45, and 02-51) that served buildings in TA-02. This Site was not identified as a SWMU or AOC in the 1990 SWMU Report, but was identified during efforts to discover the source of PCB contamination detected during Phase II Consent Order investigation sampling at AOC 02-011(a)(ii), a former storm drain. Notification of a Newly Discovered Solid Waste Management Unit was submitted to the NMED on April 26, 2018. Historical records, including engineering drawings and photographs, were reviewed, and three potential sources of PCBs were identified.

- Former structure 02-31 was an electrical transformer station located 40 ft behind former building 02-01. The transformer station was built in 1944 and removed in 1950.
- Former structure 02-45 was built in 1954 to serve former building 02-44, and consisted of three transformers approximately 14 ft above the ground, mounted across two telephone poles. The

transformer station was replaced with another transformer station (former structure 02-51) in 1961.

- Former structure 02-51 was an electrical transformer station, located approximately 20 ft southwest of former structure 02-31 and 20 ft southeast of former structure 02-45. Historical records indicated that PCB-containing transformer oil was used in equipment at this former transformer station. Structure 02-51 was constructed in 1961 and demolished in 2003.

For investigation activities for Sites 02-003(a), 02-003(e), 02-004(a), 02-005, 02-006(b), 02-006(c), 02-006(d), 02-006(e), 02-008(a), 02-009(b), 02-011(a), 02-011(b), 02-011(c), 02-011(d), refer to “Phase II Investigation Report for Middle Los Alamos Canyon Aggregate Area, Revision 2” (N3B 2018, 700091). For investigation activities for 02-014, refer to “Addendum to the Phase II Investigation Report for Middle Los Alamos Canyon Aggregate Area, Revision 1” (N3B 2020, 700846).

36.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 36.2-1.

Table 36.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
02-003(a)	Valve house and gaseous effluent vent lines	Cesium-137, strontium-90, technetium-99, iodine-131
02-003(e)	Soil contamination associated with former holding tank	Sodium-24, manganese-86
02-004(a)	Omega West Reactor facility	Uranium, plutonium, tritium, mercury, metals, asbestos
02-005	Soil contamination from drift loss, cooling tower blowdown	Hexavalent chromium
02-006(b)	Former acid waste line	Radionuclides, inorganic and organic chemicals
02-006(c)	Drainline	Inorganic and organic chemicals
02-006(d)	Sanitary wastewater	Inorganic and organic chemicals
02-006(e)	Former sump	Radionuclides
02-008(a)	Former permitted outfall from structure 02-49	Hexavalent chromium, arsenic, aluminum
02-009(b)	Non-intentional release	Radionuclides
02-011(a)	Storm drain and outfall	Radionuclides, aluminum
02-011(b)	Former drains and associated potential soil contamination	No known POCs
02-011(c)	Former storm drain	No known POCs
02-011(d)	Outfall from building 02-44	Activation products (antimony-124, chromium-51, cobalt-60, manganese-56, sodium-24, zinc-65)
02-014	Former transformer stations	PCBs

36.3 Consent Order Soil Data

Decision-level data for AOC 02-003(a), AOC 02-003(e), SWMU 02-009(b), AOC 02-011(b) consist of results from samples collected in 2000, 2007, and 2010. Revision 2 of the 2018 Phase II IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for AOC 02-004(a) consist of results from samples collected in 2003, 2007, and 2010. Revision 2 of the 2018 Phase II IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for SWMU 02-005 consist of results from samples collected in 2007, 2010, and 2011. Revision 2 of the 2018 Phase II IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for SWMU 02-006(b) and AOC 02-006(e) consist of results from samples collected in 2000, 2003, 2007, and 2010. Revision 2 of the 2018 Phase II IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for AOC 02-006(c) and AOC 02-011(c) consist of results from samples collected in 2007 and 2010. Revision 2 of the 2018 Phase II IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

AOC 02-006(d) is a duplicate of 02-006(c). All investigation results for AOC 02-006(d) are addressed under AOC 02-006(c).

Decision-level data for SWMU 02-008(a) consist of results from samples collected at in 2000 and 2007. Revision 2 of the 2018 Phase II IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

AOC 02-011(a)(i,ii,iii,iv,v,vi) is located near the west end of the former OWR. Because each segment of the AOC 02-011(a) storm drain system was interconnected, the investigation data for the six segments were combined for evaluations.

- Decision-level data for AOC 02-011(a)(i,ii,iii,iv,v,vi) consist of results from samples collected in 2007 and 2010.
- Decision-level data for AOC 02-011(a)(viii) consist of results from samples collected in 2000, 2003, 2007, and 2010.
- Decision-level data for AOC 02-011(a)(ix) consist of results from samples collected in 2000, 2003, 2007, and 2010.
- Decision-level data for AOC 02-011(a)(x) consist of results from samples collected in 2000, 2003, 2007, and 2010.

The 2018 Phase II IR, revision 2, concluded that the lateral and vertical extent of inorganic, organic, and radionuclide contaminants is defined or no further sampling for extent is warranted at AOC 02-011(a)(i,ii,iii,iv,v,vi,viii,ix, and x). Revision 2 of the 2018 Phase II IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted for AOC 02-011(a).

Decision-level data for AOC 02-011(d) consist of results from samples collected in 2000, 2007, 2010, and 2017. Revision 2 of the 2018 Phase II IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for SWMU 02-014 consist of results from samples collected in 2007, 2010, 2011, 2017 and 2018. The 2020 addendum to the Phase II IR, Revision 1, concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results from all decision-level soil samples collected for LA-SMA-5.51 are presented in Figures 36.3-1 through 36.3-4.

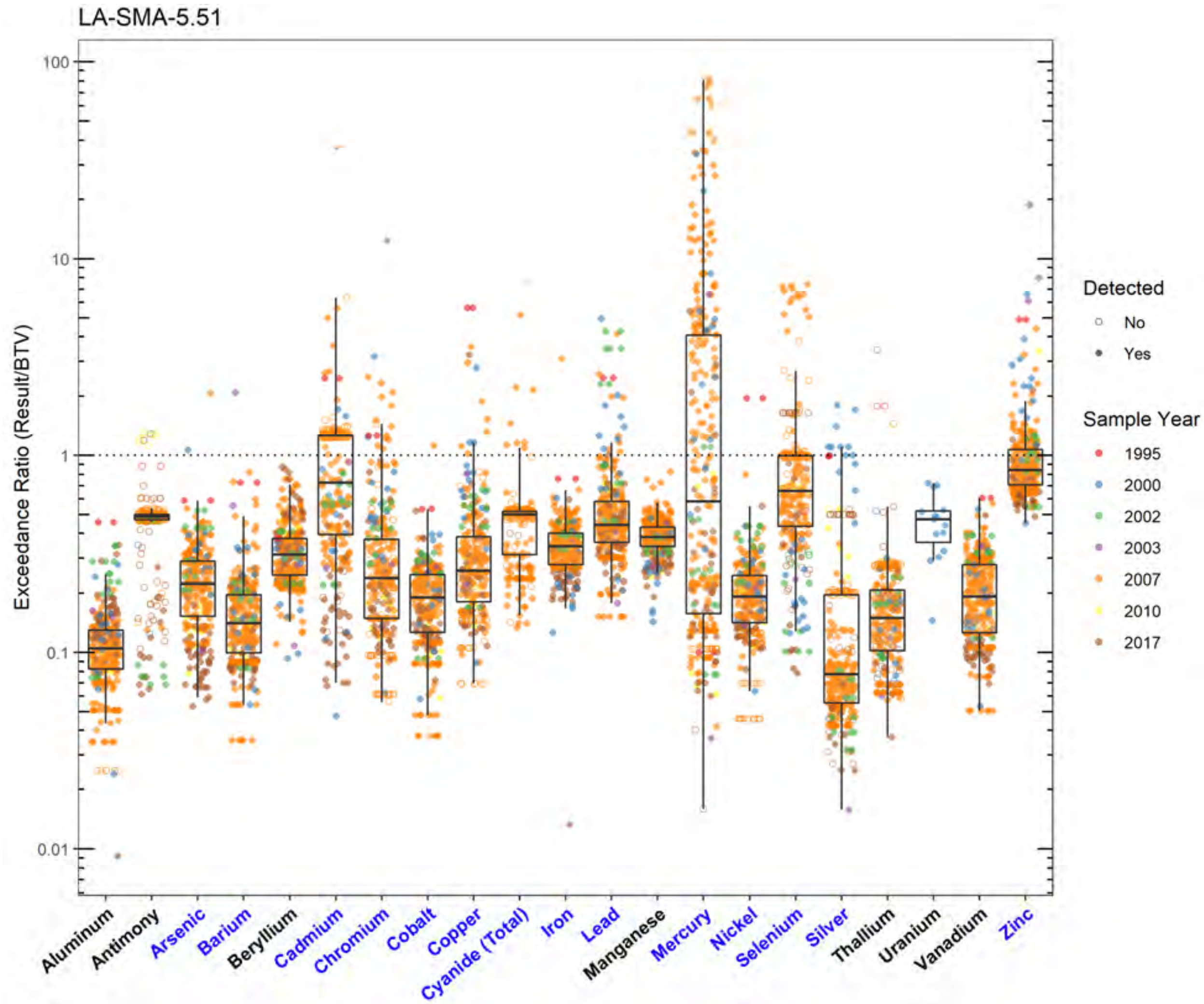


Figure 36.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-5.51

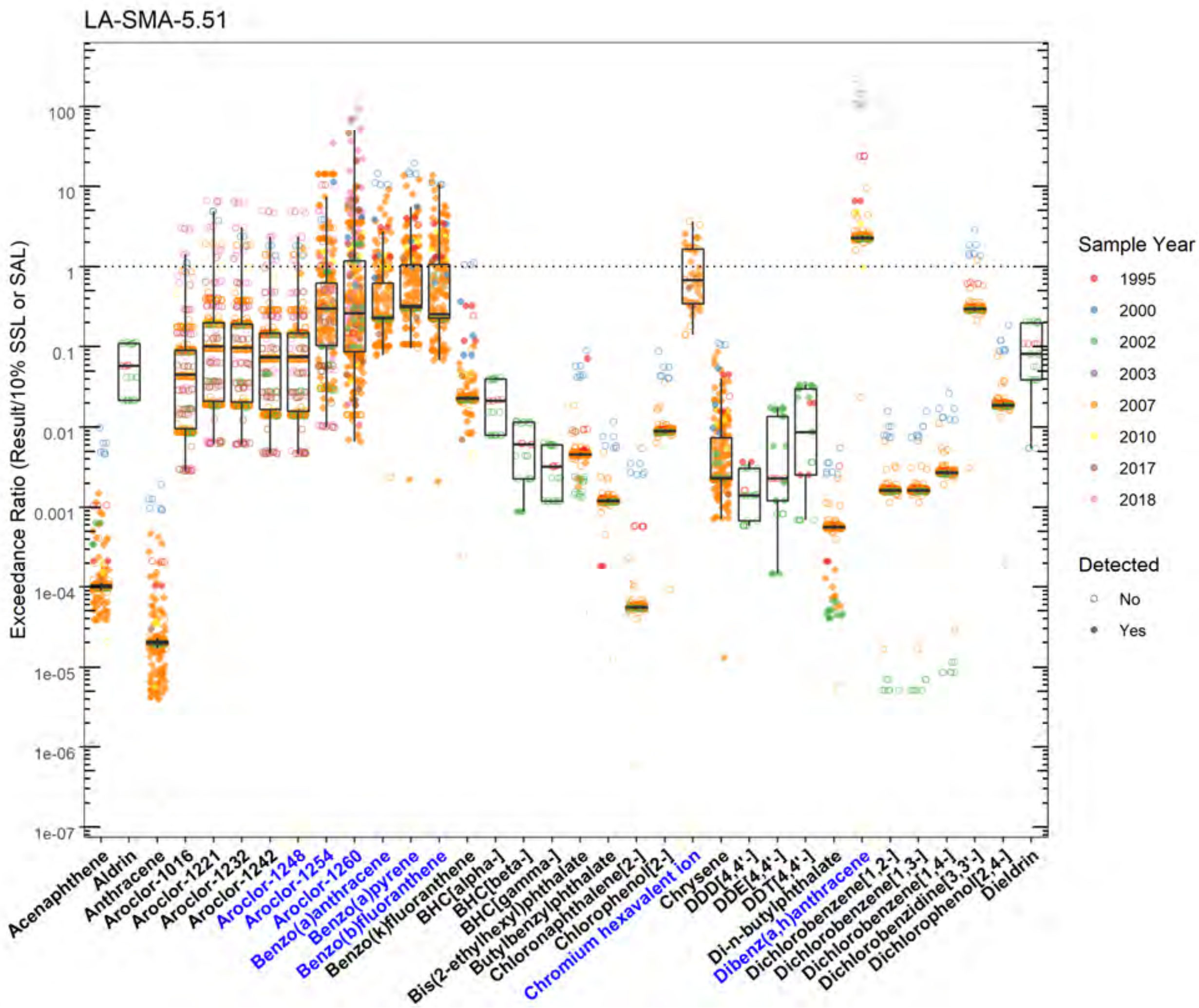


Figure 36.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.51 (Plot 1)

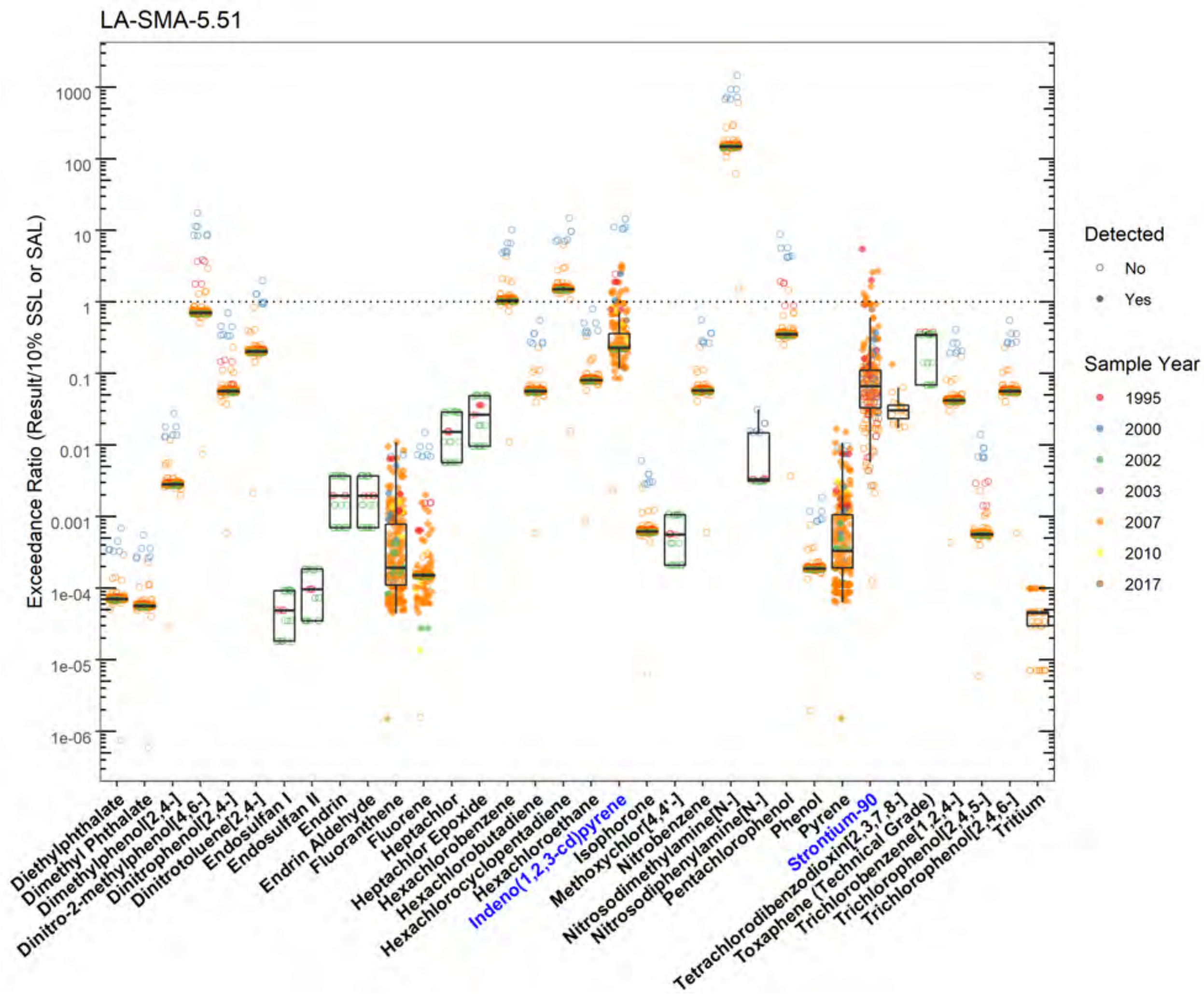


Figure 36.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.51 (Plot 2)

LA-SMA-5.51

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1248	LA-SMA-5.51	12672-29-6	Y	SSL_0.1	0.243	0.408	2007-08-08
Aroclor-1254	LA-SMA-5.51	11097-69-1	Y	SSL_0.1	0.114	3.93	2018-01-30
Aroclor-1260	LA-SMA-5.51	11096-82-5	Y	SSL_0.1	0.243	23.9	2018-01-10
Arsenic	LA-SMA-5.51	As	Y	BTV	8.17	16.9	2007-08-23
Barium	LA-SMA-5.51	Ba	Y	BTV	295	614	2003-07-11
Benzo(a)anthracene	LA-SMA-5.51	56-55-3	Y	SSL_0.1	0.153	1.40	2007-08-16
Benzo(a)pyrene	LA-SMA-5.51	50-32-8	Y	SSL_0.1	0.112	1.51	2007-08-16
Benzo(b)fluoranthene	LA-SMA-5.51	205-99-2	Y	SSL_0.1	0.153	2.10	2007-08-16
Cadmium	LA-SMA-5.51	Cd	Y	BTV	0.400	14.8	2007-08-03
Chromium	LA-SMA-5.51	Cr	Y	BTV	19.3	240	2000-09-13
Chromium hexavalent ion	LA-SMA-5.51	Cr(VI)	Y	SSL_0.1	0.305	0.775	2007-09-12
Cobalt	LA-SMA-5.51	Co	Y	BTV	8.64	9.67	2007-08-23
Copper	LA-SMA-5.51	Cu	Y	BTV	14.7	82.4	1995-08-01
Cyanide (Total)	LA-SMA-5.51	CN(TOTAL)	Y	BTV	0.500	2.59	2007-09-17
Dibenz(a,h)anthracene	LA-SMA-5.51	53-70-3	Y	SSL_0.1	0.0153	0.100	1995-08-09
Indeno(1,2,3-cd)pyrene	LA-SMA-5.51	193-39-5	Y	SSL_0.1	0.153	0.501	2007-08-16
Iron	LA-SMA-5.51	Fe	Y	BTV	21500	66400	2007-08-23
Lead	LA-SMA-5.51	Pb	Y	BTV	22.3	110	2000-09-14
Mercury	LA-SMA-5.51	Hg	Y	BTV	0.100	8.20	2007-08-22
Nickel	LA-SMA-5.51	Ni	Y	BTV	15.4	30.1	1995-08-01
Selenium	LA-SMA-5.51	Se	Y	BTV	1.52	11.3	2007-09-14
Silver	LA-SMA-5.51	Ag	Y	BTV	1.00	1.80	2000-09-15
Strontium-90	LA-SMA-5.51	Sr-90	Y	SAL_0.1	1.50	8.13	1995-03-21
Zinc	LA-SMA-5.51	Zn	Y	BTV	48.8	914	2003-07-11

Figure 36.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-5.51

36.4 Stormwater Evaluation

36.4.1 Summary of Stormwater Results Compared to 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.

36.4.2 Assessment Unit and Stream Impairments

LA-SMA-5.51 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The impairments may be Site-related, based on Site history.

36.5 Site-Specific Demonstration

36.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: barium, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chromium (hexavalent ion), dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, iron, and strontium-90.

The remaining Site-related POCs that exceeded the applicable 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.

36.5.2 Stormwater Data Summary

No data for the current monitoring stage have been collected. Gross alpha exceeded TALs in the previous monitoring stage and there was no paired SSC result to confirm whether it was below BTVs. Therefore, it will be added to the SAP.

Mercury and PCBs exceeded the TAL and BTV in the previous monitoring stage and will be added to the SAP.

36.5.3 2022 Permit Status

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

36.5.4 Sampling and Analysis Plan

Table 36.5-1 is the proposed SAP for LA-SMA-5.51.

Table 36.5-1 Proposed SAP, LA-SMA-5.51

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment, Site history, and stormwater data
Total mercury and iron	Impairment (mercury), Site history (metals), soil data, stormwater data
Total PCBs	Impairment, Site history (organics), and soil data
Asbestos	Site history
Hexavalent chromium	Site history and soil data
Strontium-90	Site history (radionuclides) and soil data
SVOCs	Site history (organics) and soil data
Dissolved barium	Site history (metals) and soil data
DOC	Permit requirement
SSC	Permit requirement

37.0 LA-SMA-5.52

Associated Sites	02-003(b), 02-007, 02-008(c)
Receiving Water	Los Alamos Canyon
Drainage Area	1.24 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	AOC 02-003(b): In Progress SWMU 02-007: In Progress AOC 02-008(c): In Progress
2010 AC Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the October 2017 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

37.1 2010 Administratively Continued Permit Summary

Following the April 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 to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600980), corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume corrective action sample collection, and monitoring is ongoing.

37.2 Site History

02-003(b) (9/3/2019)

AOC 02-003(b) consists of the former condensate trap (structure 02-048) and an associated stainless-steel gaseous effluent vent line (line 119) that were part of the off-gas system for the WBR, a homogeneous liquid-fueled reactor fueled by an enriched uranyl-salt compound, at TA-02. The WBR off-gas system consisted of the stack-gas valve house (former structure 02-19), the condensate trap, a mesa-top vent stack located above TA-02 at TA-61, and associated stainless-steel gaseous effluent vent lines.

The condensate trap was a concrete-manhole superstructure and a small-diameter standpipe. It was located at the lowest point of line 119, between the stack-gas valve house [structure 02-19, AOC 02-003(a)] and the delay tanks [structure 02-131, AOC 02-003(c)], as shown on engineering drawing C-1718. Line 119 consisted of an approximately 78-ft-long 3-in. stainless steel line that ran east-west from the stack-gas valve house (structure 02-19) to the condensate trap, and another 205-ft-long section of 3-in. stainless-steel line that ran north-south from the condensate trap to the delay tanks.

Line 119 continued from the delay tanks to the junction with the main OWR gaseous effluent vent line and up to the mesa-top stack (structure 02-09) and French drain [SWMU 02-006(a)] located at TA-61. The upper portion of the gaseous effluent vent line (line 119) from the delay tanks to the mesa-top stack is addressed as AOC 02-003(d).

The stack-gas valve house and gaseous effluent vent lines were installed in 1944 and received off-gas from the WBR. The off-gas contained gaseous fission products, including cesium-137, strontium-90, technetium-99, and iodine-131.

The condensate trap and line 119 from the stack-gas valve house (structure 02-19) to the delay tanks remained in use through 1974. The units were inactive from 1974 to 1985, and were removed and disposed of during D&D efforts in 1985 and 1986.

02-007 (9/3/2019)

SWMU 02-007 is a former septic system that received effluent from drains in the OWR facility (former building 02-01) at TA-02. The septic system consisted of a septic tank (former structure 02-43), an inlet drainline, an overflow outlet drainline, a leach field [SWMU 02-009(c)], and an outfall in Los Alamos Creek. The septic tank (former structure 02-43) was constructed of reinforced concrete and measured 13 ft long × 8 ft wide × 6 ft deep. The SWMU 02-007 septic system was installed in 1944 and removed in 1985.

Overflow from the tank discharged to the stream channel through a 6-in.-diameter VCP. The actual outfall location is not known. Laboratory wastes were discharged to the septic system. In 1947, the chemical waste shack [former building 02-03, AOC 02-010] was connected to the septic system, and remained connected until the structure was decommissioned in 1971. The septic tank, overflow outfall, and surrounding soils were removed and disposed of in 1986.

02-008(c) (9/3/2019)

AOC 02-008(c) consists of two former unpermitted outfalls and associated drainlines [AOC 02-008(c)(i) and AOC 02-008(c)(ii)] that received discharges of ground water seepage from the basement of the OWR Building (former building 02-01) at TA-02.

During the Phase I D&D activities conducted at TA-02 in 1985 and 1986, the 6-in. clay drainline [AOC 02-006(c)] was disconnected from septic tank 02-43 (AOC 02-007) as the tank was being removed. The AOC 02-006(c) drainline was tied into a new 6-in. PVC outlet drainline, and continued to discharge groundwater seepage from the OWR Building basement to a new outfall to the Los Alamos Creek [AOC 02-008(c)(i)].

In 1988, the AOC 02-008(c)(i) outfall drainline became plugged and was abandoned in place. A second drainline was installed to discharge groundwater seepage from the basement sump of the OWR Building (02-01) to Los Alamos Creek; the AOC 02-008(c)(ii) outfall located 100 ft west of the AOC 02-008(c)(i) outfall.

The OWR experienced a cooling system water leak in January 1993. As a result, the reactor was put on standby status in 1993 and remained inactive until it was decommissioned in 2003. Both AOC 02-008(c) drainlines were removed in 2003 during D&D activities implemented at the Site.

For investigation activities at the Sites, refer to “Phase II Investigation Report for Middle Los Alamos Canyon Aggregate Area, Revision 2” (N3B 2018, 700091).

37.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 37.2-1.

Table 37.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
02-003(b)	Gaseous effluent condensate	Fission products, cesium-137, strontium-90, technetium-99, iodine-131
02-007	Septic system	Inorganic and organic chemicals, strontium-90, cesium-137, uranium
02-008(c)	Outfall from building 02-01	Chromium, mercury, uranium, plutonium, fission products

37.3 Consent Order Soil Data

Decision-level data for AOC 02-003(b) consist of results from samples collected in 2000, 2007, and 2010. Revision 2 of the 2018 Phase II IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for SWMU 02-007 consist of results from samples collected in 2007 and 2010. Revision 2 of the 2018 Phase II IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for 02-008(c) consist of results from samples collected in 2007 and 2010, and decision-level data for AOC 02-008(c)(ii) consist of results from samples collected in 2007 and 2010. Revision 2 of the 2018 Phase II IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results from all decision-level soil samples collected for LA-SMA-5.52 are presented in Figures 37.3-1 through 37.3-4.

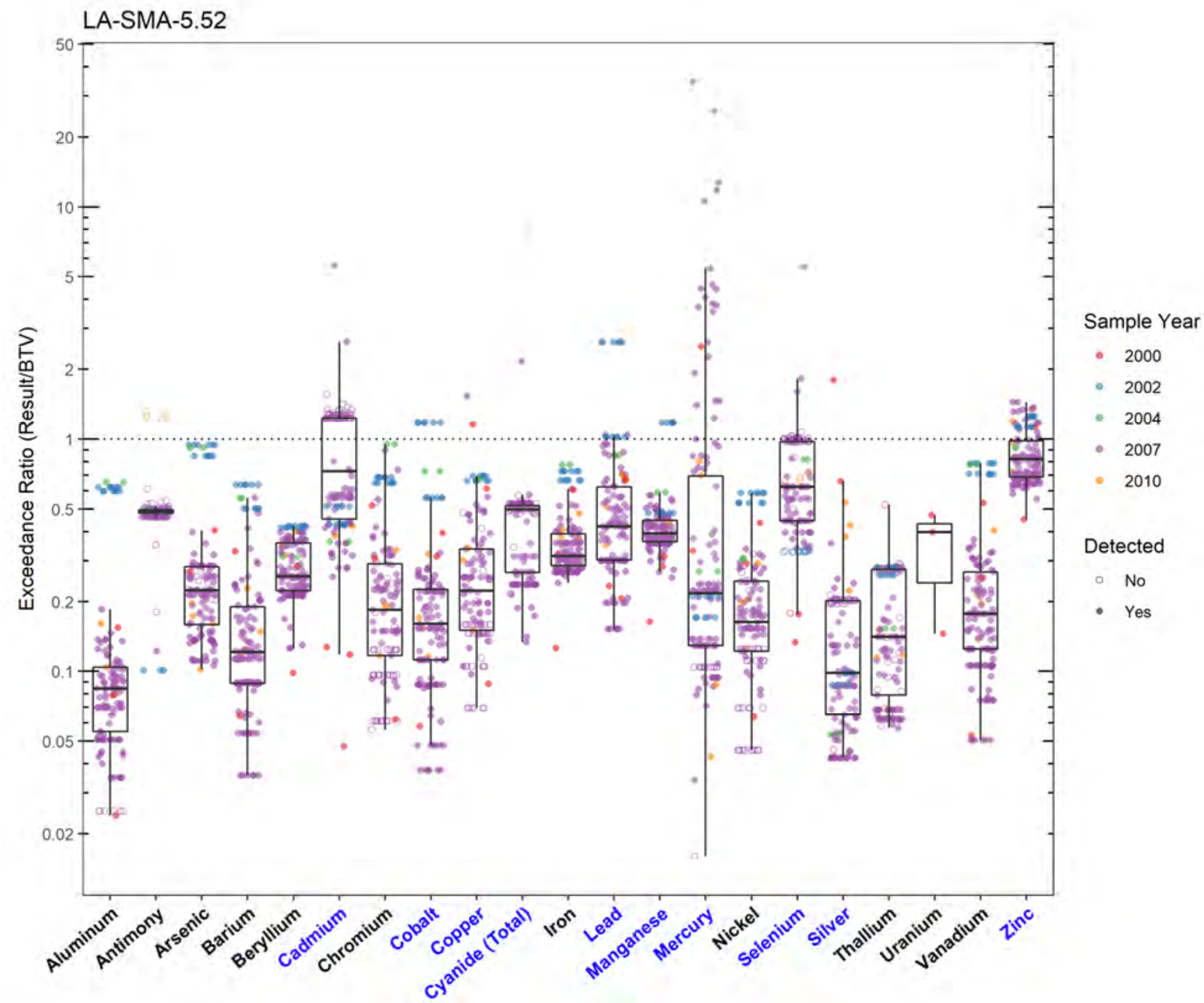


Figure 37.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-5.52

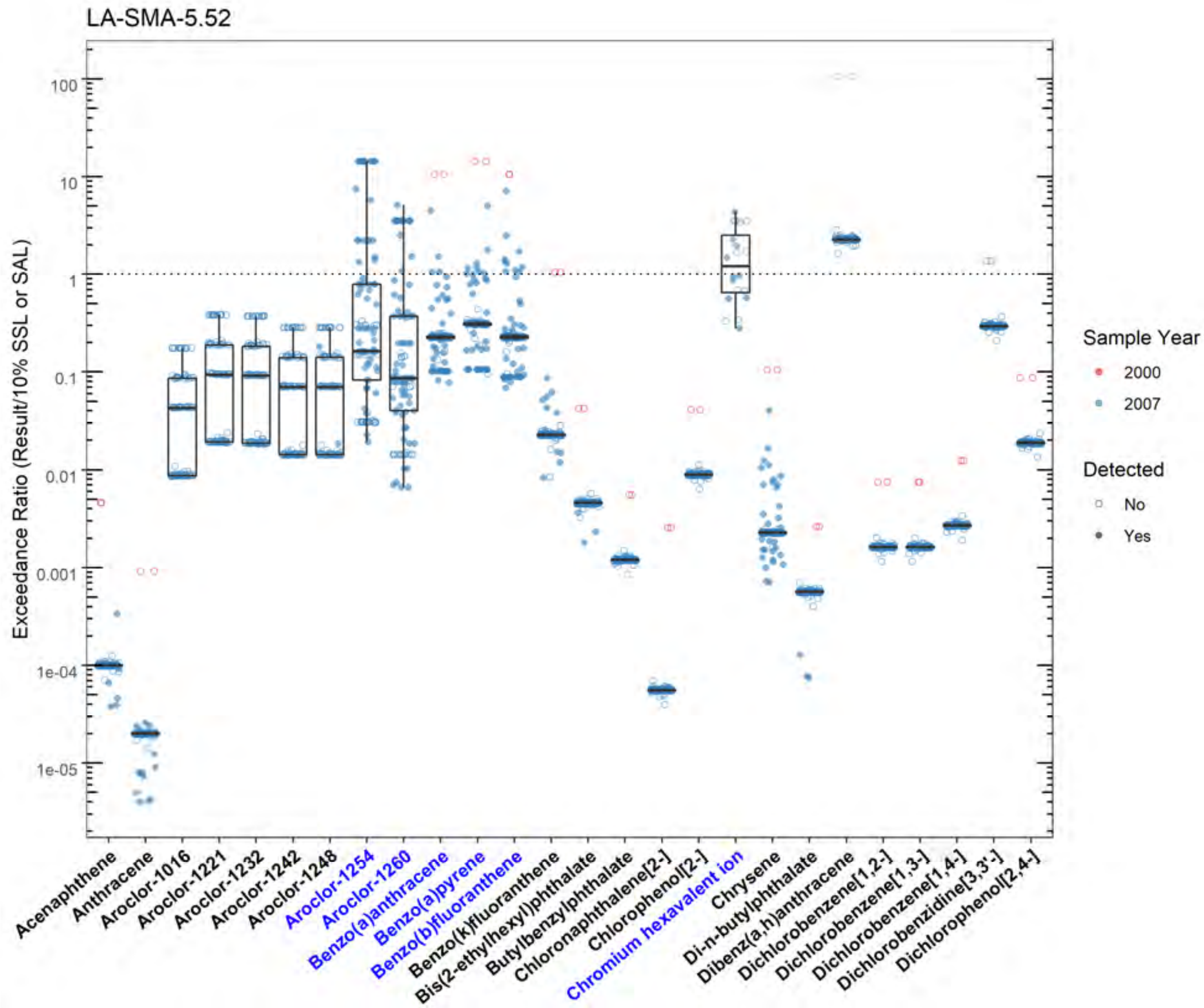


Figure 37.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.52 (Plot 1)

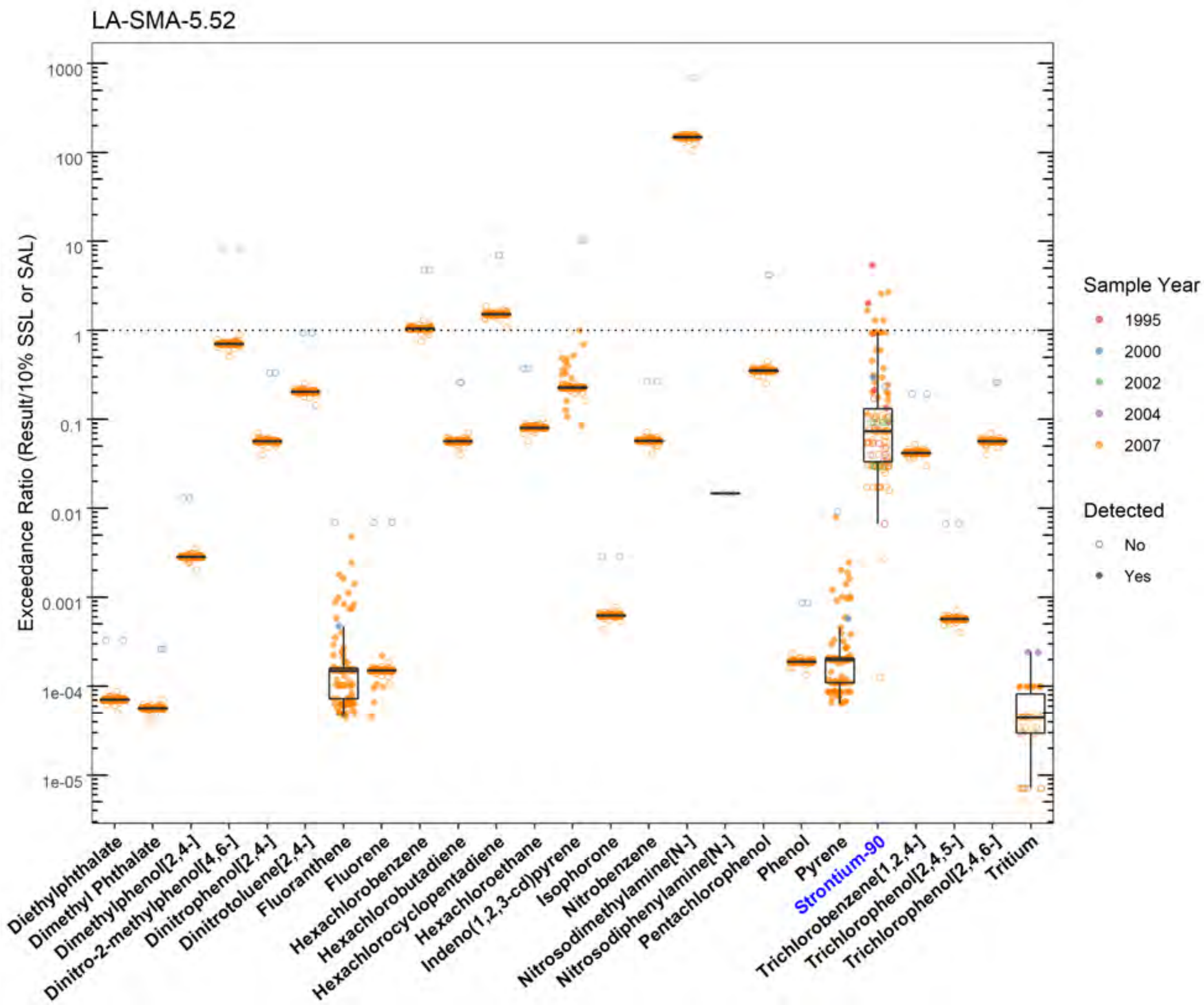


Figure 37.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.52 (Plot 2)

LA-SMA-5.52

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	LA-SMA-5.52	11097-69-1	Y	SSL_0.1	0.114	1.63	2007-08-18
Aroclor-1260	LA-SMA-5.52	11096-82-5	Y	SSL_0.1	0.243	1.25	2007-08-15
Benzo(a)anthracene	LA-SMA-5.52	56-55-3	Y	SSL_0.1	0.153	0.682	2007-08-23
Benzo(a)pyrene	LA-SMA-5.52	50-32-8	Y	SSL_0.1	0.112	0.559	2007-08-23
Benzo(b)fluoranthene	LA-SMA-5.52	205-99-2	Y	SSL_0.1	0.153	1.09	2007-08-23
Cadmium	LA-SMA-5.52	Cd	Y	BTV	0.400	2.23	2007-08-17
Chromium hexavalent ion	LA-SMA-5.52	Cr(VI)	Y	SSL_0.1	0.305	1.33	2007-08-20
Cobalt	LA-SMA-5.52	Co	Y	BTV	8.64	10.2	2002-05-24
Copper	LA-SMA-5.52	Cu	Y	BTV	14.7	22.5	2007-08-23
Cyanide (Total)	LA-SMA-5.52	CN(TOTAL)	Y	BTV	0.500	1.08	2007-09-12
Lead	LA-SMA-5.52	Pb	Y	BTV	22.3	58.1	2002-05-24
Manganese	LA-SMA-5.52	Mn	Y	BTV	671	794	2002-05-24
Mercury	LA-SMA-5.52	Hg	Y	BTV	0.100	3.46	2007-08-23
Selenium	LA-SMA-5.52	Se	Y	BTV	1.52	8.37	2007-09-19
Silver	LA-SMA-5.52	Ag	Y	BTV	1.00	1.80	2000-09-15
Strontium-90	LA-SMA-5.52	Sr-90	Y	SAL_0.1	1.50	8.13	1995-03-21
Zinc	LA-SMA-5.52	Zn	Y	BTV	48.8	70.5	2007-08-16

Figure 37.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-5.52

37.4 Stormwater Evaluation

37.4.1 Summary of Stormwater Results Compared to 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.

37.4.2 Assessment Unit and Stream Impairments

LA-SMA-5.52 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The impairments may be Site-related, based on Site history.

37.5 Site-Specific Demonstration

37.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and strontium-90.

The remaining Site-related POCs that exceeded the applicable 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.

37.5.2 Stormwater Data Summary

No data for the current monitoring stage have been collected. Mercury and total PCBs exceeded TAL and BTV in the previous monitoring stage. Dissolved aluminum and gross alpha exceeded the TAL in the previous monitoring stage.

37.5.3 2022 Permit Status

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

37.5.4 Sampling and Analysis Plan

Table 37.5-1 is the proposed SAP for LA-SMA-5.52.

Table 37.5-1 Proposed SAP, LA-SMA-5.52

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

38.0 LA-SMA-5.53

Associated Sites	02-009(a)
Receiving Water	Los Alamos Canyon
Drainage Area	1.14 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 02-009(a): In Progress
2010 AC Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the October 2017 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

38.1 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 at LA-SMA-5.53. Baseline monitoring is ongoing until one confirmation sample is collected from this SMA.

38.2 Site History

02-009(a) (9/3/2019)

SWMU 02-009(a) consists of an area of radioactively-contaminated soil (beta/gamma radiation), located around a boulder south of the southeast fence corner, east of the former Omega-50 storage building (former building 02-50) at TA-02. SWMU 02-009(a) was identified during radiological surveys conducted during the 1985–1986 D&D of the WBR and associated facilities. No other information regarding the origin of contamination at this SWMU is available. A limited amount of contaminated soil was removed from the Site in 1986, and the remaining contaminated soil was removed in 2000.

For investigation activities, refer to "Phase II Investigation Report for Middle Los Alamos Canyon Aggregate Area, Revision 2" (N3B 2018, 700091).

38.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 38.2-1.

Table 38.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
02-009(a)	Soil contamination associated with former water boiler reactor	Radionuclides

38.3 Consent Order Soil Data

Decision-level data for SWMU 02-009(a) consist of results from samples collected in 2000, 2007, and 2010. Analytical results from those samples are presented in Figures 38.3-1 through 38.3-4. Revision 2 of the 2018 Phase II IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

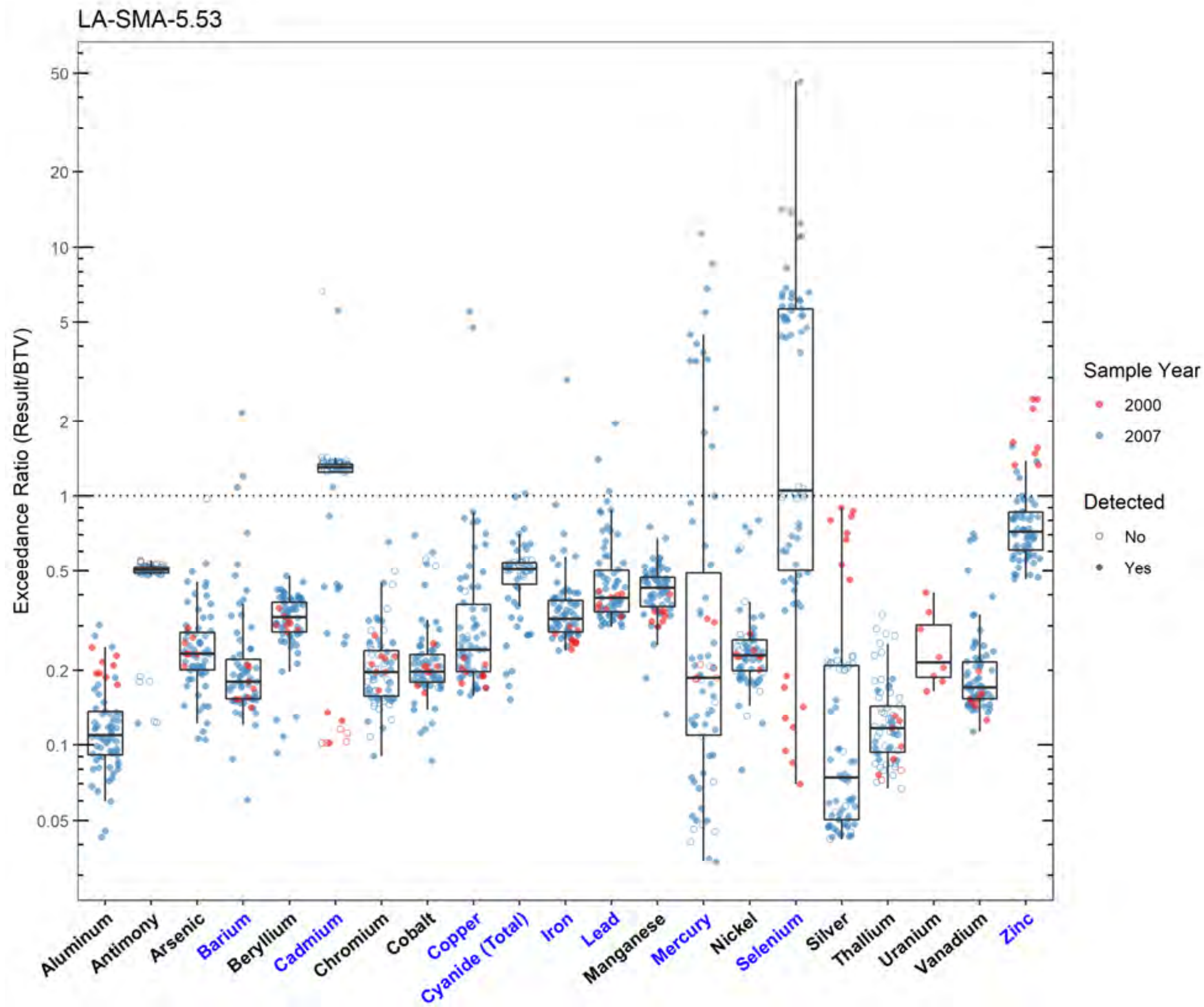


Figure 38.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-5.53

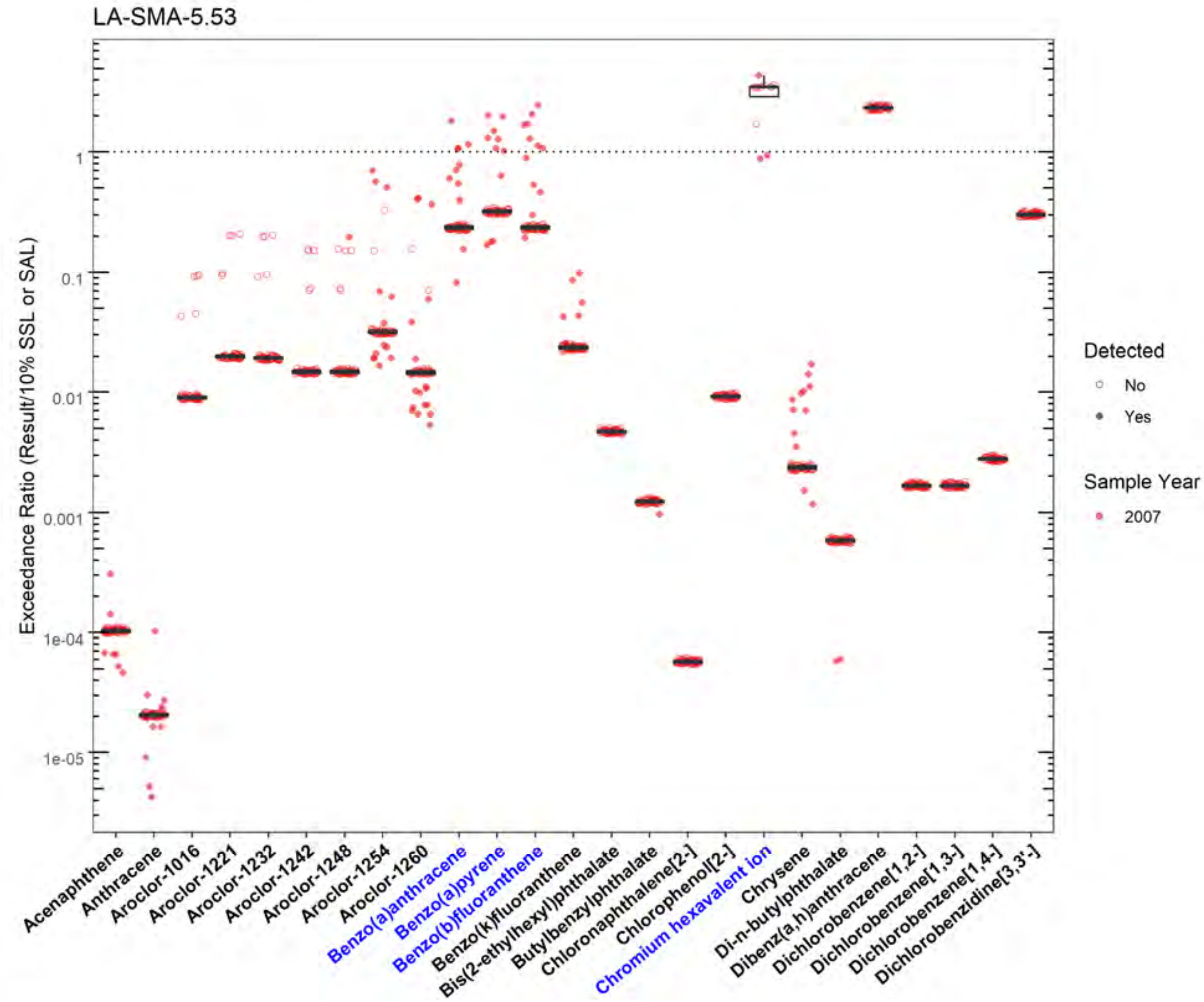


Figure 38.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.53 (Plot 1)

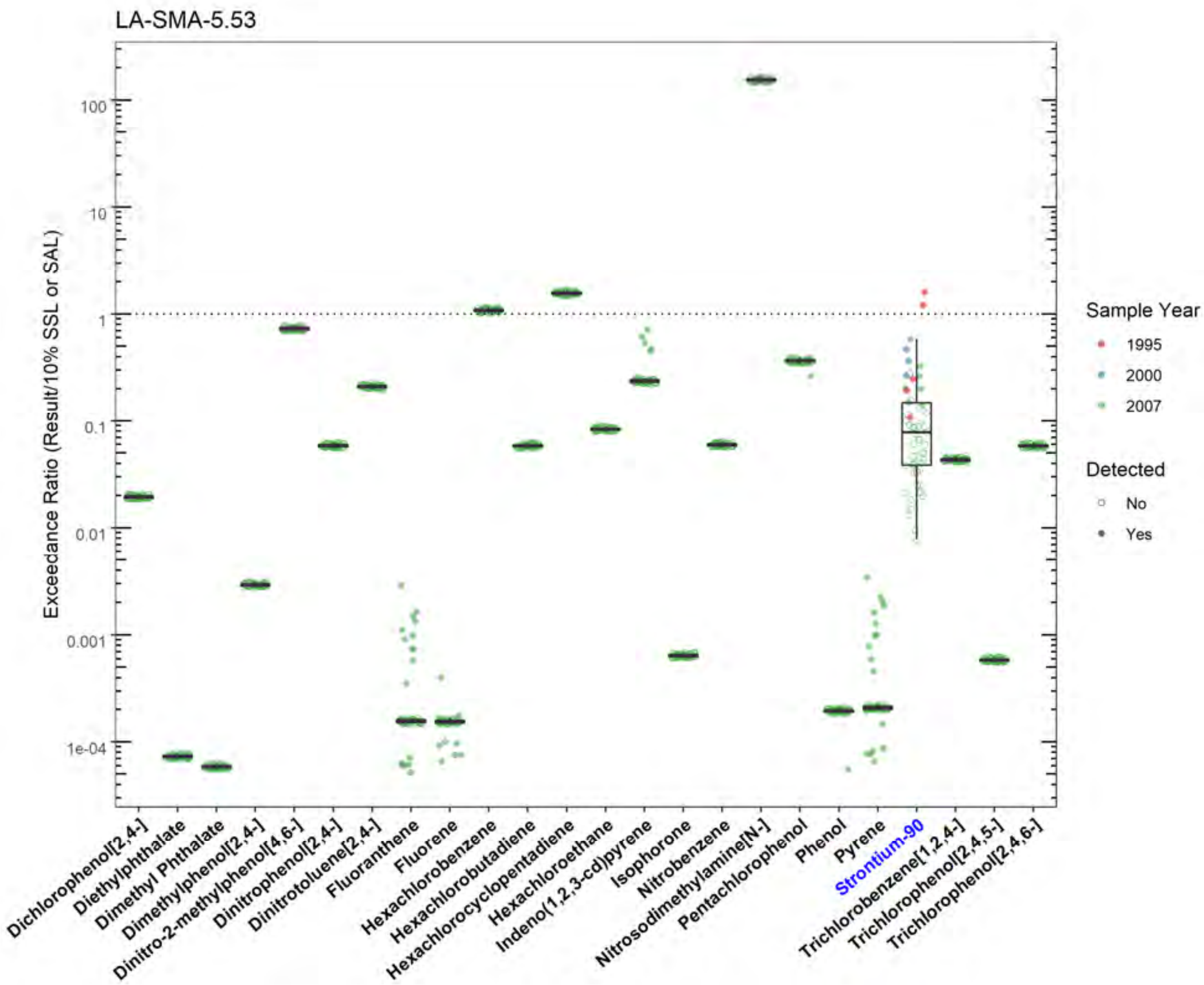


Figure 38.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.53 (Plot 2)

LA-SMA-5.53

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Barium	LA-SMA-5.53	Ba	Y	BTV	295	636	2007-08-20
Benzo(a)anthracene	LA-SMA-5.53	56-55-3	Y	SSL_0.1	0.153	0.277	2007-08-20
Benzo(a)pyrene	LA-SMA-5.53	50-32-8	Y	SSL_0.1	0.112	0.226	2007-08-20
Benzo(b)fluoranthene	LA-SMA-5.53	205-99-2	Y	SSL_0.1	0.153	0.379	2007-08-20
Cadmium	LA-SMA-5.53	Cd	Y	BTV	0.400	2.23	2007-08-17
Chromium hexavalent ion	LA-SMA-5.53	Cr(VI)	Y	SSL_0.1	0.305	1.33	2007-08-20
Copper	LA-SMA-5.53	Cu	Y	BTV	14.7	80.7	2007-09-16
Cyanide (Total)	LA-SMA-5.53	CN(TOTAL)	Y	BTV	0.500	0.510	2007-09-18
Iron	LA-SMA-5.53	Fe	Y	BTV	21500	63200	2007-09-16
Lead	LA-SMA-5.53	Pb	Y	BTV	22.3	43.7	2007-09-14
Mercury	LA-SMA-5.53	Hg	Y	BTV	0.100	1.13	2007-08-20
Selenium	LA-SMA-5.53	Se	Y	BTV	1.52	70.5	2007-09-16
Strontium-90	LA-SMA-5.53	Sr-90	Y	SAL_0.1	1.50	2.38	1995-03-22
Zinc	LA-SMA-5.53	Zn	Y	BTV	48.8	120	2000-09-29; 2000-10-02

Figure 38.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-5.53

38.4 Stormwater Evaluation

38.4.1 Summary of Stormwater Results Compared to 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.

38.4.2 Assessment Unit and Stream Impairments

LA-SMA-5.53 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The adjusted gross alpha impairment may be Site-related, based on Site history.

38.5 Site-Specific Demonstration

38.5.1 Soil Data Summary

Strontium-90 exceeded the applicable screening value in soil data and has not yet been measured in stormwater; it will be added to the SAP. The remaining parameters which exceeded the applicable screening value in soil data are not Site-related POCs and will not be added to the SAP.

38.5.2 Stormwater Data Summary

No confirmation-monitoring data.

38.5.3 2022 Permit Status

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

38.5.4 Sampling and Analysis Plan

Table 38.5-1 is the proposed SAP for LA-SMA-5.53.

Table 38.5-1 Proposed SAP, LA-SMA-5.53

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history (radionuclides)
Radium-226 and radium-228	Site history (radionuclides)
Strontium-90	Site history (radionuclides) and soil data
Tritium	Site history (radionuclides)
DOC	Permit requirement
SSC	Permit requirement

39.0 LA-SMA-5.54

Associated Sites	02-009(c)
Receiving Water	Los Alamos Canyon
Drainage Area	0.24 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 02-009(c): In Progress
2010 AC Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the October 2017 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

39.1 2010 Administratively Continued Permit Summary

Following the April 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 September 2014 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2014, 261903), 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 corrective action sample collection and monitoring is ongoing.

39.2 Site History

02-009(c) (9/3/2019)

SWMU 02-009(c) consists of a former leach field and an area of radioactively-contaminated soil (beta/gamma radiation) located on the north and south sides of Los Alamos Creek, south of the former condensate trap [former structure 02-48, AOC 02-003(b)] at TA-02.

During removal of the condensate trap and the SWMU 02-007 septic tank (former structure 02-48) as part of the 1985–1986 D&D activities, remnants of a leach field were discovered. The leach field consisted of two parallel 6-in.-diameter VCP lengths running east from the condensate trap area, parallel to Los Alamos Creek. The pipes measured 34 ft and 20 ft long, and were lying in a sand- and crushed-rock bed, approximately 2 ft below the overflow drainpipe from the nearby septic tank (former structure 02-43, SWMU 02-007), at depths between 3–8 ft bgs. The SWMU 02-007 septic system received effluent from drains in the former WBR facility (former building 02-01). All structures, including the drainlines and adjacent contaminated soils down to the saturated zone, were removed during the 1985–1986 D&D activities.

For investigation activities refer to “Phase II Investigation Report for Middle Los Alamos Canyon Aggregate Area, Revision 2” (N3B 2018, 700091).

39.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 39.2-1.

Table 39.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
02-009(c)	Soil contamination associated with condensate trap and leach field	Radionuclides

39.3 Consent Order Soil Data

Decision-level data for SWMU 02-009(c) consist of results from samples collected in 2000, 2007, and 2010. Analytical results from these samples are presented in Figures 39.3-1 through 39.3-4. Revision 2 of the 2018 Phase II IR concluded the nature and extent of contamination have been defined and no further sampling for extent is warranted.

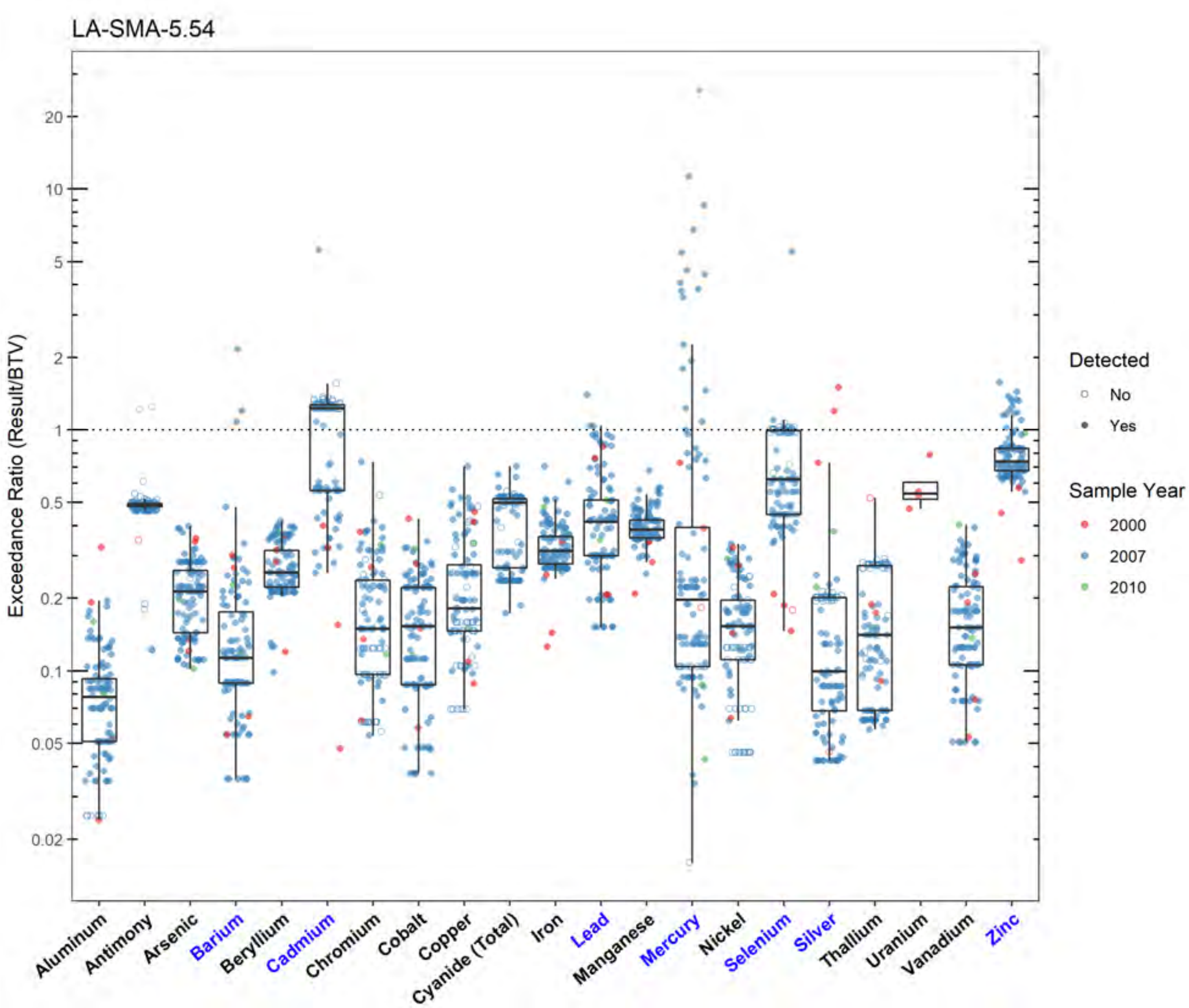


Figure 39.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-5.54

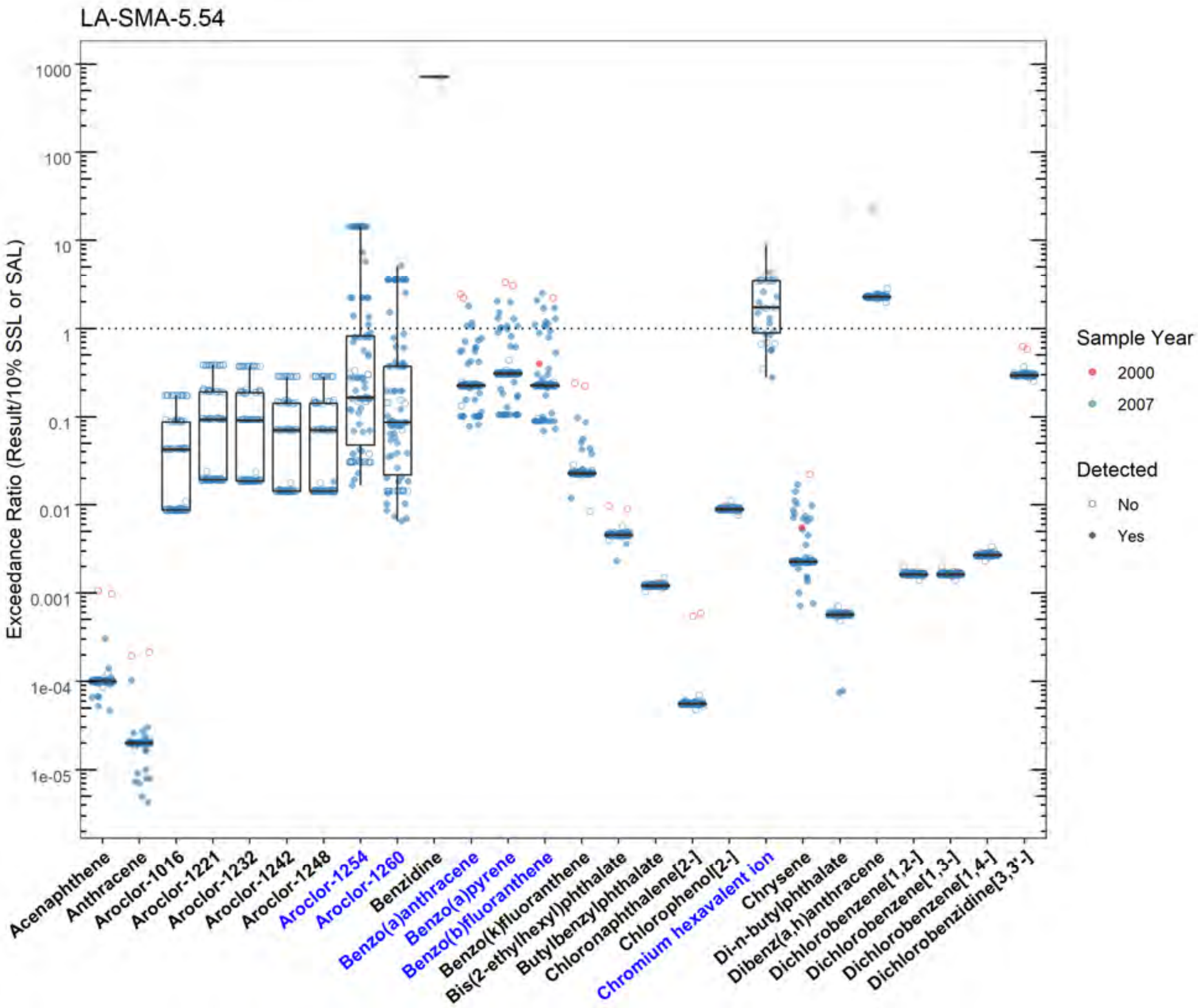


Figure 39.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.54 (Plot 1)

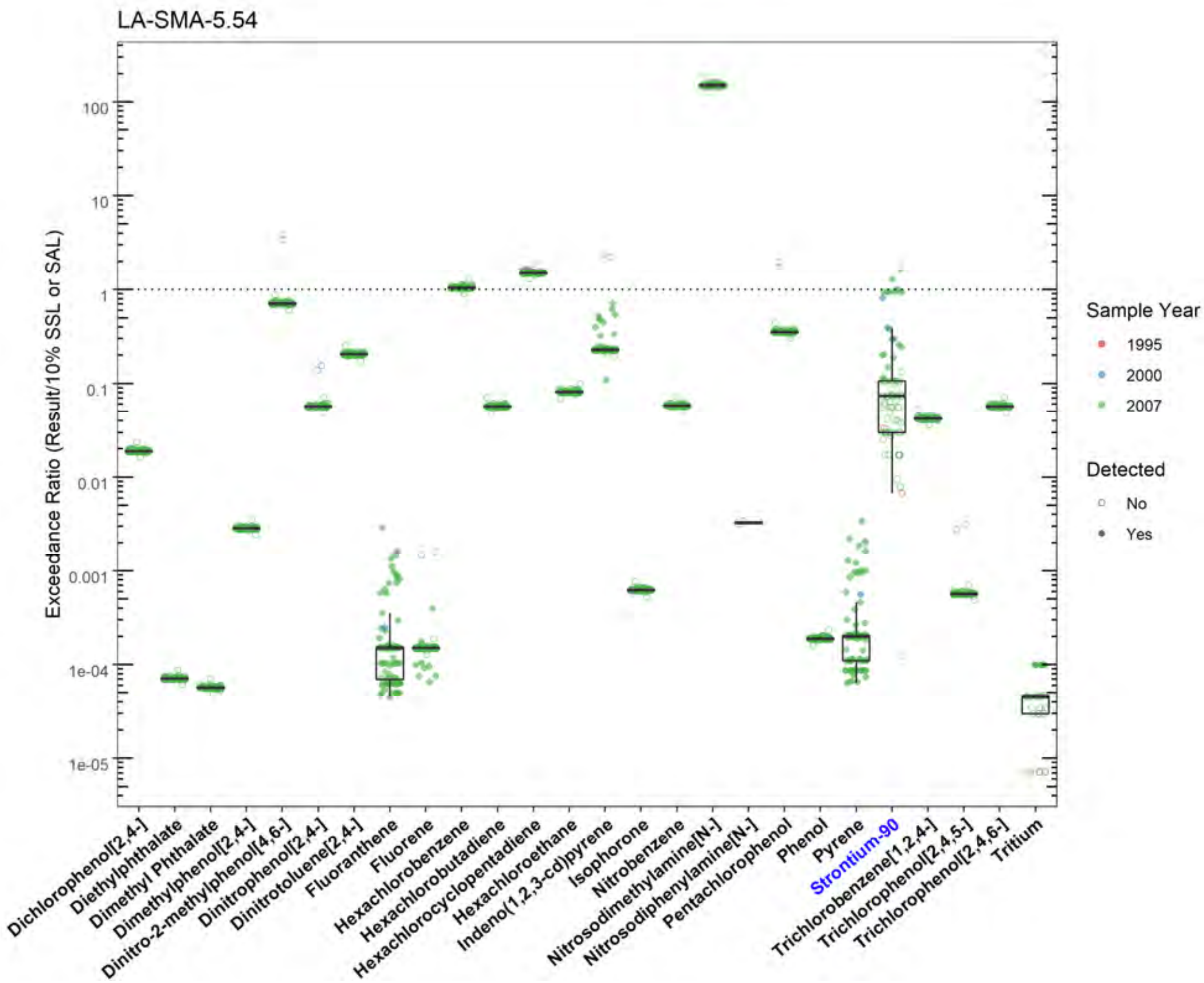


Figure 39.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.54 (Plot 2)

LA-SMA-5.54

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	LA-SMA-5.54	11097-69-1	Y	SSL_0.1	0.114	1.63	2007-08-18
Aroclor-1260	LA-SMA-5.54	11096-82-5	Y	SSL_0.1	0.243	1.25	2007-08-15
Barium	LA-SMA-5.54	Ba	Y	BTV	295	636	2007-08-20
Benzo(a)anthracene	LA-SMA-5.54	56-55-3	Y	SSL_0.1	0.153	0.277	2007-08-20
Benzo(a)pyrene	LA-SMA-5.54	50-32-8	Y	SSL_0.1	0.112	0.226	2007-08-20
Benzo(b)fluoranthene	LA-SMA-5.54	205-99-2	Y	SSL_0.1	0.153	0.379	2007-08-20
Cadmium	LA-SMA-5.54	Cd	Y	BTV	0.400	2.23	2007-08-17
Chromium hexavalent ion	LA-SMA-5.54	Cr(VI)	Y	SSL_0.1	0.305	1.33	2007-08-20
Lead	LA-SMA-5.54	Pb	Y	BTV	22.3	31.2	2007-08-20
Mercury	LA-SMA-5.54	Hg	Y	BTV	0.100	2.58	2007-08-18
Selenium	LA-SMA-5.54	Se	Y	BTV	1.52	8.37	2007-09-19
Silver	LA-SMA-5.54	Ag	Y	BTV	1.00	1.50	2000-08-30
Strontium-90	LA-SMA-5.54	Sr-90	Y	SAL_0.1	1.50	2.49	2007-08-16
Zinc	LA-SMA-5.54	Zn	Y	BTV	48.8	77.2	2007-08-20

Figure 39.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-5.54

39.4 Stormwater Evaluation

39.4.1 Summary of Stormwater Results Compared to 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 location at the SMA.

39.4.2 Assessment Unit and Stream Impairments

LA-SMA-5.54 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The adjusted gross alpha impairment may be Site-related, based on Site history.

39.5 Site-Specific Demonstration

39.5.1 Soil Data Summary

Strontium-90 exceeded the applicable screening value in soil data and has not yet been measured in stormwater, therefore it will be added to the SAP. The remaining exceedances of the applicable screening value in soil data are not Site-related POCs and will not be added to the SAP.

39.5.2 Stormwater Data Summary

No confirmation-monitoring data.

39.5.3 2022 Permit Status

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

39.5.4 Sampling and Analysis Plan

Table 39.5-1 is the proposed SAP for LA-SMA-5.54.

Table 39.5-1 Proposed SAP, LA-SMA-5.54

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment, Site history (radionuclides), and stormwater data
Strontium-90	Site history and soil data
Total PCBs	Soil data and stormwater data
DOC	Permit requirement
SSC	Permit requirement

40.0 LA-SMA-5.91

Associated Sites	21-009, 21-021, 21-023(c), 21-027(d)
Receiving Water	BV Canyon – Tributary to Los Alamos Canyon
Drainage Area	4.31 acres
Landscape Characteristics	20% impervious, 80% pervious
Consent Order Site Status	AOC 21-009: Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 21-021: In Progress SWMU 21-023(c): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 21-027(d): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 AC Permit Final Status	Corrective Action Complete/Alternative Compliance Requested/Force Majeure Request
2016–2018 SIP Actions	Based on the January 2018 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

40.1 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 2011. Analytical results from this sample initiated corrective action.

SWMU 21-023(c) received a COC under the Consent Order in June 2011. The Permittees submitted a certification of completion of corrective action for the Site to EPA per Permit part I.E.2(d) in November 2012 (LANL 2012/2013, 232273) and resubmitted in August 2013 (LANL 2013, 250035).

Following the July 2013 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2013, 244386), corrective-action stormwater samples were collected in September 2013 and July 2014. Analytical results from these samples initiated corrective action.

AOC 21-009 received a COC under the Consent Order in January 2016. The Permittees submitted a certification of completion of corrective action for the Site to EPA per Permit part I.E.2(d) in March 2016 (LANL 2017, 602213). The Permittees submitted a request for alternative compliance for SWMU 21-021 to EPA per permit Part I.E.3 in May 2015 (LANL 2015, 600417), and a force majeure request for an extension for completion of corrective action at SWMU 21-027(d) to EPA per Permit part I.E.4(c) in October 2015 (LANL 2015, 600979). No response has been received from EPA for these submittals, and stormwater monitoring has not occurred since 2014.

40.2 Site History

21-009 (1/25/2022)

AOC 21-009 is a former waste treatment laboratory (former building 21-33) that was located in the western portion of DP West at TA-21. Former building 21-33 was built on concrete pillars in 1948, of wood-frame construction on a single level with a wooden floor, and measured 16 ft × 48 ft × 12 ft high.

The former waste treatment laboratory operated until 1965 when it was destroyed by intentional burning.

Research into methods of recovering additional plutonium from liquid waste streams was conducted at building 21-33. Building components and laboratory furniture were reportedly contaminated with plutonium dust. Perchloric acid was used in research work and may have contaminated the former exhaust hoods. Laboratory waste was discharged to the SWMU 21-023(c) septic system south of the building.

AOC 21-009 has been referred to as a SWMU in historical documents and reports. For investigation activities, refer to "Phase II Investigation Report for Delta Prime Site Aggregate Area, Revision 1" (LANL 2010, 110772.33).

21-021 (11/23/2020)

SWMU 21-021 consists of potential surface soil contamination, resulting from the deposition of historical airborne releases of radionuclides from incinerators, stacks, and filter houses previously located throughout TA-21. The estimated area of potential soil contamination is approximately 300,000 m^2, and overlaps all of TA-21 and portions of DP Canyon north of TA-21. TA-21 was used primarily for plutonium research and metal production and related activities from 1945 to 1978. After the major plutonium research and metal production activities at TA-21 ceased in 1978, subsequent unrelated office and small-scale research activities continued until approximately 2006.

Historical airborne releases of radionuclides from stacks at TA-21 were documented from 1951 to 1971 and from 1973 to 1989. A minimum of approximately 2 Ci/yr of plutonium-239/240 was released from all TA-21 stacks in the 1950s. There is no documentation of nonradioactive chemical releases associated with the historical TA-21 stack emissions.

For investigation activities, refer to "Phase Report 1B, TA-21 Operable Unit RCRA Facility Investigation, Operable Unit-Wide Surface Soil, Deposition Layer and Filter Building Investigation" (LANL 1994, 026073) and "Final Reponses to EPA's Notice of Deficiency on Phase Report" (LANL 1995, 062415).

21-023(c) (9/28/2021)

SWMU 21-023(c) is a former septic system that served the former waste treatment laboratory [former building 21-33; AOC 21-009] that was located directly west of former MDA V [SWMU 21-018(a)] in the southwest portion of DP West at TA-21. The septic system consisted of a septic tank (former structure 21-62), inlet and outlet lines, and an outfall. Former septic tank 21-62 was constructed of reinforced concrete and measured 3.5 ft wide × 7 ft long × 5.8 ft deep, with 4-in.-diameter VCP inlet and outlet drainlines, and an outfall 40 ft southwest of the septic tank. The septic system was reportedly intended only for sanitary waste and served the former waste treatment laboratory (former building 21-33) from 1948 to 1965. Sewage was pumped from a sump in former building 21-33 through the septic tank and was discharged through an outlet drainline to an outfall 40 ft southwest of the septic tank, approximately 30 ft north of the southern edge of BV Canyon, a tributary to Los Alamos Canyon. The volume of wastewater handled by the septic system is not known. The septic tank was removed in 1966 and disposed of at MDA G at TA-54. The date that the inlet/outlet drainlines were removed is not known; however, the 2005–2006 Site investigation activities confirmed that none of the septic system components remained in place at that time.

For investigation activities refer to "Supplemental Tritium Report for Material Disposal Area V" (LANL 2011, 111513).

21-027(d) (4/26/2019)

SWMU 21-027(d) consists of a former outfall and associated outlet drainline from the former concrete secondary containment structure and sump for a former AST (structure 21-47, AOC C-21-028), located south of MDA B and southwest of MDA V in the southwest portion of TA-21. The AST was installed in 1945 on a 9-in.-thick concrete slab on the mesa top adjacent to DP Road, directly west of the former laundry building [building 21-20, SWMU 21-018(b)]. The former AST was installed to store No. 2 diesel fuel for the operation of the boiler in the DP laundry (former building 21-20). The boiler was reportedly diesel powered; however, former employees stated, and photographs show, that the DP laundry was tied to the DP steam plant via overhead steam lines. Therefore, the storage tank and boiler may have been used to provide power when the structure was built and remained in place as a backup source of power for the laundry. There are no records of the tank being serviced (i.e., filled with fuel).

A ditch originally drained stormwater away from the concrete slab and AST, and extended to the southwest toward BV Canyon south of MDAs B and V. In 1948, a concrete secondary containment structure was built around the former AST to contain any potential releases from the tank. A sump was constructed in the center of the south side of the containment, and a drainline [SWMU 21-027(d)] was installed in the drainage ditch from the tank containment. The first segment of the outlet drainline from the containment structure was a 4-in.-diameter steel pipe, approximately 5 ft in length, installed on the ground surface from the sump to a gate valve just outside the containment wall. At the gate valve, the drainline was changed to a VCP.

When the wastewater treatment laboratory (former building 21-33, SWMU 21-009) was constructed in 1948, the drainage ditch from the AST containment was rerouted around building 21-33 and south toward the south rim of DP Mesa. A new outlet drainline from the AST containment was then installed below ground. The outfall for the drainline was located near the mesa edge; any discharge from the containment would have flowed down the canyon hillside into BV Canyon. The AST and concrete containment were removed in 1960, and the SWMU 21-027(d) drainline was removed in March 1965.

For investigation activities, refer to the “Voluntary Corrective Measures Completion Report for Potential Release Site 21-027(d)-99 at Technical Area 21” (LANL 2002, 073107).

40.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 40.2-1.

Table 40.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
21-009	Waste treatment laboratory	Plutonium
21-021	Systematic release (sitewide)	Americium-241, plutonium-isotopes, strontium-90
21-023(c)	Septic system	Plutonium
21-027(d)	Soil contamination from former drainline	PAHs

40.3 Consent Order Soil Data

Most of the SWMUs and AOCs at TA-21 lie within the footprint of SWMU 21-021. Therefore, surface and shallow subsurface samples from investigation of those Sites are also representative of SWMU 21-021. Data from samples collected as part of Consent Order investigations and associated remediation activities are decision-level data. The approved DP Site Aggregate Area IWP indicated that the investigation of SWMU 21-021 was complete and no additional investigations were required.

Decision-level data for SWMU 21-023(c) consist of results from soil and tuff samples collected in 2005 and 2006.

Decision-level data for SWMU 21-027(d) consist of results from samples collected in 1992 and 1999. The 2002 VCM report concluded that the nature and extent of contamination have been defined.

Analytical results from all decision-level soil samples collected for LA-SMA-5.91 are presented in Figures 40.3-1 through 40.3-4.

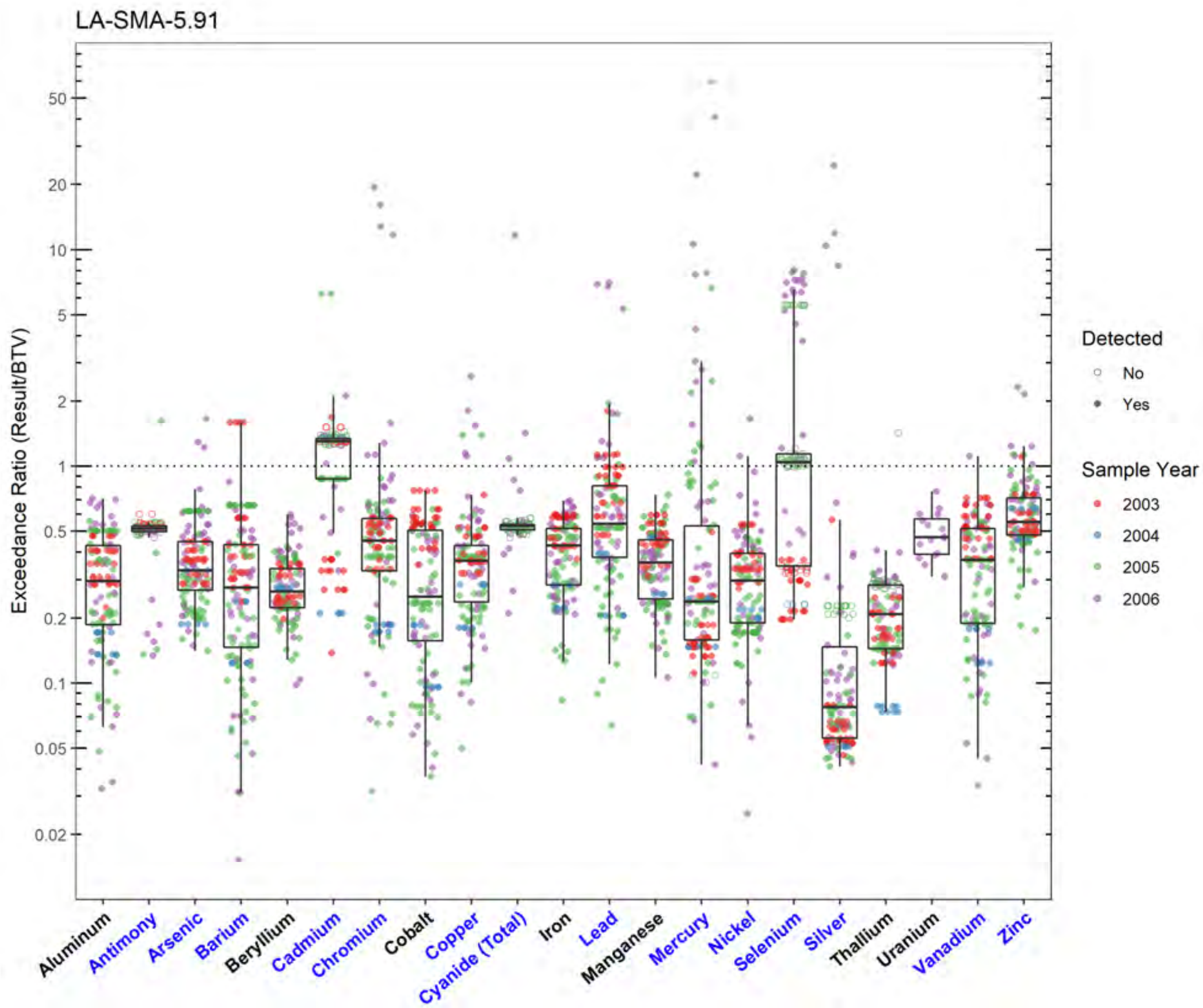


Figure 40.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-5.91

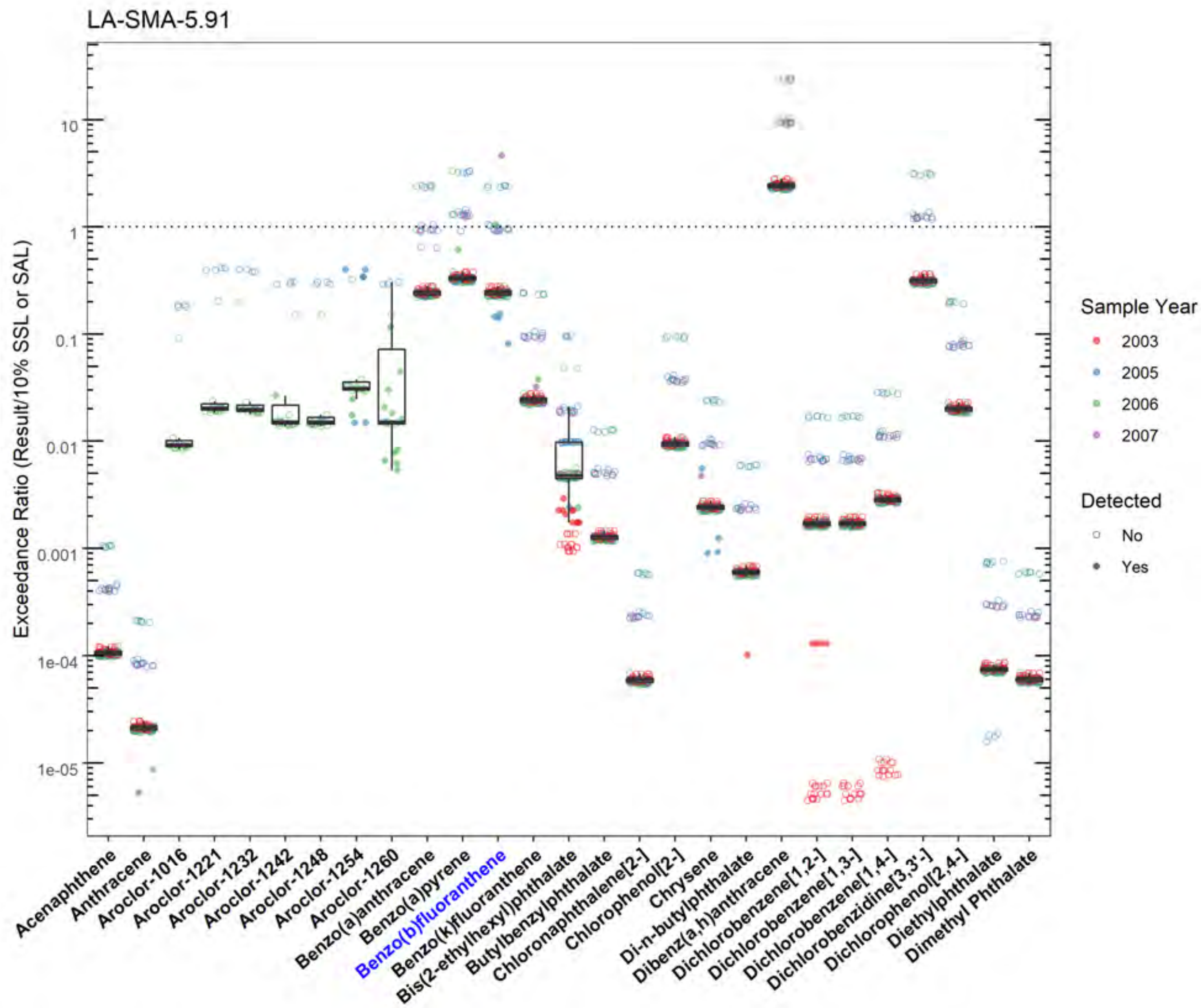


Figure 40.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.91 (Plot 1)

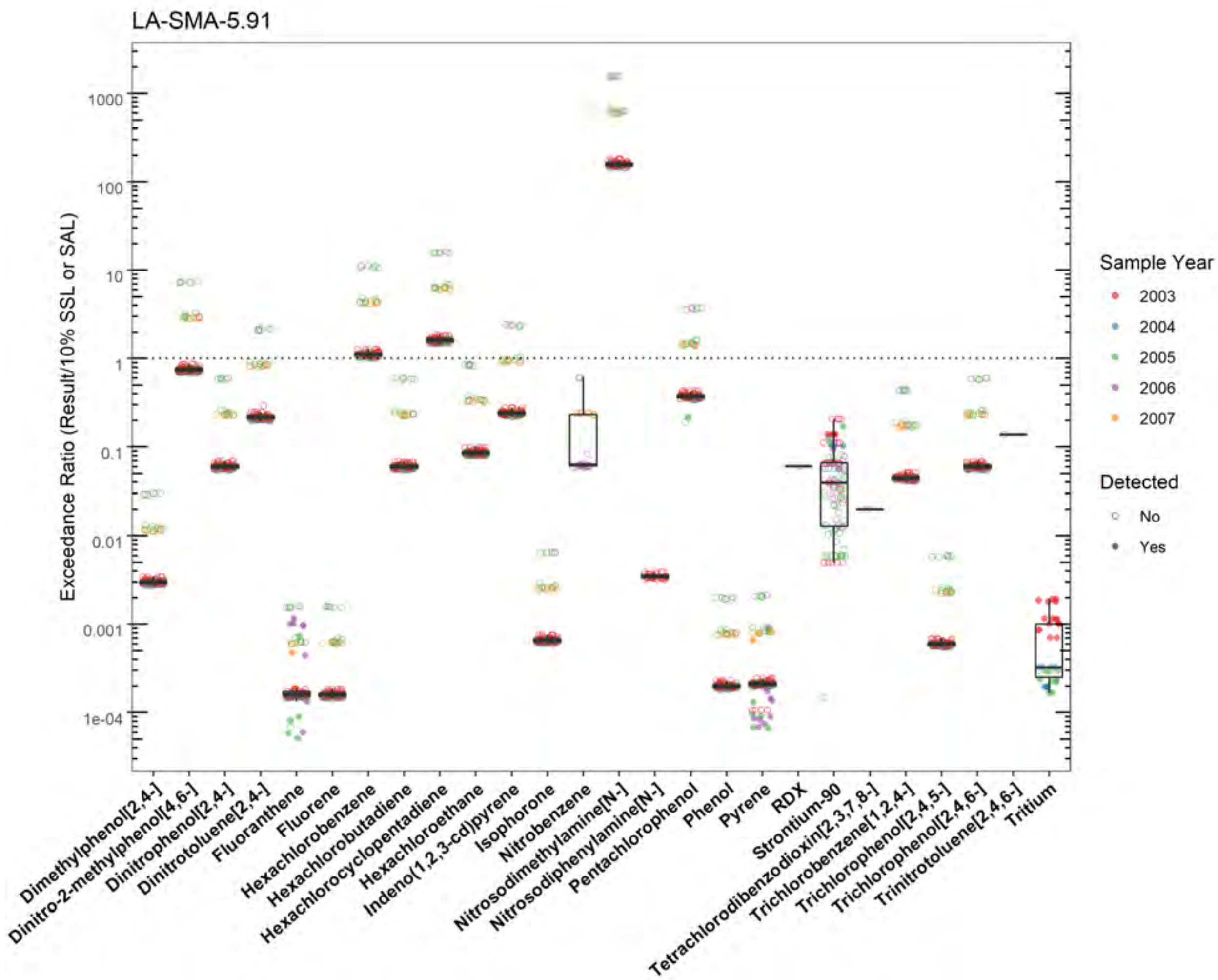


Figure 40.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.91 (Plot 2)

LA-SMA-5.91

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	LA-SMA-5.91	Sb	Y	BTV	0.830	1.34	2005-12-07
Arsenic	LA-SMA-5.91	As	Y	BTV	8.17	13.5	2006-04-27
Barium	LA-SMA-5.91	Ba	Y	BTV	295	468	2003-02-19
Benzo(b)fluoranthene	LA-SMA-5.91	205-99-2	Y	SSL_0.1	0.153	0.708	2007-05-11
Cadmium	LA-SMA-5.91	Cd	Y	BTV	0.400	2.50	2005-09-15
Chromium	LA-SMA-5.91	Cr	Y	BTV	19.3	375	2006-04-27
Copper	LA-SMA-5.91	Cu	Y	BTV	14.7	38.1	2006-04-27
Cyanide (Total)	LA-SMA-5.91	CN(TOTAL)	Y	BTV	0.500	5.78	2006-03-27
Lead	LA-SMA-5.91	Pb	Y	BTV	22.3	157	2006-04-27
Mercury	LA-SMA-5.91	Hg	Y	BTV	0.100	5.95	2006-04-27
Nickel	LA-SMA-5.91	Ni	Y	BTV	15.4	25.4	2006-04-27
Selenium	LA-SMA-5.91	Se	Y	BTV	1.52	12.2	2006-08-03
Silver	LA-SMA-5.91	Ag	Y	BTV	1.00	24.5	2006-03-27
Vanadium	LA-SMA-5.91	V	Y	BTV	39.6	44.0	2006-04-27
Zinc	LA-SMA-5.91	Zn	Y	BTV	48.8	113	2006-08-03

Figure 40.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-5.91

40.4 Stormwater Evaluation

40.4.1 Summary of Stormwater Results Compared to TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Corrective action stormwater samples were collected in September 2013 and July 2014. Analytical results from those samples are presented in Figures 40.4-1 and 40.4-2.

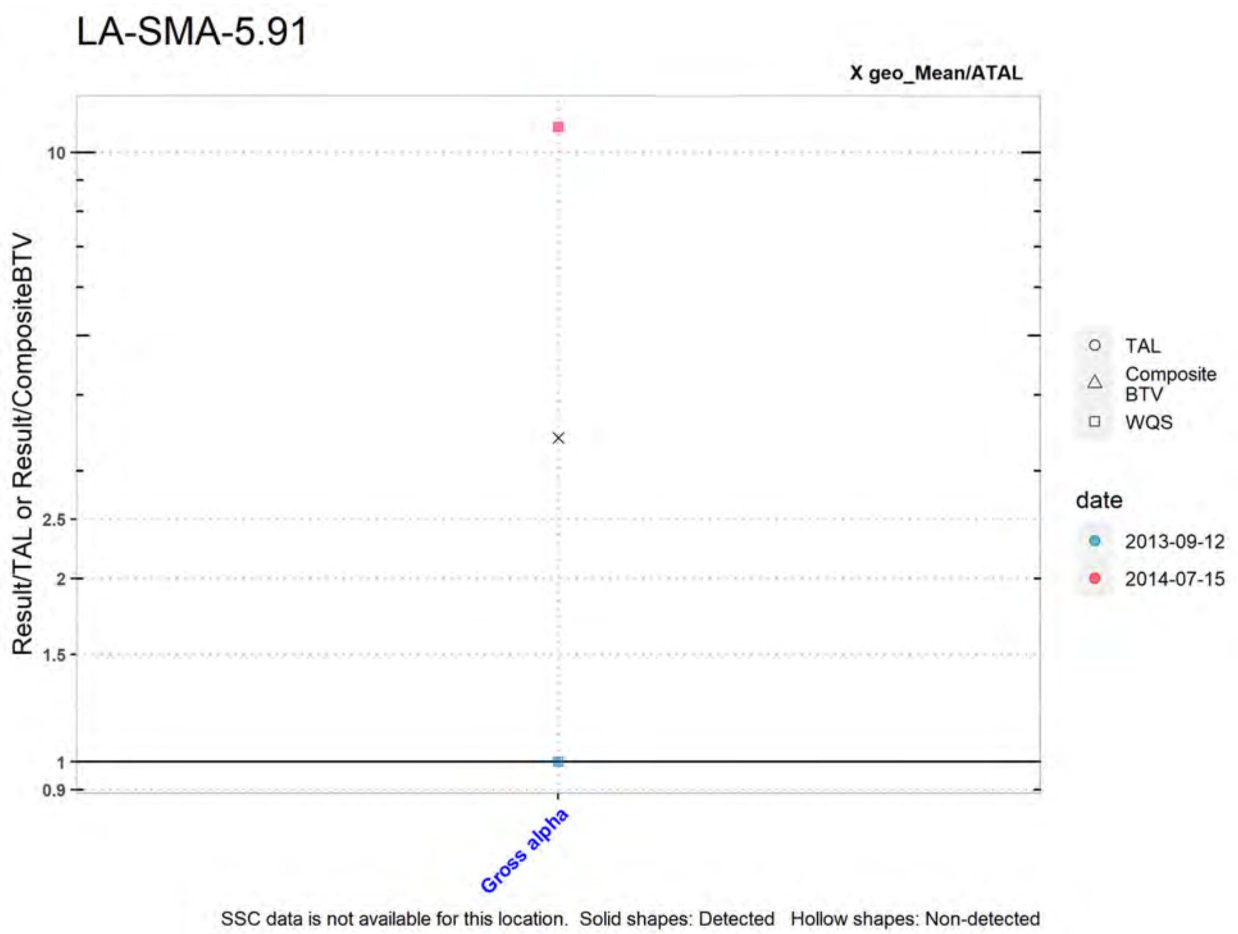


Figure 40.4-1 Analytical Results from Stormwater Samples, LA-SMA-5.91 (Plot)

LA-SMA-5.91

	Gross alpha
MQL	NA
ATAL	15
MTAL	NA
Composite_BTV	55.7
unit	pCi/L
2013-09-12 result	15.7
2013-09-12 dT	1.0
2013-09-12 dB	NA
2014-07-15 result	169
2014-07-15 dT	11
2014-07-15 dB	NA
geo_mean/ATAL	3.4
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 40.4-2 Analytical Results from Stormwater Samples, LA-SMA-5.91 (Table)

40.4.2 Assessment Unit and Stream Impairments

LA-SMA-5.91 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The adjusted gross alpha impairment may be Site-related, based on Site history.

40.5 Site-Specific Demonstration

40.5.1 Soil Data Summary

Benzo(b)fluoranthene is the only Site-related POC that exceeded the applicable screening value in soil data and has not yet been measured in stormwater. All other Site-related POCs that exceeded the applicable screening value in soil data previously measured in stormwater data and did not exceed TALs; therefore, they will not be added to the SAP.

40.5.2 Stormwater Data Summary

Gross alpha exceeded TAL in 2014 stormwater data and there was no paired SSC result to confirm whether it was below BTVs. Therefore, it will be added to the SAP.

40.5.3 2022 Permit Status

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

40.5.4 Sampling and Analysis Plan

Table 40.5-1 is the proposed SAP for LA-SMA-5.91.

Table 40.5-1 Proposed SAP, LA-SMA-5.91

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment, Site history, and stormwater data
SVOCs	Site history (PAHs) and soil data
DOC	Permit requirement
SSC	Permit requirement

41.0 LA-SMA-5.92

Associated Sites	21-013(b), 21-013(g), 21-018(a), 21-021
Receiving Water	BV Canyon – Tributary to Los Alamos Canyon
Drainage Area	0.80 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 21-013(b): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls AOC 21-013(g): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 21-018(a): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 21-021: In Progress
2010 AC Permit Final Status	Enhanced Control Corrective Action Monitoring/ Corrective Action Complete
2016–2018 SIP Actions	The January 2018 field visit determined that the current SMA sampling location did not adequately monitor runoff from Sites 21-013(g) and 21-018(a); however, a sampler move was not recommended.
2022 Permit Status	Active Monitoring

41.1 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.

AOC 21-013(g) and SWMUs 21-013(b) and 21-018(a) received COCs under the Consent Order in June 2011. The Permittees submitted a certification of completion of corrective action for the Sites to EPA per Permit part I.E.2(d) in November 2013 (LANL 2013, 251270).

Following the October 2015 submittal to EPA of certification of enhanced control installation as a corrective action for SWMUs 21-013(b) and 21-021 (LANL 2015, 600980), corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume corrective action sample collection, and monitoring is ongoing.

41.2 Site History

21-013(b) (9/28/2021)

SWMU 21-013(b) is a former surface-disposal area that was located southwest of former MDA V on the south-facing slope of BV Canyon, in the southwest corner of DP West at TA-21. This area contained the external concrete piers, concrete building foundations, and other building debris derived from the 1965 demolition of the laundry facility [former building 21-20; SWMU 21-018(b)] and a waste treatment laboratory (former building 21-33; AOC 21-009). Other debris at the site included asphalt and concrete poured onto the slope before it solidified, broken asphalt, concrete, piping, and miscellaneous building materials. The origin of the additional debris is not documented.

A radiological survey of the former waste-treatment laboratory interior before demolition showed that various surfaces were contaminated with plutonium dust. It is not known if other materials were disposed of at SWMU 21-013(b) or how long this site received building debris; however, it did not receive wastes after 1994. All debris was removed and the entire site was re-graded as part of a VCA implemented in 2005.

21-013(g) (9/28/2021)

AOC 21-013(g) is a former surface disposal area used for the disposal of construction debris that was located directly south and downgradient of MDA V [SWMU 21-018(a)], on the south-facing slope of BV Canyon at the west end of DP West at TA-21. The disposal area consisted of discarded drainlines, concrete piers, concrete building foundations, and other building debris from the 1965 removal of the laundry facility [former building 21-20, SWMU 21-018(b)] and a waste treatment laboratory (former building 21-33, AOC 21-009), along with broken asphalt and other miscellaneous building debris. It is not known how long this site received building debris; however, it did not receive any waste after 1994. All debris was removed and the site was re-graded in 2005.

21-018(a) (9/28/2021)

SWMU 21-018(a) is the former MDA V. It consisted of three parallel interconnected RLW absorption beds that were located directly south of the former DP laundry facility [former building 21-20, SWMU 21-018(b)], within the southwest portion of DP West at TA-21. The three former cobble- and gravel-filled absorption beds, each measuring 25 ft wide × 220 ft long × 5 ft to 6 ft deep, were constructed to receive RLW from the former laundry facility [former building 21-20, SWMU 21-018(b)] and the former sump [AOC 21-030] in former waste laboratory building 21-45 (AOC C-21-015) that was occupied by the LANL Waste Studies Group. The laundry facility cleaned clothing from staff working in plutonium refinement operations at DP West, and the Waste Studies Group developed processes to recover plutonium, uranium, and other scarce metals from process waste streams. The absorption beds were designed to enhance liquid infiltration into the tuff.

The average discharge rate to MDA V was 6000 to 8,000 gal./day. Discharged RLW flowed into pit 1, which overflowed into pit 2 and then into pit 3, by means of a series of 4-in.-diameter iron overflow drainlines, and collection and distribution drainlines buried within the absorption beds. Historical evidence shows that the absorption beds were under-designed for the volume of wastewater discharged, resulting in overflow into adjacent drainages and BV Canyon.

The absorption beds were used continuously from 1945 to 1961 and remained on standby status until September 1963, when they were permanently removed from service. In 1984, a chainlink fence was constructed around the absorption bed area. A soil cover was placed over the site to repair erosion damage in 1985.

In 1999, a NTISV cold demonstration was performed near MDA V in preparation of a plan to vitrify a portion of one of the contaminated absorption beds at MDA V. In 2000, the NTISV hot demonstration was conducted in absorption bed 1 at MDA V. The SWMU 21-018(a) absorption beds, including all distribution lines and absorption bed material, were removed during remediation activities implemented at MDA V in 2005 and 2006. Following excavation, all three absorption beds were backfilled with clean fill material.

21-021 (11/23/2020)

SWMU 21-021 consists of potential surface soil contamination resulting from the deposition of historical airborne releases of radionuclides from incinerators, stacks, and filter houses previously located throughout TA-21. The estimated area of potential soil contamination is approximately 300,000 m^2, and overlaps all of TA-21 and portions of DP Canyon north of TA-21. TA-21 was used primarily for plutonium research and metal production and related activities from 1945 to 1978. After the major plutonium research and metal production activities at TA-21 ceased in 1978, subsequent unrelated office and small-scale research activities continued until approximately 2006.

Historical airborne releases of radionuclides from stacks at TA-21 were documented from 1951 to 1971 and from 1973 to 1989. A minimum of approximately 2 Ci/yr of plutonium-239/240 was released from all TA-21 stacks in the 1950s. There is no documentation of nonradioactive chemical releases associated with the historical TA-21 stack emissions.

For investigation activities at SWMU 21-021, refer to “Phase Report 1B, TA-21 Operable Unit RCRA Facility Investigation, Operable Unit-Wide Surface Soil, Deposition Layer and Filter Building Investigation” (LANL 1994, 026073) and “Final Reponses to EPA’s Notice of Deficiency on Phase Report” (LANL 1995, 062415).For investigation activities at the AOC 21-013(g) and SWMUs 21-013(b) and 21-018(a), refer to “Supplemental Investigation Report for Consolidated Unit 21-018(a)-99, Material Disposal Area V, at Technical Area 21, Revision 1” (LANL 2008, 101892.22).

41.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 41.2-1.

Table 41.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POCs Source	Potential POCs
21-013(b)	Surface disposal site	Plutonium
21-013(g)	Surface disposal site	Metals, radionuclides
21-018(a)	MDA V	Plutonium isotopes, uranium isotopes, americium-241, strontium-90, gamma-emitting isotopes, inorganic chemicals
21-021	Systematic release (sitewide)	Americium-241, plutonium isotopes, strontium-90

41.3 Consent Order Soil Data

Decision-level data for SWMU 21-013(b) and AOC 21-013(g) consist of results from samples collected in 2005 and 2007. Revision 1 of the 2008 supplemental IR concluded that the nature and extent of contamination have been defined.

Decision level data for SWMU 21-018(a) consist of results from soil and tuff samples collected in 1994, 1996, 2005, 2006, and 2007. Revision 1 of the 2008 supplemental IR concluded that the nature and extent of contamination are defined.

Analytical results from all decision-level soil samples collected for LA-SMA-5.92 are presented in Figures 41.3-1 through 41.3-4.

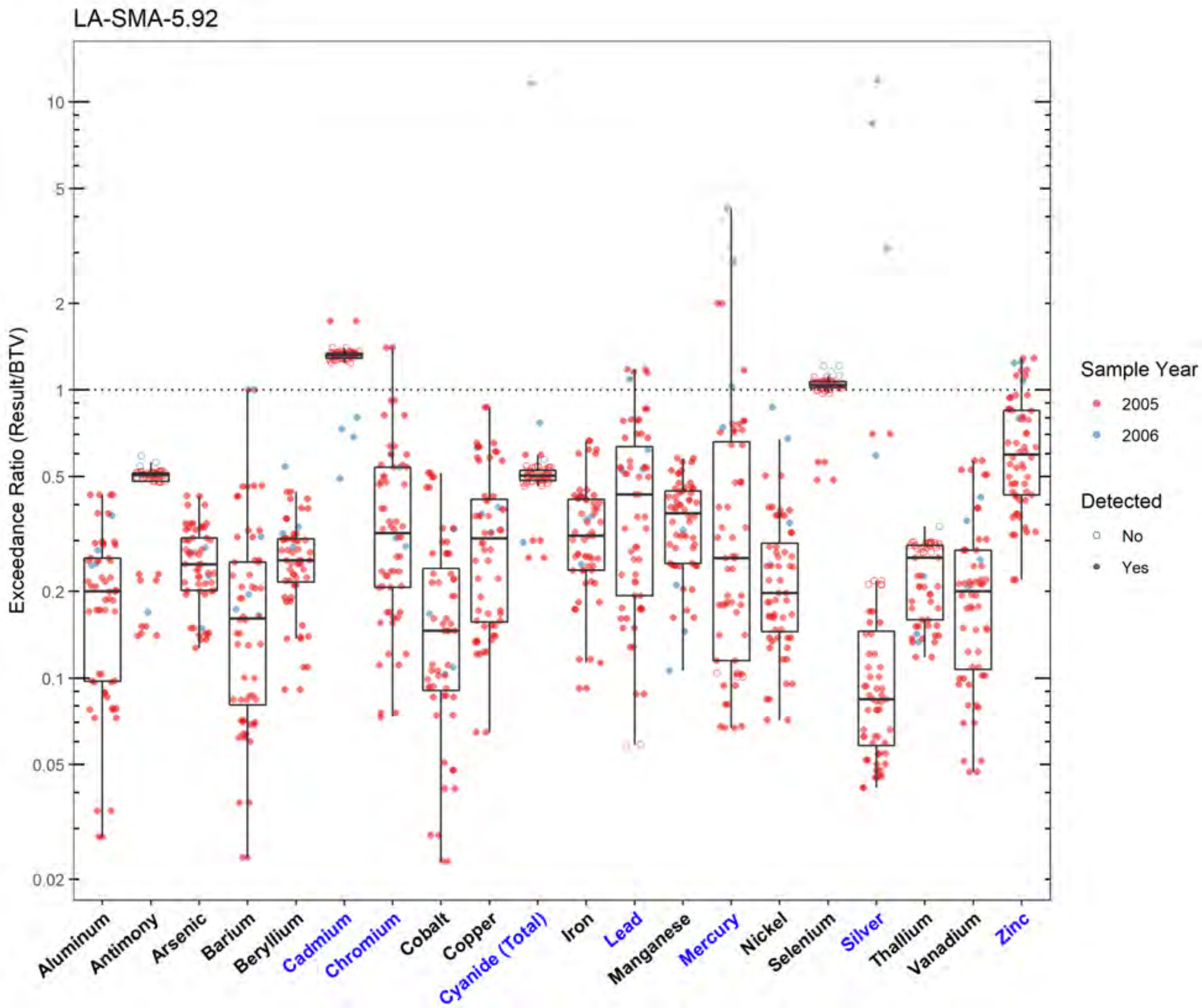


Figure 41.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-5.92

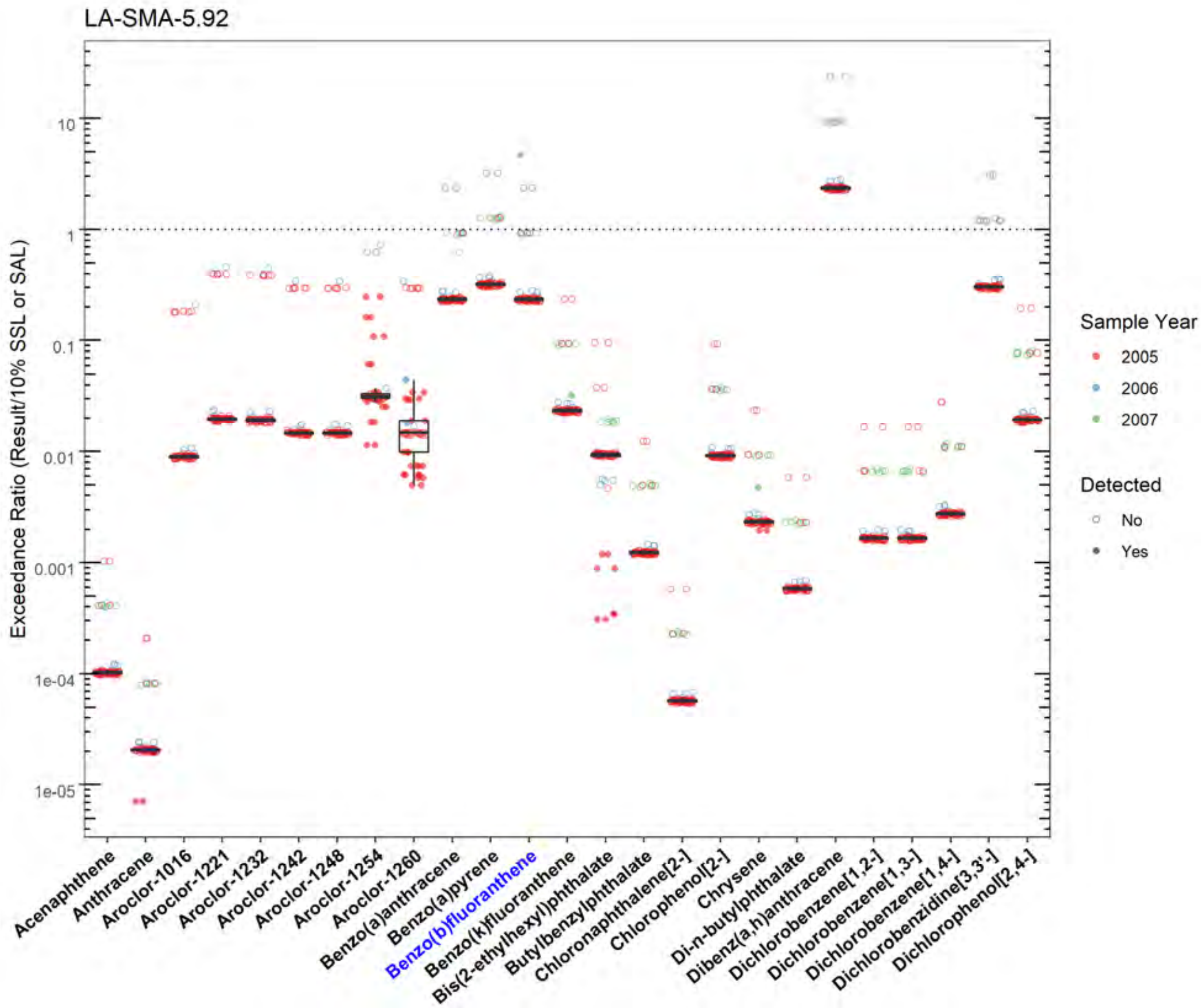


Figure 41.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.92 (Plot 1)

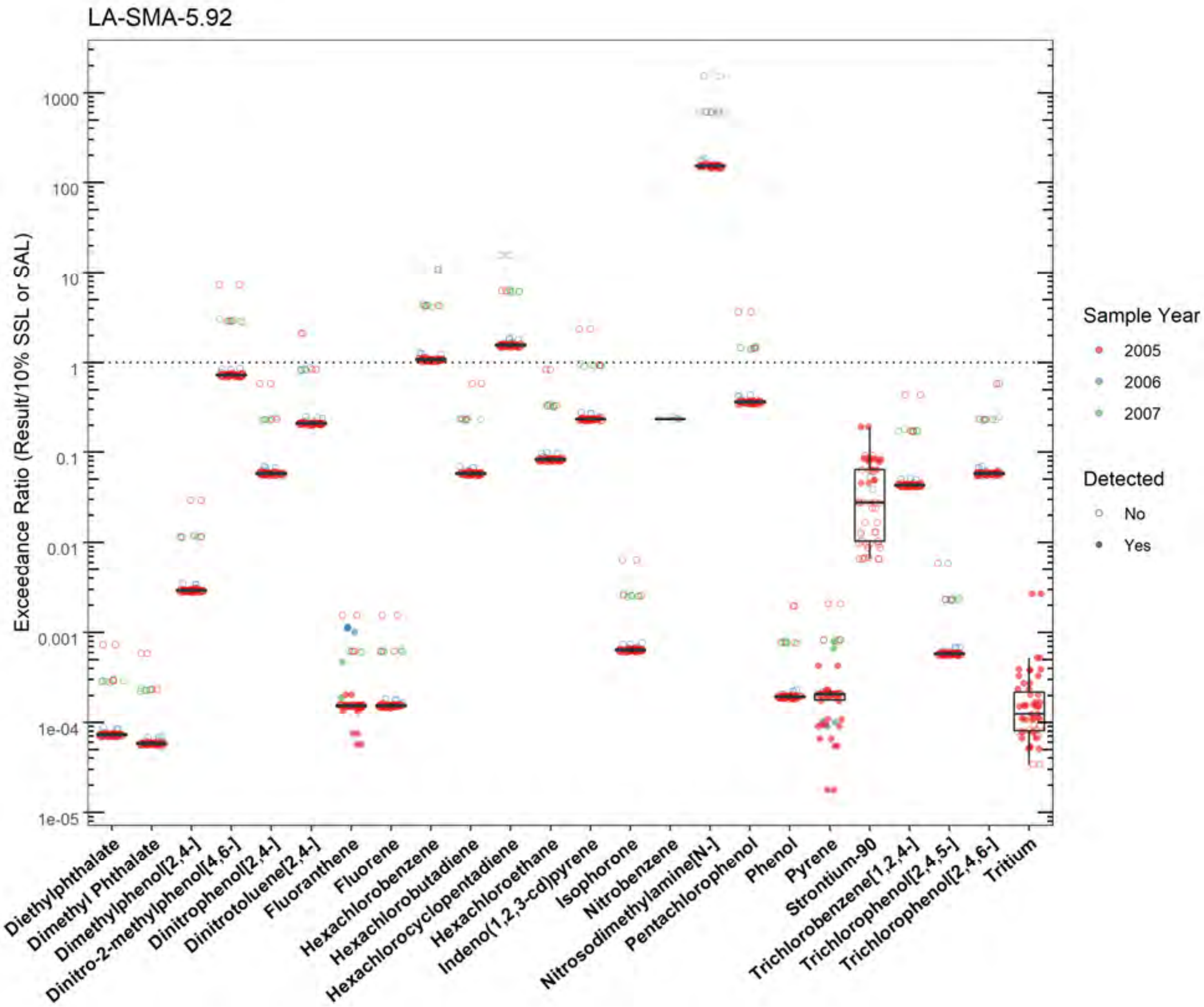


Figure 41.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-5.92 (Plot 2)

LA-SMA-5.92

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(b)fluoranthene	LA-SMA-5.92	205-99-2	Y	SSL_0.1	0.153	0.708	2007-05-11
Cadmium	LA-SMA-5.92	Cd	Y	BTV	0.400	0.691	2005-09-12
Chromium	LA-SMA-5.92	Cr	Y	BTV	19.3	27.1	2005-09-13
Cyanide (Total)	LA-SMA-5.92	CN(TOTAL)	Y	BTV	0.500	5.78	2006-03-27
Lead	LA-SMA-5.92	Pb	Y	BTV	22.3	26.4	2005-09-12
Mercury	LA-SMA-5.92	Hg	Y	BTV	0.100	0.429	2006-03-27
Silver	LA-SMA-5.92	Ag	Y	BTV	1.00	11.9	2006-03-27
Zinc	LA-SMA-5.92	Zn	Y	BTV	48.8	62.9	2005-09-12

Figure 41.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-5.92

41.4 Stormwater Evaluation

41.4.1 Summary of Stormwater Results Compared to 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.

41.4.2 Assessment Unit and Stream Impairments

LA-SMA-5.92 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The adjusted gross alpha, cyanide, and metals impairments may be Site-related, based on Site history.

41.5 Site-Specific Demonstration

41.5.1 Soil Data Summary

Mercury exceeded the applicable screening value in soil data soil data and TALs in stormwater data. All remaining Site-related POCs that exceeded the applicable 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.

41.5.2 Stormwater Data Summary

No data for the current monitoring stage have been collected. Copper and mercury exceeded TAL and BTV in the previous monitoring stage. Gross alpha exceeded TAL in 2013 stormwater data, and there was no paired SSC result to confirm whether it was below BTVs; therefore, it will be added to the SAP.

41.5.3 2022 Permit Status

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

41.5.4 Sampling and Analysis Plan

Table 41.5-1 is the proposed SAP for LA-SMA-5.92.

Table 41.5-1 Proposed SAP, LA-SMA-5.92

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment, Site history, stormwater data
Total mercury	Impairment, Site history (metals), soil data, stormwater data
Dissolved copper	Site history (metals), stormwater data
DOC	Permit requirement
SSC	Permit requirement

42.0 LA-SMA-6.25

Associated Sites	21-021, 21-024(d), 21-027(c)
Receiving Water	Los Alamos Canyon
Drainage Area	1.07 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 21-021: In Progress SWMU 21-024(d): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 21-027(c): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 AC Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the January 2018 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

42.1 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 at LA-SMA-6.25. Baseline monitoring is ongoing until one confirmation sample is collected from this SMA.

42.2 Site History

21-021 (11/23/2020)

SWMU 21-021 consists of potential surface soil contamination resulting from the deposition of historical airborne releases of radionuclides from incinerators, stacks, and filter houses previously located throughout TA-21. The estimated area of potential soil contamination is approximately 300,000 m^2, and overlaps all of TA-21 and portions of DP Canyon north of TA-21. TA-21 was used primarily for plutonium research and metal production and related activities from 1945 to 1978. After the major plutonium research and metal production activities at TA-21 ceased in 1978, subsequent unrelated office and small-scale research activities continued until approximately 2006.

Historical airborne releases of radionuclides from stacks at TA-21 were documented from 1951 to 1971 and from 1973 to 1989. A minimum of approximately 2 Ci/yr of plutonium-239/240 was released from all TA-21 stacks in the 1950s. There is no documentation of nonradioactive chemical releases associated with the historical TA-21 stack emissions.

For investigation activities, refer to “Phase Report 1B, TA-21 Operable Unit RCRA Facility Investigation, Operable Unit-Wide Surface Soil, Deposition Layer and Filter Building Investigation” (LANL 1994, 026073) and “Final Reponses to EPA’s Notice of Deficiency on Phase Report” (LANL 1995, 062415).

21-024(d) (2/27/2019)

SWMU 21-024(d) is the former location of a sanitary septic system in the southwest portion of former DP West at Technical Area TA-21, which received sanitary waste from former building 21-001 from 1945 to the early 1960s. The septic system was located south of former building 21-001, and consisted of a reinforced concrete septic tank (former structure 21-106) measuring 17.5-ft × 9.5-ft × 8.83-ft deep, two 6-in. VCP inlet drainlines, a single outlet drainline, and an outfall on the south rim of DP Mesa above Los Alamos Canyon.

Building 21-001 was constructed as an office building in 1945. The sanitary sewer system routed sewage via 6-in. VCP lines through the septic tank and outlet drainline which discharged on the south rim of DP Mesa above Los Alamos Canyon. Building 21-001 was removed in the early 1960s and the septic system was abandoned. In 1995, the septic tank was filled with pea gravel and left in place; the inlet and outlet drainlines were grouted with concrete and left in place. During the 2007 Consent Order investigation, the inactive septic tank and all remaining inlet and outlet drainlines were removed.

For investigation activities, refer to "Phase III Investigation Report for Delta Prime Site Aggregate Area at Technical Area 21, Revision 1" (LANL 2016, 601598).

21-027(c) (9/28/2021)

SWMU 21-027(c) is a former 4-in. VCP outlet drainline that exited former building 21-06 (a cafeteria and machine shop) and discharged to an outfall south of the building on the south rim of DP Mesa, within DP West at TA-21. Former building 21-06 was constructed in 1945 and was removed in 1966; the pipe was left in place. In 2007, the outlet drainline extending from former building 21-06 to the outfall was removed.

For investigation activities, refer to "Phase II Investigation Report for Delta Prime Site Aggregate Area, Revision 1" (LANL 2010, 110772.33).

42.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 42.2-1.

Table 42.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
21-021	Systematic release (sitewide)	Americium-241, plutonium isotopes, strontium-90
21-024(d)	Septic system	Radionuclides, inorganic and organic chemicals
21-027(c)	Outfall from former building 21-06	PAHs

42.3 Consent Order Soil Data

Most of the SWMUs and AOCs at TA-21 lie within the footprint of SWMU 21-021. Therefore, surface and shallow subsurface samples from investigation of those sites are also representative of SWMU 21-021. Data from samples collected as part of Consent Order investigations and associated remediation activities are decision-level data. The approved DP Site Aggregate Area IWP (LANL 2009, 108166.9) indicated that the investigation of SWMU 21-021 was complete and no additional investigations were required.

Decision-level data for SWMU 21-024(d) consist of results from samples collected in 2007, 2008, 2009, 2010, and 2011. The 2016 Phase III IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for SWMU 21-027(c) consist of results from samples collected in 2007 and 2009. Revision 1 of the 2010 Phase II IR concluded that the nature and extent of contamination were defined.

Analytical results from all decision-level soil samples collected for LA-SMA-6.25 are presented in Figures 42.3-1 through 42.3-4.

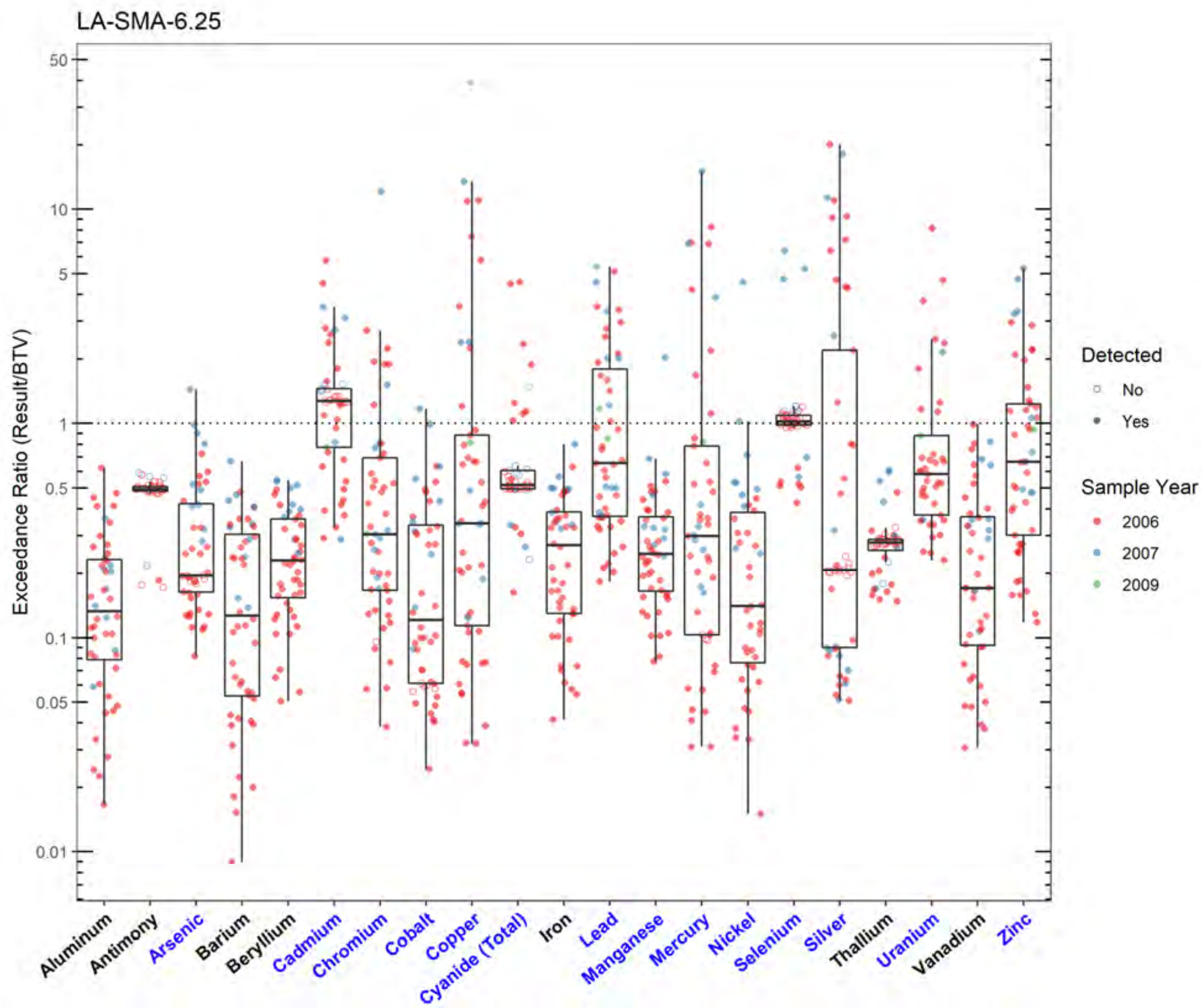


Figure 42.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-6.25

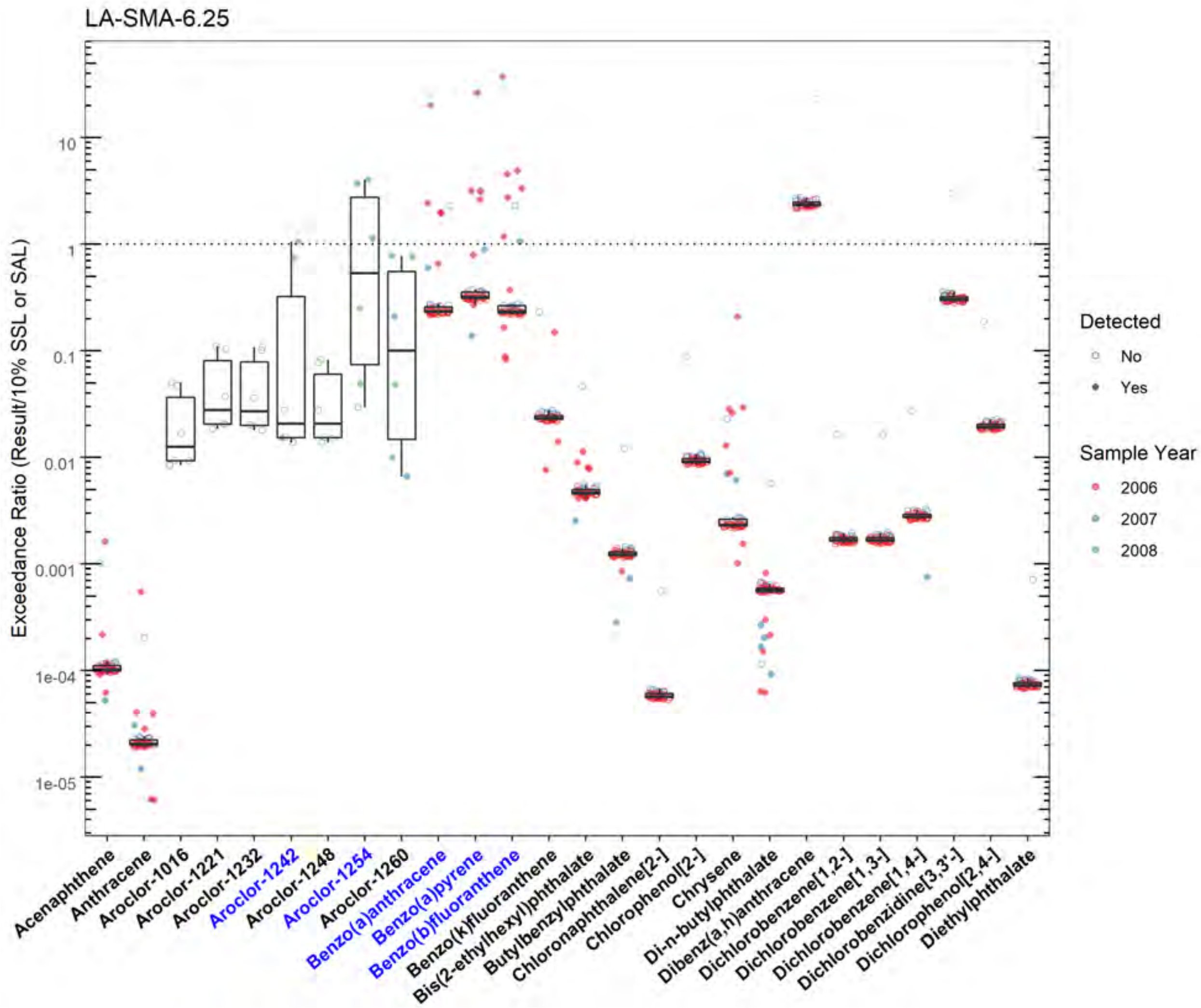


Figure 42.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-6.25 (Plot 1)

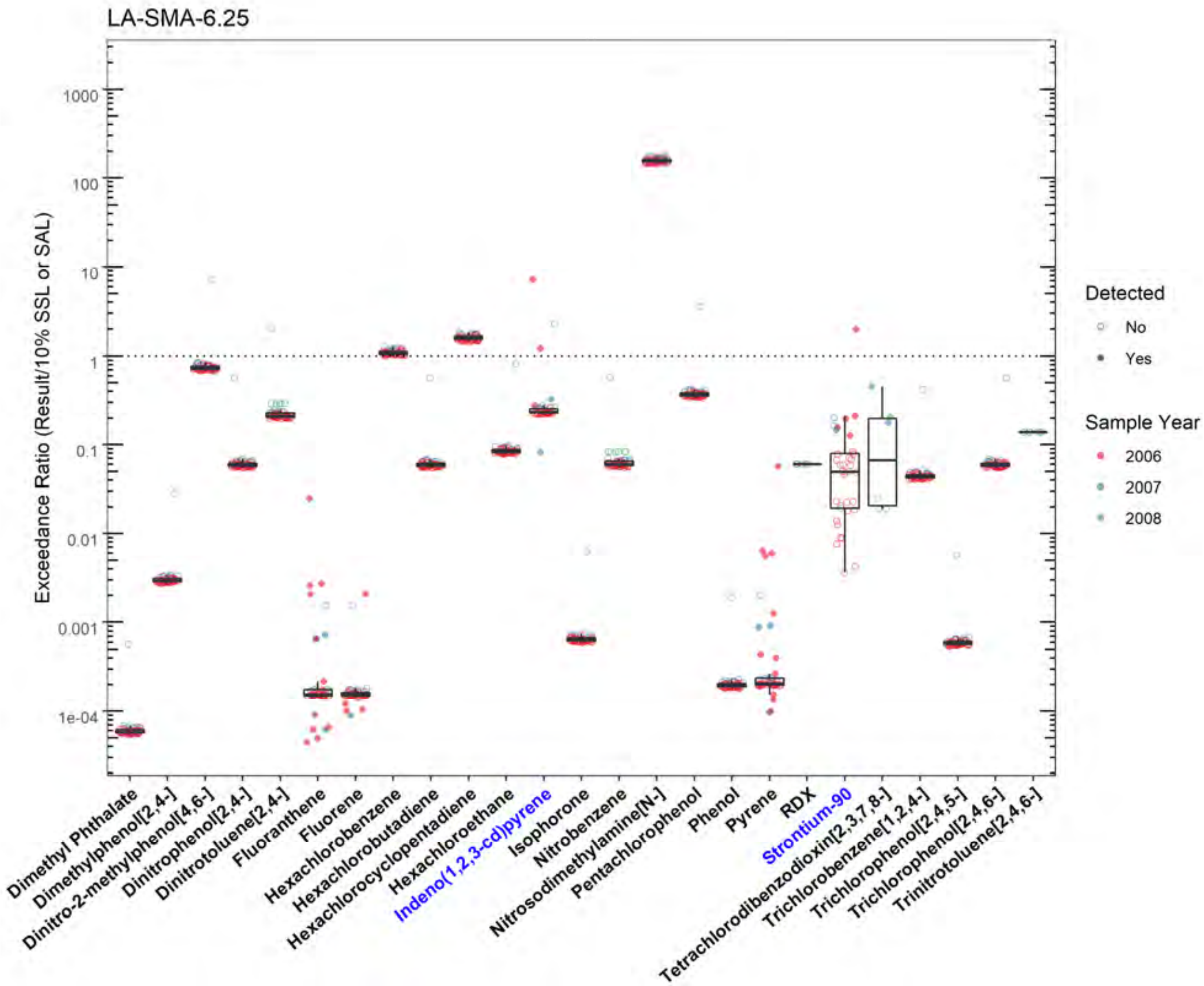


Figure 42.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-6.25 (Plot 2)

LA-SMA-6.25

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1242	LA-SMA-6.25	53469-21-9	Y	SSL_0.1	0.243	0.256	2008-01-22
Aroclor-1254	LA-SMA-6.25	11097-69-1	Y	SSL_0.1	0.114	0.457	2008-01-22
Arsenic	LA-SMA-6.25	As	Y	BTV	8.17	11.8	2007-10-11
Benzo(a)anthracene	LA-SMA-6.25	56-55-3	Y	SSL_0.1	0.153	3.08	2006-12-18
Benzo(a)pyrene	LA-SMA-6.25	50-32-8	Y	SSL_0.1	0.112	2.93	2006-12-18
Benzo(b)fluoranthene	LA-SMA-6.25	205-99-2	Y	SSL_0.1	0.153	5.67	2006-12-18
Cadmium	LA-SMA-6.25	Cd	Y	BTV	0.400	2.30	2006-12-11
Chromium	LA-SMA-6.25	Cr	Y	BTV	19.3	233	2007-10-11
Cobalt	LA-SMA-6.25	Co	Y	BTV	8.64	10.1	2007-10-11
Copper	LA-SMA-6.25	Cu	Y	BTV	14.7	575	2007-10-11
Cyanide (Total)	LA-SMA-6.25	CN(TOTAL)	Y	BTV	0.500	2.28	2006-12-11
Indeno(1,2,3-cd)pyrene	LA-SMA-6.25	193-39-5	Y	SSL_0.1	0.153	1.11	2006-12-18
Lead	LA-SMA-6.25	Pb	Y	BTV	22.3	120	2009-06-22
Manganese	LA-SMA-6.25	Mn	Y	BTV	671	1360	2007-10-11
Mercury	LA-SMA-6.25	Hg	Y	BTV	0.100	1.50	2007-10-11
Nickel	LA-SMA-6.25	Ni	Y	BTV	15.4	70.4	2007-10-11
Selenium	LA-SMA-6.25	Se	Y	BTV	1.52	9.70	2007-10-11
Silver	LA-SMA-6.25	Ag	Y	BTV	1.00	20.1	2006-12-06
Strontium-90	LA-SMA-6.25	Sr-90	Y	SAL_0.1	1.50	2.97	2006-12-18
Uranium	LA-SMA-6.25	U	Y	BTV	1.82	14.8	2006-12-06
Zinc	LA-SMA-6.25	Zn	Y	BTV	48.8	258	2007-10-11

Figure 42.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-6.25

42.4 Stormwater Evaluation

42.4.1 Summary of Stormwater Results Compared to 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.

42.4.2 Assessment Unit and Stream Impairments

LA-SMA-6.25 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The impairments may be Site-related, based on Site history.

42.5 Site-Specific Demonstration

42.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: arsenic, Aroclor-1242, Aroclor-1254, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, cadmium, chromium, cobalt, copper, cyanide (weak acid dissociable), indeno(1,2,3-cd)pyrene, lead, manganese, mercury, nickel, selenium, silver, strontium-90, uranium, and zinc.

42.5.2 Stormwater Data Summary

No confirmation-monitoring data.

42.5.3 2022 Permit Status

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

42.5.4 Sampling and Analysis Plan

Table 42.5-1 is the proposed SAP for LA-SMA-6.25.

Table 42.5-1 Proposed SAP, LA-SMA-6.25

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history
Total cyanide, mercury and selenium	Impairment, Site history (metals), and soil data
Total PCBs	Impairment, Site history (organics), soil data
Dissolved arsenic, cadmium, cobalt, chromium, copper, nickel, manganese, lead, silver, uranium, zinc	Site history (metals) and soil data
Radium-226 and radium-228	Site history (radionuclides)
Strontium-90	Site history and soil data
SVOCs	Site history (organics) and soil data
Tritium	Site history (radionuclides)
DOC	Permit requirement
SSC	Permit requirement

43.0 LA-SMA-6.3

Associated Sites	21-006(b)
Receiving Water	Los Alamos Canyon
Drainage Area	1.65 acres
Landscape Characteristics	4% impervious, 96% pervious
Consent Order Site Status	SWMU 21-006(b): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 AC Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the January 2018 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site.
2022 Permit Status	Long-Term Stewardship per Permit Part I.C.3.a criterion

43.1 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 2019. Analytical results from this sample initiated corrective action.

SWMU 21-006(b) received a COC under the Consent Order in September 2018. The Permittees submitted a certification of completion of corrective action for the Site to EPA per Permit part I.E.2(d) in December 2019 (N3B 2019, 700724). Stormwater monitoring has not occurred since 2019.

43.2 Site History

21-006(b) (2/22/2019)

SWMU 21-006(b) is an inactive seepage pit consisting of a brick manhole constructed in a trench (structure 21-118), an inlet acid drainline, an outlet vapor drainline, and an outfall in the southwest portion of TA-21. The brick seepage pit measures 13 ft × 4 ft × 6 ft deep with a wooden cover. The seepage pit and associated drainlines were installed during the construction of building 21-003 in 1945. A 3-in. Jennite-coated (coal tar sealer) cast-iron inlet drainline exited the southeast side of former building 21-002, and extended approximately 160 ft southward to the seepage pit (structure 21-118). A 2-in. steel outlet drainline ran approximately 100 ft southward from the pit to an outfall approximately 8 ft above the bench surface below the mesa top above Los Alamos Canyon. The drainlines and seepage pit were installed to receive ether waste from the ethyl ether extraction process as part of the original TA-21 plutonium-purification process conducted in building 21-002.

The ether extraction process was discontinued in September of 1945. Documentation is not available to confirm that all discharges to the seepage pit also ceased in 1945. The location of the seepage pit and associated drainlines has not been conclusively identified. Plutonium processing work was moved to TA-55 in the late 1970s. Building 21-002 was decommissioned in the 1990s and demolished in 2010.

For investigation activities, refer to “Phase III Investigation Report for Delta Prime Site Aggregate Area at Technical Area 21, Revision 1” (LANL 2016, 601598).

43.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 43.2-1.

Table 43.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POC
21-006(b)	Disposal pit	Plutonium

43.3 Consent Order Soil Data

Decision-level data for SWMU 21,006(b) consist of results from samples collected in 2007, 2009, 2010, and 2011. Analytical results from those samples are presented in Figures 43.3-1 through 43.3-4. The 2016 Phase III IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

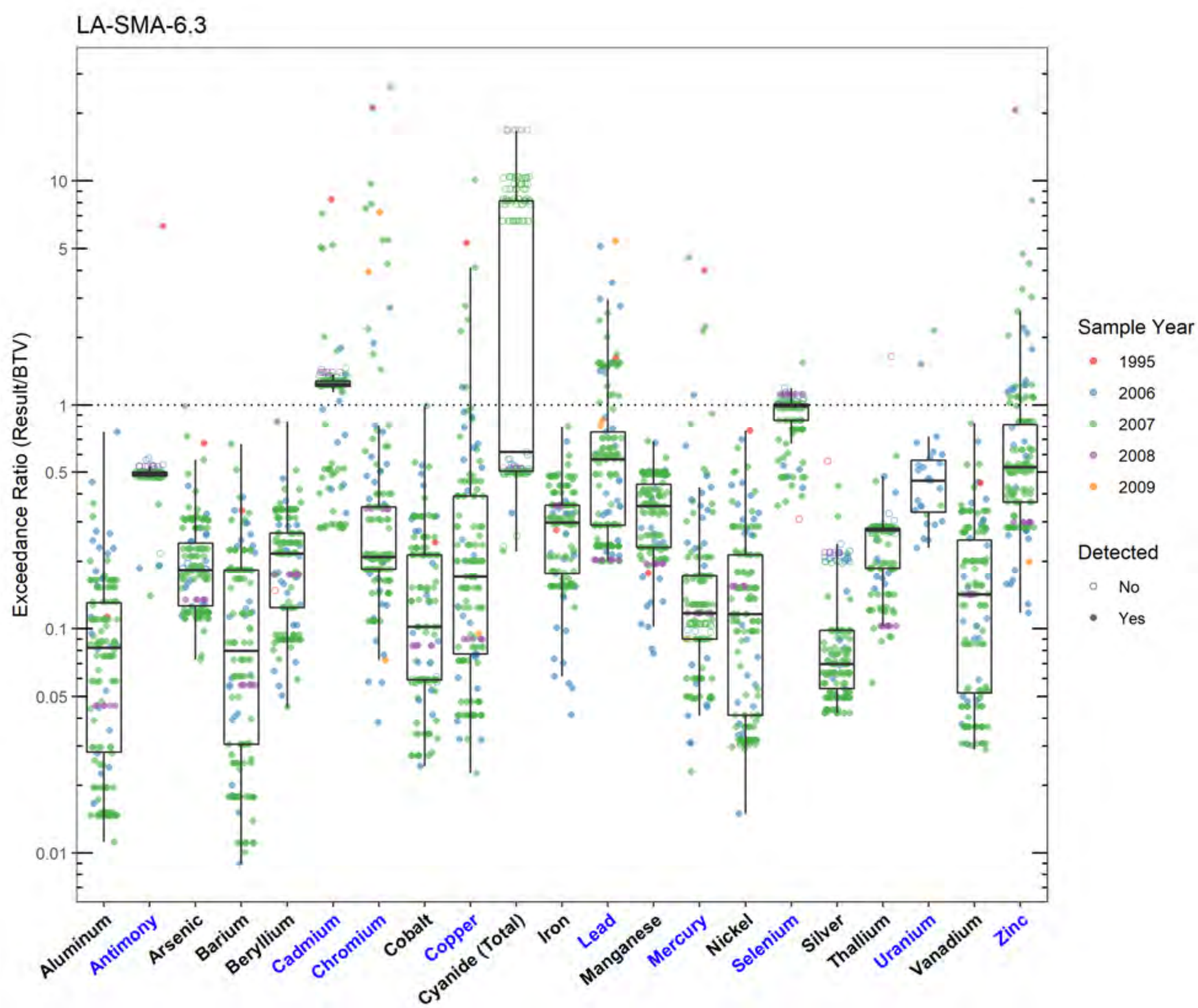


Figure 43.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-6.3

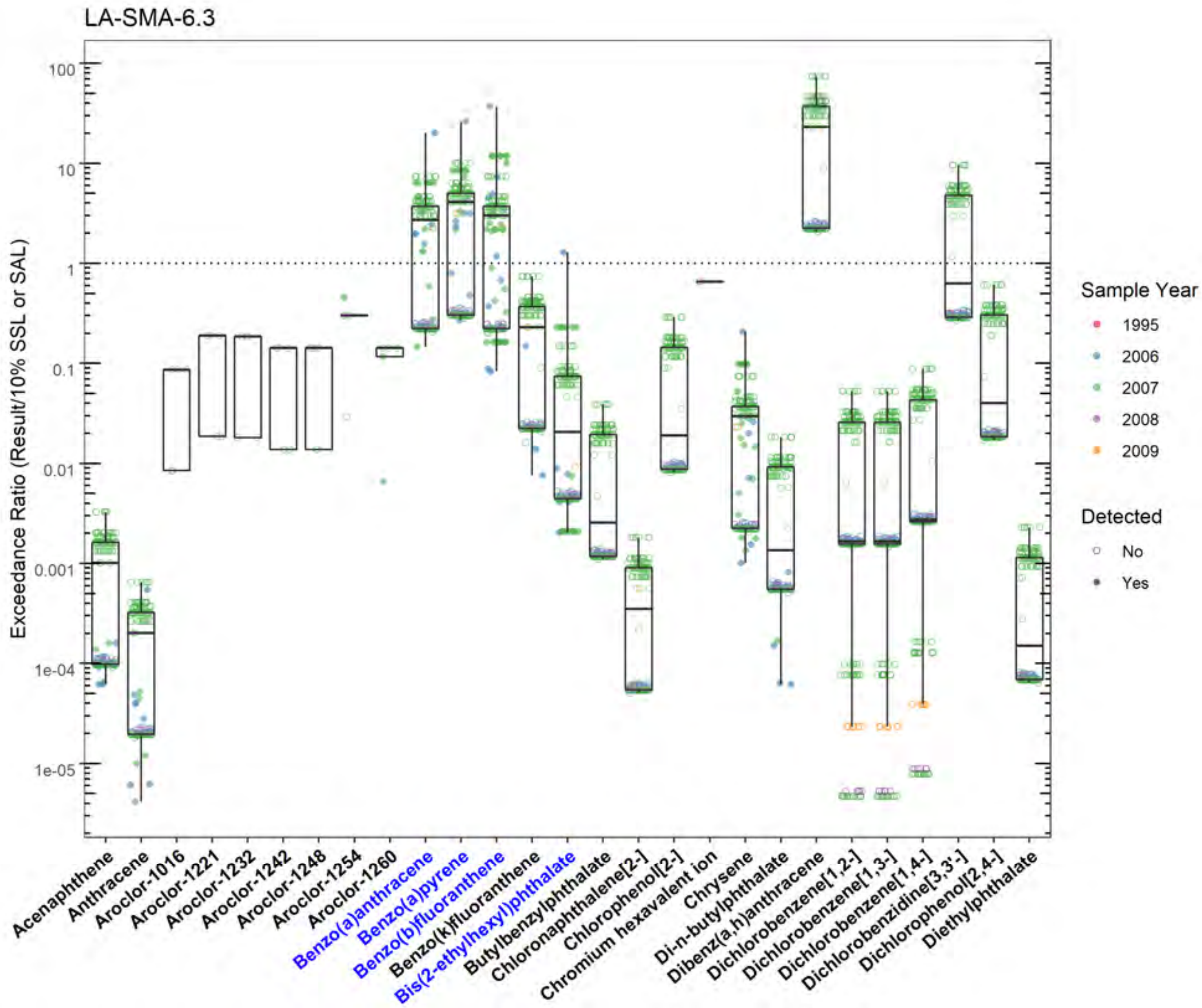


Figure 43.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-6.3 (Plot 1)

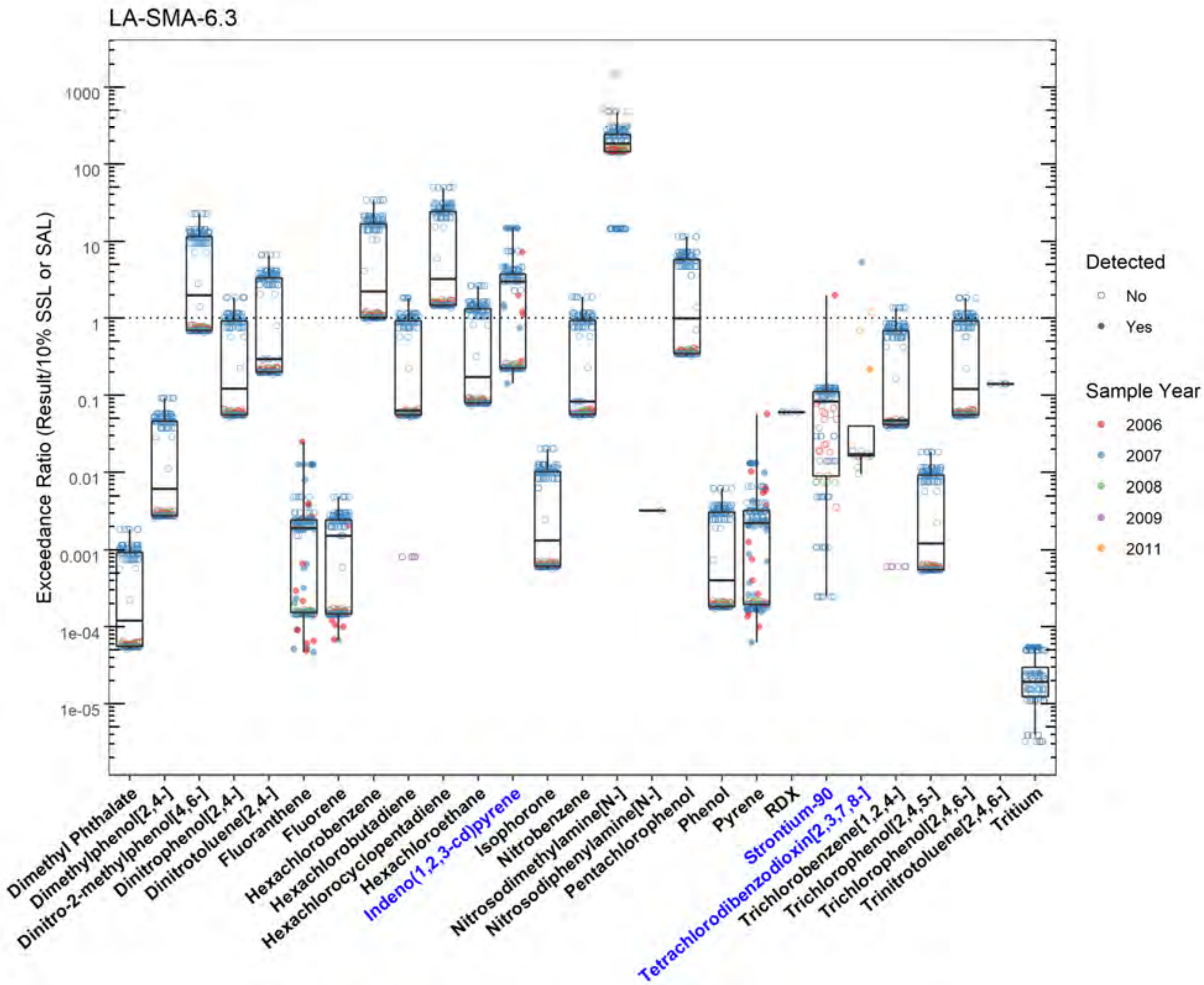


Figure 43.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-6.3 (Plot 2)

LA-SMA-6.3

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	LA-SMA-6.3	Sb	Y	BTV	0.830	5.20	1995-10-06
Benzo(a)anthracene	LA-SMA-6.3	56-55-3	Y	SSL_0.1	0.153	3.08	2006-12-18
Benzo(a)pyrene	LA-SMA-6.3	50-32-8	Y	SSL_0.1	0.112	2.93	2006-12-18
Benzo(b)fluoranthene	LA-SMA-6.3	205-99-2	Y	SSL_0.1	0.153	5.67	2006-12-18
Bis(2-ethylhexyl)phthalate	LA-SMA-6.3	117-81-7	Y	SSL_0.1	38.0	48.8	2006-12-18
Cadmium	LA-SMA-6.3	Cd	Y	BTV	0.400	3.30	1995-10-06
Chromium	LA-SMA-6.3	Cr	Y	BTV	19.3	509	2007-07-10
Copper	LA-SMA-6.3	Cu	Y	BTV	14.7	148	2007-07-10
Indeno(1,2,3-cd)pyrene	LA-SMA-6.3	193-39-5	Y	SSL_0.1	0.153	2.25	2007-05-24
Lead	LA-SMA-6.3	Pb	Y	BTV	22.3	120	2009-06-22
Mercury	LA-SMA-6.3	Hg	Y	BTV	0.100	0.457	2007-07-10
Selenium	LA-SMA-6.3	Se	Y	BTV	1.52	2.34	2007-08-22
Strontium-90	LA-SMA-6.3	Sr-90	Y	SAL_0.1	1.50	2.97	2006-12-18
Tetrachlorodibenzodioxin[2,3,7,8-]	LA-SMA-6.3	1746-01-6	Y	SSL_0.1	0.00000490	0.0000259	2007-07-17
Uranium	LA-SMA-6.3	U	Y	BTV	1.82	3.92	2007-07-12
Zinc	LA-SMA-6.3	Zn	Y	BTV	48.8	1010	1995-10-06

Figure 43.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-6.3

43.4 Stormwater Evaluation

43.4.1 Summary of Stormwater Results Compared to TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in July 2019. Analytical results from that sample are presented in Figures 43.4-1 through 43.4-4.

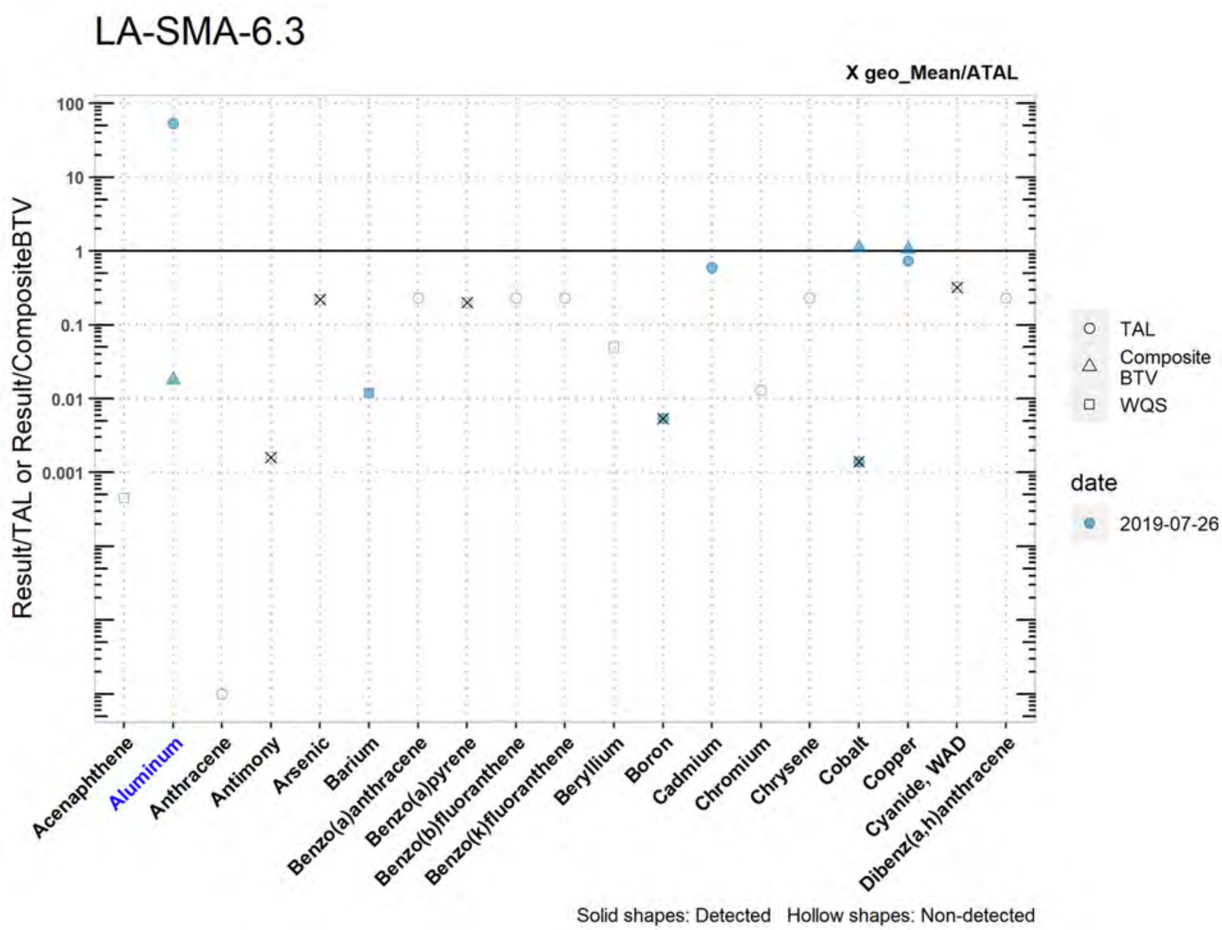


Figure 43.4-1 Analytical Results from Stormwater Sample, LA-SMA-6.3 (Plot 1)

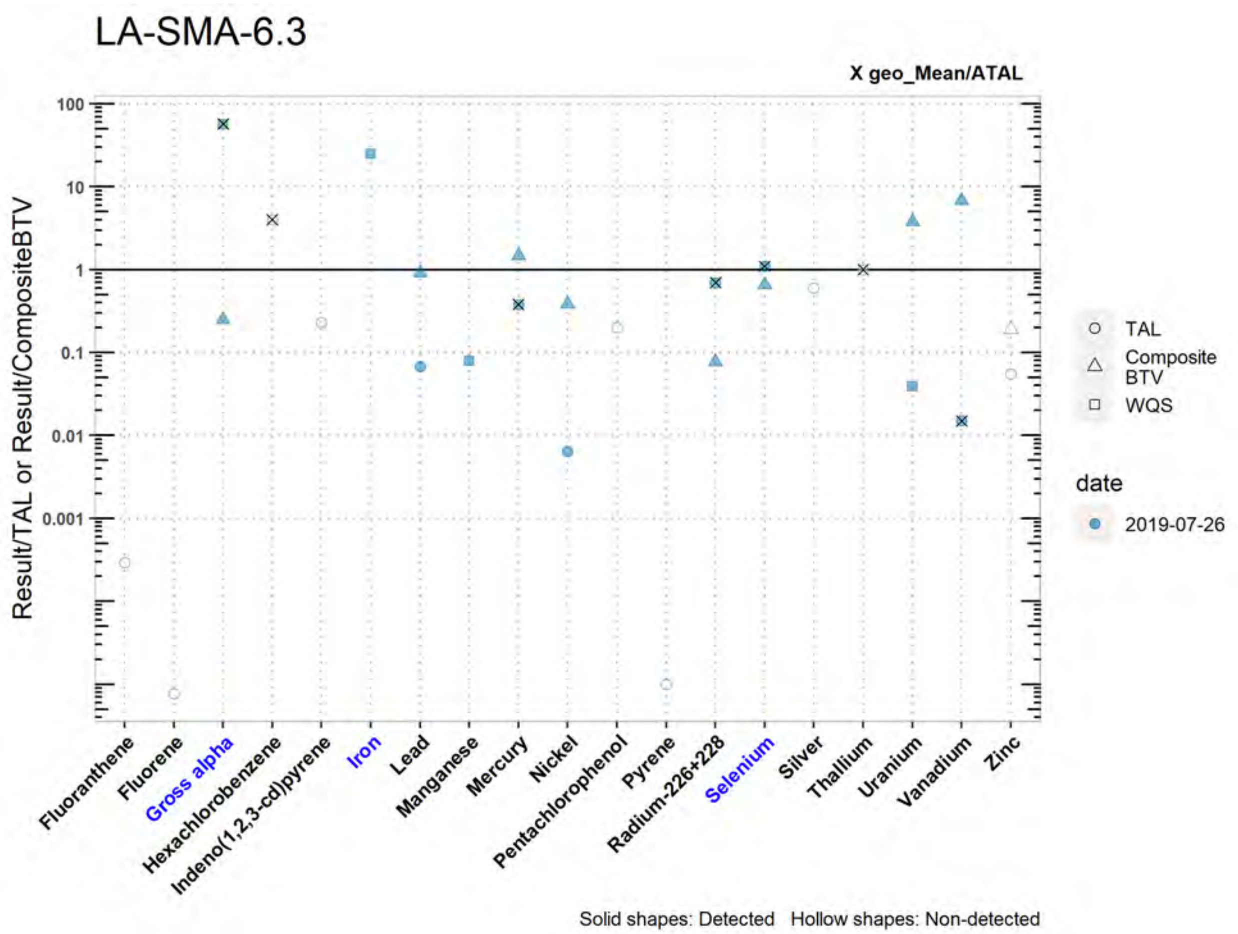


Figure 43.4-2 Analytical Results from Stormwater Sample, LA-SMA-6.3 (Plot 2)

LA-SMA-6.3

	Acenaphthene	Aluminum	Anthracene	Antimony	Arsenic	Barium	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Beryllium	Boron	Cadmium	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	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	1000	NA	5.2	NA
MTAL	NA	765	NA	NA	340	NA	0.18	NA	0.18	0.18	NA	NA	0.65	233	0.18	NA	4.8	22	0.18
Composite_BTV	NA	37300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.22	3.35	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
2019-07-26 result	*0.0408*	40900	*0.0408*	*1.00*	*2.00*	23.8	*0.0408*	*0.0408*	*0.0408*	*0.0408*	*0.200*	27.1	0.410	*3.00*	*0.0408*	1.36	3.53	*1.67*	*0.0408*
2019-07-26 dT	NA	53.5	NA	NA	NA	0.012	NA	NA	NA	NA	NA	0.0054	0.6	NA	NA	0.0014	0.735	NA	NA
2019-07-26 dB	NA	0.0180	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.11	1.05	NA	NA
geo_mean/ATAL	NA	NA	NA	0.0016	0.22	NA	NA	0.2	NA	NA	NA	0.0054	NA	NA	NA	0.0014	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 43.4-3 Analytical Results from Stormwater Sample, LA-SMA-6.3 (Table 1)

LA-SMA-6.3

	Fluoranthene	Fluorene	Gross alpha	Hexachlorobenzene	Indeno(1,2,3-cd)pyrene	Iron	Lead	Manganese	Mercury	Nickel	Pentachlorophenol	Pyrene	Radium-226+228	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc
MQL	0.064	0.064	NA	5	0.064	NA	0.5	NA	0.005	0.5	5	0.064	NA	5	0.5	0.5	NA	50	20
ATAL	NA	NA	15	0.0029	NA	NA	NA	NA	0.77	NA	NA	NA	30	5	NA	0.47	NA	100	NA
MTAL	140	5300	NA	NA	0.18	NA	19.3	NA	NA	186	19	4000	NA	20	0.49	NA	NA	NA	59.2
Composite_BTV	NA	NA	56.9	NA	NA	NA	1.44	NA	0.200	3.10	NA	NA	4.45	8.63	NA	NA	0.310	0.219	17.4
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
2019-07-26 result	*0.0408*	*0.0408*	857	*0.0120*	*0.0408*	25200	1.31	9.44	0.292	1.19	*3.80*	*0.0408*	20.9	5.66	*0.300*	*0.600*	1.17	1.48	*3.30*
2019-07-26 dT	NA	NA	57	NA	NA	25	0.0679	0.079	0.38	0.00640	NA	NA	0.697	1.1	NA	NA	0.039	0.015	NA
2019-07-26 dB	NA	NA	0.248	NA	NA	NA	0.910	NA	1.46	0.384	NA	NA	0.0772	0.656	NA	NA	3.77	6.76	NA
geo_mean/ATAL	NA	NA	57	4	NA	NA	NA	NA	0.38	NA	NA	NA	0.697	1.1	NA	1	NA	0.015	NA

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

Figure 43.4-4 Analytical Results from Stormwater Sample, LA-SMA-6.3 (Table 2)

43.4.2 Assessment Unit and Stream Impairments

LA-SMA-6.3 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The adjusted gross alpha impairment may be Site-related, based on Site history.

43.5 Site-Specific Demonstration

43.5.1 Soil Data Summary

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

43.5.2 Stormwater Data Summary

Total aluminum, gross alpha, and selenium exceeded TALs but not BTVs.

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

43.5.3 2022 Permit Status

The SMA is eligible for long-term stewardship. All Site-related POCs with TALs were below their respective composite BTVs (Part I.C.3.a).

44.0 LA-SMA-6.31

Associated Sites	21-027(a)
Receiving Water	Los Alamos Canyon
Drainage Area	0.65 acres
Landscape Characteristics	2% impervious, 98% pervious
Consent Order Site Status	SWMU 21-027(a): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls
2010 AC Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the January 2018 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

44.1 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. Monitoring is ongoing until one confirmation sample is collected from this SMA.

44.2 Site History

21-027(a) (no date)

SWMU 21-027(a) consists of drainlines that received effluent from floor drains in former building 21-003, a surface storm drainage system, and a former NPDES-permitted outfall that discharges to the mesa edge and into Los Alamos Canyon in the southwest portion of DP West at TA-21. Building 21-003 was constructed in 1945 as part of original DP West plutonium processing facilities. A 4-in. VCP ran beneath a paved area south of the former building 21-03 footprint for about 30 ft and emptied into a storm drain. A 12-in. culvert ran from the storm drain underground for about 50 ft, emptying onto the ground at a ponding area on the southwest corner of the footprint of former cooling tower [former structure 21-143, AOC C-21-027]. From the cooling tower footprint, runoff flowed in an unlined ditch to a 24-in.-diameter CMP culvert that carried runoff beneath the south perimeter road to the mesa edge. The CMP extended about 3 ft over the mesa edge. The outfall was permitted as Outfall EPA03A031 under NPDES Permit No. NM0028355 in 1994.

Building 21-003, the drains and the outlet drainlines beneath the surface, and cooling tower 21-143 (AOC C-21-007) were removed during D&D activities in 1994–1995. The 4-in. drainline beneath the paved area was left in place, as was the storm drain that collects runoff from nearby parking lots. The outfall was removed from the LANL NPDES permit, effective July 11, 1995. During the 2007 DP Site Aggregate Area investigation, remaining drainlines were removed, along with the top foot of soil at the former ponding area. The section of drainline beneath the south TA-21 perimeter road was left in place because the road was active and continued to service DP East.

For investigation activities refer to “Phase III Investigation Report for Delta Prime Site Aggregate Area at Technical Area 21, Revision 1” (LANL 2016, 601598).

44.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 44.2-1.

Table 44.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
21-027(a)	Industrial or sanitary wastewater treatment	Radionuclides, inorganic and organic chemicals

44.3 Consent Order Soil Data

Decision-level data for SWMU 21-027(a) consist of results from samples collected in 2007, 2008, 2009, and 2011. Analytical results from those samples are presented in Figures 44.3-1 through 44.3-4. The 2016 Phase III IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

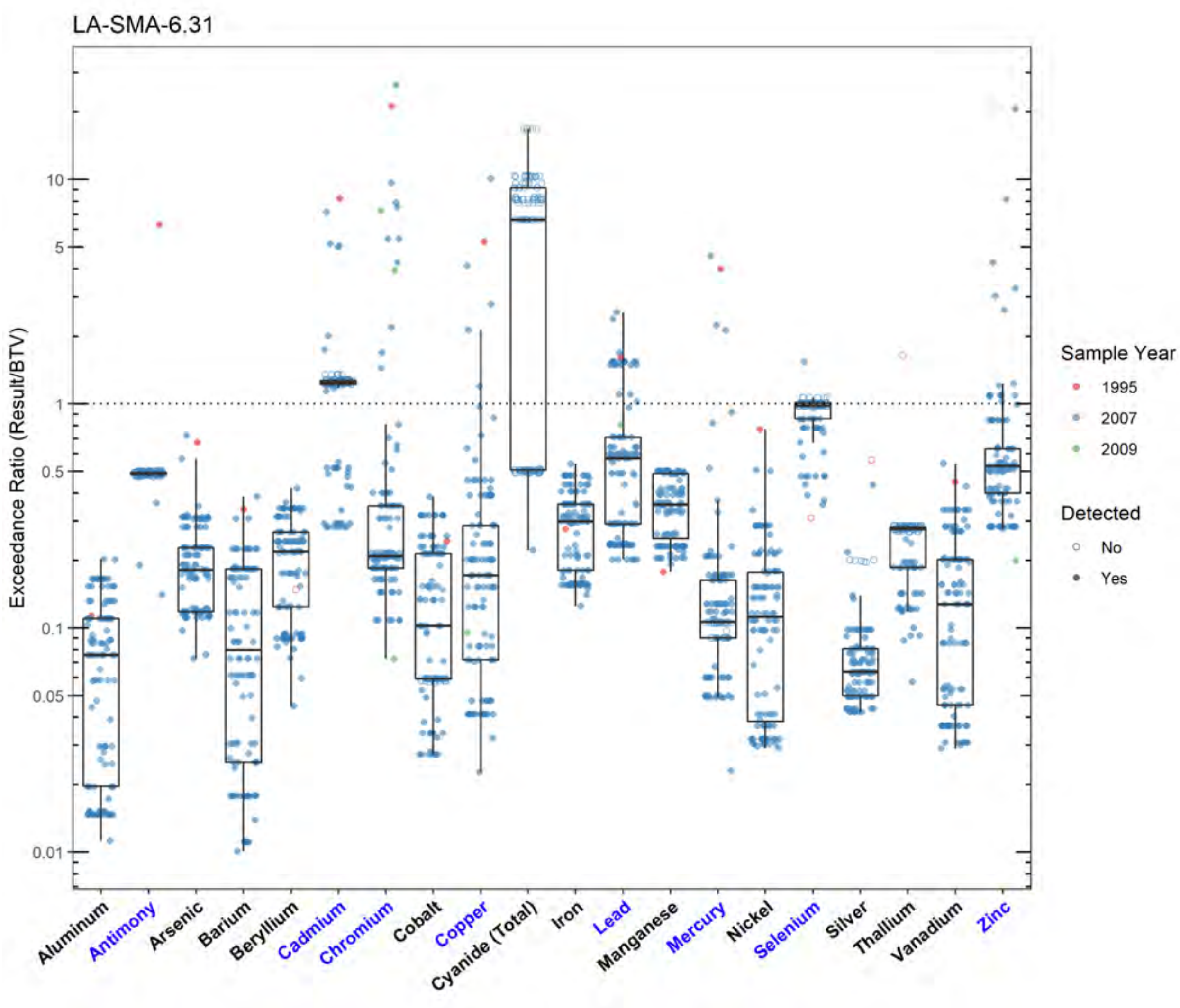


Figure 44.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-6.31

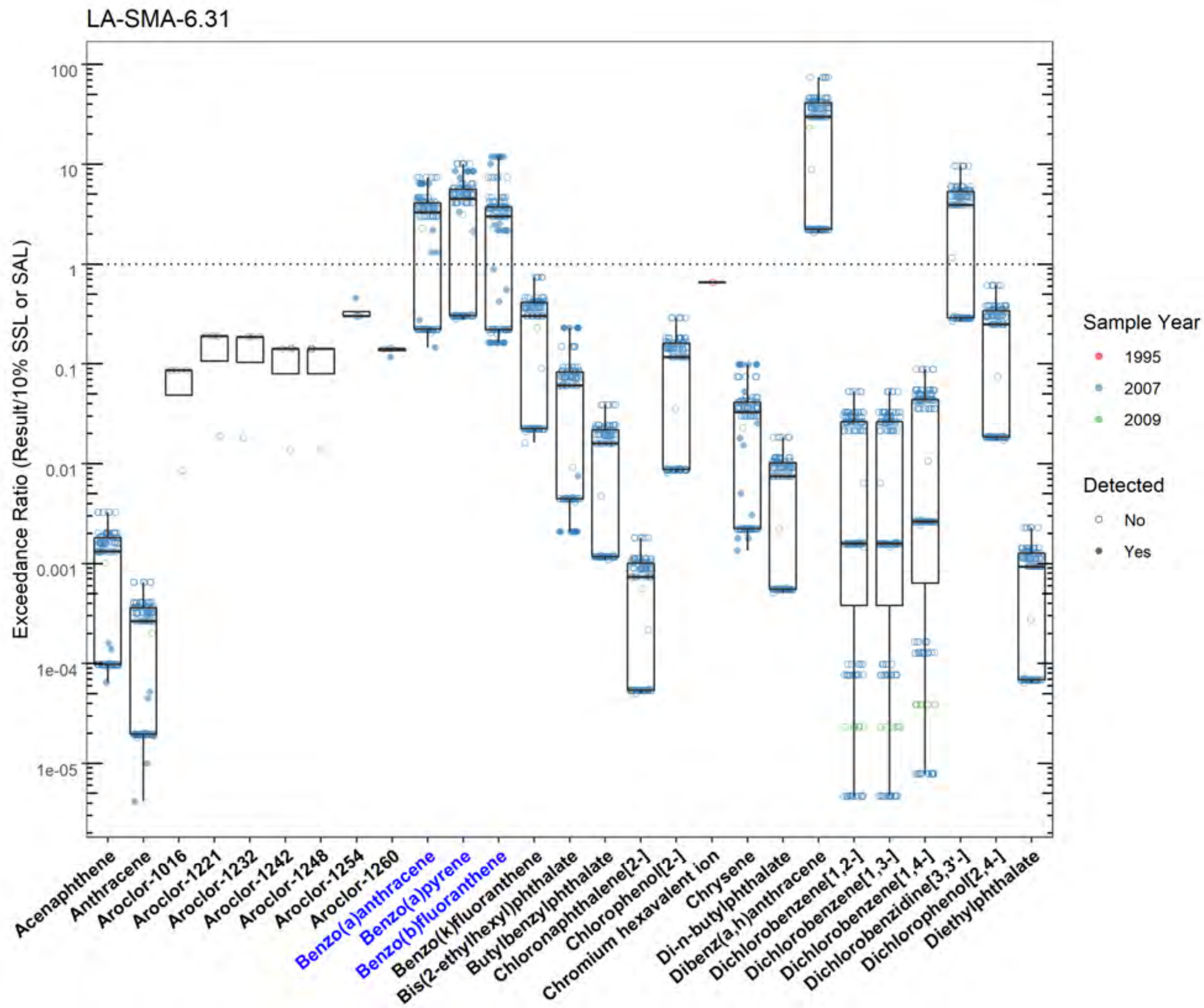


Figure 44.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-6.31 (Plot 1)

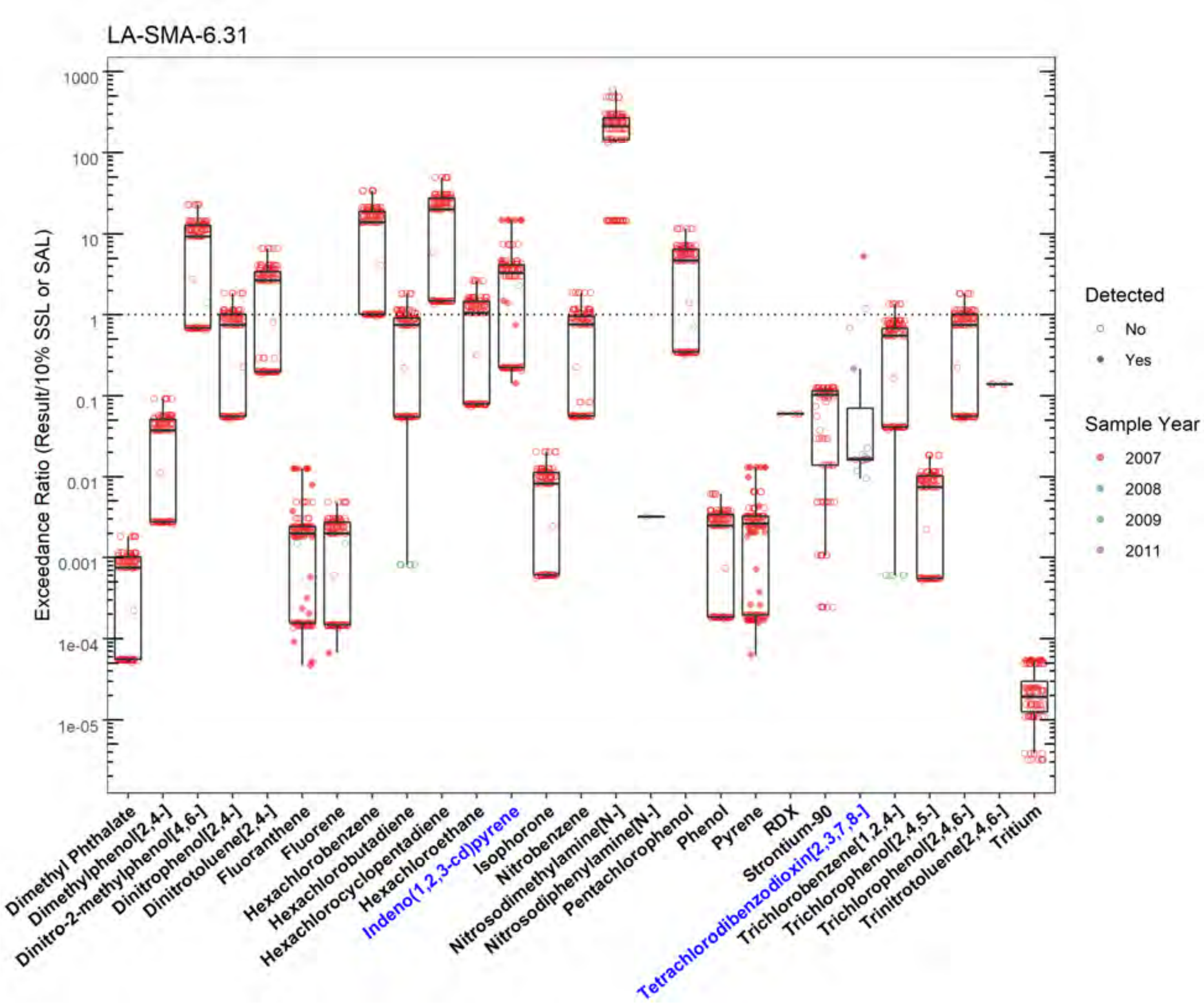


Figure 44.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-6.31 (Plot 2)

LA-SMA-6.31

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	LA-SMA-6.31	Sb	Y	BTV	0.830	5.20	1995-10-06
Benzo(a)anthracene	LA-SMA-6.31	56-55-3	Y	SSL_0.1	0.153	0.980	2007-05-24
Benzo(a)pyrene	LA-SMA-6.31	50-32-8	Y	SSL_0.1	0.112	0.948	2007-05-24
Benzo(b)fluoranthene	LA-SMA-6.31	205-99-2	Y	SSL_0.1	0.153	1.81	2007-05-24
Cadmium	LA-SMA-6.31	Cd	Y	BTV	0.400	3.30	1995-10-06
Chromium	LA-SMA-6.31	Cr	Y	BTV	19.3	509	2007-07-10
Copper	LA-SMA-6.31	Cu	Y	BTV	14.7	148	2007-07-10
Indeno(1,2,3-cd)pyrene	LA-SMA-6.31	193-39-5	Y	SSL_0.1	0.153	2.25	2007-05-24
Lead	LA-SMA-6.31	Pb	Y	BTV	22.3	57.0	2007-07-10
Mercury	LA-SMA-6.31	Hg	Y	BTV	0.100	0.457	2007-07-10
Selenium	LA-SMA-6.31	Se	Y	BTV	1.52	2.34	2007-08-22
Tetrachlorodibenzodioxin[2,3,7,8-]	LA-SMA-6.31	1746-01-6	Y	SSL_0.1	0.00000490	0.0000259	2007-07-17
Zinc	LA-SMA-6.31	Zn	Y	BTV	48.8	1010	1995-10-06

Figure 44.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-6.31

44.4 Stormwater Evaluation

44.4.1 Summary of Stormwater Results Compared to 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.

44.4.2 Assessment Unit and Stream Impairments

LA-SMA-6.31 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. These impairments may be Site-related, based on Site history.

44.5 Site-Specific Demonstration

44.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: antimony, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, cadmium, chromium, copper, indeno(1,2,3-cd)pyrene, lead, mercury, selenium, and zinc.

PCBs were measured in soil data and did not exceed the applicable screening value in soil data.

44.5.2 Stormwater Data Summary

No confirmation-monitoring data.

44.5.3 2022 Permit Status

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

44.5.4 Sampling and Analysis Plan

Table 44.5-1 is the proposed SAP for LA-SMA-6.31.

Table 44.5-1 Proposed SAP, LA-SMA-6.31

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history (radionuclides)
Total cyanide, mercury, and selenium	Impairments and Site history (inorganics), soil data
Total PCBs	Impairment and Site history
Dissolved cadmium, chromium, copper, lead, antimony, and zinc	Site history (inorganics) and soil data
SVOCs	Soil data and Site history (organics)
Radium-226 and radium-228	Site history (radionuclides)
Tritium	Site history (radionuclides)
DOC	Permit requirement
SSC	Permit requirement

45.0 LA-SMA-6.32

Associated Sites	21-021
Receiving Water	Los Alamos Canyon
Drainage Area	0.01 acres
Landscape Characteristics	37% impervious, 63% pervious
Consent Order Site Status	SWMU 21-021: In Progress
2010 AC Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the January 2018 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

45.1 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. Monitoring is ongoing until one confirmation sample is collected from this SMA.

45.2 Site History

21-021 (11/23/2020)

SWMU 21-021 consists of potential surface soil contamination resulting from the deposition of historical airborne releases of radionuclides from incinerators, stacks, and filter houses previously located throughout TA-21. The estimated area of potential soil contamination is approximately 300,000 m^2, and overlaps all of TA-21 and portions of DP Canyon north of TA-21.

TA-21 was used primarily for plutonium research and metal production and related activities from 1945 to 1978. After the major plutonium research and metal production activities at TA-21 ceased in 1978, subsequent unrelated office and small-scale research activities continued until approximately 2006. Historical airborne releases of radionuclides from stacks at TA-21 were documented from 1951 to 1971 and from 1973 to 1989. A minimum of approximately 2 Ci/yr of plutonium-239/240 was released from all TA-21 stacks in the 1950s. There is no documentation of nonradioactive chemical releases associated with the historical TA-21 stack emissions.

For investigation activities, refer to “Phase Report 1B, TA-21 Operable Unit RCRA Facility Investigation, Operable Unit-Wide Surface Soil, Deposition Layer and Filter Building Investigation” (LANL 1994, 026073) and “Final Reponses to EPA’s Notice of Deficiency on Phase Report” (LANL 1995, 062415).

45.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 45.2-1.

Table 45.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
21-021	Systematic release (sitewide)	Americium-241, plutonium isotopes, strontium-90

45.3 Consent Order Soil Data

Most of the SWMUs and AOCs at TA-21 lie within the footprint of SWMU 21-021. Therefore, surface and shallow subsurface samples from investigation of those sites are also representative of SWMU 21-021. Data from samples collected as part of Consent Order investigations and associated remediation activities are decision-level data. The approved DP Site Aggregate Area IWP (LANL 2009, 108166.9) indicated that the investigation of SWMU 21-021 was complete and no additional investigations were required.

45.4 Stormwater Evaluation

45.4.1 Summary of Stormwater Results Compared to 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.

45.4.2 Assessment Unit and Stream Impairments

LA-SMA-6.32 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. The adjusted gross alpha impairment may be Site-related, based on Site history.

45.5 Site-Specific Demonstration

45.5.1 Soil Data Summary

No Consent Order soil data available.

45.5.2 Stormwater Data Summary

No confirmation-monitoring data.

45.5.3 2022 Permit Status

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

45.5.4 Sampling and Analysis Plan

Table 45.5-1 is the proposed SAP for LA-SMA-6.32.

Table 45.5-1 Proposed SAP, LA-SMA-6.32

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history
Strontium-90	Site history
DOC	Permit requirement
SSC	Permit requirement

46.0 LA-SMA-6.34

Associated Sites	21-021, 21-022(h)
Receiving Water	Los Alamos Canyon
Drainage Area	0.70 acres
Landscape Characteristics	2% impervious, 98% pervious
Consent Order Site Status	SWMU 21-021: In Progress SWMU 21-022(h): In Progress
2010 AC Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the January 2018 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

46.1 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. Monitoring is ongoing until one confirmation sample is collected from this SMA.

46.2 Site History

21-021 (11/23/2020)

SWMU 21-021 consists of potential surface soil contamination resulting from the deposition of historical airborne releases of radionuclides from incinerators, stacks, and filter houses previously located throughout TA-21. The estimated area of potential soil contamination is approximately 300,000 m^2, and overlaps all of TA-21 and portions of DP Canyon north of TA-21.

TA-21 was used primarily for plutonium research and metal production and related activities from 1945 to 1978. After the major plutonium research and metal production activities at TA-21 ceased in 1978, subsequent unrelated office and small-scale research activities continued until approximately 2006. Historical airborne releases of radionuclides from stacks at TA-21 were documented from 1951 to 1971 and from 1973 to 1989. A minimum of approximately 2 Ci/yr of plutonium-239/240 was released from all TA-21 stacks in the 1950s. There is no documentation of nonradioactive chemical releases associated with the historical TA-21 stack emissions.

For investigation activities, refer to the “Phase Report 1B, TA-21 Operable Unit RCRA Facility Investigation, Operable Unit-Wide Surface Soil, Deposition Layer and Filter Building Investigation” (LANL 1994, 026073) and “Final Reponses to EPA’s Notice of Deficiency on Phase Report” (LANL 1995, 062415).

21-022(h) (9/3/2019)

SWMU 21-022(h) consists of a former sump (former structure 21-202), inlet and outlet drainlines, and a former NPDES-permitted outfall (EPA 03A032), south of former building 21-150 in the south-central portion of TA-21. Building 21-150 was constructed in 1963 as a plutonium-fuels development building, including the development of plutonium-238 heat sources for space electric-power applications. Building 21-150 became operational in 1963.

Former structure 21-202 consisted of a 36-in.-diameter CMP designed to receive industrial wastewater from the building 21-150 basement floor and roof drains, and route effluent through a 150-ft-long, 6-in.-diameter drainline that discharged to an outfall in Los Alamos Canyon. Releases of plutonium-238 occurred in several rooms in former building 21-150, resulting in contamination on soil adjacent to, and the roof above, room 605A, and in the basement from leaks in vacuum pump leaks. Building 21-150 was decontaminated between 1978 and 1981 to allow continued occupancy for non-plutonium research operations. All plutonium processing equipment was removed along with the building roof and soil contamination outside room 605A. The circulating chilled-water system was decontaminated and left place for continued use.

The LANL Inorganic and Structural Chemistry Group (CNC-4) began operating former building 21-150 as a molecular-chemistry laboratory with offices in the early 1980s. By 1991, the 6-in. outlet drain line had been replaced with a 24-in. drainline and only treated cooling water was being discharged to the SWMU 21-022(h) sump system and outfall. Building 21-150 was subsequently decommissioned in the early 1990s.

The SWMU 21-022(h) sump (structure 21-202) and associated inlet and outlet drainlines were removed in 2007. The section of the outlet drainline located beneath the southern branch of DP Road was left in place because the road was, and remains, active to access DP East. Building 21-150 was demolished down to the concrete slab in November 2010.

For investigation activities, refer to "Phase III Investigation Report for Delta Prime Site Aggregate Area at Technical Area 21, Revision 1" (LANL 2016, 601598).

46.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 46.2-1.

Table 46.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
21-021	Systematic release (sitewide)	Americium-241, plutonium isotopes, strontium-90
21-022(h)	Waste lines	Plutonium, inorganic and organic chemicals, radionuclides

46.3 Consent Order Soil Data

Most of the SWMUs and AOCs at TA-21 lie within the footprint of SWMU 21-021. Therefore, surface and shallow subsurface samples from investigation of those sites are also representative of SWMU 21-021. Data from samples collected as part of Consent Order investigations and associated remediation activities are decision-level data. The approved DP Site Aggregate Area IWP (LANL 2009, 108166.9) indicated that the investigation of SWMU 21-021 was complete and no additional investigations were required.

Decision-level data for SWMU 21-022(h) consist of results from samples collected in 2007, 2009 and 2011. The 2016 Phase III IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results from all decision-level soil samples collected for LA-SMA-6.34 are presented in Figures 46.3-1 through 46.3-4.

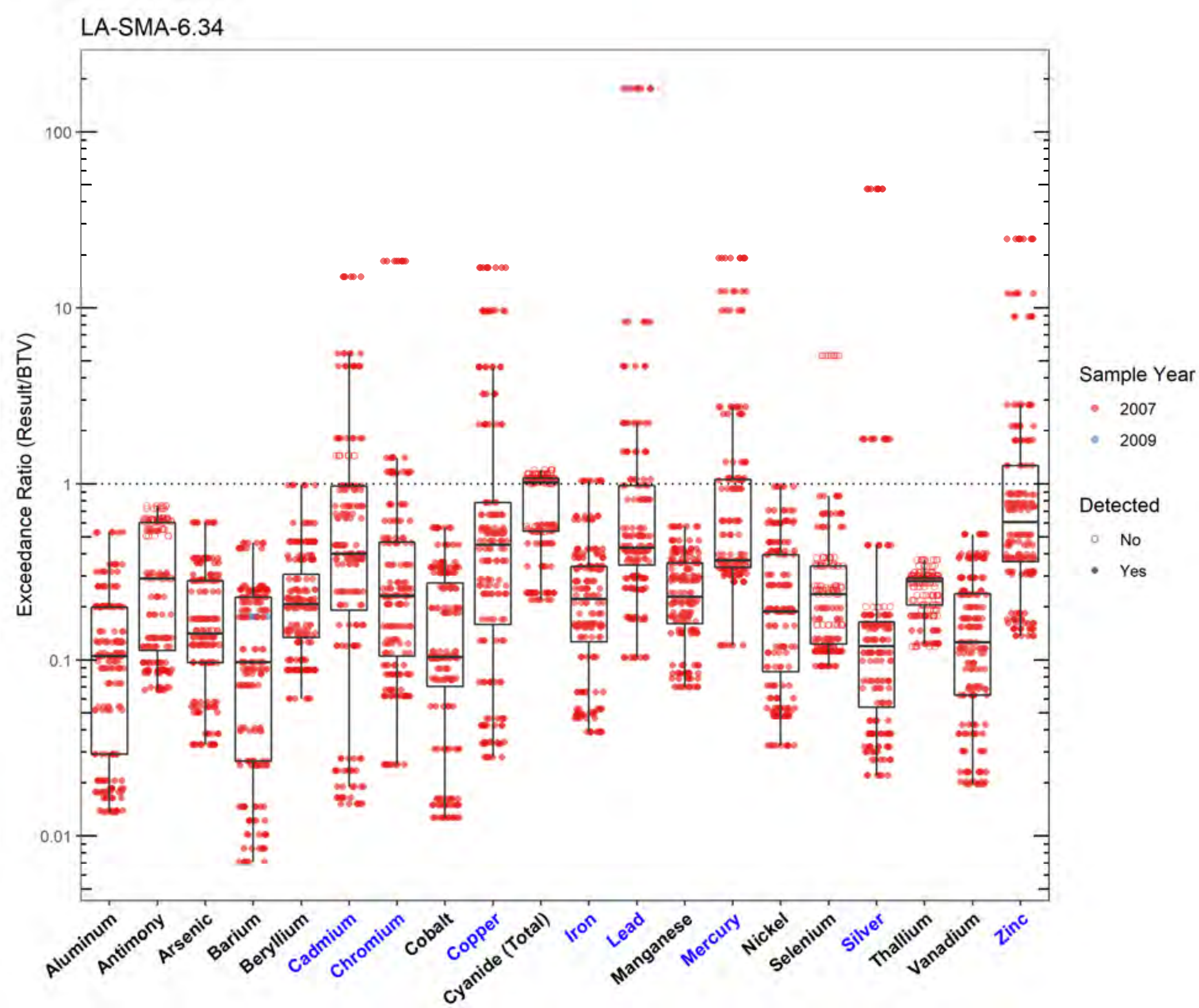


Figure 46.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-6.34

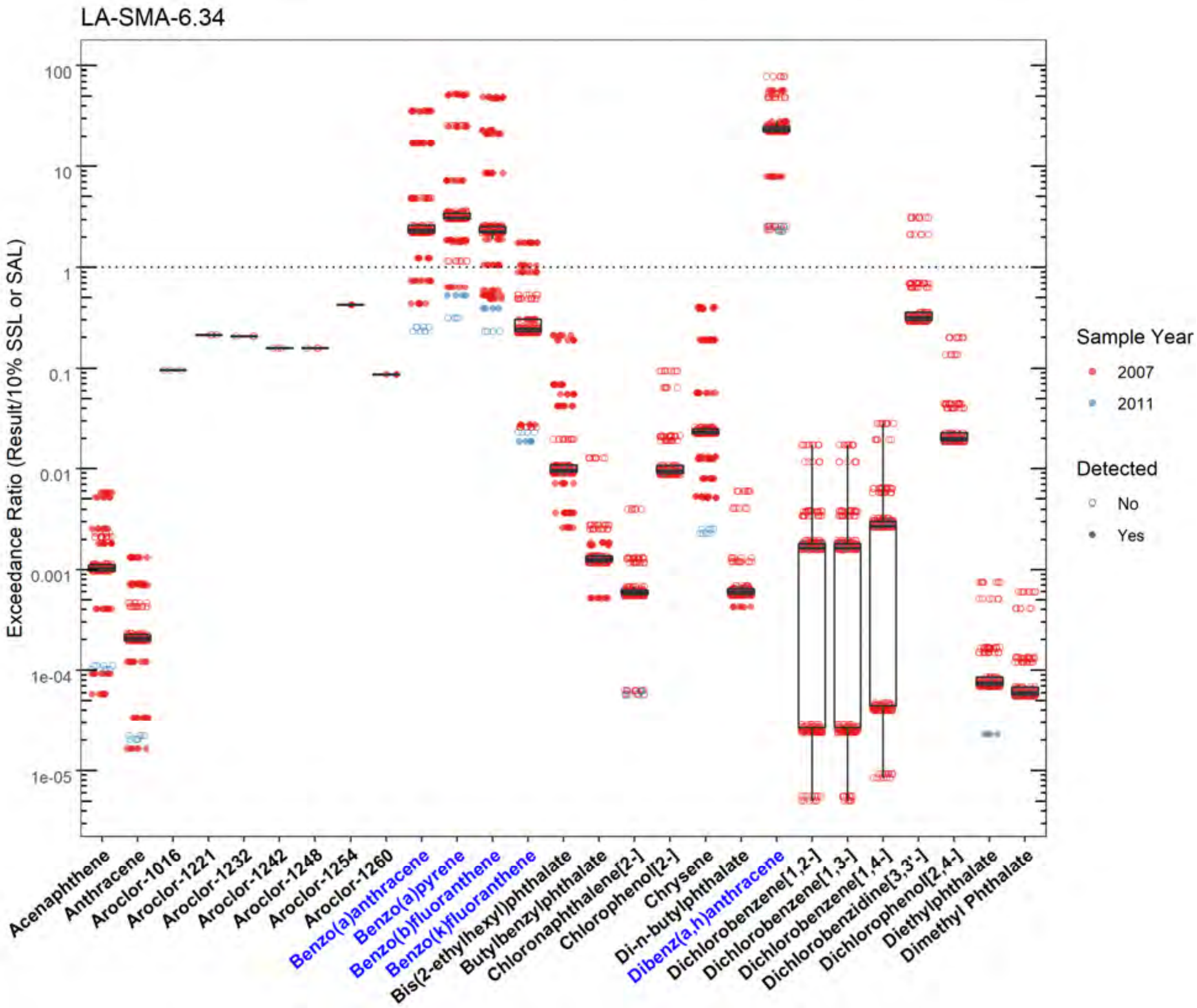


Figure 46.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-6.34 (Plot 1)

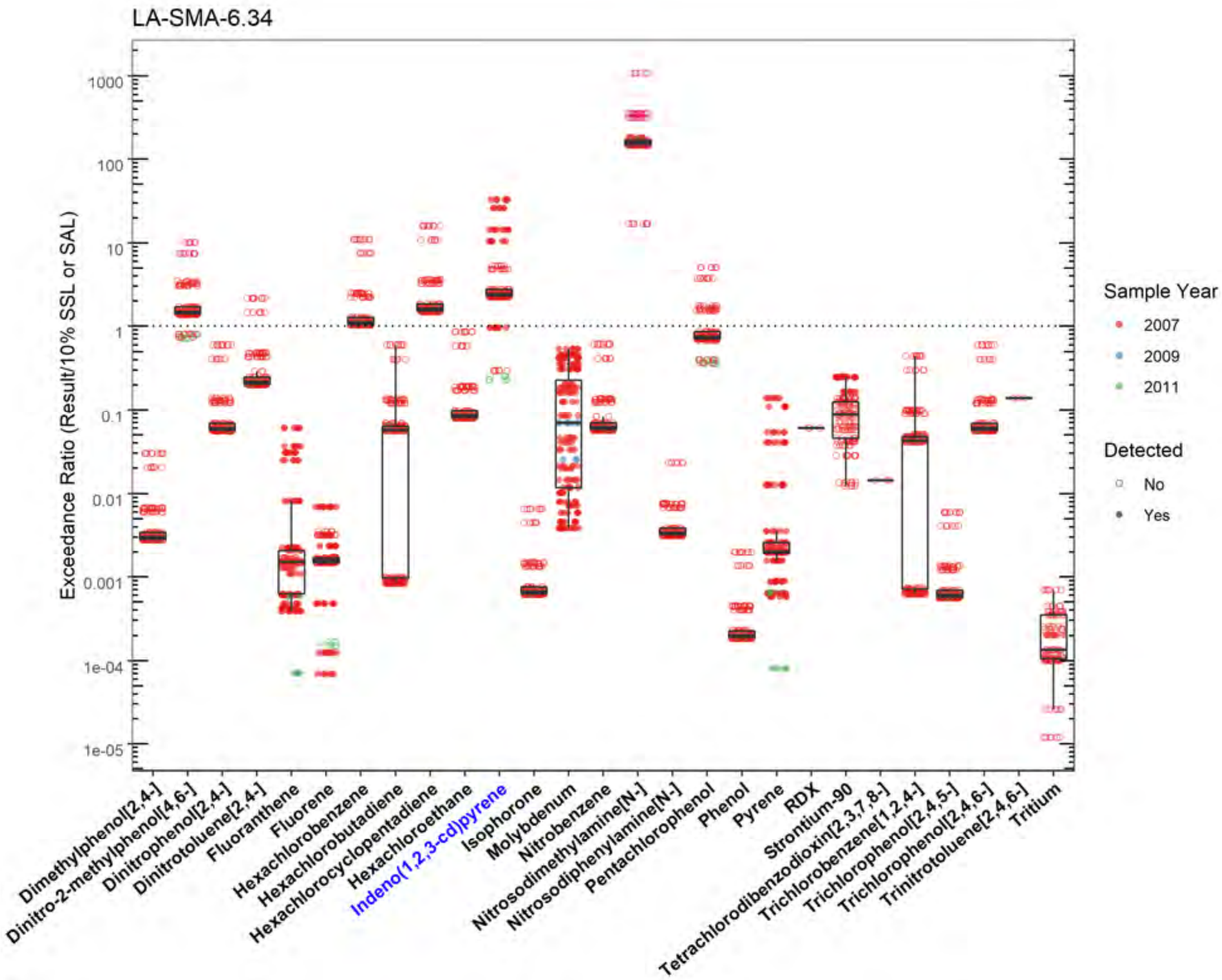


Figure 46.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-6.34 (Plot 2)

LA-SMA-6.34

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	LA-SMA-6.34	56-55-3	Y	SSL_0.1	0.153	5.50	2007-05-23
Benzo(a)pyrene	LA-SMA-6.34	50-32-8	Y	SSL_0.1	0.112	5.90	2007-05-23
Benzo(b)fluoranthene	LA-SMA-6.34	205-99-2	Y	SSL_0.1	0.153	7.50	2007-05-23
Benzo(k)fluoranthene	LA-SMA-6.34	207-08-9	Y	SSL_0.1	1.53	2.70	2007-05-23
Cadmium	LA-SMA-6.34	Cd	Y	BTV	0.400	6.00	2007-05-23
Chromium	LA-SMA-6.34	Cr	Y	BTV	19.3	356	2007-05-29
Copper	LA-SMA-6.34	Cu	Y	BTV	14.7	249	2007-05-29
Dibenz(a,h)anthracene	LA-SMA-6.34	53-70-3	Y	SSL_0.1	0.0153	0.870	2007-05-23
Indeno(1,2,3-cd)pyrene	LA-SMA-6.34	193-39-5	Y	SSL_0.1	0.153	5.00	2007-05-23
Iron	LA-SMA-6.34	Fe	Y	BTV	21500	22400	2007-05-29
Lead	LA-SMA-6.34	Pb	Y	BTV	22.3	3940	2007-05-29
Mercury	LA-SMA-6.34	Hg	Y	BTV	0.100	1.92	2007-05-29
Silver	LA-SMA-6.34	Ag	Y	BTV	1.00	47.3	2007-05-29
Zinc	LA-SMA-6.34	Zn	Y	BTV	48.8	1200	2007-05-29

Figure 46.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-6.34

46.4 Stormwater Evaluation

46.4.1 Summary of Stormwater Results Compared to 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.

46.4.2 Assessment Unit and Stream Impairments

LA-SMA-6.34 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. These impairments may be Site-related, based on Site history.

46.5 Site-Specific Demonstration

46.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, cadmium, chromium, copper, iron, lead, mercury, silver, and zinc.

46.5.2 Stormwater Data Summary

No confirmation-monitoring data.

46.5.3 2022 Permit Status

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

46.5.4 Sampling and Analysis Plan

Table 46.5-1 is the proposed SAP for LA-SMA-6.34.

Table 46.5-1 Proposed SAP, LA-SMA-6.34

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history
Total cyanide, mercury, selenium, and iron	Impairment (cyanide, mercury, and selenium), Site history (inorganics), and soil data
Total PCBs	Impairment and Site history (organics)
Radium-226 and radium-228	Site history (radionuclides)
Dissolved cadmium, chromium, copper, lead, silver and zinc	Site history (inorganics) and soil data
SVOCs	Site history (organic chemicals) and soil data
DOC	Permit requirement
SSC	Permit requirement

47.0 LA-SMA-6.38

Associated Sites	21-021, 21-024(c)
Receiving Water	Los Alamos Canyon
Drainage Area	0.77 acres
Landscape Characteristics	2% impervious, 98% pervious
Consent Order Site Status	SWMU 21-021: In Progress SWMU 21-024(c): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 AC Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the January 2018 field visit, the current SMA sampling location did not adequately monitor runoff from Site 21-024(c). Therefore, the sampler was moved to monitor runoff from the former outfall area at 21-024(c), which is the regulated portion of this SWMU.
2022 Permit Status	Active Monitoring

47.1 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 2018 SAP, a decision was made to implement the monitoring location move recommended during the 2018 SIP review. 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.

47.2 Site History

21-021 (11/23/2020)

SWMU 21-021 consists of potential surface soil contamination resulting from the deposition of historical airborne releases of radionuclides from incinerators, stacks, and filter houses previously located throughout TA-21. The estimated area of potential soil contamination is approximately 300,000 m^2, and overlaps all of TA-21 and portions of DP Canyon north of TA-21.

TA-21 was used primarily for plutonium research and metal production and related activities from 1945 to 1978. After the major plutonium research and metal production activities at TA-21 ceased in 1978, subsequent unrelated office and small-scale research activities continued until approximately 2006. Historical airborne releases of radionuclides from stacks at TA-21 were documented from 1951 to 1971 and from 1973 to 1989. A minimum of approximately 2 Ci/yr of plutonium-239/240 was released from all TA-21 stacks in the 1950s. There is no documentation of nonradioactive chemical releases associated with the historical TA-21 stack emissions.

For investigation activities, refer to “Phase Report 1B, TA-21 Operable Unit RCRA Facility Investigation, Operable Unit-Wide Surface Soil, Deposition Layer and Filter Building Investigation” (LANL 1994, 026073) and “Final Reponses to EPA’s Notice of Deficiency on Phase Report” (LANL 1995, 062415).

21-024(c) (2/22/2019)

SWMU 21-024(c) is an inactive septic system that served former buildings 21-054 and 21-061 in the southwest portion of TA-21. The septic system consisted of a septic tank (former structure 21-056), inlet drainlines from former buildings 21-054 and 21-061, an outlet drainline, and an outfall on the south rim of Los Alamos Canyon. The reinforced concrete septic tank (former structure 21-056) measured 4.0 ft long × 8.0 ft wide × approximately 5.0 ft deep, and was located 6.0 ft bgs. The inlet and outlet drainlines were 4-in.-diameter VCPs.

Building 21-054 was constructed in 1945 and housed a machine shop and warehouse. The septic system was installed in 1945 to route sewage from building 21-054. Building 21-061 was constructed in 1950 to house a laboratory to support classified plutonium research. The building and the unpaved area east of the building, along with the container storage area (SWMU 21-003), were ultimately used for the storage of PCB-containing capacitors and transformers, PCB-contaminated pumps and drums containing PCB-contaminated oil, solvents, and trash. The building was connected to the SWMU 21-024(c) septic system in 1950. In 1966, use of the septic system ceased and the system was abandoned in place.

Building 21-054 was demolished in 1969. PCB waste storage was moved from SWMU 21-003 to TA-54 in 1989; building 21-061 was decommissioned and the interior of the building was decontaminated in accordance with the TSCA 40 CFR 761. Building 21-061 was demolished in 2002. The SWMU 21-024(c) septic tank and inlet and outlet drainlines were removed in 2006, along with PCB-contaminated soil and tuff from SWMU 21-003. Additional PCB-contaminated soil and tuff associated with SWMU 21-003 were removed in 2009.

For investigation activities, refer to "Phase III Investigation Report for Delta Prime Site Aggregate Area at Technical Area 21, Revision 1" (LANL 2016, 601598).

47.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 47.2-1.

Table 47.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
21-021	Systematic release (sitewide)	Americium-241, plutonium isotopes, strontium-90
21-024(c)	Septic system	Radionuclides, inorganic and organic chemicals, PCBs

47.3 Consent Order Soil Data

Most of the SWMUs and AOCs at TA-21 lie within the footprint of SWMU 21-021. Therefore, surface and shallow subsurface samples from investigation of those sites are also representative of SWMU 21-021. Data from samples collected as part of Consent Order investigations and associated remediation activities are decision-level data. The approved DP Site Aggregate Area IWP (LANL 2009, 108166.9) indicated that the investigation of SWMU 21-021 was complete and no additional investigations were required.

Decision-level data for SWMU 21-024(c) consist of results from samples collected in 2006, 2007, 2009, and 2011.

The 2016 Phase III IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results from all decision-level soil samples collected for LA-SMA-6.38 are presented in Figures 47.3-1 through 47.3-4.

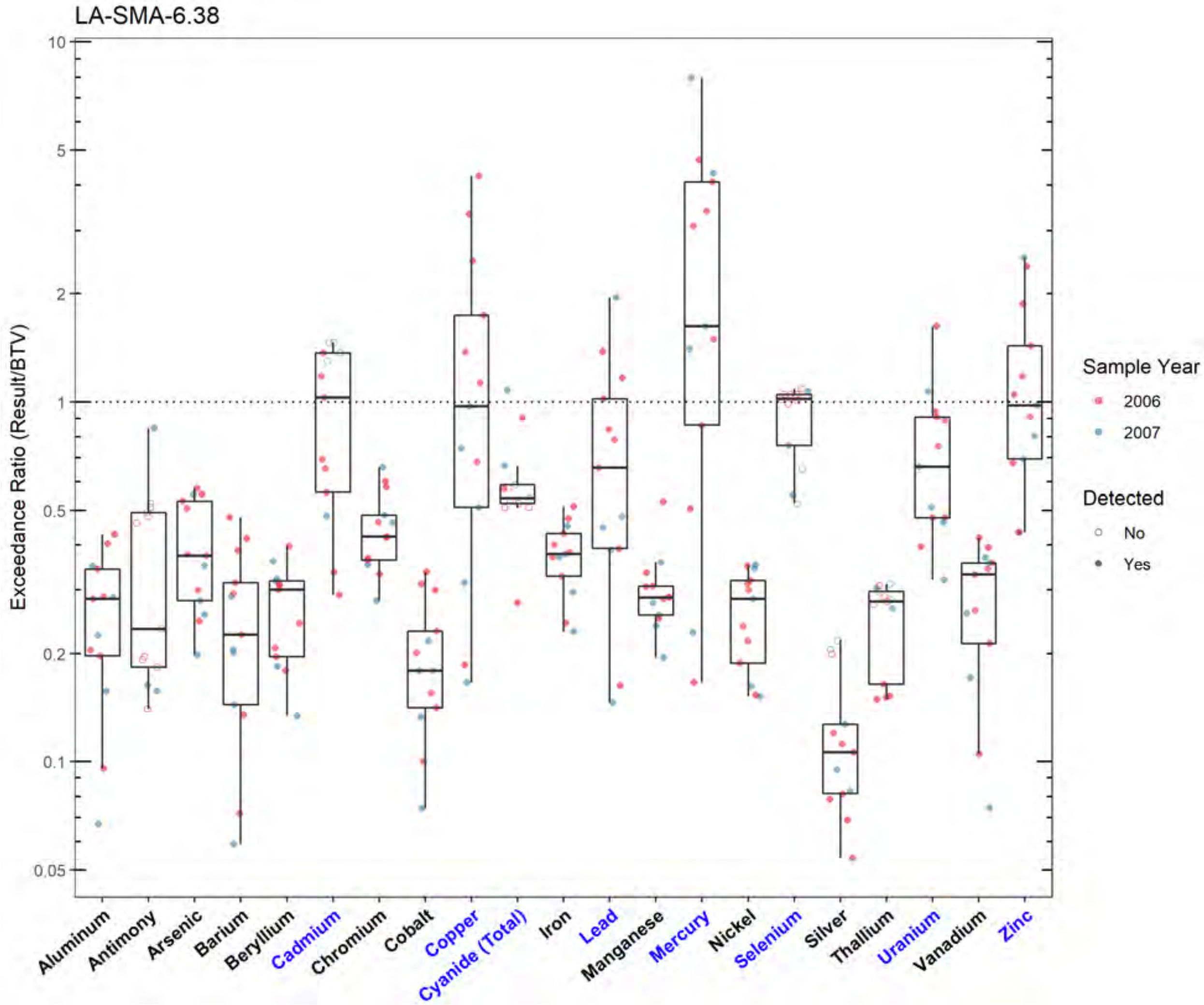


Figure 47.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-6.38

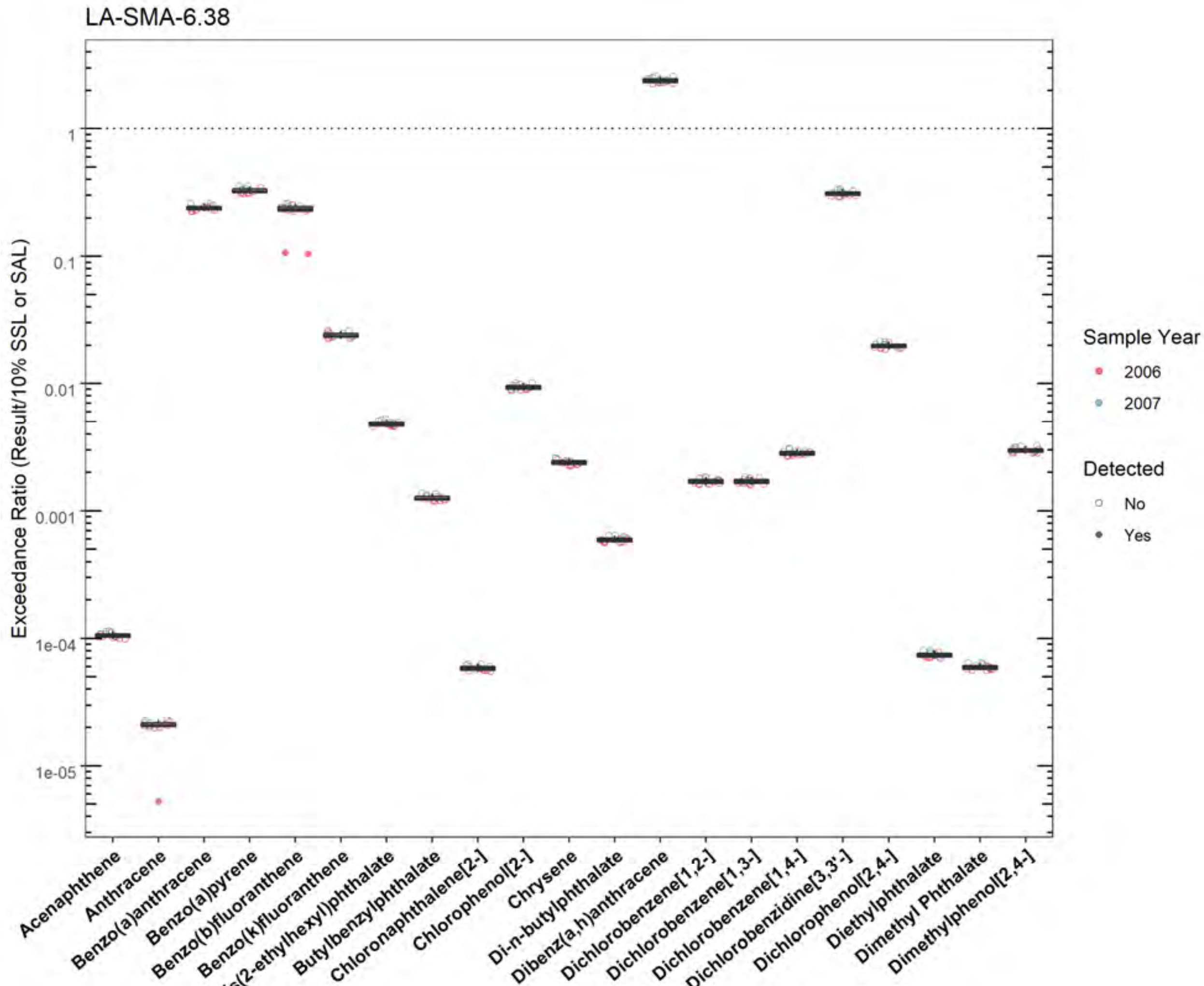


Figure 47.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-6.38 (Plot 1)

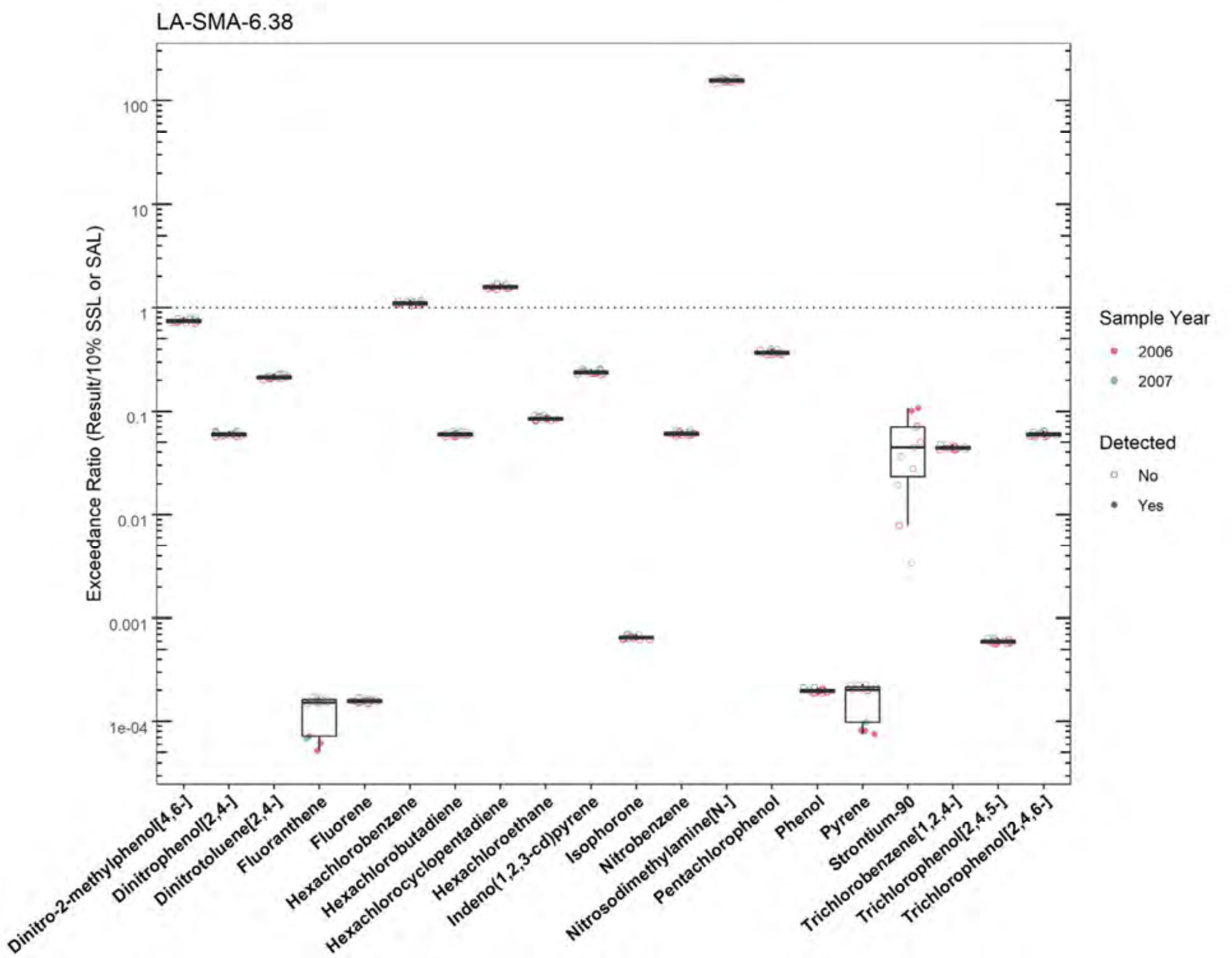


Figure 47.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-6.38 (Plot 2)

LA-SMA-6.38

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Cadmium	LA-SMA-6.38	Cd	Y	BTV	0.400	0.548	2006-12-13
Copper	LA-SMA-6.38	Cu	Y	BTV	14.7	62.4	2006-12-13
Cyanide (Total)	LA-SMA-6.38	CN(TOTAL)	Y	BTV	0.500	0.542	2007-03-01
Lead	LA-SMA-6.38	Pb	Y	BTV	22.3	43.5	2007-02-26
Mercury	LA-SMA-6.38	Hg	Y	BTV	0.100	0.798	2007-02-26
Selenium	LA-SMA-6.38	Se	Y	BTV	1.52	1.63	2007-02-27
Uranium	LA-SMA-6.38	U	Y	BTV	1.82	2.95	2006-12-13
Zinc	LA-SMA-6.38	Zn	Y	BTV	48.8	123	2007-02-26

Figure 47.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-6.38

47.4 Stormwater Evaluation

47.4.1 Summary of Stormwater Results Compared to 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.

47.4.2 Assessment Unit and Stream Impairments

LA-SMA-6.38 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. These impairments may be Site-related, based on Site history.

47.5 Site-Specific Demonstration

47.5.1 Soil Data Summary

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

47.5.2 Stormwater Data Summary

No confirmation-monitoring data.

47.5.3 2022 Permit Status

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

47.5.4 Sampling and Analysis Plan

Table 47.5-1 is the proposed SAP for LA-SMA-6.38.

Table 47.5-1 Proposed SAP, LA-SMA-6.38

Monitoring Constituent	Background for Monitoring
Total cyanide, mercury and selenium	Impairments, Site history (inorganic chemicals), and soil data
Gross alpha	Impairment and Site history
Total PCBs	Impairment and Site history (organic chemicals)
Dissolved cadmium, copper, lead, uranium, and zinc	Site history (inorganic chemicals) and soil data
Radium-226 and radium-228	Site history (radionuclides)
Tritium	Site history (radionuclides)
SVOCs	Site history (organic chemicals)
DOC	Permit requirement
SSC	Permit requirement

48.0 LA-SMA-6.395

Associated Sites	21-021, 21-024(j)
Receiving Water	Los Alamos Canyon
Drainage Area	3.58 acres
Landscape Characteristics	3% impervious, 97% pervious
Consent Order Site Status	SWMU 21-021: In Progress SWMU 21-024(j): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 AC Permit Final Status	Alternative Compliance Requested/Corrective Action Complete
2016–2018 SIP Actions	Based on the January 2018 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

48.1 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.

SWMU 21-024(j) received a COC under the Consent Order in January 2016. The Permittees submitted a certification of completion of corrective action for the Site to EPA per Permit part I.E.2(d) for the Site in March 2017 (LANL 2017, 602213). The Permittees submitted a request for alternative compliance for SWMU 21-021 to EPA per permit Part I.E.3 in May 2015 044 (LANL 2015, 600418). No response has been received from EPA for this request, and stormwater monitoring has not occurred since 2013.

48.2 Site History

21-021 (11/23/2020)

SWMU 21-021 consists of potential surface soil contamination resulting from the deposition of historical airborne releases of radionuclides from incinerators, stacks, and filter houses previously located throughout TA-21. The estimated area of potential soil contamination is approximately 300,000 m^2, and overlaps all of TA-21 and portions of DP Canyon north of TA-21.

TA-21 was used primarily for plutonium research and metal production and related activities from 1945 to 1978. After the major plutonium research and metal production activities at TA-21 ceased in 1978, subsequent unrelated office and small-scale research activities continued until approximately 2006. Historical airborne releases of radionuclides from stacks at TA-21 were documented from 1951 to 1971 and from 1973 to 1989. A minimum of approximately 2 Ci/yr of plutonium-239/240 was released from all TA-21 stacks in the 1950s. There is no documentation of nonradioactive chemical releases associated with the historical TA-21 stack emissions.

For investigation activities, refer to “Phase Report 1B, TA-21 Operable Unit RCRA Facility Investigation, Operable Unit-Wide Surface Soil, Deposition Layer and Filter Building Investigation” (LANL 1994, 026073) and “Final Reponses to EPA’s Notice of Deficiency on Phase Report” (LANL 1995, 062415).

21-024(j) (9/28/2021)

SWMU 21-024(j) is a former septic system that served former building 21-155, a warehouse and laboratory within the northeast portion of DP East at TA-21. The septic system was constructed in 1961 and consisted of a reinforced concrete septic tank (former structure 21-194) that measured 5 ft × 3 ft × 6 ft deep; 4-in. VCP inlet and outlet drainlines; and an outfall that discharged to the south rim of DP Mesa, above Los Alamos Canyon. The septic tank was located adjacent to the southwest corner of building 21-155 near the southern DP Mesa perimeter road. The septic tank was decommissioned in 1966, pumped out, filled with earth, and abandoned in place. The septic tank, along with the associated inlet and outlet drainlines, were removed in 2007.

For investigation activities, refer to “Phase II Investigation Report for Delta Prime Site Aggregate Area, Revision 1” (LANL 2010, 110772.33).

48.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 48.2-1.

Table 48.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
21-021	Systematic release (sitewide)	Americium-241, plutonium isotopes, strontium-90
21-024(j)	Septic system	Radionuclides, inorganic and organic chemicals

48.3 Consent Order Soil Data

Most of the SWMUs and AOCs at TA-21 lie within the footprint of SWMU 21-021. Therefore, surface and shallow subsurface samples from investigation of those sites are also representative of SWMU 21-021. Data from samples collected as part of Consent Order investigations and associated remediation activities are decision-level data. The approved DP Site Aggregate Area IWP (LANL 2009, 108166.9) indicated that the investigation of SWMU 21-021 was complete and no additional investigations were required.

Decision-level data for SWMU 21-024(j) consist of results from samples collected in 2007, 2008, and 2009. Revision 1 of the 2010 Phase II IR concluded that the nature and extent of contamination are defined.

Analytical results from all decision-level soil samples collected for LA-SMA-6.395 are presented in Figures 48.3-1 through 48.3-4.

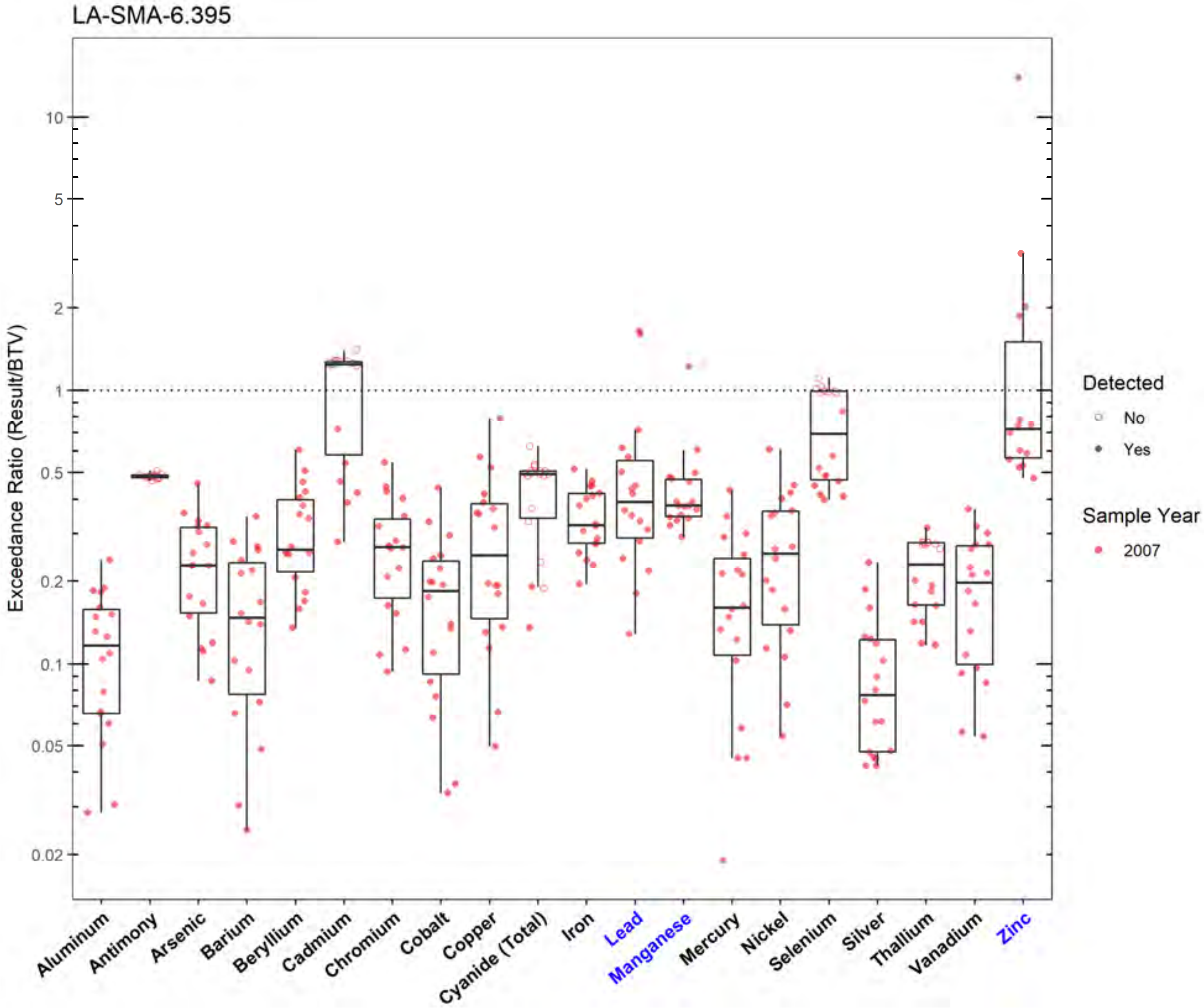


Figure 48.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-6.395

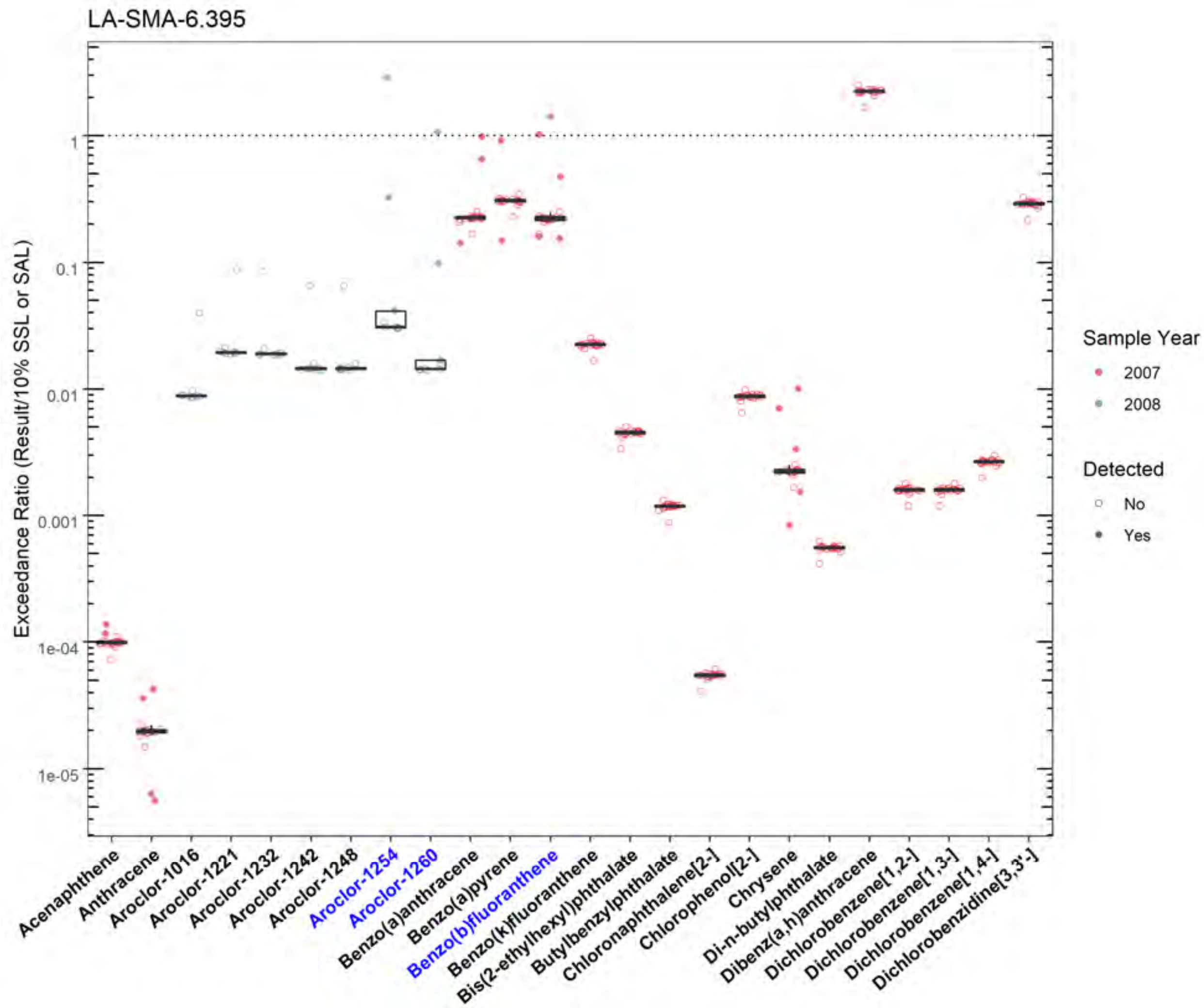


Figure 48.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-6.395 (Plot 1)

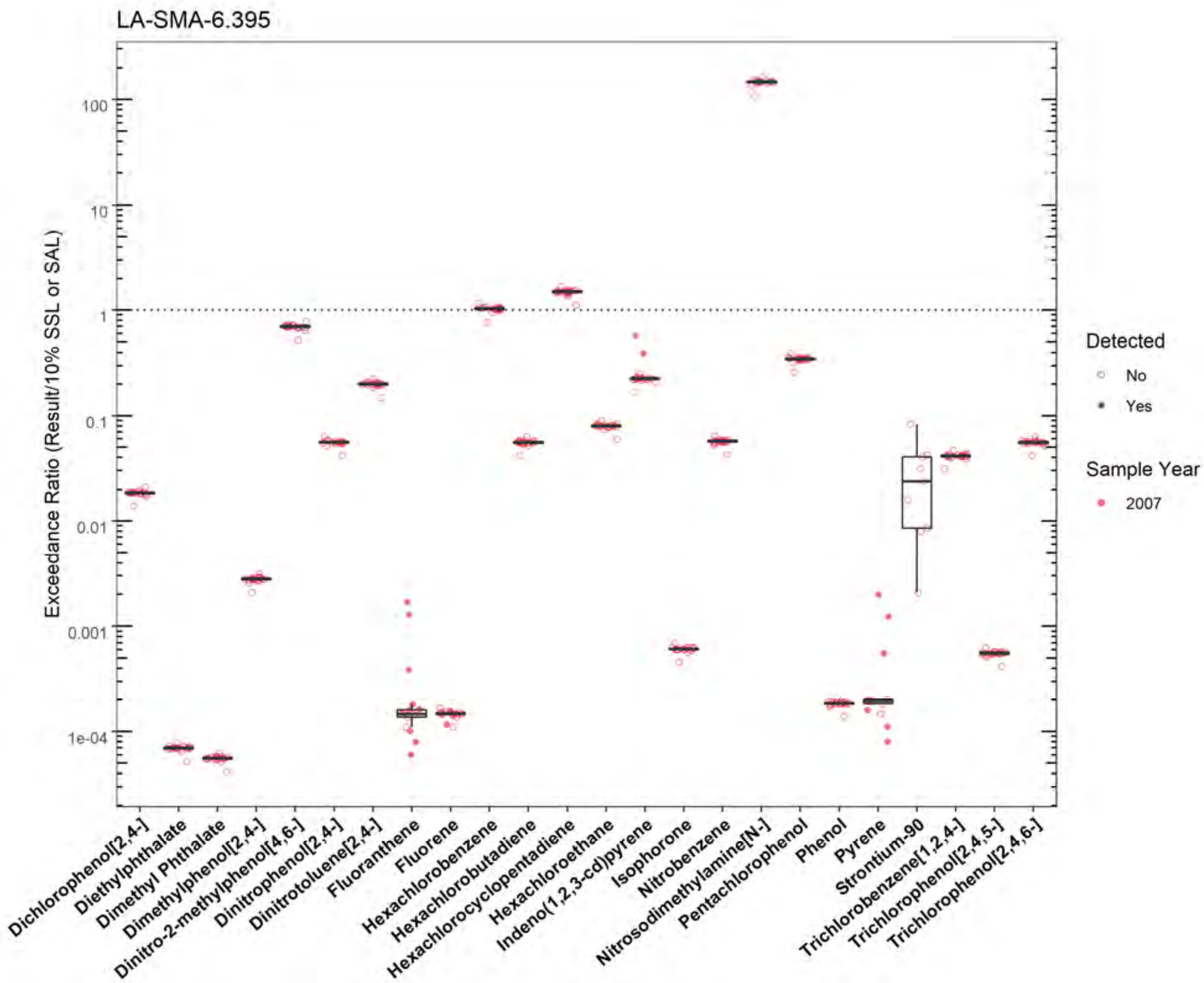


Figure 48.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-6.395 (Plot 2)

LA-SMA-6.395

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	LA-SMA-6.395	11097-69-1	Y	SSL_0.1	0.114	0.326	2008-01-16
Aroclor-1260	LA-SMA-6.395	11096-82-5	Y	SSL_0.1	0.243	0.260	2008-01-16
Benzo(b)fluoranthene	LA-SMA-6.395	205-99-2	Y	SSL_0.1	0.153	0.215	2007-06-25
Lead	LA-SMA-6.395	Pb	Y	BTV	22.3	36.5	2007-07-05
Manganese	LA-SMA-6.395	Mn	Y	BTV	671	818	2007-06-25
Zinc	LA-SMA-6.395	Zn	Y	BTV	48.8	685	2007-06-25

Figure 48.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-6.395

48.4 Stormwater Evaluation

48.4.1 Summary of Stormwater Results Compared to 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 48.4-1 and 48.4-2.

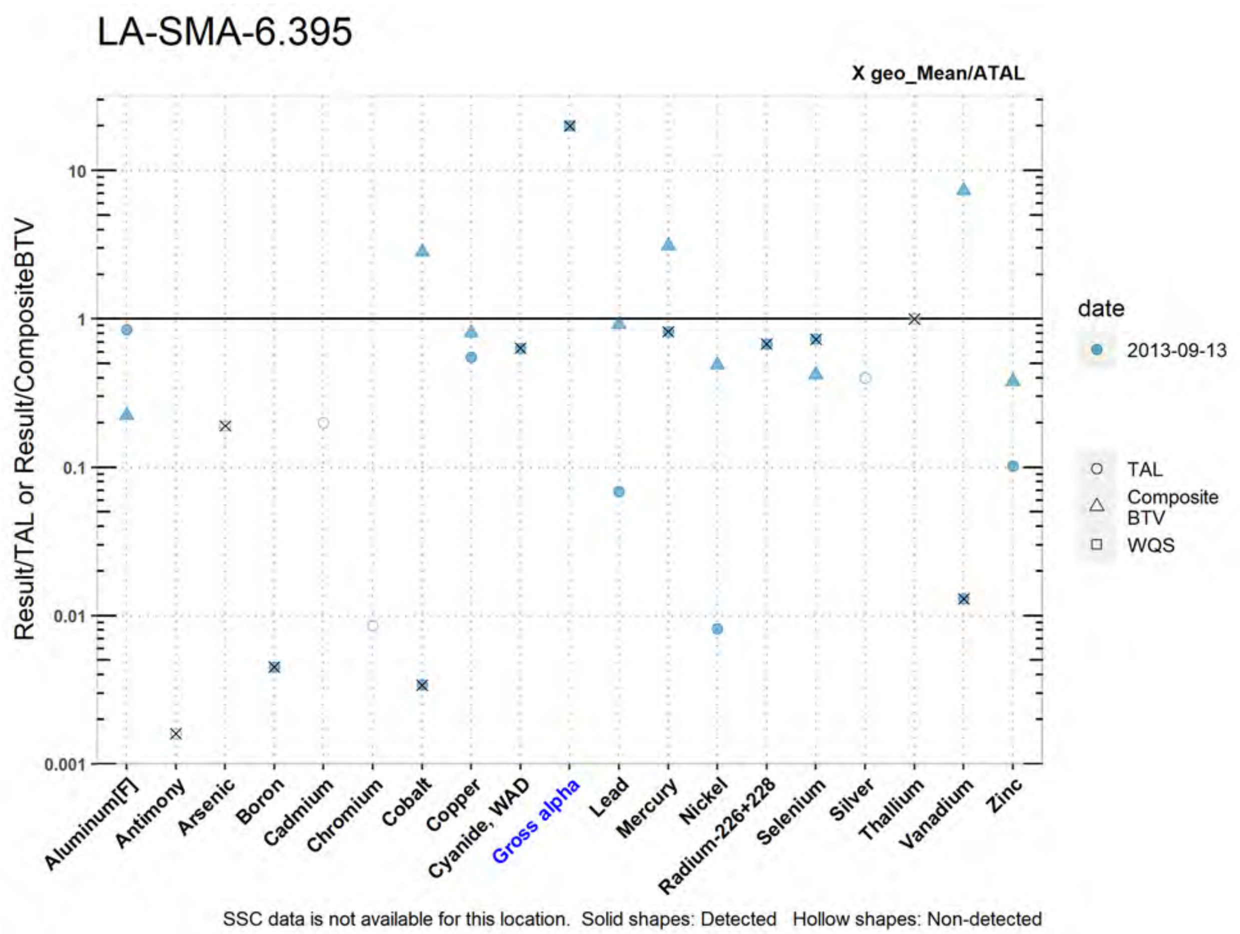


Figure 48.4-1 Analytical Results from Stormwater Sample, LA-SMA-6.395 (Plot)

LA-SMA-6.395

	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	0.65	233	NA	4.8	22	NA	19.3	NA	186	NA	20	0.49	NA	NA	59.2
Composite_BTV	2860	NA	NA	NA	NA	NA	1.21	3.30	NA	57.0	1.45	0.202	3.10	4.40	8.70	NA	NA	0.175	15.9
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
2013-09-13 result	637	*1.00*	*1.70*	22.7	*0.110*	*2.00*	3.40	2.66	3.30	300	1.33	0.630	1.52	20.3	3.66	*0.200*	*0.450*	1.28	6.03
2013-09-13 dT	0.849	NA	NA	0.0045	NA	NA	0.0034	0.554	0.635	20	0.0689	0.82	0.00817	0.677	0.73	NA	NA	0.013	0.102
2013-09-13 dB	0.223	NA	NA	NA	NA	NA	2.81	0.806	NA	NA	0.917	3.12	0.490	NA	0.421	NA	NA	7.31	0.379
geo_mean/ATAL	NA	0.0016	0.19	0.0045	NA	NA	0.0034	NA	0.635	20	NA	0.82	NA	0.677	0.73	NA	1	0.013	NA

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

Figure 48.4-2 Analytical Results from Stormwater Sample, LA-SMA-6.395 (Table)

48.4.2 Assessment Unit and Stream Impairments

LA-SMA-6.395 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. These impairments may be Site-related, based on Site history.

48.5 Site-Specific Demonstration

48.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: Aroclor-1254, Aroclor-1260, and benzo(b)fluoranthene.

Although there is an impairment for mercury, the applicable screening value was not exceeded in soil data and the TAL was not exceeded in stormwater data. Therefore, it will not be added to the SAP.

48.5.2 Stormwater Data Summary

Gross alpha exceeded TAL in 2013 stormwater data and there was no paired SSC result to confirm whether it was below BTVs. Therefore, it will be added to the SAP.

48.5.3 2022 Permit Status

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

48.5.4 Sampling and Analysis Plan

Table 48.5-1 is the proposed SAP for LA-SMA-6.395.

Table 48.5-1 Proposed SAP, LA-SMA-6.395

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment, Site history (radionuclides), and stormwater data
Total PCBs	Impairment, Site history (organic chemicals), and soil data
SVOCs	Site history (organic chemicals) and soil data
Tritium	Site history (radionuclides)
DOC	Permit requirement
SSC	Permit requirement

49.0 LA-SMA-6.5

Associated Sites	21-021, 21-024(i)
Receiving Water	Los Alamos Canyon
Drainage Area	1.15 acres
Landscape Characteristics	1% impervious, 99% pervious
Consent Order Site Status	SWMU 21-021: In Progress SWMU 21-024(i): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 AC Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the January 2018 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

49.1 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. Monitoring is ongoing until one confirmation sample is collected from this SMA.

49.2 Site History

21-021 (11/23/2020)

SWMU 21-021 consists of potential surface soil contamination resulting from the deposition of historical airborne releases of radionuclides from incinerators, stacks, and filter houses previously located throughout TA-21. The estimated area of potential soil contamination is approximately 300,000 m^2, and overlaps all of TA-21 and portions of DP Canyon north of TA-21.

TA-21 was used primarily for plutonium research and metal production and related activities from 1945 to 1978. After the major plutonium research and metal production activities at TA-21 ceased in 1978, subsequent unrelated office and small-scale research activities continued until approximately 2006. Historical airborne releases of radionuclides from stacks at TA-21 were documented from 1951 to 1971 and from 1973 to 1989. A minimum of approximately 2 Ci/yr of plutonium-239/240 was released from all TA-21 stacks in the 1950s. There is no documentation of nonradioactive chemical releases associated with the historical TA-21 stack emissions.

For investigation activities, refer to “Phase Report 1B, TA-21 Operable Unit RCRA Facility Investigation, Operable Unit-Wide Surface Soil, Deposition Layer and Filter Building Investigation” (LANL 1994, 026073), and “Final Reponses to EPA’s Notice of Deficiency on Phase Report” (LANL 1995, 062415).

21-024(i) (9/28/2021)

SWMU 21-024(i) consists of a former septic system that served the former polonium research/processing laboratory (former building 21-152) and two former cooling towers (former structures 21-166 and 21-167), all located within DP East at TA-21. The 1990 SWMU Report describes SWMU 21-024(i) as a septic system consisting of a 5-ft × 10-ft × 7-ft-9-in. inactive septic tank (former structure 21-181); an inlet drainline serving former building 21-152 and former structures 21-166 and

21-167; a sump (former structure 21-175); an outlet drainline; and an outfall that discharged to the southeast rim of DP Mesa, above Los Alamos Canyon.

Engineering drawings ENG-R 1196 (pg. 8 of 8) and ENG-C 2213 show that the septic system received discharges from building 21-152 via 6-in.-diameter VCP inlet drainline, through a sump (structure 21-175) to the reinforced concrete septic tank (former structure 21-181, shown as 6-ft × 10-ft × 8-ft-deep on this drawing). Blowdown drainlines from two cooling towers (former structures 21-166 and 21-167) were also connected to sump 21-175 and septic tank 21-181. Effluent was routed via 6-in.-diameter VCP outlet line to the surface in a broad open area with a gentle slope extending approximately 30 ft to the southeastern edge of DP Mesa above Los Alamos Canyon. The sump and portions of the pipe currently lie under building 21-209.

The septic system received effluent from 21-152 and floor drain effluent from cooling towers 21-166 and 21-167 from 1945 to 1964. A portion of the inlet line, the tank and its contents, and the outlet line were left in place following deactivation in 1964 when building 21-209 was built on top of the existing inlet lines from building 21-152, structure 21-166, and structure 21-167. New blowdown pipelines from structures 21-166 and 21-167 were connected into the SWMU 21-024(k) septic system.

Former building 21-209 was situated over a section of the inlet drainline that previously connected to the sump (former structure 21-175). The portion of the inlet line from the fence to the septic tank, the septic tank, and the outlet drainline to the outfall were removed in 2001 as part of an IA, and the remaining portion of the inlet line was removed in 2007. Building 21-209 and both cooling towers were removed in 2010.

For investigation activities, refer to “Phase II Investigation Report for Delta Prime Site Aggregate Area, Revision 1” (LANL 2010, 110772.33).

49.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 49.2-1.

Table 49.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
21-021	Systematic release (sitewide)	Americium-241, plutonium isotopes, strontium-90
21-024(i)	Septic system	Radionuclides, inorganic and organic chemicals

49.3 Consent Order Soil Data

Most of the SWMUs and AOCs at TA-21 lie within the footprint of SWMU 21-021. Therefore, surface and shallow subsurface samples from investigation of those sites are also representative of SWMU 21-021. Data from samples collected as part of Consent Order investigations and associated remediation activities are decision-level data. The approved DP Site Aggregate Area IWP (LANL 2009, 108166.9) indicated that the investigation of SWMU 21-021 was complete and no additional investigations were required.

Decision-level data for SWMU 21-024(i) consist of results from samples collected in 1993, 1997, 1998, 2001, 2002, 2008 and 2009. Revision 1 of the 2010 phase II IR concluded that the nature and extent of contamination are defined.

Analytical results from all decision-level soil samples collected for LA-SMA-6.5 are presented in Figures 49.3-1 through 49.3-4.

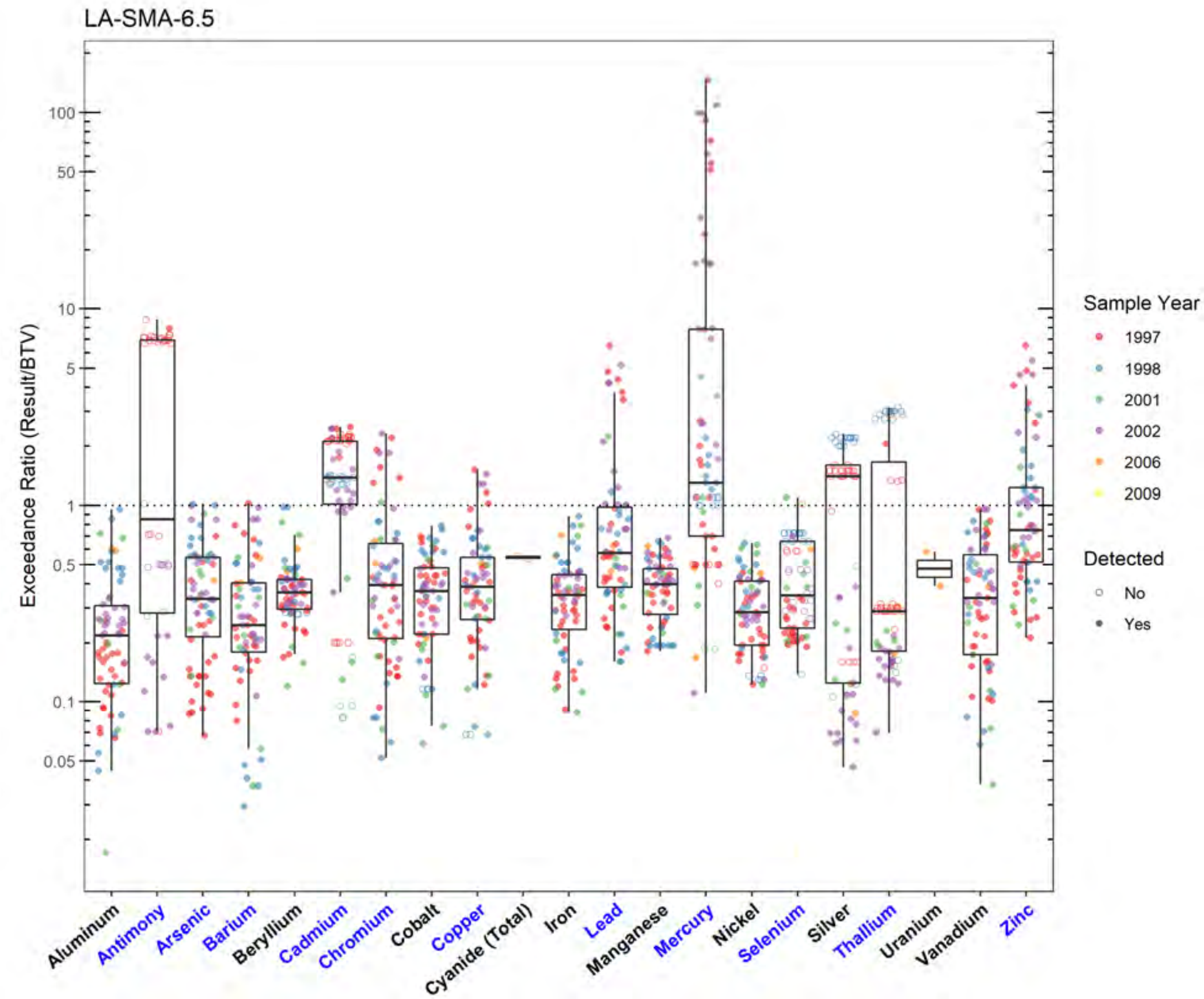


Figure 49.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-6.5

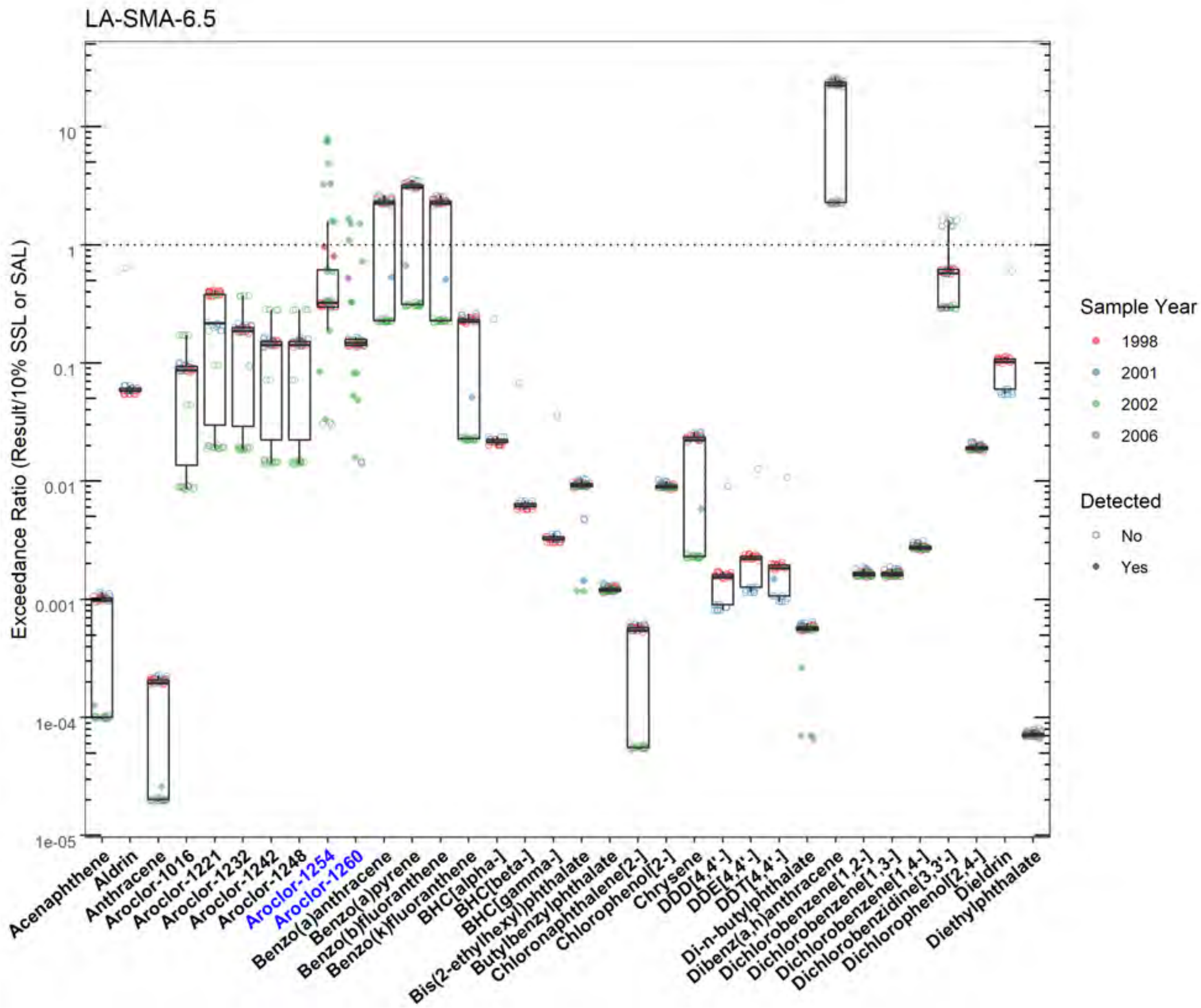


Figure 49.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-6.5 (Plot 1)

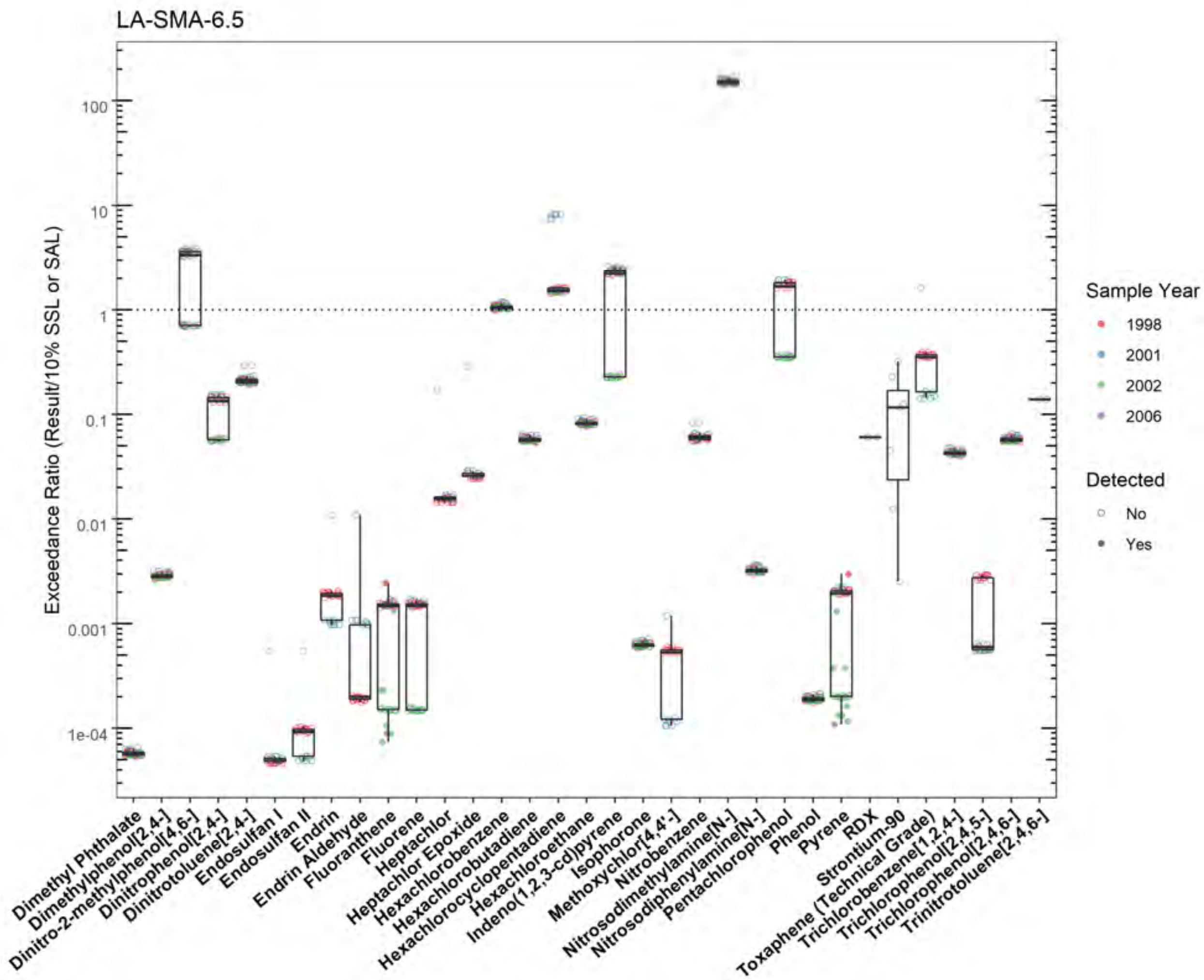


Figure 49.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-6.5 (Plot 2)

LA-SMA-6.5

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	LA-SMA-6.5	Sb	Y	BTV	0.830	6.60	1997-03-31
Aroclor-1254	LA-SMA-6.5	11097-69-1	Y	SSL_0.1	0.114	0.906	2002-09-26
Aroclor-1260	LA-SMA-6.5	11096-82-5	Y	SSL_0.1	0.243	0.400	2002-09-26
Arsenic	LA-SMA-6.5	As	Y	BTV	8.17	8.30	1998-10-08
Barium	LA-SMA-6.5	Ba	Y	BTV	295	304	1997-03-31
Cadmium	LA-SMA-6.5	Cd	Y	BTV	0.400	1.00	1997-03-31
Chromium	LA-SMA-6.5	Cr	Y	BTV	19.3	44.7	2002-09-26
Copper	LA-SMA-6.5	Cu	Y	BTV	14.7	22.2	1997-03-31
Lead	LA-SMA-6.5	Pb	Y	BTV	22.3	144	1997-03-31
Mercury	LA-SMA-6.5	Hg	Y	BTV	0.100	14.7	1997-03-31
Selenium	LA-SMA-6.5	Se	Y	BTV	1.52	1.67	2001-01-24
Thallium	LA-SMA-6.5	Tl	Y	BTV	0.730	1.50	1997-11-06
Zinc	LA-SMA-6.5	Zn	Y	BTV	48.8	316	1997-03-31

Figure 49.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-6.5

49.4 Stormwater Evaluation

49.4.1 Summary of Stormwater Results Compared to 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.

49.4.2 Assessment Unit and Stream Impairments

LA-SMA-6.5 drains to Los Alamos Canyon (DP Canyon to upper LANL boundary), which has impairments for total recoverable cyanide, total recoverable selenium, PCBs, adjusted gross alpha, and total mercury. These impairments may be Site-related, based on Site history.

49.5 Site-Specific Demonstration

49.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: antimony, Aroclor-1254, Aroclor-1260, arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, thallium, and zinc.

49.5.2 Stormwater Data Summary

No confirmation-monitoring data.

49.5.3 2022 Permit Status

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

49.5.4 Sampling and Analysis Plan

Table 49.5-1 is the proposed SAP for LA-SMA-6.5.

Table 49.5-1 Proposed SAP, LA-SMA-6.5

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history (radionuclides)
Total cyanide, mercury, and selenium	Impairment, Site history (inorganic chemicals), and soil data
Total PCBs	Impairment, Site history (organic chemicals), and soil data
Dissolved arsenic, barium, cadmium, chromium, copper, lead, antimony, thallium, and zinc	Site history (inorganic chemicals) and soil data
Radium-226 and radium-228	Site history (radionuclides)
SVOCs	Site history (organic chemicals)
Tritium	Site history (radionuclides)
DOC	Permit requirement
SSC	Permit requirement

50.0 LA-SMA-9

Associated Sites	26-001, 26-002(a), 26-002(b), 26-003
Receiving Water	Los Alamos Canyon
Drainage Area	5.27 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 26-001: In Progress SWMU 26-002(a): In Progress SWMU 26-002(b): In Progress SWMU 26-003: In Progress
2010 AC Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the October 2017 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

50.1 2010 Administratively Continued Permit Summary

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

The Permittees submitted a request for alternative compliance for all four sites to EPA per permit Part I.E.3 in May 2015 044 (LANL 2015, 600418). No response has been received from EPA for this request, and stormwater monitoring has not occurred since 2014.

50.2 Site History

26-001 (9/3/2019)

SWMU 26-001 is an inactive surface disposal area on the south-facing slope of Los Alamos Canyon that contains debris from a former five-room concrete storage vault (former structure 26-01) at former TA-26, formerly known as D-Site. D-Site was established for the Los Alamos Scientific Laboratory Chemistry and Metallurgical Research division, for the purpose of storing radioactive materials. The vault was constructed in 1946 and was decommissioned and dismantled in 1966.

Although the vault was constructed for storing radioactive materials, documentation describing the specific type and quantity of radioactive materials stored is not available. One documents states that the vault "stored friable containers which now contain, or have contained radioactive material." The vault was later used for storing HE.

Before the vault was dismantled in 1966, all contaminated contents that could be removed, including shelving, a drainage system [SWMU 26-002(b)], a sump [SWMU 26-002(a)], and duct work, were removed and disposed of at MDA C. The remaining portions of the vault, including concrete walls and foundation, were bulldozed over the edge of the mesa top onto the south-facing slope of Los Alamos Canyon. When all rubble had been pushed over the edge of the mesa top, soil was pushed over the side to cover the rubble to a minimum depth of 3 ft.

In the 1970s, most of the vault debris was observed on the bench below the mesa top; however, some debris may have fallen as far as the canyon floor. Former TA-26 is currently located within the boundary of TA-73.

26-002(a) (9/3/2019)

SWMU 26-002(a) is the former acid sump system that served the concrete storage vault at former building 26-1, known as the East Gate vault, within the former D-Site at TA-26. D-Site was established for the Los Alamos Scientific Laboratory Chemistry and Metallurgical Research division for the purpose of storing radioactive materials. The former acid sump system consisted of a 6-in.-diameter VCP floor drain in the south center room of the vault., connected to a collection sump (former structure 26-6) via an inlet drainline; the sump discharged through an outlet drainline to an outfall into Los Alamos Canyon.

Engineering records describe the sump as having an internal diameter of 4 ft and a depth of 10 ft. The collection sump (former structure 26-6) was located outside and directly south of the vault (former building 26-1). The vault and its associated structures were constructed in 1946 and decommissioned and demolished in 1966. The sump and its drainlines were removed before demolition of the storage vault and disposed of at MDA C. Former TA-26 is currently located within the boundary of TA-73.

26-002(b) (9/3/2019)

SWMU 26-002(b) is the former equipment room drainage system constructed in 1946 for the concrete storage vault (former structure 26-1) at TA-26, formerly known as D-Site. D-Site was established for the Los Alamos Scientific Laboratory Chemistry and Metallurgical Research division for the purpose of storing radioactive materials. The drainage system was installed during construction of the storage vault in 1946. It carried effluent that likely included wash water and minor spills from the former equipment room through a 4-in.-diameter VCP floor drain that discharged directly to the south-facing slope of Los Alamos Canyon. The former drainline was not connected to the SWMU 26-002(a) sump system or the SWMU 26-003 septic system. The former drainline ran south from structure 26-1, parallel to the SWMU 26-003 septic system drainlines, and discharged at a point near the septic system outfall, directly above the SWMU 26-001 surface disposal area. The drainlines were removed before demolition of the vault structure in 1966. All removable material, including the drainlines, was disposed of at MDA C. Former TA-26 is currently located within the boundary of TA-73.

26-003 (9/3/2019)

SWMU 26-003 is the former septic system that served sanitary facilities in the east room of the concrete storage vault (former structure 26-1) at former TA-26, formerly known as D-Site. D-Site was established for the Los Alamos Scientific Laboratory Chemistry and Metallurgical Research division for the purpose of storing radioactive materials. The septic system consisted of a 4-in.-diameter VCP inlet drainline connected to the 250-gal. steel septic tank (former structure 26-50), and an overflow outlet drainline that discharged to an outfall on the south-facing slope of Los Alamos Canyon below the mesa top. The septic system was installed in August 1948 south of building 26-1.

It was assumed that the septic system was free from radioactive contamination because the system served only the toilet and sink in the least contaminated room of the storage vault. However, because radioactive contamination was found in the vault, it is possible that contaminants were introduced into the septic system. The former SWMU 26-002(b) drainline ran south from the storage vault (former building 26-1), parallel to the SWMU 26-003 septic system drainlines, and discharged at a point near the septic system outfall.

The SWMU 26-003 septic system may have been removed at the same time as the sump system [SWMU 26-002(a)] and other removable components associated with the vault were removed in 1966, but no clear documentation is available. The drainlines were removed before demolition of the vault structure in 1966. All removable material, including the drainlines, was disposed of at MDA C. Former TA-26 is currently located within the boundary of TA-73.

For investigation activities at the Sites, refer to "Phase II Investigation Report for Middle Los Alamos Canyon Aggregate Area, Revision 2" (N3B 2018, 700091).

50.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 50.2-1.

Table 50.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
26-001	Surface disposal site	Radionuclides, HE
26-002(a)	Soil contamination from former acid sump system	Uranium, tritium
26-002(b)	Drainline associated with Vault 26-01	Uranium, tritium
26-003	Septic system	Uranium, tritium, inorganic and organic chemicals

50.3 Consent Order Soil Data

Decision-level data for SWMU 26-001, SWMU 26-002(a), SWMU 26-002(b), and SWMU 26-003 consist of results from samples collected in 2007 and 2010. Analytical results from those samples are presented in Figures 50.3-1 through 50.3-4. Revision 2 of the 2018 Phase II IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

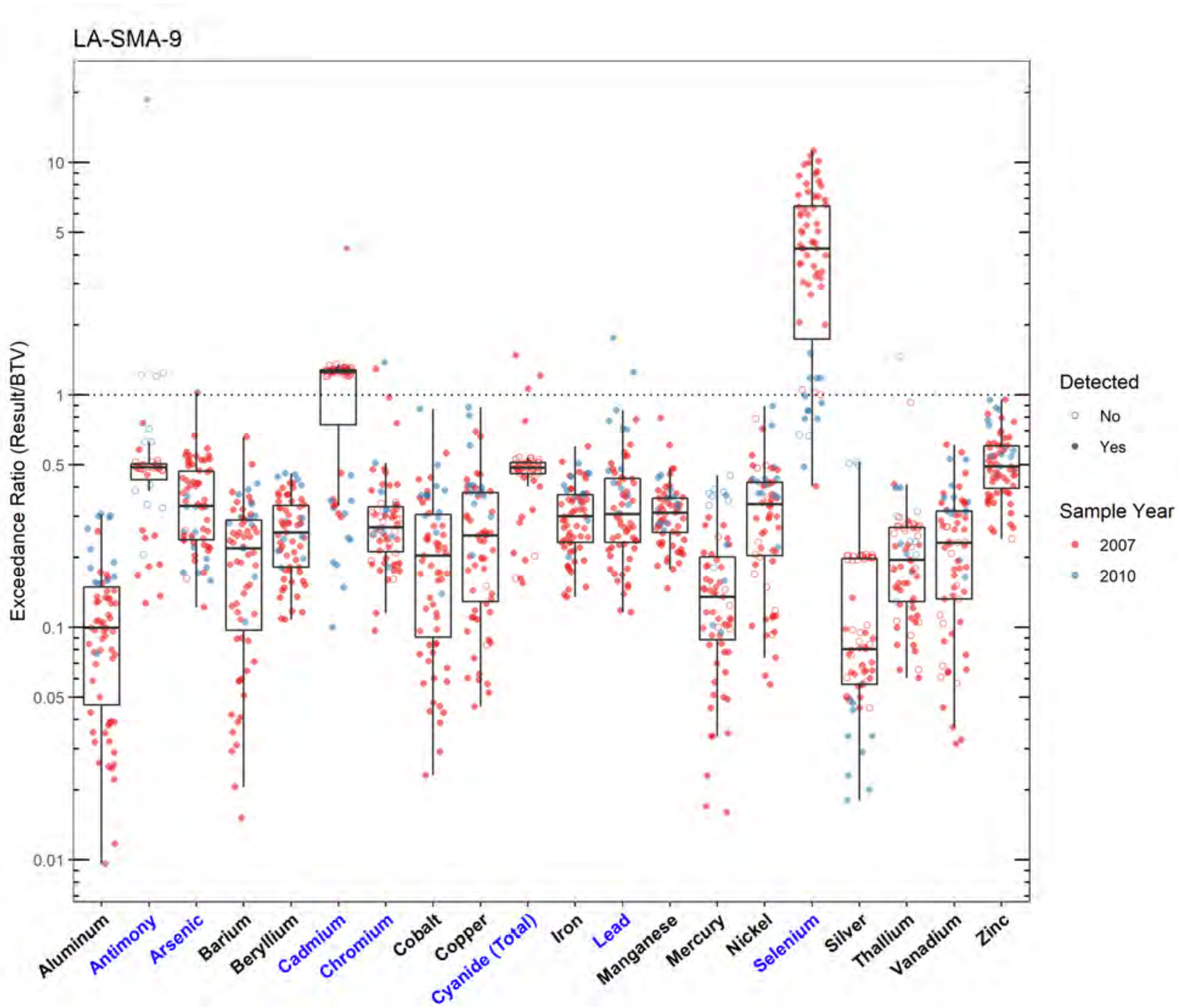


Figure 50.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-9

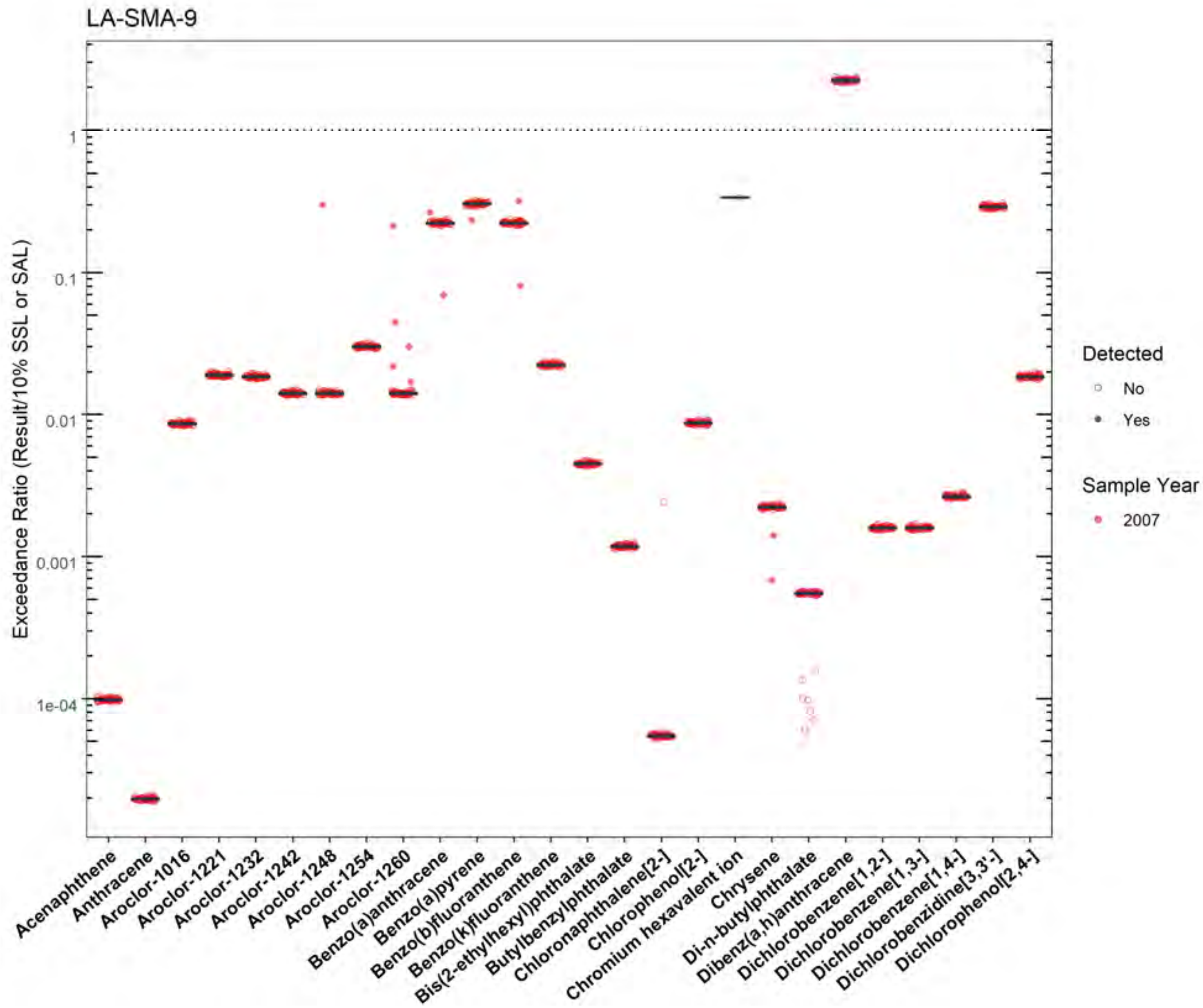


Figure 50.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-9 (Plot 1)

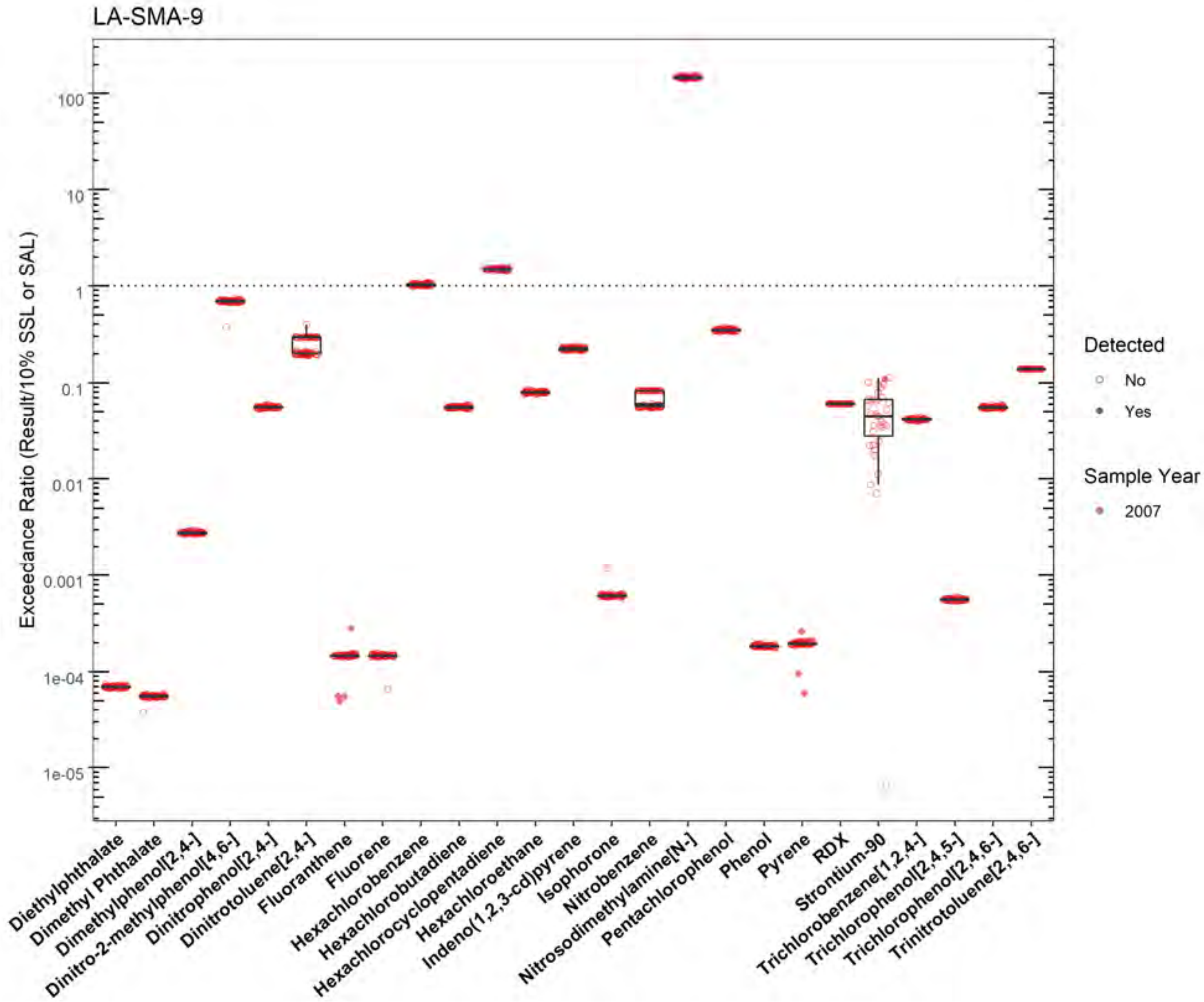


Figure 50.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-9 (Plot 2)

LA-SMA-9

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	LA-SMA-9	Sb	Y	BTV	0.830	15.5	2010-07-26
Arsenic	LA-SMA-9	As	Y	BTV	8.17	8.34	2007-10-04
Cadmium	LA-SMA-9	Cd	Y	BTV	0.400	1.71	2007-10-01
Chromium	LA-SMA-9	Cr	Y	BTV	19.3	26.6	2010-07-21
Cyanide (Total)	LA-SMA-9	CN(TOTAL)	Y	BTV	0.500	0.740	2007-10-03
Lead	LA-SMA-9	Pb	Y	BTV	22.3	39.2	2010-07-21
Selenium	LA-SMA-9	Se	Y	BTV	1.52	17.0	2007-10-05

Figure 50.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-9

50.4 Stormwater Evaluation

50.4.1 Summary of Stormwater Results Compared to TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective action stormwater sample was collected in August 2014; analytical results from that sample is presented in Figures 50.4-1 and 50.4-2.

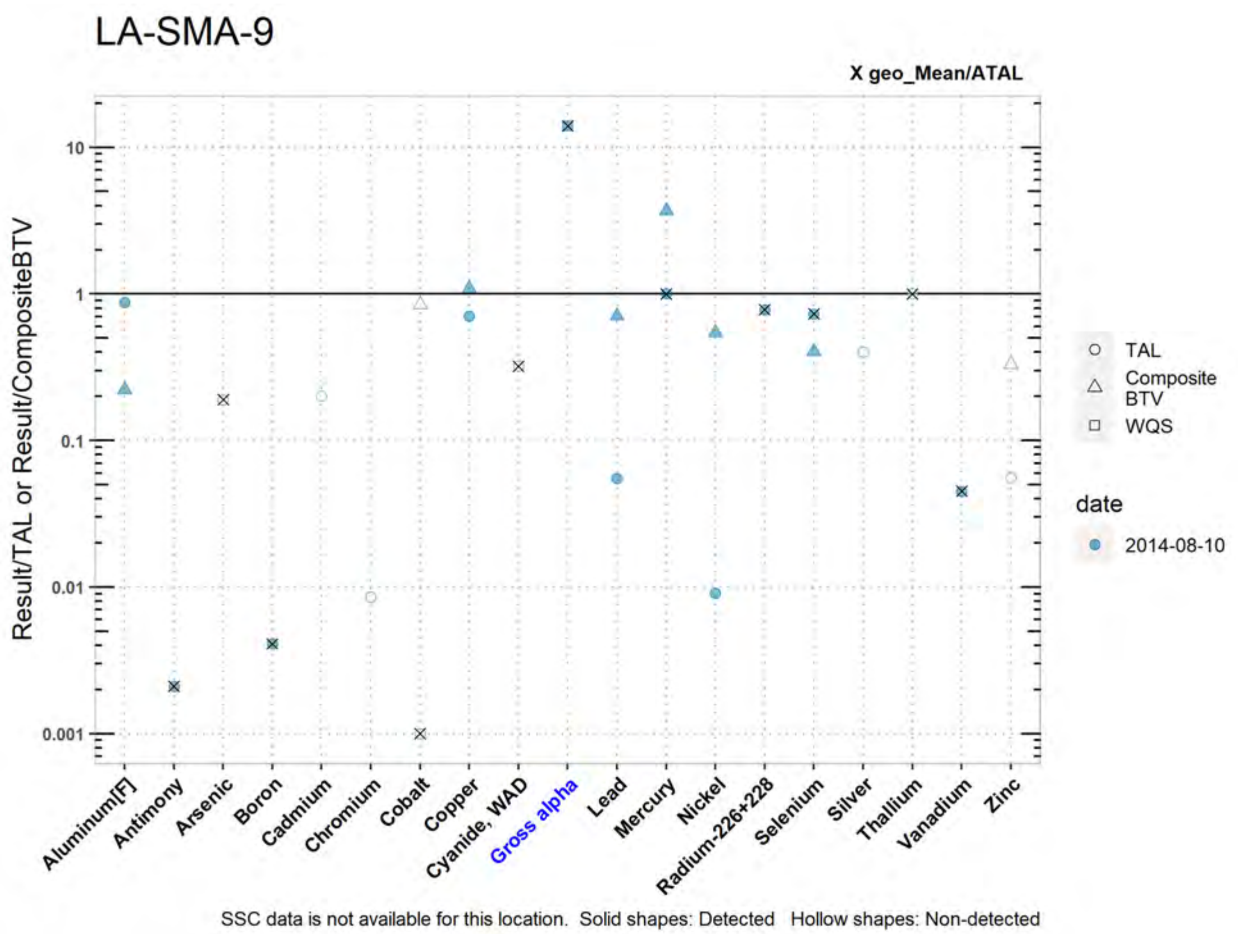


Figure 50.4-1 Analytical Results from Stormwater Sample, LA-SMA-9 (Plot)

LA-SMA-9

	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	0.65	233	NA	4.8	22	NA	19.3	NA	186	NA	20	0.49	NA	NA	59.2
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
2014-08-10 result	656	1.32	*1.70*	20.5	*0.110*	*2.00*	*1.00*	3.40	*1.67*	208	1.06	0.767	1.69	23.4	3.65	*0.200*	*0.450*	4.54	*3.30*
2014-08-10 dT	0.875	0.0021	NA	0.0041	NA	NA	NA	0.708	NA	14	0.0549	1.0	0.00909	0.780	0.73	NA	NA	0.045	NA
2014-08-10 dB	0.222	NA	NA	NA	NA	NA	NA	1.09	NA	NA	0.707	3.69	0.545	NA	0.406	NA	NA	NA	NA
geo_mean/ATAL	NA	0.0021	0.19	0.0041	NA	NA	0.0010	NA	0.321	14	NA	1.0	NA	0.780	0.73	NA	1	0.045	NA

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

Figure 50.4-2 Analytical Results from Stormwater Sample, LA-SMA-9 (Table)

50.4.2 Assessment Unit and Stream Impairments

LA-SMA-9 drains to Los Alamos Canyon (NM-4 to DP Canyon), which has impairments for total recoverable aluminum, PCBs, total recoverable cyanide, radium, adjusted gross alpha, and total recoverable selenium. These impairments may be Site-related, based on Site history.

50.5 Site-Specific Demonstration

50.5.1 Soil Data Summary

All Site-related POCs that exceeded the applicable 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.

50.5.2 Stormwater Data Summary

Gross alpha was the only TAL exceedance, and there was no paired SSC value to confirm whether it was below BV. Therefore, it will be added to the SAP.

50.5.3 2022 Permit Status

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

50.5.4 Sampling and Analysis Plan

Table 50.5-1 is the proposed SAP for LA-SMA-9.

Table 50.5-1 Proposed SAP, LA-SMA-9

Monitoring Constituent	Background for Monitoring
Gross alpha (1)	Impairment, Site history (radionuclides), and stormwater data
Cyanide (1)	Impairment and soil data
Tritium	Site history
Dissolved uranium	Site history
DOC	Permit requirement
SSC	Permit requirement

51.0 LA-SMA-10.12

Associated Sites	53-008
Receiving Water	Los Alamos Canyon
Drainage Area	0.68 acres
Landscape Characteristics	2% impervious, 98% pervious
Consent Order Site Status	AOC 53-008: In Progress
2010 AC Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	The October 2017 field visit determined that the current sampler location did not adequately address runoff from the AOC. Therefore, the sampler intake will be moved slightly south to the top of the spillway to address chromium in soil at location 53-612513.
2022 Permit Status	Active Monitoring

51.1 2010 Administratively Continued Permit Summary

Following the May 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 December 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 232349), corrective-action monitoring was initiated and stormwater samples were collected in September 2013 and July 2015. Analytical results from these samples had no TAL exceedances.

The Permittees submitted a certification of completion of corrective action for the Site to EPA per permit Part I.E.2.(a) in March 2016 (LANL 2016, 601270). Stormwater monitoring has not occurred since 2015.

51.2 Site History

53-008 9/29/2021

AOC 53-008 is an unpaved open area (referred to as a “boneyard”) used to store used materials and equipment associated with experiments conducted at TA-53. This storage area, approximately 3 to 4 acres in size, is irregularly shaped, and located east and south of the former TA-53 surface impoundments [former Consolidated Unit 53-002(a)-99]. Most of the storage area is vegetated with grasses, shrubs, and juniper trees, and several dirt trails also run through it.

Materials shown to be present at the Site in 1989 photographs include vacuum pumps, metal ducting, concrete shielding blocks, empty overpack drums, and drums containing steel bearings. The Site was inspected in September 1993 and was found to contain shielding blocks (magnetite concrete and steel), concrete, steel, other metallic debris, and other miscellaneous items. No hazardous materials or chemicals were observed, with the exception of lead stored in a shed (structure 53-621) at the south end of the Site.

This area has been used for storage from approximately 1972 to the present. Currently, much of the material previously stored at the Site has been removed.

For investigation activities, refer to “Supplemental Investigation Report for Lower Sandia Canyon Aggregate Area, Revision 1” (N3B 2021, 701448).

51.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 51.2-1.

Table 51.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
53-008	Storage area	Metals, radionuclides

51.3 Consent Order Soil Data

Decision-level data for AOC 53-008 consist of results from samples collected in 2010. Analytical results from those samples are presented in Figures 51.3-1 through 51.3-4. Revision 1 of the 2021 supplemental IR concluded that the nature and extent of contamination have been defined except for the vertical extent of chromium and the lateral extent of cyanide.

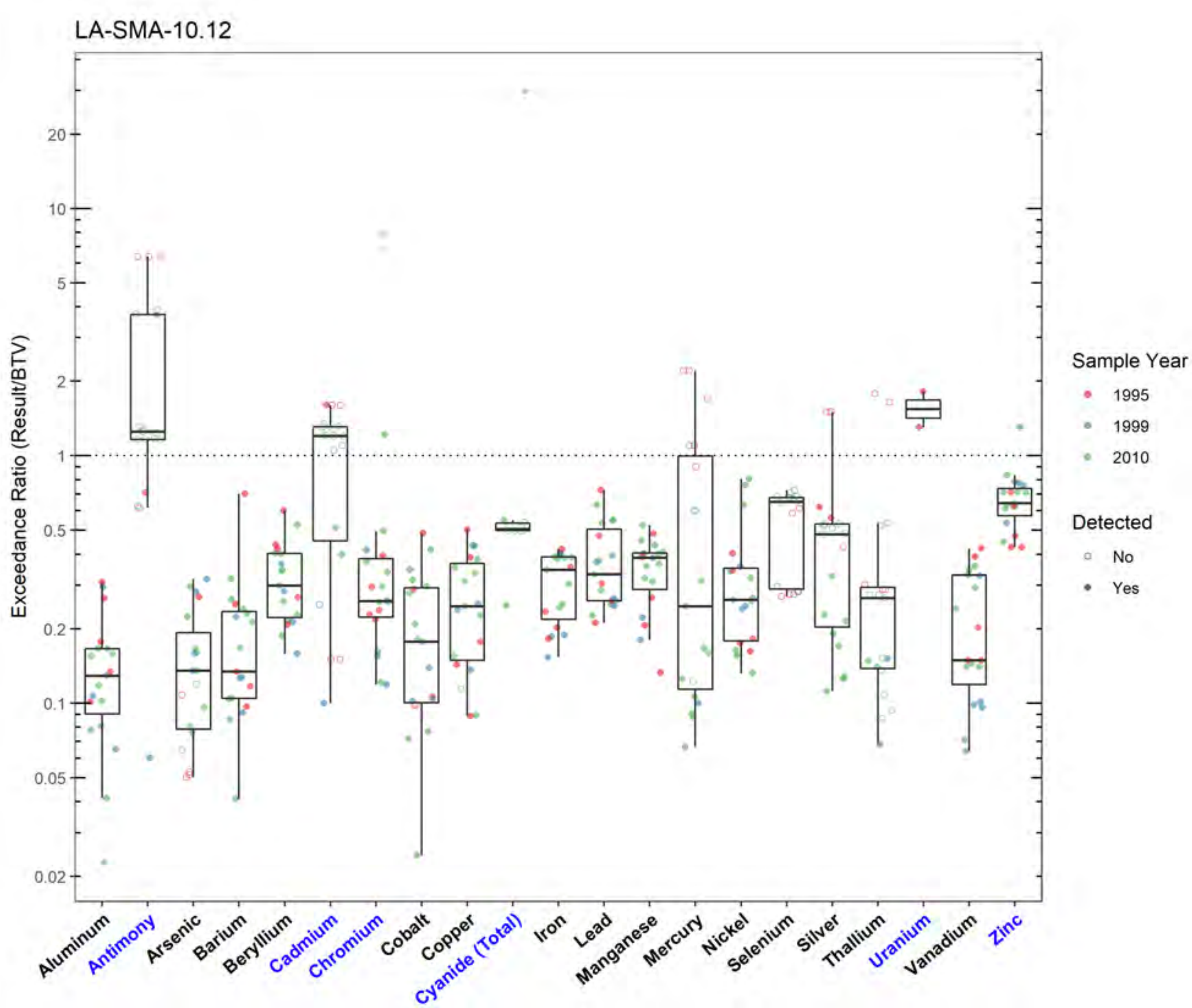


Figure 51.3-1 Inorganics Analytical Results from Soil Samples Associated with LA-SMA-10.12

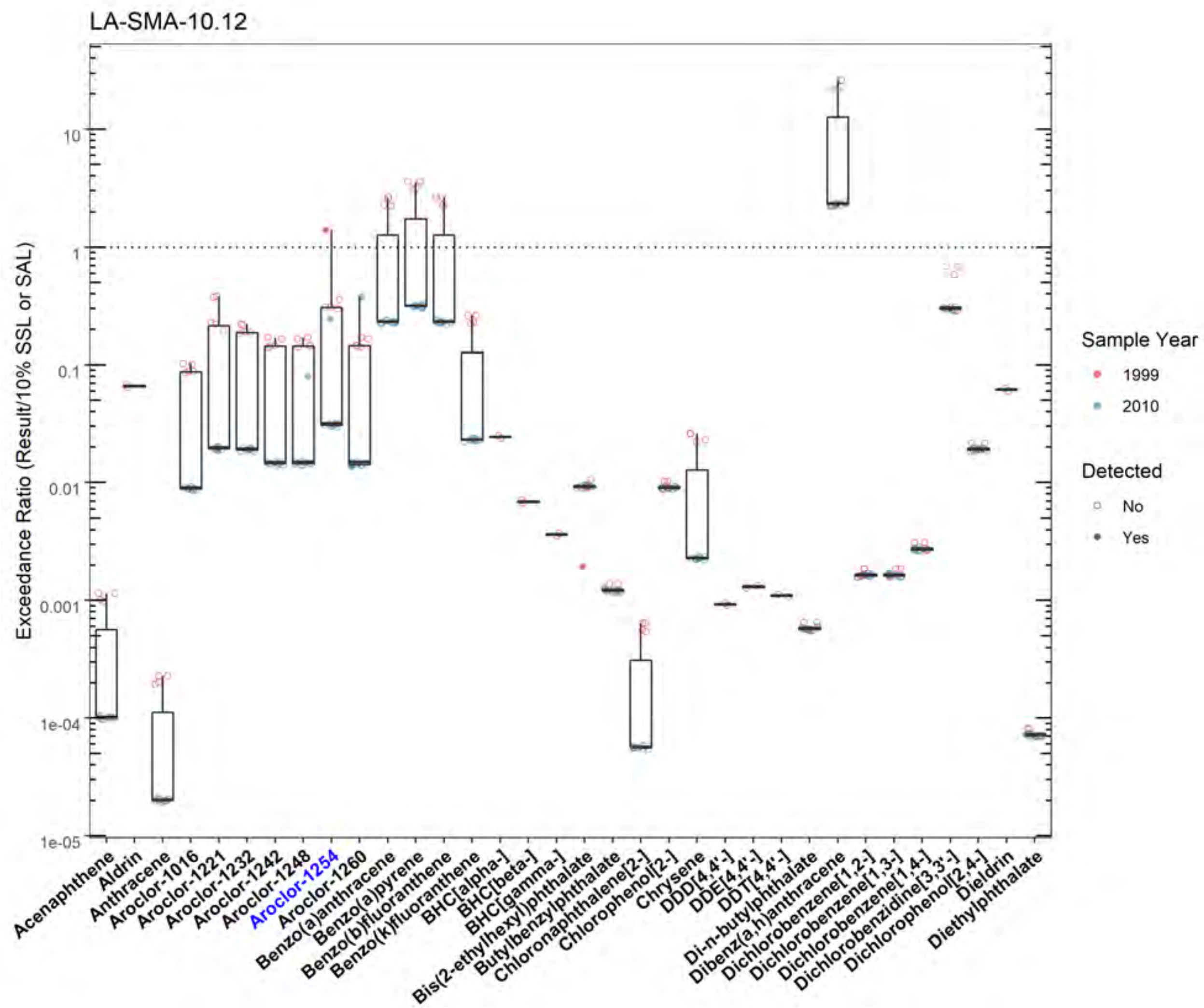


Figure 51.3-2 Organics Analytical Results from Soil Samples Associated with LA-SMA-10.12 (Plot 1)

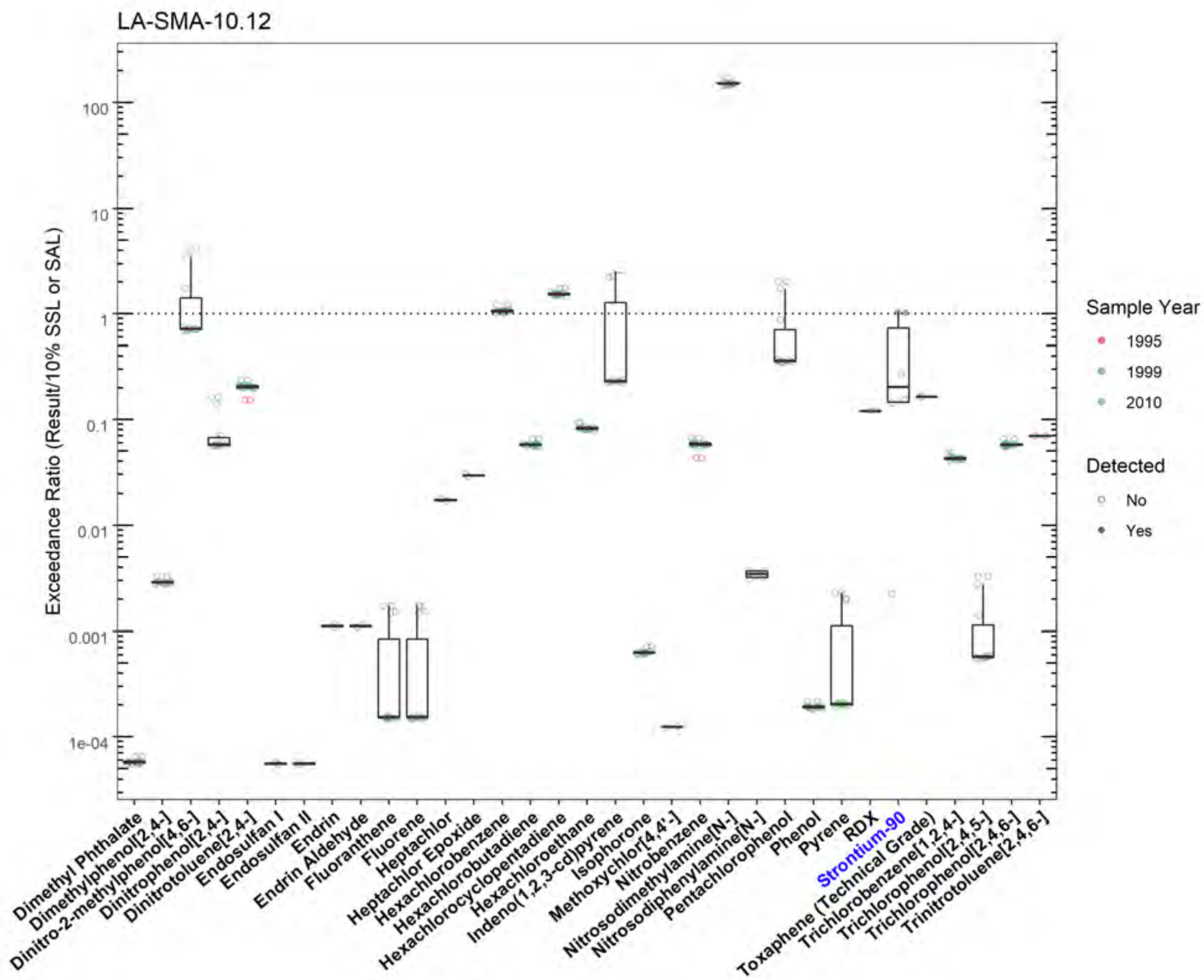


Figure 51.3-3 Organics Analytical Results from Soil Samples Associated with LA-SMA-10.12 (Plot 2)

LA-SMA-10.12

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	LA-SMA-10.12	Sb	Y	BTV	0.830	3.08	2010-08-10
Aroclor-1254	LA-SMA-10.12	11097-69-1	Y	SSL_0.1	0.114	0.160	1999-07-09
Cadmium	LA-SMA-10.12	Cd	Y	BTV	0.400	0.640	1995-05-10
Chromium	LA-SMA-10.12	Cr	Y	BTV	19.3	150	2010-08-10
Cyanide (Total)	LA-SMA-10.12	CN(TOTAL)	Y	BTV	0.500	14.9	2010-08-11
Strontium-90	LA-SMA-10.12	Sr-90	Y	SAL_0.1	1.50	1.56	1999-08-24
Uranium	LA-SMA-10.12	U	Y	BTV	1.82	3.31	1995-05-18
Zinc	LA-SMA-10.12	Zn	Y	BTV	48.8	63.4	1999-07-09

Figure 51.3-4 Screening-Level Exceedances from Soil Samples Associated with LA-SMA-10.12

51.4 Stormwater Evaluation

51.4.1 Summary of Stormwater Results Compared to TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Corrective action stormwater samples were collected in September 2013 and July 2015; analytical results from these samples are presented in Figures 51.4-1 and 51.4-2.

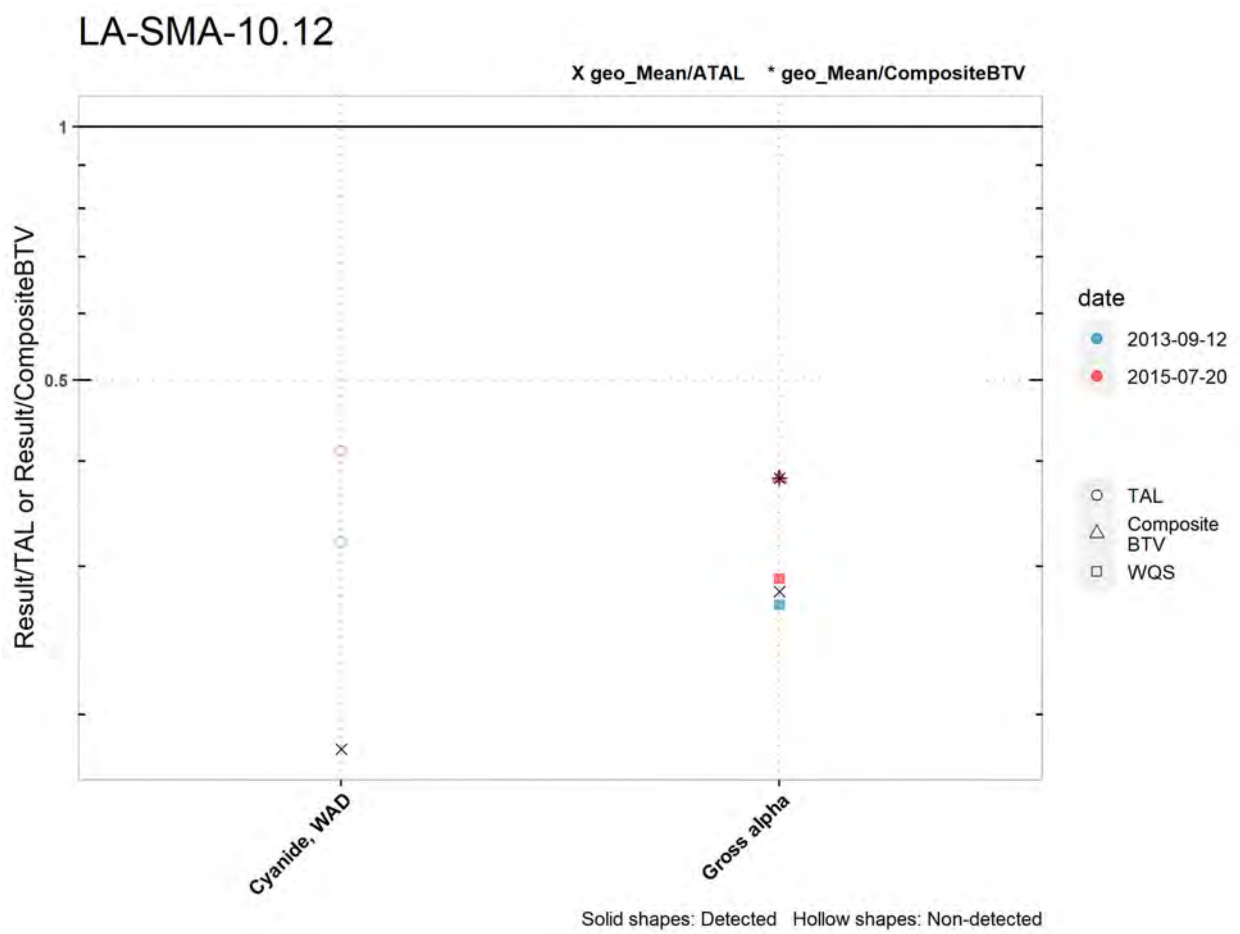


Figure 51.4-1 Analytical Results from Stormwater Samples, LA-SMA-10.12 (Plot)

LA-SMA-10.12

	Cyanide, WAD	Gross alpha
MQL	10	NA
ATAL	5.2	15
MTAL	22	NA
Composite_BTV	NA	57.1
unit	ug/L	pCi/L*
2013-09-12 result	*1.67*	4.07
2013-09-12 dT	NA	0.27
2013-09-12 dB	NA	NA
2015-07-20 result	*2.14*	4.36
2015-07-20 dT	NA	0.29
2015-07-20 dB	NA	0.382
geo_mean/ATAL	0.182	0.28
geo_mean/B	NA	0.382

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 51.4-2 Analytical Results from Stormwater Samples, LA-SMA-10.12 (Table)

51.4.2 Assessment Unit and Stream Impairments

LA-SMA-10.12 drains to Los Alamos Canyon (NM-4 to DP Canyon), which has impairments for total recoverable aluminum, PCBs, total recoverable cyanide, radium, adjusted gross alpha, and total recoverable selenium. The metals, radium, and gross alpha impairments may be Site-related, based on Site history.

51.5 Site-Specific Demonstration

51.5.1 Soil Data Summary

Strontium-90 is the only Site-related POC that exceeded the applicable screening value in soil data and has not yet been measured in stormwater.

51.5.2 Stormwater Data Summary

Cyanide and gross alpha were measured in the most current stage of monitoring and were below TALs.

51.5.3 2022 Permit Status

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

51.5.4 Sampling and Analysis Plan

Table 51.5-1 is the proposed SAP for LA-SMA-10.12.

Table 51.5-1 Proposed SAP, LA-SMA-10.12

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

52.0 DP-SMA-0.3

Associated Sites	21-029
Receiving Water	DP Canyon
Drainage Area	1.59 acres
Landscape Characteristics	41% impervious, 59% pervious
Consent Order Site Status	SWMU 21-029: Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	The January 2018 field visit determined that the current sampler location did not monitor runoff from the impacted area. Therefore, it was proposed that the sampler be moved into the main channel, upgradient from the county yard. Due to construction of an apartment complex on top of the SWMU footprint since the SIP review, it was determined that current sampler location is now more representative of the area; therefore, the sampler will not be moved, and the drainage area will be updated.
2022 Permit Status	Active Monitoring

52.1 2010 Administratively Continued Permit Summary

Following the April 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 2013 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2013, 244386), corrective-action monitoring was initiated and stormwater samples were collected in July and September 2013. Analytical results from these samples initiated corrective action.

SWMU 21-029 received a COC under the Consent Order in January 2016. The Permittees submitted a certification of completion of corrective action for the Site per Permit part I.E.2(d) in March 2017 (LANL 2017, 602213). Stormwater monitoring has not occurred since 2013.

52.2 Site History

21-029 (9/28/2021)

SWMU 21-029 is the former DP Tank Farm, located entirely on the mesa top within the very western portion of DP West and TA-21. DP Tank Farm consisted of 15 ASTs and USTs that contained various petroleum hydrocarbon products, and two fill stations (East and West) that were located just inside the earthen berm along the northern perimeter of the tank farm, on a 3.5-acre site between the eastern boundary of the Knights of Columbus property line and the western boundary of the Los Alamos County Fire and Training Station. Structures at the site included fuel tanks, fill ports, valve boxes, the East and West Fill Stations, access roads, and a large earthen berm on the north side of the Site, extending from just east of the West Fill Station to the east end of the Site. Other structures included two CMPs that previously discharged stormwater runoff from DP Road into DP Canyon (AOC C-00-021) and the western portion of the facility access road.

DP Tank Farm was the primary fueling station supporting LASL operations until the late 1970s, when some of the fuel storage and distribution operations were moved to TA-03. The tank farm remained operational until February 1985. Thirteen of the tanks were installed belowground, and two were installed aboveground. The approximate tank capacities reportedly ranged from 21,000 gal. to 51,000 gal. To contain any petroleum hydrocarbon releases, an earthen berm was constructed along the northern perimeter of the Site sometime between 1974 and 1986. The berm was approximately 397 ft long × 4 ft high.

All storage tanks and structures (including piping, two fill stations, and valve boxes) were decommissioned and removed in 1988. The excavation for each UST was backfilled with the soil that had covered the tanks. During decommissioning activities, one tank (structure-21-ATF-10) had a leaking gasket, and 4 yd^3 of soil were removed. Approximately 75 yd^3 of soil were also removed from the areas around the two fill stations, where the soil was stained with petroleum hydrocarbons. The remaining tanks were reportedly in excellent condition, as documented during corrosion inspections conducted in 1980. Minor spills and leaks during the 39 yr of day-to-day operations at the Site resulted in the release of diesel fuel, kerosene, ethanol/alcohol, No. 2 diesel fuel oil, and leaded gasoline into the environment at the tank farm, including two petroleum hydrocarbon seeps in DP Canyon (AOC C-00-021).

For investigation activities, refer to “Phase II RFI Report for Potential Release Site 21-029, DP Tank Farm” (LANL 2001, 071303) and “Response to Request for Supplemental Information for the Phase II RFI Report for Potential Release Site 21-029, DP Tank Farm” (LANL 2001, 073436).

52.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 51.2-1.

Table 51.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
21-029	Former DP Tank Farm	PAHs, lead

52.3 Consent Order Soil Data

Decision-level data for SWMU 21-029 consist of samples collected in 2001. Analytical results from those samples are presented in Figures 52.3-1 through 52.3-4. The 2001 Phase II IR for SWMU 21-029 concluded that the nature and extent of mesa-top contamination had been defined.

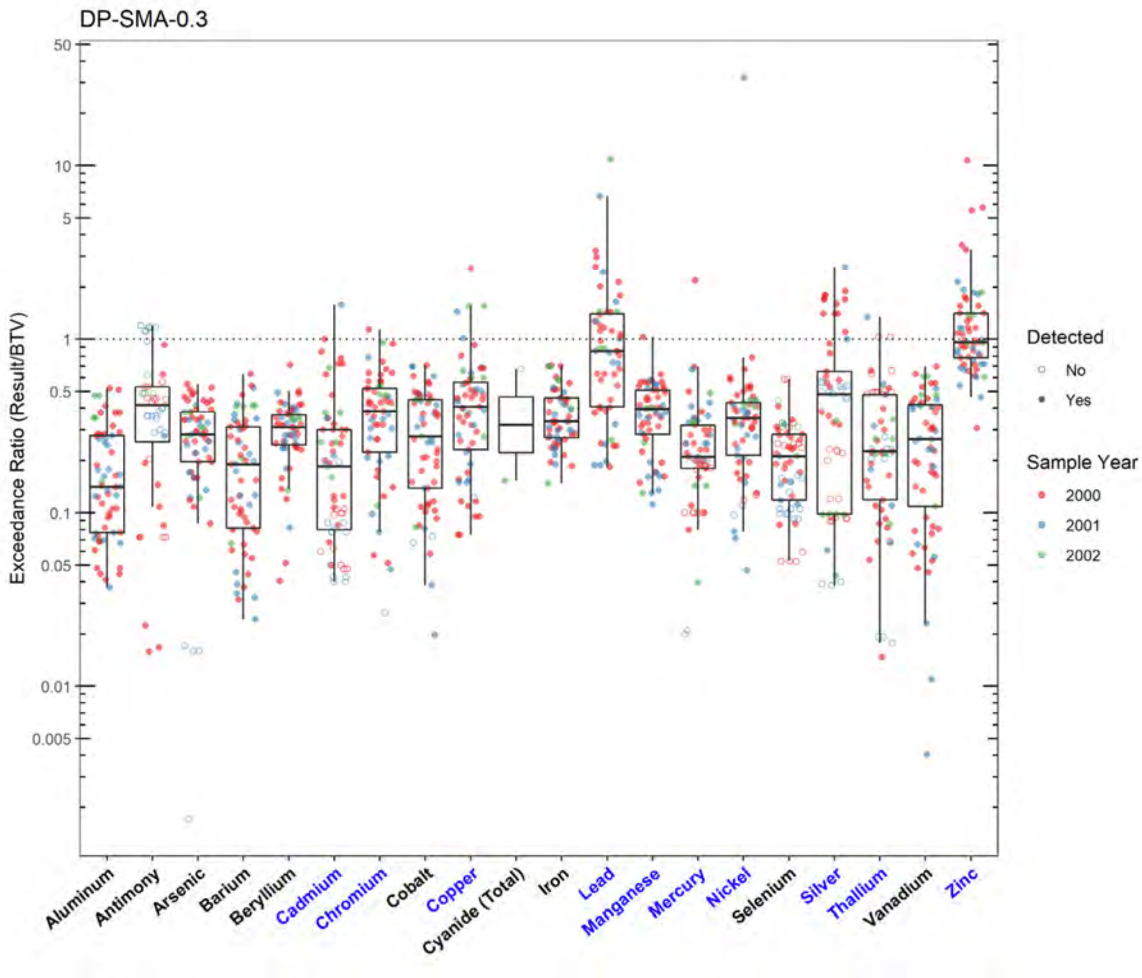


Figure 52.3-1 Inorganics Analytical Results from Soil Samples Associated with DP-SMA-0.3

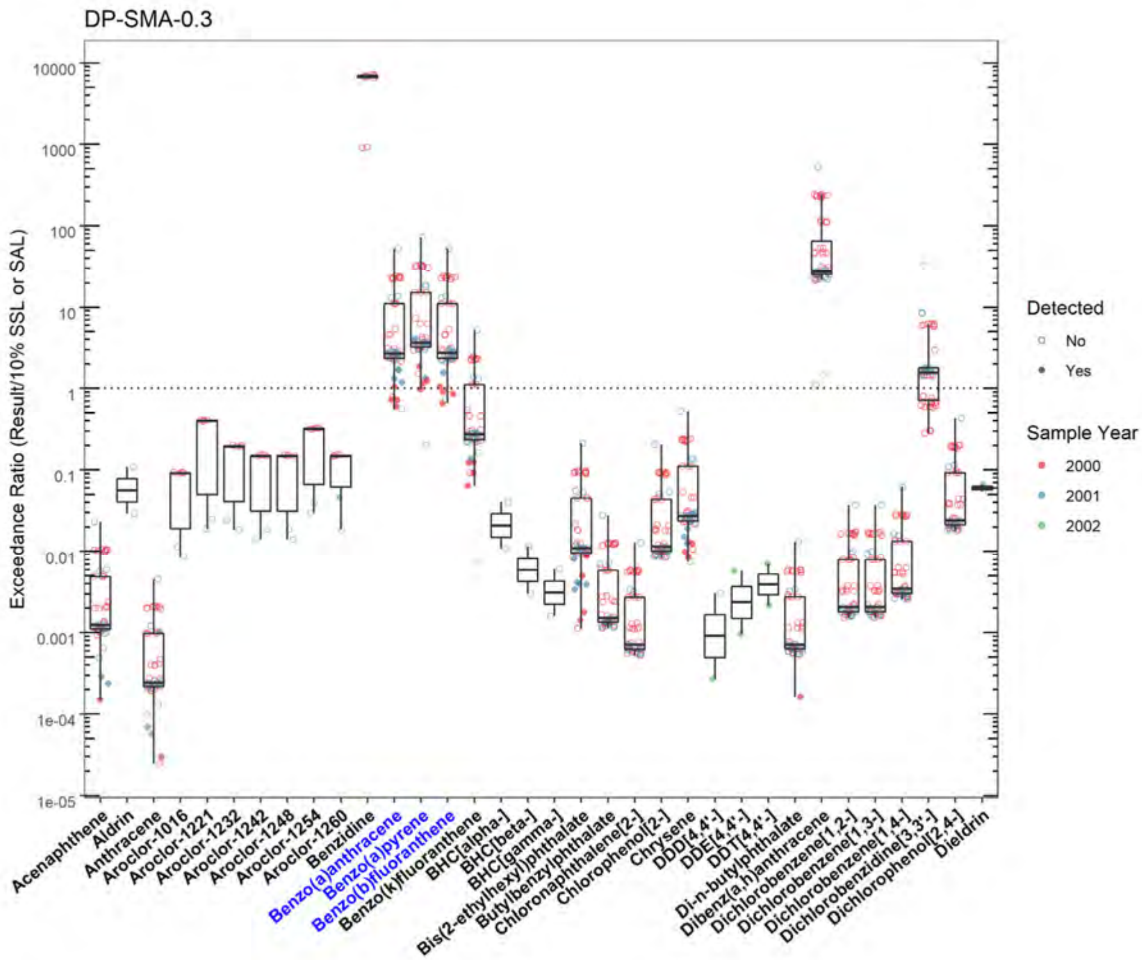


Figure 52.3-2 Organics Analytical Results from Soil Samples Associated with DP-SMA-0.3 (Plot 1)

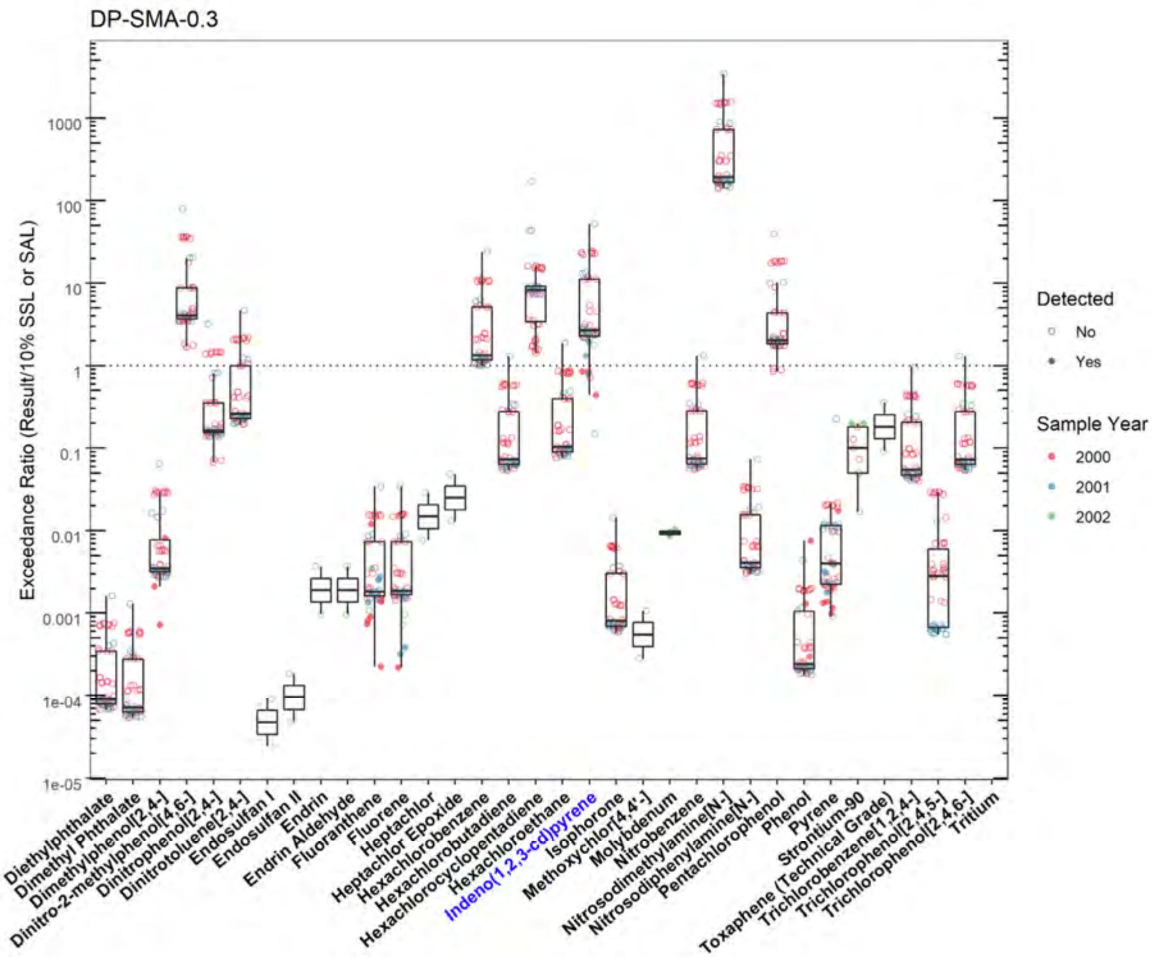


Figure 52.3-3 Organics Analytical Results from Soil Samples Associated with DP-SMA-0.3 (Plot 2)

DP-SMA-0.3

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	DP-SMA-0.3	56-55-3	Y	SSL_0.1	0.153	0.430	2001-05-15
Benzo(a)pyrene	DP-SMA-0.3	50-32-8	Y	SSL_0.1	0.112	0.460	2001-05-15
Benzo(b)fluoranthene	DP-SMA-0.3	205-99-2	Y	SSL_0.1	0.153	0.470	2001-05-15
Cadmium	DP-SMA-0.3	Cd	Y	BTV	0.400	0.630	2001-06-21
Chromium	DP-SMA-0.3	Cr	Y	BTV	19.3	22.0	2000-08-09
Copper	DP-SMA-0.3	Cu	Y	BTV	14.7	37.7	2000-07-10
Indeno(1,2,3-cd)pyrene	DP-SMA-0.3	193-39-5	Y	SSL_0.1	0.153	0.290	2001-05-15
Lead	DP-SMA-0.3	Pb	Y	BTV	22.3	244	2002-07-31
Manganese	DP-SMA-0.3	Mn	Y	BTV	671	690	2000-08-09
Mercury	DP-SMA-0.3	Hg	Y	BTV	0.100	0.220	2000-08-07
Nickel	DP-SMA-0.3	Ni	Y	BTV	15.4	496	2001-05-15
Silver	DP-SMA-0.3	Ag	Y	BTV	1.00	2.60	2001-06-08
Thallium	DP-SMA-0.3	Tl	Y	BTV	0.730	0.980	2001-06-04
Zinc	DP-SMA-0.3	Zn	Y	BTV	48.8	520	2000-06-22

Figure 52.3-4 Screening-Level Exceedances from Soil Samples Associated with DP-SMA-0.3

52.4 Stormwater Evaluation

52.4.1 Summary of Stormwater Results Compared to TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Due to soil disturbance within the SMA, new confirmation-monitoring samples must be collected at the current monitoring location.

52.4.2 Assessment Unit and Stream Impairments

DP-SMA-0.3 drains to DP Canyon (400 m upstream of grade control to upper LANL boundary), which has impairments for adjusted gross alpha, PCBs, total recoverable aluminum, and dissolved copper. These impairments are not likely to be Site-related, based on Site history.

52.5 Site-Specific Demonstration

52.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: benzo(b)fluoranthene, benzo(a)pyrene, benzo(a)anthracene, indeno(1,2,3-cd)pyrene, and lead. The remaining metals that exceeded the applicable screening value in soil data are not Site-related POCs, therefore they will not be added to the SAP.

52.5.2 Stormwater Data Summary

No confirmation-monitoring data have been collected after soil disturbance was conducted in the SMA.

52.5.3 2022 Permit Status

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

52.5.4 Sampling and Analysis Plan

Table 52.5-1 is the proposed SAP for DP-SMA-0.3.

Table 52.5-1 Proposed SAP, DP-SMA-0.3

Monitoring Constituent	Background for Monitoring
SVOCs	Site history (PAHs) and soil data
Dissolved lead	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

53.0 DP-SMA-0.4

Associated Sites	21-021
Receiving Water	DP Canyon
Drainage Area	0.13 acres
Landscape Characteristics	12% impervious, 88% pervious
Consent Order Site Status	SWMU 21-021: In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the January 2018 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring/Corrective Action

53.1 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 044 (LANL 2015, 600418). No response has been received from EPA, and stormwater monitoring has not occurred since 2013.

53.2 Site History

21-021 (11/23/2020)

SWMU 21-021 consists of potential surface soil contamination resulting from the deposition of historical airborne releases of radionuclides from incinerators, stacks, and filter houses previously located throughout TA-21. The estimated area of potential soil contamination is approximately 300,000 m^2, and overlaps all of TA-21 and portions of DP Canyon north of TA-21.

TA-21 was used primarily for plutonium research and metal production and related activities from 1945 to 1978. After the major plutonium research and metal production activities at TA-21 ceased in 1978, subsequent unrelated office and small-scale research activities continued until approximately 2006. Historical airborne releases of radionuclides from stacks at TA-21 were documented from 1951 to 1971 and from 1973 to 1989. A minimum of approximately 2 Ci/yr of plutonium-239/240 was released from all TA-21 stacks in the 1950s. There is no documentation of nonradioactive chemical releases associated with the historical TA-21 stack emissions.

For investigation activities, refer to “Phase Report 1B, TA-21 Operable Unit RCRA Facility Investigation, Operable Unit-Wide Surface Soil, Deposition Layer and Filter Building Investigation” (LANL 1994, 026073) and “Final Reponses to EPA’s Notice of Deficiency on Phase Report” (LANL 1995, 062415).

53.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 53.2-1.

Table 53.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
21-021	Systematic release (sitewide)	Americium-241, plutonium isotopes, strontium-90

53.3 Consent Order Soil Data

No Consent Order soil data.

53.4 Stormwater Evaluation

53.4.1 Summary of Stormwater Results Compared to 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 53.4-1 and 53.4-2.

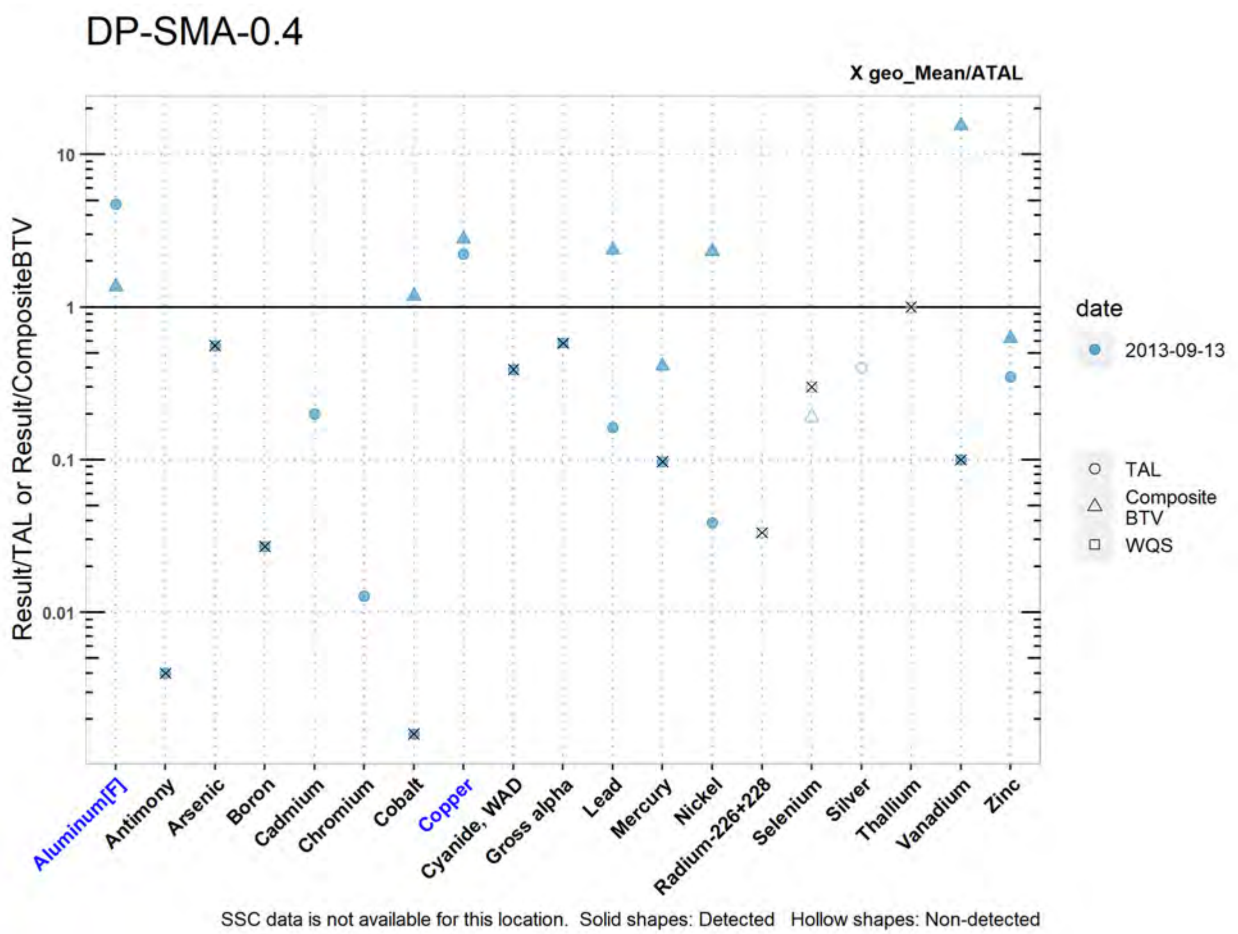


Figure 53.4-1 Analytical Results from Stormwater Sample, DP-SMA-0.4 (Plot)

DP-SMA-0.4

	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	0.65	233	NA	4.8	22	NA	19.3	NA	186	NA	20	0.49	NA	NA	59.2
Composite_BTV	2610	NA	NA	NA	NA	NA	1.31	3.84	NA	56.3	1.32	0.183	3.10	4.96	7.89	NA	NA	0.682	33.0
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
2013-09-13 result	3540	2.53	5.04	135	0.135	2.98	1.55	10.7	2.03	8.71	3.13	0.0750	7.19	*1.00*	*1.50*	*0.200*	*0.450*	10.5	20.6
2013-09-13 dT	4.72	0.0040	0.56	0.027	0.2	0.0128	0.0016	2.23	0.390	0.58	0.162	0.097	0.0387	NA	NA	NA	NA	0.10	0.348
2013-09-13 dB	1.36	NA	NA	NA	NA	NA	1.18	2.79	NA	NA	2.37	0.410	2.32	NA	NA	NA	NA	15.4	0.624
geo_mean/ATAL	NA	0.0040	0.56	0.027	NA	NA	0.0016	NA	0.390	0.58	NA	0.097	NA	0.0333	0.30	NA	1	0.10	NA

Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 53.4-2 Analytical Results from Stormwater Sample, DP-SMA-0.4 (Table)

53.4.2 Assessment Unit and Stream Impairments

DP-SMA-0.4 drains to DP Canyon (400m upstream of grade control to upper LANL boundary), which has impairments for adjusted gross alpha, PCBs, total recoverable aluminum, and dissolved copper. The adjusted gross alpha impairment may be Site-related, based on Site history.

53.5 Site-Specific Demonstration

53.5.1 Soil Data Summary

No Consent Order soil data.

53.5.2 Stormwater Data Summary

Aluminum and copper exceeded the TAL and BTV.

53.5.3 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.2.b.i) for aluminum and copper. The SMA is also in active monitoring; not all Site-related POCs were analyzed for in past samples.

53.5.4 Sampling and Analysis Plan

Table 53.5-1 is the proposed SAP for DP-SMA-0.4.

Table 53.5-1 Proposed SAP, DP-SMA-0.4

Monitoring Constituent	Background for Monitoring
Strontium-90	Site history
DOC	Permit requirement
SSC	Permit requirement

54.0 DP-SMA-0.6

Associated Sites	21-021, 21-024(l)
Receiving Water	DP Canyon
Drainage Area	0.03 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 21-021: In Progress SWMU 21-024(l): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested/Corrective Action Complete
2016–2018 SIP Actions	Based on the January 2018 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site.
2022 Permit Status	Long-Term Stewardship per Permit Part I.C.3.a criterion

54.1 2010 Administratively Continued Permit Summary

Following the April 2011 submittal of certification of baseline control installation to EPA, a baseline stormwater sample was collected in July 2019. Analytical results from this sample initiated corrective action.

SWMU 21-024(l) received a COC under the Consent Order in September 2018. The Permittees submitted a certification of completion of corrective action for the Site per Permit part I.E.2(d) in December 2019 (N3B 2019, 700724). The Permittees submitted a request for alternative compliance for 21-021 per permit Part I.E.3 in October 2020 (N3B 2020, 701098). No response has been received from EPA. Stormwater monitoring has not occurred since 2019.

54.2 Site History

21-021 (11/23/2020)

SWMU 21-021 consists of potential surface soil contamination resulting from the deposition of historical airborne releases of radionuclides from incinerators, stacks, and filter houses previously located throughout TA-21. The estimated area of potential soil contamination is approximately 300,000 m^2, and overlaps all of TA-21 and portions of DP Canyon north of TA-21.

TA-21 was used primarily for plutonium research and metal production and related activities from 1945 to 1978. After the major plutonium research and metal production activities at TA-21 ceased in 1978, subsequent unrelated office and small-scale research activities continued until approximately 2006. Historical airborne releases of radionuclides from stacks at TA-21 were documented from 1951 to 1971 and from 1973 to 1989. A minimum of approximately 2 Ci/yr of plutonium-239/240 was released from all TA-21 stacks in the 1950s. There is no documentation of nonradioactive chemical releases associated with the historical TA-21 stack emissions.

For investigation activities, refer to “Phase Report 1B, TA-21 Operable Unit RCRA Facility Investigation, Operable Unit-Wide Surface Soil, Deposition Layer and Filter Building Investigation” (LANL 1994, 026073) and “Final Reponses to EPA’s Notice of Deficiency on Phase Report” (LANL 1995, 062415).

21-024(l) (2/27/2019)

SWMU 21-024(l) consists of a former outfall that received liquid waste from the floor drain in the building 21-021 mechanical room via a 3-in. cast-iron drainline. Building 21-021 was constructed in 1946 at TA-21 and was used as a secure vault to store special fissile material, including uranium and plutonium metal. Building 21-021 was decommissioned in 1978 and remained vacant until it was demolished. The SWMU 21-024(l) drainline was removed during the 2006–2007 Consent Order Phase I investigation.

For investigation activities, refer to “Phase III Investigation Report for Delta Prime Site Aggregate Area at Technical Area 21, Revision 1” (LANL 2016, 601598).

54.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 54.2-1.

Table 54.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
21-021	Systematic release (sitewide)	Americium-241, plutonium isotopes, strontium-90
21-024(l)	Outfall from building 21-021	Plutonium, uranium

54.3 Consent Order Soil Data

Most of the SWMUs and AOCs at TA-21 lie within the footprint of SWMU 21-021. Therefore, surface and shallow subsurface samples from investigation of those sites are also representative of SWMU 21-021. Data from samples collected as part of Consent Order investigations and associated remediation activities are decision-level data. The approved DP Site Aggregate Area IWP (LANL 2009, 108166.9) indicated that the investigation of SWMU 21-021 was complete and no additional investigations were required.

Decision-level data for former Consolidated Unit 21-024(l)-99, which includes SWMU 21-024(l), consist of results from samples collected at locations in 2007 and 2009. The 2016 Phase III IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results from all decision-level soil samples collected for DP-SMA-0.6 are presented in Figures 54.3-1 through 54.3-4.

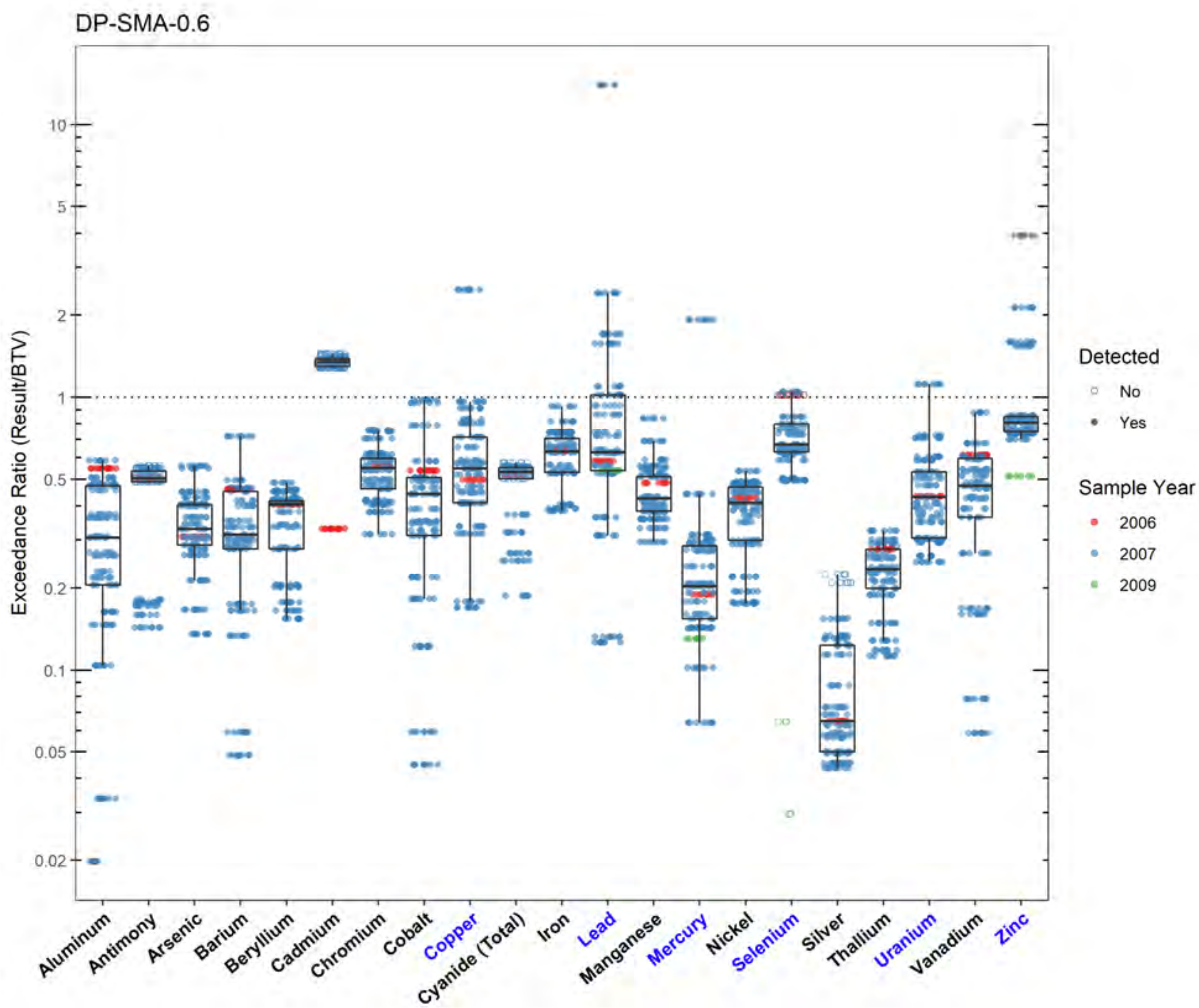


Figure 54.3-1 Inorganics Analytical Results from Soil Samples Associated with DP-SMA-0.6

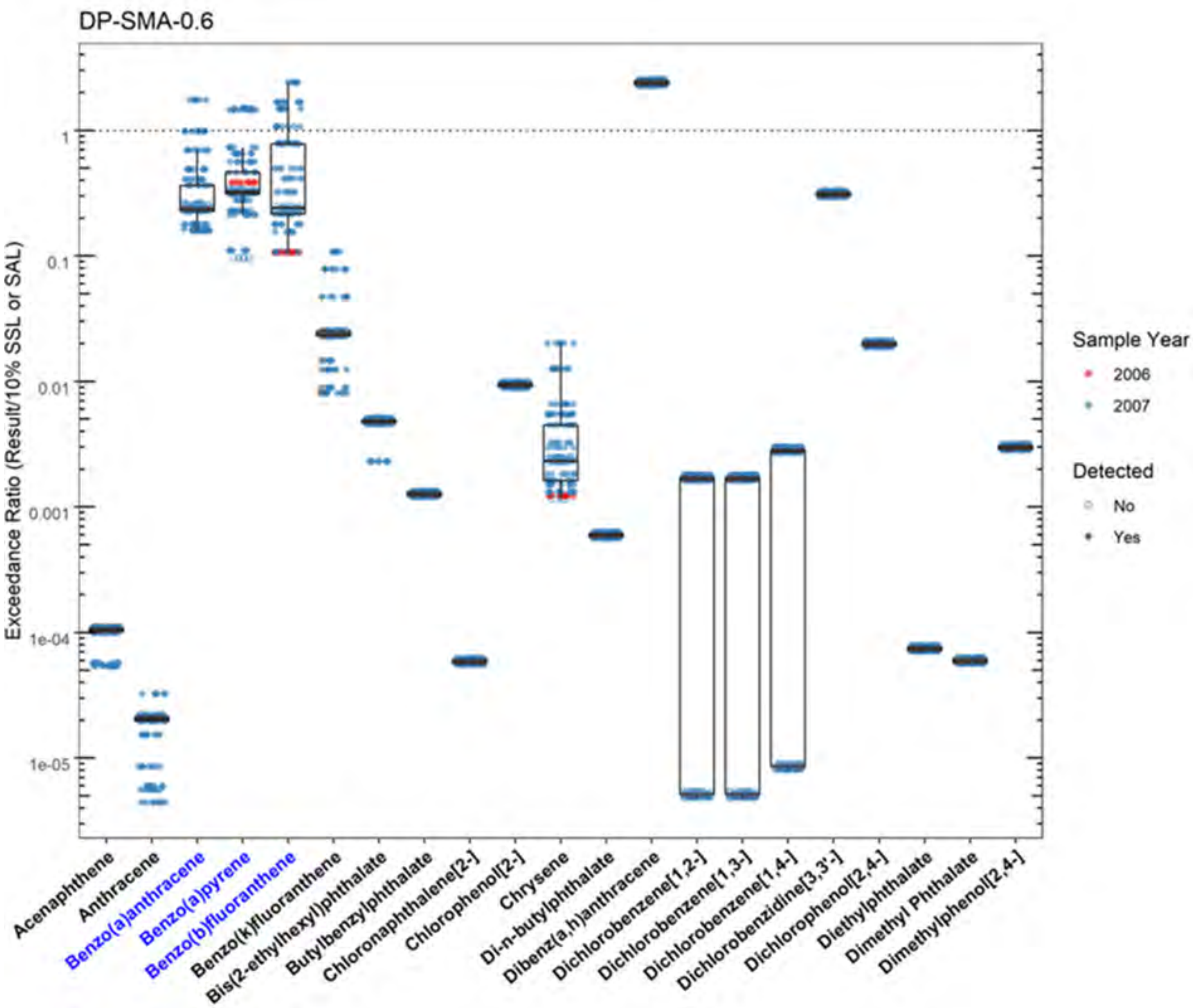


Figure 54.3-2 Organics Analytical Results from Soil Samples Associated with DP-SMA-0.6 (Plot 1)

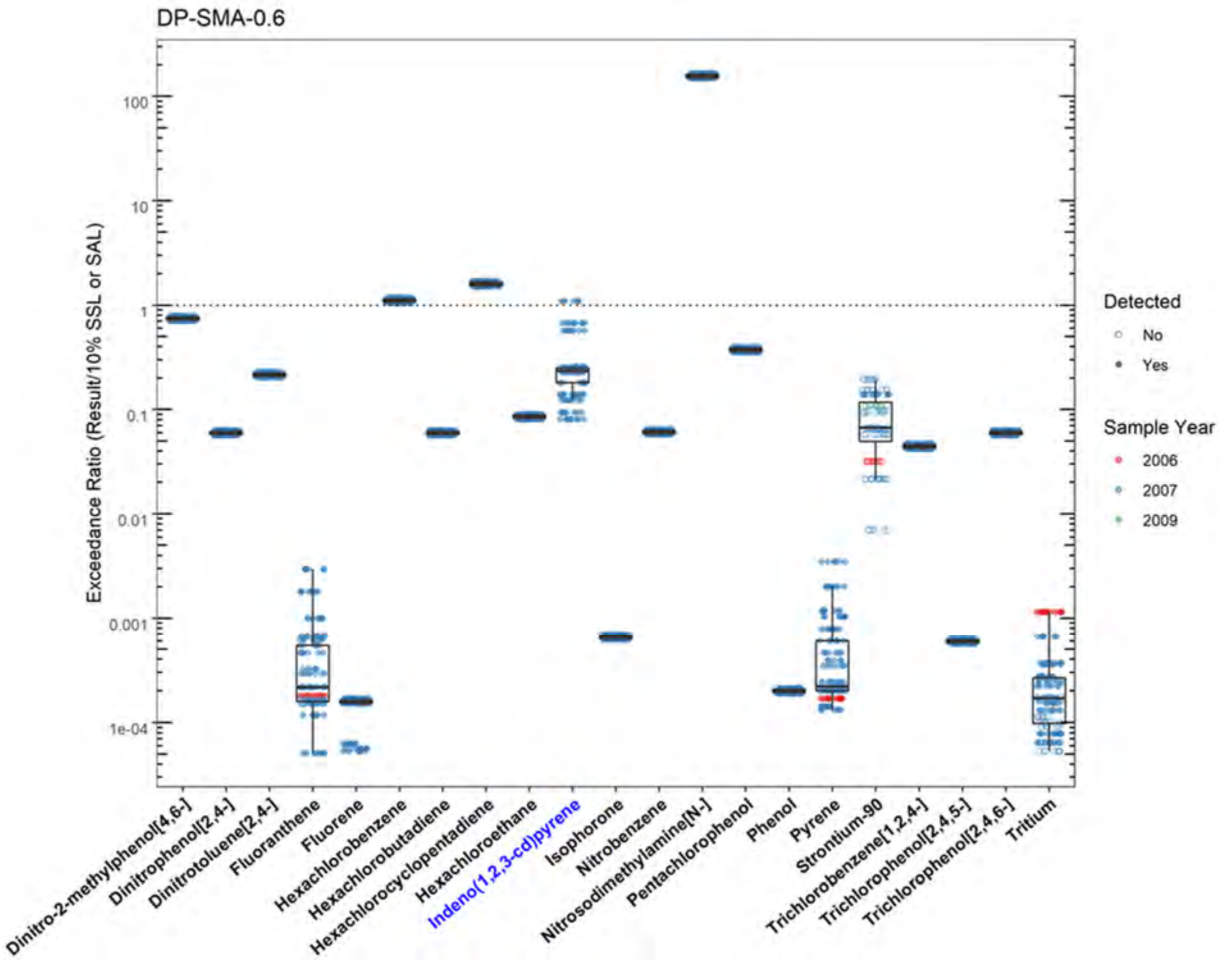


Figure 54.3-3 Organics Analytical Results from Soil Samples Associated with DP-SMA-0.6 (Plot 2)

DP-SMA-0.6

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	DP-SMA-0.6	56-55-3	Y	SSL_0.1	0.153	0.267	2007-06-12
Benzo(a)pyrene	DP-SMA-0.6	50-32-8	Y	SSL_0.1	0.112	0.168	2007-06-13
Benzo(b)fluoranthene	DP-SMA-0.6	205-99-2	Y	SSL_0.1	0.153	0.368	2007-06-12
Copper	DP-SMA-0.6	Cu	Y	BTV	14.7	36.4	2007-06-13
Indeno(1,2,3-cd)pyrene	DP-SMA-0.6	193-39-5	Y	SSL_0.1	0.153	0.167	2007-06-12
Lead	DP-SMA-0.6	Pb	Y	BTV	22.3	312	2007-06-13
Mercury	DP-SMA-0.6	Hg	Y	BTV	0.100	0.192	2007-01-10
Selenium	DP-SMA-0.6	Se	Y	BTV	1.52	1.59	2007-06-12
Uranium	DP-SMA-0.6	U	Y	BTV	1.82	2.03	2007-06-12
Zinc	DP-SMA-0.6	Zn	Y	BTV	48.8	192	2007-06-13

Figure 54.3-4 Screening-Level Exceedances from Soil Samples Associated with DP-SMA-0.6

54.4 Stormwater Evaluation

54.4.1 Summary of Stormwater Results Compared to TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective action stormwater sample was collected in July 2019; results of the analysis of that sample are presented in Figures 54.4-1 through 54.4-4.

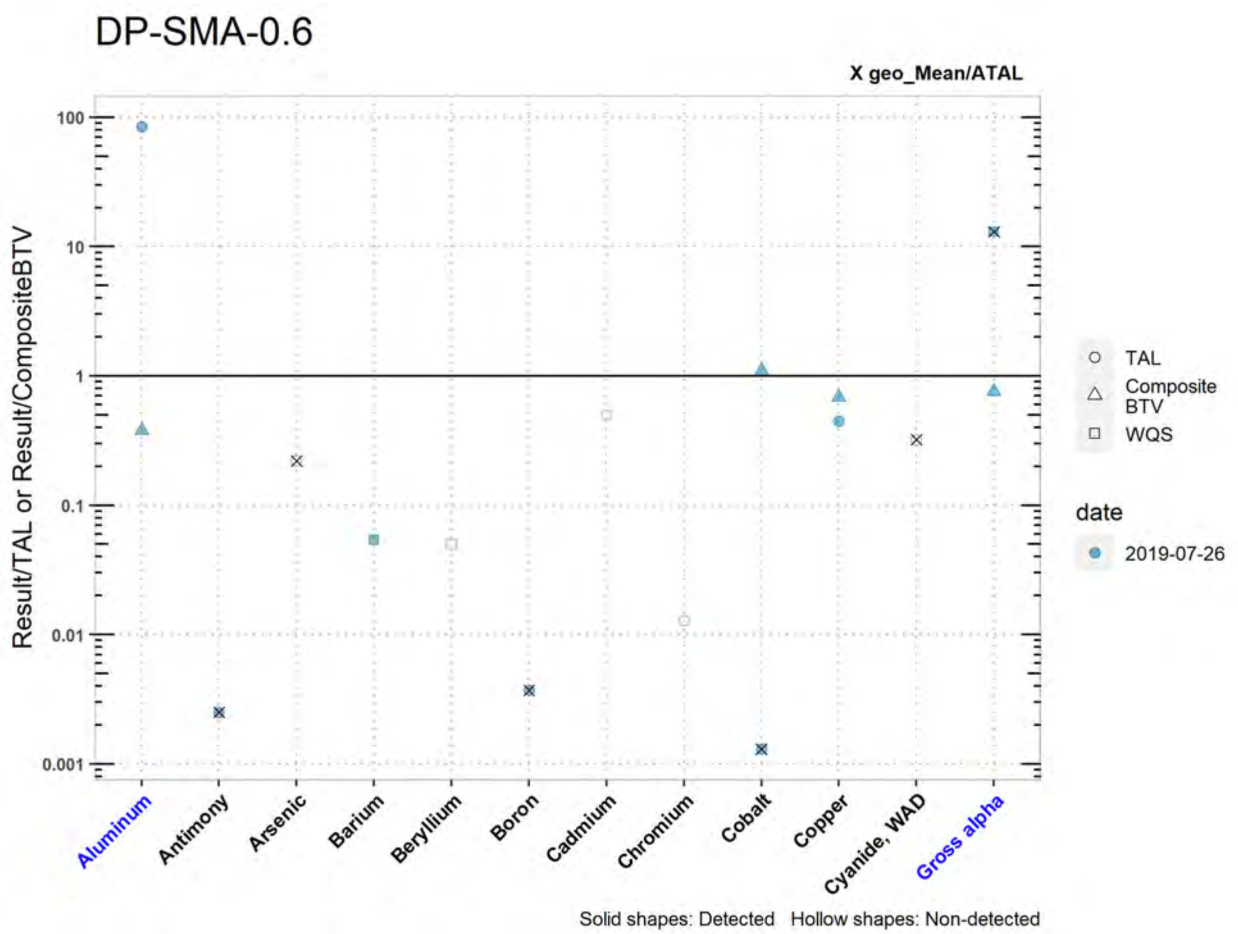


Figure 54.4-1 Analytical Results from Stormwater Sample, DP-SMA-0.6 (Plot 1)

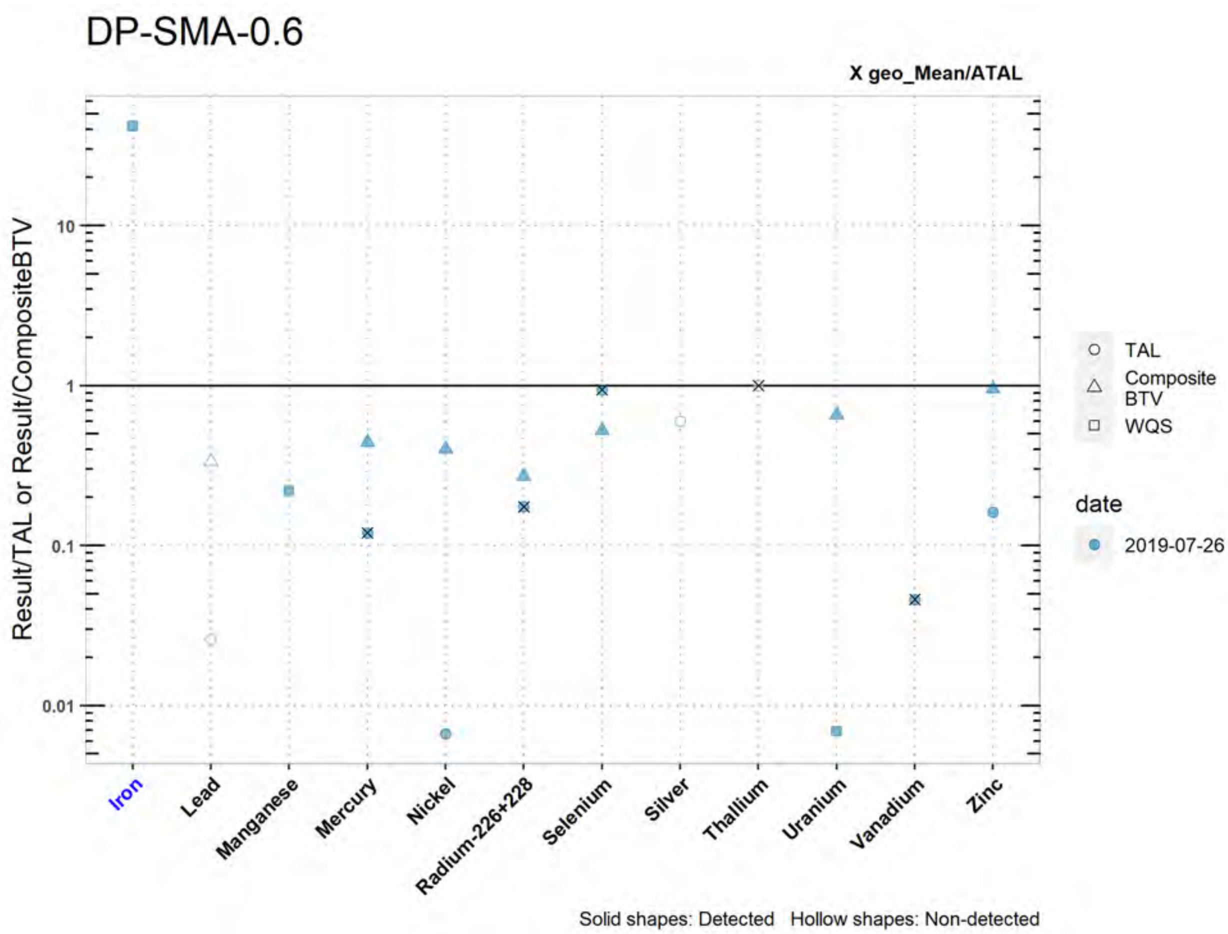


Figure 54.4-2 Analytical Results from Stormwater Sample, DP-SMA-0.6 (Plot 2)

DP-SMA-0.6

	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	765	NA	340	NA	NA	NA	0.65	233	NA	4.8	22	NA
Composite_BTV	37400	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	pCi/L*
2019-07-26 result	64800	1.57	*2.00*	107	*0.200*	18.5	*0.300*	*3.00*	1.30	2.14	*1.67*	199
2019-07-26 dT	84.7	0.0025	NA	0.054	NA	0.0037	NA	NA	0.0013	0.446	NA	13
2019-07-26 dB	0.377	NA	NA	NA	NA	NA	NA	NA	1.10	0.686	NA	0.756
geo_mean/ATAL	NA	0.0025	0.22	NA	NA	0.0037	NA	NA	0.0013	NA	0.321	13

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 54.4-3 Screening Results from Stormwater Sample, DP-SMA-0.6 (Table 1)

DP-SMA-0.6

	Iron	Lead	Manganese	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc
MQL	NA	0.5	NA	0.005	0.5	NA	5	0.5	0.5	NA	50	20
ATAL	NA	NA	NA	0.77	NA	30	5	NA	0.47	NA	100	NA
MTAL	NA	19.3	NA	NA	186	NA	20	0.49	NA	NA	NA	59.2
Composite_BTV	NA	1.50	NA	0.208	3.10	4.21	8.98	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
2019-07-26 result	42200	*0.500*	26.2	0.0920	1.24	5.24	4.71	*0.300*	*0.600*	0.207	4.62	9.52
2019-07-26 dT	42	NA	0.22	0.12	0.00667	0.175	0.94	NA	NA	0.0069	0.046	0.161
2019-07-26 dB	NA	NA	NA	0.442	0.400	0.271	0.524	NA	NA	0.657	NA	0.952
geo_mean/ATAL	NA	NA	NA	0.12	NA	0.175	0.94	NA	1	NA	0.046	NA

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

Figure 54.4-4 Screening Results from Stormwater Sample, DP-SMA-0.6 (Table 2)

54.4.2 Assessment Unit and Stream Impairments

DP-SMA-0.6 drains to DP Canyon (400 m upstream of grade control to upper LANL boundary), which has impairments for adjusted gross alpha, PCBs, total recoverable aluminum, and dissolved copper. The adjusted gross alpha impairment may be Site-related, based on Site history.

54.5 Site-Specific Demonstration

54.5.1 Soil Data Summary

Uranium is a Site-related POCs that exceeded the applicable screening value in soil data, and was previously measured in stormwater data and did not exceed TAL. Therefore, it will not be added to the SAP.

The remaining exceedances of the applicable screening value in soil data are not Site-related POCs and will not be added to the SAP.

54.5.2 Stormwater Data Summary

Gross alpha and total aluminum results were above TALs but below BTVs.

54.5.3 2022 Permit Status

The SMA is eligible for long- term stewardship. All Site-related POCs with TALs were below their respective composite background threshold values (Part I.C.3.a).

55.0 DP-SMA-1

Associated Sites	21-011(k), 21-021
Receiving Water	DP Canyon
Drainage Area	1.52 acres
Landscape Characteristics	26% impervious, 74% pervious
Consent Order Site Status	SWMU 21-011(k): In Progress SWMU 21-021: In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the November 2016 field visit, the sampler location was moved towards the Site discharge area to determine potential impacts from the Site. The former location was being impacted by an area that was not associated with 21-011(k).
2022 Permit Status	Active Monitoring

55.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, baseline stormwater monitoring was initiated. While developing the 2017 SAP, a decision was made to implement the monitoring location move recommended during the 2016 SIP review. A baseline stormwater sample was collected in June 2022. Analytical results from this sample initiated corrective action.

55.2 Site History

21-011(k) (4/26/2019)

SWMU 21-011(k) was the NPDES-permitted outfall (EPA 050050) for treated industrial wastewater from the former RLWTF in building 21-257 [SWMU 21-011(a)] at the north boundary of MDA T at TA-21. Prior to being permitted, the outfall also received treated industrial wastewater from the former RLWTF in former building 21-35 [SWMU 21-010(a)]. The SWMU consisted of a drainline from two holding tanks containing treated wastewater [structures 21-112 and -113, SWMUs 21-011(f and g)] and an outfall area on the north-facing slope of DP Canyon. The original drainline from tanks 21-112 and -113 consisted of a 4-in. VCP that discharged to an outfall ditch excavated into soil and tuff. The VCP was replaced in 1976 with a 4-in. cast-iron drainline that was installed within the same trench as the original drainline. The discharge end of the 4-in. cast-iron drainline was located approximately 80 ft north of the TA-21 perimeter road. The former outfall drainline terminated at a gently sloping, rocky surface extending approximately 30 ft to the south rim of DP Canyon.

TA-21 is the former plutonium processing facility at the Laboratory. The first RLWTF in former building 21-35, [SWMU 21-010(a)] was activated in 1952, and operated until 1967 when the new industrial RLWTF in Building 21-257 [SWMU 21-011(a)] came online. Both facilities treated RLW from DP West and DP East, consisting of liquids remaining after plutonium extraction and processing of radioactive materials for nuclear weapons and aeronautical research projects. Treatment did not fully neutralize the wastewater but raised the pH to the then current acceptable discharge levels for the SWMU 21-011(k) outfall. The treatment system effluent was piped northeast toward DP Canyon and discharged to an outfall on the north side of DP Mesa [SWMU 21-011(k)]. This effluent contained a variety of radionuclides and chemicals, primarily inorganic chemicals.

Discharges of treated wastewater to the outfall were discontinued in July 1986. Building 21-257 was used between 1986 and 2006 for the treatment of tritiated wastewater from the TSTA (Building 21-155). The treated wastewater was stored in holding tanks 21-112 and 21-113 [SWMUs 21-011(f and g)], and was routinely transported by tanker truck to the RLWTF at TA-50.

In January 2001, approximately 55 gal. of partially treated tritiated wastewater were unintentionally released from holding tank 21-113 through the SWMU 21-011(k) drainline when a faulty gauge caused the tank to overfill. The wastewater in the tank originated from the TSTA facility. The released wastewater infiltrated into the ground within 50 ft of the end of the drainline within the outfall area of SWMU 21-011(k). The Release/Discharge Notification submitted to NMED and EPA Region 6 indicates that the wastewater did not reach a watercourse. The area impacted was approximately 2 ft × 50 ft and was covered with snow at the time of the release. The outlet drainline from holding tanks 21-112 and -113 was permanently plugged in January 2001 as part of the release response, and was subsequently removed during the 2003 VCM conducted at the Site. SWMU 21-011(k) is located directly northeast of the MDA T NES boundary.

For investigation activities, refer to “Voluntary Corrective Measure Completion Report for Solid Waste Management Unit 21-011(k) at Technical Area 21” (LANL 2003, 082260) and “Response to the Notice of Disapproval for the Voluntary Corrective Measure Completion Report for Solid Waste Management Unit 21-011(k) at Technical Area 21” (LANL 2005, 091501).

21-021 (11/23/2020)

SWMU 21-021 consists of potential surface soil contamination resulting from the deposition of historical airborne releases of radionuclides from incinerators, stacks, and filter houses previously located throughout TA-21. The estimated area of potential soil contamination is approximately 300,000 m^2, and overlaps all of TA-21 and portions of DP Canyon north of TA-21.

TA-21 was used primarily for plutonium research and metal production and related activities from 1945 to 1978. After the major plutonium research and metal production activities at TA-21 ceased in 1978, subsequent unrelated office and small-scale research activities continued until approximately 2006. Historical airborne releases of radionuclides from stacks at TA-21 were documented from 1951 to 1971 and from 1973 to 1989. A minimum of approximately 2 Ci/yr of plutonium-239/240 was released from all TA-21 stacks in the 1950s. There is no documentation of nonradioactive chemical releases associated with the historical TA-21 stack emissions.

For investigation activities, refer to “Phase Report 1B, TA-21 Operable Unit RCRA Facility Investigation, Operable Unit-Wide Surface Soil, Deposition Layer and Filter Building Investigation” (LANL 1994, 026073) and “Final Reponses to EPA’s Notice of Deficiency on Phase Report” (LANL 1995, 062415).

55.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 55.2-1.

Table 55.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
21-011(k)	Former outfall from building 21-257	Anericium-241, cesium-137, plutonium isotopes, thorium isotopes, strontium-90, uranium isotopes, metals, inorganic chemicals, tritium
21-021	Systematic release (sitewide)	Americium-241, plutonium isotopes, strontium-90

55.3 Consent Order Soil Data

Decision-level data for SWMU 21-011(k) consist of results from samples collected at locations in 1996, 2001, and 2003 that were not excavated during the VCM. The 2003 VCM completion report concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Most of the SWMUs and AOCs at TA-21 lie within the footprint of SWMU 21-021. Therefore, surface and shallow subsurface samples from investigation of those sites are also representative of SWMU 21-021. Data from samples collected as part of Consent Order investigations and associated remediation activities are decision-level data. The approved DP Site Aggregate Area IWP (LANL 2009, 108166.9) indicated that the investigation of SWMU 21-021 was complete and no additional investigations were required.

Analytical results from all decision-level soil samples collected for DP-SMA-1 are presented in Figures 55.3-1 through 55.3-4.

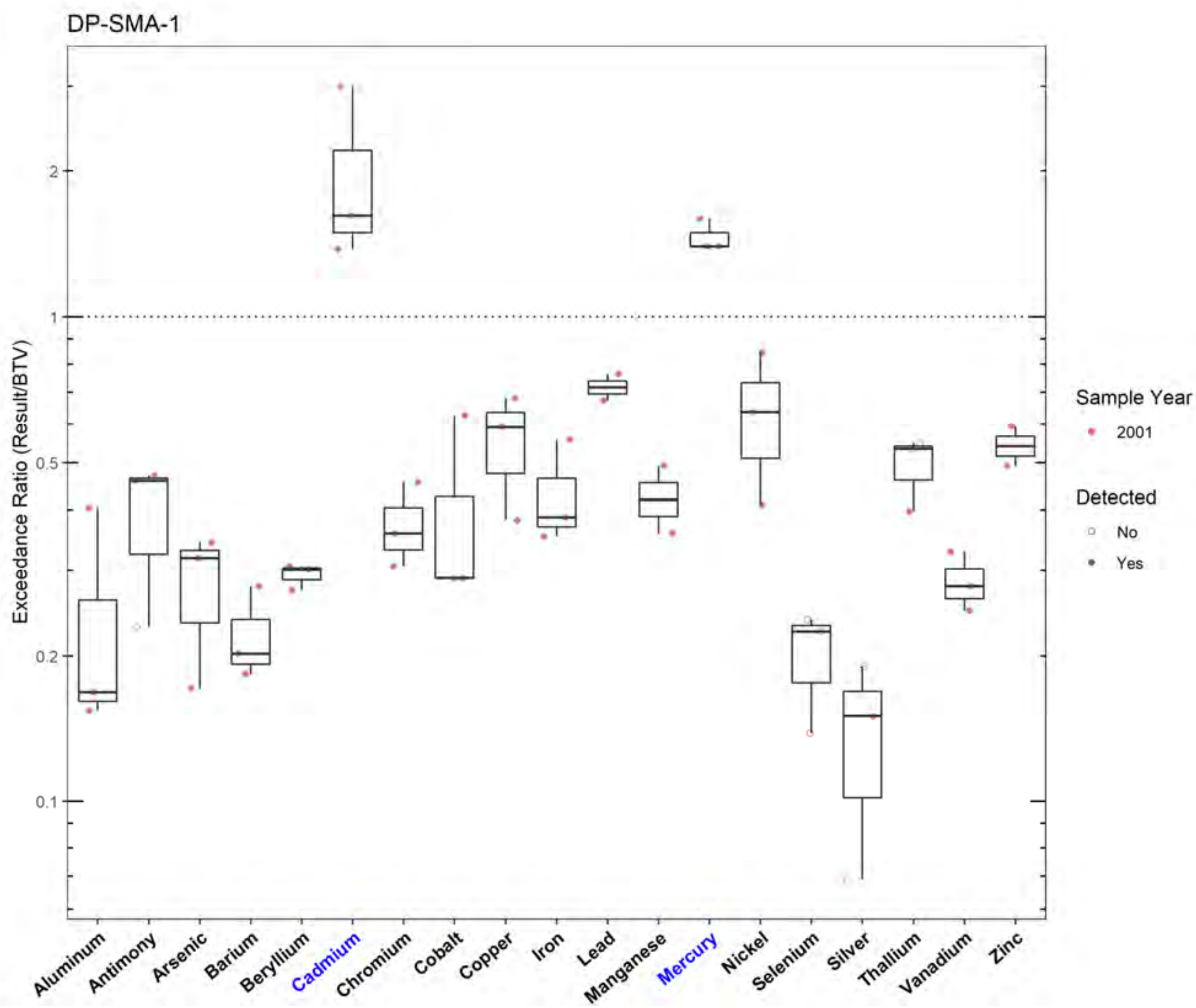


Figure 55.3-1 Inorganics Analytical Results from Soil Samples Associated with DP-SMA-1

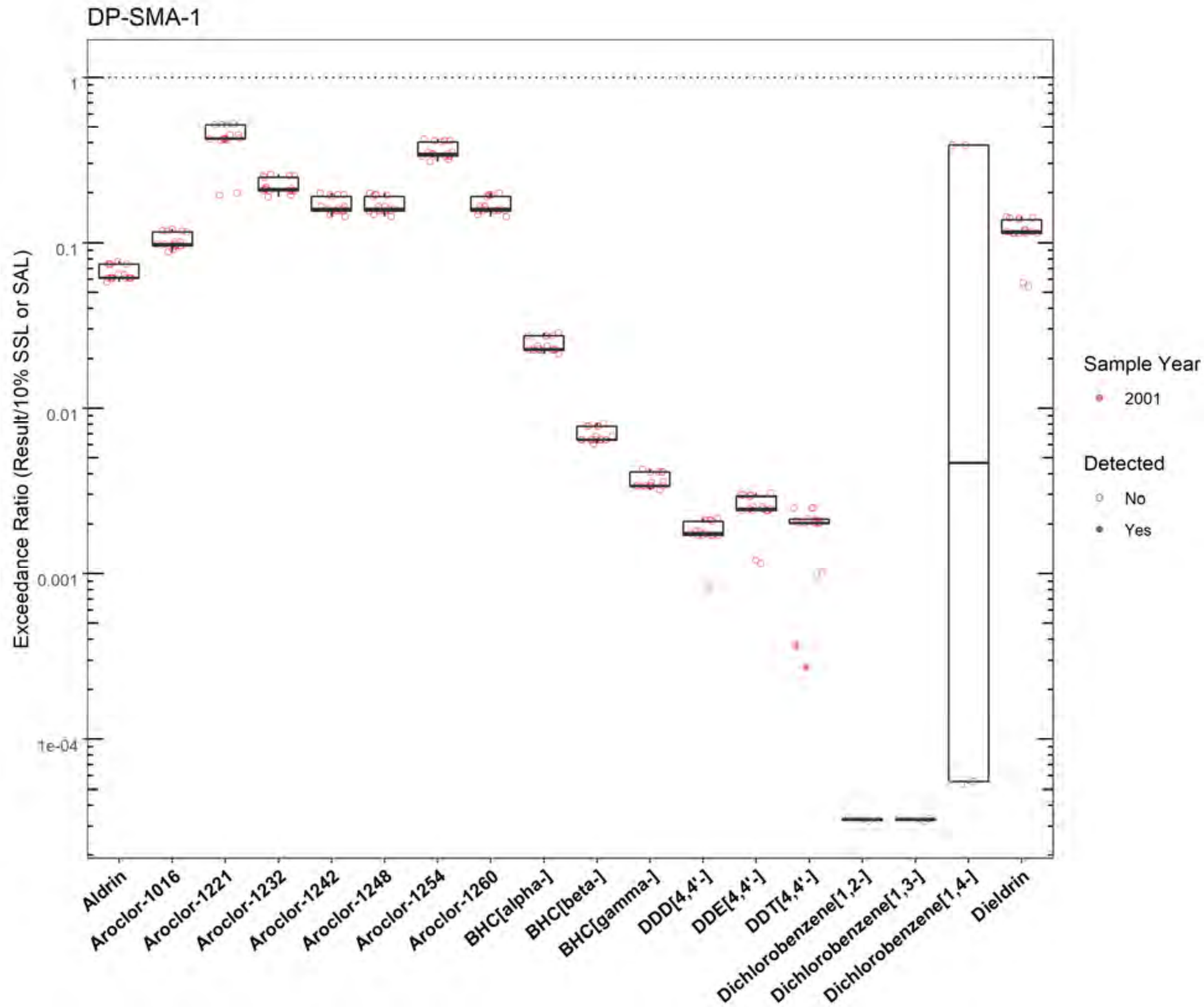


Figure 55.3-2 Organics Analytical Results from Soil Samples Associated with DP-SMA-1 (Plot 1)

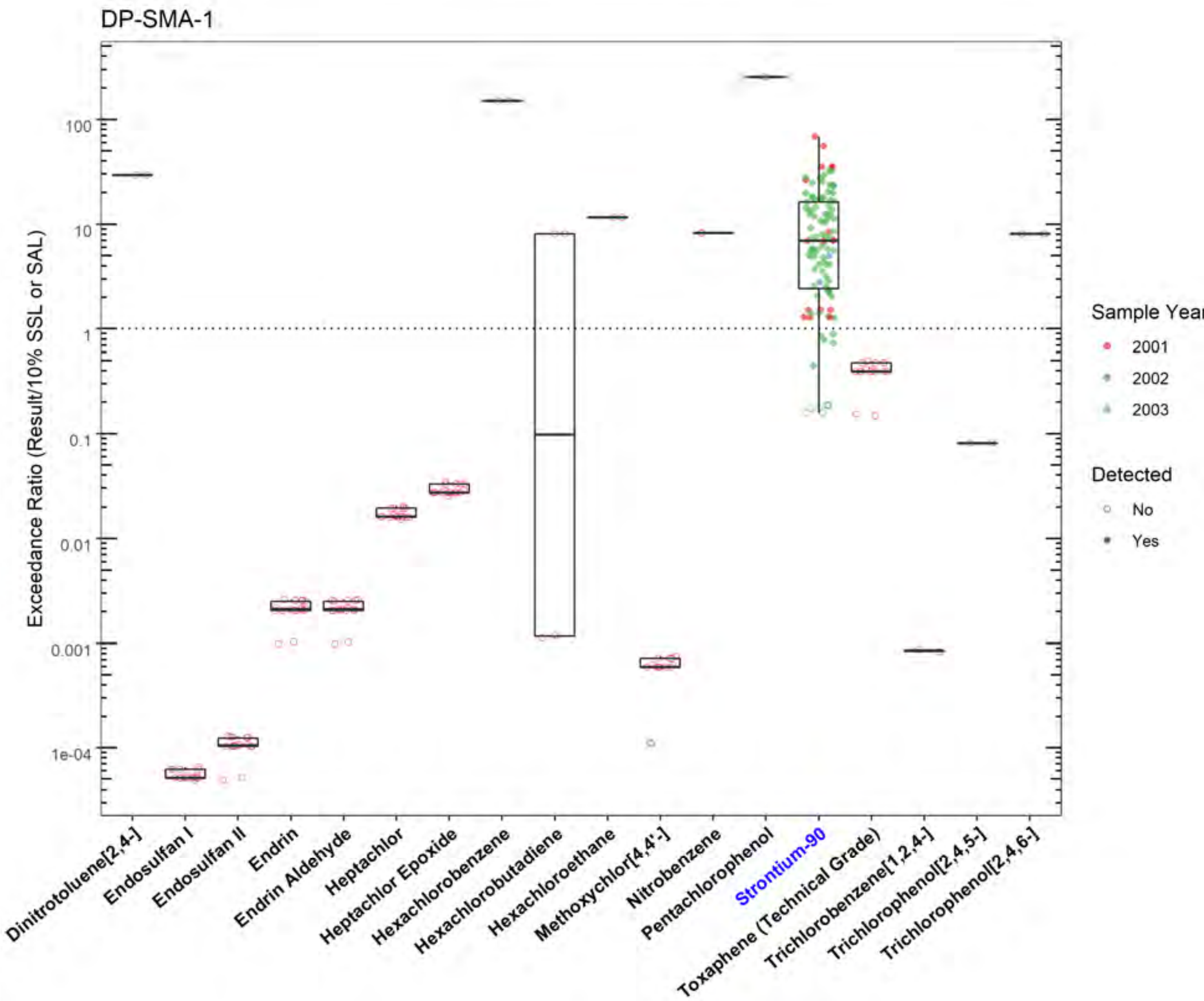


Figure 55.3-3 Organics Analytical Results from Soil Samples Associated with DP-SMA-1 (Plot 2)

DP-SMA-1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Cadmium	DP-SMA-1	Cd	Y	BTV	0.400	1.20	2001-03-09
Mercury	DP-SMA-1	Hg	Y	BTV	0.100	0.160	2001-03-09
Strontium-90	DP-SMA-1	Sr-90	Y	SAL_0.1	1.50	103	2001-03-09

Figure 55.3-4 Screening-Level Exceedances from Soil Samples Associated with DP-SMA-1

55.4 Stormwater Evaluation

55.4.1 Summary of Stormwater Results Compared to 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.

55.4.2 Assessment Unit and Stream Impairments

DP-SMA-1 drains to DP Canyon (100-m downstream grade control to 400-m upstream grade control), which has impairments for adjusted gross alpha, PCBs, total recoverable aluminum, and dissolved copper. The adjusted gross alpha, copper, and aluminum impairments may be Site-related, based on Site history.

55.5 Site-Specific Demonstration

55.5.1 Soil Data Summary

Cadmium, mercury, and strontium-90 exceeded the applicable screening value in soil data.

55.5.2 Stormwater Data Summary

No confirmation-monitoring data.

55.5.3 2022 Permit Status

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

55.5.4 Sampling and Analysis Plan

Table 55.5-1 is the proposed SAP for DP-SMA-1.

Table 55.5-1 Proposed SAP, DP-SMA-1

Monitoring Constituent	Background for Monitoring
Dissolved copper and cadmium	Impairment (copper), Site history (metals), and soil data
Total aluminum	Impairment and Site history (metals)
Gross alpha	Impairment and Site history
Total mercury	Site history (metals) and soil data
Strontium-90	Site history and soil data
Tritium	Site history
DOC	Permit requirement
SSC	Permit requirement

56.0 DP-SMA-2

Associated Sites	21-021, 21-024(h)
Receiving Water	DP Canyon
Drainage Area	0.54 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 21-021: In Progress SWMU 21-024(h): 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 January 2018 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

56.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal of certification of baseline control installation to EPA, baseline stormwater 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.

56.2 Site History

21-021 (11/23/2020)

SWMU 21-021 consists of potential surface soil contamination resulting from the deposition of historical airborne releases of radionuclides from incinerators, stacks, and filter houses previously located throughout TA-21. The estimated area of potential soil contamination is approximately 300,000 m^2, and overlaps all of TA-21 and portions of DP Canyon north of TA-21.

TA-21 was used primarily for plutonium research and metal production and related activities from 1945 to 1978. After the major plutonium research and metal production activities at TA-21 ceased in 1978, subsequent unrelated office and small-scale research activities continued until approximately 2006. Historical airborne releases of radionuclides from stacks at TA-21 were documented from 1951 to 1971 and from 1973 to 1989. A minimum of approximately 2 Ci/yr of plutonium-239/240 was released from all TA-21 stacks in the 1950s. There is no documentation of nonradioactive chemical releases associated with the historical TA-21 stack emissions.

For investigation activities, refer to “Phase Report 1B, TA-21 Operable Unit RCRA Facility Investigation, Operable Unit-Wide Surface Soil, Deposition Layer and Filter Building Investigation” (LANL 1994, 026073) and “Final Reponses to EPA’s Notice of Deficiency on Phase Report” (LANL 1995, 062415).

21-024(h) (9/28/2021)

SWMU 21-024(h) is a former septic system associated with former administration building and shop (former building 21-151) and a former polonium-processing and high-temperature laboratory (former building 21-152), within the northeast portion of DP East at TA-21. The former septic system consisted of a reinforced-concrete septic tank (former structure 21-163) that measured 11.33 ft × 6.33 ft × 8.67 ft deep, 6-in.-diameter VCP inlet and outlet drainlines, and an outfall that discharged to the surface of the north rim of DP Mesa above DP Canyon. The septic system was constructed in 1945 at the same time as building 21-151. Building 21-151 was removed in the early 1960s, and in 1965, the building 21-152 septic system was tied into the existing septic tank (former structure 21-163). The septic system was decommissioned in 1966 and was abandoned in place. The septic tank and inlet and outlet drainlines were subsequently removed in 2007. Building 21-152 was removed in 2010.

For investigation activities, refer to “Phase II Investigation Report for Delta Prime Site Aggregate Area, Revision 1” (LANL 2010, 110772.33).

56.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 56.2-1.

Table 56.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
21-021	Systematic release (sitewide)	Americium-241, plutonium isotopes, strontium-90
21-024(h)	Septic system	Radionuclides, polonium, tritium, inorganic and organic chemicals

56.3 Consent Order Soil Data

Most of the SWMUs and AOCs at TA-21 lie within the footprint of SWMU 21-021. Therefore, surface and shallow subsurface samples from investigation of those sites are also representative of SWMU 21-021. Data from samples collected as part of Consent Order investigations and associated remediation activities are decision-level data. The approved DP Site Aggregate Area IWP (LANL 2009, 108166.9) indicated that the investigation of SWMU 21-021 was complete and no additional investigations were required.

Decision-level data for SWMU 21-024(h) consist of results from samples collected at locations in 2007 and 2009. Revision 1 of the 2010 Phase II IR concluded that the nature and extent of contamination have been defined.

Analytical results from all decision-level soil samples collected for DP-SMA-2 are presented in Figures 56.3-1 through 56.3-4.

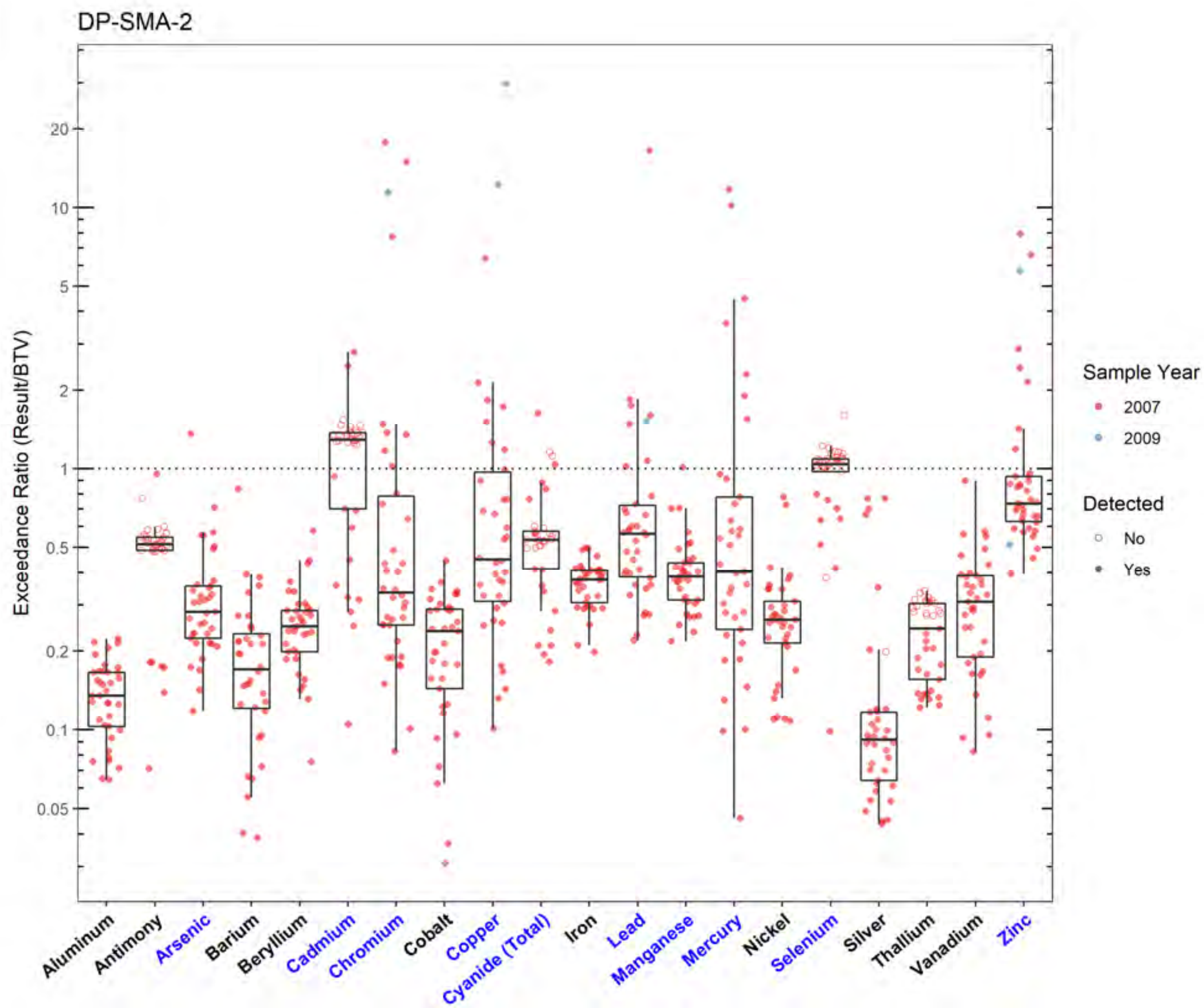


Figure 56.3-1 Inorganics Analytical Results from Soil Samples Associated with DP-SMA-2

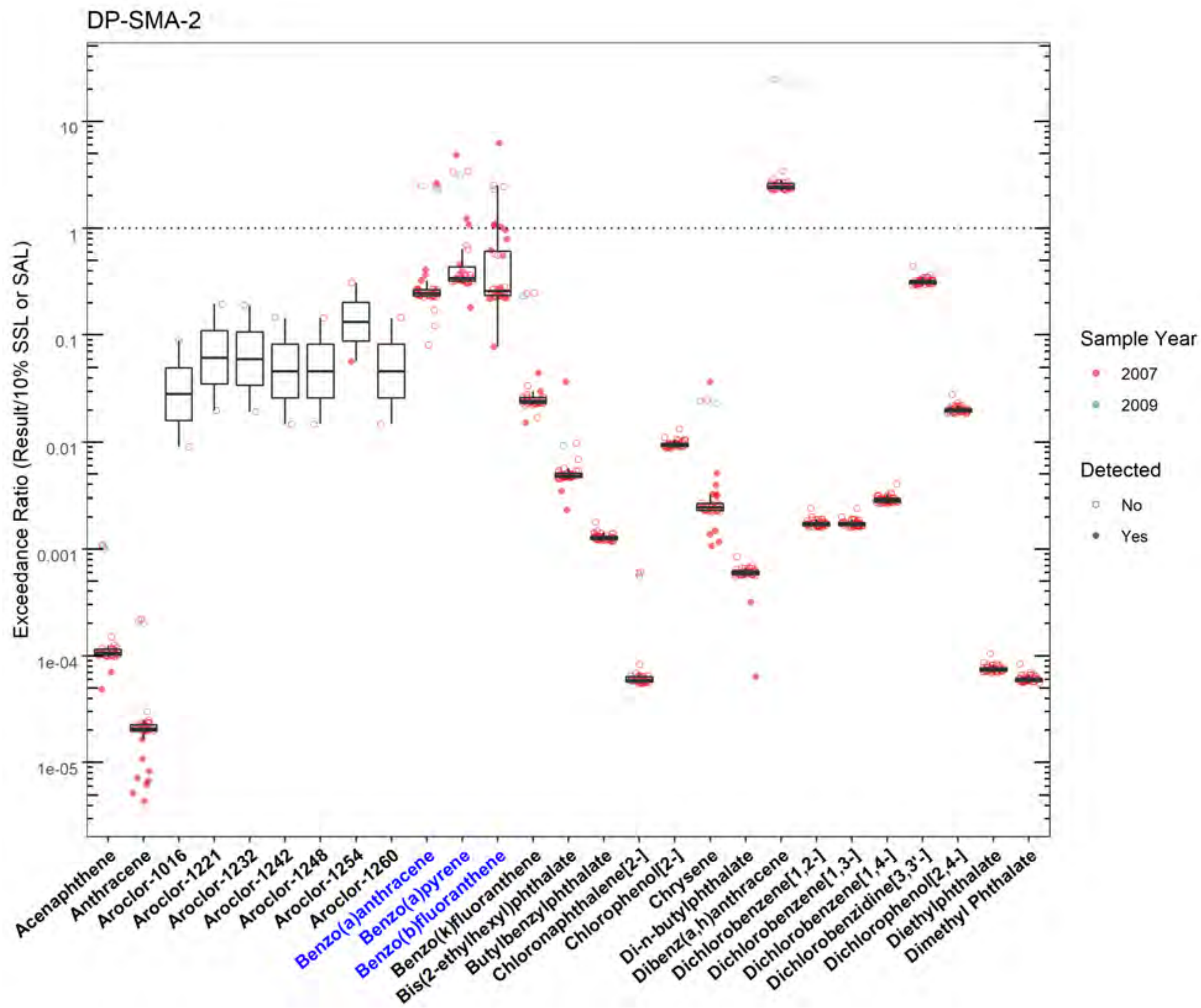


Figure 56.3-2 Organics Analytical Results from Soil Samples Associated with DP-SMA-2 (Plot 1)

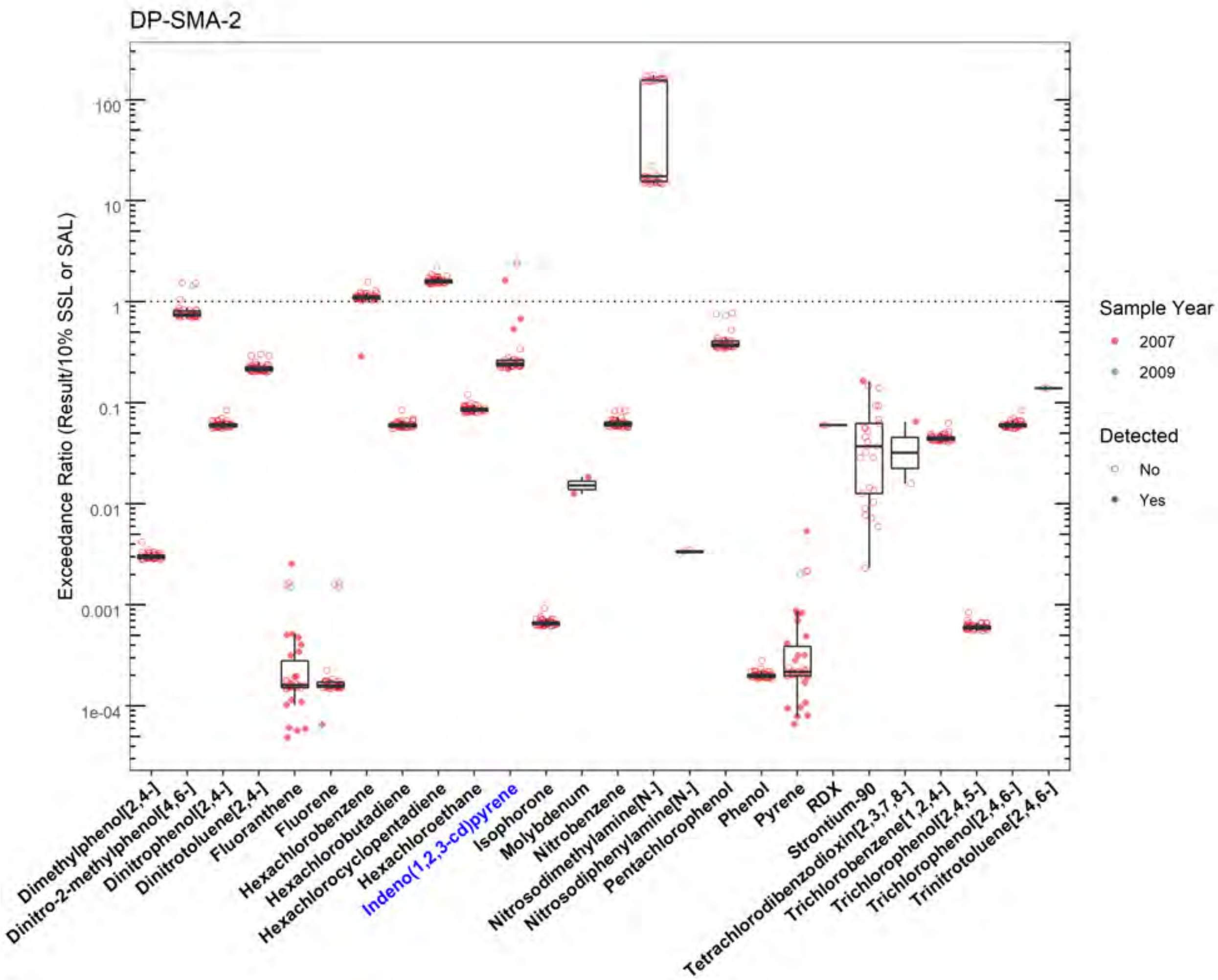


Figure 56.3-3 Organics Analytical Results from Soil Samples Associated with DP-SMA-2 (Plot 2)

DP-SMA-2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Arsenic	DP-SMA-2	As	Y	BTV	8.17	11.1	2007-06-13
Benzo(a)anthracene	DP-SMA-2	56-55-3	Y	SSL_0.1	0.153	0.400	2007-06-13
Benzo(a)pyrene	DP-SMA-2	50-32-8	Y	SSL_0.1	0.112	0.540	2007-06-13
Benzo(b)fluoranthene	DP-SMA-2	205-99-2	Y	SSL_0.1	0.153	0.955	2007-06-13
Cadmium	DP-SMA-2	Cd	Y	BTV	0.400	1.12	2007-06-13
Chromium	DP-SMA-2	Cr	Y	BTV	19.3	341	2007-06-13
Copper	DP-SMA-2	Cu	Y	BTV	14.7	438	2007-06-13
Cyanide (Total)	DP-SMA-2	CN(TOTAL)	Y	BTV	0.500	0.815	2007-05-30
Indeno(1,2,3-cd)pyrene	DP-SMA-2	193-39-5	Y	SSL_0.1	0.153	0.250	2007-06-13
Lead	DP-SMA-2	Pb	Y	BTV	22.3	369	2007-06-13
Manganese	DP-SMA-2	Mn	Y	BTV	671	681	2007-05-30
Mercury	DP-SMA-2	Hg	Y	BTV	0.100	1.17	2007-04-24
Selenium	DP-SMA-2	Se	Y	BTV	1.52	1.64	2007-05-29
Zinc	DP-SMA-2	Zn	Y	BTV	48.8	387	2007-06-13

Figure 56.3-4 Screening-Level Exceedances from Soil Samples Associated with DP-SMA-2

56.4 Stormwater Evaluation

56.4.1 Summary of Stormwater Results Compared to 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.

56.4.2 Assessment Unit and Stream Impairments

DP-SMA-2 drains to DP Canyon (100-m downstream grade control to 400-m upstream grade control), which has impairments for adjusted gross alpha, PCBs, total recoverable aluminum, and dissolved copper. The impairments may be Site-related, based on Site history.

56.5 Site-Specific Demonstration

56.5.1 Soil Data Summary

The following parameters exceeded the applicable screening value in soil data: arsenic; benzo(a)anthracene; benzo(a)pyrene, benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene, cadmium, chromium, copper, cyanide (weak acid dissociable), lead, manganese, mercury, selenium, and zinc.

56.5.2 Stormwater Data Summary

No confirmation-monitoring data.

56.5.3 2022 Permit Status

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

56.5.4 Sampling and Analysis Plan

Table 56.5-1 is the proposed SAP for DP-SMA-2.

Table 56.5-1 Proposed SAP, DP-SMA-2

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history (radionuclides)
PCBs	Impairment and Site history (organics)
Dissolved arsenic, cadmium, chromium, copper, lead, manganese, and zinc	Impairment (copper), Site history (inorganics), and soil data
Radium-226/228	Site history (radionuclides)
Tritium	Site history
SVOCs	Site history (organics) and soil data
Total cyanide, mercury, and selenium	Site history (inorganics) and soil data
DOC	Permit requirement
SSC	Permit requirement

57.0 DP-SMA-2.35

Associated Sites	21-021, 21-024(n)
Receiving Water	DP Canyon
Drainage Area	0.70 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 21-021: In Progress SWMU 21-024(n): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the January 2018 field visit, all parties agreed that the current SMA sampling location was the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

57.1 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 both sites per permit Part I.E.3 in May 2015 (LANL 2015, 600419). No response has been received from EPA. Stormwater monitoring has not occurred since 2013.

57.2 Site History

21-021 (11/23/2020)

SWMU 21-021 consists of potential surface soil contamination resulting from the deposition of historical airborne releases of radionuclides from incinerators, stacks, and filter houses previously located throughout TA-21. The estimated area of potential soil contamination is approximately 300,000 m^2, and overlaps all of TA-21 and portions of DP Canyon north of TA-21.

TA-21 was used primarily for plutonium research and metal production and related activities from 1945 to 1978. After the major plutonium research and metal production activities at TA-21 ceased in 1978, subsequent unrelated office and small-scale research activities continued until approximately 2006. Historical airborne releases of radionuclides from stacks at TA-21 were documented from 1951 to 1971 and from 1973 to 1989. A minimum of approximately 2 Ci/yr of plutonium-239/240 was released from all TA-21 stacks in the 1950s. There is no documentation of nonradioactive chemical releases associated with the historical TA-21 stack emissions.

For investigation activities, refer to “Phase Report 1B, TA-21 Operable Unit RCRA Facility Investigation, Operable Unit-Wide Surface Soil, Deposition Layer and Filter Building Investigation” (LANL 1994, 026073) and “Final Reponses to EPA’s Notice of Deficiency on Phase Report” (LANL 1995, 062415).

21-024(n) (2/27/2019)

SWMU 21-024(n) was identified in the 1990 SWMU Report as a CMP that exited a concrete bulkhead on the north side of former building 21-155 and discharged to an outfall north of former building 21-213, directly south of the DP Mesa perimeter road, and west of MDA U (SWMU 21-017) in the northeast portion of TA-21. From the outfall, the effluent flowed north to a ditch paralleling the north DP Mesa perimeter road, and then east to a culvert that passed under the northern DP Mesa perimeter road and into DP Canyon.

Building 21-155 was constructed in 1949 and housed a warehouse and laboratory. Engineering drawings and results from the 2004 geophysical survey identified three additional drainlines originating from former building 21-155 (or next to former building 21-155), that followed a parallel path to, and west of, the original SWMU 21-024(n) drainline. Each of these parallel drainlines discharged to an outfall on the same hillside as the original SWMU 21-024(n) outfall. Effluent from all four former outfalls flowed downslope, via the ditch on the south side of the DP Mesa perimeter road, to one of two culverts (one to the east and one to the west) that crossed under the perimeter road, and emptied on the surface and into DP Canyon. All four drainlines were removed in 2007 except sections of drainlines under former building 21-213, which were inaccessible.

For investigation activities, refer to "Phase III Investigation Report for Delta Prime Site Aggregate Area at Technical Area 21, Revision 1" (LANL 2014, 600091).

57.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 57.2-1.

Table 57.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
21-021	Systematic release (sitewide)	Americium-241, plutonium isotopes, strontium-90
21-024(n)	Drainline	Zinc, plutonium, tritium, PAHs

57.3 Consent Order Soil Data

Most of the SWMUs and AOCs at TA-21 lie within the footprint of SWMU 21-021. Therefore, surface and shallow subsurface samples from investigation of those sites are also representative of SWMU 21-021. Data from samples collected as part of Consent Order investigations and associated remediation activities are decision-level data. The approved DP Site Aggregate Area IWP (LANL 2009, 108166.9) indicated that the investigation of SWMU 21-021 was complete and no additional investigations were required.

Decision-level data for SWMU 21-024(n) consist of results from samples collected at locations in 2007, 2009, 2010, and 2011. The 2016 Phase III IR concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results from all decision-level soil samples collected for DP-SMA-2.35 are presented in Figures 57.3-1 through 57.3-4.

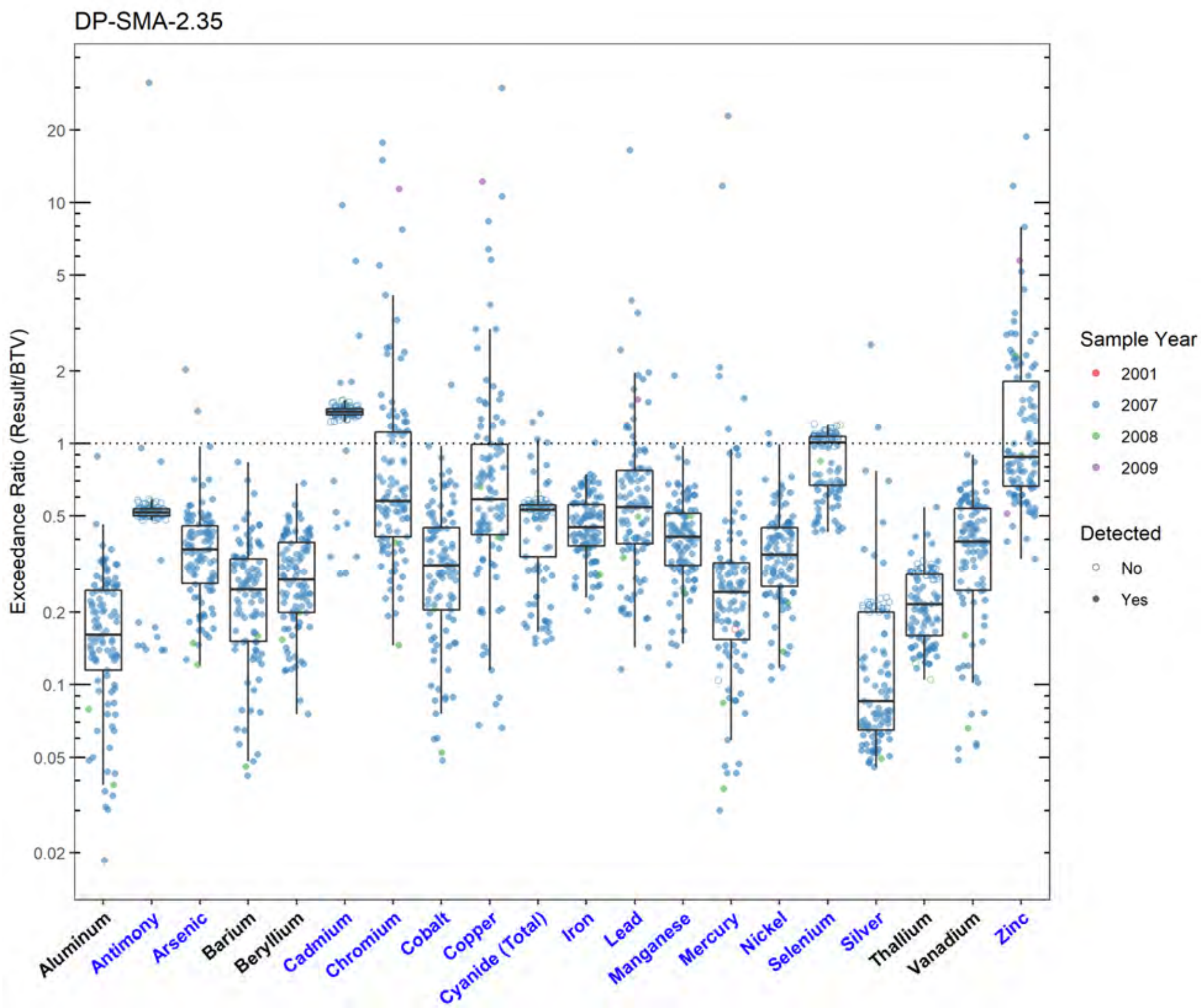


Figure 57.3-1 Inorganics Analytical Results from Soil Samples Associated with DP-SMA-2.35

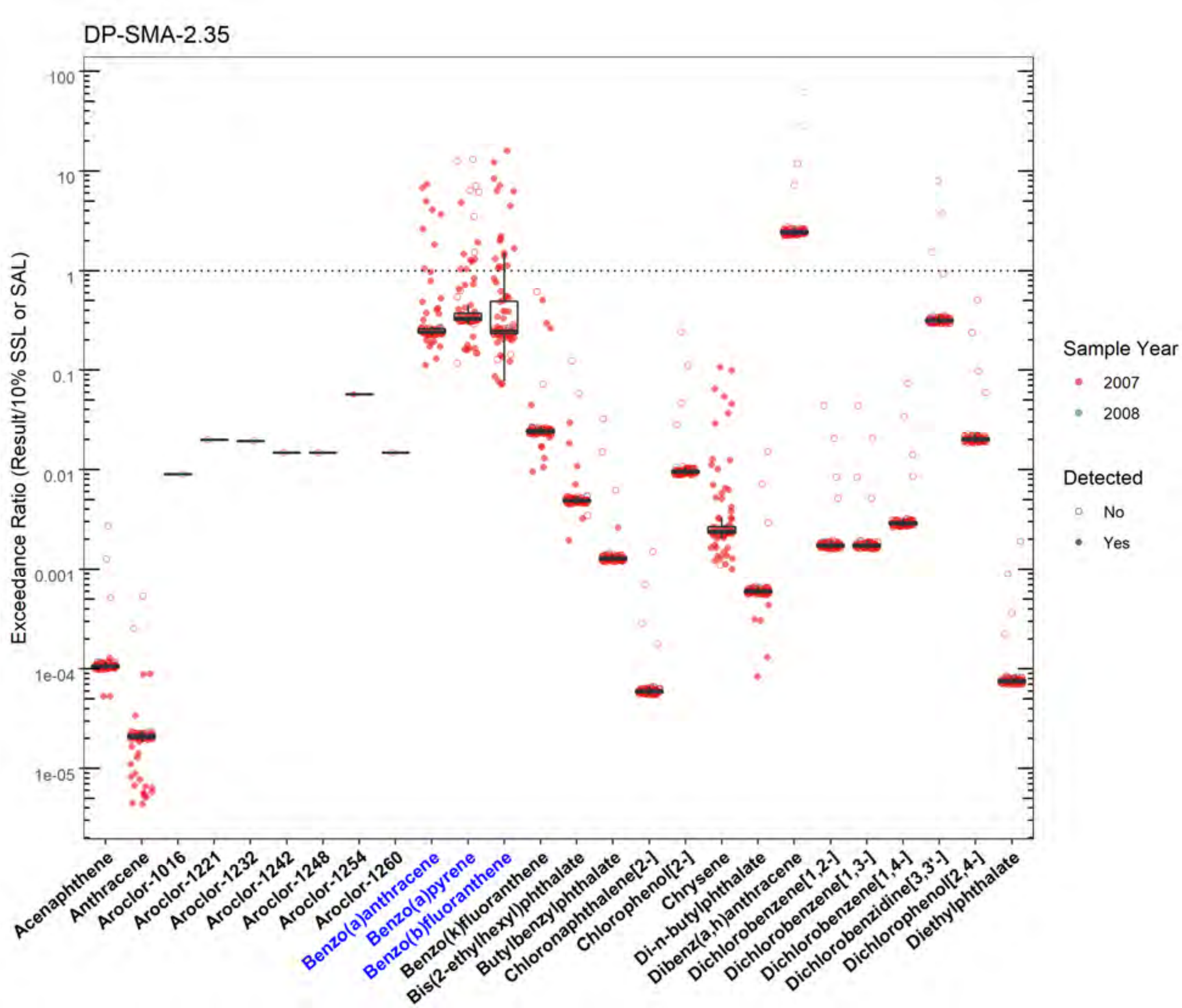


Figure 57.3-2 Organics Analytical Results from Soil Samples Associated with DP-SMA-2.35 (Plot 1)

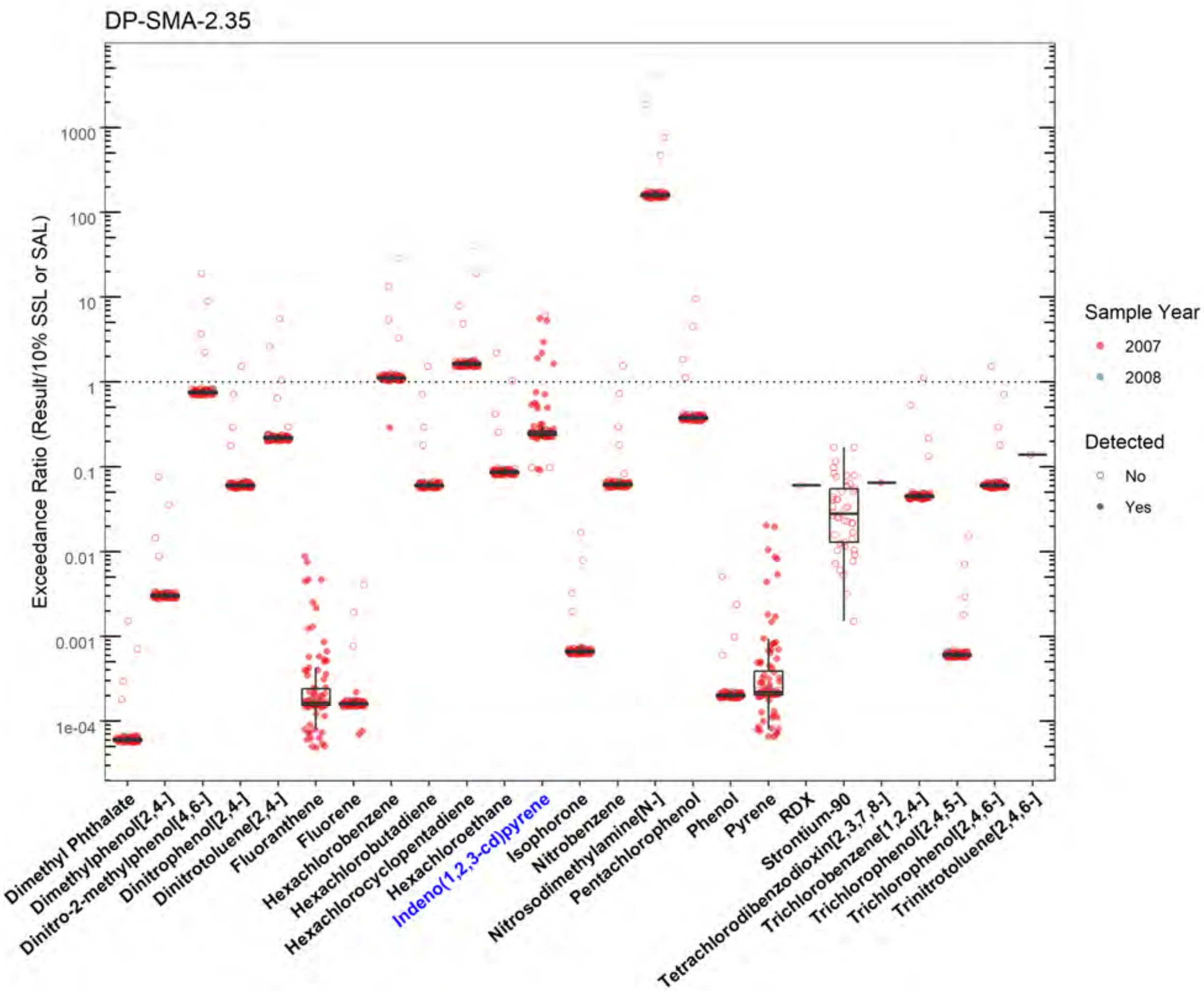


Figure 57.3-3 Organics Analytical Results from Soil Samples Associated with DP-SMA-2.35 (Plot 2)

DP-SMA-2.35

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	DP-SMA-2.35	Sb	Y	BTV	0.830	26.1	2007-06-20
Arsenic	DP-SMA-2.35	As	Y	BTV	8.17	16.6	2007-06-21
Benzo(a)anthracene	DP-SMA-2.35	56-55-3	Y	SSL_0.1	0.153	1.12	2007-06-20
Benzo(a)pyrene	DP-SMA-2.35	50-32-8	Y	SSL_0.1	0.112	0.540	2007-06-13
Benzo(b)fluoranthene	DP-SMA-2.35	205-99-2	Y	SSL_0.1	0.153	2.45	2007-06-20
Cadmium	DP-SMA-2.35	Cd	Y	BTV	0.400	3.90	2007-06-20
Chromium	DP-SMA-2.35	Cr	Y	BTV	19.3	341	2007-06-13
Cobalt	DP-SMA-2.35	Co	Y	BTV	8.64	15.1	2007-06-13
Copper	DP-SMA-2.35	Cu	Y	BTV	14.7	438	2007-06-13
Cyanide (Total)	DP-SMA-2.35	CN(TOTAL)	Y	BTV	0.500	0.663	2007-06-20
Indeno(1,2,3-cd)pyrene	DP-SMA-2.35	193-39-5	Y	SSL_0.1	0.153	0.854	2007-06-20
Iron	DP-SMA-2.35	Fe	Y	BTV	21500	21700	2007-06-18
Lead	DP-SMA-2.35	Pb	Y	BTV	22.3	369	2007-06-13
Manganese	DP-SMA-2.35	Mn	Y	BTV	671	1280	2007-06-13
Mercury	DP-SMA-2.35	Hg	Y	BTV	0.100	2.28	2007-04-24
Nickel	DP-SMA-2.35	Ni	Y	BTV	15.4	17.0	2007-06-20
Selenium	DP-SMA-2.35	Se	Y	BTV	1.52	1.68	2007-06-15
Silver	DP-SMA-2.35	Ag	Y	BTV	1.00	2.57	2007-04-24
Zinc	DP-SMA-2.35	Zn	Y	BTV	48.8	915	2007-06-20

Figure 57.3-4 Screening-Level Exceedances from Soil Samples Associated with DP-SMA-2.35

57.4 Stormwater Evaluation

57.4.1 Summary of Stormwater Results Compared to 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 57.4-1 and 57.4-2.

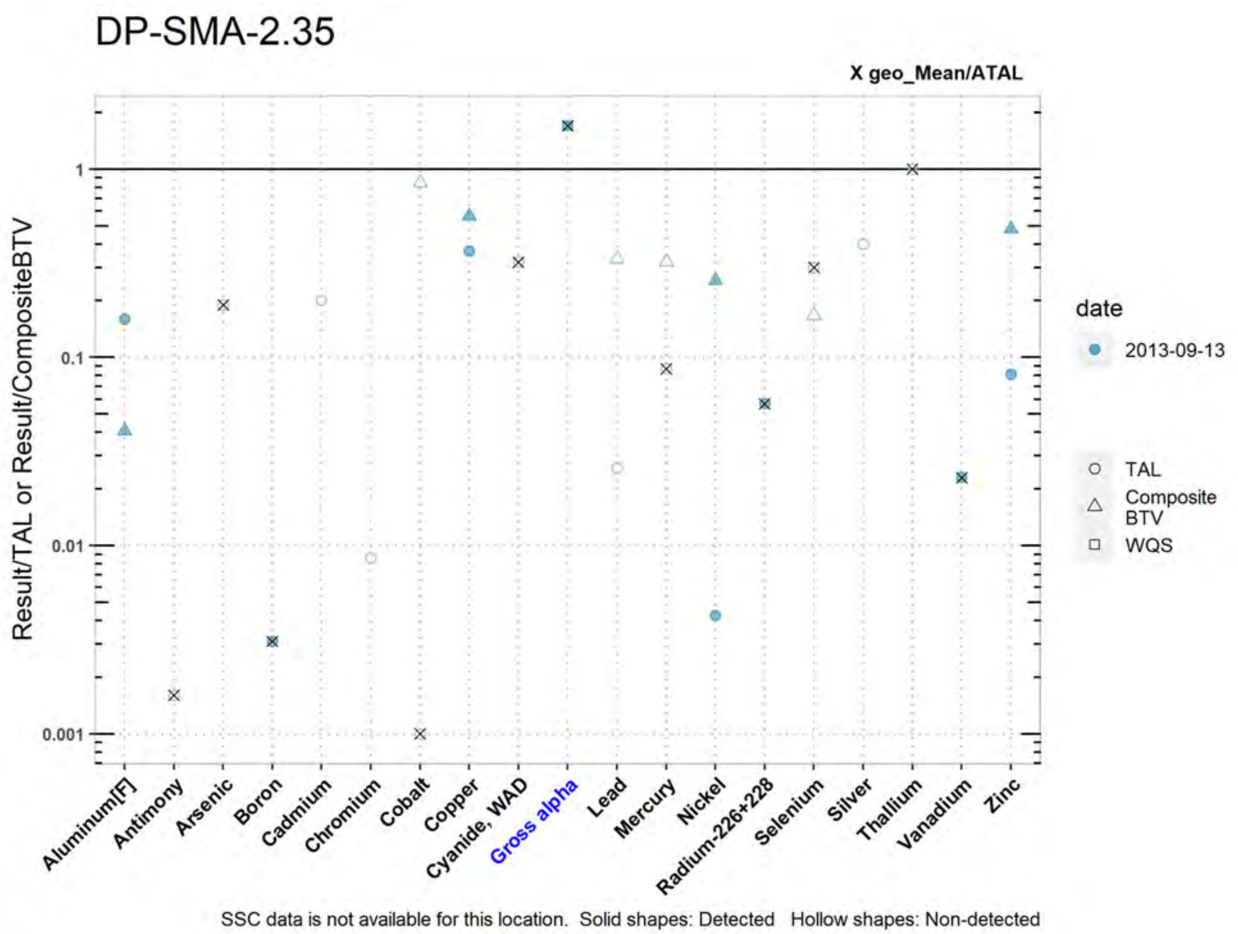


Figure 57.4-1 Analytical Results from Stormwater Sample, DP-SMA-2.35 (Plot)

DP-SMA-2.35

	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	0.65	233	NA	4.8	22	NA	19.3	NA	186	NA	20	0.49	NA	NA	59.2
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
2013-09-13 result	120	*1.00*	*1.70*	15.7	*0.110*	*2.00*	*1.00*	1.76	*1.67*	25.0	*0.500*	*0.0670*	0.791	1.70	*1.50*	*0.200*	*0.450*	2.33	4.81
2013-09-13 dT	0.160	NA	NA	0.0031	NA	NA	NA	0.367	NA	1.7	NA	NA	0.00425	0.0567	NA	NA	NA	0.023	0.0812
2013-09-13 dB	0.0407	NA	NA	NA	NA	NA	NA	0.564	NA	NA	NA	NA	0.255	NA	NA	NA	NA	NA	0.481
geo_mean/ATAL	NA	0.0016	0.19	0.0031	NA	NA	0.0010	NA	0.321	1.7	NA	0.087	NA	0.0567	0.30	NA	1	0.023	NA

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

Figure 57.4-2 Analytical Results from Stormwater Sample, DP-SMA-2.35 (Table)

57.4.2 Assessment Unit and Stream Impairments

DP-SMA-2.35 drains to DP Canyon (100-m downstream grade control to 400-m upstream grade control), which has impairments for adjusted gross alpha, PCBs, total recoverable aluminum, and dissolved copper. The adjusted gross alpha impairment may be Site-related, based on Site history.

57.5 Site-Specific Demonstration

57.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene.

The metals and cyanide that exceeded the applicable 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.

57.5.2 Stormwater Data Summary

Gross alpha exceeded TAL in 2013 stormwater data. There was no paired SSC value to confirm whether it was below BTV, therefore it will be added to the SAP.

57.5.3 2022 Permit Status

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

57.5.4 Sampling and Analysis Plan

Table 57.5-1 is the proposed SAP for DP-SMA-2.35.

Table 57.5-1 Proposed SAP, DP-SMA-2.35

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment, Site history, and stormwater data
Tritium	Site history
SVOCs	Site history (PAHs) and soil data
DOC	Permit requirement
SSC	Permit requirement

58.0 DP-SMA-3

Associated Sites	21-013(c), 21-021
Receiving Water	DP Canyon
Drainage Area	0.24 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 21-013(c): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 21-021: In Progress
2010 Administratively Continued Permit Final Status	Corrective Action Complete/Alternative Compliance Requested
2016–2018 SIP Actions	The January 2018 field visit determined that the current sampler location had been moved too far from the previous IP sampler location to be representative of the Site. Therefore, the sampler was returned to the location where the IP sampler was formerly located.
2022 Permit Status	Active Monitoring

58.1 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 July 2011. Analytical results from this sample initiated corrective action.

Following the September 2012 submittal to EPA of certification of enhanced control installation (LANL 2012, 227785), corrective-action monitoring was initiated and stormwater samples were collected in July and August 2019. Analytical results from these samples initiated corrective action.

SWMU 21-013(c) received a COC under the Consent Order in January 2016. The Permittees submitted a certification of completion of corrective action per Permit part I.E.2(d) for the Site in March 2017 (LANL 2017, 602213). The Permittees submitted a request for alternative compliance for SWMU 21-021 per permit Part I.E.3 in October 2020 (N3B 2020, 701098). No response has been received from EPA. Stormwater monitoring has not occurred since 2019.

58.2 Site History

21-013(c) (9/28/2021)

SWMU 21-013(c) is a former surface disposal area that was located northeast of the High Temperature Chemistry Building (former building 21-209), at the eastern end of DP Mesa at TA-21. The Site consisted of mounds of earth; an excavated trench; and an earthen berm that contained scattered concrete, asphalt, and metal debris. Four large concrete pylons and several piles of soil, asphalt, and concrete also were located at the Site. Other surface debris included glass, scrap metal, wood, cans, paper, and plastic. The Site had been disturbed in the past and appeared to contain only construction materials. It is not known when the materials were disposed of at this Site. All debris was removed from SWMU 21-013(c) during the 1995 VCA implemented at the Site, and the berm surface was recontoured.

For investigation activities, refer to “Phase II Investigation Report for Delta Prime Site Aggregate Area Revision 1” (LANL 2010, 110772.33).

21-021 (11/23/2020)

SWMU 21-021 consists of potential surface soil contamination resulting from the deposition of historical airborne releases of radionuclides from incinerators, stacks, and filter houses previously located throughout TA-21. The estimated area of potential soil contamination is approximately 300,000 m^2, and overlaps all of TA-21 and portions of DP Canyon north of TA-21.

TA-21 was used primarily for plutonium research and metal production and related activities from 1945 to 1978. After the major plutonium research and metal production activities at TA-21 ceased in 1978, subsequent unrelated office and small-scale research activities continued until approximately 2006. Historical airborne releases of radionuclides from stacks at TA-21 were documented from 1951 to 1971 and from 1973 to 1989. A minimum of approximately 2 Ci/yr of plutonium-239/240 was released from all TA-21 stacks in the 1950s. There is no documentation of nonradioactive chemical releases associated with the historical TA-21 stack emissions.

For investigation activities, refer to “Phase Report 1B, TA-21 Operable Unit RCRA Facility Investigation, Operable Unit-Wide Surface Soil, Deposition Layer and Filter Building Investigation” (LANL 1994, 026073) and “Final Reponses to EPA’s Notice of Deficiency on Phase Report” (LANL 1995, 062415).

58.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 58.2-1.

Table 58.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
21-013(c)	Surface disposal site	Metals, PAHs, phthalates
21-021	Systematic release (sitewide)	Americium-241, plutonium isotopes, strontium-90

58.3 Consent Order Soil Data

Decision-level data for SWMU 21-013(c) consist of results from samples collected in 2006 and 2009. Revision 1 of the 2010 Phase II IR concluded that the nature and extent of contamination are defined.

Most of the SWMUs and AOCs at TA-21 lie within the footprint of SWMU 21-021. Therefore, surface and shallow subsurface samples from investigation of those sites are also representative of SWMU 21-021. Data from samples collected as part of Consent Order investigations and associated remediation activities are decision-level data. The approved DP Site Aggregate Area IWP (LANL 2009, 108166.9) indicated that the investigation of SWMU 21-021 was complete and no additional investigations were required.

Analytical results from all decision-level soil samples collected for DP-SMA-3 are presented in Figures 58.3-1 through 58.3-4.

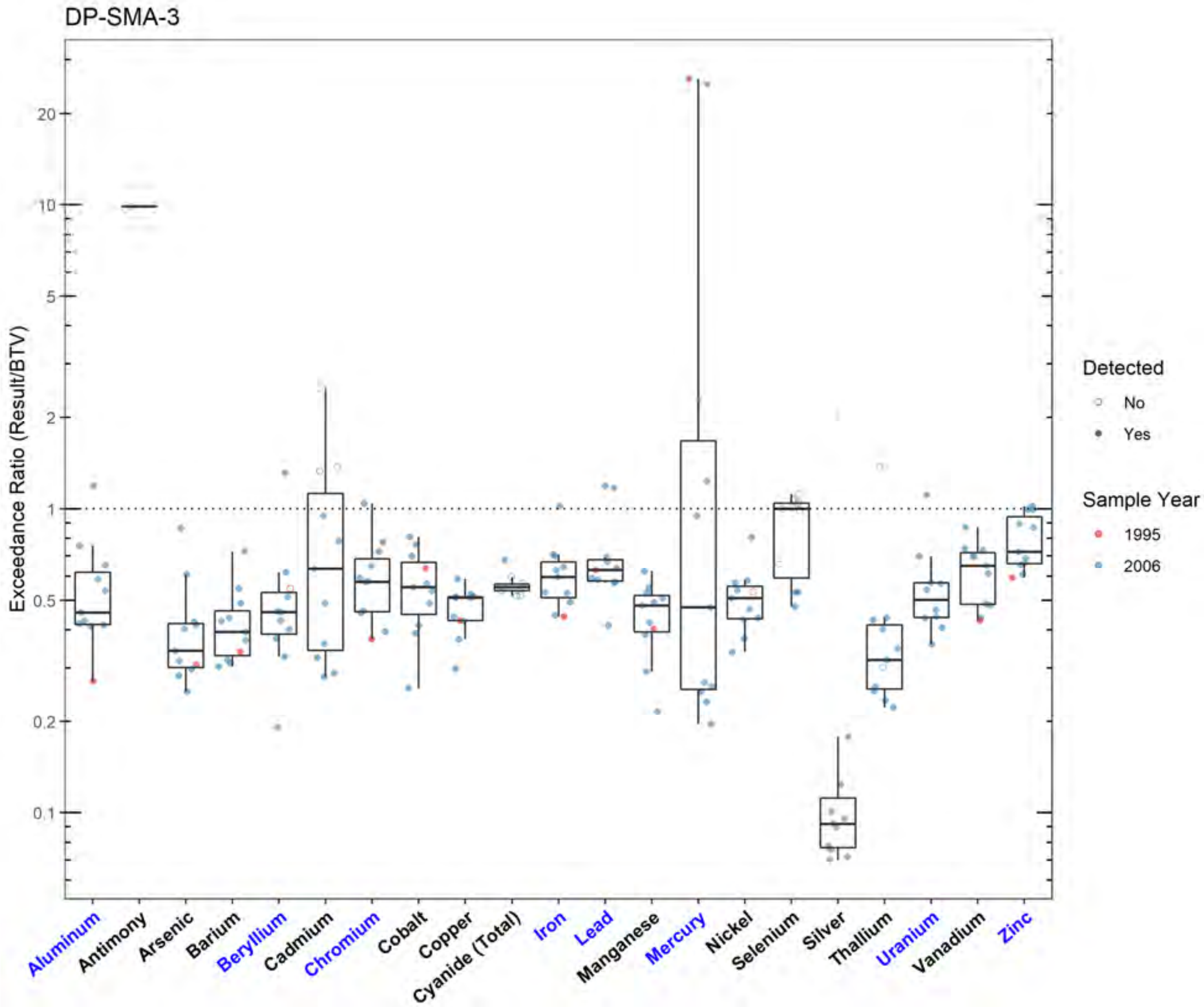


Figure 58.3-1 Inorganics Analytical Results from Soil Samples Associated with DP-SMA-3

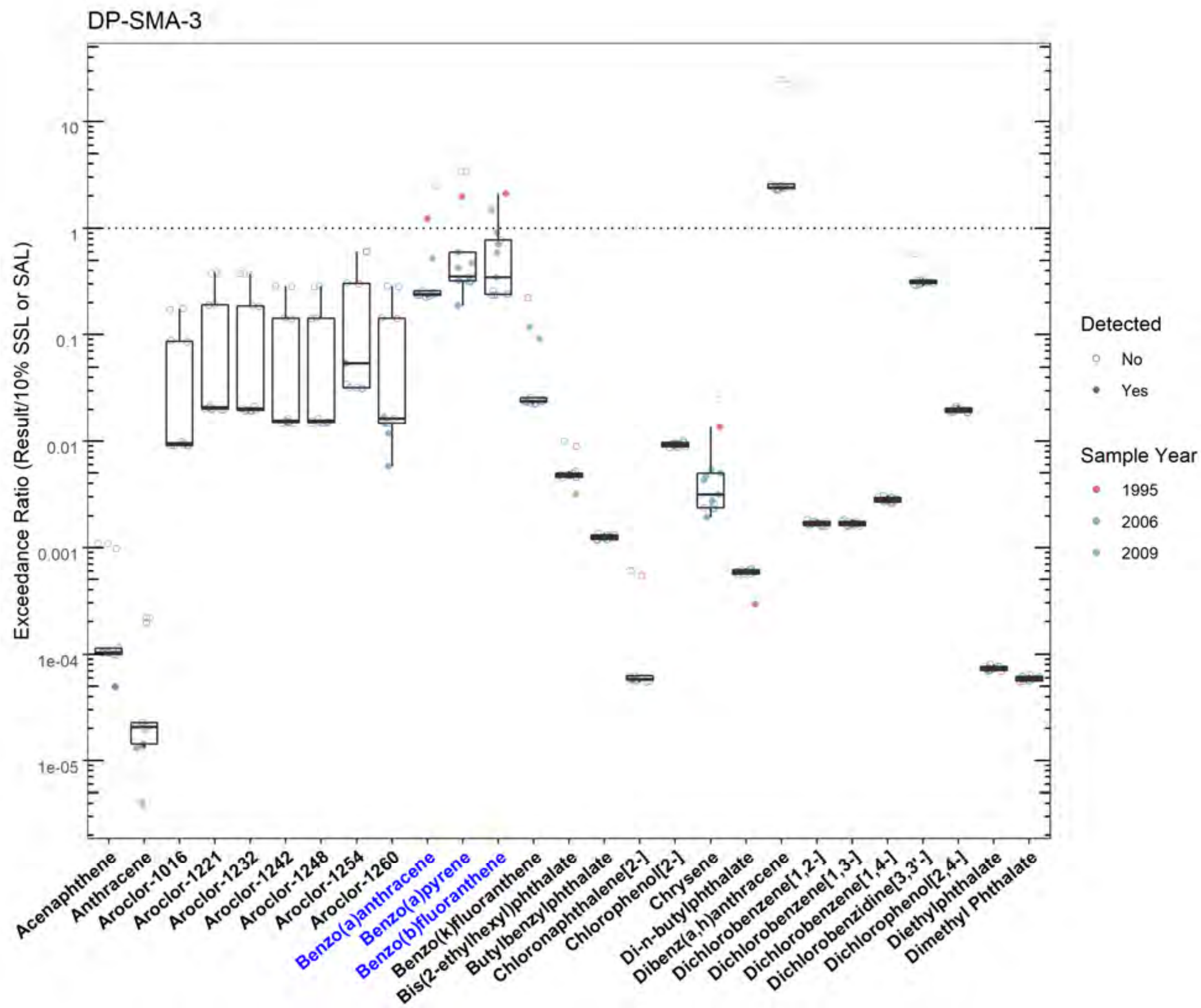


Figure 58.3-2 Organics Analytical Results from Soil Samples Associated with DP-SMA-3 (Plot 1)

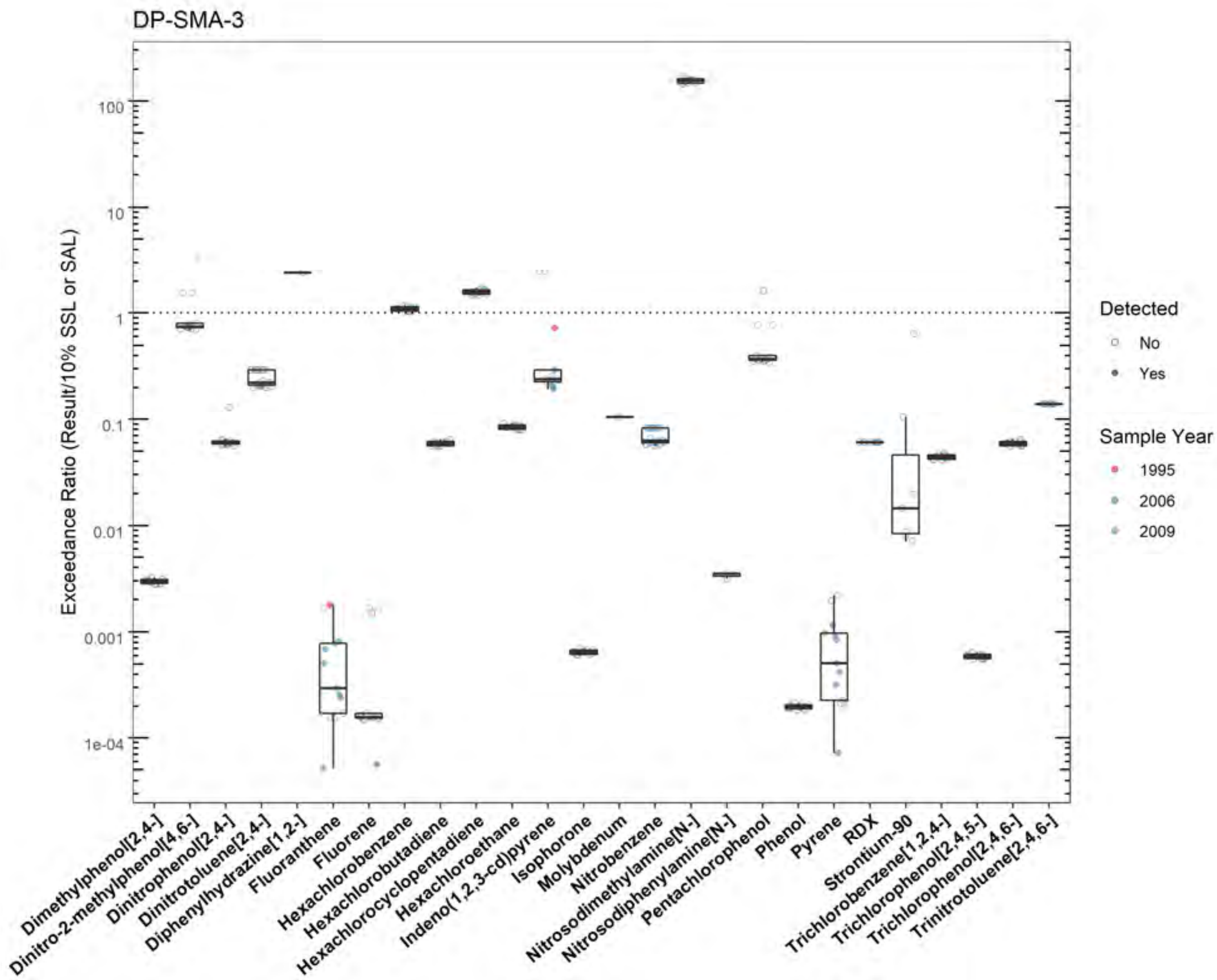


Figure 58.3-3 Organics Analytical Results from Soil Samples Associated with DP-SMA-3 (Plot 2)

DP-SMA-3

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aluminum	DP-SMA-3	Al	Y	BTV	29200	34800	2006-07-27
Benzo(a)anthracene	DP-SMA-3	56-55-3	Y	SSL_0.1	0.153	0.190	1995-09-05
Benzo(a)pyrene	DP-SMA-3	50-32-8	Y	SSL_0.1	0.112	0.220	1995-09-05
Benzo(b)fluoranthene	DP-SMA-3	205-99-2	Y	SSL_0.1	0.153	0.320	1995-09-05
Beryllium	DP-SMA-3	Be	Y	BTV	1.83	2.39	2006-07-27
Chromium	DP-SMA-3	Cr	Y	BTV	19.3	20.1	2006-07-27
Iron	DP-SMA-3	Fe	Y	BTV	21500	21900	2006-07-27
Lead	DP-SMA-3	Pb	Y	BTV	22.3	26.5	2006-07-27
Mercury	DP-SMA-3	Hg	Y	BTV	0.100	2.60	1995-09-05
Uranium	DP-SMA-3	U	Y	BTV	1.82	2.02	2006-07-27
Zinc	DP-SMA-3	Zn	Y	BTV	48.8	49.6	2006-07-27

Figure 58.3-4 Screening-Level Exceedances from Soil Samples Associated with DP-SMA-3

58.4 Stormwater Evaluation

58.4.1 Summary of Stormwater Results Compared to 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 2019. Analytical results from those samples are presented in Figures 58.4-1 through 58.4-4.

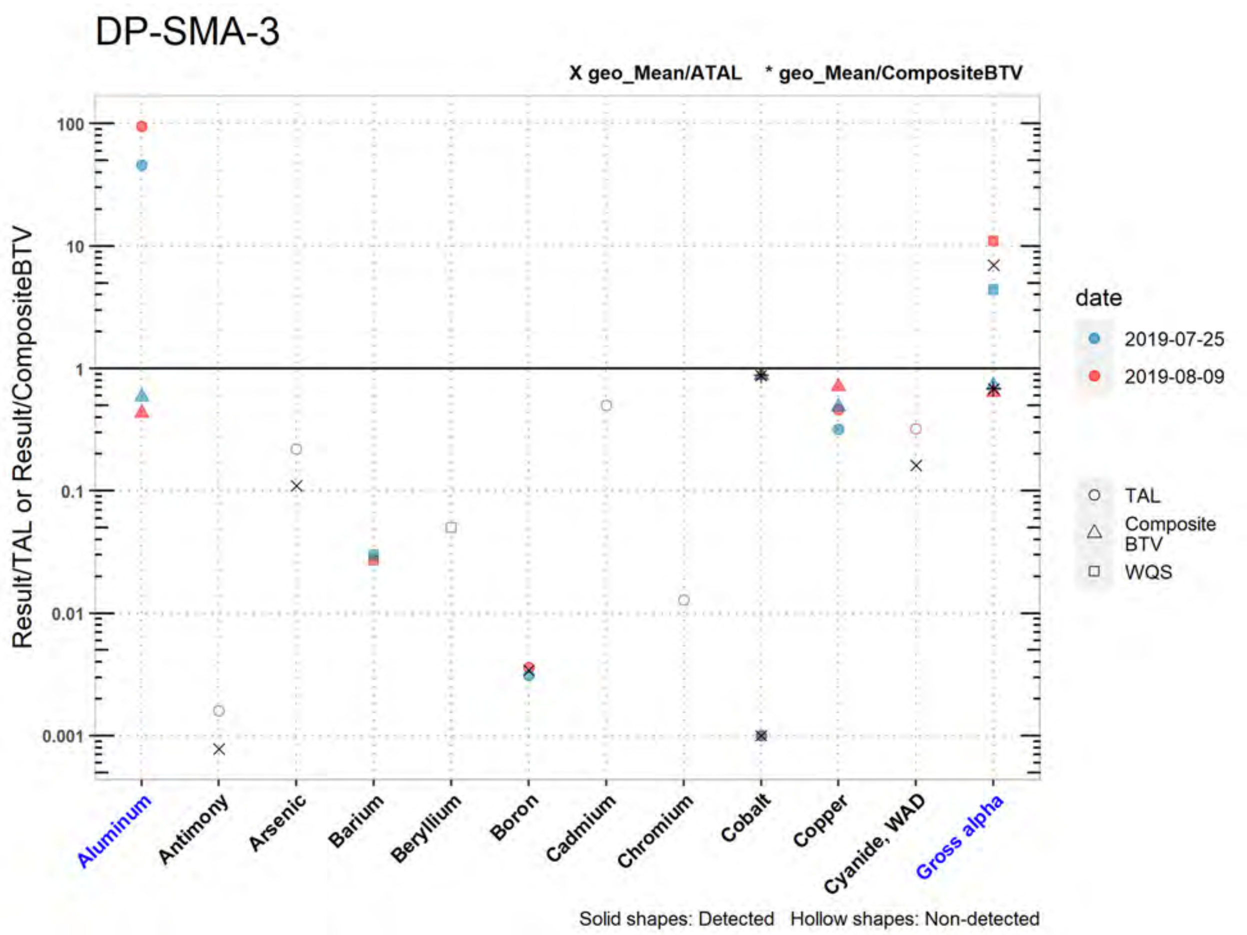


Figure 58.4-1 Analytical Results from Stormwater Samples, DP-SMA-3 (Plot 1)

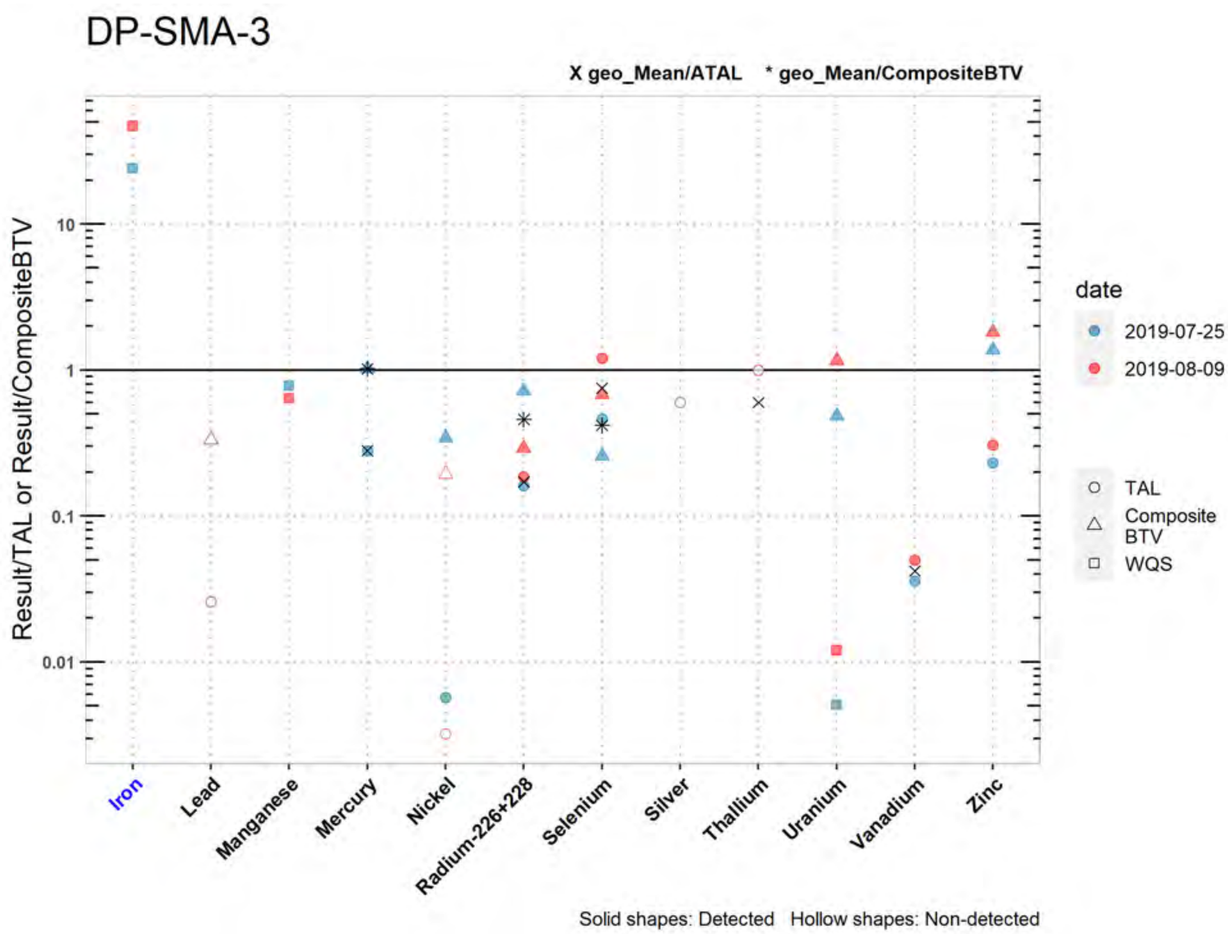


Figure 58.4-2 Analytical Results from Stormwater Samples, DP-SMA-3 (Plot 2)

DP-SMA-3

	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	765	NA	340	NA	NA	NA	0.65	233	NA	4.8	22	NA
Composite_BTV	37400	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	pCi/L*
2019-07-25 result	35000	*1.00*	*2.00*	60.9	*0.200*	15.6	*0.300*	*3.00*	1.03	1.52	*1.67*	66.5
2019-07-25 dT	45.8	NA	NA	0.030	NA	0.0031	NA	NA	0.0010	0.317	NA	4.4
2019-07-25 dB	0.585	NA	NA	NA	NA	NA	NA	NA	0.873	0.487	NA	0.727
2019-08-09 result	72600	*1.00*	*2.00*	54.3	*0.200*	18.1	*0.300*	*3.00*	1.04	2.21	*1.67*	164
2019-08-09 dT	94.9	NA	NA	0.027	NA	0.0036	NA	NA	0.0010	0.460	NA	11
2019-08-09 dB	0.431	NA	NA	NA	NA	NA	NA	NA	0.881	0.708	NA	0.637
geo_mean/ATAL	NA	0.00078	0.11	NA	NA	0.0034	NA	NA	0.0010	NA	0.161	7.0
geo_mean/B	NA	NA	NA	NA	NA	NA	NA	NA	0.877	NA	NA	0.680

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 58.4-3 Analytical Results from Stormwater Samples, DP-SMA-3 (Table 1)

DP-SMA-3

	Iron	Lead	Manganese	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc
MQL	NA	0.5	NA	0.005	0.5	NA	5	0.5	0.5	NA	50	20
ATAL	NA	NA	NA	0.77	NA	30	5	NA	0.47	NA	100	NA
MTAL	NA	19.3	NA	NA	186	NA	20	0.49	NA	NA	NA	59.2
Composite_BTV	NA	1.50	NA	0.208	3.10	4.21	8.98	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
2019-07-25 result	24000	*0.500*	93.6	0.213	1.06	4.83	2.32	*0.300*	*0.600*	0.152	3.58	13.7
2019-07-25 dT	24	NA	0.78	0.28	0.00570	0.161	0.46	NA	NA	0.0051	0.036	0.231
2019-07-25 dB	NA	NA	NA	1.02	0.342	0.717	0.258	NA	NA	0.483	NA	1.37
2019-08-09 result	47000	*0.500*	76.2	NA	*0.600*	5.54	6.08	*0.300*	*0.600*	0.364	4.99	18.2
2019-08-09 dT	47	NA	0.64	NA	NA	0.185	1.2	NA	NA	0.012	0.050	0.307
2019-08-09 dB	NA	NA	NA	NA	NA	0.292	0.677	NA	NA	1.16	NA	1.82
geo_mean/ATAL	NA	NA	NA	0.28	NA	0.172	0.75	NA	0.6	NA	0.042	NA
geo_mean/B	NA	NA	NA	1.02	NA	0.458	0.418	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 58.4-4 Analytical Results from Stormwater Samples, DP-SMA-3 (Table 2)

58.4.2 Assessment Unit and Stream Impairments

DP-SMA-3 drains to DP Canyon (100 m downstream grade control to 400 m upstream grade control), which has impairments for adjusted gross alpha, PCBs, total recoverable aluminum, and dissolved copper. The adjusted gross alpha, copper, and aluminum impairments may be Site-related, based on Site history.

58.5 Site-Specific Demonstration

58.5.1 Soil Data Summary

Benzo(b)fluoranthene, benzo(a)pyrene, and benzo(a)anthracene are the only Site-related POCs that exceeded the applicable screening value in soil data; they have not been monitored in stormwater.

58.5.2 Stormwater Data Summary

Gross alpha and aluminum were measured in stormwater and were above TALs but below BTVs.

58.5.3 2022 Permit Status

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

58.5.4 Sampling and Analysis Plan

Table 58.5-1 is the proposed SAP for DP-SMA-3.

Table 58.5-1 Proposed SAP, DP-SMA-3

Monitoring Constituent	Background for Monitoring
SVOCs	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

2022 Annual Sampling Implementation Plan

NPDES Permit No. NM0030759
June 2023

Sandia/Mortandad Watershed

Receiving Waters:
Cañada del Buey, Mortandad Canyon, Sandia Canyon, and Ten Site Canyon

Volume 2

CONTENTS

59.0 S-SMA-0.25

Associated Sites	03-013(a), 03-052(f)
Receiving Water	Sandia Canyon
Drainage Area	33.05 acres
Landscape Characteristics	54% impervious, 46% pervious
Consent Order Site Status	SWMU 03-013(a): In Progress Deferred per Consent Order SWMU 03-052(f): Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	Corrective Action Complete/Force Majeure Request
2016–2018 SIP Actions	Based on the August 2016 field visit, the current SMA sampling location and boundary were agreed by all parties to be the best representation of stormwater discharge at the Sites.
2022 Permit Status	Active Monitoring/Corrective Action

59.1 2010 Administratively Continued Permit Summary

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

The Permittees submitted a request for alternative compliance for the Sites to EPA per permit Part I.E.3 in April 2013 (LANL 2013, 241092). EPA responded to this request in March 2014, denying this request, and corrective action was re-initiated.

Following the July 2014 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2014, 257905), corrective-action monitoring was initiated. Corrective-action stormwater samples were collected in July and August 2014. Analytical results from these samples initiated corrective action.

The Permittees submitted a force majeure request for an extension for completion of corrective action for SWMU 03-052(f) per Permit part I.E.4(c) in September 2015 (LANL 2015, 600910). No response has been received from EPA for these submittals; stormwater monitoring has not occurred for this Site since 2014.

Following the September 2015 submittal to EPA of certification of a no-exposure condition at SWMU 03-013(a) per Permit Part I.E.2(c) (LANL 2015, 600932), monitoring was initiated for the required investigation sample for the Site. This sample was collected in June 2016, and the analytical results were submitted to EPA in August 2016 LANL 2016, 601772). Monitoring has not occurred at this Site since 2016.

59.2 Site History

03-013(a) (3/28/2022)

SWMU 03-013(a) is a former 1500-ft-long CMP storm drain that served building 03-38 (maintenance shops) in TA-03. The storm drain ran underground around building 03-38, east along the south side of the Otowi Building (building 03-261), and connected to four other storm drains before daylighting 100 ft east of the Otowi Building, where it became an open concrete and rock-lined ditch. The open drain continued past transportable office buildings (buildings 03-1616 and 03-1617) and passed beneath streets and sidewalks to a point northeast of the Oppenheimer Study Center (building 03-207), where it discharged to the SWMU 03-052(f) outfall and ultimately to Sandia Canyon.

Most of the CMP associated with SWMU 03-013(a) was removed in 2004 to accommodate construction of the NSSB (building 03-1400) and a new parking structure (structure 03-1402) southeast and east of the Otowi Building. The excavated CMP was managed as nonhazardous/nonradioactive industrial waste. Inspection of the drainline trench showed no evidence of a release from the storm drainline. A new storm drainline was installed west of SWMU 03-052(f) to manage stormwater runoff from the new parking structure. The new storm drain discharges to the SWMU 03-052(f) outfall.

For investigation activities, refer to “Investigation Report for Upper Sandia Canyon Aggregate Area, Revision 1” (LANL 2010, 110862.24).

03-052(f) (1/13/2017)

SWMU 03-052(f) is a former NPDES-permitted outfall (EPA 03A023), which received wastewater from floor drains [AOC 03-013(b)], sinks, water fountains, and a storm drain [SWMU 03-013(a)] in building 03-38 until 1987, when the drains in building 03-38 were rerouted to the TA-03 sanitary sewer system. Stoddard solvents, dry acid, and caustic materials from the maintenance shop were discarded through sinks and floor drains to this outfall. Spent paint solvents and cutting oils contaminated with machined beryllium particles also may have been released to the floor drains during the 1960s and 1970s. In addition, cooling water for welding torches was discharged directly to the drains.

The first spill recorded at this SWMU was approximately 200 gal. of water and waste-oil mixture that was discharged when an automatic compressor-blowdown mechanism failed. A second spill from a ruptured air-compressor oil line resulted in the release of approximately 1 quart of compressor oil to the drain, producing an oily sheen on the surface of the water at the SWMU 03-052(f) outfall. A third spill occurred when approximately 15 gal. of diesel fuel was released from a ruptured truck fuel line into the utilities construction trench between buildings 03-1793 and 03-1794. On the same day, a clay sewer pipe in the utility trench broke, releasing approximately 2,000 gal. of wastewater into the excavation. A sump pump was used to remove the wastewater from the excavation, and the wastewater was discharged to SWMU 03-052(f). The diesel-contaminated asphalt and soil were removed and disposed of. Runoff from parking lots and the surrounding areas also discharges to the outfall. Outfall 03A023 was removed from the NPDES permit on July 11, 1997.

For investigation activities, refer to “Supplemental Investigation Report for Upper Sandia Canyon Aggregate Area, Revision 1” (LANL 2015, 600912).

59.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 59.2-1.

Table 59.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
03-013(a)	Storm drain	Metals, PAHs, organic chemicals
03-052(f)	Outfall	Metals, beryllium, chromium, lead, nickel, inorganic chemicals, PCBs, organic chemicals

59.3 Consent Order Soil Data

Decision-level data are not available for SWMU 03-013(a).

Decision-level data for SWMU 03-052(f) consist of results from samples collected in 2009. Analytical results from those samples are presented in Figures 59.3-1 through 59.3-4. The 2015 supplemental IR (LANL 2015, 600912) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

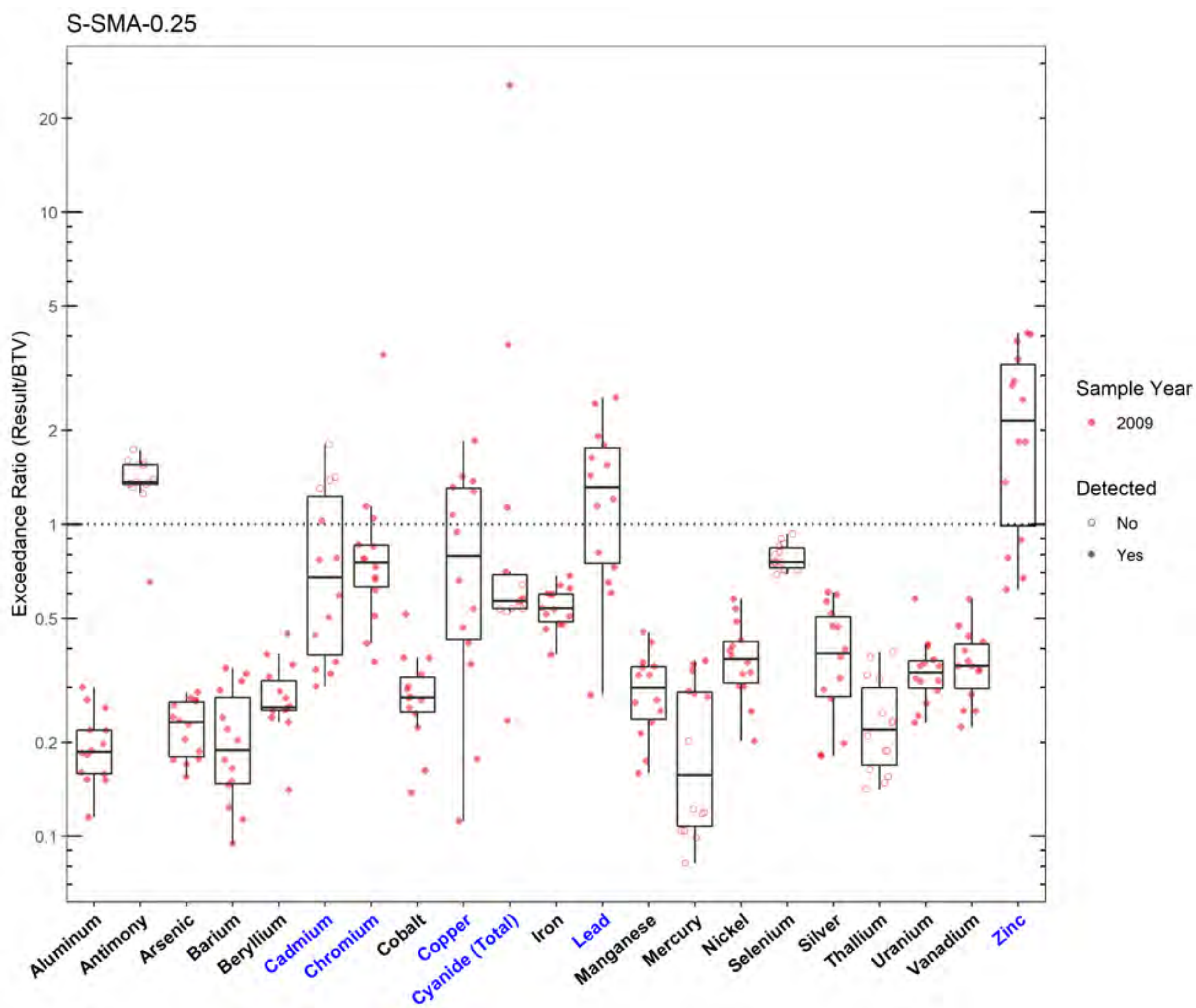


Figure 59.3-1 Inorganics Analytical Results from Soil Samples Associated with S-SMA-0.25

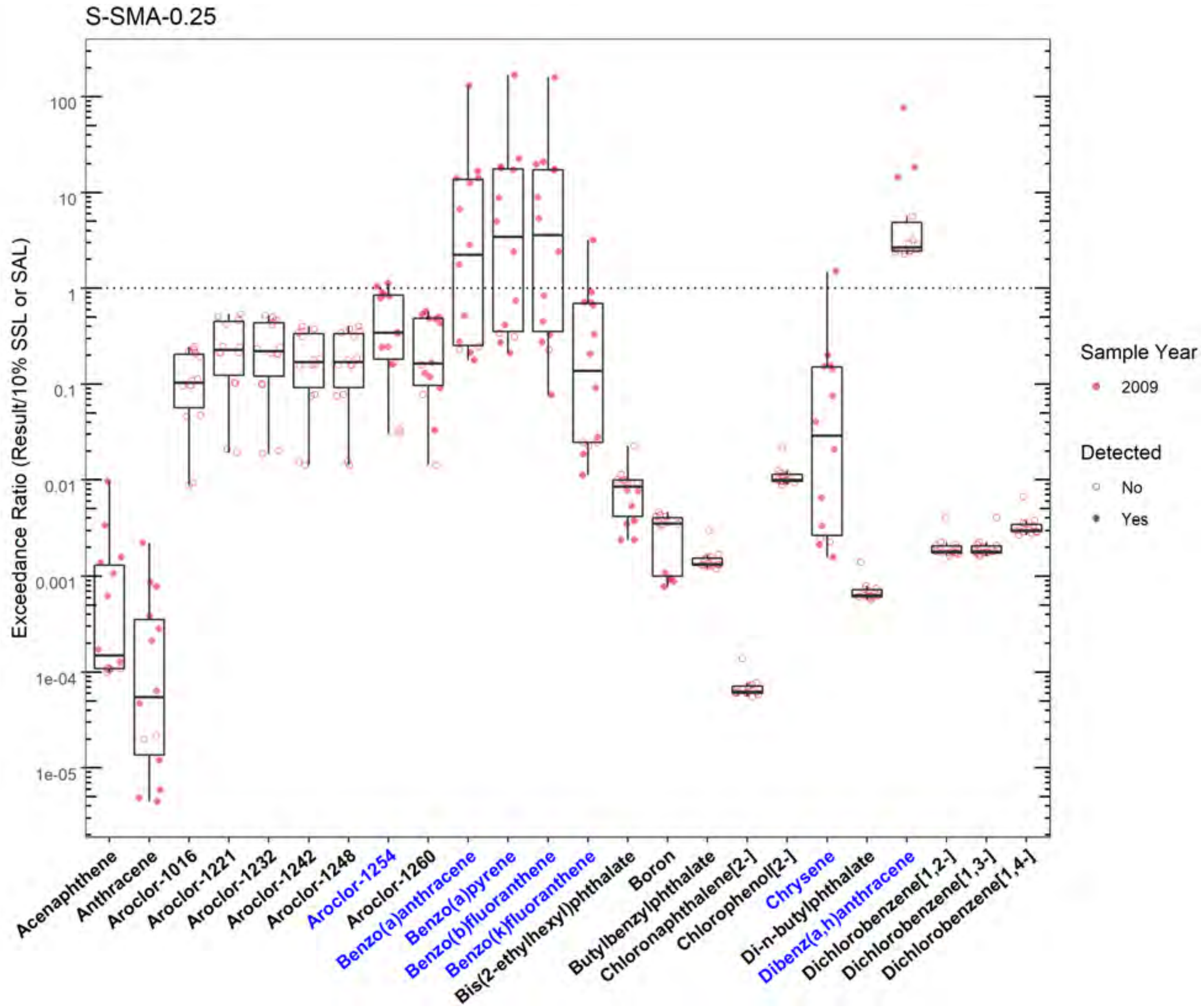


Figure 59.3-2 **Organics Analytical Results from Soil Samples Associated with S-SMA-0.25 (Plot 1)**

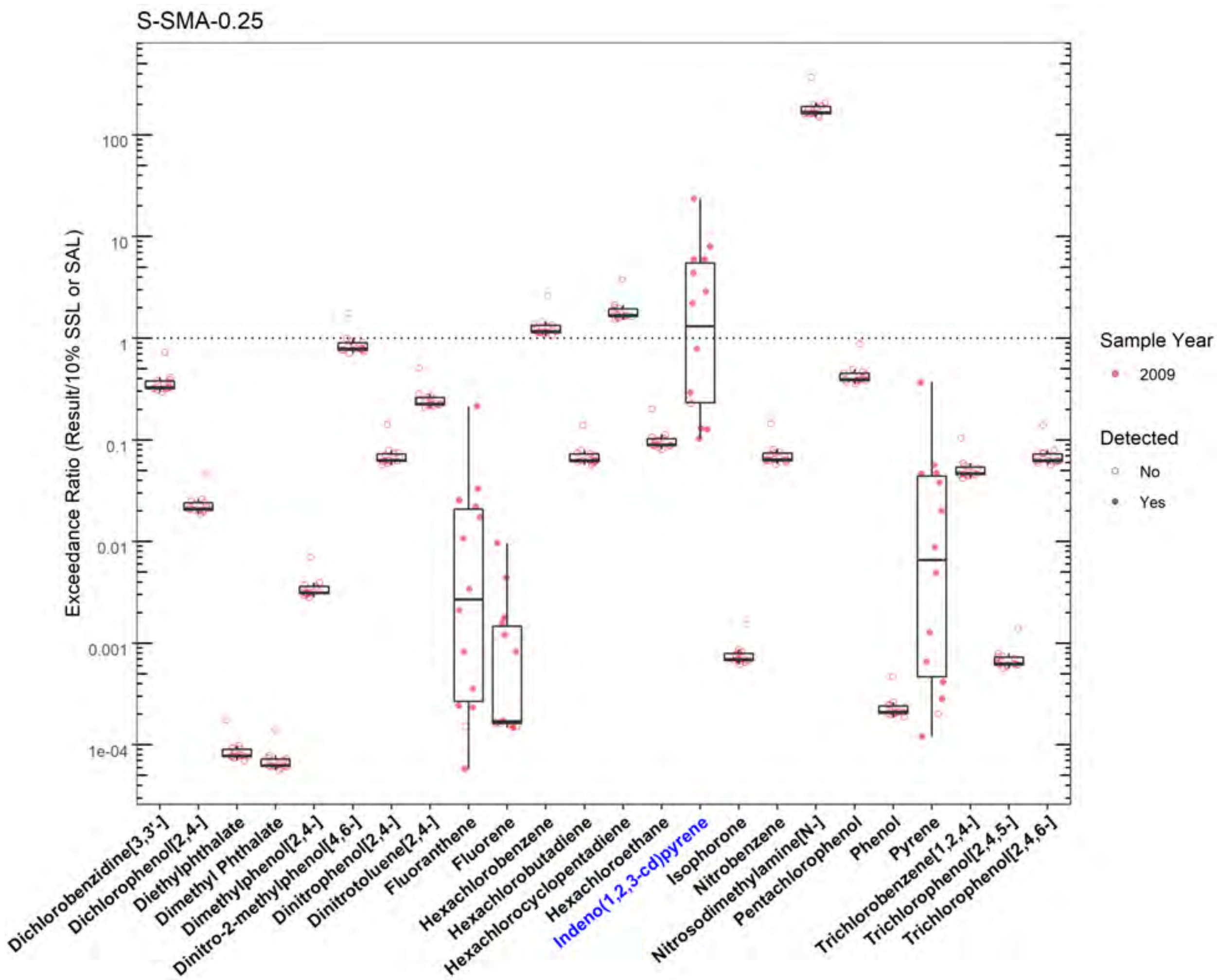


Figure 59.3-3 Organics Analytical Results from Soil Samples Associated with S-SMA-0.25 (Plot 2)

S-SMA-0.25

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	S-SMA-0.25	11097-69-1	Y	SSL_0.1	0.114	0.128	2009-10-30
Benzo(a)anthracene	S-SMA-0.25	56-55-3	Y	SSL_0.1	0.153	19.9	2009-10-30
Benzo(a)pyrene	S-SMA-0.25	50-32-8	Y	SSL_0.1	0.112	18.7	2009-10-30
Benzo(b)fluoranthene	S-SMA-0.25	205-99-2	Y	SSL_0.1	0.153	24.2	2009-10-30
Benzo(k)fluoranthene	S-SMA-0.25	207-08-9	Y	SSL_0.1	1.53	4.86	2009-10-30
Cadmium	S-SMA-0.25	Cd	Y	BTV	0.400	0.409	2009-10-30
Chromium	S-SMA-0.25	Cr	Y	BTV	19.3	67.3	2009-10-30
Chrysene	S-SMA-0.25	218-01-9	Y	SSL_0.1	15.3	22.9	2009-10-30
Copper	S-SMA-0.25	Cu	Y	BTV	14.7	27.2	2009-10-30
Cyanide (Total)	S-SMA-0.25	CN(TOTAL)	Y	BTV	0.500	12.8	2009-10-30
Dibenz(a,h)anthracene	S-SMA-0.25	53-70-3	Y	SSL_0.1	0.0153	1.17	2009-10-30
Indeno(1,2,3-cd)pyrene	S-SMA-0.25	193-39-5	Y	SSL_0.1	0.153	3.62	2009-10-30
Lead	S-SMA-0.25	Pb	Y	BTV	22.3	56.7	2009-10-30
Zinc	S-SMA-0.25	Zn	Y	BTV	48.8	200	2009-10-30

Figure 59.3-4 Screening-Level Exceedances from Soil Samples Associated with S-SMA-0.25

59.4 Stormwater Evaluation

59.4.1 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 May and June 2016. Analytical results from those samples are presented in Figures 59.4-1 through 59.4-4.

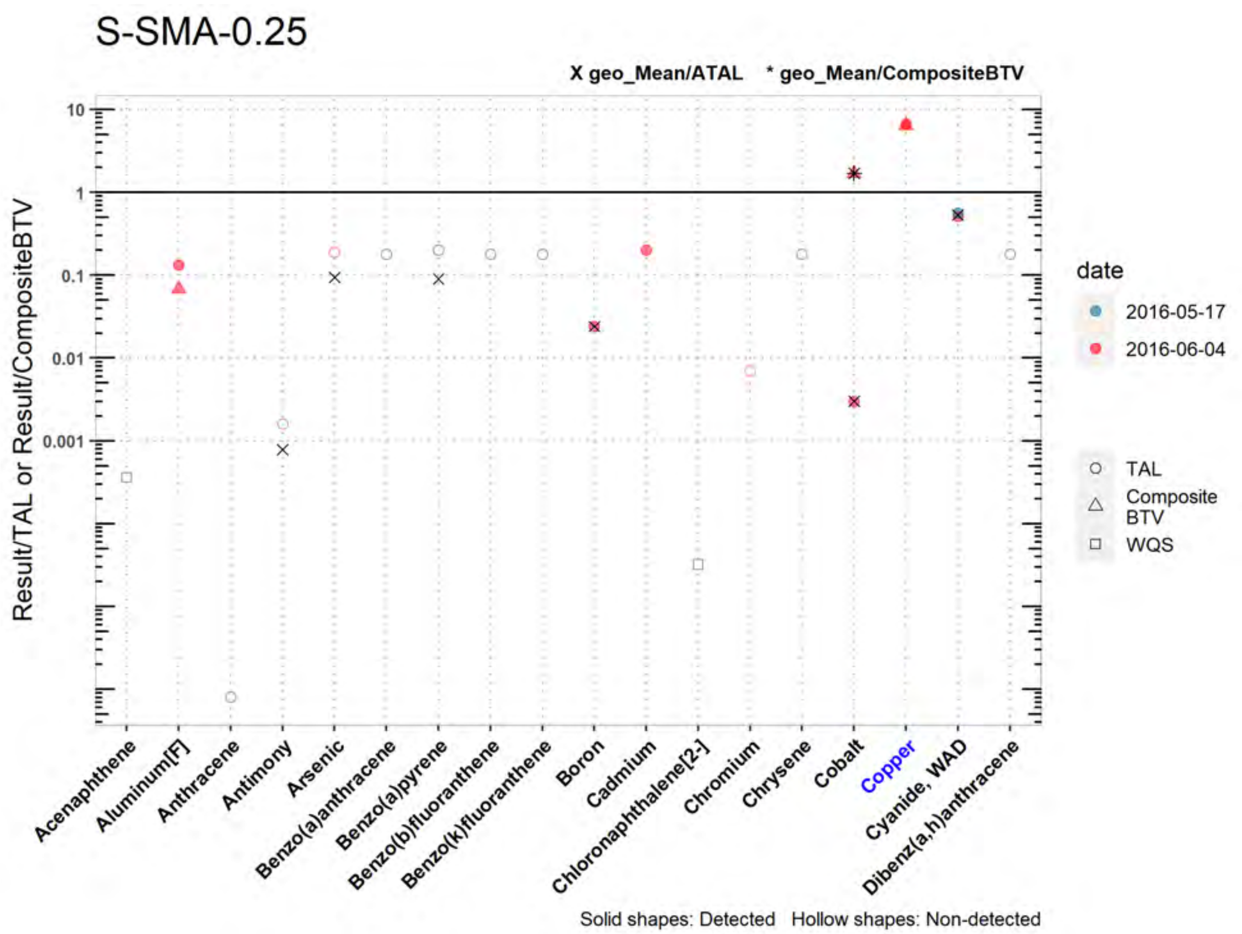


Figure 59.4-1 Analytical Results from Stormwater Samples, S-SMA-0.25 (Plot 1)

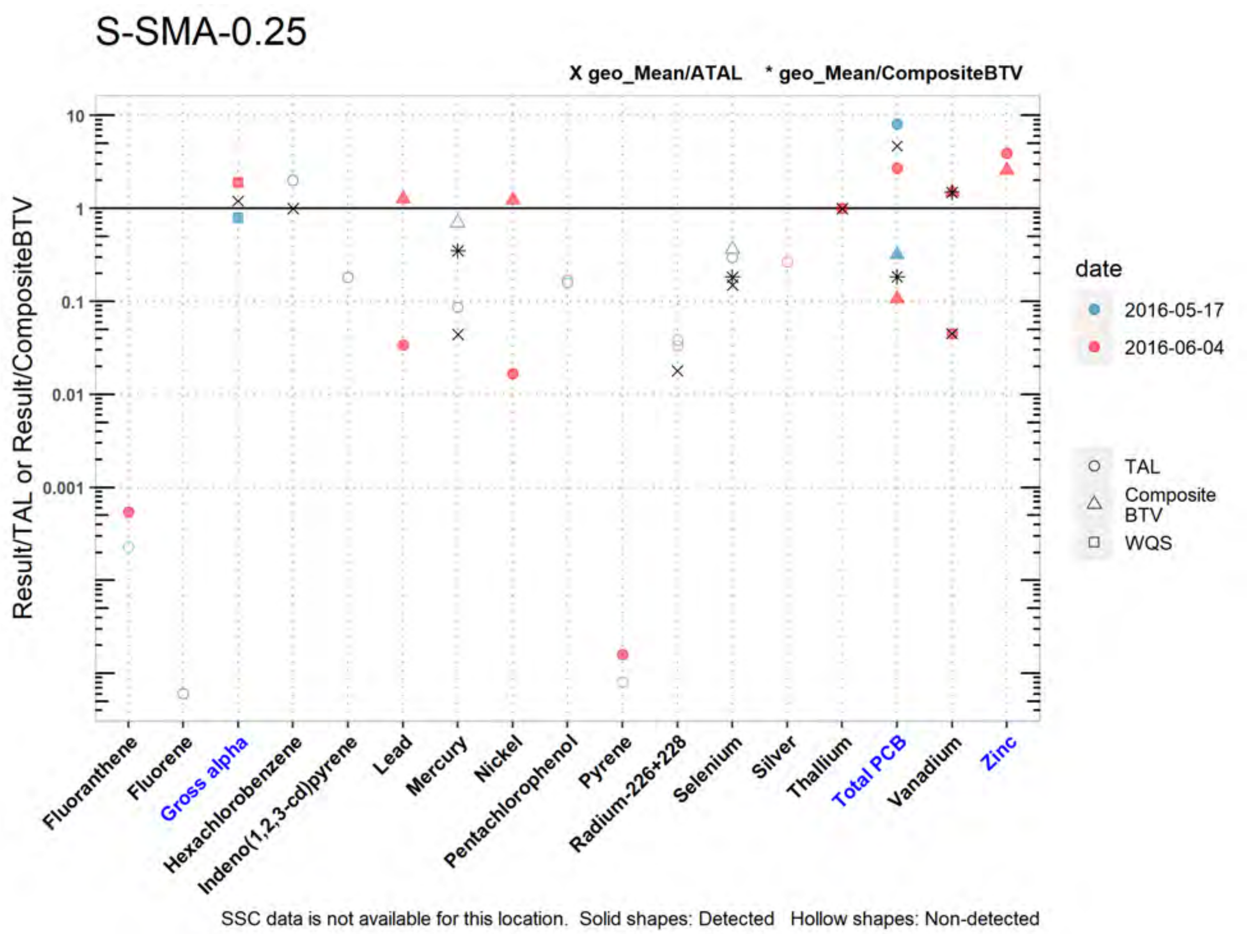


Figure 59.4-2 Analytical Results from Stormwater Samples, S-SMA-0.25 (Plot 2)

S-SMA-0.25

	Acenaphthene	Aluminum [F]	Anthracene	Antimony	Arsenic	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Boron	Cadmium	Chloronaphthalene [2-]	Chromium	Chrysene	Cobalt	Copper	Cyanide, WAD	Dibenz(a,h)anthracene
MQL	NA	2.5	0.064	1	0.5	0.064	0.064	0.064	0.064	100	1	NA	10	0.064	50	0.5	10	0.064
ATAL	NA	NA	NA	640	9	NA	0.18	NA	NA	5000	NA	NA	NA	NA	1000	NA	5.2	NA
MTAL	NA	750	NA	NA	340	0.18	NA	0.18	0.18	NA	0.804	NA	285	0.18	NA	6.07	22	0.18
Composite_BTV	NA	1450	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.76	6.31	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
2016-05-17 result	*0.0323*	NA	*0.0323*	NA	NA	*0.0323*	*0.0323*	*0.0323*	*0.0323*	NA	NA	*0.0323*	NA	*0.0323*	NA	NA	2.90	*0.0323*
2016-05-17 dT	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.558	NA
2016-05-17 dB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2016-06-04 result	*0.0323*	99.1	*0.0323*	*1.00*	*1.70*	*0.0323*	*0.0323*	*0.0323*	*0.0323*	122	0.164	*0.0323*	*2.00*	*0.0323*	2.98	40.4	2.66	*0.0323*
2016-06-04 dT	NA	0.132	NA	NA	NA	NA	NA	NA	NA	0.024	0.2	NA	NA	NA	0.0030	6.66	0.512	NA
2016-06-04 dB	NA	0.0683	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.69	6.40	NA	NA
geo_mean/ATAL	NA	NA	NA	0.00078	0.094	NA	0.09	NA	NA	0.024	NA	NA	NA	NA	0.0030	NA	0.534	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.69	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 59.4-3 Analytical Results from Stormwater Samples, S-SMA-0.25 (Table 1)

S-SMA-0.25

	Fluoranthene	Fluorene	Gross alpha	Hexachlorobenzene	Indeno(1,2,3-cd)pyrene	Lead	Mercury	Nickel	Pentachlorophenol	Pyrene	Radium-226+228	Selenium	Silver	Thallium	Total PCB	Vanadium	Zinc
MQL	0.064	0.064	NA	5	0.064	0.5	0.005	0.5	5	0.064	NA	5	0.5	0.5	0.2	50	20
ATAL	NA	NA	15	0.0029	NA	NA	0.77	NA	NA	NA	30	5	NA	0.47	0.00064	100	NA
MTAL	140	5300	NA	NA	0.18	25.5	NA	229	19	4000	NA	20	0.753	NA	NA	NA	74.3
Composite_BTV	NA	NA	53.1	NA	NA	0.690	0.0957	3.09	NA	NA	7.55	4.13	NA	NA	0.0162	3.05	113
unit	ug/L	ug/L	pCi/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
2016-05-17 result	*0.0323*	*0.0323*	11.8	*0.00672*	*0.0323*	NA	*0.0670*	NA	*3.00*	*0.0323*	*1.16*	*1.50*	NA	NA	0.00516	NA	NA
2016-05-17 dT	NA	NA	0.79	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.1	NA	NA
2016-05-17 dB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.319	NA	NA
2016-06-04 result	0.0753	*0.0323*	28.5	*0.00679*	*0.0323*	0.866	*0.0670*	3.81	*3.23*	0.0645	*1.00*	*1.50*	*0.200*	0.486	0.00173	4.53	290
2016-06-04 dT	0.00054	NA	1.9	NA	NA	0.0340	NA	0.0166	NA	0.000016	NA	NA	NA	1	2.7	0.045	3.90
2016-06-04 dB	NA	NA	NA	NA	NA	1.26	NA	1.23	NA	NA	NA	NA	NA	NA	0.107	1.49	2.57
geo_mean/ATAL	NA	NA	1.2	1	NA	NA	0.044	NA	NA	NA	0.0179	0.15	NA	1	4.7	0.045	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	0.350	NA	NA	NA	NA	0.182	NA	NA	0.184	1.49	NA

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

Figure 59.4-4 Analytical Results from Stormwater Samples, S-SMA-0.25 (Table 2)

59.4.2 Assessment Unit and Stream Impairments

S-SMA-0.25 drains to Sandia Canyon (Sigma Canyon to NPDES outfall 001), which has impairments for dissolved copper, PCBs, total aluminum, and temperature. The dissolved copper, PCB, and total aluminum impairments may be Site-related, based on Site history.

59.5 Site-Specific Demonstration

59.5.1 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: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

The metals (excluding copper), cyanide, and PCBs that exceeded the applicable soil screening value in soil data were previously measured in stormwater data and did not exceed TALs and BTVs. Therefore, they will not be added to the SAP. Copper exceeded in soil data and stormwater data.

59.5.2 Stormwater Data Summary

Copper exceeded both the TAL and BTV. Those data will be screened once all Site-related POCs have been analyzed.

59.5.3 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.2.b.i) for copper. The SMA is also in active monitoring; not all Site-related POCs were analyzed for in past samples.

59.5.4 Sampling and Analysis Plan

Table 59.5-1 is the proposed SAP for S-SMA-0.25.

Table 59.5-1 Proposed SAP, S-SMA-0.25

Monitoring Constituent	Background for Monitoring
SVOCs	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

60.0 S-SMA-1.1

Associated Sites	03-029
Receiving Water	Sandia Canyon
Drainage Area	7.49 acres
Landscape Characteristics	37% impervious, 63% pervious
Consent Order Site Status	SWMU 03-029: Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	Force Majeure Request
2016–20182016–2018 SIP Actions	Based on the February 2016 signatures of SIP review, all parties agreed that the current SMA sampling location was representative of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring/Corrective Action

60.1 2010 Administratively Continued Permit Summary

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

Following the December 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 232349); corrective-action monitoring was initiated at a new location that was more representative of the Sites, after installation of controls. Two stormwater samples were collected in July 2014. Analytical results from these samples initiated corrective action.

Additionally, the Permittees submitted a force majeure request for an extension for completion of corrective action at SWMU 03-029 per Permit part I.E.4(c) in September 2013 (LANL 2013, 250039). No response has been received from EPA for this submittal, and stormwater monitoring has not occurred for this Site since 2014.

60.2 Site History

03-029 (1/11/2017)

SWMU 03-029 was reportedly a 30-ft × 70-ft asphalt landfill, located approximately 300 ft south of building 03-271 near the rim of Sandia Canyon. The landfill reportedly received excess asphalt from the batch plant. After being decommissioned, it was subsequently covered with sand, which raised and leveled the surface areas at the mesa rim. Efforts to determine the landfill location were performed using ground-penetrating radar and electromagnetic surveys and trenching; however, no evidence of a landfill was found.

For investigation activities, refer to “Supplemental Investigation Report for Upper Sandia Canyon Aggregate Area, Revision 1” (LANL 2015, 600912).

60.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 60.2-1.

Table 60.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
03-029	Former asphalt landfill	PAHs

60.3 Consent Order Soil Data

Decision-level data for SWMU 03-029 consist of results from samples collected in 2009. Analytical results from those samples are presented in Figures 60.3-1 through 60.3-4. The 2015 IR (LANL 2015, 600912) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

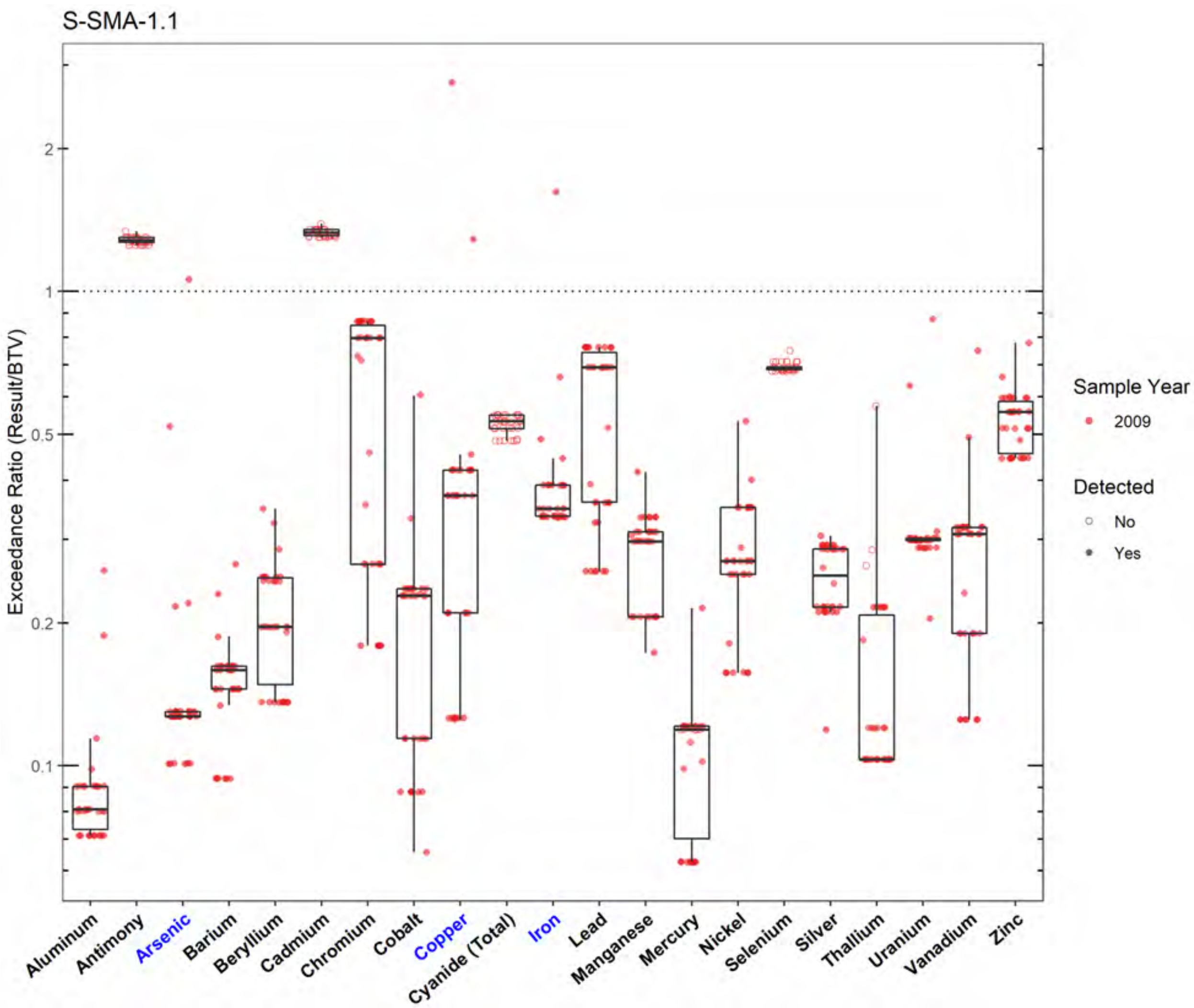


Figure 60.3-1 Inorganics Analytical Results from Soil Samples Associated with S-SMA-1.1

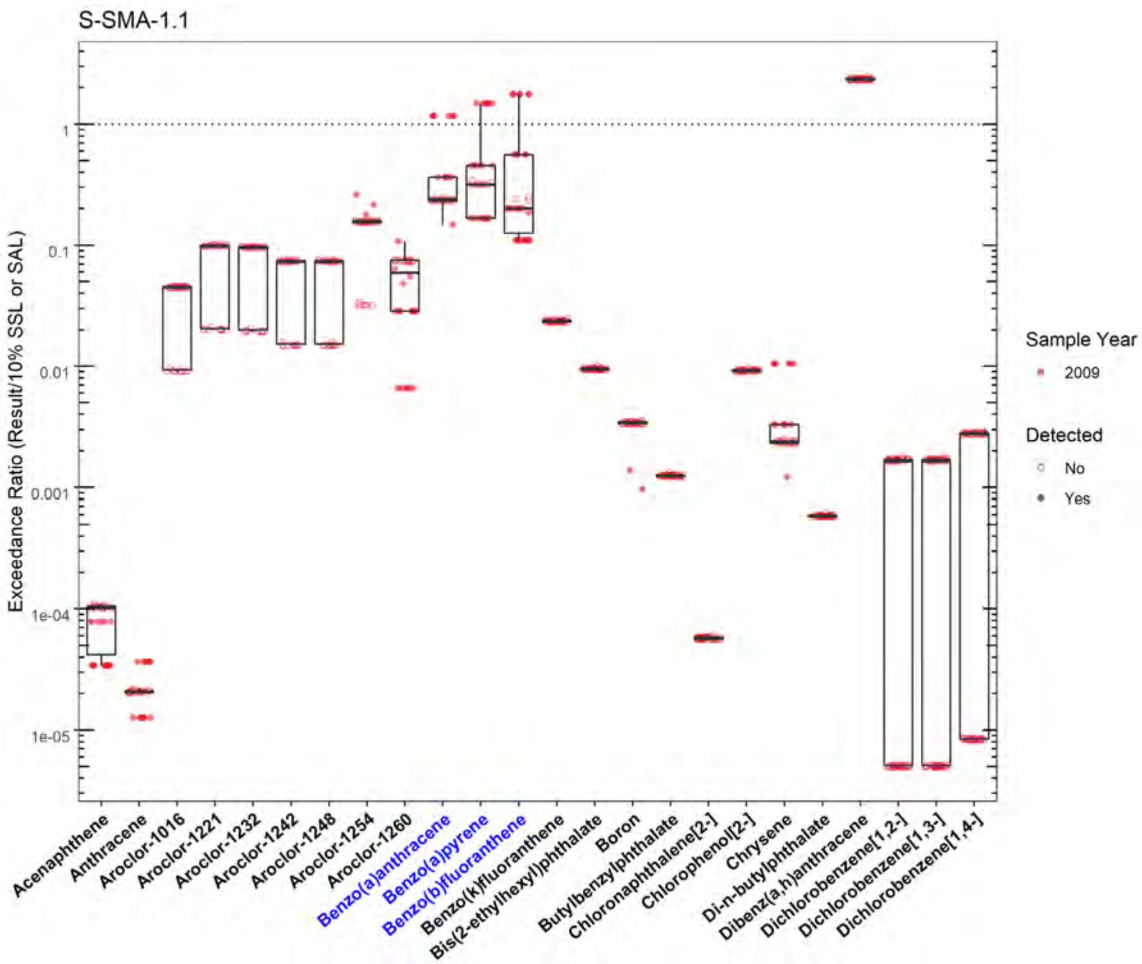


Figure 60.3-2 Organics Analytical Results from Soil Samples Associated with S-SMA-1.1 (Plot 1)

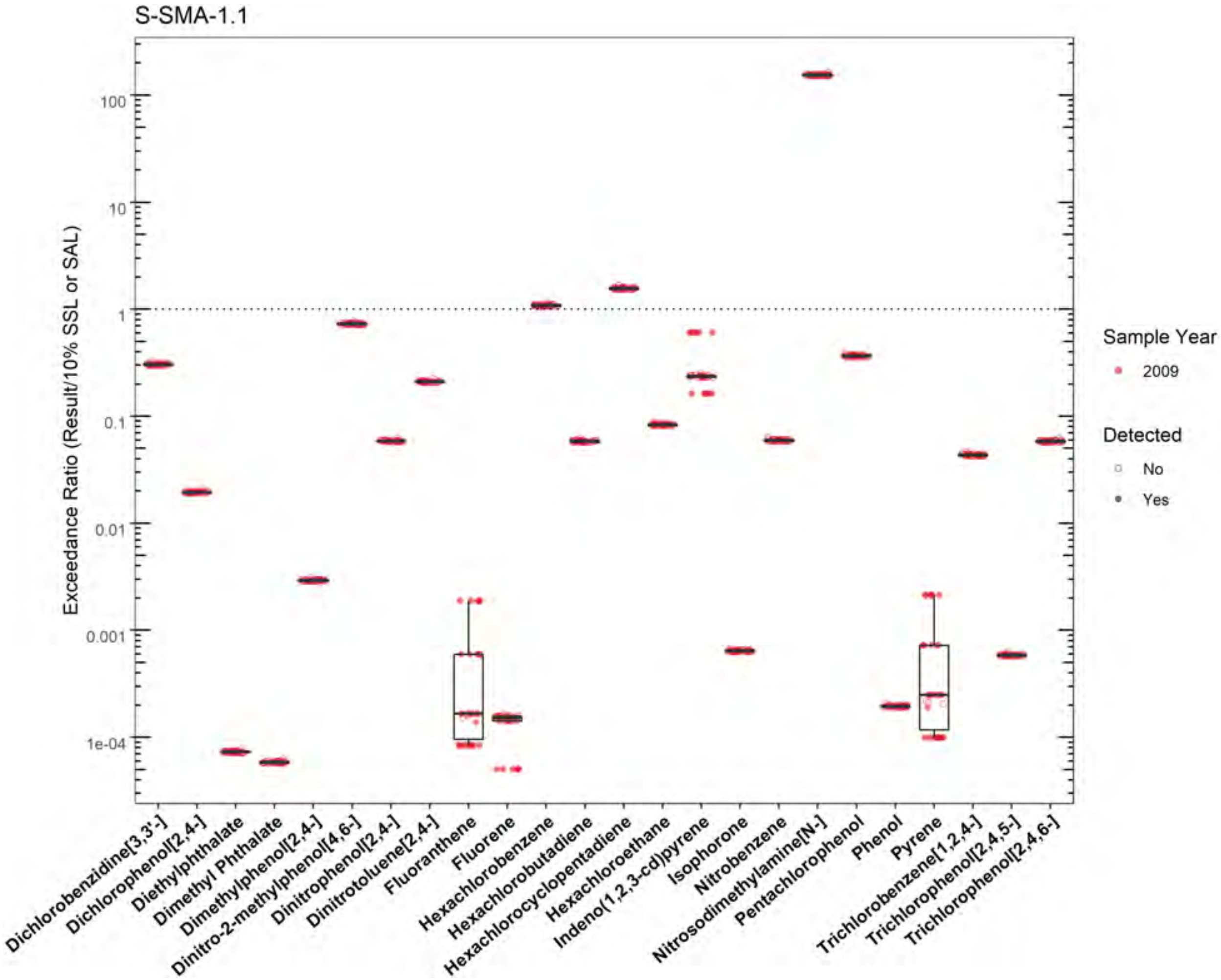


Figure 60.3-3 Organics Analytical Results from Soil Samples Associated with S-SMA-1.1 (Plot 2)

S-SMA-1.1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Arsenic	S-SMA-1.1	As	Y	BTV	8.17	8.70	2009-10-22
Benzo(a)anthracene	S-SMA-1.1	56-55-3	Y	SSL_0.1	0.153	0.179	2009-10-27
Benzo(a)pyrene	S-SMA-1.1	50-32-8	Y	SSL_0.1	0.112	0.166	2009-10-27
Benzo(b)fluoranthene	S-SMA-1.1	205-99-2	Y	SSL_0.1	0.153	0.270	2009-10-27
Copper	S-SMA-1.1	Cu	Y	BTV	14.7	40.5	2009-10-22
Iron	S-SMA-1.1	Fe	Y	BTV	21500	34900	2009-10-22

Figure 60.3-4 Screening-Level Exceedances from Soil Samples Associated with S-SMA-1.1

60.4 Stormwater Evaluation

60.4.1 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 2014. Analytical results from those samples are presented in Figures 60.4-1 and 60.4-2.

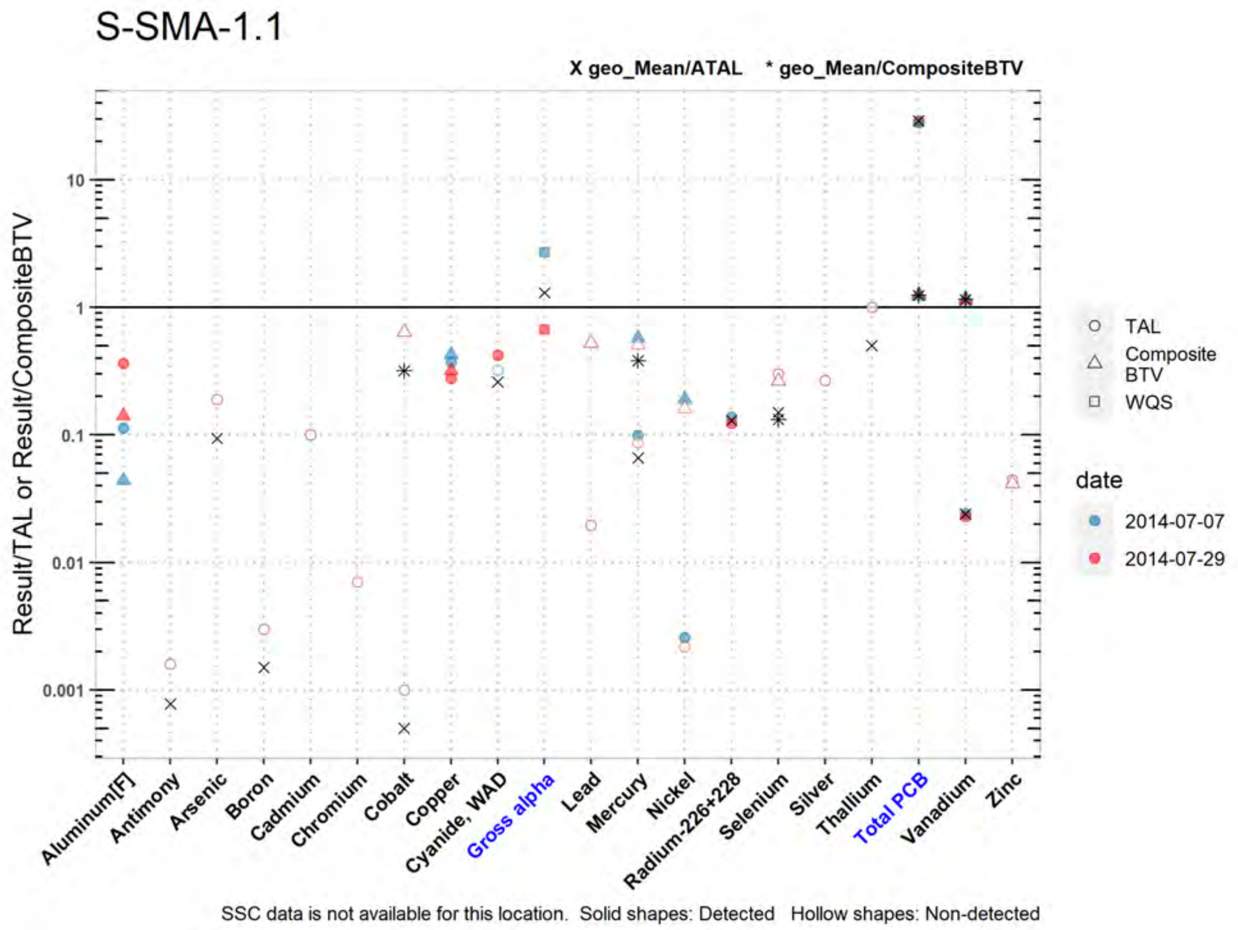


Figure 60.4-1 Analytical Results from Stormwater Samples, S-SMA-1.1 (Plot)

S-SMA-1.1

	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	0.804	285	NA	6.07	22	NA	25.5	NA	229	NA	20	0.753	NA	NA	NA	74.3
Composite_BTV	1930	NA	NA	NA	NA	NA	1.57	5.28	NA	54.4	0.952	0.132	3.10	6.47	5.70	NA	NA	0.0149	2.06	79.4
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
2014-07-07 result	84.7	*1.00*	*1.70*	*15.0*	*0.110*	*2.00*	*1.00*	2.24	*1.67*	39.9	*0.500*	0.0760	0.589	4.14	*1.50*	*0.200*	*0.450*	0.0182	2.41	*3.30*
2014-07-07 dT	0.113	NA	NA	NA	NA	NA	NA	0.369	NA	2.7	NA	0.099	0.00257	0.138	NA	NA	NA	28	0.024	NA
2014-07-07 dB	0.0439	NA	NA	NA	NA	NA	NA	0.424	NA	NA	NA	0.576	0.190	NA	NA	NA	NA	1.22	1.17	NA
2014-07-29 result	272	*1.00*	*1.70*	*15.0*	*0.110*	*2.00*	*1.00*	1.68	2.19	10.1	*0.500*	*0.0670*	*0.500*	3.69	*1.50*	*0.200*	*0.450*	0.0187	2.32	*3.30*
2014-07-29 dT	0.363	NA	NA	NA	NA	NA	NA	0.277	0.421	0.67	NA	NA	NA	0.123	NA	NA	NA	29	0.023	NA
2014-07-29 dB	0.141	NA	NA	NA	NA	NA	NA	0.318	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.26	1.13	NA
geo_mean/ATAL	NA	0.00078	0.094	0.0015	NA	NA	0.00050	NA	0.260	1.3	NA	0.066	NA	0.130	0.15	NA	0.5	29	0.024	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	0.318	NA	NA	NA	NA	0.382	NA	NA	0.132	NA	NA	1.24	1.15	NA

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

Figure 60.4-2 Analytical Results from Stormwater Samples, S-SMA-1.1 (Table)

60.4.2 Assessment Unit and Stream Impairments

S-SMA-1.1 drains to Sandia Canyon (Sigma Canyon to NPDES outfall 001), which has impairments for dissolved copper, PCBs, total aluminum, and temperature. The impairments are not Site-related, based on Site history.

60.5 Site-Specific Demonstration

60.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene.

Arsenic and copper exceeded the applicable screening value in soil data, but were previously monitored in stormwater data and did not exceed TALs; therefore, they will not be added to the SAP. Iron exceeded the applicable screening value in soil data but is not a Site-related POC; therefore, it will not be added to the SAP.

60.5.2 Stormwater Data Summary

Gross alpha exceeded TAL in 2014 stormwater data; there was no paired SSC result to confirm whether it was below BTVs, gross alpha is not Site-related and will not be added to the SAP.

Total PCBs exceeded both TAL and BTV.

60.5.3 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.2.b.i) for PCBs. The SMA is also in active monitoring; not all Site-related POCs were analyzed for in past samples.

60.5.4 Sampling and Analysis Plan

Table 60.5-1 is the proposed SAP for S-SMA-1.1.

Table 60.5-1 Proposed SAP, S-SMA-1.1

Monitoring Constituent	Background for Monitoring
SVOCs	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

61.0 S-SMA-2

Associated Sites	03-012(b), 03-045(b), 03-045(c), 03-056(c)
Receiving Water	Sandia Canyon
Drainage Area	49.85 acres
Landscape Characteristics	52% impervious, 48% pervious
Consent Order Site Status	SWMU 03-012(b): Pending Receipt of Certificate of Completion SWMU 03-045(b): In Progress SWMU 03-045(c): In Progress SWMU 03-056(c): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls
2010 Administratively Continued Permit Final Status	Force Majeure Request/Site Deletion Request/Corrective Action Complete
2016–2018 SIP Actions	All parties agree that the current SMA sampling location and boundary may not be the best representation of stormwater discharge from the Site. Monitoring for all Sites of the SMA must continue, unless moved via a permit notification. However, a more representative location was not identified and a sampler move was not recommended.
2022 Permit Status	Active Monitoring/Corrective Action

61.1 2010 Administratively Continued Permit Summary

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

Following the July 2013 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2013, 244386), corrective-action monitoring was initiated, and stormwater samples were collected in July and August 2013. Analytical results from these samples initiated corrective action.

The Permittees submitted a Request for Permit Modification for removal of Sites 03-045(b) and 03-045(c) to EPA pursuant to Title 40 of the CFR 122.62 (a)(15) and Permit Part III.A.5 in October 2015 (LANL 2015, 600961). The Permittees submitted a request for alternative compliance for SWMU 03-056(c) per permit Part I.E.3 in April 2013 LANL 2013, 241092). EPA responded to the request in March 2014 by extending the compliance deadline for S-SMA-2 to October 2015, and indicating that the request may be reevaluated if future discharges still fail to meet TAL action levels after the installation of enhanced controls. The Permittees submitted a request for force majeure for SWMU 03-012(b) per permit Part I.E.4(c) in October 2013 (LANL 2013, 250039). No response has been received from EPA. Stormwater monitoring has not occurred since 2013.

61.2 Site History

03-012(b) (11/26/2019)

SWMU 03-012(b) is an area of soil contamination associated with operational releases in the form of drift from former cooling towers at the power plant located at TA-03. The cooling towers [structure 03-58 and former structure 03-25 (currently structure 03-592)] were located to the east of the power plant. Between 1951 and 1985, treated effluent from the former TA-03 WWTP was used in the cooling towers; potassium dichromate was added to the effluent to prevent bacteria growth. Operational releases occurred as a result of both drift from the cooling towers to soil around the towers and discharges from the cooling towers to the SWMU 03-045(b) outfall. A gas turbine generator (structure 03-2422), along with supporting utilities, was installed east of the power plant within the eastern portion of SWMU 03-012(b) in 2007.

The distinction between SWMUs 03-012(b) and 03-045(b) is often not clear in historical documents. The 1990 SWMU Report, which originally identified these sites as SWMUs, describes SWMU 03-012(b) as former chilled water operational releases, including cooling tower drift loss and cooling water discharges to Sandia Canyon. SWMU 03-045(b) is described as the NPDES outfall for cooling towers 03-25 and 03-58. The 1993 RFI work plan for OU 1114 identifies SWMU 03-012(b) as the power plant outfall, while the addendum to the RFI work plan for OU 1114 identifies SWMU 03-045(b) as the outfall for the power plant cooling towers and notes that this discharge point is identical to SWMU 03-012(b). Similar descriptions are provided in the 1996 Phase I RFI report for TA-03.

Based on the original descriptions in the 1990 SWMU report, SWMU 03-012(b) was intended to address only chromium releases associated with the addition of potassium dichromate to the power plant effluent. Although chromium was released from the cooling tower outfall as well as by drift, discharge of chromium from the outfall ceased before the NPDES permit was issued for the outfall. Thus, SWMUs 03-012(b) and 03-045(b) are physically the same outfall but address releases of different materials at different time periods. That is, SWMU 03-012(b) is associated with releases of chromated cooling water, which occurred until the mid-1970s, and SWMU 03-045(b) is associated with permitted discharges from the outfall, which occurred later.

For the purposes of the Upper Sandia Canyon Aggregate Area investigation, it is not practical to distinguish the releases associated with the same outfall. Therefore, releases from the outfall as represented by both SWMUs 03-012(b) and 03-045(b) are addressed by the investigation of SWMU 03-045(b). The investigation of SWMU 03-012(b) is limited to chromium releases from cooling tower drift from the former cooling towers.

03-045(b) (1/11/2017)

SWMU 03-045(b) is an NPDES-permitted outfall (EPA 01A001) that received effluent from two of the TA-03 power plant (building 03-22) cooling towers (structures 03-25 and 03-58) and the chlorine building (structure 03-24), and discharged to a small tributary of Sandia Canyon southeast of building 03-22. From 1951 until the mid-1970s, this cooling water contained chromate. Cooling tower (structure 03-25) was demolished in 1990, and a new cooling tower (structure 03-592) was constructed at the same location in 1998; the concrete foundation of structure 03-25 collected stormwater that discharged to the outfall.

All wastewater previously discharged from the TA-03 power plant to SWMU 03-045(b) was treated in a neutralization tank (structure 03-1381) to adjust the pH of wastewater before it was discharged, to meet NPDES requirements. Sulfuric acid and soda ash were used to adjust the pH of wastewater before discharge to the SWMU 03-045(b) outfall. A sulfuric acid release to the SWMU 03-045(b) outfall from the power plant neutralization tank (structure 03-1381) occurred in May 1990. Low pH values were reported in a 2.5-mi section of the watercourse below the outfall. Soda ash was added along the watercourse to raise the pH. A subsequent survey detected no measurements below pH 6.9.

The SWMU 03-045(b) outfall is currently permitted as NPDES outfall 001 on the 2007 LANL NPDES authorization permit. The outfall currently receives treated sanitary effluent from the TA-46 SWSC Plant and the SERF, as well as occasional discharges of power plant cooling tower blowdown. The outfall is also authorized to discharge power plant wastewater from boiler blowdown drains, demineralizer backwash, and floor and sink drains to Sandia Canyon.

For investigation activities, refer to "Supplemental Investigation Report for Upper Sandia Canyon Aggregate Area, Revision 1" (LANL 2015, 600912).

03-045(c) (1/11/2017)

SWMU 03-045(c) is an NPDES-permitted outfall (EPA 03A027), located approximately 55 ft east of SWMU 03-045(b). SWMU 03-045(c) previously received effluent from a cooling tower (structure 03-285) that served the generators powering a Laboratory computer system. Cooling tower 03-285 was taken out of service in 2007 and demolished in 2012. SWMU 03-045(c) now receives blowdown from the cooling towers at the Strategic Computing Complex (building 03-2327), which became operational in 2002. Cooling tower 03-285 was constructed in 1968, and SWMU 03-045(c) may have historically received chromate-treated water. Outfall 03A027 is currently permitted for the discharge of cooling tower blowdown water and other wastewater from structures 03-285 and 03-2327.

For investigation activities, refer to "Supplemental Investigation Report for Upper Sandia Canyon Aggregate Area, Revision 1" (LANL 2015, 600912).

03-056(c) (3/28/2022)

SWMU 03-056(c) is a former outdoor storage area that was located on the northeast side of a utilities shop, building 03-223, at TA-03. The SWMU extends along the length of building 03-223 to the south and is bounded by a security fence to the north. The outdoor storage area was used to store electrical equipment, capacitors, and transformers with PCB-containing dielectric fluids. Waste solvents used for cleaning electrical equipment were also reportedly stored at this location in unmarked drums.

The types of solvents used at the site from 1967 to approximately 1981 are not known. Viking R30 (1,1,1-trichloroethane) was used from 1981 to 1990. Beginning in 1990 and continuing to 1992, a nonhazardous citrus-based solvent was used as a substitute for solvent-based cleaners. In addition, Transclene, which contains tetrachloroethene, may have been stored at the site because it was used by an electrical equipment maintenance subcontractor to retrofill transformers in the field. It is believed that the maintenance crew disposed of all these waste materials at an approved waste disposal facility.

In 1991, the facility manager placed approximately 1 to 2 ft of clean fill over the surface of the former storage area to elevate it and to reroute run-on drainage away from the site. In 1992, the storage area was decommissioned. Investigations and remedial actions were performed at SWMU 03-056(c) in 1994, 1995, 2000 and 2001. As a result of remediation and restoration efforts, the mesa top was backfilled and paved.

For investigation activities, refer to "Investigation Report for Upper Sandia Canyon Aggregate Area, Revision 1" (LANL 2010, 110862.24).

61.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 61.2-1.

Table 61.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
03-012(b)	Operational release	Chromium, hexavalent chromium, inorganic chemicals
03-045(b)	Operational release	Metals, hexavalent chromium, inorganic chemicals
03-045(c)	Outfall from structure 03-285	Naturally occurring metals concentrated by evaporation, hexavalent chromium
03-056(c)	Transformer storage area	Organic chemicals, PCBs

61.3 Consent Order Soil Data

Decision-level data for SWMU 03-045(b) consist of results from samples collected in 2009. The 2015 IR (LANL 2015, 600912) concluded that the lateral extent of contamination has not been defined in the drainage downgradient of the outfall because only one location at the outfall was sampled at SWMU 03-045(b).

Decision-level data for SWMU 03-045(c) consist of results from soil samples collected in 2009. The 2015 IR (LANL 2015, 600912) concluded that the vertical extent of PCBs and PAHs and the lateral extent of contamination have not been defined in the drainage downgradient of the outfall.

Decision-level data for SWMU 03-056(c) consist of results from samples collected in 2000 and 2001. Revision 1 of the 2010 IR (LANL 2010, 110862.24) concluded that the nature and extent of contamination have been defined.

Analytical results from all decision-level soil samples collected for S-SMA-2 are presented in Figures 61.3-1 through 61.3-4.

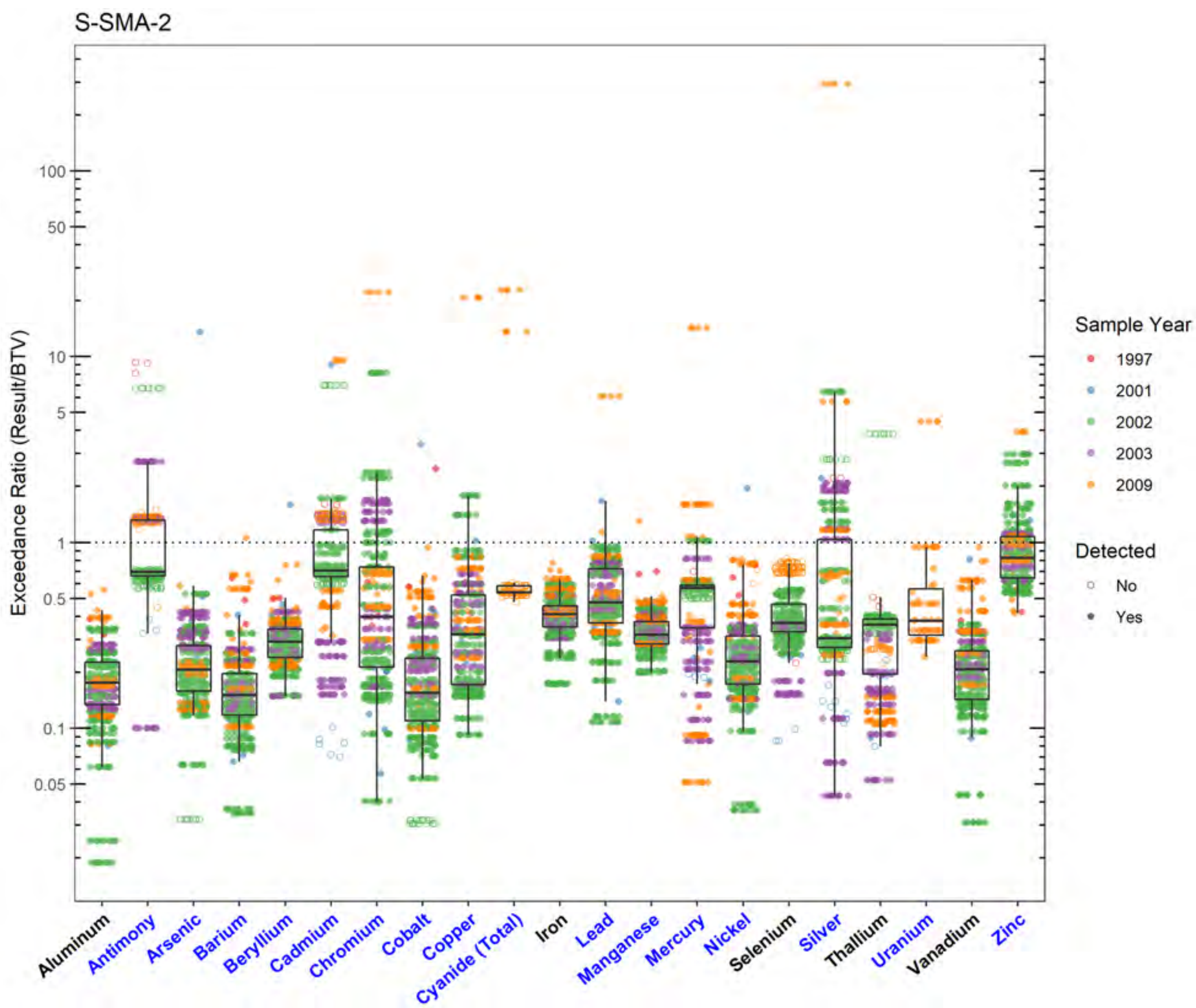


Figure 61.3-1 Inorganics Analytical Results from Soil Samples Associated with S-SMA-2

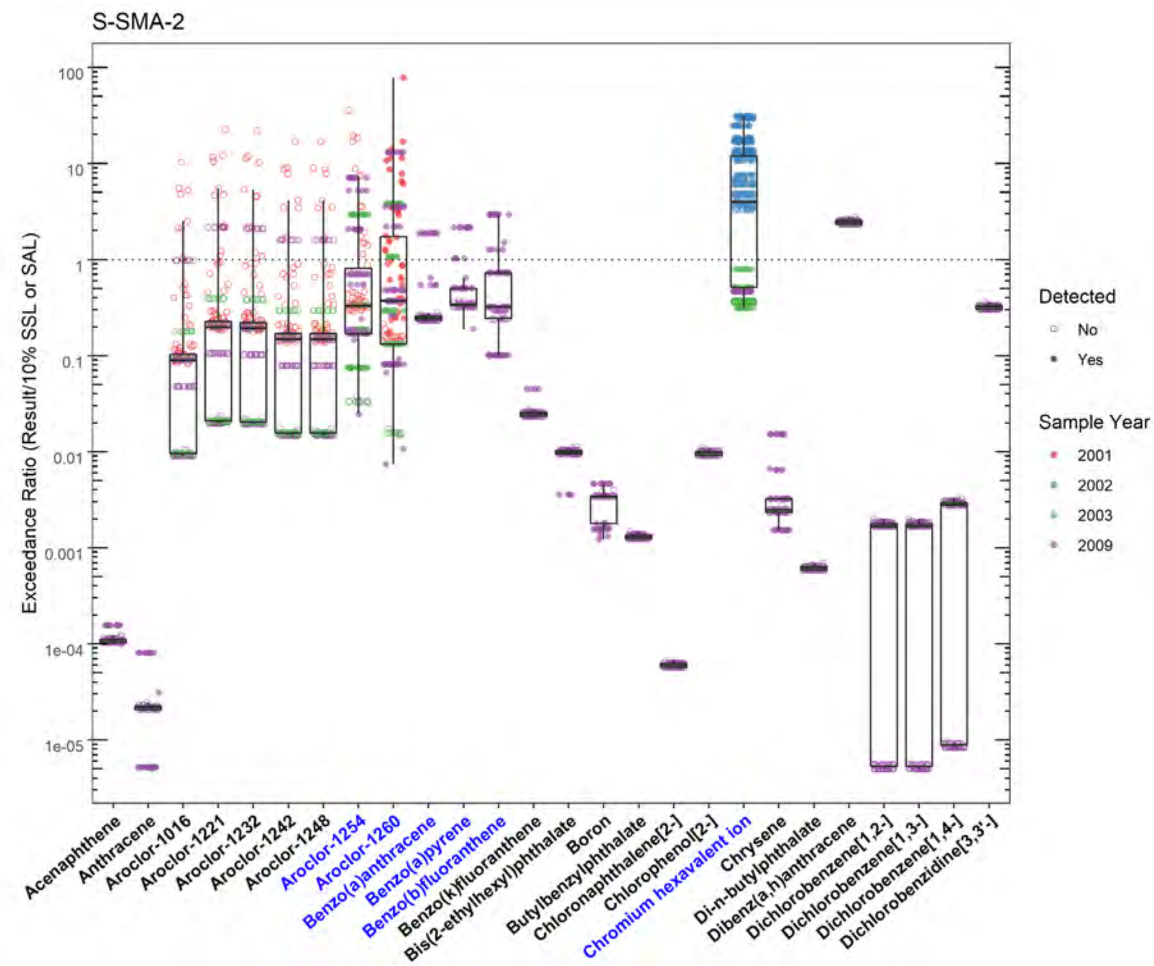


Figure 61.3-2 Organics Analytical Results from Soil Samples Associated with S-SMA-2 (Plot 1)

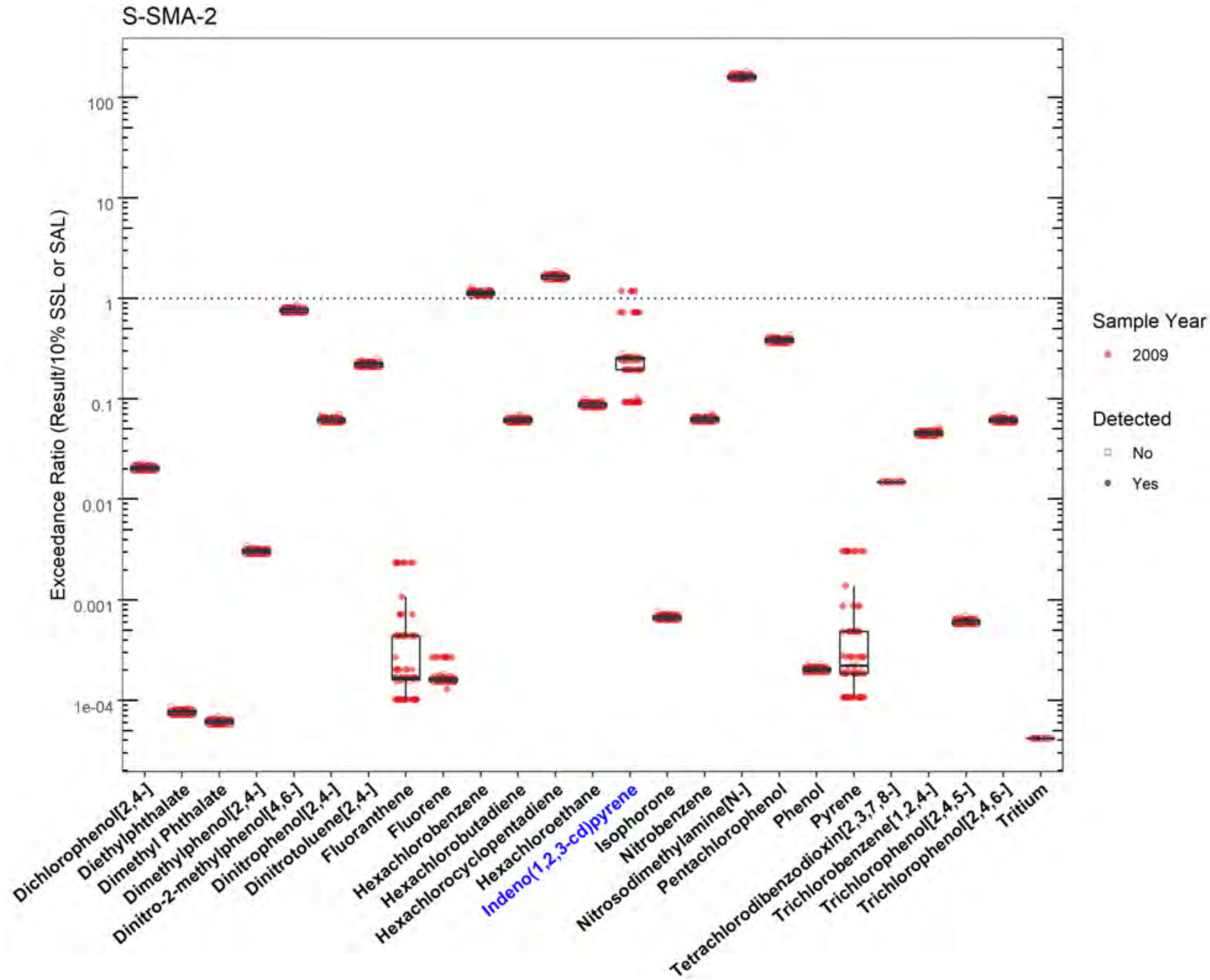


Figure 61.3-3 Organics Analytical Results from Soil Samples Associated with S-SMA-2 (Plot 2)

S-SMA-2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	S-SMA-2	Sb	Y	BTV	0.830	2.25	2003-11-24
Aroclor-1254	S-SMA-2	11097-69-1	Y	SSL_0.1	0.114	0.812	2009-11-04
Aroclor-1260	S-SMA-2	11096-82-5	Y	SSL_0.1	0.243	19.0	2001-01-11
Arsenic	S-SMA-2	As	Y	BTV	8.17	110	2001-01-11
Barium	S-SMA-2	Ba	Y	BTV	295	312	2009-11-30
Benzo(a)anthracene	S-SMA-2	56-55-3	Y	SSL_0.1	0.153	0.287	2009-11-04
Benzo(a)pyrene	S-SMA-2	50-32-8	Y	SSL_0.1	0.112	0.242	2009-11-04
Benzo(b)fluoranthene	S-SMA-2	205-99-2	Y	SSL_0.1	0.153	0.451	2009-11-04
Beryllium	S-SMA-2	Be	Y	BTV	1.83	2.90	2001-01-11
Cadmium	S-SMA-2	Cd	Y	BTV	0.400	3.80	2009-11-11
Chromium	S-SMA-2	Cr	Y	BTV	19.3	426	2009-11-11
Chromium hexavalent ion	S-SMA-2	Cr(VI)	Y	SSL_0.1	0.305	9.50	2002-09-12
Cobalt	S-SMA-2	Co	Y	BTV	8.64	29.0	2001-01-11
Copper	S-SMA-2	Cu	Y	BTV	14.7	305	2009-11-11
Cyanide (Total)	S-SMA-2	CN(TOTAL)	Y	BTV	0.500	11.4	2009-11-11
Indeno(1,2,3-cd)pyrene	S-SMA-2	193-39-5	Y	SSL_0.1	0.153	0.181	2009-11-11
Lead	S-SMA-2	Pb	Y	BTV	22.3	136	2009-11-11
Manganese	S-SMA-2	Mn	Y	BTV	671	873	2009-11-17
Mercury	S-SMA-2	Hg	Y	BTV	0.100	1.43	2009-11-11
Nickel	S-SMA-2	Ni	Y	BTV	15.4	30.0	2001-01-11
Silver	S-SMA-2	Ag	Y	BTV	1.00	294	2009-11-11
Uranium	S-SMA-2	U	Y	BTV	1.82	8.09	2009-11-11
Zinc	S-SMA-2	Zn	Y	BTV	48.8	191	2009-11-11

Figure 61.3-4 Screening-Level Exceedances from Soil Samples Associated with S-SMA-2

61.4 Stormwater Evaluation

61.4.1 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 2013. Analytical results from those samples are presented in Figures 61.4-1 and 61.4-2.

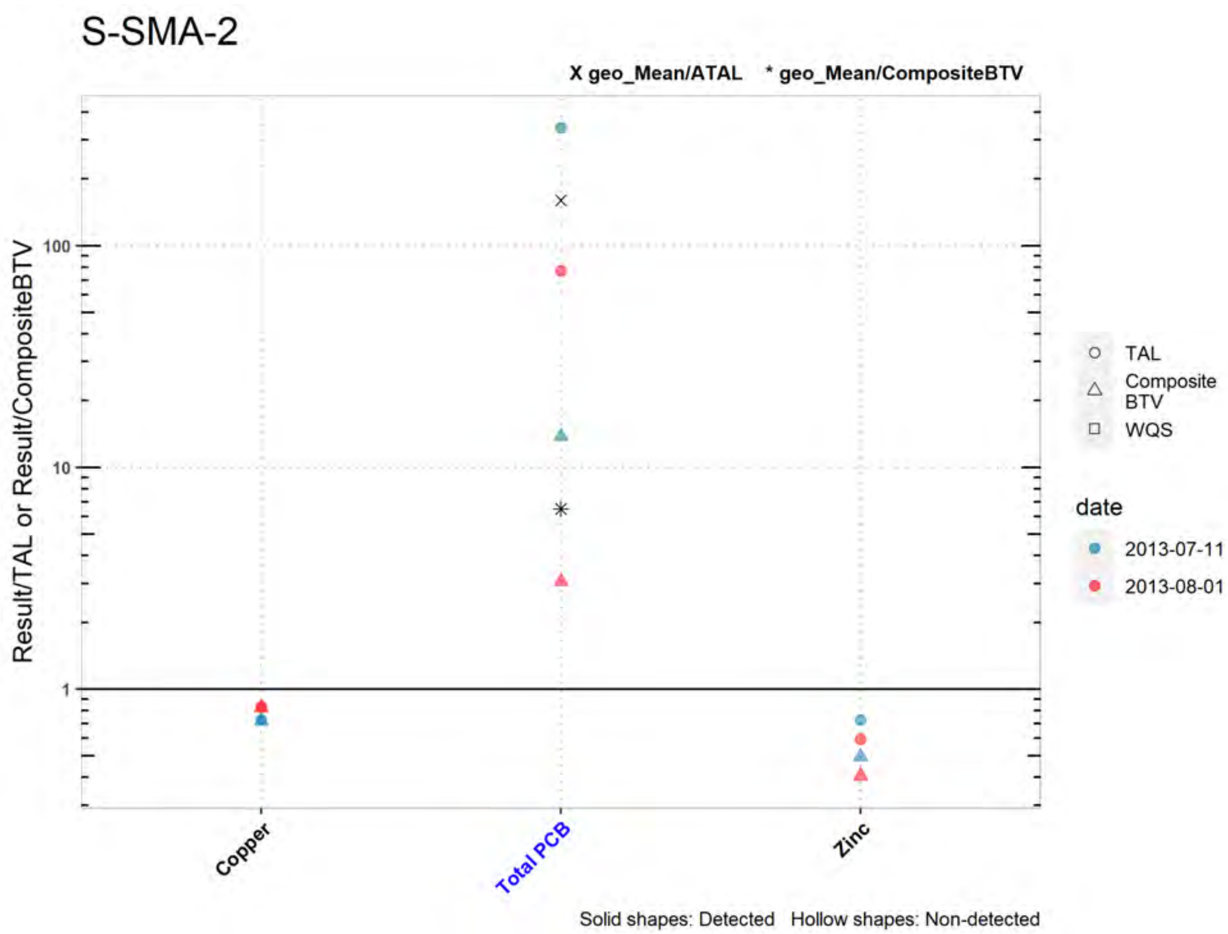


Figure 61.4-1 Analytical Results from Stormwater Samples, S-SMA-2 (Plot)

S-SMA-2

	Copper	Total PCB	Zinc
MQL	0.5	0.2	20
ATAL	NA	0.00064	NA
MTAL	6.07	NA	74.3
Composite_BTV	6.19	0.0160	109
unit	ug/L	ug/L	ug/L
2013-07-11 result	4.43	0.220	54.0
2013-07-11 dT	0.730	340	0.727
2013-07-11 dB	0.716	13.8	0.495
2013-08-01 result	5.08	0.0490	44.2
2013-08-01 dT	0.837	77	0.595
2013-08-01 dB	0.821	3.06	0.406
geo_mean/ATAL	NA	160	NA
geo_mean/B	NA	6.49	NA

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

Figure 61.4-2 Analytical Results from Stormwater Samples, S-SMA-2 (Table)

61.4.2 Assessment Unit and Stream Impairments

S-SMA-2 drains to Sandia Canyon (Sigma Canyon to NPDES outfall 001), which has impairments for dissolved copper, PCBs, total aluminum, and temperature. The aluminum, copper, and PCB impairments may be Site-related, based on Site history.

61.5 Site-Specific Demonstration

61.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chromium hexavalent ion, indeno(1,2,3-cd)pyrene.

PCBs exceeded the applicable screening value in soil data and were previously monitored in stormwater data.

The metals that exceeded the applicable screening value in soil data were previously monitored in stormwater data and did not exceed TALs. Therefore, they will not be added to the SAP.

61.5.2 Stormwater Data Summary

PCBs exceeded TAL and BTV.

61.5.3 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.2.b.i) for PCBs. The SMA is also in active monitoring; not all Site-related POCs were analyzed for in past samples.

61.5.4 Sampling and Analysis Plan

Table 61.5-1 is the proposed SAP for S-SMA-2.

Table 61.5-1 Proposed SAP, S-SMA-2

Monitoring Constituent	Background for Monitoring
SVOCs	Site history and soil data
Hexavalent chromium	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

62.0 S-SMA-2.01

Associated Sites	03-052(b), 03-056(k)
Receiving Water	Sandia Canyon
Drainage Area	0.59 acres
Landscape Characteristics	38% impervious, 62% pervious
Consent Order Site Status	AOC 03-052(b): Pending Receipt of Certificate of Completion. AOC 03-056(k): Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	Force Majeure Request
2016–2018 SIP Actions	Based on March 2016 field visit, all parties agreed that the current SMA sampling location and boundary is the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

62.1 2010 Administratively Continued Permit Summary

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

Following the December 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 232349), corrective-action monitoring was initiated, and a stormwater sample was collected in September 2013. Monitoring continued into 2014 to attempt to collect a second sample, per Permit part I.E.1.(a). A second sample could not be collected within the monitoring period, and analytical results from the 2013 sample initiated corrective action per Permit Part I.E.5.(d).

The Permittees submitted a force majeure request for an extension for completion of corrective action at SWMU 03-029 per Permit part I.E.4(c) in September 2013 (LANL 2013, 250039). No response has been received from EPA for this submittal, and stormwater monitoring has not occurred for this Site since 2014.

The monitoring location was moved, and the drainage area was updated, in 2018 because of a change in conditions after facility construction within the SMA. No samples were collected under the Administratively Continued Permit.

SWMU 03-056(k) was added to the 2022 Individual Permit through NMEDs State Certification.

62.2 Site History

03-052(b) (1/12/2017)

AOC 03-052(b) consists of five stormwater collection areas at TA-03, about 20 ft north and west of the Sigma Building (building 03-66). Surface runoff flows from the area around the north end of the Sigma Building to three stormwater collection areas within the building fence, which channel stormwater to two stormwater collection areas north of the building 03-66 fence. The collection areas northeast of building 03-66 discharge to a storm drain outlet just north of Eniwetok Drive, and the area to the northwest of building 03-66 flows to a single storm drain that discharges to a low-lying grassy area northwest of building 03-66.

03-056(k) (1/12/2017)

AOC 03-056(k) is a container storage area on the north side of a loading dock at the northwest corner of the Sigma Building (building 03-66). Waste oil, solvents, and radioactively-contaminated graphite were staged in this area. Four documented releases of radiological materials are known to have occurred at this site.

For investigation activities for the Sites, refer to “Supplemental Investigation Report for Upper Sandia Canyon Aggregate Area, Revision 1” (LANL 2015, 600912).

62.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 62.2-1.

Table 62.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
03-052(b)	Storm drainage	Organic chemicals, uranium, DU
03-056(k)	Container storage area	Organic chemicals, radionuclides

62.3 Consent Order Soil Data

Decision-level data for AOC 03-052(b) consist of results from samples collected in 1997, 2009, and 2010. The 2015 supplemental IR (LANL 2015, 600912) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for AOC 03-056(k) consist of results from samples collected in 1997 and 2009. The 2015 IR (LANL 2015, 600912) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results from all decision-level soil samples collected for S-SMA-2.01 are presented in Figures 62.3-1 through 62.3-4.

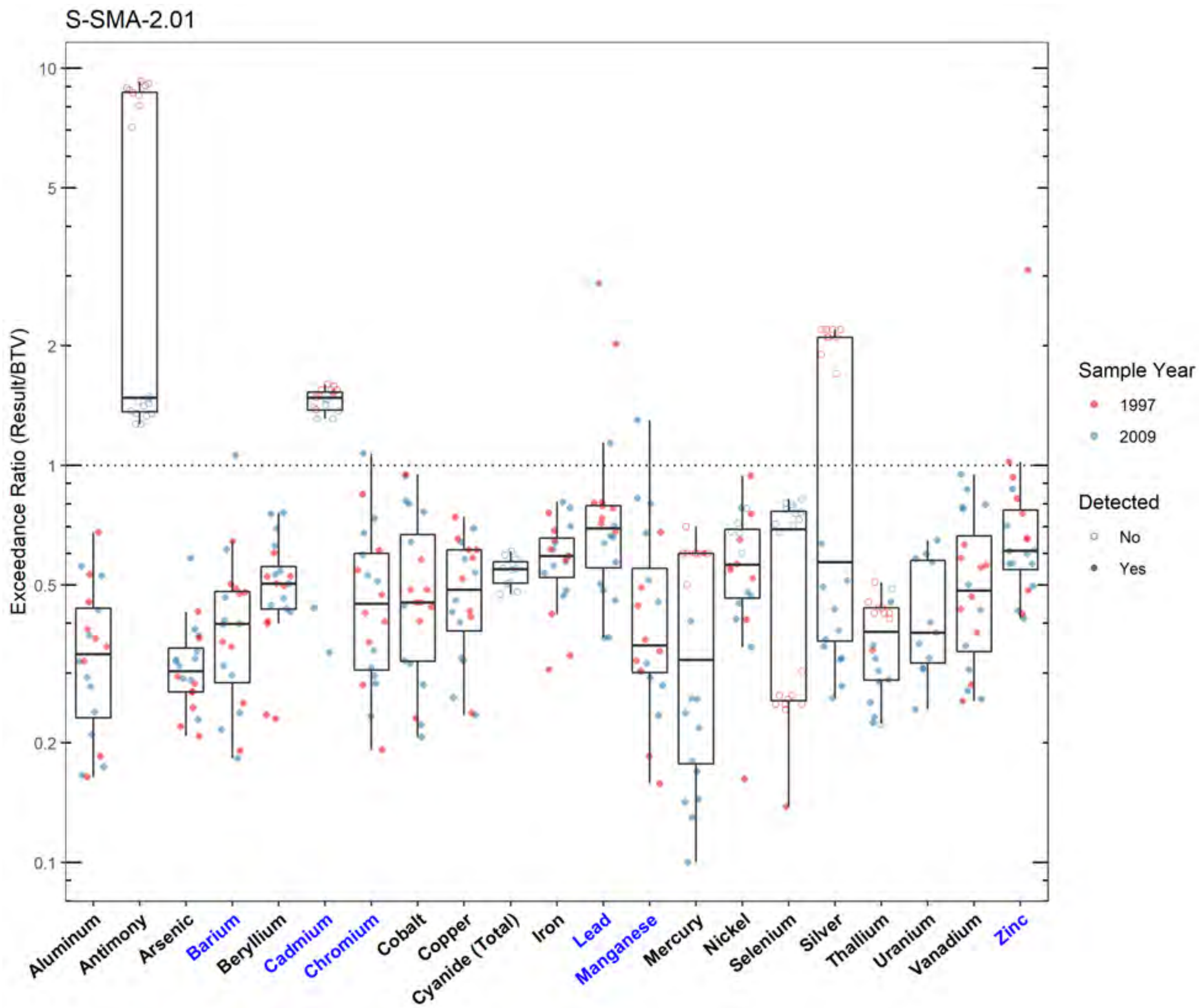


Figure 62.3-1 **Inorganics Analytical Results from Soil Samples Associated with S-SMA-2.01**

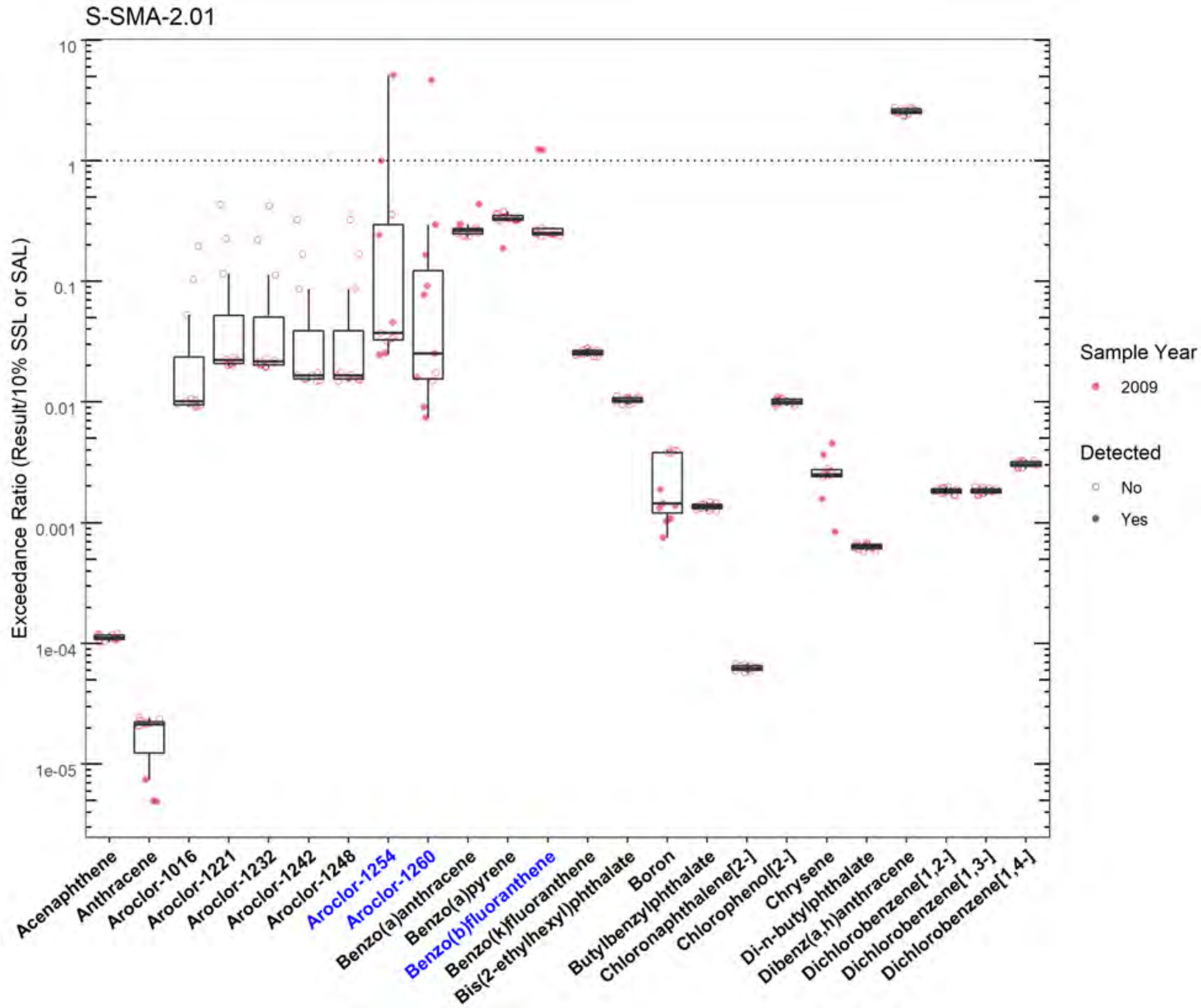


Figure 62.3-2 Organics Analytical Results from Soil Samples Associated with S-SMA-2.01 (Plot 1)

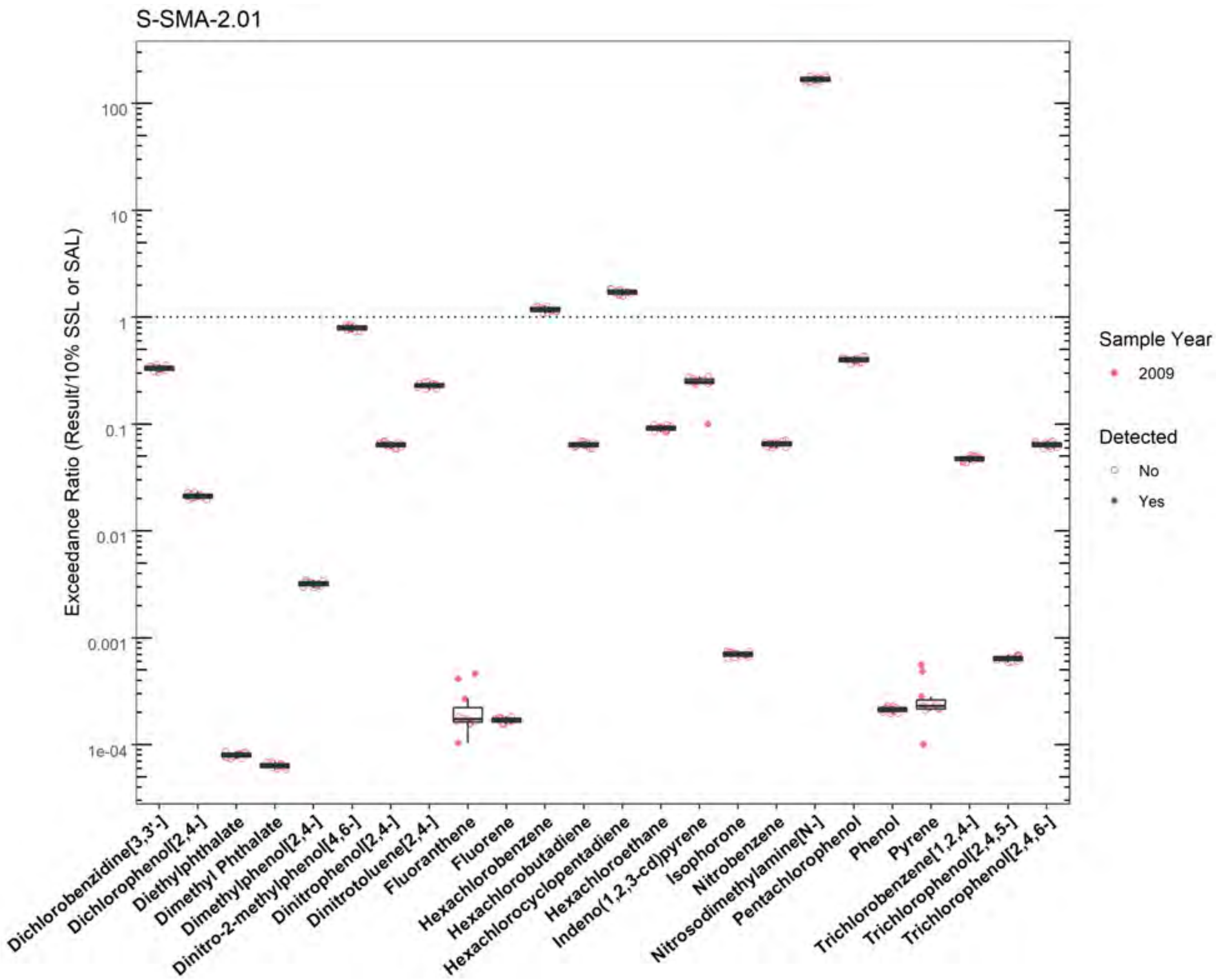


Figure 62.3-3 Organics Analytical Results from Soil Samples Associated with S-SMA-2.01 (Plot 2)

S-SMA-2.01

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	S-SMA-2.01	11097-69-1	Y	SSL_0.1	0.114	0.581	2009-12-01
Aroclor-1260	S-SMA-2.01	11096-82-5	Y	SSL_0.1	0.243	1.13	2009-12-01
Barium	S-SMA-2.01	Ba	Y	BTV	295	312	2009-11-30
Benzo(b)fluoranthene	S-SMA-2.01	205-99-2	Y	SSL_0.1	0.153	0.189	2009-12-01
Cadmium	S-SMA-2.01	Cd	Y	BTV	0.400	0.610	1997-07-16
Chromium	S-SMA-2.01	Cr	Y	BTV	19.3	20.7	2009-11-17
Lead	S-SMA-2.01	Pb	Y	BTV	22.3	64.0	1997-07-16
Manganese	S-SMA-2.01	Mn	Y	BTV	671	873	2009-11-17
Zinc	S-SMA-2.01	Zn	Y	BTV	48.8	152	1997-07-16

Figure 62.3-4 Screening-Level Exceedances from Soil Samples Associated with S-SMA-2.01

62.4 Stormwater Evaluation

62.4.1 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.

62.4.2 Assessment Unit and Stream Impairments

S-SMA-2.01 drains to Sandia Canyon (Sigma Canyon to NPDES outfall 001), which has impairments for dissolved copper, PCBs, total aluminum, and temperature. The PCBs impairment may be Site-related, based on Site history.

62.5 Site-Specific Demonstration

62.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: Aroclor-1254, Aroclor-1260, and benzo(b)fluoranthene.

62.5.2 Stormwater Data Summary

No stormwater data for current stage and current monitoring location.

62.5.3 2022 Permit Status

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

62.5.4 Sampling and Analysis Plan

Table 62.5-1 is the proposed SAP for S-SMA-2.01.

Table 62.5-1 Proposed SAP, S-SMA-2.01

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment, Site history, and soil data
Gross alpha	Site history (radionuclides)
Radium-226 and radium-228	Site history (radionuclides)
Tritium	Site history (radionuclides)
Strontium-90	Site history (radionuclides)
SVOCs	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

63.0 S-SMA-2.8

Associated Sites	03-014(c2)
Receiving Water	Sandia Canyon
Drainage Area	0.09 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	AOC 03-014(c2): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the March 2016 field visit, the current SMA sampling location and boundary were agreed by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

63.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, baseline monitoring was initiated. To date, stormwater flow has not been sufficient for full-volume sample collection at S-SMA-2.8. Baseline monitoring is ongoing until one confirmation sample is collected from this SMA.

63.2 Site History

03-014(c2) (1/12/2017)

AOC 03-014(c2) is the inactive overflow outfall that previously received treated effluent from the former TA-03 WWTP from 1975 until the WWTP chlorination system [SWMU 03-014(j)] was constructed in 1985. The outfall was located on the north side of the chlorination system pump pit (structure 03-166). Effluent for this outfall discharged as sheet flow onto a steep slope containing a stormwater-runoff erosion channel, which eventually trends northeast into Sandia Canyon. Soil and sediment were occasionally cleaned out of the channel with a backhoe and piled onto the upslope channel bank.

Following the construction of the chlorination system, the outfall was rerouted underground from the pump pit to the chlorination dosing and contact chamber, where the final effluent discharged freely from a flow measurement weir north of the contact chamber into Sandia Canyon. This outfall was abandoned in 1988 or 1989, when the WWTP effluent was routed to a new outfall, AOC 03-014(b2).

For investigation activities, refer to "Supplemental Investigation Report for Upper Sandia Canyon Aggregate Area, Revision 1" (LANL 2015, 600912).

63.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 63.2-1.

Table 63.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
03-014(c2)	Outfall	Inorganic chemicals, organic chemicals, radionuclides

63.3 Consent Order Soil Data

Decision-level data collected at AOC 03-014(c2) consist of samples collected in 2009. Analytical results from those samples are presented in Figures 63.3-1 through 64.3-4. The 2015 supplemental IR (LANL 2015, 600912) concluded that the vertical extent of Aroclor-1254 and Aroclor-1260 is not defined and further sampling for extent is warranted.

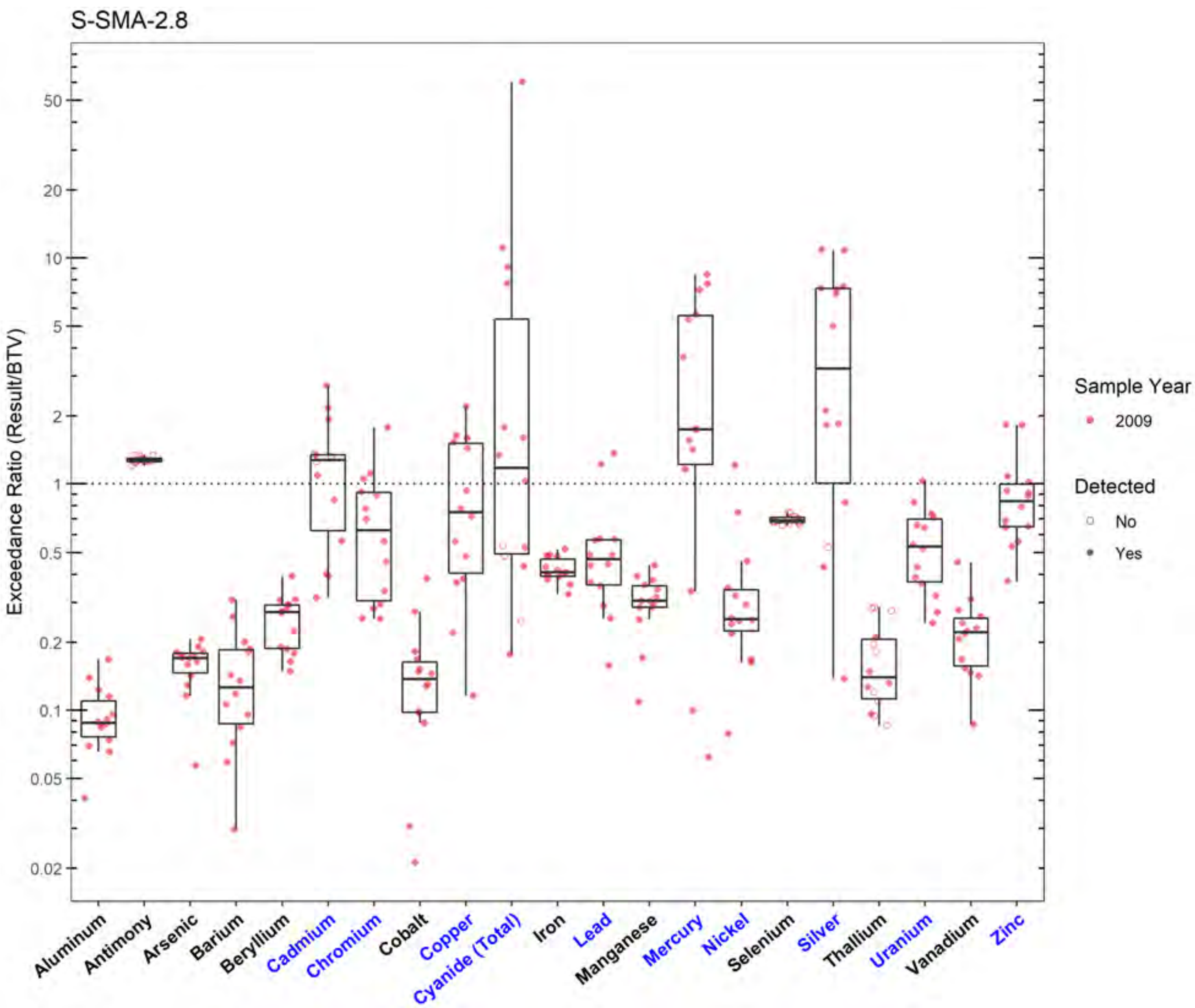


Figure 63.3-1 Inorganics Analytical Results from Soil Samples Associated with S-SMA-2.8

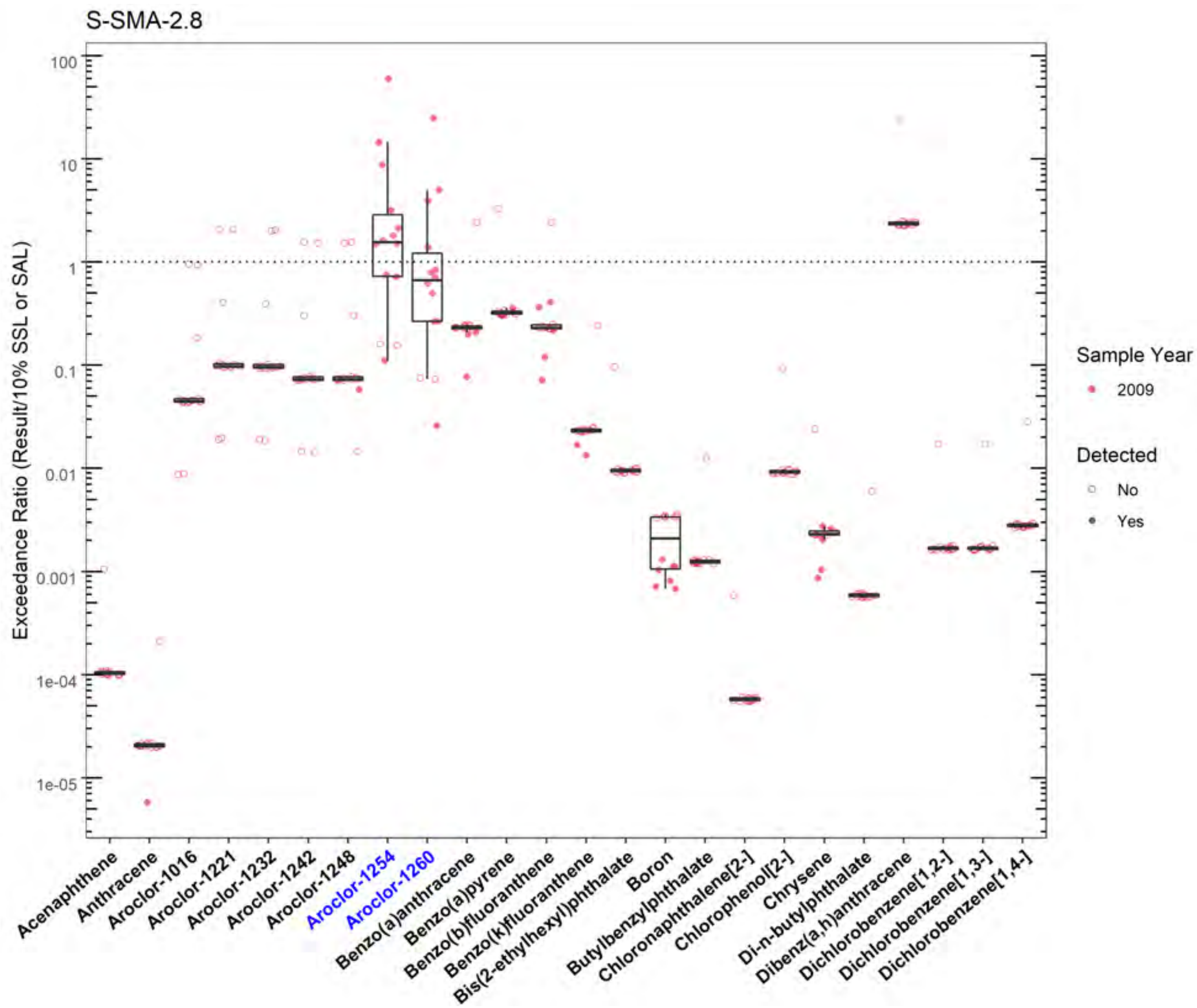


Figure 63.3-2 Organics Analytical Results from Soil Samples Associated with S-SMA-2.8 (Plot 1)

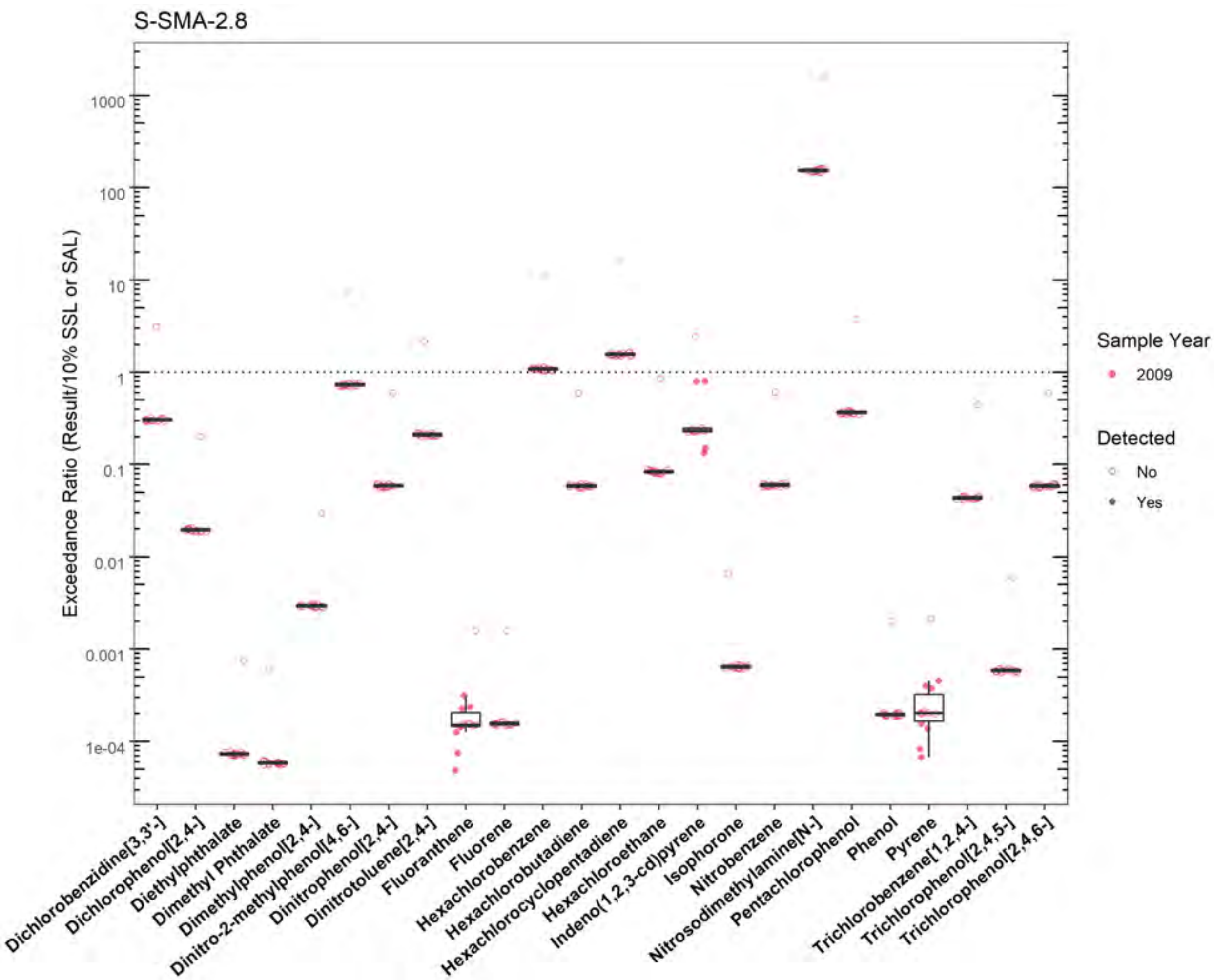


Figure 63.3-3 Organics Analytical Results from Soil Samples Associated with S-SMA-2.8 (Plot 2)

S-SMA-2.8

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	S-SMA-2.8	11097-69-1	Y	SSL_0.1	0.114	6.78	2009-11-11
Aroclor-1260	S-SMA-2.8	11096-82-5	Y	SSL_0.1	0.243	6.03	2009-11-11
Cadmium	S-SMA-2.8	Cd	Y	BTV	0.400	1.09	2009-11-11
Chromium	S-SMA-2.8	Cr	Y	BTV	19.3	34.4	2009-11-11
Copper	S-SMA-2.8	Cu	Y	BTV	14.7	32.3	2009-11-11
Cyanide (Total)	S-SMA-2.8	CN(TOTAL)	Y	BTV	0.500	30.2	2009-11-12
Lead	S-SMA-2.8	Pb	Y	BTV	22.3	30.5	2009-11-11
Mercury	S-SMA-2.8	Hg	Y	BTV	0.100	0.847	2009-11-11
Nickel	S-SMA-2.8	Ni	Y	BTV	15.4	18.6	2009-11-11
Silver	S-SMA-2.8	Ag	Y	BTV	1.00	10.9	2009-11-11
Uranium	S-SMA-2.8	U	Y	BTV	1.82	1.88	2009-11-11
Zinc	S-SMA-2.8	Zn	Y	BTV	48.8	89.4	2009-11-11

Figure 63.3-4 Screening-Level Exceedances from Soil Samples Associated with S-SMA-2.8

63.4 Stormwater Evaluation

63.4.1 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.

63.4.2 Assessment Unit and Stream Impairments

S-SMA-2.8 drains to Sandia Canyon (Sigma Canyon to NPDES outfall 001), which has impairments for dissolved copper, PCBs, total aluminum, and temperature. The PCB and metals impairments may be Site-related, based on Site history.

63.5 Site-Specific Demonstration

63.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: Aroclor-1254, Aroclor-1260, cadmium, chromium, copper, cyanide (weak-acid dissociable), lead, mercury, nickel, silver, uranium, and zinc.

63.5.2 Stormwater Data Summary

No confirmation-monitoring data.

63.5.3 2022 Permit Status

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

63.5.4 Sampling and Analysis Plan

Table 63.5-1 is the proposed SAP for S-SMA-2.8.

Table 63.5-1 Proposed SAP, S-SMA-2.8

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment, Site history (organic chemicals), and soil data
Dissolved cadmium, chromium, copper, lead, nickel, silver, uranium, and zinc	Impairment, Site history (inorganics), and soil data
Total aluminum, cyanide, and mercury	Impairment, Site history (inorganics), and soil data
Gross alpha	Site history (radionuclides)
Strontium-90	Site history (radionuclides)
Radium-226 and radium-228	Site history (radionuclides)
Tritium	Site history (radionuclides)
SVOCs	Site history (organic chemicals)
DOC	Permit requirement
SSC	Permit requirement

64.0 S-SMA-3.51

Associated Sites	03-009(i)
Receiving Water	Sandia Canyon
Drainage Area	0.11 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 03-009(i): Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the March 2016 field visit, the current SMA sampling location and boundary were agreed by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

64.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, baseline monitoring was initiated. To date, stormwater flow has not been sufficient for full-volume sample collection at S-SMA-3.51. Baseline monitoring is ongoing until one confirmation sample is collected from this SMA.

64.2 Site History

03-009(i) (7/29/2016)

SWMU 03-009(i) is an inactive surface disposal site located east of the liquid and compressed gas facility (building 03-170). This site consists primarily of clean fill from TA-03 construction sites with construction debris, including crushed tuff, and pieces of concrete and asphalt mixed in with some of the fill material. The OU 1114 RFI work plan incorrectly states that the use of the disposal area ceased in 1980; the 1990 SWMU Report did not specify dates of operation. Aerial photographs from 1979 and 1986 show the site was not used before 1980 and was still being used for fill placement in 1986. Site visits in the early 1990s confirmed that fill was still being placed at the site periodically.

For investigation activities, refer to “Supplemental Investigation Report for Upper Sandia Canyon Aggregate Area, Revision 1” (LANL 2015, 600912).

64.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 64.2-1.

Table 64.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
03-009(i)	Surface disposal site	Iron, PAHs

64.3 Consent Order Soil Data

Decision-level data for SWMU 03-009(i) consist of results from samples collected in 2009. Analytical results from those samples are presented in Figures 64.3-1 through 64.3-4. The 2015 supplemental IR

(LANL 2015, 600912) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

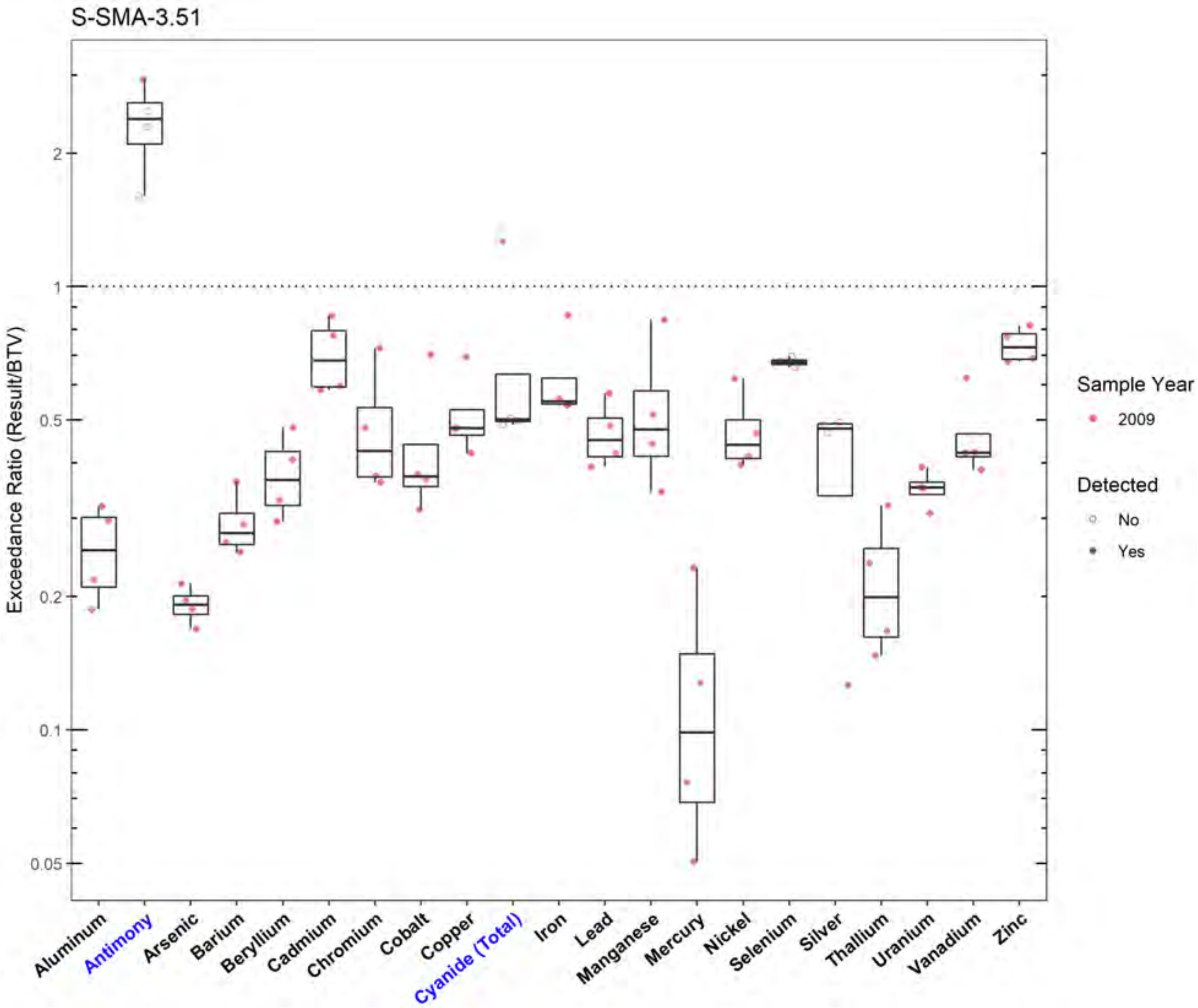


Figure 64.3-1 Inorganics Analytical Results from Soil Samples Associated with S-SMA-3.51

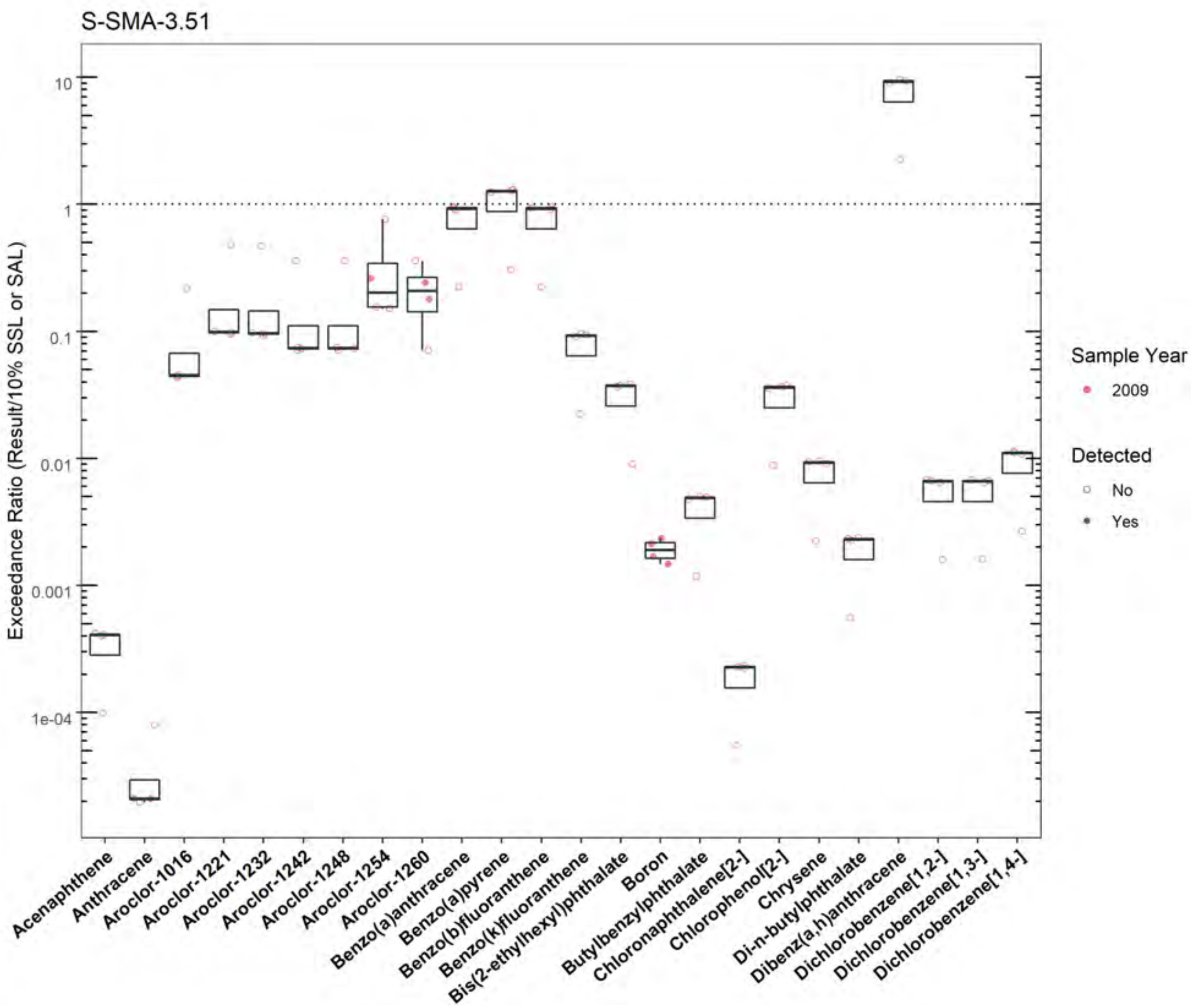


Figure 64.3-2 **Organics Analytical Results from Soil Samples Associated with S-SMA-3.51 (Plot 1)**

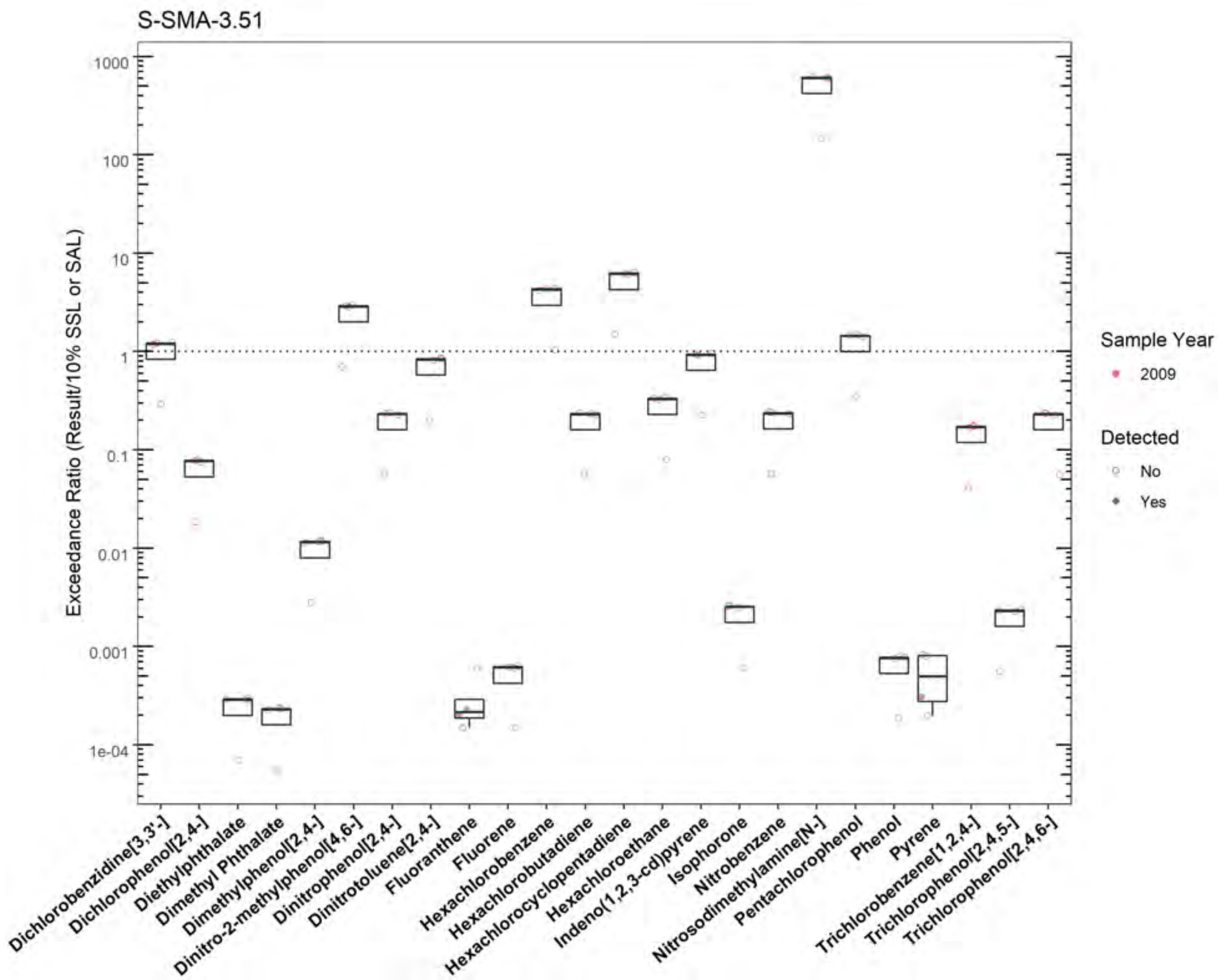


Figure 64.3-3 Organics Analytical Results from Soil Samples Associated with S-SMA-3.51 (Plot 2)

S-SMA-3.51

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	S-SMA-3.51	Sb	Y	BTV	0.830	2.44	2009-11-18
Cyanide (Total)	S-SMA-3.51	CN(TOTAL)	Y	BTV	0.500	0.631	2009-11-18

Figure 64.3-4 Screening-Level Exceedances from Soil Samples Associated with S-SMA-3.51

64.4 Stormwater Evaluation

64.4.1 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.

64.4.2 Assessment Unit and Stream Impairments

S-SMA-3.51 drains to Sandia Canyon (Sigma Canyon to NPDES outfall 001), which has impairments for dissolved copper, PCBs, total aluminum, and temperature. The impairments are not Site-related, based on Site history.

64.5 Site-Specific Demonstration

64.5.1 Soil Data Summary

No Site-related POCs exceeded the applicable screening value in soil data. However, not all SVOCs monitored in stormwater data are monitored in soil data, thus SVOCs will be added to the SAP.

64.5.2 Stormwater Data Summary

No confirmation-monitoring data.

64.5.3 2022 Permit Status

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

64.5.4 Sampling and Analysis Plan

Table 64.5-1 is the proposed SAP for S-SMA-3.51.

Table 64.5-1 Proposed SAP, S-SMA-3.51

Monitoring Constituent	Background for Monitoring
SVOCs	Site history (PAHs)
DOC	Permit requirement
SSC	Permit requirement

65.0 S-SMA-3.52

Associated Sites	03-021
Receiving Water	Sandia Canyon
Drainage Area	0.11 acres
Landscape Characteristics	46% impervious, 54% pervious
Consent Order Site Status	SWMU 03-021: Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	The sampler move location was identified and agreed upon by all parties during a March 2016 field visit. The sampler move captures an original exposed drainage channel feature likely impacted by Site discharge that was not currently monitored. The sampler was moved to where this channel meets tuff, and upgradient of where the channel joins the main drainage, and addresses the berm low point.
2022 Permit Status	Active Monitoring

65.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, baseline monitoring was initiated. While developing the 2017 sampling and analysis plan SAP, a decision was made to implement the monitoring location move recommended during the 2016 SIP review, and baseline monitoring was reinitiated. To date, stormwater flow has not been sufficient for full-volume sample collection at S-SMA-3.52. Baseline monitoring is ongoing until one confirmation sample is collected from this SMA.

65.2 Site History

03-021 (1/11/2017)

SWMU 03-021 is an outfall and associated drainage channel located approximately 60 ft north of the north exterior wall of the liquid and compressed gas facility (building 03-170). The outfall is a formerly NPDES-permitted outfall (EPA 04A094) and was removed from the 1997 permit. From 1964 to 1976, the outfall discharged caustic wash and rinse water from compressed-gas-cylinder cleaning operations were performed in a below-floor-grade pit in the northern part of building 03-170. A 2-in.-diameter iron outfall pipe in an open exterior ditch carried the caustic wash and rinse water from the pit. The end of the outfall pipe discharged into a northeast-trending surface ditch that continued about 180 ft to the main north-south drainage ditch.

This outfall was not used after 1976, when the compressed-gas suppliers assumed cylinder washing and painting responsibilities. The outfall was buried when 5 to 10 ft of fill material was placed over the former outfall area and graded during site preparation activities for the construction of building 03-1650, the compressed-gas cylinder storage shed.

For investigation activities, refer to “Supplemental Investigation Report for Upper Sandia Canyon Aggregate Area, Revision 1” (LANL 2015, 600912).

65.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 65.2-1.

Table 65.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
03-021	Outfall	Heavy metals

65.3 Consent Order Soil Data

Decision-level data for SWMU 03-021 consist of results from samples collected in 1997 and 2009. Analytical results from those samples are presented in Figures 65.3-1 through 65.3-4. The 2015 IR (LANL 2015, 600912) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

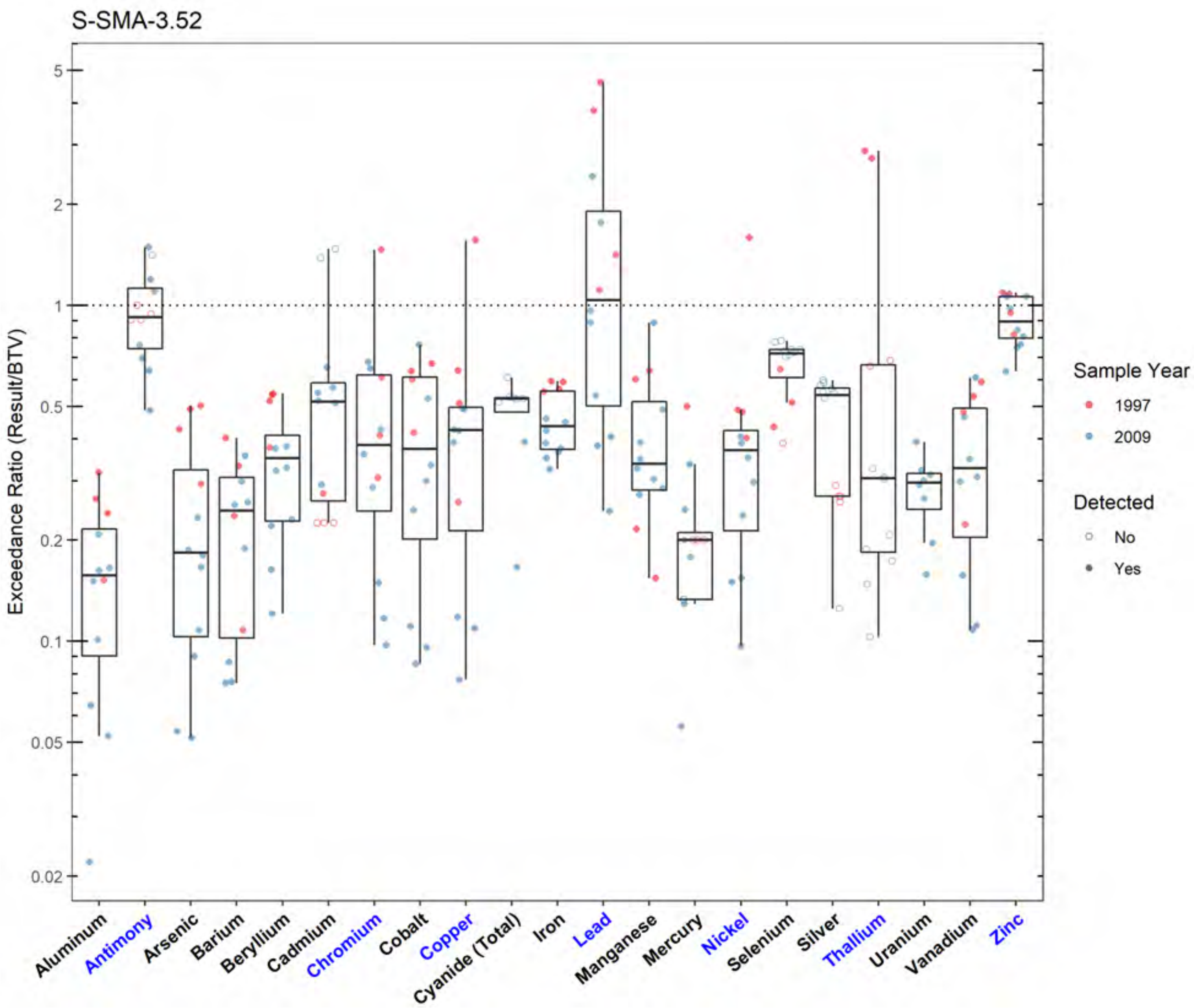


Figure 65.3-1 Inorganics Analytical Results from Soil Samples Associated with S-SMA-3.52

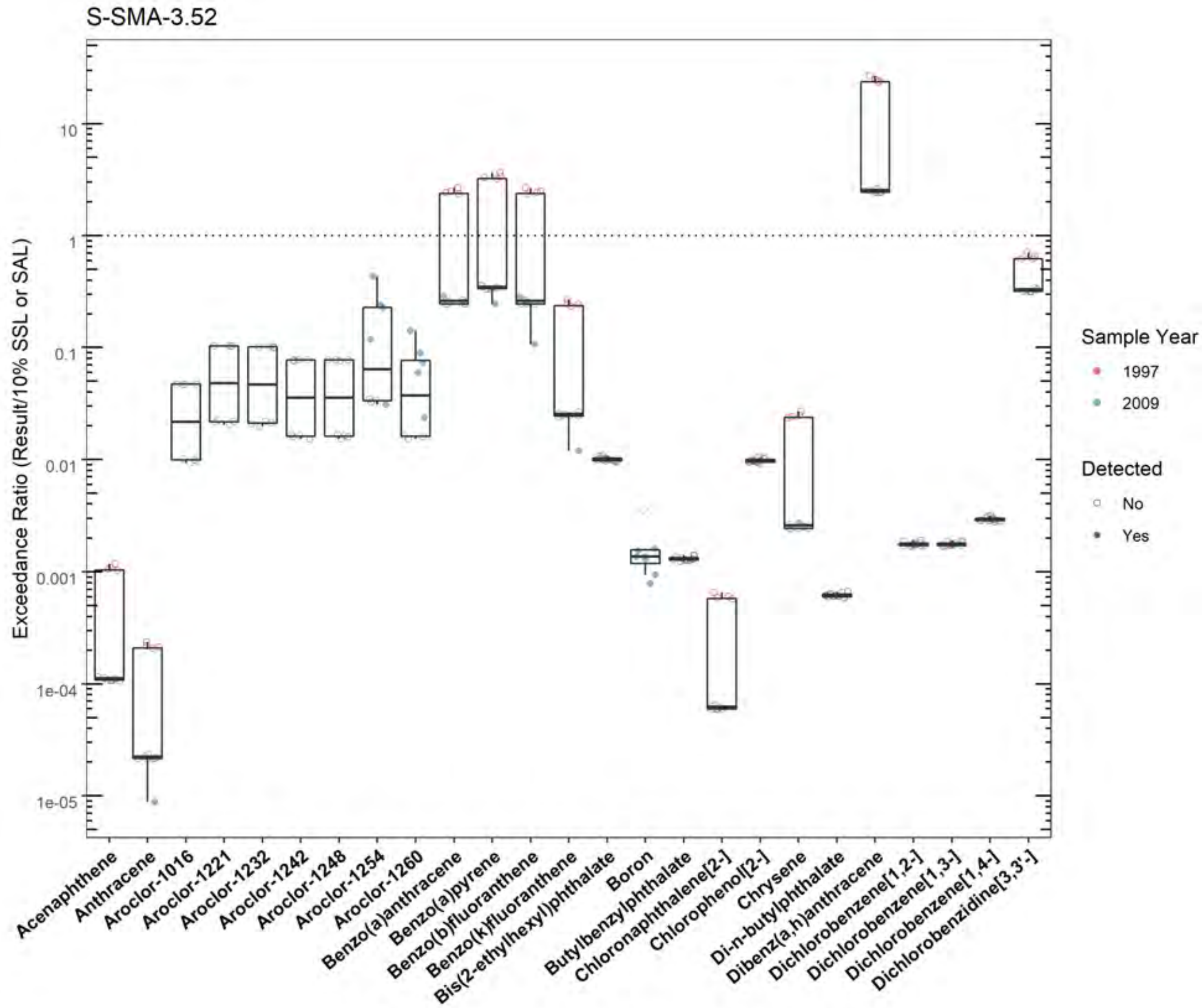


Figure 65.3-2 Organics Analytical Results from Soil Samples Associated with S-SMA-3.52 (Plot 1)

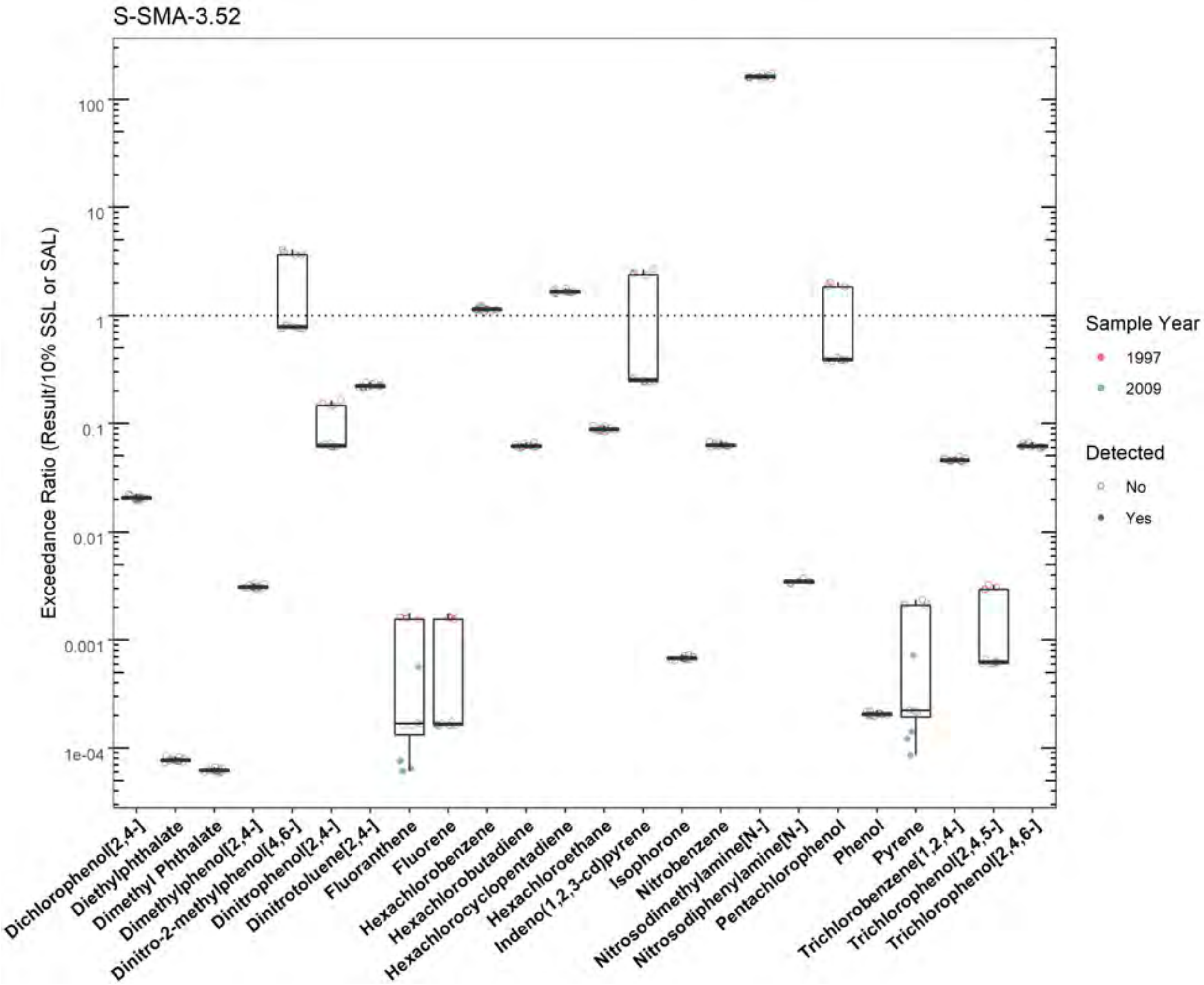


Figure 65.3-3 Organics Analytical Results from Soil Samples Associated with S-SMA-3.52 (Plot 2)

S-SMA-3.52

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	S-SMA-3.52	Sb	Y	BTV	0.830	1.24	2009-11-04
Chromium	S-SMA-3.52	Cr	Y	BTV	19.3	28.1	1997-07-18
Copper	S-SMA-3.52	Cu	Y	BTV	14.7	22.9	1997-07-18
Lead	S-SMA-3.52	Pb	Y	BTV	22.3	103	1997-07-18
Nickel	S-SMA-3.52	Ni	Y	BTV	15.4	24.5	1997-07-18
Thallium	S-SMA-3.52	Tl	Y	BTV	0.730	2.10	1997-07-18
Zinc	S-SMA-3.52	Zn	Y	BTV	48.8	53.0	1997-07-18

Figure 65.3-4 Screening-Level Exceedances from Soil Samples Associated with S-SMA-3.52

65.4 Stormwater Evaluation

65.4.1 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.

65.4.2 Assessment Unit and Stream Impairments

S-SMA-3.52 drains to Sandia Canyon (Sigma Canyon to NPDES outfall 001), which has impairments for dissolved copper, PCBs, total aluminum, and temperature. The aluminum and copper impairments may be Site-related, based on Site history.

65.5 Site-Specific Demonstration

65.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: antimony, chromium, copper, lead, nickel, thallium, and zinc.

65.5.2 Stormwater Data Summary

No confirmation-monitoring data.

65.5.3 2022 Permit Status

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

65.5.4 Sampling and Analysis Plan

Table 65.5-1 is the proposed SAP for S-SMA-3.52.

Table 65.5-1 Proposed SAP, S-SMA-3.52

Monitoring Constituent	Background for Monitoring
Dissolved antimony, chromium, copper, lead, nickel, thallium, and zinc	Impairment (copper), Site history (heavy metals), and soil data
Total aluminum	Impairment and Site history
DOC	Permit requirement
SSC	Permit requirement

66.0 S-SMA-3.53

Associated Sites	03-014(b2)
Receiving Water	Sandia Canyon
Drainage Area	0.01 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	AOC 03-014(b2): Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	Force Majeure Request
2016–2018 SIP Actions	Based on the March 2016 field visit the current SMA sampling location and boundary were agreed by all parties to be the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring/Corrective Action

66.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in August 2011. Analytical results from this sample initiated corrective action.

Following the June 2013 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2013, 242173), corrective-action monitoring was initiated and a corrective-action stormwater sample was collected in July 2014. Analytical results from this sample initiated corrective action.

The Permittees submitted a force majeure request for an extension for completion of corrective action at SWMU 03-029 per Permit part I.E.4(c) in September 2013 (LANL 2013, 250039). No response has been received from EPA for this submittal, and stormwater monitoring has not occurred for this Site since 2014.

66.2 Site History

03-014(b2) (12/21/2021)

AOC 03-014(b2) is a former NPDES-permitted outfall (EPA SSSO1S) and associated inlet drainline for the former TA-03 WWTP. The outfall received treated effluent from a flow-measurement weir north of the WWTP chlorination system [SWMU 03-014(j)] dosing and contact chamber, via a 1.5-ft-diameter × 300-ft- long CMP. The outfall discharged to a rocky outcrop at the edge of Sandia Canyon. Outfall SSS01S was permitted for the discharge of wastewater, and was removed from the NPDES permit in 1994.

AOC 03-014(b2) received effluent from the former TA-03 WWTP from 1989 to 1992 when the WWTP was decommissioned. AOC 03-014(b2) received treated effluent from the SWSC plant at TA-46 from 1992 to 1998, when effluent discharges were redirected to the outfall at the power plant, building 03-22. AOC 03-014(b2) was monitored three times per month for biochemical oxygen demand, total suspended solids, pH, fecal coliform, total chlorine, and radioactive constituents. From 1989 to 1993, radioactive constituents were reported above the detection limits.

For investigation activities, refer to “Supplemental Investigation Report for Upper Sandia Canyon Aggregate Area, Revision 1” (LANL 2015, 600912).

66.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 66.2-1.

Table 66.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
03-014(b2)	Outfall	Inorganic chemicals, organic chemicals, radionuclides

66.3 Consent Order Soil Data

Decision-level data for AOC 03-014(b2) consist of results for samples collected in 2009. Analytical results from those samples are presented in Figures 66.3-1 through 66.3-4. The 2015 supplemental IR (LANL 2015, 600912) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

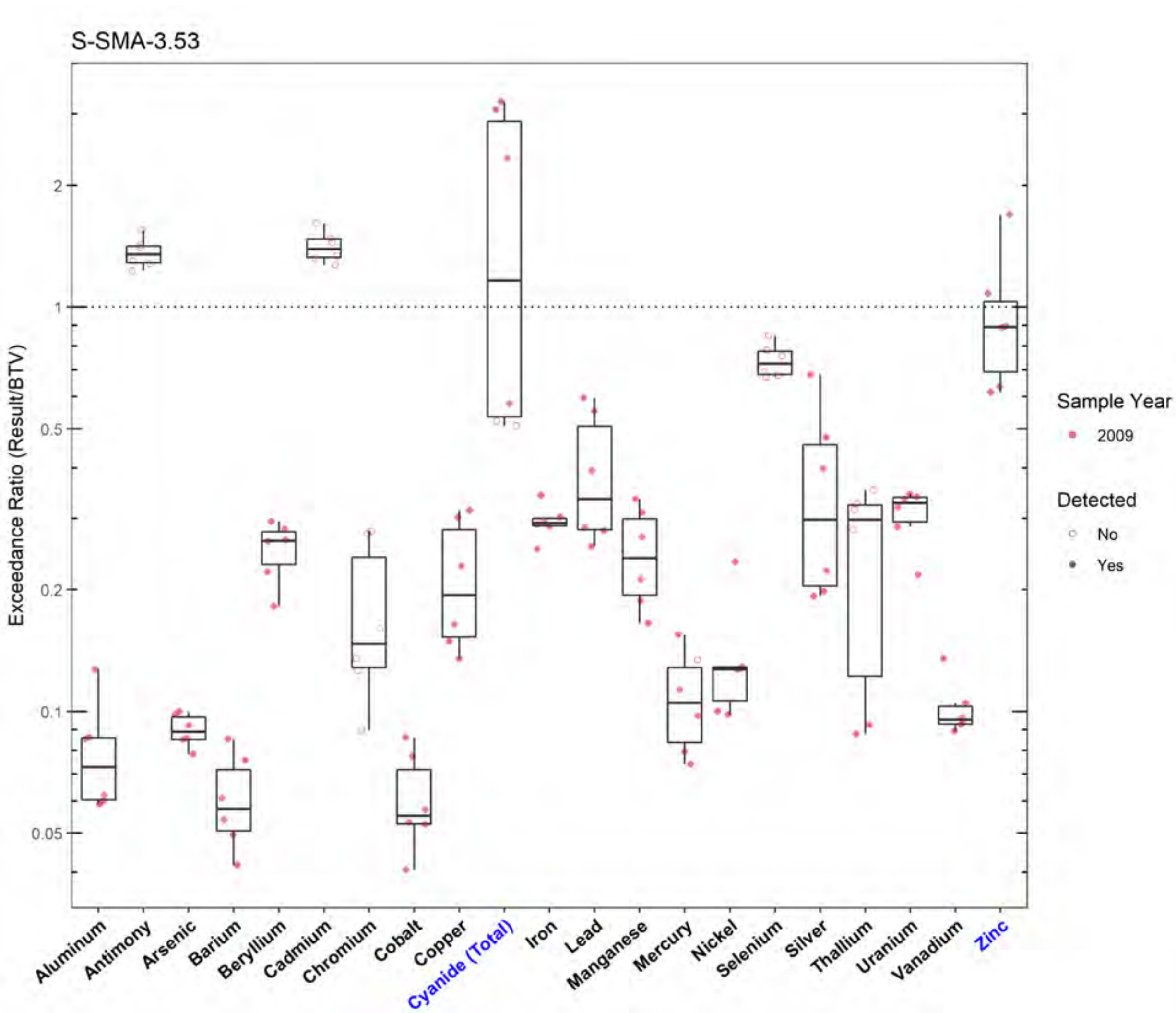


Figure 66.3-1 Inorganics Analytical Results from Soil Samples Associated with S-SMA-3.53

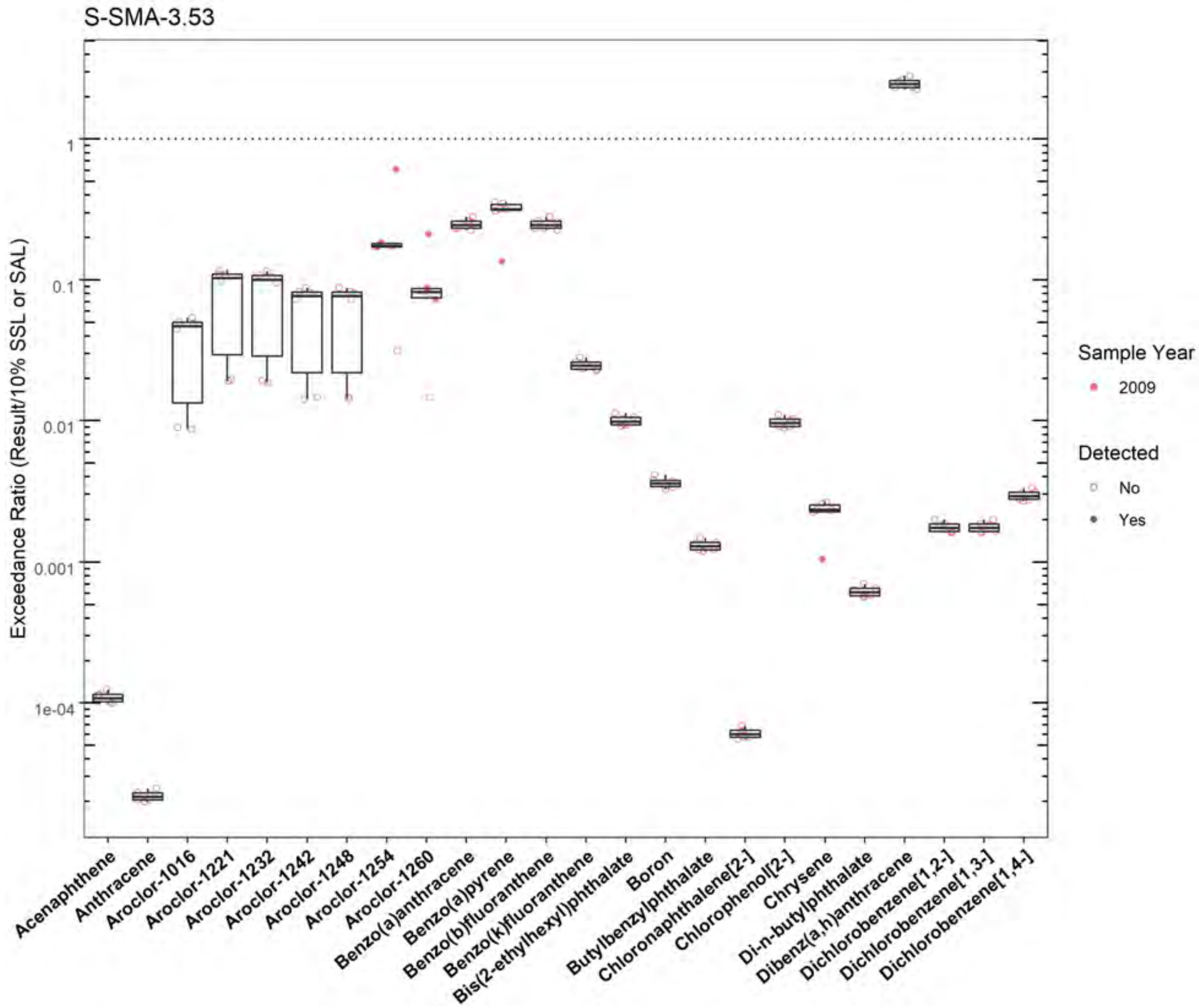


Figure 66.3-2 **Organics Analytical Results from Soil Samples Associated with S-SMA-3.53 (Plot 1)**

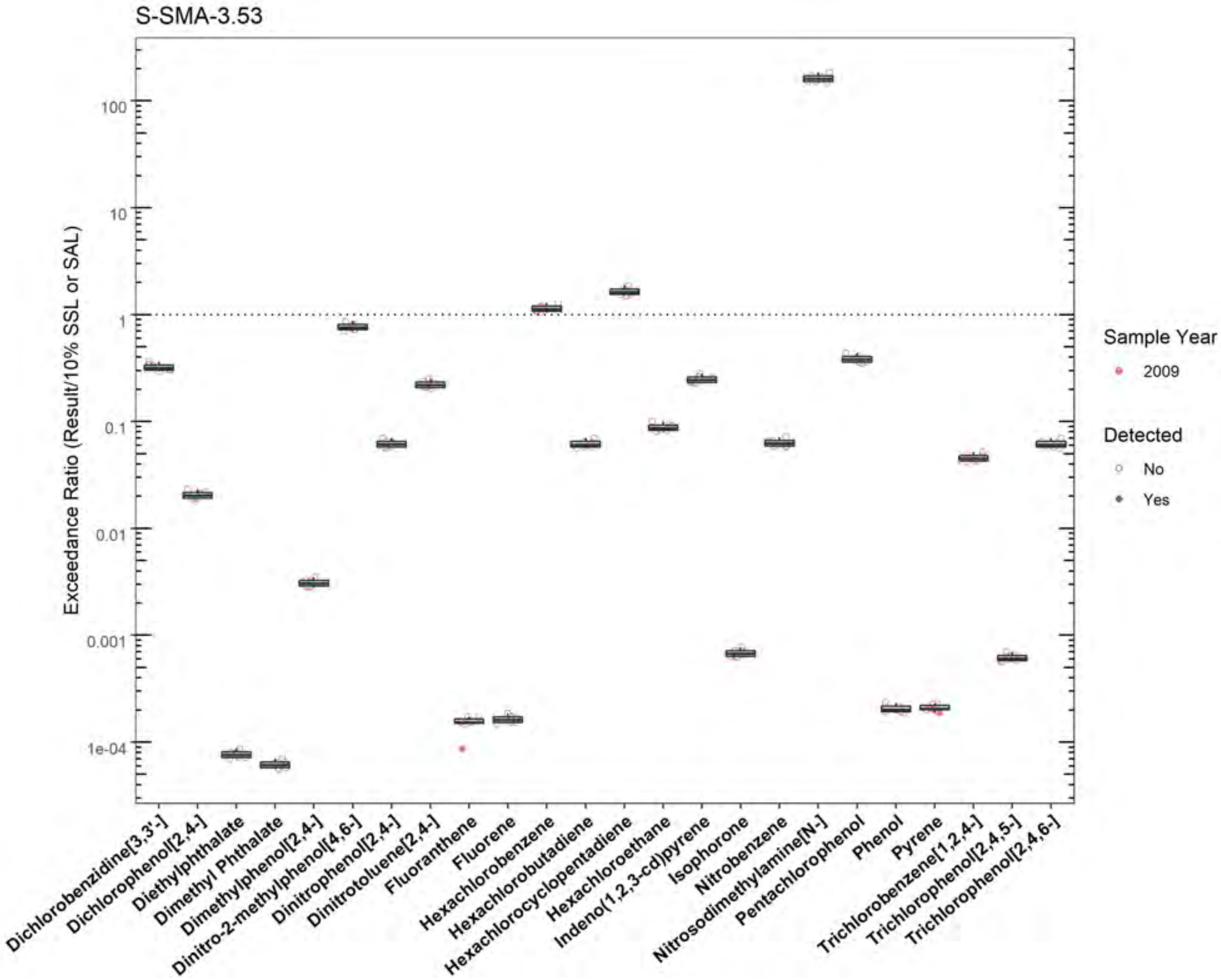


Figure 66.3-3 Organics Analytical Results from Soil Samples Associated with S-SMA-3.53 (Plot 2)

S-SMA-3.53

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Cyanide (Total)	S-SMA-3.53	CN(TOTAL)	Y	BTV	0.500	1.61	2009-11-16
Zinc	S-SMA-3.53	Zn	Y	BTV	48.8	82.4	2009-11-16

Figure 66.3-4 Screening-Level Exceedances from Soil Samples Associated with S-SMA-3.53

66.4 Stormwater Evaluation

66.4.1 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 Figures 66.4-1 and 66.4-2.

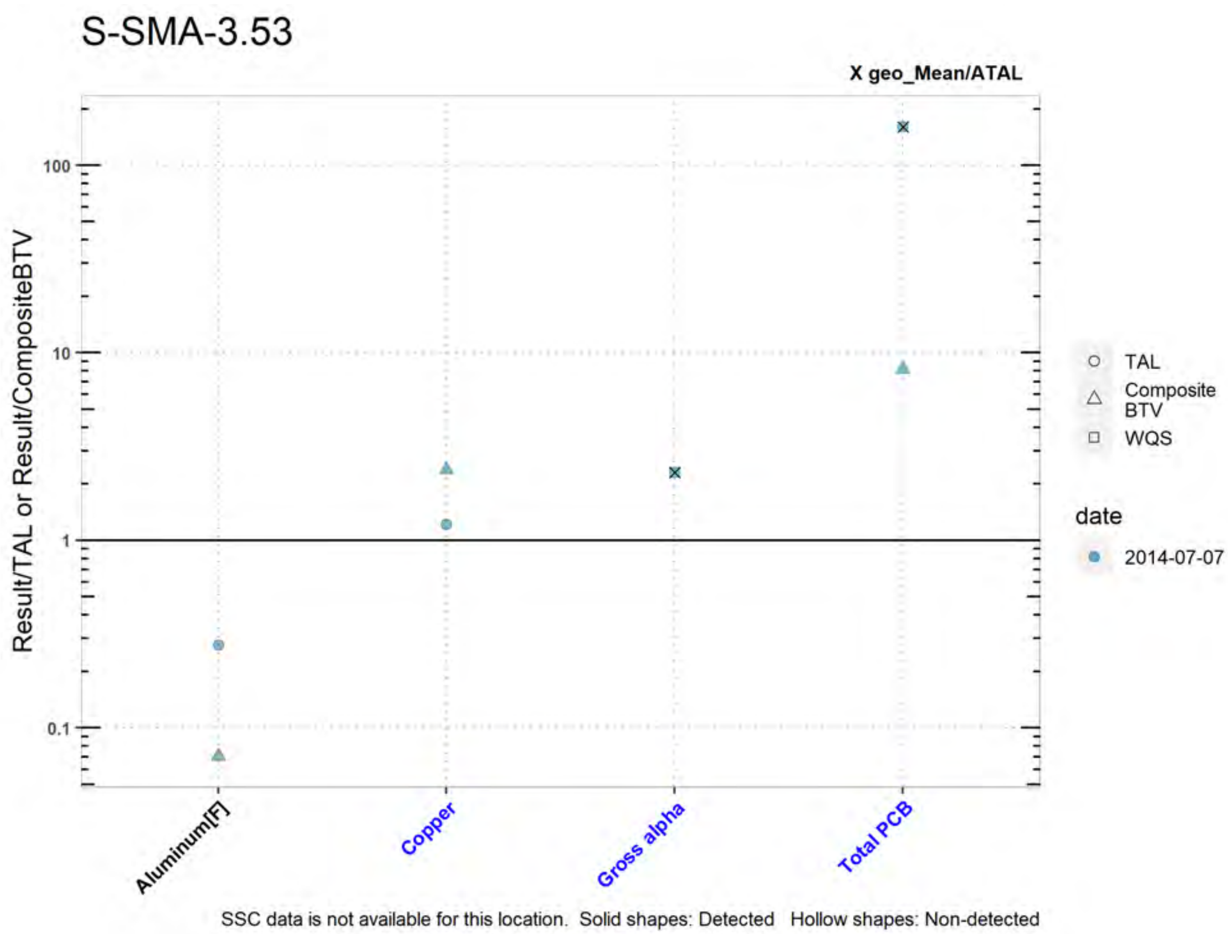


Figure 66.4-1 Analytical Results from Stormwater Sample, S-SMA-3.53 (Plot)

S-SMA-3.53

	Aluminum [F]	Copper	Gross alpha	Total PCB
MQL	2.5	0.5	NA	0.2
ATAL	NA	NA	15	0.00064
MTAL	750	6.07	NA	NA
Composite_BTV	2950	3.12	57.2	0.0122
unit	ug/L	ug/L	pCi/L	ug/L
2014-07-07 result	208	7.41	34.4	0.0997
2014-07-07 dT	0.277	1.22	2.3	160
2014-07-07 dB	0.0705	2.38	NA	8.17
geo_mean/ATAL	NA	NA	2.3	160

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

Figure 66.4-2 Analytical Results from Stormwater Sample, S-SMA-3.53 (Table)

66.4.2 Assessment Unit and Stream Impairments

S-SMA-3.53 drains to Sandia Canyon (Sigma Canyon to NPDES outfall 001), which has impairments for dissolved copper, PCBs, total aluminum, and temperature. The adjusted gross alpha, PCB and metals impairments may be Site-related, based on Site history.

66.5 Site-Specific Demonstration

66.5.1 Soil Data Summary

All Site-related POCs that exceeded the applicable 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.

66.5.2 Stormwater Data Summary

Gross alpha exceeded TAL in 2014 stormwater data. There was no paired SSC result to confirm whether it was below BTVs, therefore, it will be added to the SAP. Copper and PCBs exceeded both TALs and BTVs.

66.5.3 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.2.b.i) for copper and PCBs. The SMA is also in active monitoring; not all Site-related POCS were analyzed for in past samples.

66.5.4 Sampling and Analysis Plan

Table 66.5-1 is the proposed SAP for S-SMA-3.53.

Table 66.5-1 Proposed SAP, S-SMA-3.53

Monitoring Constituent	Background for Monitoring
Gross alpha (1)	Impairment, Site history (radionuclides) and stormwater data
Strontium-90	Site history (radionuclides)
Tritium	Site history (radionuclides)
SVOCs	Site history (organic chemicals)
DOC	Permit requirement
SSC	Permit requirement

67.0 S-SMA-3.6

Associated Sites	60-007(b)
Receiving Water	Sandia Canyon
Drainage Area	3.22 acres
Landscape Characteristics	23% impervious, 77% pervious
Consent Order Site Status	SWMU 60-007(b): Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	Force Majeure Request
2016–2018 SIP Actions	Based on the August 2016 SIP map signatures, all parties agreed that the current monitoring location was the most representative of the Site.
2022 Permit Status	Active Monitoring/Corrective Action

67.1 2010 Administratively Continued Permit Summary

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

Following the December 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 232349), corrective-action monitoring was initiated, and stormwater samples were collected in June and July 2013. Analytical results from these samples initiated corrective action.

The Permittees submitted a force majeure request for an extension for completion of corrective action at SWMU 60-007(b) per Permit part I.E.4(c) in September 2013 (LANL 2013, 250039). No response has been received from EPA for this submittal, and stormwater monitoring has not occurred for this Site since 2013.

67.2 Site History

60-007(b) (12/21/2021)

SWMU 60-007(b) consists of two storm drainage ditches that extend from the north and south sides of two paved parking areas on the east side of the motor pool building (building 60-1), run along the east of the parking areas, and into Upper Sandia Canyon directly east of the parking areas at TA-60. The northern storm drainage ditch starts approximately 600 ft from a paved area directly north of the building 60-1. The southern storm drainage ditch starts at the southeast corner of the paved parking area, east of the southeast corner of building 60-1, extends to the east, and then turns north around the eastern-most parking area, eventually joining the northern storm drainage ditch before it extends into Upper Sandia Canyon.

Stormwater, containing motor oil and heavy metals from the parking areas, runs into the storm drainage ditch. Other former sources of potential contamination to the ditches are a steam-cleaning pad, a used-oil storage tank, and an oil/water separator. In addition, equipment that used PCB-containing oil was stored on an asphalt area east of building 60-1. The areas of the ditches visibly affected by these sources were remediated in 1986 by removing stained soil down to bedrock.

For investigation activities, refer to “Supplemental Investigation Report for Upper Sandia Canyon Aggregate Area, Revision 1” (LANL 2015, 600912).

67.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 67.2-1.

Table 67.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
60-007(b)	Release	Metals, PAHs, PCBs

67.3 Consent Order Soil Data

Decision-level data for SWMU 60-007(b) consist of samples collected in 2009. Analytical results from those samples are presented in Figures 67.3-1 through 67.3-4. The 2015 supplemental IR (LANL 2015, 600912) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

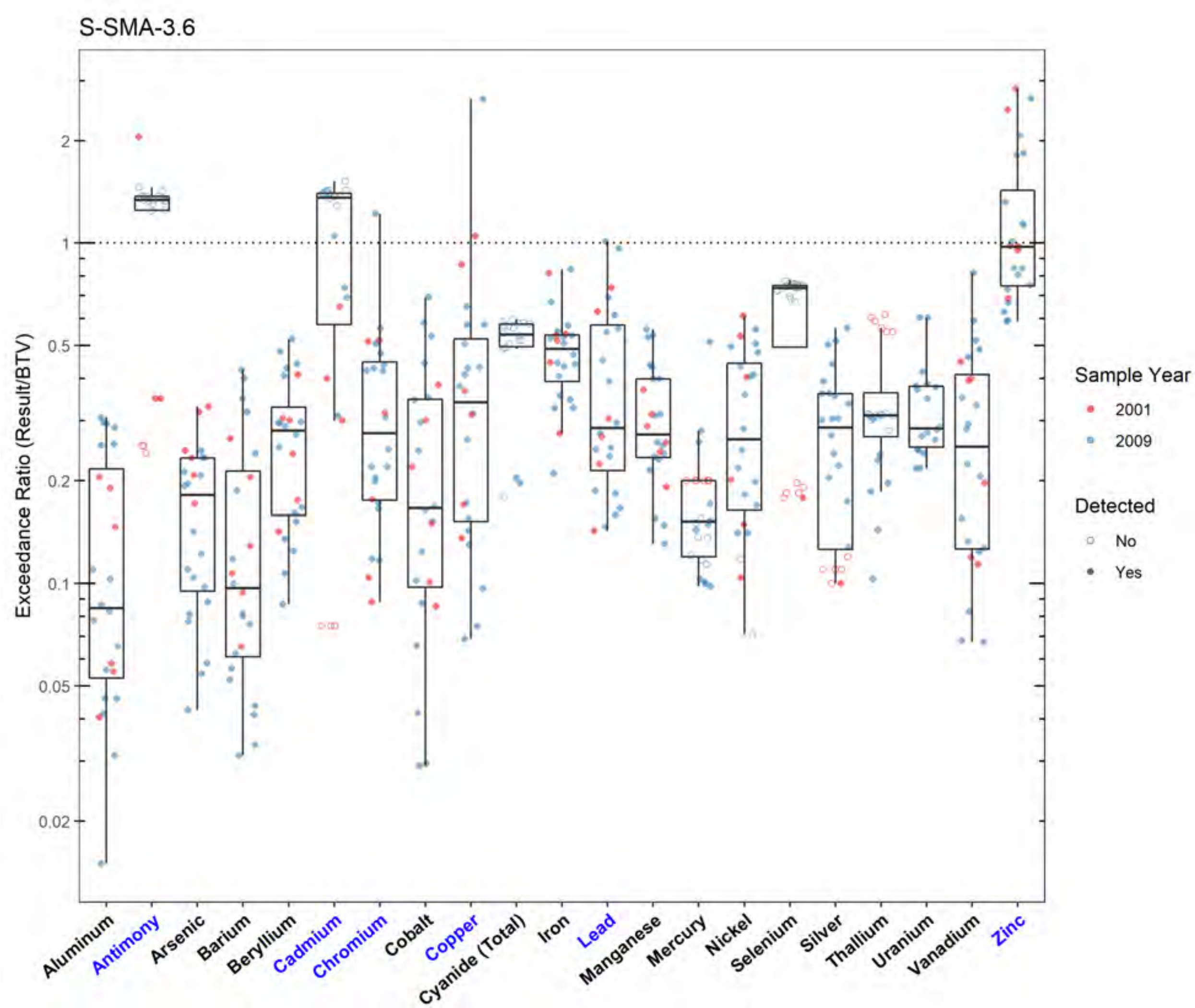


Figure 67.3-1 Inorganics Analytical Results from Soil Samples Associated with S-SMA-3.6

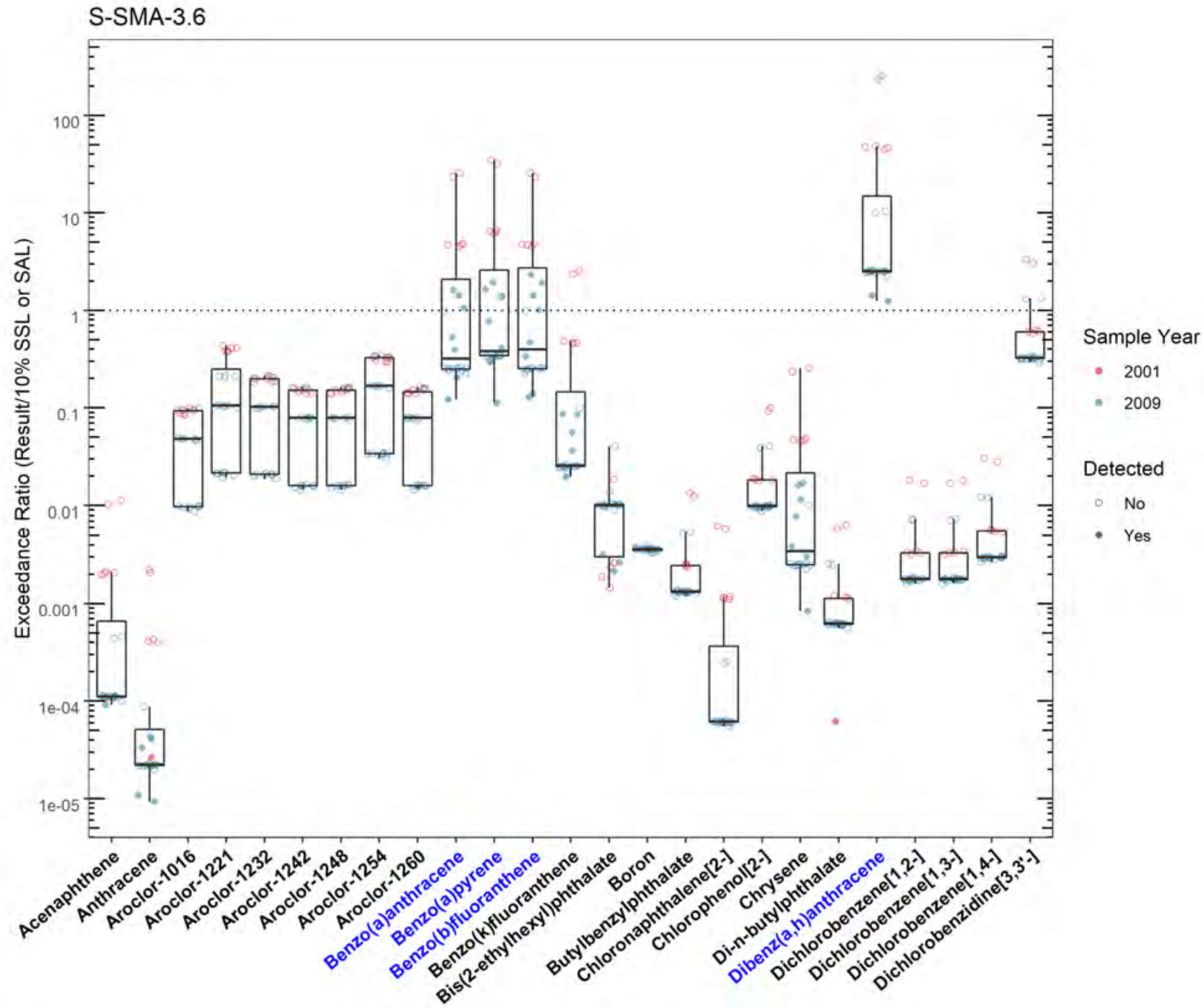


Figure 67.3-2 Organics Analytical Results from Soil Samples Associated with S-SMA-3.6 (Plot 1)

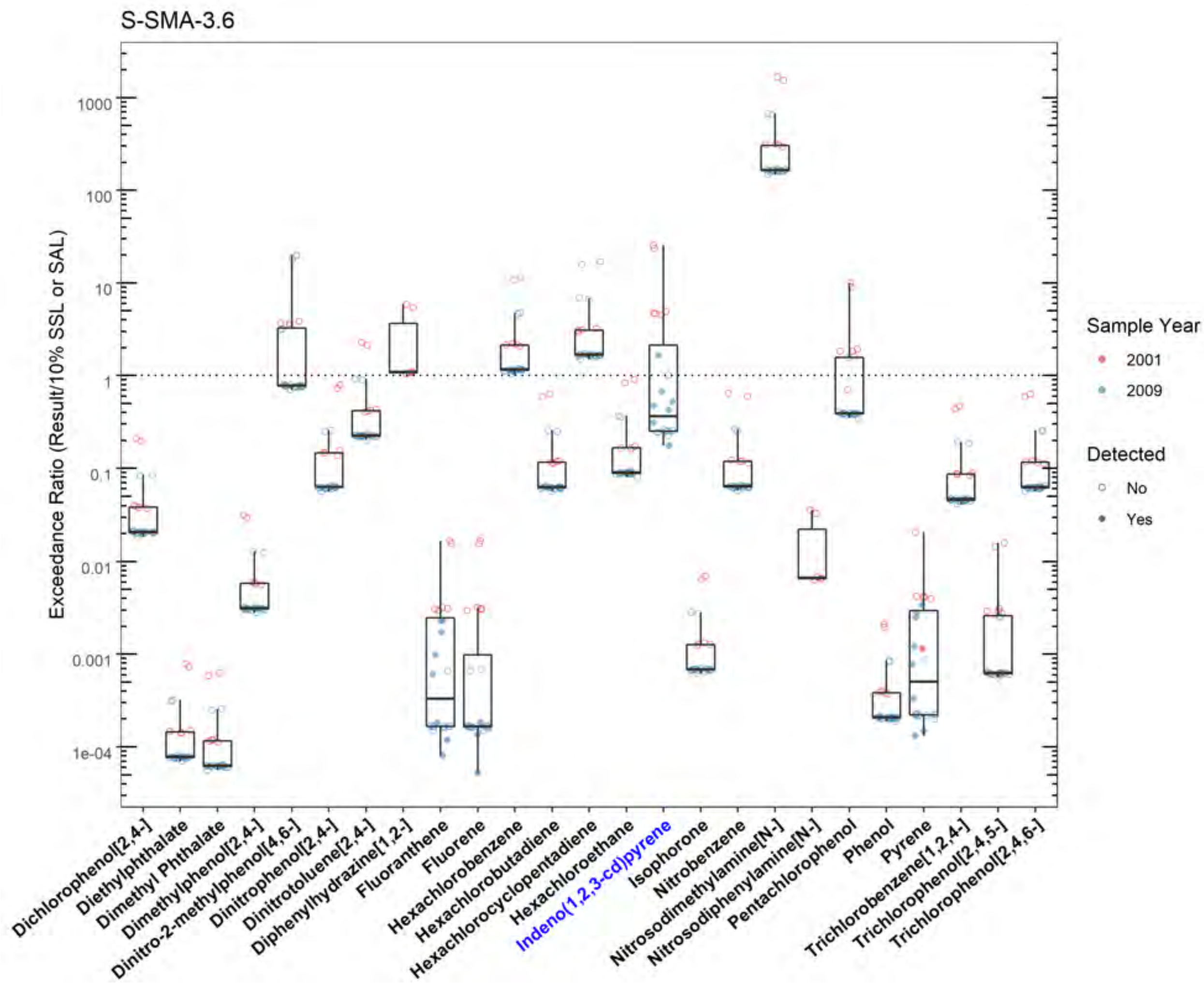


Figure 67.3-3 Organics Analytical Results from Soil Samples Associated with S-SMA-3.6 (Plot 2)

S-SMA-3.6

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	S-SMA-3.6	Sb	Y	BTV	0.830	1.70	2001-07-26
Benzo(a)anthracene	S-SMA-3.6	56-55-3	Y	SSL_0.1	0.153	0.247	2009-12-04
Benzo(a)pyrene	S-SMA-3.6	50-32-8	Y	SSL_0.1	0.112	0.216	2009-12-07
Benzo(b)fluoranthene	S-SMA-3.6	205-99-2	Y	SSL_0.1	0.153	0.352	2009-12-07
Cadmium	S-SMA-3.6	Cd	Y	BTV	0.400	0.420	2009-12-07
Chromium	S-SMA-3.6	Cr	Y	BTV	19.3	23.5	2009-12-07
Copper	S-SMA-3.6	Cu	Y	BTV	14.7	38.9	2009-12-07
Dibenz(a,h)anthracene	S-SMA-3.6	53-70-3	Y	SSL_0.1	0.0153	0.0217	2009-12-07
Indeno(1,2,3-cd)pyrene	S-SMA-3.6	193-39-5	Y	SSL_0.1	0.153	0.254	2009-12-04
Lead	S-SMA-3.6	Pb	Y	BTV	22.3	22.6	2009-12-04
Zinc	S-SMA-3.6	Zn	Y	BTV	48.8	139	2001-07-26

Figure 67.3-4 Screening-Level Exceedances from Soil Samples Associated with S-SMA-3.6

67.4 Stormwater Evaluation

67.4.1 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 July 2013. Analytical results from those samples are presented in Figures 67.4-1 and 67.4-2.

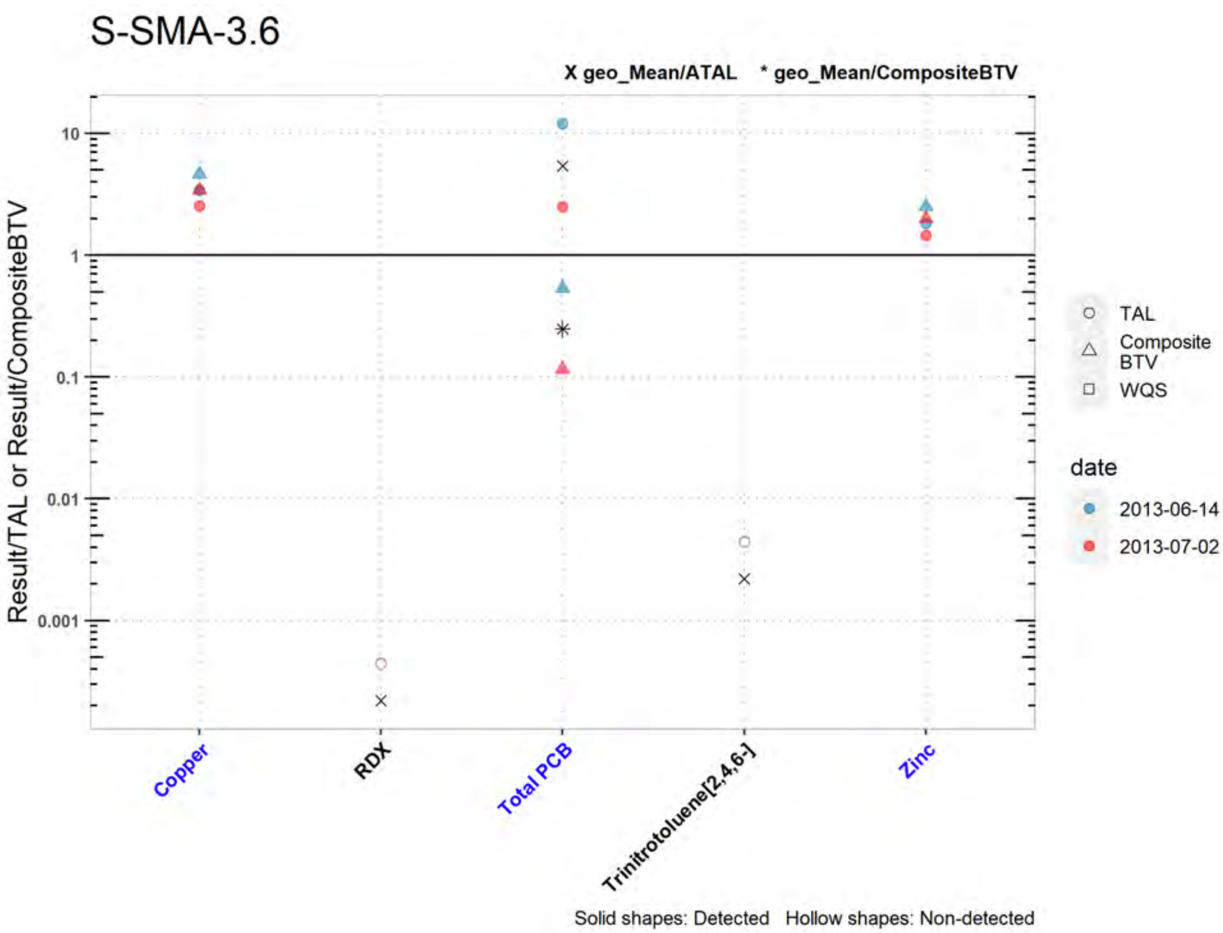


Figure 67.4-1 Analytical Results from Stormwater Samples, S-SMA-3.6 (Plot)

S-SMA-3.6

	Copper	RDX	Total PCB	Trinitrotoluene [2,4,6-]	Zinc
MQL	0.5	NA	0.2	NA	20
ATAL	NA	200	0.00064	20	NA
MTAL	6.07	NA	NA	NA	74.3
Composite_BTV	4.49	NA	0.0139	NA	54.1
unit	ug/L	ug/L	ug/L	ug/L	ug/L
2013-06-14 result	20.8	*0.0909*	0.00745	*0.0909*	135
2013-06-14 dT	3.43	NA	12	NA	1.82
2013-06-14 dB	4.63	NA	0.536	NA	2.50
2013-07-02 result	15.4	*0.0889*	0.00160	*0.0889*	108
2013-07-02 dT	2.54	NA	2.5	NA	1.45
2013-07-02 dB	3.43	NA	0.115	NA	2.00
geo_mean/ATAL	NA	0.00022	5.4	0.0022	NA
geo_mean/B	NA	NA	0.248	NA	NA

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

Figure 67.4-2 Analytical Results from Stormwater Samples, S-SMA-3.6 (Table)

67.4.2 Assessment Unit and Stream Impairments

S-SMA-3.6 drains to Sandia Canyon (Sigma Canyon to NPDES outfall 001), which has impairments for dissolved copper, PCBs, total aluminum, and temperature. The PCB and metals impairments may be Site-related, based on Site history.

67.5 Site-Specific Demonstration

67.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

Antimony, cadmium, chromium, and lead exceeded the applicable screening value in soil data. They were previously monitored in stormwater data and did not exceed TALs; therefore, they will not be added to the SAP. Copper and zinc exceeded the applicable screening value in soil data and TAL and BTVs.

67.5.2 Stormwater Data Summary

Copper and zinc exceeded the TAL and composite BTV. Total PCBs exceeded the TAL but not the composite BTV.

67.5.3 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.2.b.i) for copper and zinc. The SMA is also in active monitoring; not all Site-related POCs were analyzed for in past samples.

67.5.4 Sampling and Analysis Plan

Table 67.5-1 is the proposed SAP for S-SMA-3.6.

Table 67.5-1 Proposed SAP, S-SMA-3.6

Monitoring Constituent	Background for Monitoring
SVOCs	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

68.0 S-SMA-3.61

Associated Sites	60-004(f)
Receiving Water	Sandia Canyon
Drainage Area	1.59 acres
Landscape Characteristics	27% impervious, 73% pervious
Consent Order Site Status	AOC 60-004(f): Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	NA
2016–2018 SIP Actions	NA
2022 Permit Status	Active Monitoring

68.1 2010 Administratively Continued Permit Summary

AOC 60-004(f) was not monitored under the Administratively Continued Permit. It was added to the 2022 Individual Permit by NMED in the State Certification process.

68.2 Site History

60-004(f) (1/13/2017)

AOC 60-004(f) consists of two former unpaved, bermed storage pads, Pad 2 and Pad 3, located at TA-60 southeast of building 60-2. Pad 2 measured 12 ft × 65 ft, and Pad 3 measured 12 ft × 40 ft. Both pads were used to store 55-gal. product containers that dispensed Stoddard solvent, antifreeze, motor oil, grease, transmission fluid, and window-washing fluid. The pads were constructed in 1978 when the maintenance warehouse (building 60-2) was built. In 1985, 6-in. asphalt berms were built at the open ends of both pads to mitigate rainfall run-on and runoff. In 1990, all containers were removed from the pads. Stained soil with a petroleum odor was observed within the bermed pads.

AOC 60-004(f) was formerly identified as AOC C-60-005; however, the designation was changed to AOC 60-004(f) in the December 1993 response to the OU 1114 RFI work plan Notice of Deficiency.

For investigation activities, refer to “Supplemental Investigation Report for Upper Sandia Canyon Aggregate Area, Revision 1” (LANL 2015, 600912).

68.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 68.2-1.

Table 68.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
60-004(f)	Storage area	Organic chemicals

68.3 Consent Order Soil Data

Decision-level data for AOC 60-004(f) consist of results from samples collected in 2009. Analytical results from those samples are presented in Figures 68.3-1 through 68.3-4.The 2015 supplemental IR (LANL 2015, 600912) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

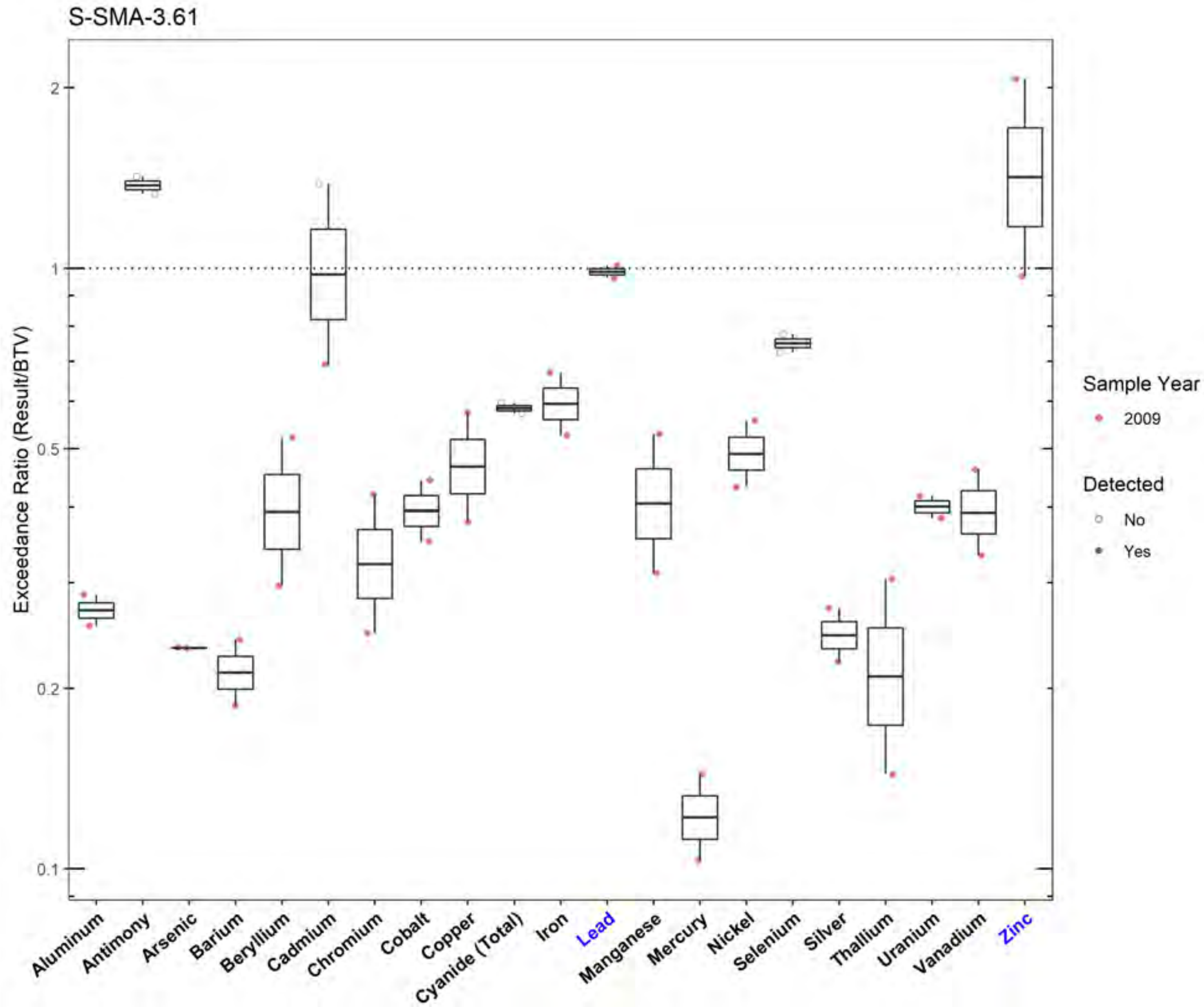


Figure 68.3-1 Inorganics Analytical Results from Soil Samples Associated with S-SMA-3.61

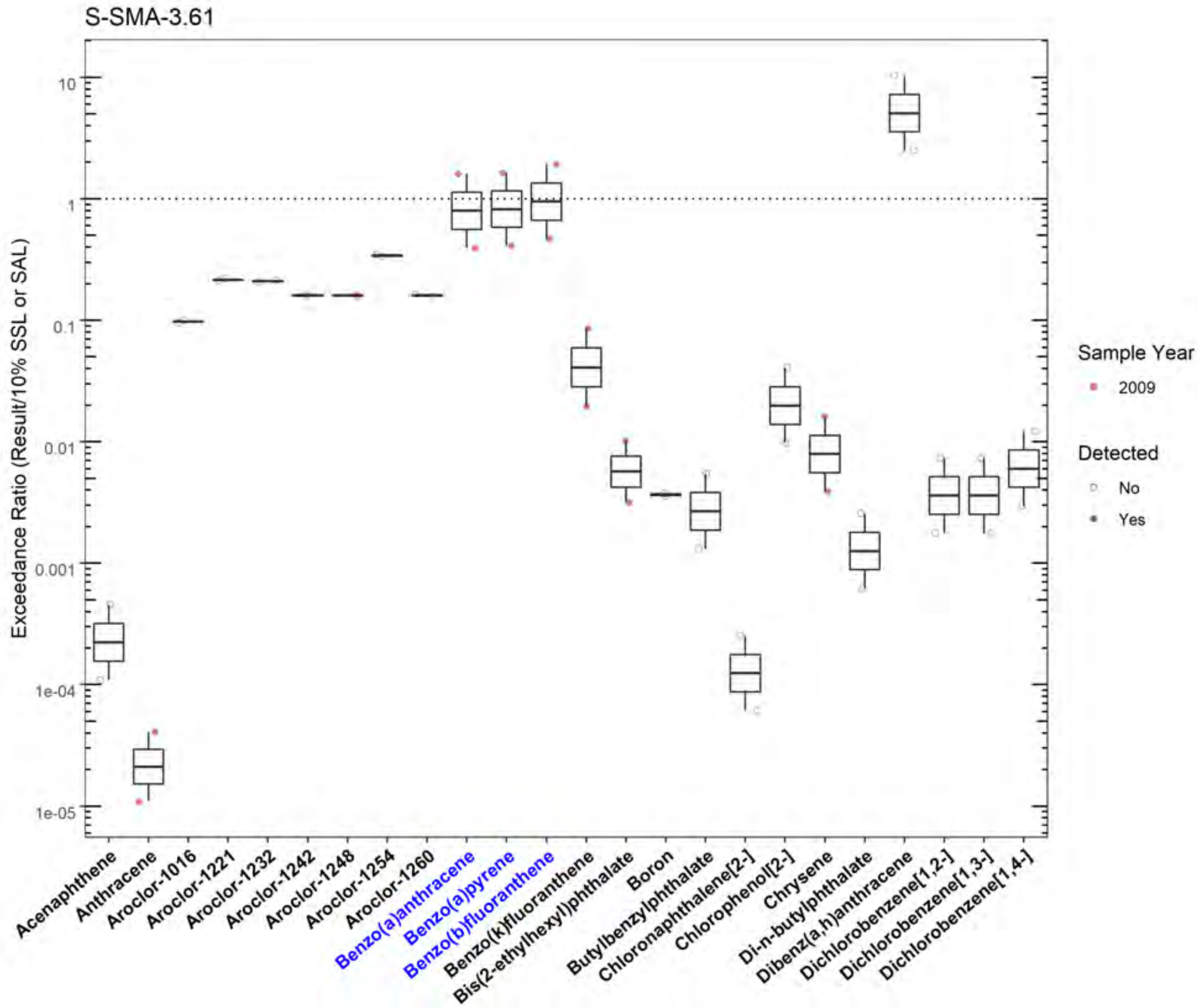


Figure 68.3-2 Organics Analytical Results from Soil Samples Associated with S-SMA-3.61 (Plot 1)

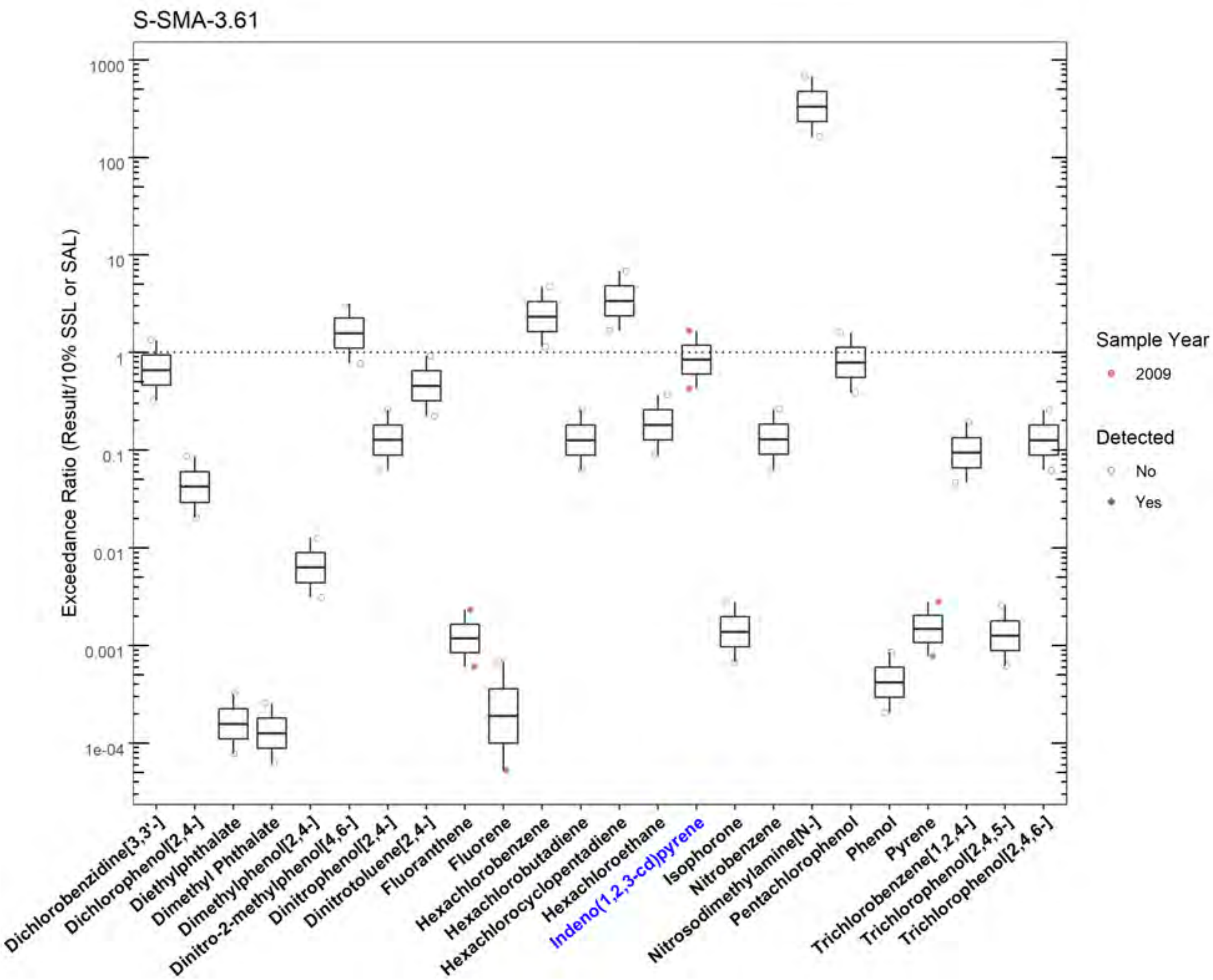


Figure 68.3-3 Organics Analytical Results from Soil Samples Associated with S-SMA-3.61 (Plot 2)

S-SMA-3.61

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	S-SMA-3.61	56-55-3	Y	SSL_0.1	0.153	0.247	2009-12-04
Benzo(a)pyrene	S-SMA-3.61	50-32-8	Y	SSL_0.1	0.112	0.183	2009-12-04
Benzo(b)fluoranthene	S-SMA-3.61	205-99-2	Y	SSL_0.1	0.153	0.294	2009-12-04
Indeno(1,2,3-cd)pyrene	S-SMA-3.61	193-39-5	Y	SSL_0.1	0.153	0.254	2009-12-04
Lead	S-SMA-3.61	Pb	Y	BTV	22.3	22.6	2009-12-04
Zinc	S-SMA-3.61	Zn	Y	BTV	48.8	101	2009-12-04

Figure 68.3-4 Screening-Level Exceedances from Soil Samples Associated with S-SMA-3.61

68.4 Stormwater Evaluation

68.4.1 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.

68.4.2 Assessment Unit and Stream Impairments

S-SMA-3.61 drains to Sandia Canyon (Sigma Canyon to NPDES outfall 001), which has impairments for dissolved copper, PCBs, total aluminum, and temperature. The PCB impairment may be Site-related, based on Site history.

68.5 Site-Specific Demonstration

68.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene. PCBs were measured in soil data and did not exceed screening levels; therefore, they will not be added to the SAP.

Lead and zinc exceeded the applicable screening value but are not Site-related POCs, and will not be added to the SAP.

68.5.2 Stormwater Data Summary

No confirmation-monitoring data.

68.5.3 2022 Permit Status

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

68.5.4 Sampling and Analysis Plan

Table 68.5-1 is the proposed SAP for S-SMA-3.61.

Table 68.5-1 Proposed SAP, S-SMA-3.61

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

69.0 S-SMA-3.62

Associated Sites	60-002
Receiving Water	Sandia Canyon
Drainage Area	1.12 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 60-002: Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	NA
2016–2018 SIP Actions	NA
2022 Permit Status	Active Monitoring

69.1 2010 Administratively Continued Permit Summary

60-002 was added to the 2022 Individual Permit by NMED in the State Certification.

69.2 Site History

60-002 (1/12/2017)

SWMU 60-002 consists of three former storage areas (designated as West, Central, and East) on Sigma Mesa at TA-60.

The former western storage area measures approximately 150 ft × 300 ft, and is located approximately 300 ft southeast of building 60-2, on the north side of the unimproved portion of Eniwetok Drive that traverses the mesa. Historically, piles of concrete blocks, wooden poles, tuff, fill, and cables were stored at this location. A large mound of fill, with pieces of cured asphalt and concrete, was situated in the northern portion of the site.

The central storage area was located approximately 50 ft north of the Roads and Grounds salt and sand storage facility (building 60-178), and consisted of a 50-ft-diameter mound of fill, approximately 10 ft high, with construction debris, including concrete fence post supports, pipe, metal strips, and wood.

The eastern storage area is on the south side of the unimproved portion of Eniwetok Drive, about 300 ft west of SWMU 60-007(a) near the east end of Sigma Mesa. This area was used to stage piles of broken cured asphalt removed from roadways and parking lots around the Laboratory for recycling. The eastern storage area location is currently the site of the Laboratory's asphalt batch plant.

For investigation activities, refer to "Supplemental Investigation Report for Upper Sandia Canyon Aggregate Area, Revision 1" (LANL 2015, 600912).

69.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 69.2-1.

Table 69.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
60-002	Storage area	Metals, organic chemicals

69.3 Consent Order Soil Data

Decision-level data for SWMU 60-002 (West) consist of results from samples collected in 2009. Analytical results from those samples are presented in Figures 69.3-1 through 69.3-4.The 2015 IR (LANL 2015, 600912) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

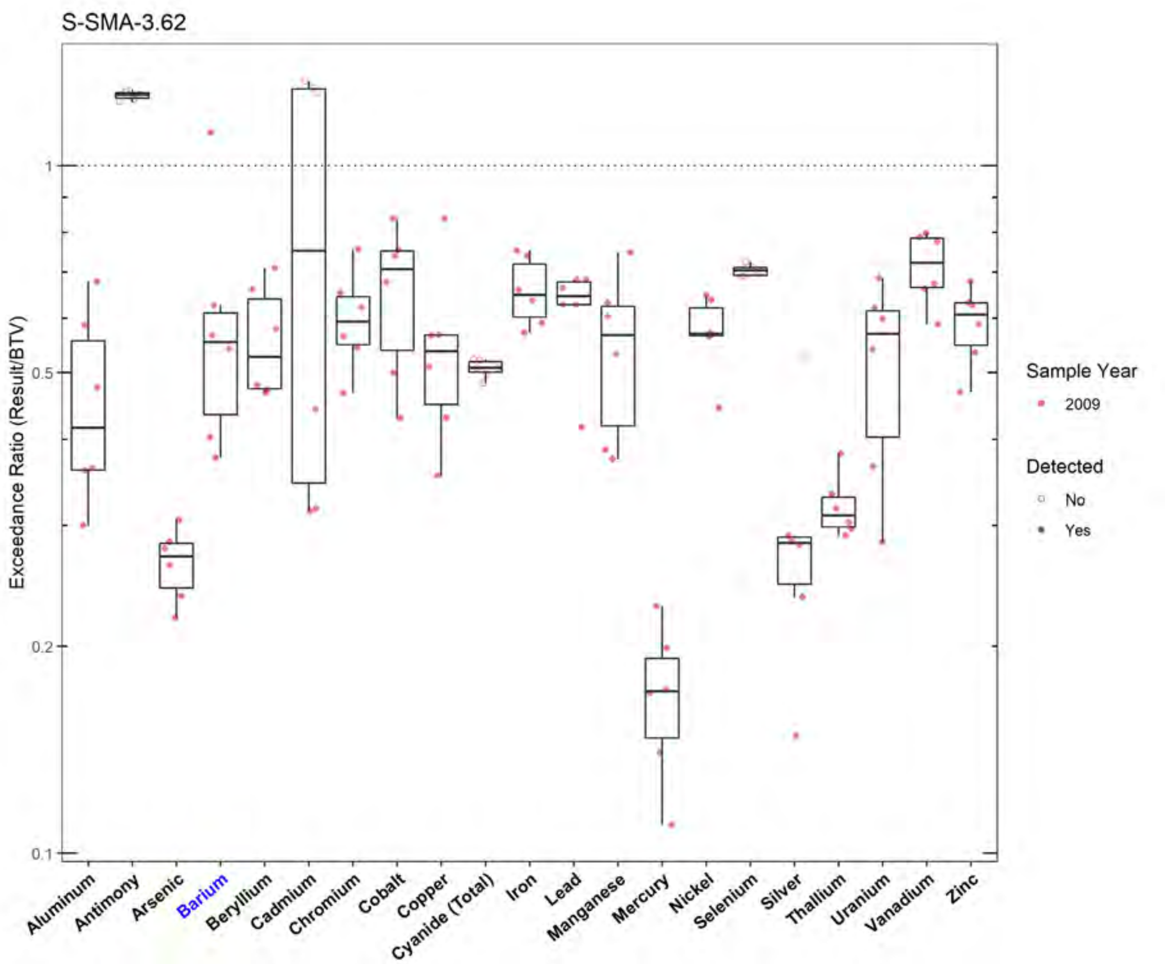


Figure 69.3-1 Inorganics Analytical Results for Soil Samples Associated with S-SMA-3.62

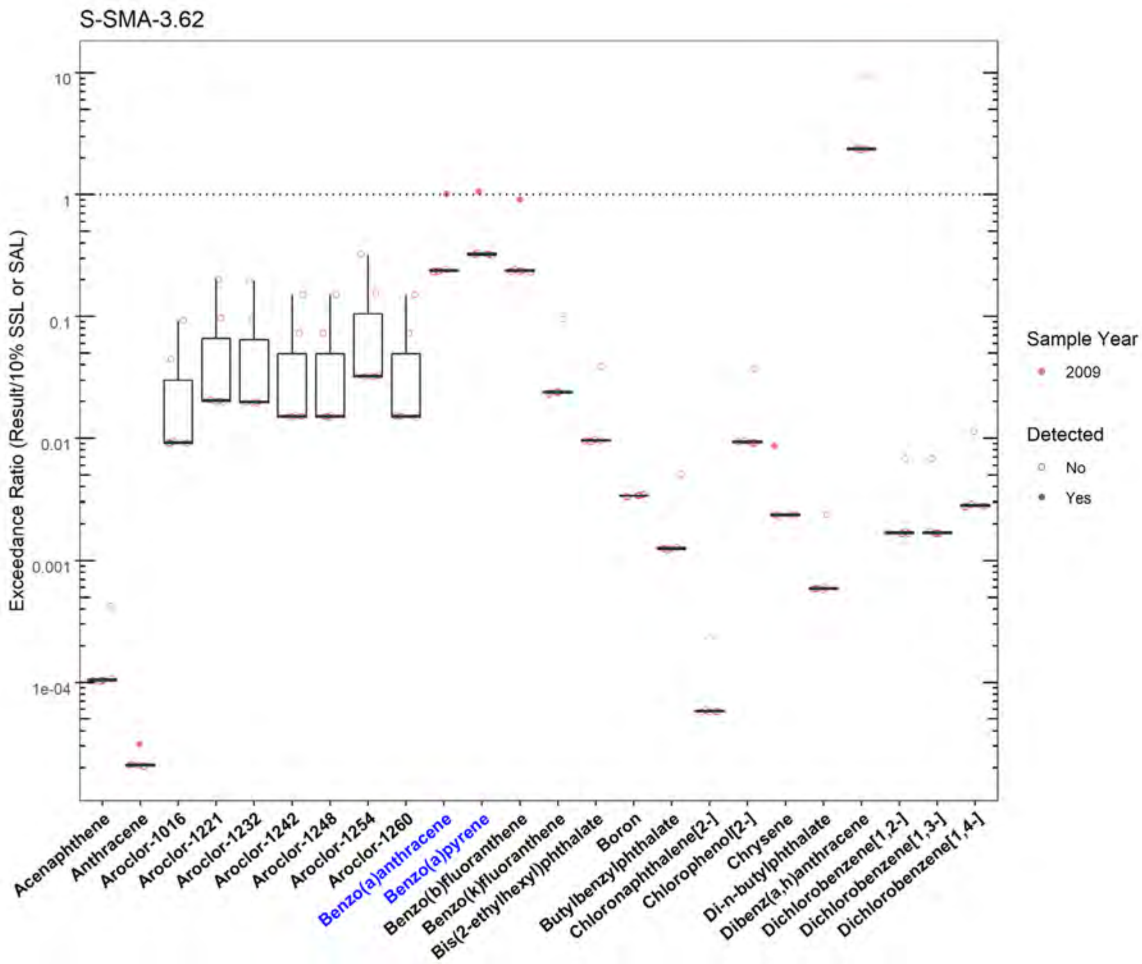


Figure 69.3-2 Organics Analytical Results for Soil Samples Associated with S-SMA-3.62 (Plot 1)

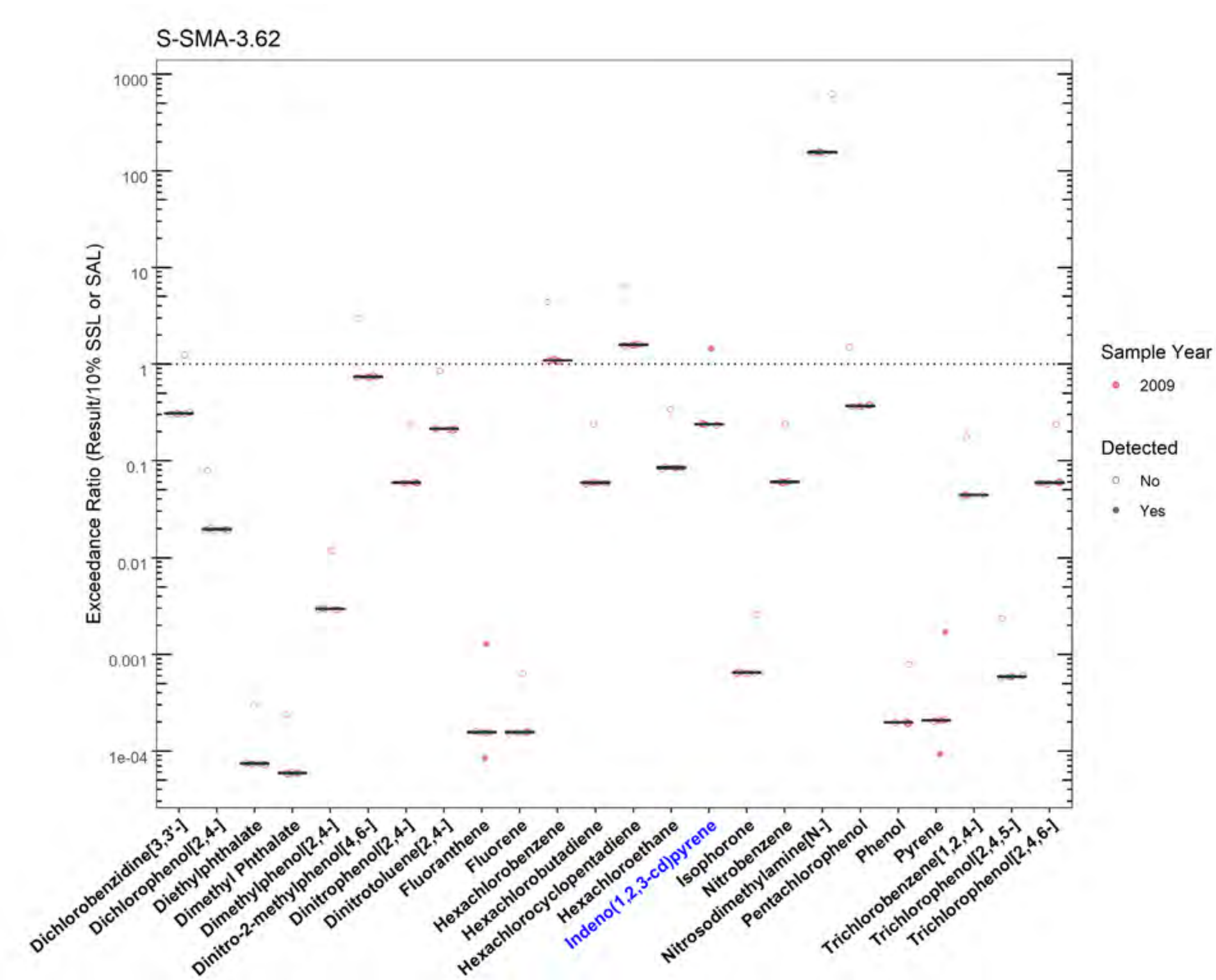


Figure 69.3-3 Organics Analytical Results for Soil Samples Associated with S-SMA-3.62 (Plot 2)

S-SMA-3.62

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Barium	S-SMA-3.62	Ba	Y	BTV	295	331	2009-12-04
Benzo(a)anthracene	S-SMA-3.62	56-55-3	Y	SSL_0.1	0.153	0.154	2009-12-04
Benzo(a)pyrene	S-SMA-3.62	50-32-8	Y	SSL_0.1	0.112	0.119	2009-12-04
Indeno(1,2,3-cd)pyrene	S-SMA-3.62	193-39-5	Y	SSL_0.1	0.153	0.221	2009-12-04

Figure 69.3-4 Screening-Level Exceedances from Soil Samples Associated with S-SMA-3.62

69.4 Stormwater Evaluation

69.4.1 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.

69.4.2 Assessment Unit and Stream Impairments

S-SMA-3.62 drains to Sandia Canyon (Sigma Canyon to NPDES outfall 001), which has impairments for dissolved copper, PCBs, total aluminum, and temperature. The PCB and metals impairments may be Site-related, based on Site history.

69.5 Site-Specific Demonstration (SSD)

69.5.1 Soil Data Summary

The following parameters exceeded the applicable screening value and have not yet been measured on stormwater data: barium, benzo(a)anthracene, benzo(a)pyrene, and ideno(1,2,3-cd)pyrene.

69.5.2 Stormwater Data Summary

No confirmation-monitoring data.

69.5.3 2022 Permit Status

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

69.5.4 Sampling and Analysis Plan

Table 69.5-1 is the proposed SAP for S-SMA-3.62.

Table 69.5-1 Proposed SAP, S-SMA-3.62

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment and Site history (organics)
Dissolved copper and barium	Impairment (copper), Site history (metals), and soil data
Total aluminum	Impairment and Site history (metals)
SVOCs	Site history (organics) and soil data
DOC	Permit requirement
SSC	Permit requirement

70.0 S-SMA-3.7

Associated Sites	53-012(e)
Receiving Water	Sandia Canyon
Drainage Area	0.04 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	AOC 53-012(e): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	The October 2017 field visit determined that the current sampler location did not adequately address runoff from the AOC. Therefore, the sampler was moved downgradient to address PCBs in soil at location 53-01087.
2022 Permit Status	Active Monitoring

70.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, baseline monitoring was initiated. While developing the 2018 SAP, a decision was made to implement the monitoring location move recommended during the 2017 SIP review, and baseline monitoring was reinitiated. To date, stormwater flow has not been sufficient for full-volume sample collection at S-SMA-3.7. Baseline monitoring is ongoing until one confirmation sample is collected from this SMA.

70.2 Site History

53-012(e) (9/29/2021)

AOC 53-012(e) is a former outfall and associated drainline which served the TA-53 equipment test laboratory (building 53-2). The drainline runs southwest under an asphalt parking lot, approximately 110 ft from the southwest corner of building 53-2, and then changes direction, running northwest approximately 100 ft to the outfall near the edge of Sandia Canyon. The outfall discharged effluent from a drainline attached to 12 trench drains, 2 sink drains, and a floor drain in building 53-2. The primary source of the wastewater was blowdown from the building 53-2 cooling tower, which was discharged to one of the trench drains.

Historically, chemicals added to the cooling water included sodium molybdate and hydroxyethylidene diphosphonic acid as corrosion inhibitors; 1-bromo-3-chloro-5,5-dimethylhydantoin as a microbicide; and sodium bisulfite as an oxygen scavenger. The trench drains also received wastewater from equipment flushing and floor washing. Discharges to this outfall began in approximately 1968 when building 53-2 went into service. This outfall was included in the LANL NPDES permit as Outfall 03A114. Discharges to this outfall ceased, and the outfall was removed from the NPDES permit on July 11, 1995. The drainline is still in place, but the outfall has been plugged.

For investigation activities, refer to “Supplemental Investigation Report for Lower Sandia Canyon Aggregate Area, Revision 1” (N3B 2021, 701448).

70.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 70.2-1.

Table 70.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
53-012(e)	Outfall from building 53-2	Metals, inorganic chemicals, organic chemicals, PCBs, radionuclides

70.3 Consent Order Soil Data

Decision-level data for AOC 53-012(e) consist of results from samples collected in 1995 and 2010. Analytical results from those samples are presented in Figures 70.3-1 through 70.3-4. Revision 1 of the 2021 supplemental IR (N3B 2021, 701448) concluded that the nature and extent of contamination have been defined except for the vertical extent of all constituents at one sample location.

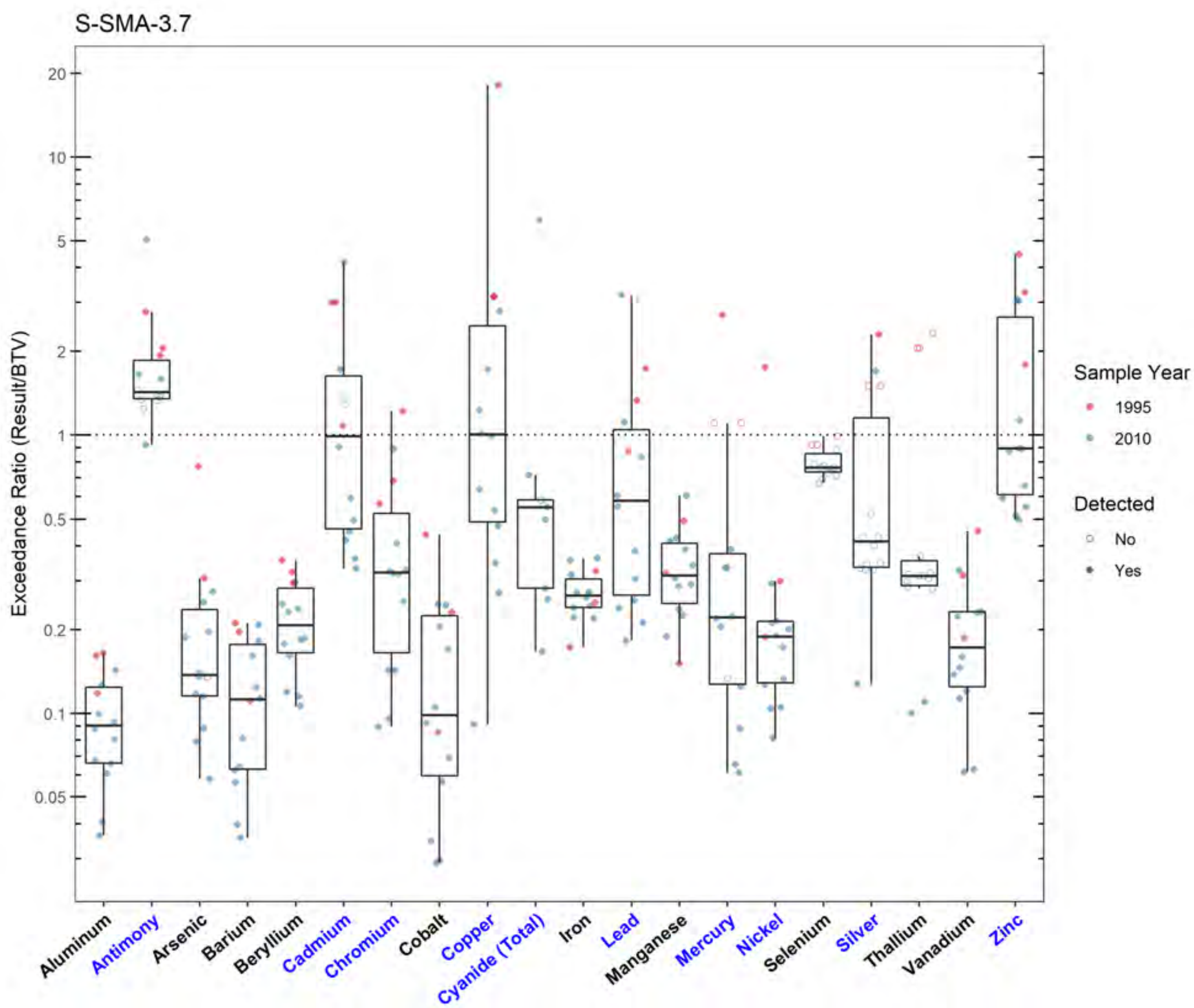


Figure 70.3-1 Inorganics Analytical Results from Soil Samples Associated with S-SMA-3.7

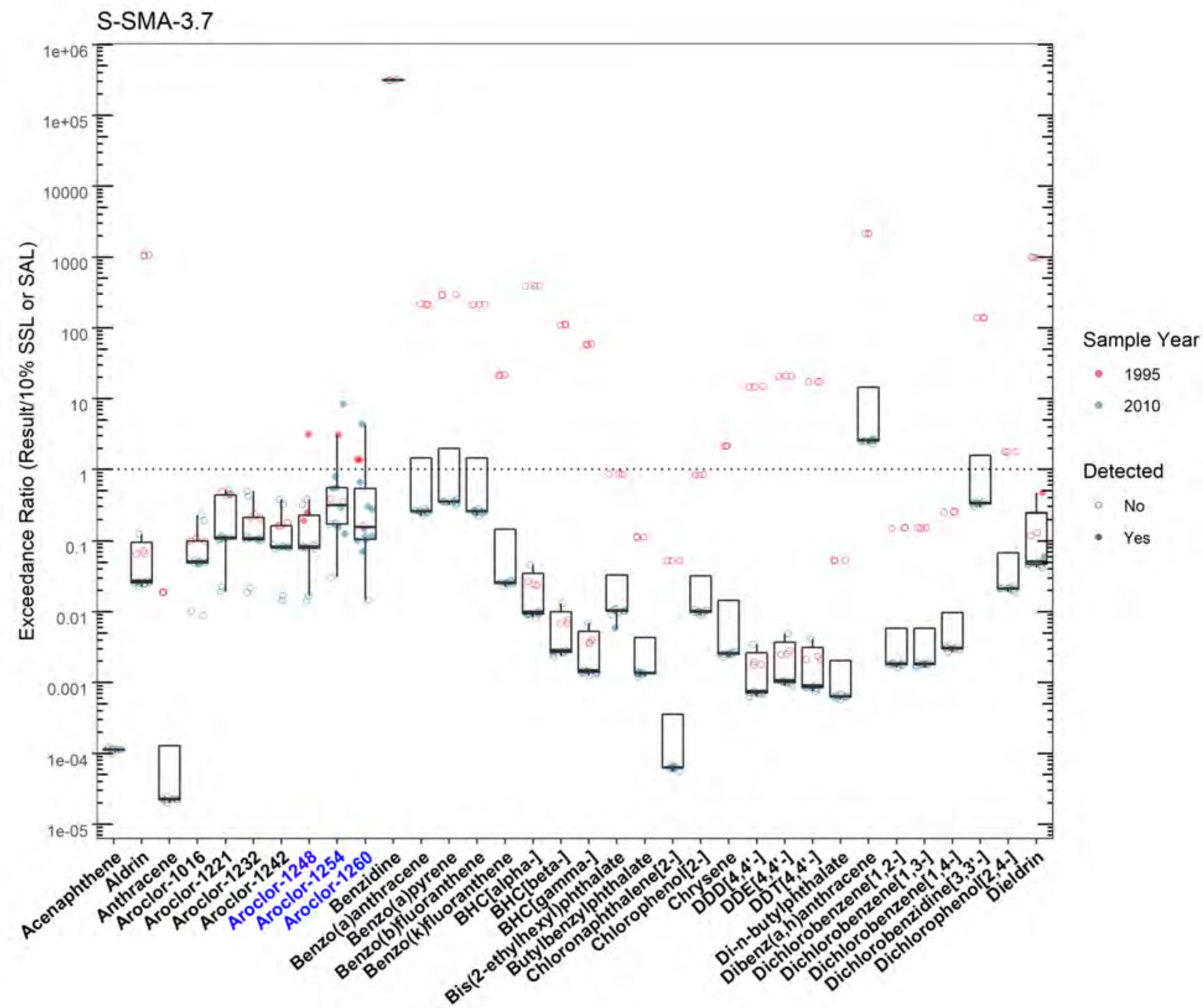


Figure 70.3-2 Organics Analytical Results from Soil Samples Associated with S-SMA-3.7 (Plot 1)

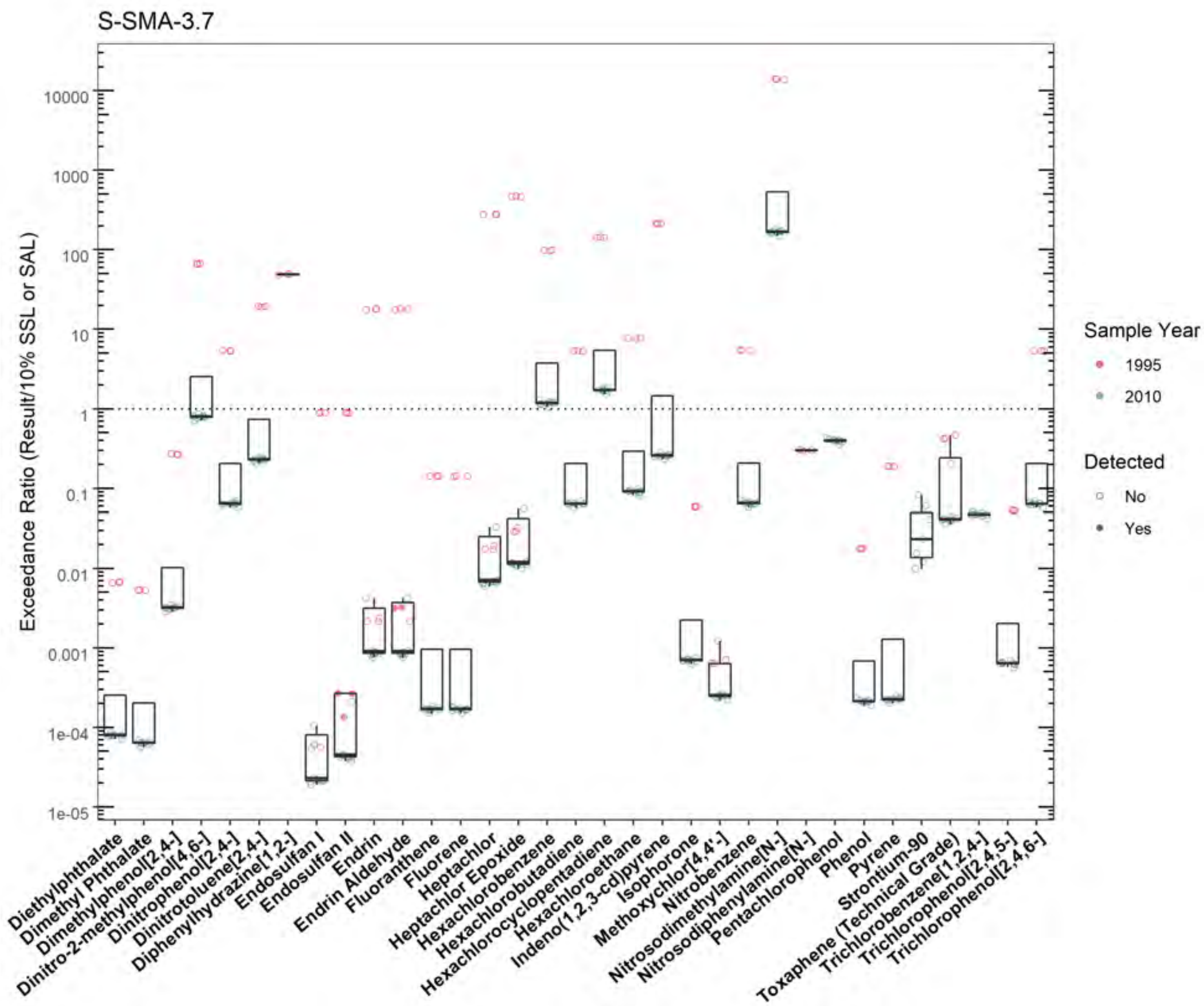


Figure 70.3-3 Organics Analytical Results from Soil Samples Associated with S-SMA-3.7 (Plot 2)

S-SMA-3.7

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	S-SMA-3.7	Sb	Y	BTV	0.830	4.19	2010-08-19
Aroclor-1248	S-SMA-3.7	12672-29-6	Y	SSL_0.1	0.243	0.760	1995-05-09
Aroclor-1254	S-SMA-3.7	11097-69-1	Y	SSL_0.1	0.114	0.950	2010-08-19
Aroclor-1260	S-SMA-3.7	11096-82-5	Y	SSL_0.1	0.243	1.06	2010-08-19
Cadmium	S-SMA-3.7	Cd	Y	BTV	0.400	1.67	2010-08-19
Chromium	S-SMA-3.7	Cr	Y	BTV	19.3	23.5	1995-05-09
Copper	S-SMA-3.7	Cu	Y	BTV	14.7	267	1995-05-09
Cyanide (Total)	S-SMA-3.7	CN(TOTAL)	Y	BTV	0.500	2.96	2010-08-19
Lead	S-SMA-3.7	Pb	Y	BTV	22.3	71.1	2010-08-19
Mercury	S-SMA-3.7	Hg	Y	BTV	0.100	0.270	1995-05-09
Nickel	S-SMA-3.7	Ni	Y	BTV	15.4	27.0	1995-05-09
Silver	S-SMA-3.7	Ag	Y	BTV	1.00	2.30	1995-05-09
Zinc	S-SMA-3.7	Zn	Y	BTV	48.8	218	1995-05-09

Figure 70.3-4 Screening-Level Exceedances from Soil Samples Associated with S-SMA-3.7

70.4 Stormwater Evaluation

70.4.1 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.

70.4.2 Assessment Unit and Stream Impairments

S-SMA-3.7 drains to Sandia Canyon (Sigma Canyon to NPDES outfall 001), which has impairments for dissolved copper, PCBs, total aluminum, and temperature. The PCBs and metals impairments may be Site-related, based on Site history.

70.5 Site-Specific Demonstration

70.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: antimony, Aroclor-1248, Aroclor-1254, Aroclor-1260, cadmium, chromium, copper, cyanide (total), lead, mercury, nickel, silver, and zinc.

70.5.2 Stormwater Data Summary

No confirmation-monitoring data.

70.5.3 2022 Permit Status

The SMA is in active monitoring; no confirmation-monitoring sample has been collected at this location.

70.5.4 Sampling and Analysis Plan

Table 70.5-1 is the proposed SAP for S-SMA-3.7.

Table 70.5-1 Proposed SAP, S-SMA-3.7

Monitoring Constituent	Background for Monitoring
Dissolved antimony, cadmium, chromium, copper, lead, nickel, silver, and zinc	Impairment (copper), Site history (metals), and soil data
Total PCBs	Impairment, soil data, and Site history
Total aluminum and mercury	Impairment (aluminum), Site history (metals), and soil data
Cyanide	Site history (inorganics) and soil data
Gross alpha	Site history (radionuclides)
Radium-226 and radium-228	Site history (radionuclides)
Tritium	Site history (radionuclides)
SVOCs	Site history
DOC	Permit requirement
SSC	Permit requirement

71.0 S-SMA-3.71

Associated Sites	53-001(a)
Receiving Water	Sandia Canyon
Drainage Area	0.05 acres
Landscape Characteristics	3% impervious, 97% pervious
Consent Order Site Status	SWMU 53-001(a): Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the October 2017 field visit, all parties agreed that the current SMA sampling location and boundary was the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

71.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, baseline monitoring was initiated. To date, stormwater flow has not been sufficient for full-volume sample collection at S-SMA-3.71. Baseline monitoring is ongoing until one confirmation sample is collected from this SMA.

71.2 Site History

53-001(a) (9/30/2021)

SWMU 53-001(a) is an outdoor storage area located on the north side of the TA-53 equipment test laboratory (building 53-2) at TA-53. This storage area consists of a covered concrete pad currently serving as a drum storage area for building 53-2. This area was also formerly used as a SAA for hazardous waste. Non-PCB dielectric oil is currently stored on the concrete pad. The pad is surrounded by a concrete curb to provide secondary containment. A drain valve located in the northwest corner of the curbed area was previously used to release accumulated rainwater, but is now plugged.

The storage area is believed to have been first used in 1968 when operations at building 53-2 began. A 1989 photograph of the area shows the site looked much as it does today. By 1992, the site was no longer being used as an SAA. A Laboratory listing of waste accumulation areas dated April 1993 notes that the SAA on the north side of building 53-2 was removed. The site was inspected in 1993 and no evidence of staining or releases was observed.

For investigation activities, refer to “Supplemental Investigation Report for Lower Sandia Canyon Aggregate Area, Revision 1” (N3B 2021, 701448).

71.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 71.2-1.

Table 71.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
53-001(a)	Storage area	Metals, PCBs, organic chemicals

71.3 Consent Order Soil Data

Decision-level data for SWMU 53-001(a) consist of results from samples collected in 1995, 1997, and 2010. Analytical results from those samples are presented in Figures 71.3-1 through 71.3-4. Revision 1 of the 2021 supplemental IR (N3B 2021, 701448) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

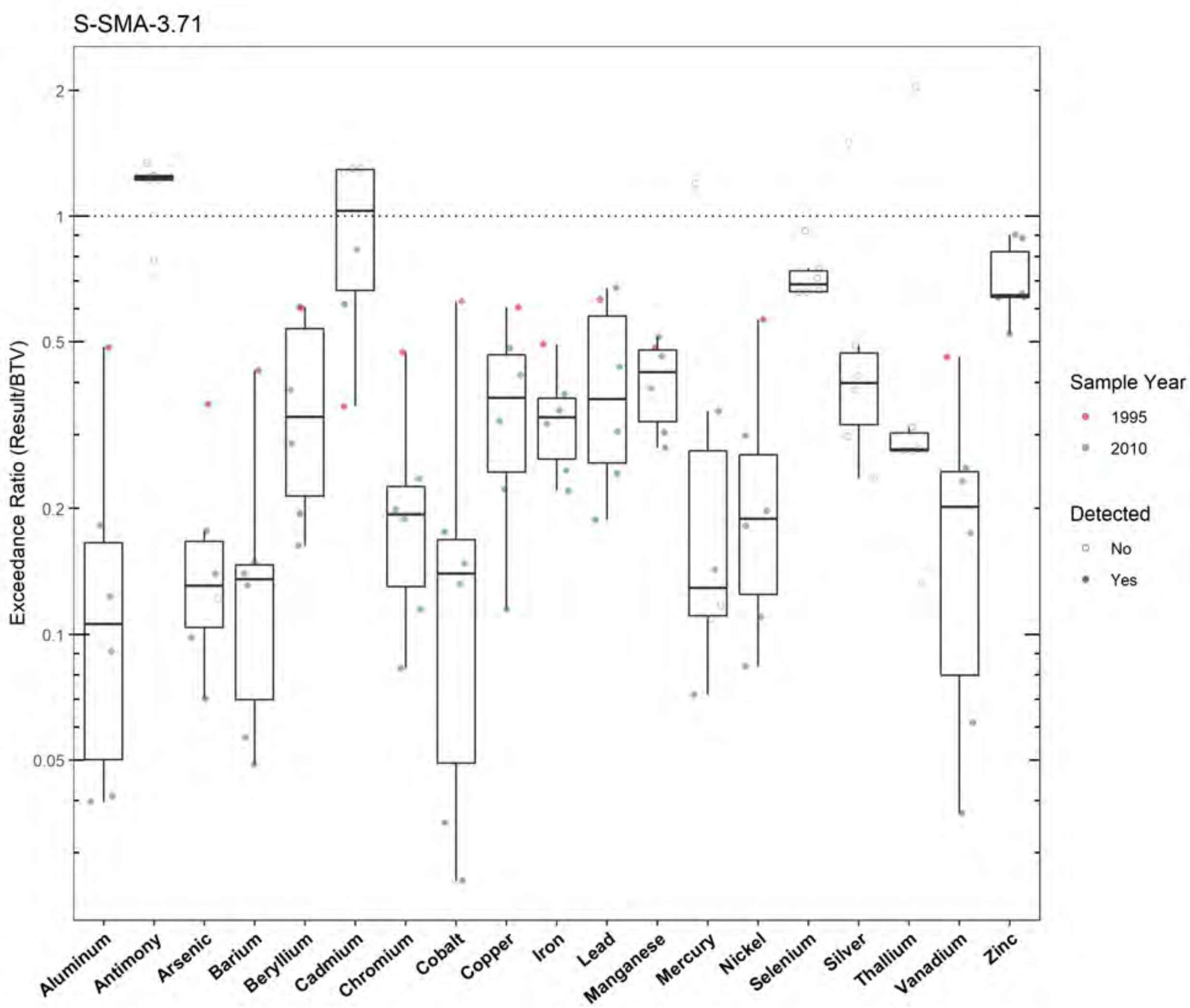


Figure 71.3-1 Inorganics Analytical Results from Soil Samples Associated with S-SMA-3.71

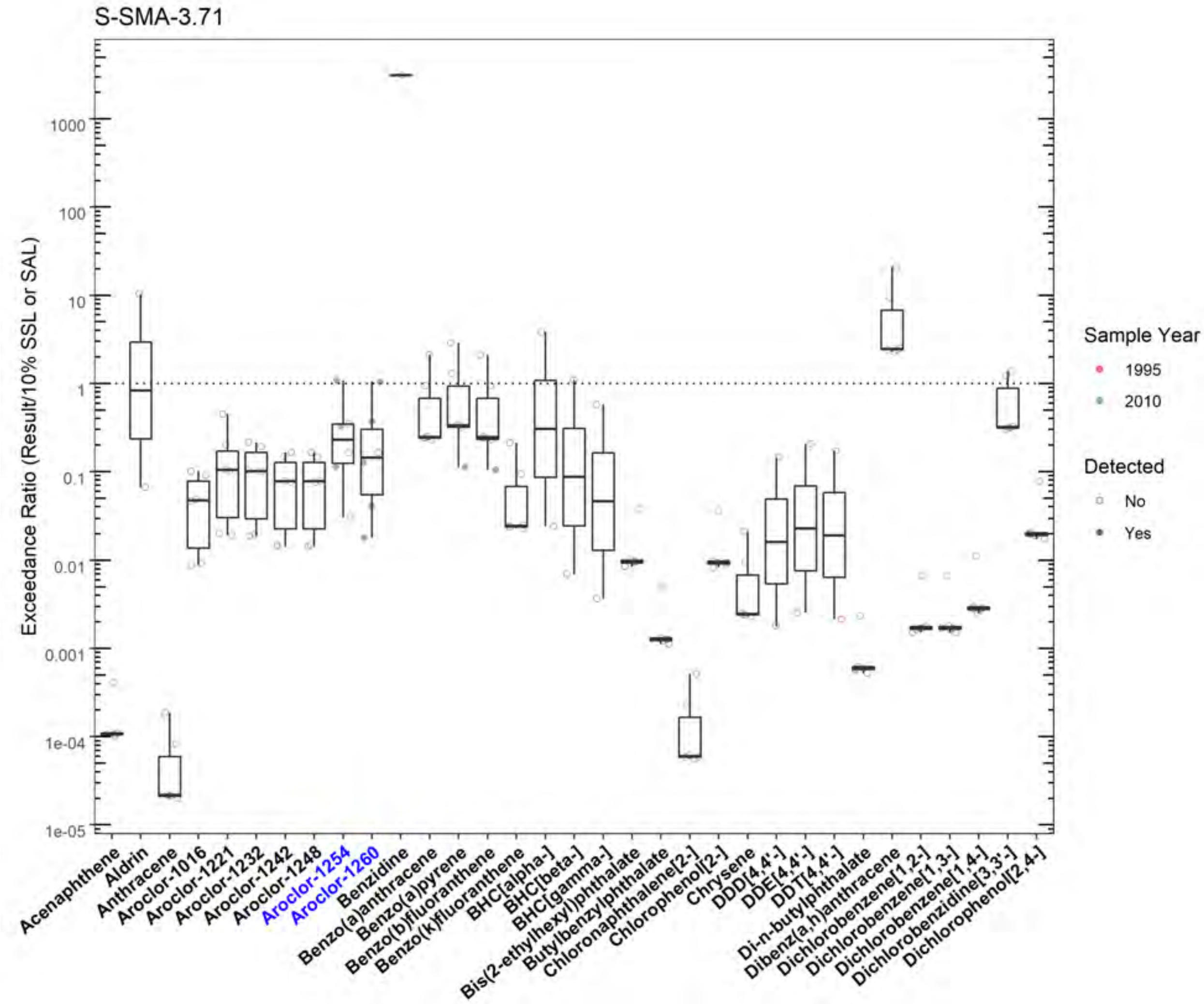


Figure 71.3-2 Organics Analytical Results from Soil Samples Associated with S-SMA-3.71 (Plot 1)

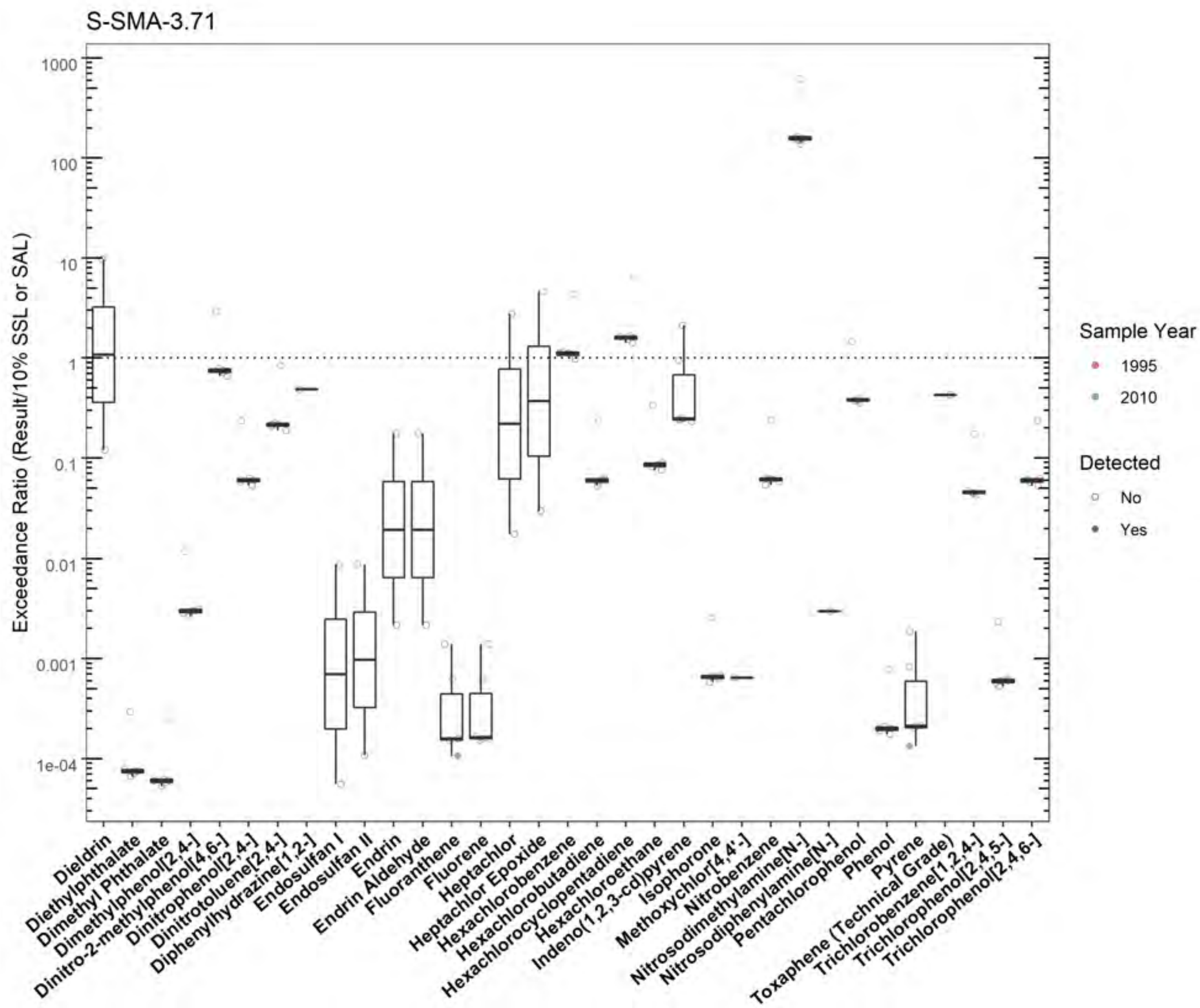


Figure 71.3-3 Organics Analytical Results from Soil Samples Associated with S-SMA-3.71 (Plot 2)

S-SMA-3.71

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	S-SMA-3.71	11097-69-1	Y	SSL_0.1	0.114	0.123	2010-08-19
Aroclor-1260	S-SMA-3.71	11096-82-5	Y	SSL_0.1	0.243	0.256	2010-08-19

Figure 71.3-4 Screening-Level Exceedances from Soil Samples Associated with S-SMA-3.71

71.4 Stormwater Evaluation

71.4.1 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.

71.4.2 Assessment Unit and Stream Impairments

S-SMA-3.71 drains to Sandia Canyon (within LANL below Sigma Canyon), which has impairments for adjusted gross alpha, dissolved copper, PCBs, total aluminum, and total mercury. The PCBs and metals impairments may be Site-related, based on Site history.

71.5 Site-Specific Demonstration

71.5.1 Soil Data Summary

Aroclor-1254 and Aroclor-1260 exceeded the applicable screening value in soil data and have not yet been measured in stormwater.

71.5.2 Stormwater Data Summary

No confirmation-monitoring data.

71.5.3 2022 Permit Status

The SMA is in active monitoring; no confirmation-monitoring sample has been collected at this location.

71.5.4 Sampling and Analysis Plan

Table 71.5-1 is the proposed SAP for S-SMA-3.71.

Table 71.5-1 Proposed SAP, S-SMA-3.71

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment, Site history, and soil data
Total aluminum and mercury	Impairment and Site history
Dissolved copper	Impairment and Site history
SVOCs	Site history
DOC	Permit requirement
SSC	Permit requirement

72.0 S-SMA-3.72

Associated Sites	53-001(b)
Receiving Water	Sandia Canyon
Drainage Area	0.26 acres
Landscape Characteristics	94% impervious, 6% pervious
Consent Order Site Status	SWMU 53-001(b): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the February 2016 signatures of SIP review, all parties agreed that the current SMA sampling location was representative of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring/Corrective Action

72.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in July 2015. Analytical results from this sample initiated corrective action.

SWMU 53-001(b) received a COC under the Consent Order in July 2013. The Permittees submitted a certification of completion of corrective action to EPA per Permit part I.E.2(d) for the Site in October 2015 (LANL 2015, 600978). Stormwater monitoring has not occurred since 2015.

72.2 Site History

53-001(b) (7/31/2017)

SWMU 53-001(b) is an outdoor storage area located on a concrete pad that rests on the asphalt parking lot on the south side of the TA-53 equipment test laboratory (building 53-2). Before 1990, this area consisted of racks used to store drums of products and wastes associated with maintenance activities, including spent TCE, Freon, other solvents, and acidic waste. Engineering drawings show that the storage area was constructed in 1971. A 1989 photograph shows drums in the storage area, some of which were product and some of which were marked with hazardous waste labels. The photograph identifies no staining, indicating no spills or leakage had occurred.

In 1990, the drum racks were removed and replaced with four lockable flammable-material storage cabinets. The site was inspected in 1993, and again no evidence of staining or releases was noted. The Laboratory's current waste-site database indicates that this storage location also contained a less-than-90-day waste storage area that had been taken out of service in 1998. The site currently contains flammable material storage cabinets used only for product storage.

For investigation activities, refer to "Investigation Report for Lower Sandia Canyon Aggregate Area, Revision 1" (LANL 2011, 205989).

72.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 72.2-1.

Table 72.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
53-001(b)	Outdoor storage area	Copper, lead, SVOCs

72.3 Consent Order Soil Data

Decision-level data for SWMU 53-001(b) consist of results from samples collected in 1995 and 2010. Analytical results from those samples are presented in Figures 72.3-1 through 72.3-4. The 2011 IR (LANL 2011, 205989) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

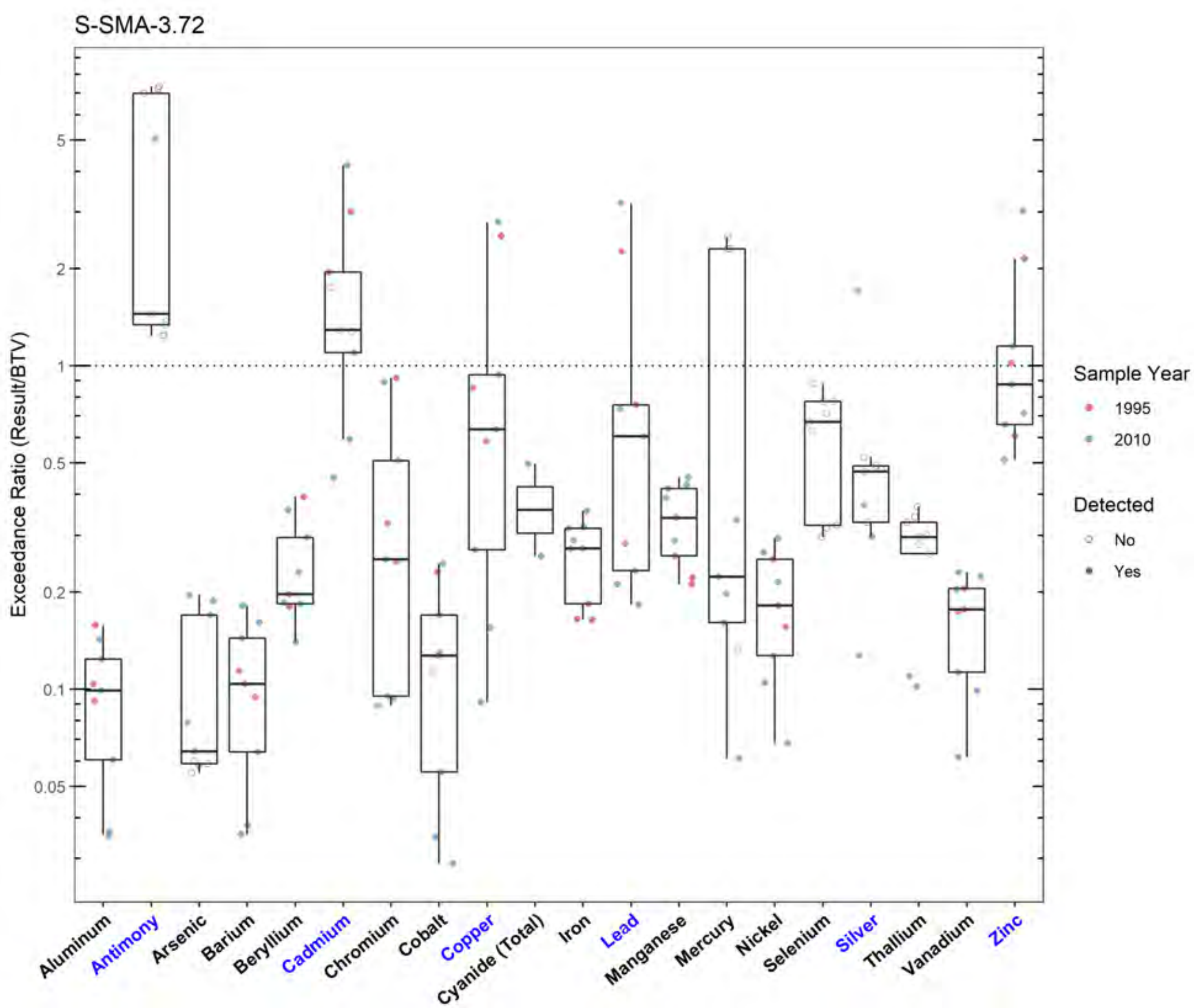


Figure 72.3-1 Inorganics Analytical Results from Soil Samples Associated with S-SMA-3.72

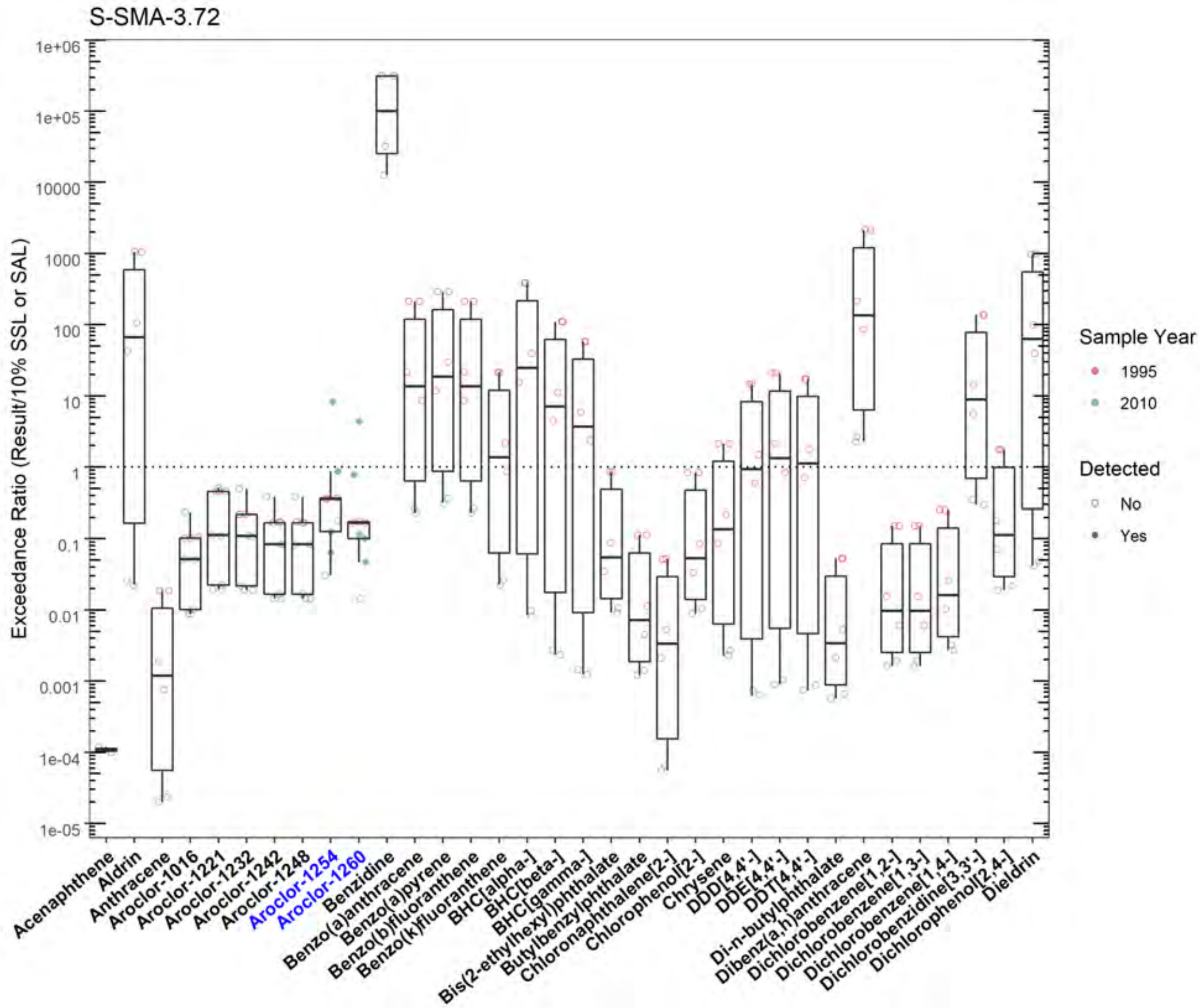


Figure 72.3-2 **Organics Analytical Results from Soil Samples Associated with S-SMA-3.72 (Plot 1)**

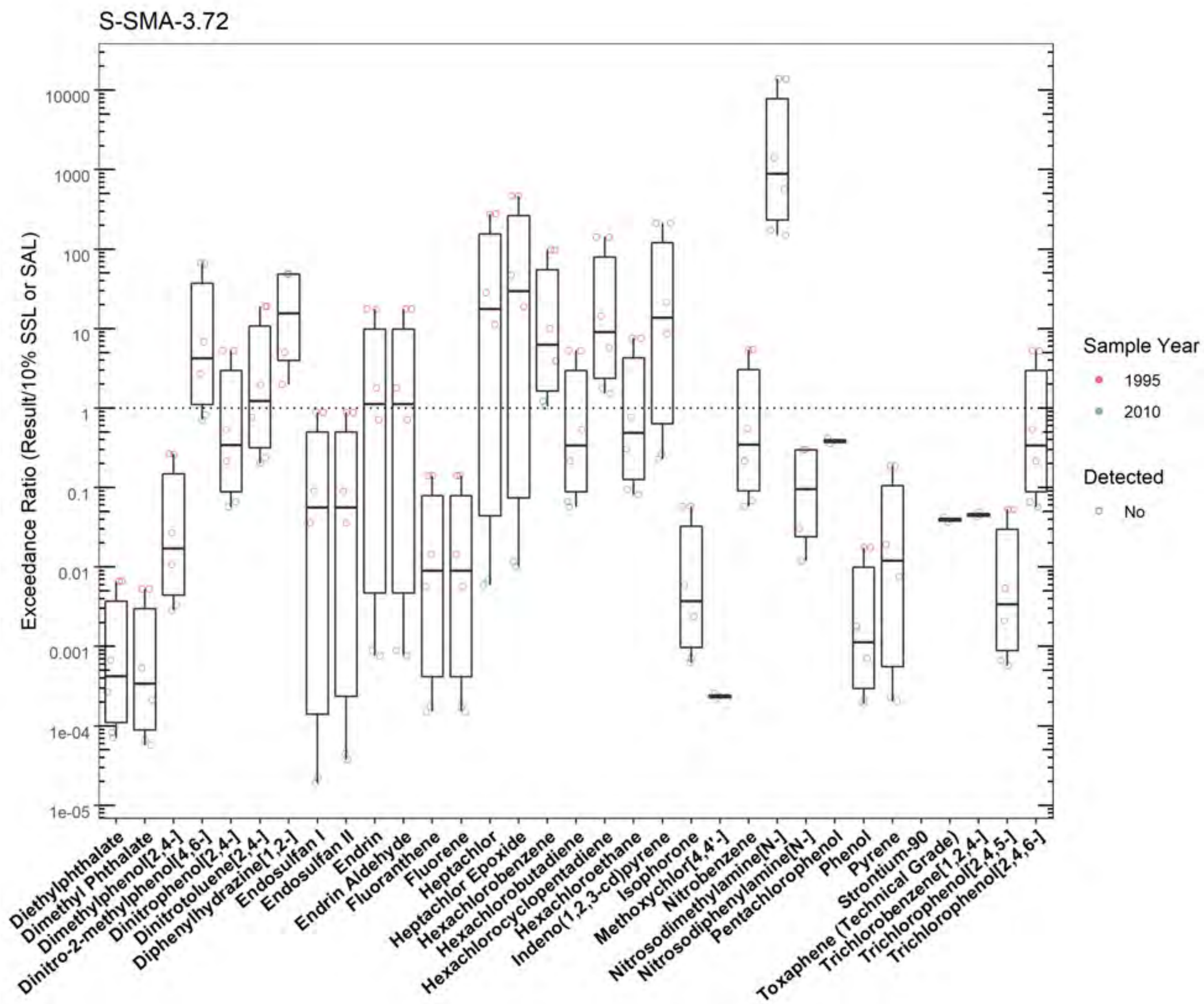


Figure 72.3-3 Organics Analytical Results from Soil Samples Associated with S-SMA-3.72 (Plot 2)

S-SMA-3.72

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	S-SMA-3.72	Sb	Y	BTV	0.830	4.19	2010-08-19
Aroclor-1254	S-SMA-3.72	11097-69-1	Y	SSL_0.1	0.114	0.950	2010-08-19
Aroclor-1260	S-SMA-3.72	11096-82-5	Y	SSL_0.1	0.243	1.06	2010-08-19
Cadmium	S-SMA-3.72	Cd	Y	BTV	0.400	1.67	2010-08-19
Copper	S-SMA-3.72	Cu	Y	BTV	14.7	41.0	2010-08-19
Lead	S-SMA-3.72	Pb	Y	BTV	22.3	71.1	2010-08-19
Silver	S-SMA-3.72	Ag	Y	BTV	1.00	1.70	2010-08-19
Zinc	S-SMA-3.72	Zn	Y	BTV	48.8	148	2010-08-19

Figure 72.3-4 Screening-Level Exceedances from Soil Samples Associated with S-SMA-3.72

72.4 Stormwater Evaluation

72.4.1 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 2015. Analytical results from that sample are presented in Figures 72.4-1 and 72.4-2.

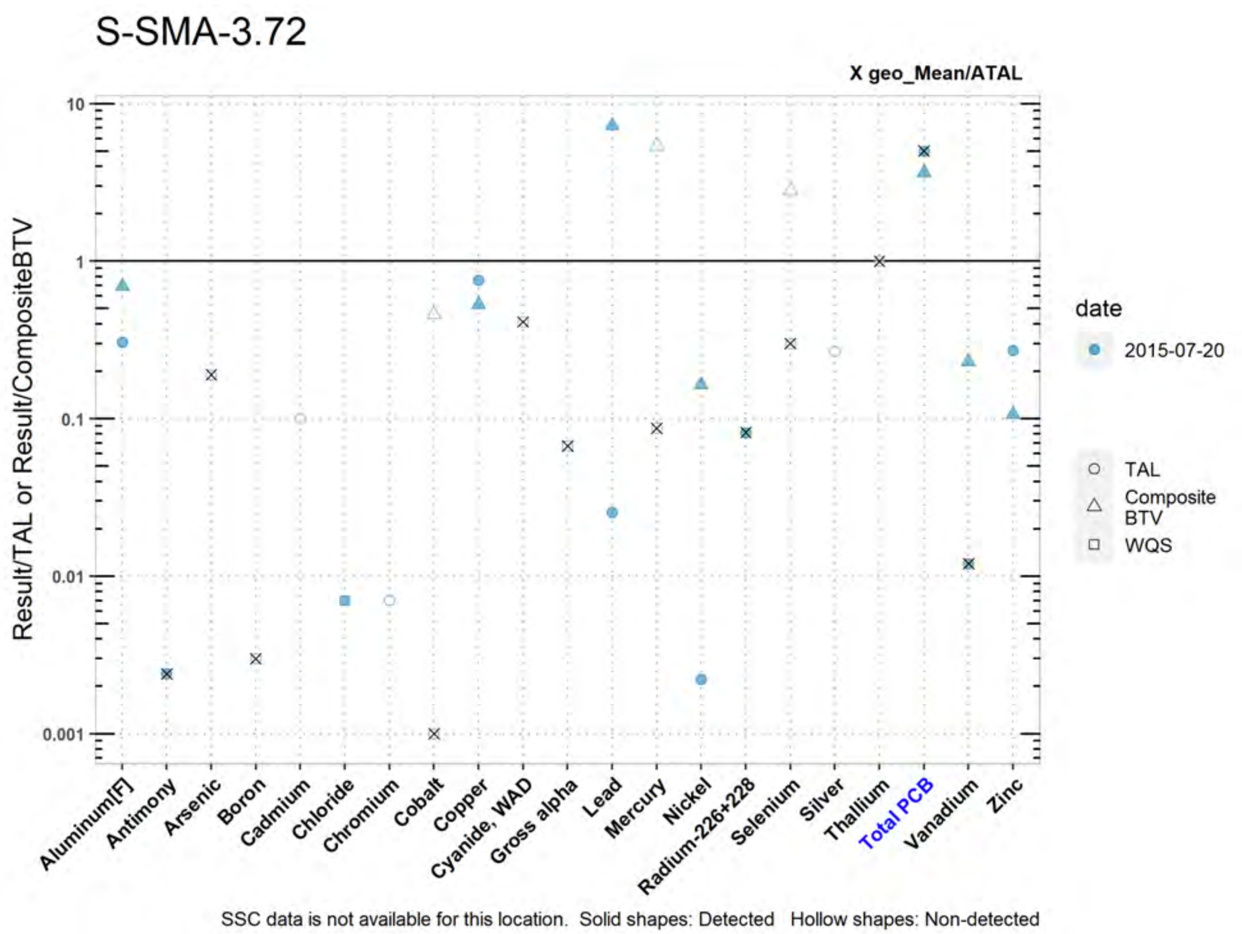


Figure 72.4-1 Analytical Results from Stormwater Sample, S-SMA-3.72 (Plot)

S-SMA-3.72

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chloride	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	NA	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	NA	1000	NA	5.2	15	NA	0.77	NA	30	5	NA	0.47	0.014	100	NA
MTAL	750	NA	340	NA	0.804	NA	285	NA	6.07	22	NA	25.5	NA	229	NA	20	0.753	NA	NA	NA	74.3
Composite_BTV	333	NA	NA	NA	NA	NA	NA	2.19	8.67	NA	50.0	0.0896	0.0124	3.09	10.0	0.536	NA	NA	0.0192	5.30	189
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	ug/L
2015-07-20 result	230	1.53	*1.70*	*15.0*	*0.110*	1620	*2.00*	*1.00*	4.59	*2.14*	*1.00*	0.647	*0.0670*	0.507	2.45	*1.50*	*0.200*	*0.450*	0.0699	1.22	20.1
2015-07-20 dT	0.307	0.0024	NA	NA	NA	0.0070	NA	NA	0.756	NA	NA	0.0254	NA	0.00221	0.0817	NA	NA	NA	5.0	0.012	0.271
2015-07-20 dB	0.691	NA	NA	NA	NA	NA	NA	NA	0.529	NA	NA	7.22	NA	0.164	NA	NA	NA	NA	3.64	0.230	0.106
geo_mean/ATAL	NA	0.0024	0.19	0.0030	NA	NA	NA	0.0010	NA	0.412	0.067	NA	0.087	NA	0.0817	0.30	NA	1	5.0	0.012	NA

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

Figure 72.4-2 Analytical Results from Stormwater Sample, S-SMA-3.72 (Table)

72.4.2 Assessment Unit and Stream Impairments

S-SMA-3.72 drains to Sandia Canyon (within LANL, below Sigma Canyon), which has impairments for adjusted gross alpha, dissolved copper, PCBs, total aluminum, and total mercury. The copper impairment may be Site-related, based on Site history.

72.5 Site-Specific Demonstration

72.5.1 Soil Data Summary

PCBs exceeded the applicable screening value in soil data and stormwater data. All remaining Site-related POCs that exceeded the applicable 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.

72.5.2 Stormwater Data Summary

Total PCBs exceeded the TAL and BTV.

72.5.3 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.2.b.i) for PCBs. The SMA is also in active monitoring; not all Site-related POCs were analyzed for in past samples.

72.5.4 Sampling and Analysis Plan

Table 72.5-1 is the proposed SAP for S-SMA-3.72.

Table 72.5-1 Proposed SAP, S-SMA-3.72

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

73.0 S-SMA-3.95

Associated Sites	20-002(a)
Receiving Water	Sandia Canyon
Drainage Area	0.21 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 20-002(a): Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the August 2017 field visit, all parties agreed that the current SMA sampling location and boundary was the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

73.1 2010 Administratively Continued Permit Summary

Following the May 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in September 2013. 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, 600417). No response has been received from EPA, and stormwater monitoring has not occurred since 2013.

73.2 Site History

20-002(a) (9/30/2021)

SWMU 20-002(a) is the location of a former firing pit (former structure 20-6), located at the far west end of former TA-20, south of East Jemez Road. The steel-lined pit was constructed following the failure of the Dumbo, a containment firing vessel [see description of SWMU 20-002(b)] and was used from 1945 to 1948 to conduct initiator tests. The firing pit had interior dimensions of 14 ft 8 in. × 14 ft 8 in. × 12 ft deep. The walls and floor of the pit consisted of 0.75-in.-thick steel plate backed by 12-in. × 12-in. timbers. The pit was covered by a steel framework, overlain by a mat of 0.25-in.-diameter steel rods spaced 1 in. apart. According to a 1947 report, the framework and mat, presumably installed to contain shot debris, failed after the first few shots. Laboratory facility engineering records indicate that the pit was removed in April 1948. A memorandum dated April 20, 1948, describing cleanup efforts in Lower Sandia Canyon, notes that one “cage” was excavated and the “interior checked negative” after clearing. The SWMU 20-002(a) firing pit is presumed to be the cage referred to in the memorandum.

For investigation activities, refer to “Supplemental Investigation Report for Lower Sandia Canyon Aggregate Area, Revision 1” (N3B 2021, 701448).

73.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 73.2-1.

Table 73.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
20-002(a)	Former firing site	Metals, beryllium, nickel, HE, strontium-90, uranium

73.3 Consent Order Soil Data

Decision-level data for SWMU 20-002(a) consist of results from samples collected in 2010. Analytical results from those samples are presented in Figures 73.3-1 through 73.3-3. Revision 1 of the 2021 supplemental IR (N3B 2021, 701448) concluded that the nature and extent of contamination have been defined and further sampling for extent is not warranted.

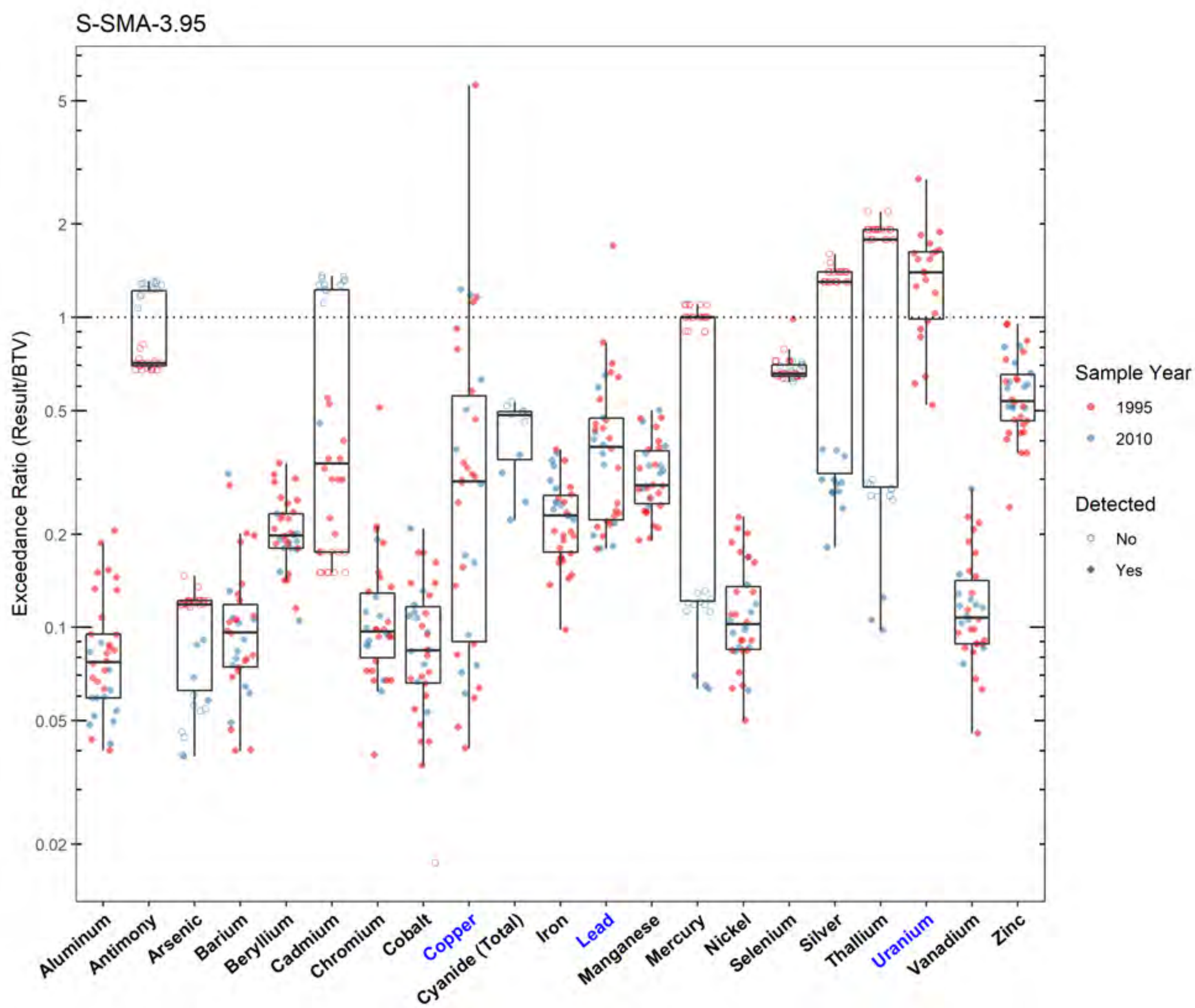


Figure 73.3-1 Inorganics Analytical Results from Soil Samples Associated with S-SMA-3.95

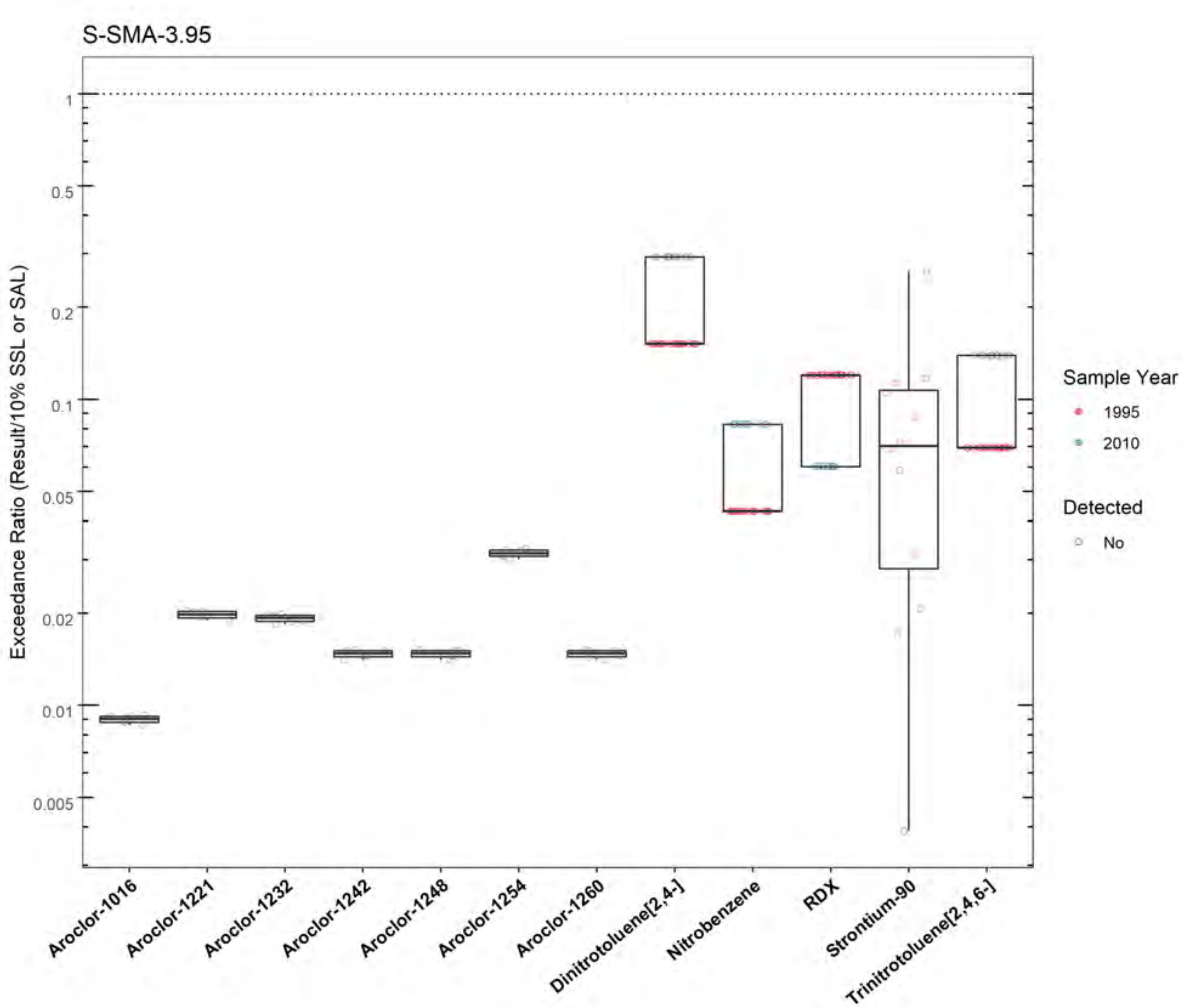


Figure 73.3-2 Organics Analytical Results from Soil Samples Associated with S-SMA-3.95

S-SMA-3.95

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Copper	S-SMA-3.95	Cu	Y	BTV	14.7	82.6	1995-05-16
Lead	S-SMA-3.95	Pb	Y	BTV	22.3	37.9	1995-05-16
Uranium	S-SMA-3.95	U	Y	BTV	1.82	5.08	1995-05-16

Figure 73.3-3 Screening-Level Exceedances from Soil Samples Associated with S-SMA-3.95

73.4 Stormwater Evaluation

73.4.1 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 73.4-1 through 73.4-4.

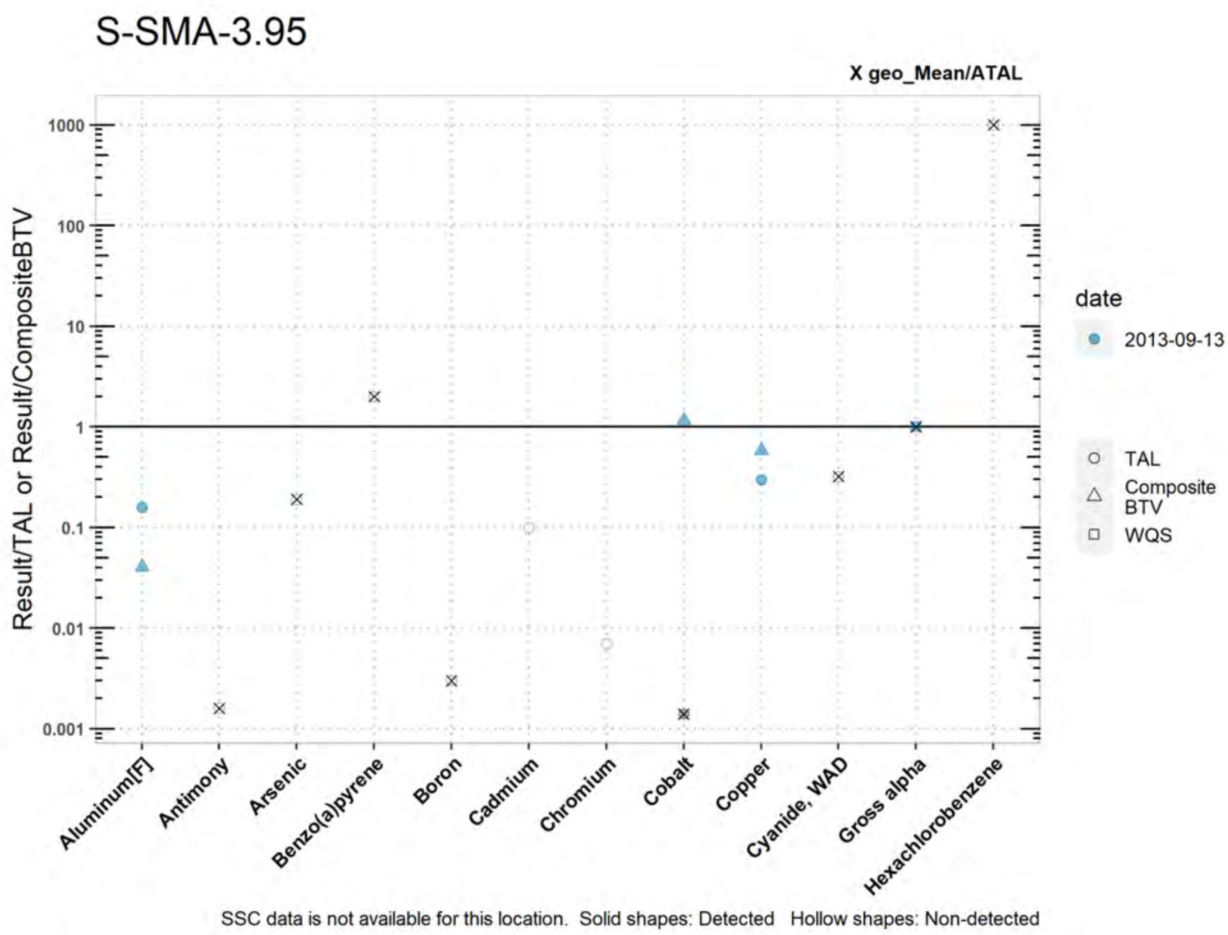


Figure 73.4-1 Analytical Results from Stormwater Sample, S-SMA-3.95 (Plot 1)

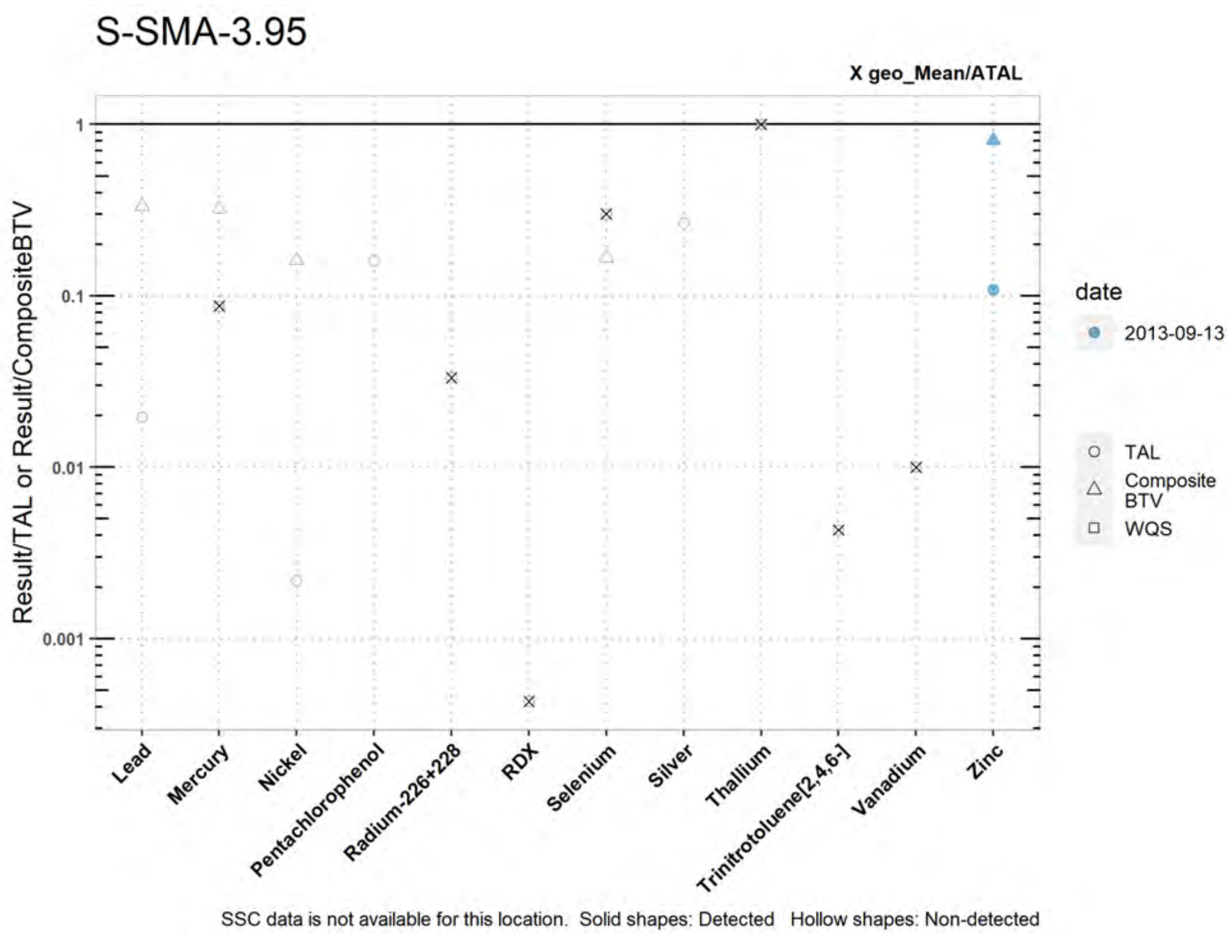


Figure 73.4-2 Analytical Results from Stormwater Sample, S-SMA-3.95 (Plot 2)

S-SMA-3.95

	Aluminum [F]	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Hexachlorobenzene
MQL	2.5	1	0.5	0.064	100	1	10	50	0.5	10	NA	5
ATAL	NA	640	9	0.18	5000	NA	NA	1000	NA	5.2	15	0.0029
MTAL	750	NA	340	NA	NA	0.804	285	NA	6.07	22	NA	NA
Composite_BTV	2950	NA	NA	NA	NA	NA	NA	1.18	3.12	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	pCi/L	ug/L
2013-09-13 result	119	*1.00*	*1.70*	*0.300*	*15.0*	*0.110*	*2.00*	1.37	1.80	*1.67*	15.4	*3.00*
2013-09-13 dT	0.159	NA	NA	NA	NA	NA	NA	0.0014	0.297	NA	1.0	NA
2013-09-13 dB	0.0403	NA	NA	NA	NA	NA	NA	1.16	0.577	NA	NA	NA
geo_mean/ATAL	NA	0.0016	0.19	2	0.0030	NA	NA	0.0014	NA	0.321	1.0	1000

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

Figure 73.4-3 Analytical Results from Stormwater Sample, S-SMA-3.95 (Table 1)

S-SMA-3.95

	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
MQL	0.5	0.005	0.5	5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	0.77	NA	NA	30	200	5	NA	0.47	20	100	NA
MTAL	25.5	NA	229	19	NA	NA	20	0.753	NA	NA	NA	74.3
Composite_BTV	1.50	0.208	3.10	NA	4.21	NA	8.98	NA	NA	NA	NA	10.0
unit	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2013-09-13 result	*0.500*	*0.0670*	*0.500*	*3.00*	*1.00*	*0.0851*	*1.50*	*0.200*	*0.450*	*0.0851*	*1.00*	8.07
2013-09-13 dT	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.109
2013-09-13 dB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.807
geo_mean/ATAL	NA	0.087	NA	NA	0.0333	0.00043	0.30	NA	1	0.0043	0.010	NA

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

Figure 73.4-4 Analytical Results from Stormwater Sample, S-SMA-3.95 (Table 2)

73.4.2 Assessment Unit and Stream Impairments

S-SMA-3.95 drains to Sandia Canyon (within LANL, below Sigma Canyon), which has impairments for adjusted gross alpha, dissolved copper, PCBs, total aluminum, and total mercury. The adjusted gross alpha and metals impairments may be Site-related, based on Site history.

73.5 Site-Specific Demonstration

73.5.1 Soil Data Summary

Uranium exceeded the applicable screening value in soil data and has not yet been measured in stormwater. All remaining Site-related POCs that exceeded the applicable screening value soil data were analyzed for in stormwater data.

73.5.2 Stormwater Data Summary

No TAL exceedances in the confirmation-monitoring sample.

73.5.3 2022 Permit Status

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

73.5.4 Sampling and Analysis Plan

Table 73.5-1 is the proposed SAP for S-SMA-3.95.

Table 73.5-1 Proposed SAP, S-SMA-3.95

Monitoring Constituent	Background for Monitoring
Dissolved uranium	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

74.0 S-SMA-4.1

Associated Sites	53-014
Receiving Water	Sandia Canyon
Drainage Area	0.01 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 53-014: Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the February 2016 signatures of SIP review, all parties agreed that the current SMA sampling location was representative of stormwater discharge from the Site.
2022 Permit Status	Deletion

74.1 2010 Administratively Continued Permit Summary

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

Following the October 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 228781), corrective-action monitoring was initiated. A corrective-action investigation stormwater sample was collected in September 2013. Analytical results from this sample were not used for corrective-action monitoring purposes, as the Site was issued a COC under the Consent Order from NMED in August 2013.

The Permittees submitted a certification of completion of corrective action per Permit part I.E.2(d) for the Site in August 2013 (LANL 2013, 246775). Stormwater monitoring has not occurred since 2013.

74.2 Site History

53-014 (7/31/2017)

SWMU 53-014 is a lead spill site located at a paved storage area in TA-53 west of building 53-18. Lead shot was spilled on the paved surface, and stormwater washed the lead into an asphalt-lined channel that joins a drainage below a NPDES-permitted outfall (03A113). The lead shot was observed at a number of locations in the channel, but was not seen below a large catchment approximately 50 ft below the canyon rim. This site was not originally identified in the 1990 SWMU Report but was discovered only after the RFI work plan for OU 1100 had been prepared.

This site was originally reported as a SWMU in the 1996 notification letter to the NMED, and is listed as such in Attachment K of the RCRA permit and in the 2005 and 2016 Consent Orders. However, the site is identified as an AOC in recent reports and NMED correspondence.

For investigation activities, refer to "Investigation Report for Lower Sandia Canyon Aggregate Area, Revision 1" (LANL 2011, 205989).

74.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 74.2-1.

Table 74.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
53-014	Soil contamination, lead storage site	Lead

74.3 Consent Order Soil Data

Decision-level data for SWMU 53-014 consist of results from samples collected in 1997. Analytical results from those samples are presented in Figure 74.3-1. The 2011 IR (LANL 2011, 205989) concluded that the nature and extent of lead contamination were defined in 1997 and all lead results were below the residential SSL. Therefore, the nature and extent of contamination were not evaluated, and human-health and no-ecological-risk screenings were not performed for the site.

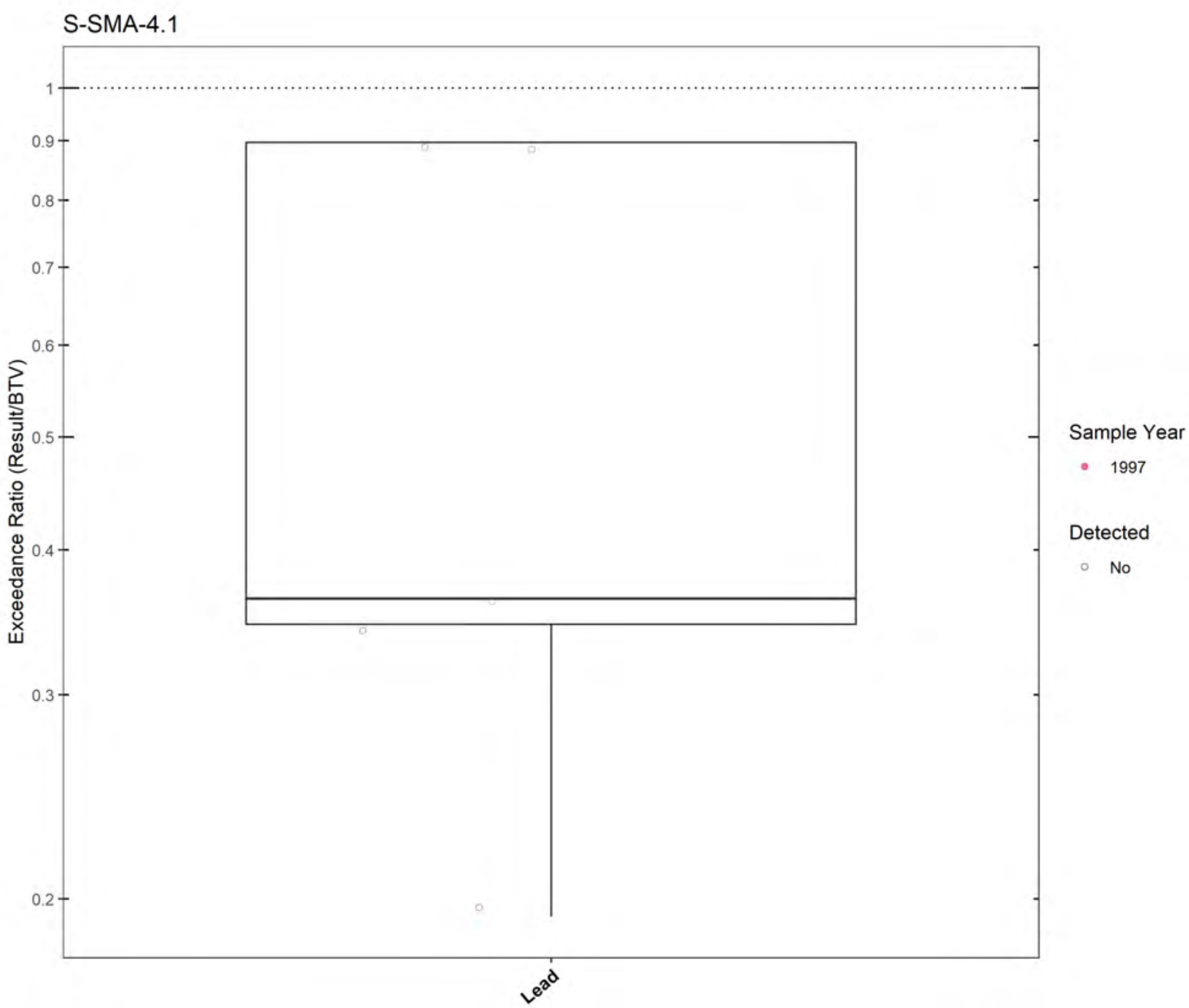


Figure 74.3-1 Lead Analytical Results from Soil Samples Associated with S-SMA-4.1

74.4 Stormwater Evaluation

74.4.1 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 74.4-1 and 74.4-2.

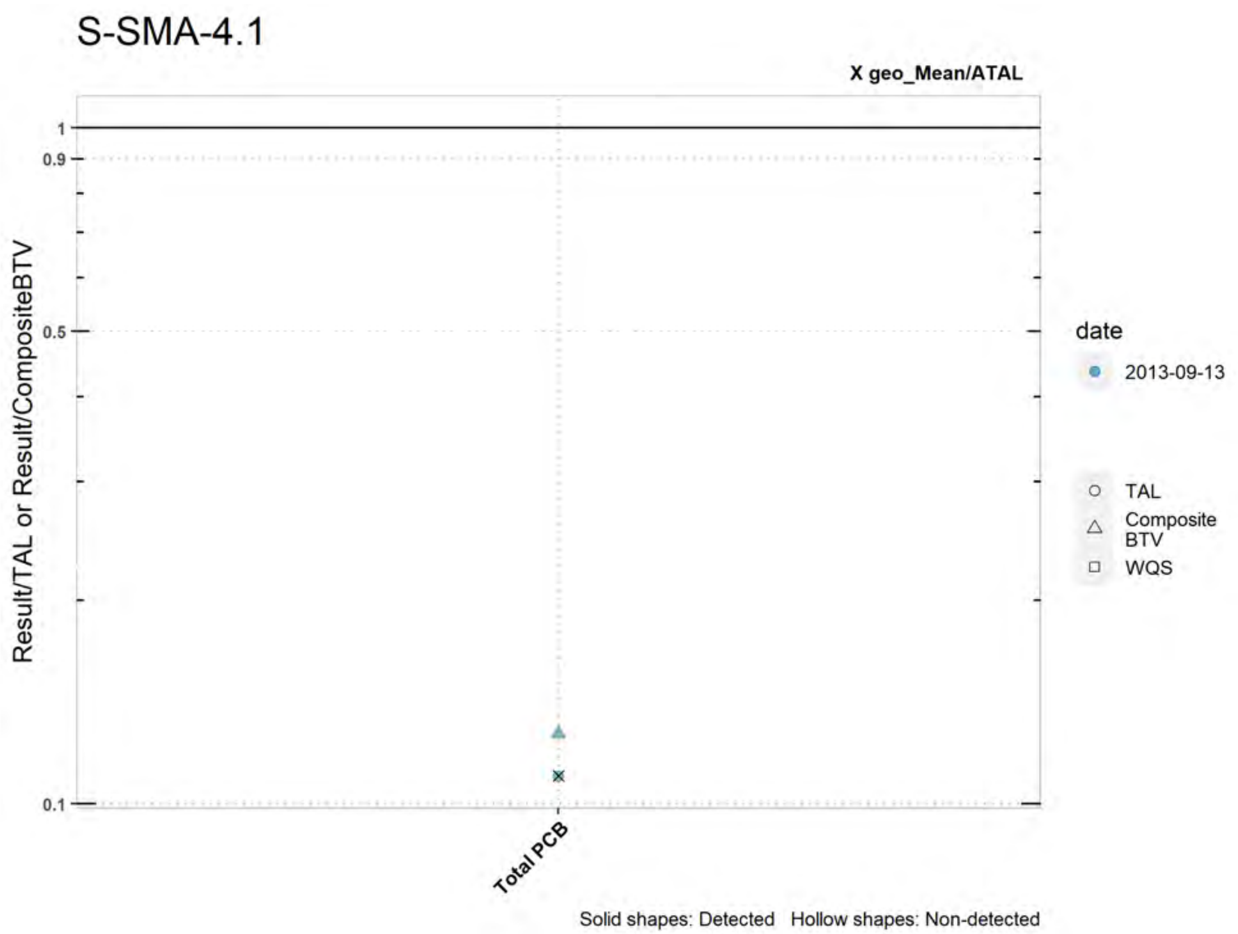


Figure 74.4-1 Analytical Results from Stormwater Sample, S-SMA-4.1 (Plot)

S-SMA-4.1

	Total PCB
MQL	0.2
ATAL	0.014
MTAL	NA
Composite_BTV	0.0122
unit	ug/L
2013-09-13 result	0.00155
2013-09-13 dT	0.11
2013-09-13 dB	0.127
geo_mean/ATAL	0.11

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

Figure 74.4-2 Analytical Results from Stormwater Sample, S-SMA-4.1 (Table)

74.4.2 Assessment Unit and Stream Impairments

S-SMA-4.1 drains to Sandia Canyon (within LANL, below Sigma Canyon), which has impairments for adjusted gross alpha, dissolved copper, PCBs, total aluminum, and total mercury. The impairments are not Site-related, based on Site history.

74.5 Site-Specific Demonstration

74.5.1 Soil Data Summary

There were no exceedances of the applicable screening value in soil data.

74.5.2 Stormwater Data Summary

There were no TAL exceedances in stormwater data.

74.5.3 2022 Permit Status

The SMA and associated Sites are eligible for deletion because stormwater discharges associated with industrial activity no longer occur at the Site (Part I.C.4.e).

75.0 S-SMA-5

Associated Sites	20-002(c)
Receiving Water	Sandia Canyon
Drainage Area	0.39 acres
Landscape Characteristics	34% impervious, 66% pervious
Consent Order Site Status	SWMU 20-002(c): Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the August 2017 field visit, all parties agreed that the current SMA sampling location and boundary was the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

75.1 2010 Administratively Continued Permit Summary

Following the May 2011 submittal to EPA of certification of baseline control installation, 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 at S-SMA-5. Baseline monitoring is ongoing until one confirmation sample is collected from this SMA.

75.2 Site History

20-002(c) (9/30/2021)

SWMU 20-002(c) is a former firing point located near the southern edge of TA-53, close to the boundary of TA-72. This firing point was used for tests with explosive charges of up to 50 lb at former TA-20. The firing point is depicted in engineering drawing ENG-C 1778, Revision 1, as a pad bordered on three sides by an earthen berm. Engineering records indicate that the structure associated with this firing point (former structure 20-9) was removed in April 1948. A memorandum dated April 20, 1948, describing cleanup efforts in Sandia Canyon, notes that seven shot areas were excavated and the ground checked negative after removal. The SWMU 20-002(c) firing point likely is one of the seven shot areas referenced in that memorandum. The north side of this site is currently covered by the road embankment for East Jemez Road.

For investigation activities, refer to “Supplemental Investigation Report for Lower Sandia Canyon Aggregate Area, Revision 1” (N3B 2021, 701448).

75.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 75.2-1.

Table 75.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
20-002(c)	Firing site	HE

75.3 Consent Order Soil Data

Decision-level data for SWMU 20-002(c) consist of results from samples collected in 2010. Analytical results from those samples are presented in Figures 75.3-1 through 75.3-3. Revision 1 of the 2021 supplemental IR (N3B 2021, 701448) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

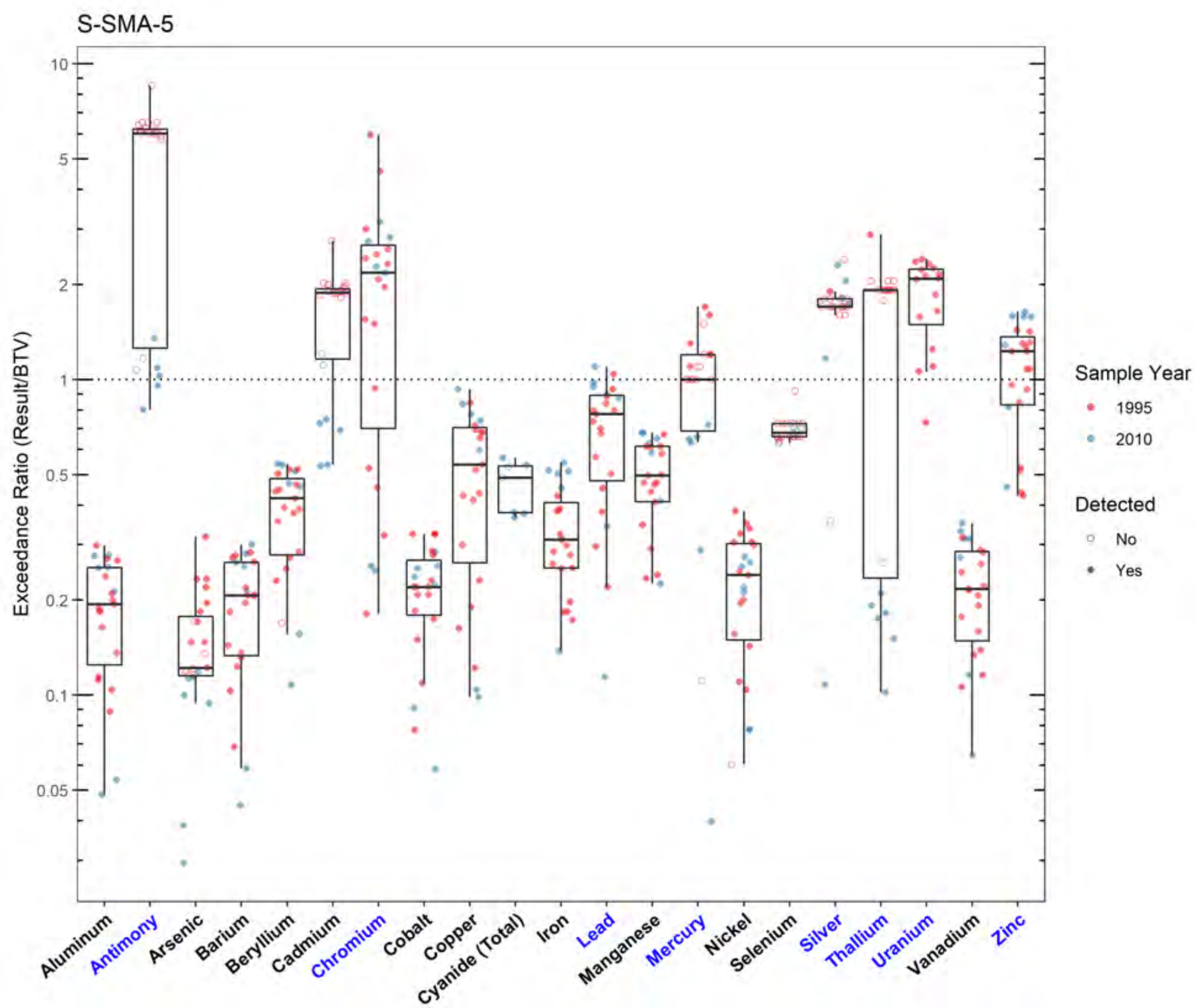


Figure 75.3-1 Inorganics Analytical Results from Soil Samples Associated with S-SMA-5

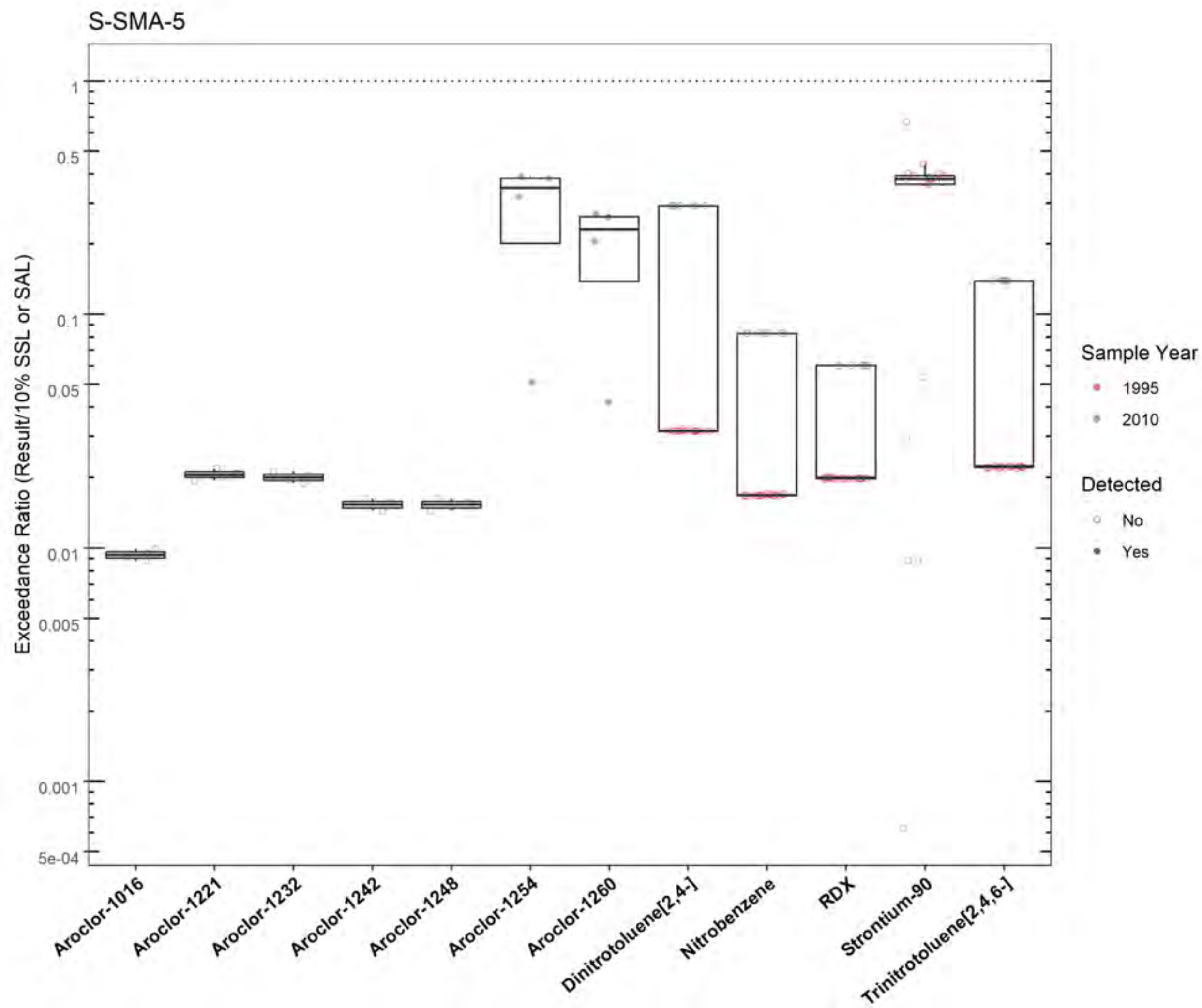


Figure 75.3-2 Organics Analytical Results from Soil Samples Associated with S-SMA-5

S-SMA-5

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	S-SMA-5	Sb	Y	BTV	0.830	1.12	2010-08-03
Chromium	S-SMA-5	Cr	Y	BTV	19.3	115	1995-06-08
Lead	S-SMA-5	Pb	Y	BTV	22.3	24.6	2010-08-02
Mercury	S-SMA-5	Hg	Y	BTV	0.100	0.170	1995-06-08
Silver	S-SMA-5	Ag	Y	BTV	1.00	2.31	2010-08-02
Thallium	S-SMA-5	Tl	Y	BTV	0.730	2.10	1995-06-08
Uranium	S-SMA-5	U	Y	BTV	1.82	4.38	1995-06-08
Zinc	S-SMA-5	Zn	Y	BTV	48.8	80.0	2010-08-02

Figure 75.3-3 Screening-Level Exceedances from Soil Samples Associated with S-SMA-5

75.4 Stormwater Evaluation

75.4.1 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.

75.4.2 Assessment Unit and Stream Impairments

S-SMA-5 drains to Sandia Canyon (within LANL, below Sigma Canyon), which has impairments for adjusted gross alpha, dissolved copper, PCBs, total aluminum, and total mercury. The impairments are not Site-related, based on Site history.

75.5 Site-Specific Demonstration

75.5.1 Soil Data Summary

No Site-related POCs exceeded the applicable screening value in soil data. HE will be monitored for in stormwater.

75.5.2 Stormwater Data Summary

No confirmation-monitoring data.

75.5.3 2022 Permit Status

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

75.5.4 Sampling and Analysis Plan

Table 75.5-1 is the proposed SAP for S-SMA-5.

Table 75.5-1 Proposed SAP, S-SMA-5

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

76.0 S-SMA-5.2

Associated Sites	20-003(c)
Receiving Water	Sandia Canyon
Drainage Area	0.63 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	AOC 20-003(c): Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the February 2016 signatures of SIP review, all parties agreed that the current SMA sampling location was representative of stormwater discharge from the Site.
2022 Permit Status	Corrective Action

76.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in July 2019. 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 October 2020 (N3B 2020, 701098). No response has been received from EPA, and stormwater monitoring has not occurred since 2019.

76.2 Site History

20-003(c) (9/30/2021)

AOC 20-003(c) is the site of a former U.S. Navy gun mount, located approximately 90 ft north of East Jemez Road in Sandia Canyon in former TA-20. The site is now located within TA-53.

The former gun site was used between 1945 and 1948. A 10-ft × 10-ft concrete pad with a steel-plate surface (former structure 20-16) was used as a mount for the gun. Engineering drawing ENG-C 1778 shows a 30-ft-long, earth-bermed, timber-frame bin filled with tamped earth (former structure 20-10) located near the gun and on the slope at the toe of the canyon wall. At the end nearest the gun, the timber frame was 12 ft wide and 10 ft high, and at the far end, it was 20 ft wide and 5 ft high.

The gun was fired into the earth-filled bin so that the projectile could be recovered. Laboratory engineering records show that in April 1948, structure 20-10 was removed and structure 20-28 (a conduit manhole) was left in place along with the concrete pad with anchor bolts (structure 20-16). The disposition of the soil from the timber-bin frame is not known.

For investigation activities, refer to "Supplemental Investigation Report for Lower Sandia Canyon Aggregate Area, Revision 1" (N3B 2021, 701448).

76.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 76.2-1.

Table 76.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
20-003(c)	Former firing site	Metals, radium, strontium-90

76.3 Consent Order Soil Data

Decision-level data for AOC 20-003(c) consist of results from samples collected in 2010. Analytical results from those samples are presented in Figures 76.3-1 through 76.3-3. Revision 1 of the 2021 supplemental IR (N3B 2021, 701448) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

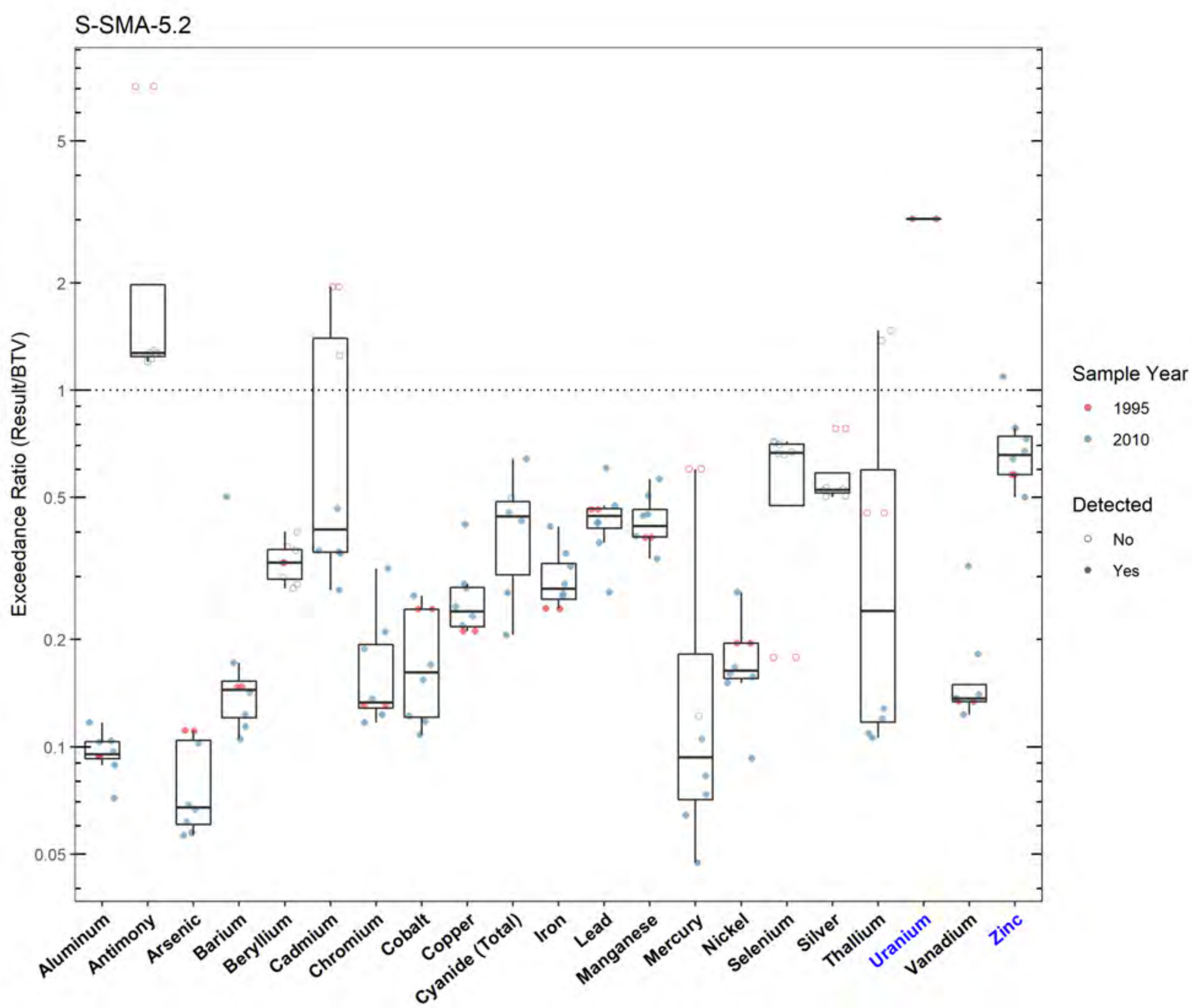


Figure 76.3-1 Inorganics Analytical Results from Soil Samples Associated with S-SMA-5.2

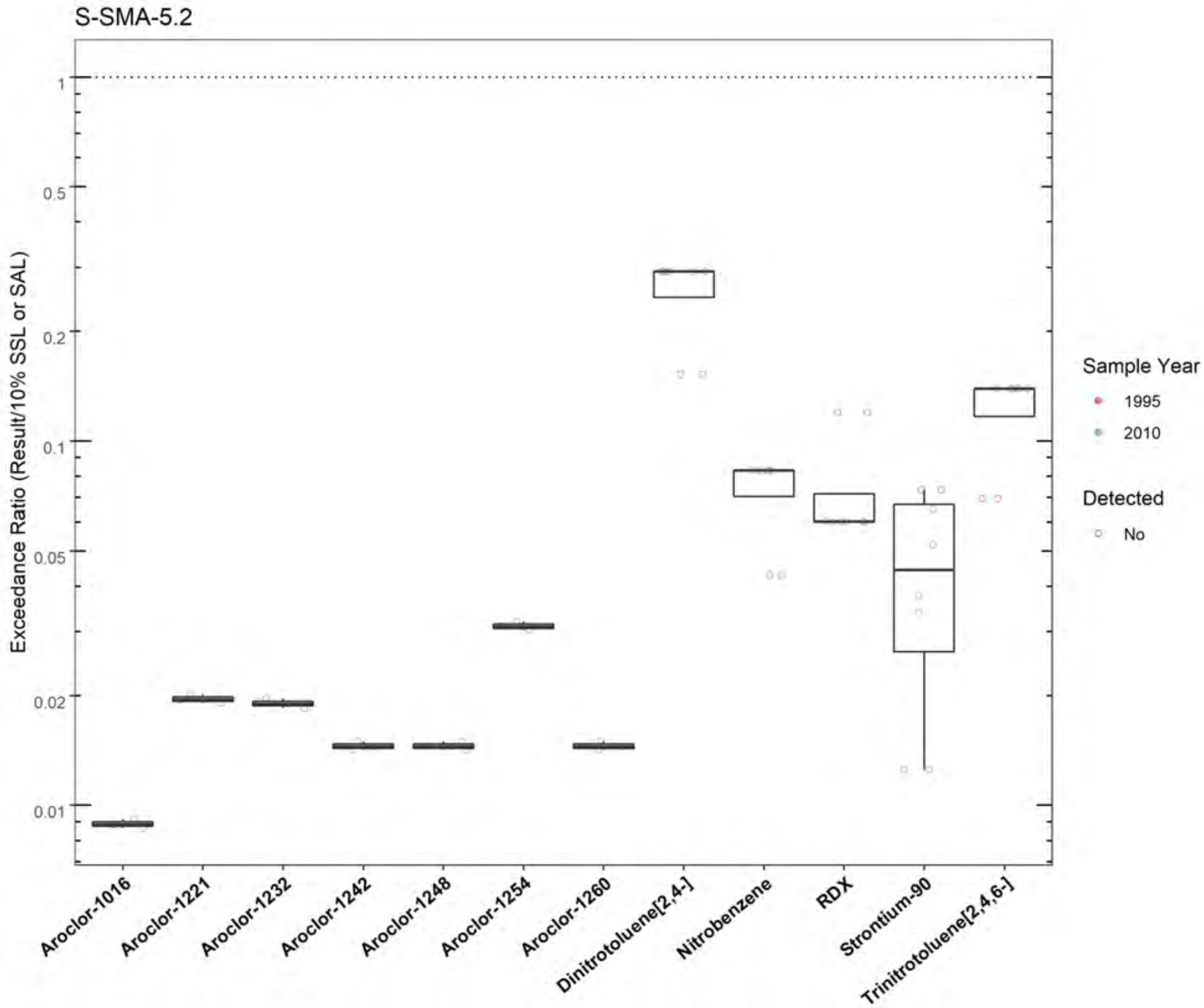


Figure 76.3-2 Organics Analytical Results from Soil Samples Associated with S-SMA-5.2

S-SMA-5.2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Uranium	S-SMA-5.2	U	Y	BTV	1.82	5.50	1995-05-30
Zinc	S-SMA-5.2	Zn	Y	BTV	48.8	53.2	2010-07-29

Figure 76.3-3 Screening-Level Exceedances from Soil Samples Assoicated with S-SMA-5.2

76.4 Stormwater Evaluation

76.4.1 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 2019. Analytical results from that sample are presented in Figures 76.4-1 through 76.4-4.

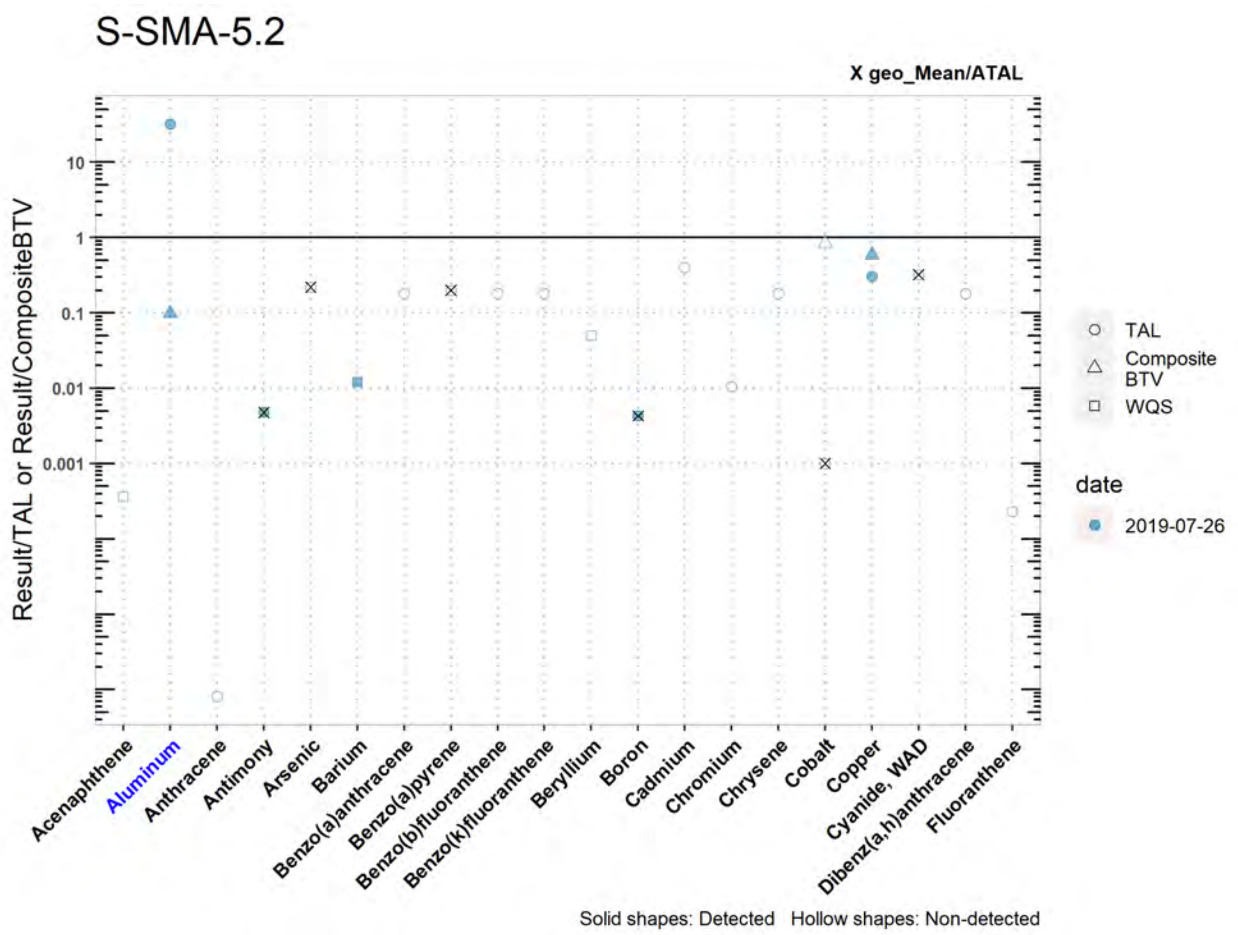


Figure 76.4-1 Analytical Results from Stormwater Sample, S-SMA-5.2 (Plot 1)

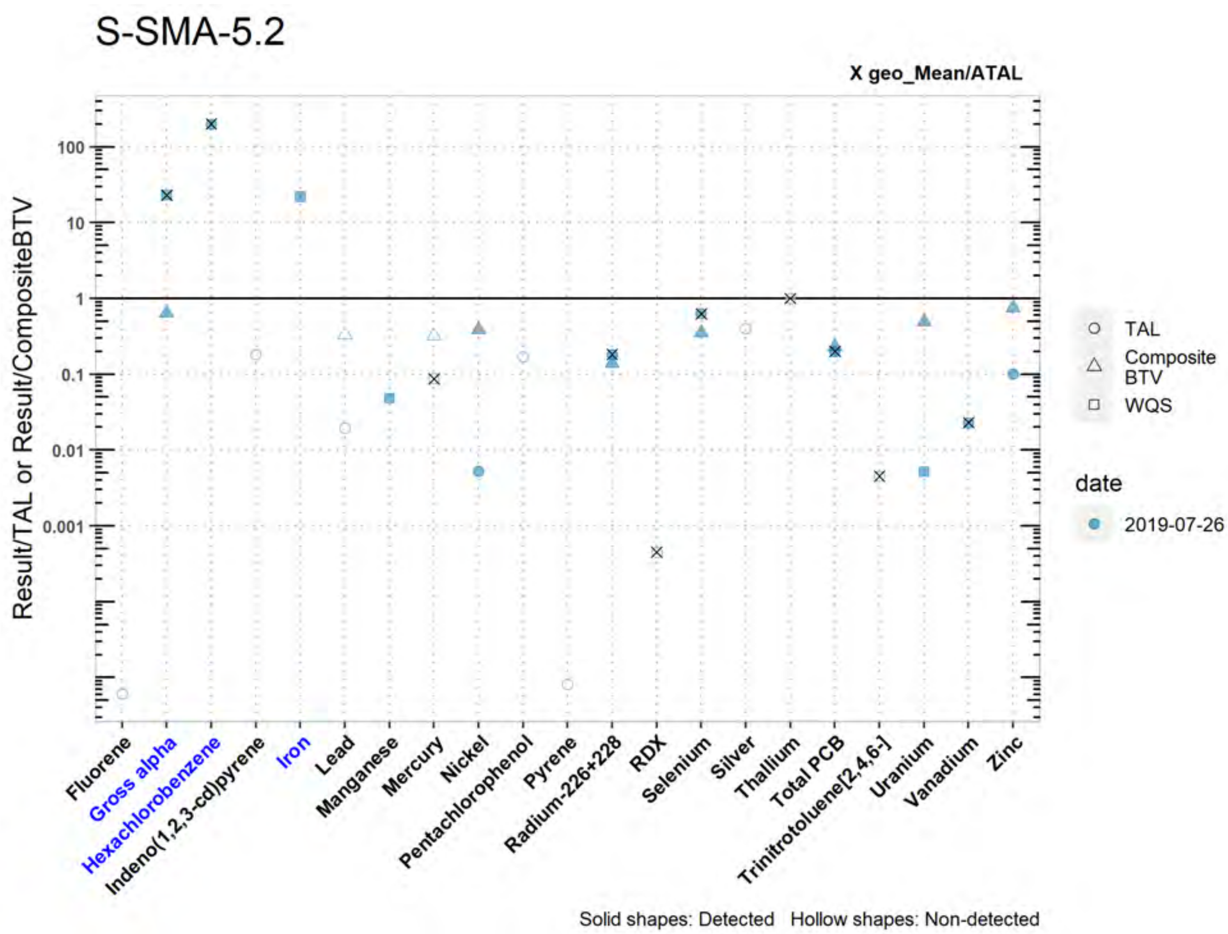


Figure 76.4-2 Analytical Results from Stormwater Sample, S-SMA-5.2 (Plot 2)

S-SMA-5.2

	Acenaphthene	Aluminum	Anthracene	Antimony	Arsenic	Barium	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Beryllium	Boron	Cadmium	Chromium	Chrysene	Cobalt	Copper	Cyanide, WAD	Dibenz(a,h)anthracene	Fluoranthene
MQL	NA	2.5	0.064	1	0.5	NA	0.064	0.064	0.064	0.064	NA	100	1	10	0.064	50	0.5	10	0.064	0.064
ATAL	NA	NA	NA	640	9	NA	NA	0.18	NA	NA	NA	5000	NA	NA	NA	1000	NA	5.2	NA	NA
MTAL	NA	1077	NA	NA	340	NA	0.18	NA	0.18	0.18	NA	NA	0.804	285	0.18	NA	6.07	22	0.18	140
Composite_BTV	NA	37400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.18	3.12	NA	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
2019-07-26 result	*0.0323*	34600	*0.0323*	3.10	*2.00*	24.8	*0.0323*	*0.0323*	*0.0323*	*0.0323*	*0.200*	21.4	*0.300*	*3.00*	*0.0323*	*1.00*	1.84	*1.67*	*0.0323*	*0.0323*
2019-07-26 dT	NA	32.1	NA	0.0048	NA	0.012	NA	NA	NA	NA	NA	0.0043	NA	NA	NA	NA	0.303	NA	NA	NA
2019-07-26 dB	NA	0.0984	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.590	NA	NA	NA
geo_mean/ATAL	NA	NA	NA	0.0048	0.22	NA	NA	0.2	NA	NA	NA	0.0043	NA	NA	NA	0.0010	NA	0.321	NA	NA

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

Figure 76.4-3 Analytical Results from Stormwater Sample, S-SMA-5.2 (Table 1)

S-SMA-5.2

	Fluorene	Gross alpha	Hexachlorobenzene	Indeno(1,2,3-cd)pyrene	Iron	Lead	Manganese	Mercury	Nickel	Pentachlorophenol	Pyrene	Radium-226+228	RDX	Selenium	Silver	Thallium	Total PCB	Trinitrotoluene [2,4,6-]	Uranium	Vanadium	Zinc
MQL	0.064	NA	5	0.064	NA	0.5	NA	0.005	0.5	5	0.064	NA	NA	5	0.5	0.5	0.2	NA	NA	50	20
ATAL	NA	15	0.0029	NA	NA	NA	NA	0.77	NA	NA	NA	30	200	5	NA	0.47	0.014	20	NA	100	NA
MTAL	5300	NA	NA	0.18	NA	25.5	NA	NA	229	19	4000	NA	NA	20	0.753	NA	NA	NA	NA	NA	74.3
Composite_BTV	NA	57.2	NA	NA	NA	1.50	NA	0.208	3.10	NA	NA	4.21	NA	8.98	NA	NA	0.0122	NA	0.315	NA	10.0
unit	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	ug/L
2019-07-26 result	*0.0323*	347	0.555	*0.0323*	22000	*0.500*	62.2	*0.0670*	1.20	*3.23*	*0.0323*	5.47	*0.0898*	3.17	*0.300*	*0.600*	0.00282	*0.0898*	0.155	2.28	7.54
2019-07-26 dT	NA	23	200	NA	22	NA	0.048	NA	0.00524	NA	NA	0.182	NA	0.63	NA	NA	0.20	NA	0.0052	0.023	0.101
2019-07-26 dB	NA	0.645	NA	NA	NA	NA	NA	NA	0.387	NA	NA	0.138	NA	0.353	NA	NA	0.231	NA	0.492	NA	0.754
geo_mean/ATAL	NA	23	200	NA	NA	NA	NA	0.087	NA	NA	NA	0.182	0.00045	0.63	NA	1	0.20	0.0045	NA	0.023	NA

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

Figure 76.4-4 Analytical Results from Stormwater Sample, S-SMA-5.2 (Table 2)

76.4.2 Assessment Unit and Stream Impairments

S-SMA-5.2 drains to Sandia Canyon (within LANL, below Sigma Canyon), which has impairments for adjusted gross alpha, dissolved copper, PCBs, total aluminum, and total mercury. The adjusted gross alpha and metals impairments may be Site-related, based on Site history.

76.5 Site-Specific Demonstration

76.5.1 Soil Data Summary

Zinc exceeded the applicable screening value in soil data, and was previously monitored in stormwater data and did not exceed TALs, therefore it will not be added to the SAP. Uranium exceeded the applicable screening value in soil data but is not a Site-related POC, therefore it will not be added to the SAP.

76.5.2 Stormwater Data Summary

Aluminum and gross alpha exceeded the TAL but not the BTV. Hexachlorobenzene exceeded the TAL, but there is no BTV.

76.5.3 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.2.b.i).

77.0 S-SMA-5.5

Associated Sites	20-005
Receiving Water	Sandia Canyon
Drainage Area	0.65 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 20-005: In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the August 2017 field visit, all parties agreed that all parties agreed that the current SMA sampling location and boundary was the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

77.1 2010 Administratively Continued Permit Summary

Following the May 2011 submittal to EPA of certification of baseline control installation, 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 per permit Part I.E.3 in May 2015 for the Site (LANL 2015, 600417). No response has been received from EPA, and stormwater monitoring has not occurred since 2014.

77.2 Site History

20-005 (9/29/2021)

SWMU 20-005 is a former septic system (septic tank and drainlines) that was located south of East Jemez Road in former TA-20. The site is now located within TA-72.

The system served a toilet, restroom sink, and darkroom sink in former building 20-1. The system was constructed in 1945, and its use was discontinued in 1948. Engineering drawings show the tank (former structure 20-27) as having 6-in.-thick concrete walls with interior dimensions of 3 ft × 6 ft × 5 ft deep, and a capacity of 540 gal. The discharge point of the tank is not known. The septic system could not be located during a 1985 program conducted by the Laboratory to remove existing structures from Lower Sandia Canyon. Although the tank could not be located, a pit-like depression was noted in the tuff in the area where the tank was believed to have been located. According to the 1985 report, excavation surrounding the area of the “pit” turned up no evidence of the tank or associated drainlines.

For investigation activities, refer to “Supplemental Investigation Report for Lower Sandia Canyon Aggregate Area, Revision 1” (N3B 2021, 701448).

77.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 77.2-1.

Table 77.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
20-005	Septic tank	Silver, inorganic chemicals, cyanide, organic chemicals

77.3 Consent Order Soil Data

Decision-level data for SWMU 20-005 consist of results from samples collected in 2010. Analytical results from those samples are presented in Figures 77.3-1 through 77.3-3. Revision 1 of the 2021 supplemental IR (N3B 2021, 701448) concluded that the nature and extent of contaminants have been defined, except for the vertical extent of inorganic and organic chemicals at two sample locations where the required depth intervals were not sampled.

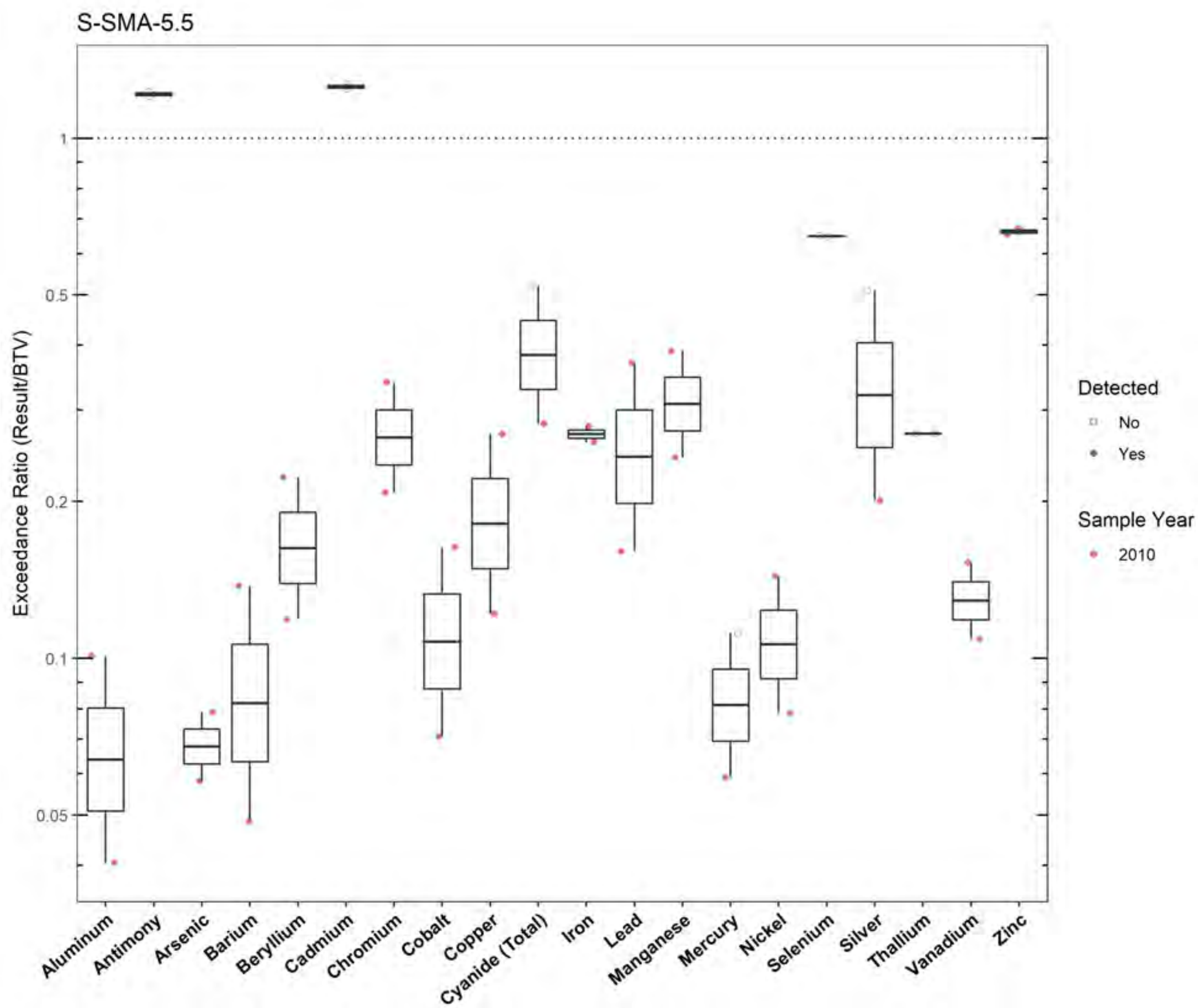


Figure 77.3-1 Inorganics Analytical Results from Soil Samples Associated with S-SMA-5.5

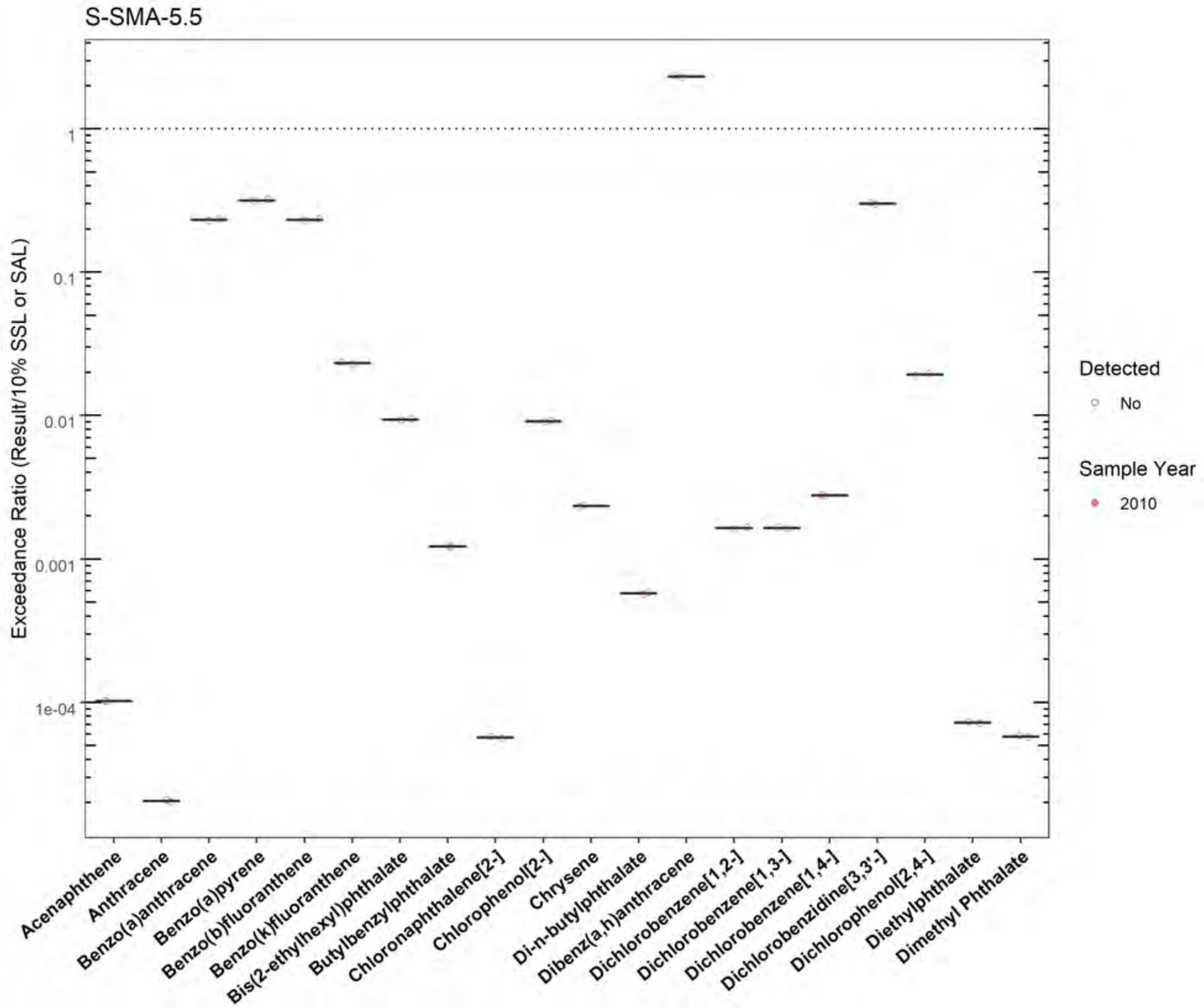


Figure 77.3-2 Organics Analytical Results from Soil Samples Associated with S-SMA-5.5 (Plot 1)

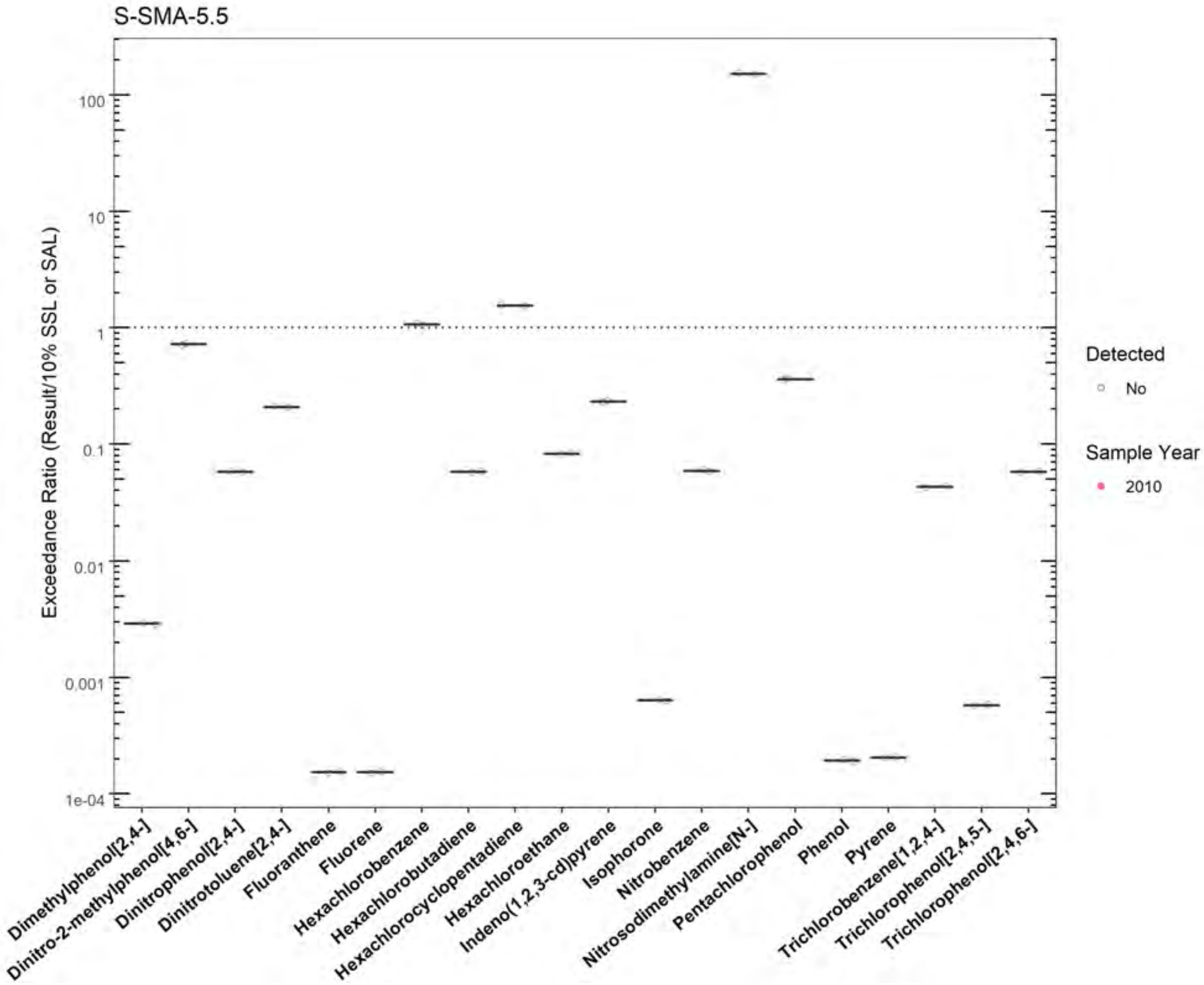


Figure 77.3-3 Organics Analytical Results from Soil Samples Associated with S-SMA-5.5 (Plot 2)

77.4 Stormwater Evaluation

77.4.1 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 this sample are presented in Figures 77.4-1 and 77.4-2.

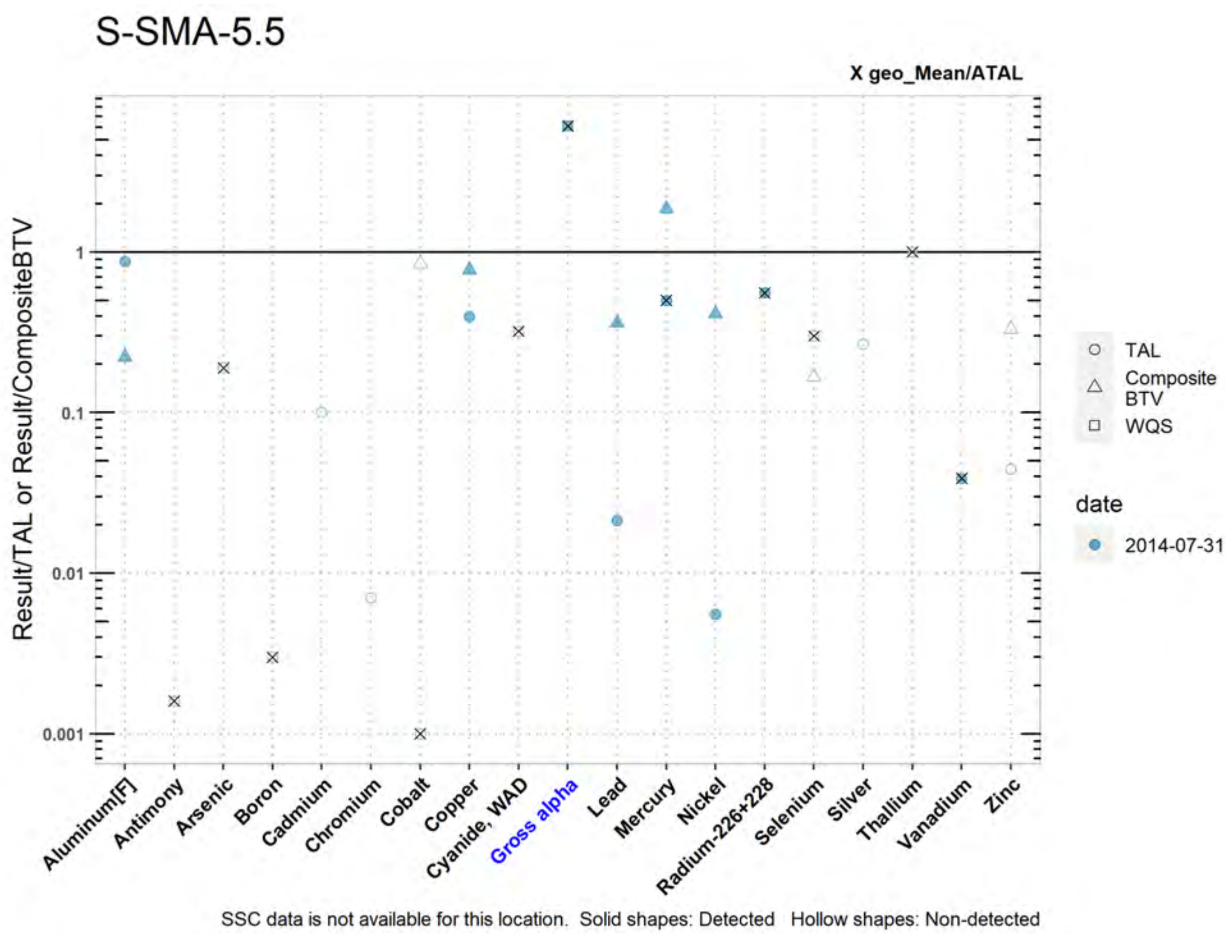


Figure 77.4-1 Analytical Results from Stormwater Sample, S-SMA-5.5 (Plot)

S-SMA-5.5

	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	0.804	285	NA	6.07	22	NA	25.5	NA	229	NA	20	0.753	NA	NA	74.3
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
2014-07-31 result	655	*1.00*	*1.70*	*15.0*	*0.110*	*2.00*	*1.00*	2.41	*1.67*	91.0	0.543	0.386	1.27	16.7	*1.50*	*0.200*	*0.450*	3.89	*3.30*
2014-07-31 dT	0.873	NA	NA	NA	NA	NA	NA	0.397	NA	6.1	0.0213	0.50	0.00555	0.557	NA	NA	NA	0.039	NA
2014-07-31 dB	0.222	NA	NA	NA	NA	NA	NA	0.772	NA	NA	0.362	1.86	0.410	NA	NA	NA	NA	NA	NA
geo_mean/ATAL	NA	0.0016	0.19	0.0030	NA	NA	0.0010	NA	0.321	6.1	NA	0.50	NA	0.557	0.30	NA	1	0.039	NA

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

Figure 77.4-2 Analytical Results from Stormwater Sample, S-SMA-5.5 (Table)

77.4.2 Assessment Unit and Stream Impairments

S-SMA-5.5 drains to Sandia Canyon (within LANL, below Sigma Canyon), which has impairments for adjusted gross alpha, dissolved copper, PCBs, total aluminum, and total mercury. The metals and PCB impairment may be Site-related, based on Site history.

77.5 Site-Specific Demonstration

77.5.1 Soil Data Summary

There were no exceedances of the applicable screening value in soil data.

77.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL, but there was no SSC data to determine if it exceeded the BTV. Gross alpha is not a site related POC, so it will not be added to the SAP.

77.5.3 2022 Permit Status

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

77.5.4 Sampling and Analysis Plan

Table 77.5-1 is the proposed SAP for S-SMA-5.5.

Table 77.5-1 Proposed SAP, S-SMA-5.5

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

78.0 S-SMA-6

Associated Sites	72-001
Receiving Water	Sandia Canyon
Drainage Area	5.79 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	AOC 72-001: In Progress Deferred per Consent Order
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	The November 2016 field visit determined that the sampler was being impacted by up-canyon sources. The sampler was moved to better represent historical SWMU activities at this Site.
2022 Permit Status	Long-Term Stewardship per Permit Part I.C.3 criterion

78.1 2010 Administratively Continued Permit Summary

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

Following the October 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600948), 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. Corrective-action monitoring was reinitiated, and stormwater samples were collected in July and September 2017. Analytical results from these samples initiated corrective action.

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

78.2 Site History

72-001 (7/31/2017)

AOC 72-001 consists of an active small-arms firing and training range used by the Laboratory's security force. The firing range is located in Sandia Canyon at the west end of TA-72 and has been operational since 1966. It includes a 175-ft × 250-ft firing range surrounded by earthen berms, an adjacent skeet-shooting range, and administrative buildings. The drainage channel and flood plain of Sandia Canyon run through the middle of the firing range.

Structures at this site include an office building (building 72-8, a former guard station), range house (building 72-9), scoring area (building 72-10), firing station (building 72-11), weapons-cleaning area (building 72-12), storage buildings (72-13 and 72-14), and canopies 3 and 4 (buildings 72-15 and 72-16). Lead is present within the firing range because bullets are scattered at the base of the berms and cliffs, and lead shot from skeet shooting is visible on the ground.

During the 1995 VCA conducted at SWMU 00-016 (an inactive small-arms firing range), the NMED concurred with the Laboratory's request to move lead-contaminated soil from the inactive range to the active AOC 72-001 firing range. During the second phase of the VCA implemented at SWMU 00-016 in

1996 and 1997, lead was removed from soil stockpiled from berms at the former firing range using dry sieving. Approximately 4,660 yd^3 of sieved soil from SWMU 00-016 was transported to TA-72 and placed on the berms located along the north side of the AOC 72-001 firing range and along the berm located between, and north of, canopies 3 and 4.

For investigation activities, refer to “Investigation Report for Lower Sandia Canyon Aggregate Area, Revision 1” (LANL 2011, 205989).

78.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 78.2-1.

Table 78.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
72-001	Firing site	Copper, lead

78.3 Consent Order Soil Data

Decision-level data for AOC 72-001 consist of results from samples collected in 1995. The 2011 IR (LANL 2011, 205989) proposed delaying investigation of this site because it is an active small-arms firing range.

78.4 Stormwater Evaluation

78.4.1 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 this sample are presented in Figures 78.4-1 and 78.4-2.

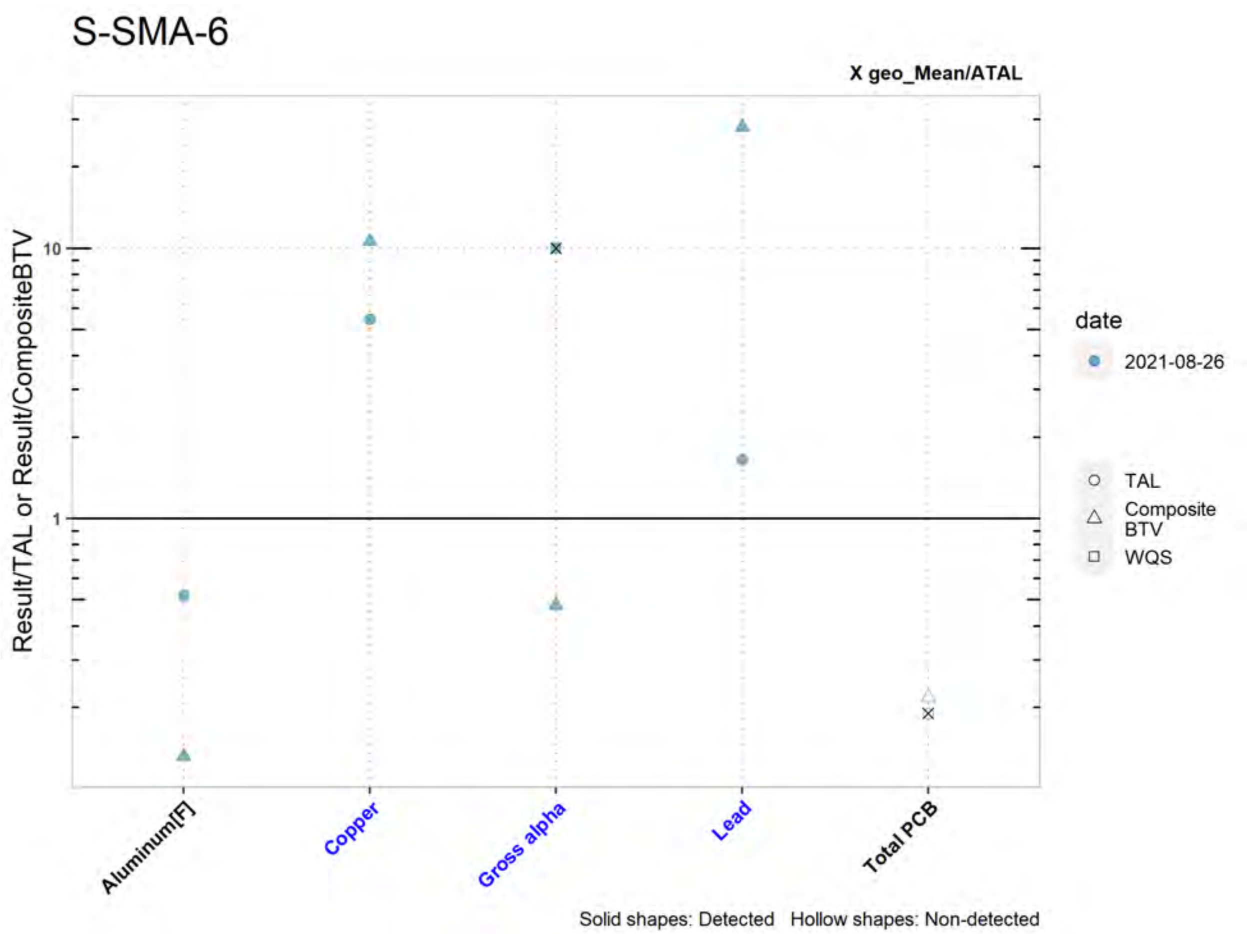


Figure 78.4-1 Analytical Results from Stormwater Sample, S-SMA-6 (Plot)

S-SMA-6

	Aluminum [F]	Copper	Gross alpha	Lead	Total PCB
MQL	2.5	0.5	NA	0.5	0.2
ATAL	NA	NA	15	NA	0.014
MTAL	750	6.07	NA	25.5	NA
Composite_BTV	2950	3.12	57.2	1.50	0.0122
unit	ug/L**	ug/L	pCi/L*	ug/L	ug/L
2021-08-26 result	389	33.1	156	42.1	*0.00266*
2021-08-26 dT	0.519	5.45	10	1.65	NA
2021-08-26 dB	0.132	10.6	0.478	28.1	NA
geo_mean/ATAL	NA	NA	10	NA	0.19

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 78.4-2 Analytical Results from Stormwater Sample, S-SMA-6 (Table)

78.4.2 Assessment Unit and Stream Impairments

S-SMA-6 drains to Sandia Canyon (within LANL, below Sigma Canyon), which has impairments for adjusted gross alpha, dissolved copper, PCBs, total aluminum, and total mercury. The copper impairment may be Site-related, based on Site history.

78.5 Site-Specific Demonstration

78.5.1 Soil Data Summary

No decision-level soil data.

78.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL but not the BTV. Copper and lead exceeded the TAL and BTV.

78.5.3 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.

79.0 CDB-SMA-0.15

Associated Sites	04-003(a), 04-004
Receiving Water	Cañada del Buey
Drainage Area	0.41 acres
Landscape Characteristics	39% impervious, 61% pervious
Consent Order Site Status	SWMU 04-003(a): Pending Receipt of Certificate of Completion. AOC 04-004: Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the June 2017 field visits, all parties agreed that the current SMA sampling location and boundary was the best representation of stormwater discharge from the Sites.
2022 Permit Status	Corrective Action

79.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, a baseline 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 Sites 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.

79.2 Site History

04-003(a) (2/18/2021)

SWMU 04-003(a) is an outfall located approximately 15 ft southeast of former building 04-7 at former TA-04 (now TA-52). Former building 04-7, which operated from 1948 to 1955, housed a darkroom and photoprocessing laboratory. Discharges from 04-7 to the outfall flowed to a trench that eventually discharged into Upper Cañada del Buey. Portions of the trench have since been covered by buildings 52-114 and 52-115 and an asphalt parking lot.

Beta activity was detected in the darkroom in 1955, and portions of the floor were removed in an attempt to remediate the contamination. It is not known whether the drainlines were removed when former building 04-7 was dismantled in 1956.

04-004 (2/18/2021)

AOC 04-004 is an area of potential soil contamination associated with the footprint of former building 04-7 at former TA-04 (now TA-52). The former building, which measured approximately 16 ft × 43 ft, housed a darkroom and photoprocessing laboratory. The building was used to develop film from 1948 to 1955 and was dismantled in 1956. A radiation survey in the early 1940s detected activity in the darkroom of building 04-7, and parts of the floor were removed. A resurvey found the floor free of radioactive contamination in 1955. AOC 04-004 has also been referred to as SWMU 04-004 in historical documents.

For investigation activities for the Sites, refer to "Supplemental Investigation Report for Upper Cañada del Buey Aggregate Area, Revision 1" (N3B 2020, 701038).

79.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 79.2-1.

Table 79.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
04-003(a)	Inactive outfall and associated drainline from former building 04-7	Silver, cyanide, uranium
04-004	Soil contamination from former photoprocessing building 04-7	Silver, cyanide, uranium

79.3 Consent Order Soil Data

Decision-level data for SWMU 04-003(a) and AOC 04-004 consist of results from samples collected in 1998 and 2010. Analytical results from those samples are presented in Figures 79.3-1 through 79.3-4. Revision 1 of the 2020 supplemental IR (N3B 2020, 701038) concluded that the nature and extent of contamination are defined.

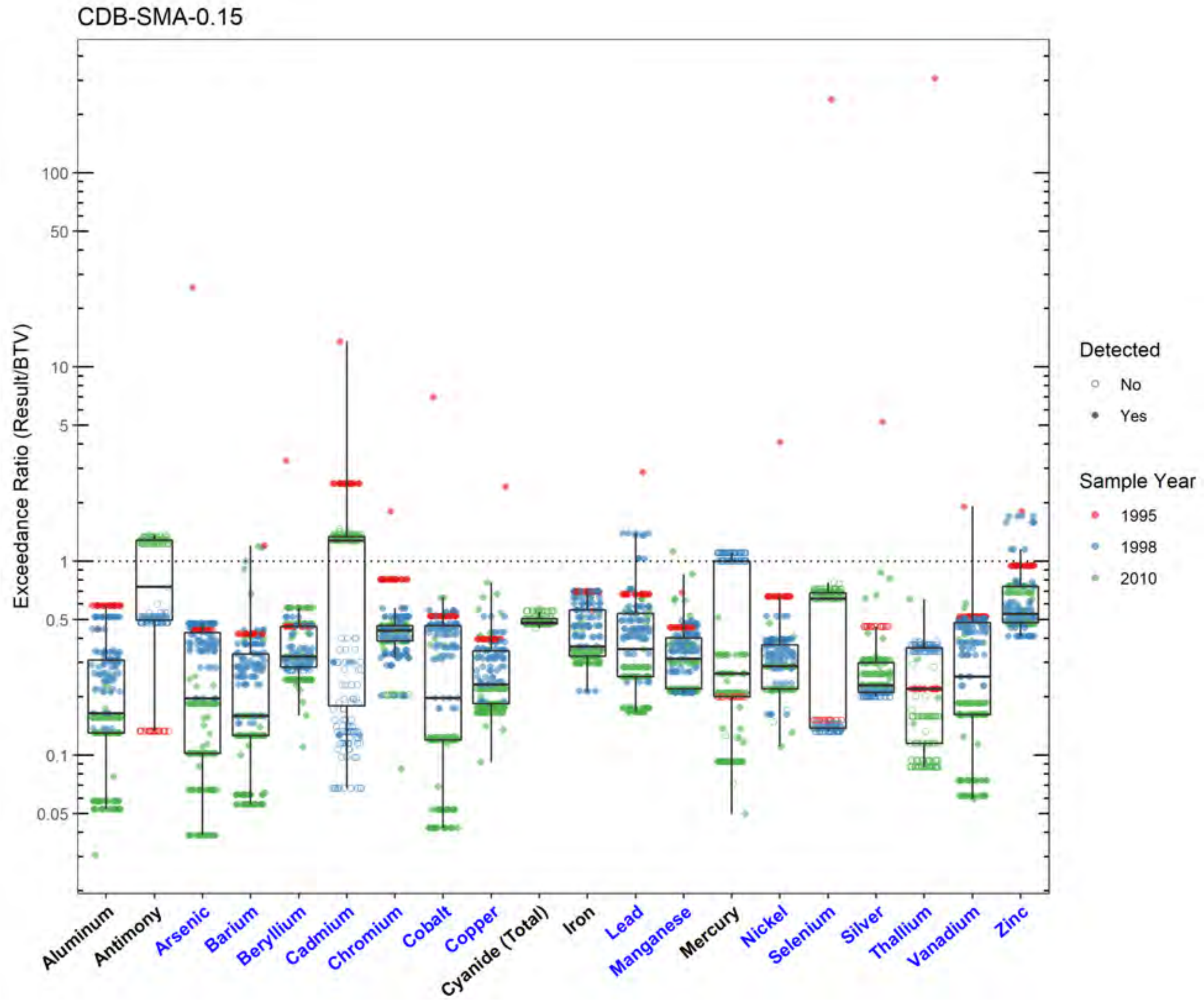


Figure 79.3-1 Inorganics Analytical Results from Soil Samples Associated with CDB-SMA-0.15

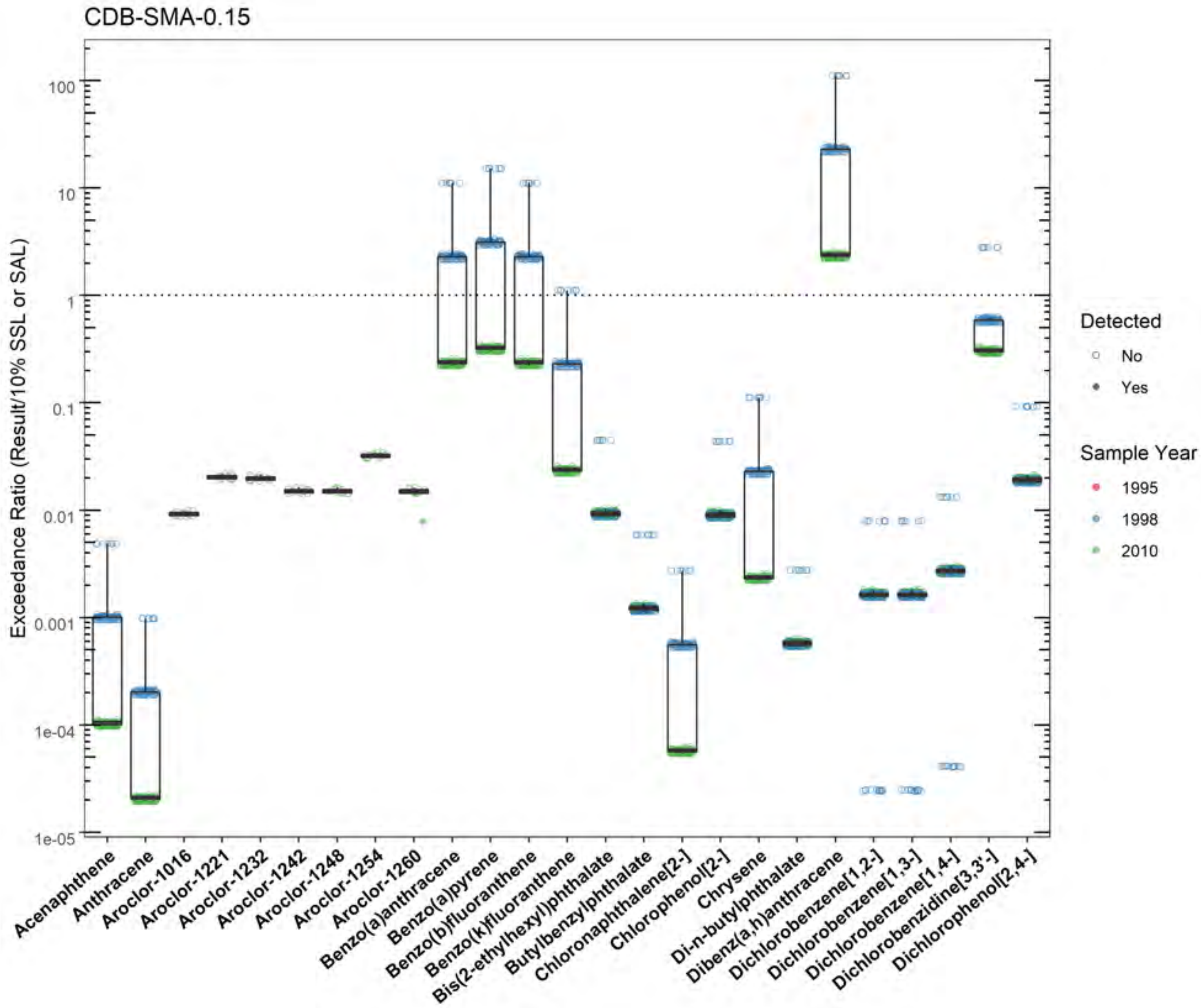


Figure 79.3-2 Organics Analytical Results from Soil Samples Associated with CDB-SMA-0.15 (Plot 1)

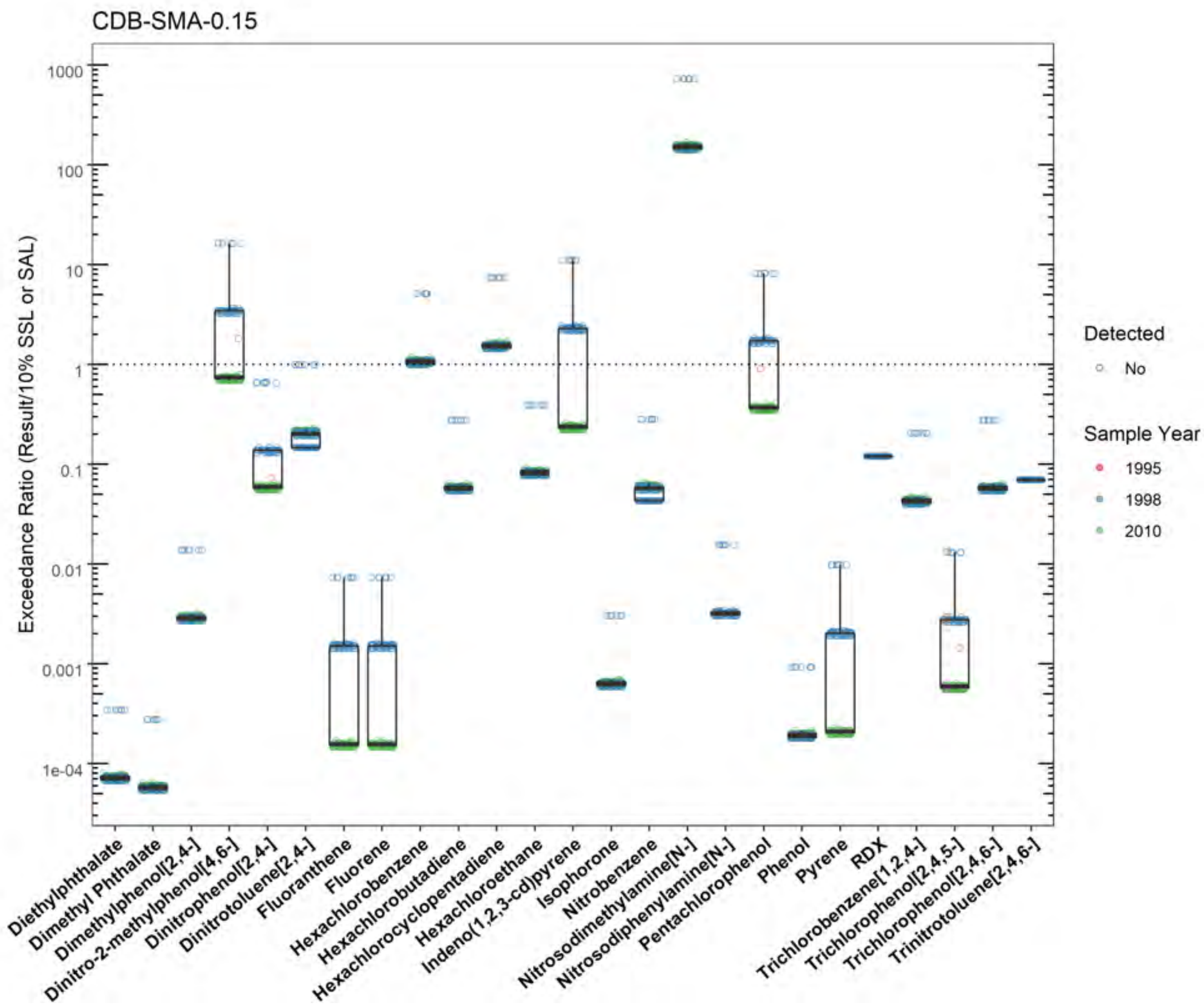


Figure 79.3-3 Organics Analytical Results from Soil Samples Associated with CDB-SMA-0.15 (Plot 2)

CDB-SMA-0.15

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Arsenic	CDB-SMA-0.15	As	Y	BTV	8.17	210	1995-06-27
Barium	CDB-SMA-0.15	Ba	Y	BTV	295	355	1995-06-27
Beryllium	CDB-SMA-0.15	Be	Y	BTV	1.83	6.00	1995-06-27
Cadmium	CDB-SMA-0.15	Cd	Y	BTV	0.400	5.40	1995-06-27
Chromium	CDB-SMA-0.15	Cr	Y	BTV	19.3	34.8	1995-06-27
Cobalt	CDB-SMA-0.15	Co	Y	BTV	8.64	60.2	1995-06-27
Copper	CDB-SMA-0.15	Cu	Y	BTV	14.7	35.6	1995-06-27
Lead	CDB-SMA-0.15	Pb	Y	BTV	22.3	63.7	1995-06-27
Manganese	CDB-SMA-0.15	Mn	Y	BTV	671	753	2010-01-06
Nickel	CDB-SMA-0.15	Ni	Y	BTV	15.4	63.0	1995-06-27
Selenium	CDB-SMA-0.15	Se	Y	BTV	1.52	361	1995-06-27
Silver	CDB-SMA-0.15	Ag	Y	BTV	1.00	5.20	1995-06-27
Thallium	CDB-SMA-0.15	Tl	Y	BTV	0.730	225	1995-06-27
Vanadium	CDB-SMA-0.15	V	Y	BTV	39.6	75.7	1995-06-27
Zinc	CDB-SMA-0.15	Zn	Y	BTV	48.8	87.9	1995-06-27

Figure 79.3-4 Screening-Level Exceedances from Soil Samples Associated with CDB-SMA-0.15

79.4 Stormwater Evaluation

79.4.1 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 2015. Analytical results from this sample are presented in Figures 79.4-1 and 79.4-2.

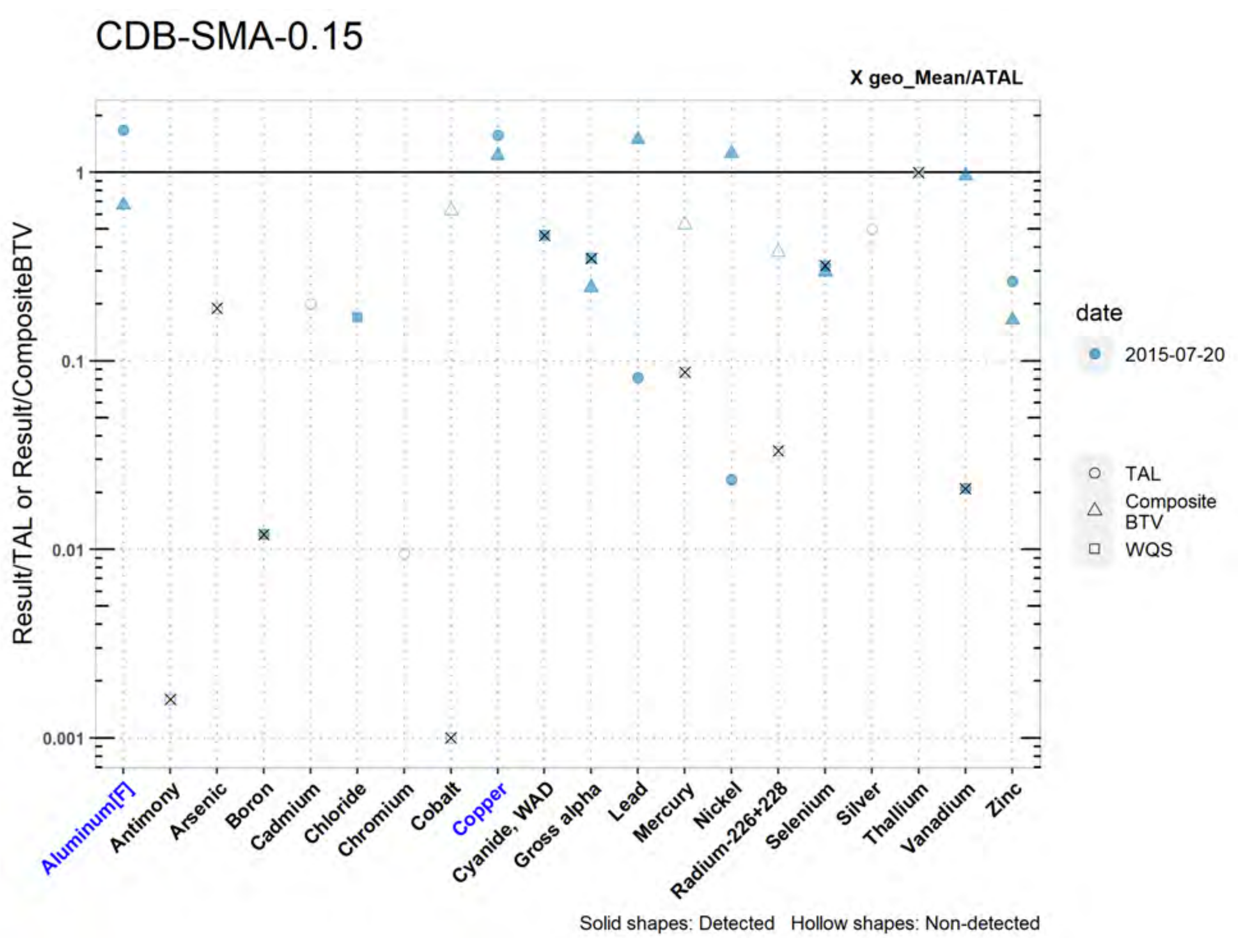


Figure 79.4-1 Analytical Results from Stormwater Sample, CDB-SMA-0.15 (Plot)

CDB-SMA-0.15

	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	0.583	NA	210	NA	4.25	22	NA	16.7	NA	167	NA	20	0.394	NA	NA	52.7
Composite_BTV	1860	NA	NA	NA	NA	NA	NA	1.60	5.43	NA	54.2	0.914	0.127	3.10	6.63	5.47	NA	NA	2.21	84.3
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
2015-07-20 result	1250	*1.00*	*1.70*	61.0	*0.110*	40000	*2.00*	*1.00*	6.66	2.41	5.32	1.36	*0.0670*	3.90	*1.00*	1.62	*0.200*	*0.450*	2.11	13.9
2015-07-20 dT	1.67	NA	NA	0.012	NA	0.17	NA	NA	1.57	0.463	0.35	0.0814	NA	0.0234	NA	0.32	NA	NA	0.021	0.264
2015-07-20 dB	0.672	NA	NA	NA	NA	NA	NA	NA	1.23	NA	0.245	1.49	NA	1.26	NA	0.296	NA	NA	0.955	0.165
geo_mean/ATAL	NA	0.0016	0.19	0.012	NA	NA	NA	0.0010	NA	0.463	0.35	NA	0.087	NA	0.0333	0.32	NA	1	0.021	NA

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 79.4-2 Analytical Results from Stormwater Sample, CDB-SMA-0.15 (Table)

79.4.2 Assessment Unit and Stream Impairments

CDB-SMA-0.15 drains to Cañada del Buey (within LANL), which has impairments for adjusted gross alpha and PCBs. The adjusted gross alpha impairment may be Site-related, based on Site history.

79.5 Site-Specific Demonstration

79.5.1 Soil Data Summary

All Site-related POCs that exceeded the applicable 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.

Barium, beryllium, and manganese exceeded the applicable screening value in soil data but are not Site-related POCs, and will not be added to the SAP.

79.5.2 Stormwater Data Summary

Copper exceeded the TAL and BTV. Filtered aluminum exceeded the TAL but not the BTV.

79.5.3 2022 Permit Status

Due to the exceedance of a composite BTV and/or TAL, corrective action will be initiated at this SMA for copper (Part I.C.2.b.i).

80.0 CDB-SMA-0.25

Associated Sites	46-004(c2), 46-004(e2)
Receiving Water	Cañada del Buey
Drainage Area	2.94 acres
Landscape Characteristics	47% impervious, 53% pervious
Consent Order Site Status	SWMU 46-004(c2): Pending Receipt of Certificate of Completion. AOC 46-004(e2): Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the June 2017 field visits, all parties agreed that the current SMA sampling location and boundary was the best representation of stormwater discharge from the Sites.
2022 Permit Status	Corrective Action

80.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in September 2011. Analytical results from this sample initiated corrective action.

Following the July 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 221595), corrective-action monitoring was initiated, and stormwater samples were collected in July and September 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, 600417). No response has been received from EPA, and stormwater monitoring has not occurred since 2013.

80.2 Site History

46-004(c2) (2/18/2021)

SWMU 46-004(c2) is a former NPDES-permitted outfall (EPA 03A042) and an industrial drainline in building 46-1 at TA-46. Building 46-1 housed offices, two assembly bays, a machine shop, several laboratories for the assembly and checkout of electrical components, general laboratories, and a uranium-polishing area in support of the Rover Program. The outfall consists of a 4-in.-diameter cast-iron pipe that discharged effluent from floor drains in the north equipment room of building 46-1 to a ditch approximately 50 ft northwest of building 46-1, and then to a storm drain culvert that discharged into Cañada del Buey. In 1997, the floor drains that discharged to the SWMU 46-004(c2) outfall either were removed from service or were rerouted to the SWSC plant at TA-46. The outfall was removed from the NPDES permit effective March 10, 1998.

46-004(e2) (2/18/2021)

AOC 46-004(e2) is the outfall from roof, floor, and sink drains in building 46-42 at TA-46. The outfall consists of a 4-in.-diameter pipe located approximately 50 ft northeast of building 46-42 at the head of a drainage ditch associated with SWMU 46-006(a). The outfall is located approximately 3 ft below the level of the asphalt pavement. Building 46-42 was constructed as an equipment checkout facility and contains electronics and robotics laboratories. In the mid-1990s, the floor and sink drains that discharged to this outfall either were removed from service or were rerouted to the sanitary sewer system. The outfall currently receives stormwater from building 46-42 roof drains only.

For investigation activities for the Sites, refer to “Supplemental Investigation Report for Upper Cañada del Buey Aggregate Area, Revision 1” (N3B 2020, 701038).

80.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 80.2-1.

Table 80.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
46-004(c2)	Outfall from building 46-1	Zinc, uranium
46-004(e2)	Outfall from building 46-42	Metals

80.3 Consent Order Soil Data

Decision-level data for SWMU 46-004(c2) and AOC 46-004(e2) consist of results from samples collected in 2010. Analytical results from those samples are presented in Figures 80.3-1 through 80.3-4. Revision 1 of the 2020 supplemental IR (N3B 2020, 701038) concluded that the nature and extent of contamination are defined.

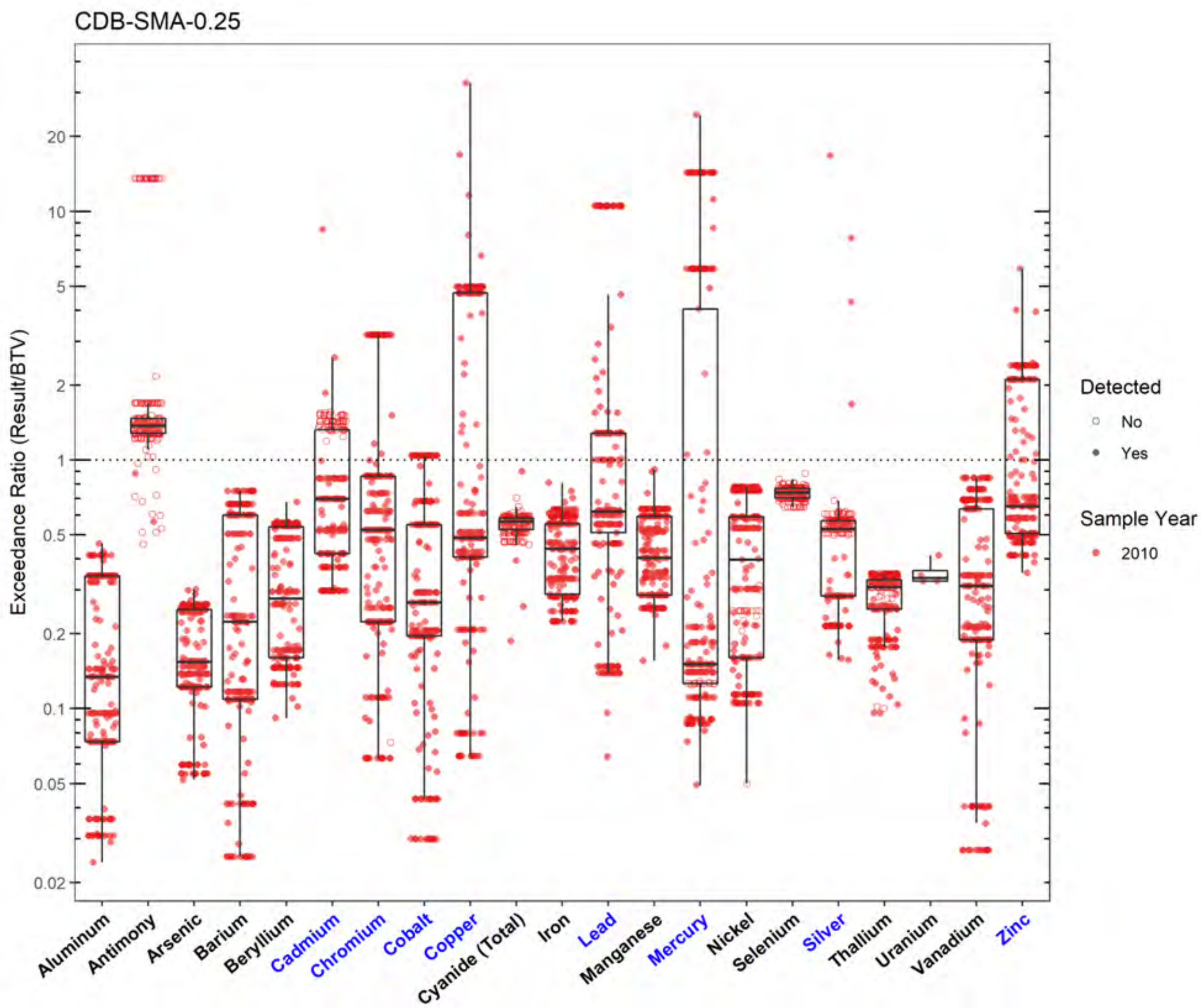


Figure 80.3-1 Inorganics Analytical Results from Soil Samples Associated with CDB-SMA-0.25

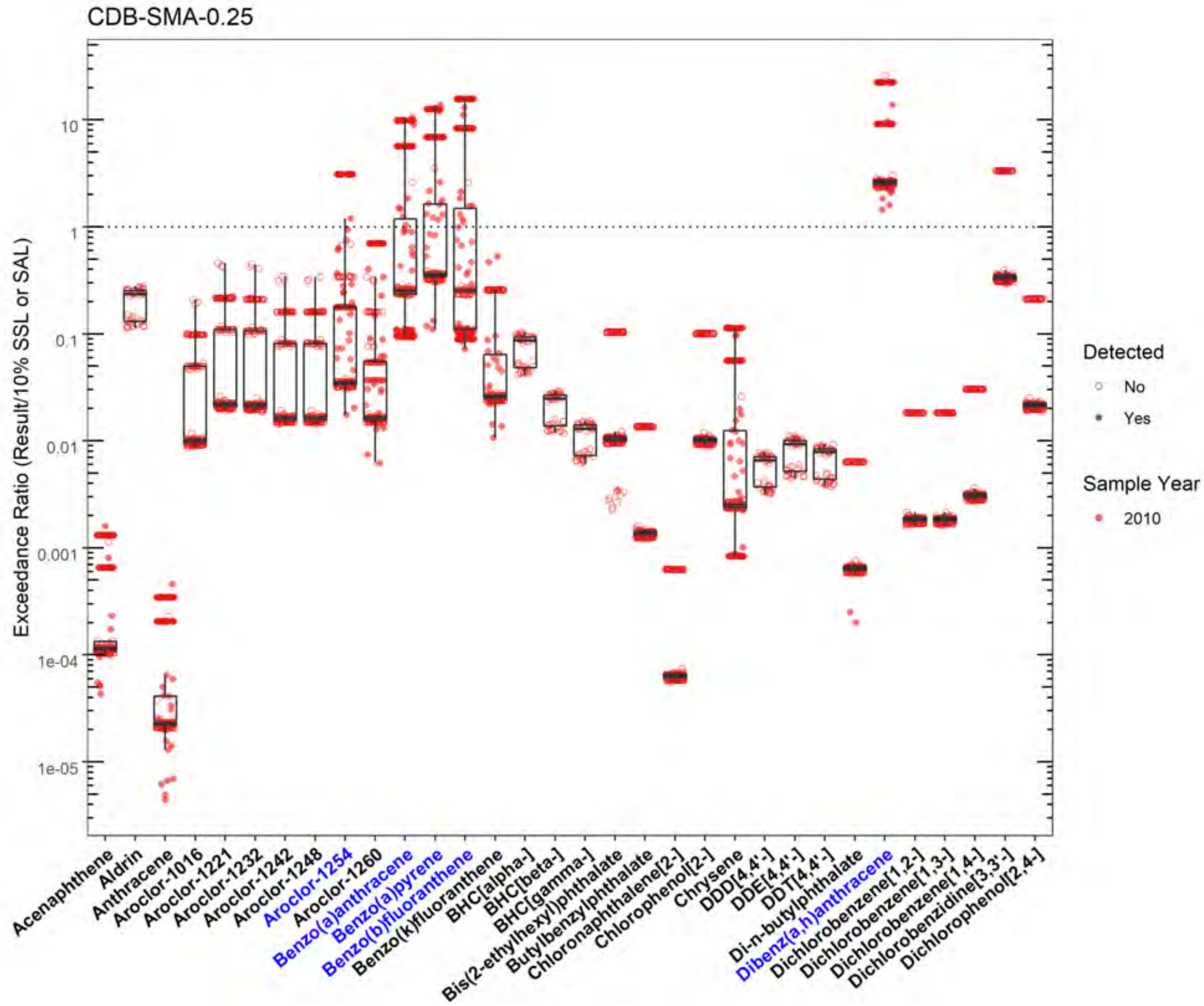


Figure 80.3-2 **Organics Analytical Results from Soil Samples Associated with CDB-SMA-0.25 (Plot 1)**

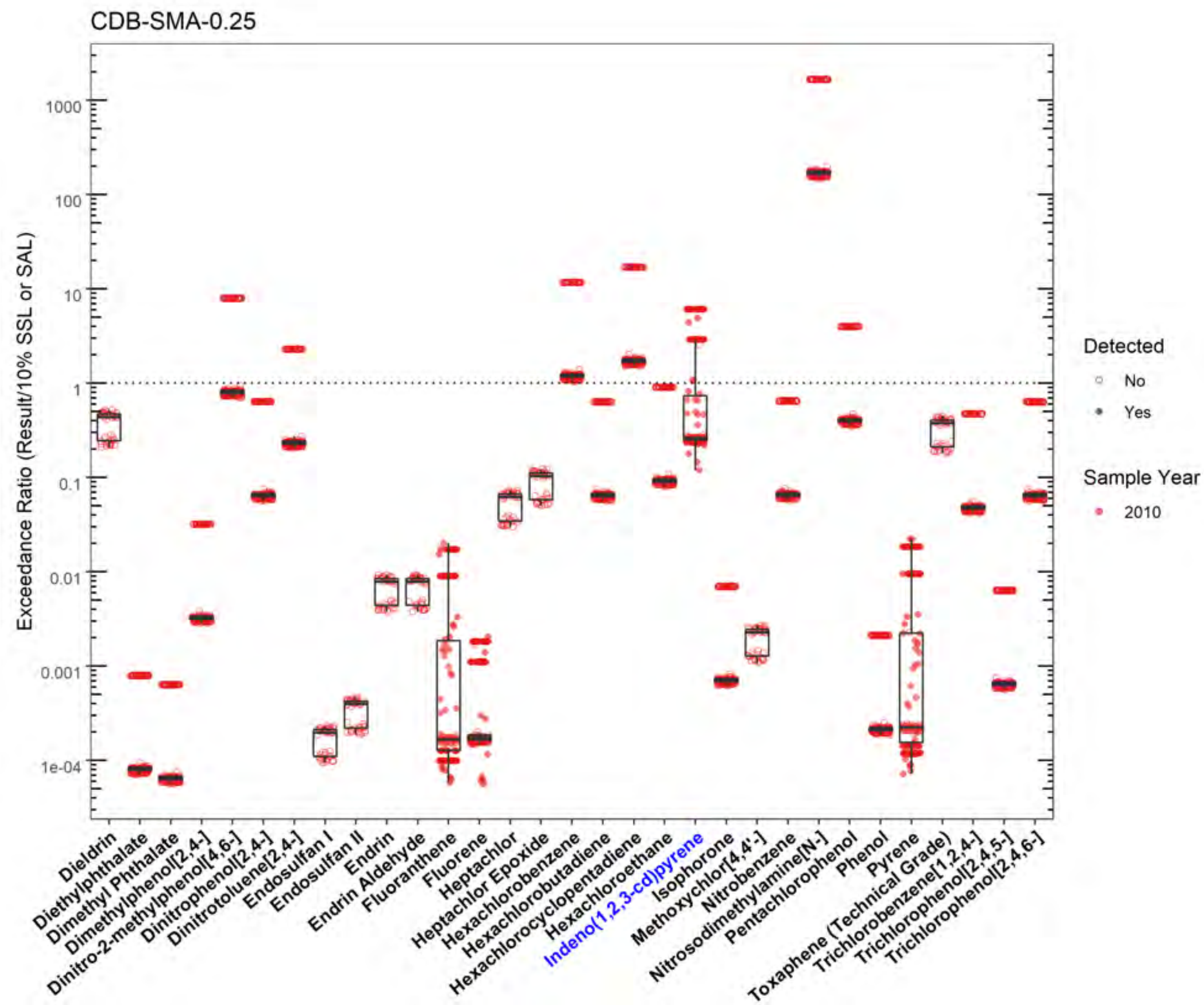


Figure 80.3-3 Organics Analytical Results from Soil Samples Associated with CDB-SMA-0.25 (Plot 2)

CDB-SMA-0.25

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	CDB-SMA-0.25	11097-69-1	Y	SSL_0.1	0.114	0.352	2010-02-16
Benzo(a)anthracene	CDB-SMA-0.25	56-55-3	Y	SSL_0.1	0.153	1.60	2010-03-17
Benzo(a)pyrene	CDB-SMA-0.25	50-32-8	Y	SSL_0.1	0.112	1.53	2010-03-17
Benzo(b)fluoranthene	CDB-SMA-0.25	205-99-2	Y	SSL_0.1	0.153	2.38	2010-02-16
Cadmium	CDB-SMA-0.25	Cd	Y	BTV	0.400	3.38	2010-03-17
Chromium	CDB-SMA-0.25	Cr	Y	BTV	19.3	61.6	2010-02-16
Cobalt	CDB-SMA-0.25	Co	Y	BTV	8.64	8.99	2010-02-10
Copper	CDB-SMA-0.25	Cu	Y	BTV	14.7	484	2010-01-15
Dibenz(a,h)anthracene	CDB-SMA-0.25	53-70-3	Y	SSL_0.1	0.0153	0.343	2010-02-16
Indeno(1,2,3-cd)pyrene	CDB-SMA-0.25	193-39-5	Y	SSL_0.1	0.153	0.934	2010-02-16
Lead	CDB-SMA-0.25	Pb	Y	BTV	22.3	235	2010-02-16
Mercury	CDB-SMA-0.25	Hg	Y	BTV	0.100	2.44	2010-03-17
Silver	CDB-SMA-0.25	Ag	Y	BTV	1.00	16.8	2010-03-17
Zinc	CDB-SMA-0.25	Zn	Y	BTV	48.8	286	2010-01-12

Figure 80.3-4 Screening-Level Exceedances from Soil Samples Associated with CDB-SMA-0.25

80.4 Stormwater Evaluation

80.4.1 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 2013. Analytical results from those samples are presented in Figures 80.4-1 and 80.4-2.

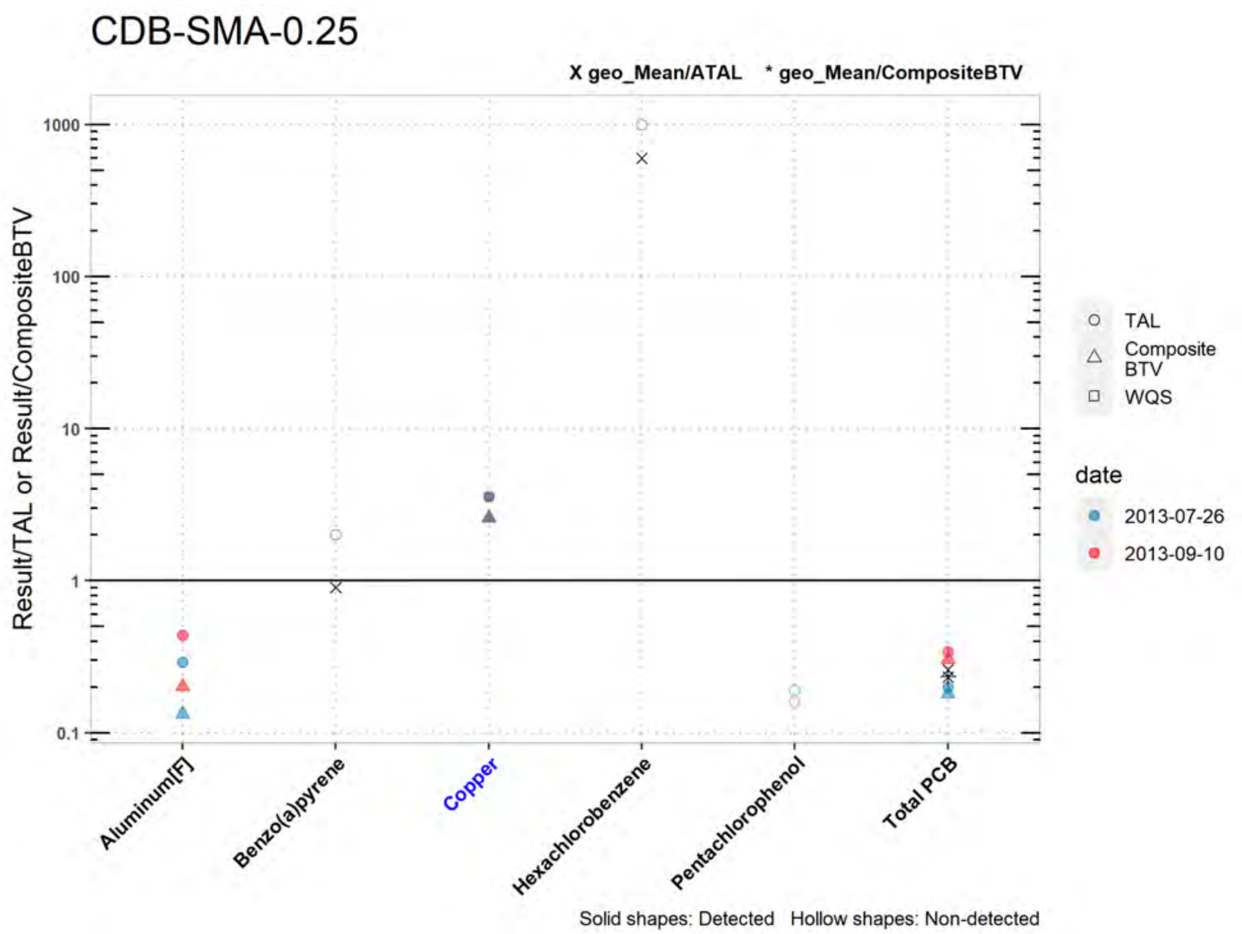


Figure 80.4-1 Analytical Results from Stormwater Samples, CDB-SMA-0.25 (Plot)

CDB-SMA-0.25

	Aluminum [F]	Benzo(a)pyrene	Copper	Hexachlorobenzene	Pentachlorophenol	Total PCB
MQL	2.5	0.064	0.5	5	5	0.2
ATAL	NA	0.18	NA	0.0029	NA	0.014
MTAL	750	NA	4.25	NA	19	NA
Composite_BTV	1640	NA	5.90	NA	NA	0.0157
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2013-07-26 result	218	*0.357*	15.2	*3.57*	*3.57*	0.00282
2013-07-26 dT	0.291	NA	3.58	NA	NA	0.20
2013-07-26 dB	0.133	NA	2.58	NA	NA	0.180
2013-09-10 result	329	*0.300*	15.2	*3.00*	*3.00*	0.00474
2013-09-10 dT	0.439	NA	3.58	NA	NA	0.34
2013-09-10 dB	0.201	NA	2.58	NA	NA	0.302
geo_mean/ATAL	NA	0.9	NA	600	NA	0.26
geo_mean/B	NA	NA	NA	NA	NA	0.233

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

Figure 80.4-2 Analytical Results from Stormwater Samples, CDB-SMA-0.25 (Table)

80.4.2 Assessment Unit and Stream Impairments

CDB-SMA-0.25 drains to Cañada del Buey (within LANL), which has impairments for adjusted gross alpha and PCBs. The adjusted gross alpha impairment may be Site-related, based on Site history.

80.5 Site-Specific Demonstration

80.5.1 Soil Data Summary

Copper exceeded the applicable screening value in soil data and the stormwater TAL, and will be added to the SAP. The remaining metals and Aroclor-1254 that exceeded the applicable screening value soil data were previously measured in stormwater data and did not exceed TALs. Therefore, they will not be added to the SAP.

80.5.2 Stormwater Data Summary

Copper exceeded the TAL and BTV.

80.5.3 2022 Permit Status

Due to the exceedance of a composite BTV and/or TAL, corrective action will be initiated at this SMA for copper (Part I.C.2.b.i).

81.0 CDB-SMA-0.55

Associated Sites	46-004(g), 46-004(m), 46-004(s), 46-006(f)
Receiving Water	Cañada del Buey
Drainage Area	3.73 acres
Landscape Characteristics	49% impervious, 51% pervious
Consent Order Site Status	SWMU 46-004(g): Pending Receipt of Certificate of Completion. SWMU 46-004(m): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 46-004(s): Pending Receipt of Certificate of Completion. SWMU 46-006(f): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested/Corrective Action Complete
2016–2018 SIP Actions	Based on the June 2017 field visits, all parties agreed that the current SMA sampling location and boundary was the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring/Corrective Action

81.1 2010 Administratively Continued Permit Summary

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

SWMU 46-004(m) received a COC under the Consent Order from NMED in July 2012. The Permittees submitted a certification of completion of corrective action per Permit part I.E.2(d) for the Site in November 2013 (LANL 2013, 251269). The Permittees submitted a request for alternative compliance for SWMUs 46-004(g), 46-004(s), and 46-006(f) 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.

81.2 Site History

46-004(g) (2/18/2021)

SWMU 46-004(g) consists of an area of potential surface soil contamination associated with the deposition of contaminants in exhaust emissions from stacks on building 46-1, and from a former outfall from an industrial drainline in building 46-1 at TA-46. The work in building 46-1 that generated exhaust emissions involved the baking and high-temperature testing of radioactive fuel rods. The outfall component of SWMU 46-004(g) consists of a 12-in.-diameter VCP industrial drainline that received effluent from floor drains and roof drains within the central portion of building 46-1, and discharged into Cañada del Buey north of building 46-154. Building 46-1 housed offices, two assembly bays, a machine shop, several laboratories for the assembly and checkout of electrical components, general laboratories, and a uranium-polishing area. In 1996 and 1997, the floor drains that discharged to this outfall either were removed from service or were rerouted to the SWSC plant at TA-46. Roof drains from building 46-1 that discharged to this outfall were rerouted to the stormwater drain system in 1996.

46-004(m) (no date)

SWMU 46-004(m) consists of a former NPDES-permitted outfall (04A013), located approximately 60 ft north of building 46-30. The outfall protrudes from a 10-ft-deep bank on the hillside north of building 46-30. The outfall discharged effluent from an industrial drainline in building 46-30 to a ditch at the foot of the bank. The ditch channeled wastewater to a storm drain culvert that discharges into Cañada del Buey. Engineering drawings show that this industrial drainline received effluent from the roof drains, laboratory sinks, and floor drains in building 46-30m a hydraulics laboratory and machine shop. In December 1995, after all discharges to the outfall from building 46-30 had ceased, the outfall was removed from the NPDES permit.

The Cerro Grande fire of 2000 burned moderately to severely in the vicinity of this SWMU, and the vegetative ground cover and canopy were mostly destroyed. To dissipate stormwater run-on from upslope locations in the burn area, wattles were installed on slopes within the drainages, and rock check dams were placed in the main drainages. The lower portion of the sloped area was hand raked, re-seeded with native grasses, and mulched with straw. The upper portion of the sloped area was hydromulched. An earthen base-course berm was installed along the fire road at the toe of the slope to provide additional protection from sediment migration.

46-004(s) (2/18/2021)

SWMU 46-004(s) is an outfall located approximately 20 ft south of building 46-1 at TA-46. The outfall consists of a 4-in.-diameter cast-iron pipe that discharged to a drainage ditch (SWMU 46-007) on the south side of building 46-1. The drainage ditch leads to a storm drain culvert that discharges into Cañada del Buey. The outfall received effluent from floor and roof drains of the south high bay in building 46-1, which housed offices, two assembly bays, a machine shop, several laboratories for the assembly and checkout of electrical components, general laboratories, and a uranium-polishing area. In 1995, all floor drains in the south high bay of building 46-1 either were plugged or were rerouted to the SWSC plant at TA-46. Currently, roof drains from the south high bay discharge to the storm drainage system and/or daylight near building 46-1.

46-006(f) (2/18/2021)

SWMU 46-006(f) is a storage shed (building 46-36) located approximately 50 ft east of building 46-1 at TA-46. The 20-ft × 30-ft metal storage shed was constructed in 1955. The floor of the storage shed is paved and sits approximately 6 to 8 in. below grade. The area surrounding the storage shed was used as a storage area, as a staging area for equipment and materials awaiting disposal, and as an unloading area for new equipment. The areas on the west and south sides of the storage shed are paved; the areas on the north and east sides of the shed are unpaved.

Stored materials may have included oils [possibly containing PCBs], alkali metals, asbestos-containing products, beryllium alloys, potassium dichromate, lead bricks, lead shot, and mercury. Because the floor of building 46-36 is below grade, frequent flooding of the storage shed occurs during the rainy season. The surrounding area slopes north to a storm drain culvert that discharges into Cañada del Buey.

For investigation activities for SWMUs 46-004(g), 46-004(s), and 46-006(f), refer to "Supplemental Investigation Report for Upper Cañada del Buey Aggregate Area, Revision 1" (N3B 2020, 701038). For investigation activities for SWMU 46-004(m), refer to "Investigation Report for Upper Cañada del Buey Aggregate Area, Revision 1" (LANL 2011, 203410).

81.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 81.2-1.

Table 81.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
46-004(g)	Drains and exhaust system	Metals, mercury, SVOCs
46-004(m)	Outfall from building 46-30	No known POCs
46-004(s)	Outfall associated with building 46-1	Metals, mercury, SVOCs
46-006(f)	Storage area	Beryllium, hexavalent chromium, lead, mercury, asbestos, PCBs

81.3 Consent Order Soil Data

Decision-level data for the stack emissions/soil deposition component of SWMU 46-004(g) consist of results from samples collected in 2010 in conjunction with the investigation of SWMUs 46-004(d2 and h) and AOCs C-46-002 and C-46-003. Revision 1 of the 2020 supplemental IR (N3B 2020, 701038) concluded that the nature and extent of contamination are defined.

Decision-level data for the outfall component of SWMU 46-004(g) consist of results from samples collected in 2010. Revision 1 of the 2020 supplemental IR (N3B 2020, 701038) concluded that the nature and extent of contamination are defined.

Decision-level data at SWMU 46-004(m) consist of results from samples included in the approved 2011 IR (LANL 2011, 203410), which concluded that the nature and extent had been defined for all chemicals and radionuclides detected at SWMU 46-004(m).

Decision-level data for SWMU 46-004(s) consist of results from samples collected in 2010. Revision 1 of the 2020 supplemental IR (N3B 2020, 701038) concluded that the nature and extent of contamination are defined.

Decision-level data for SWMU 46-006(f) consist of results from samples collected in 2010. Revision 1 of the 2020 supplemental IR (N3B 2020, 701038) concluded that the nature and extent of contamination are defined. However, because the site description and operational history indicate that stored materials may have included potassium dichromate, further sampling and analysis for hexavalent chromium is warranted.

Analytical results from all decision-level soil samples collected for CDB-SMA-0.55 are presented in Figures 81.3-1 through 81.3-4.

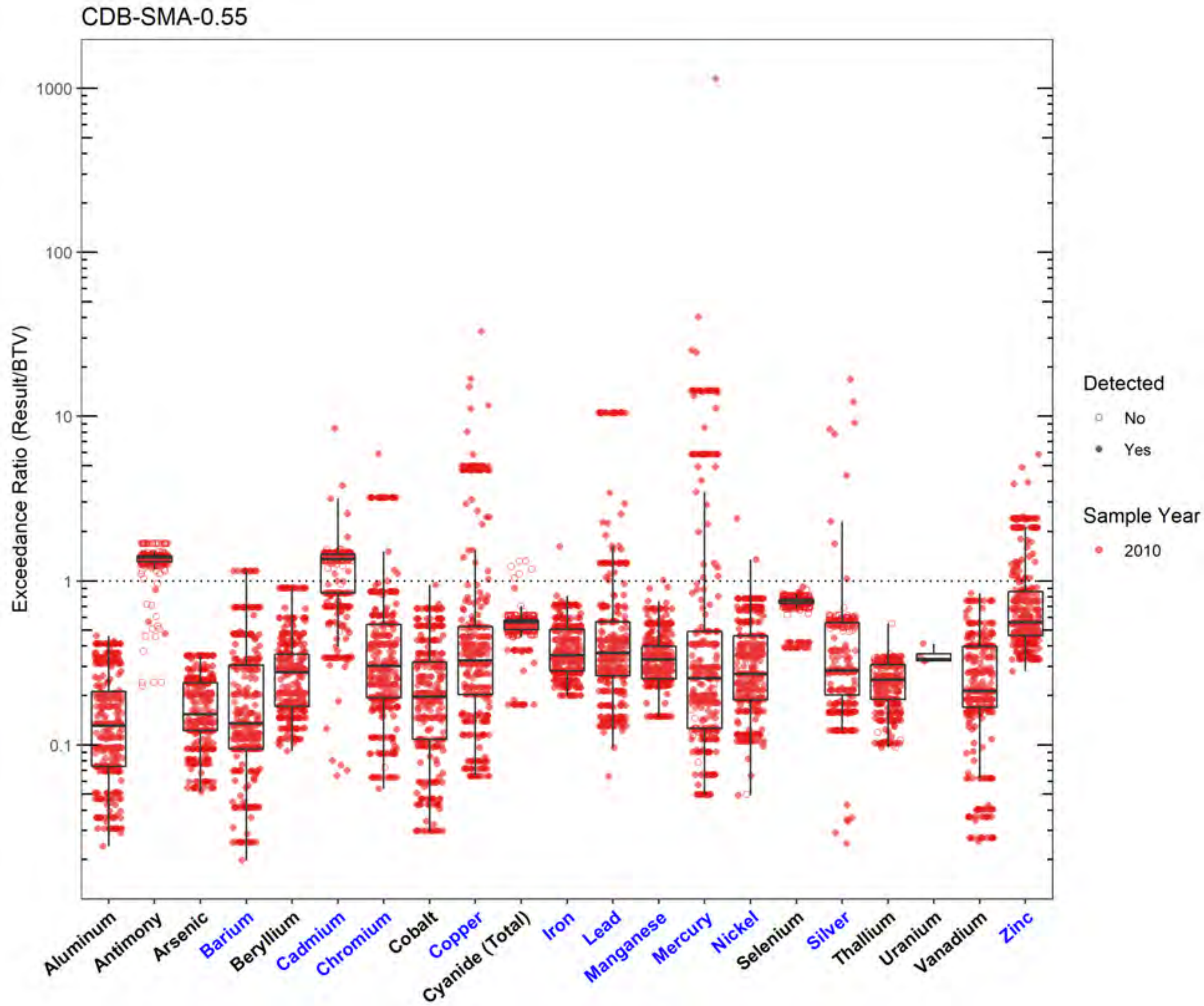


Figure 81.3-1 Inorganics Analytical Results from Soil Samples Associated with CDB-SMA-0.55

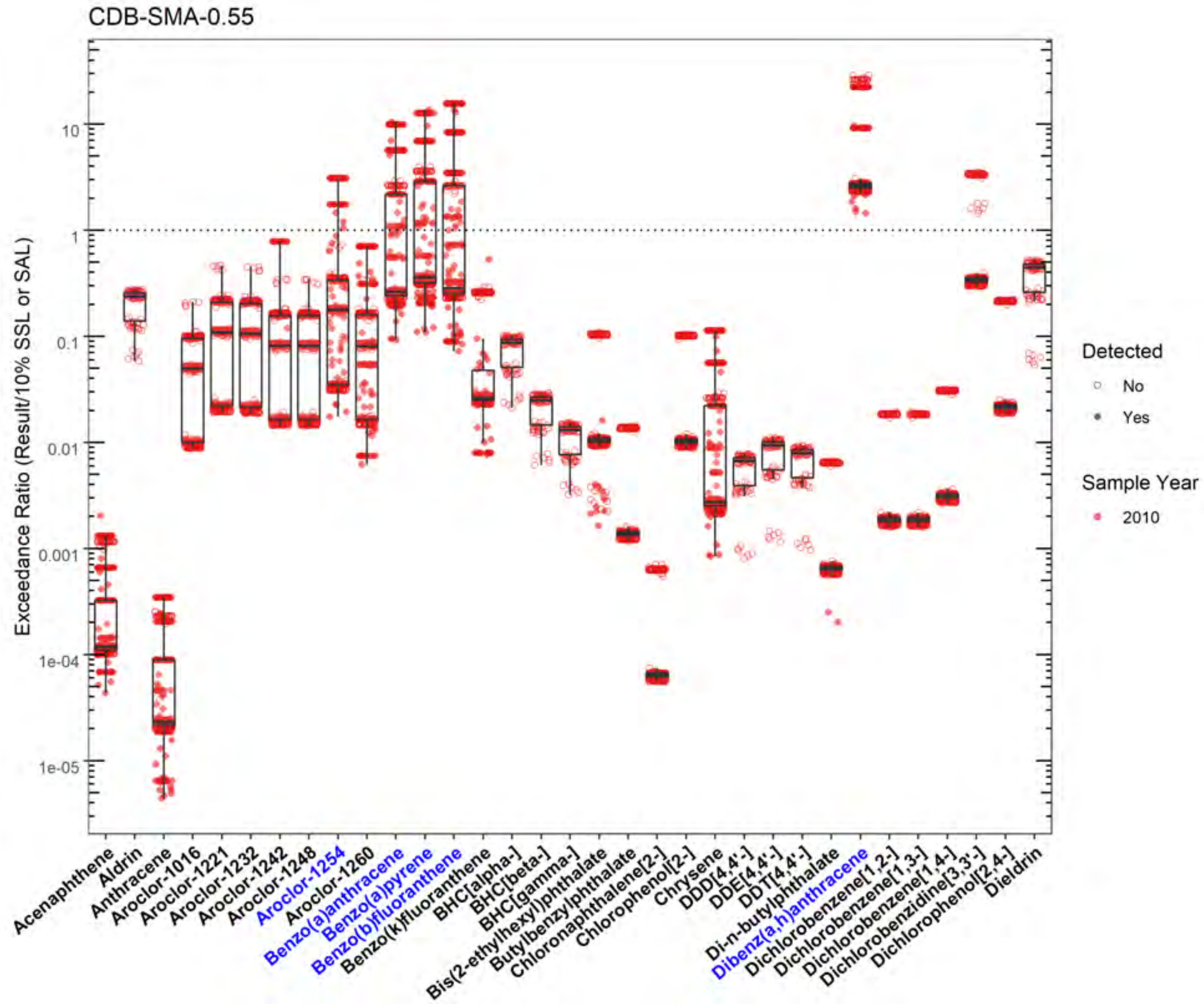


Figure 81.3-2 Organics Analytical Results from Soil Samples Associated with CDB-SMA-0.55 (Plot 1)

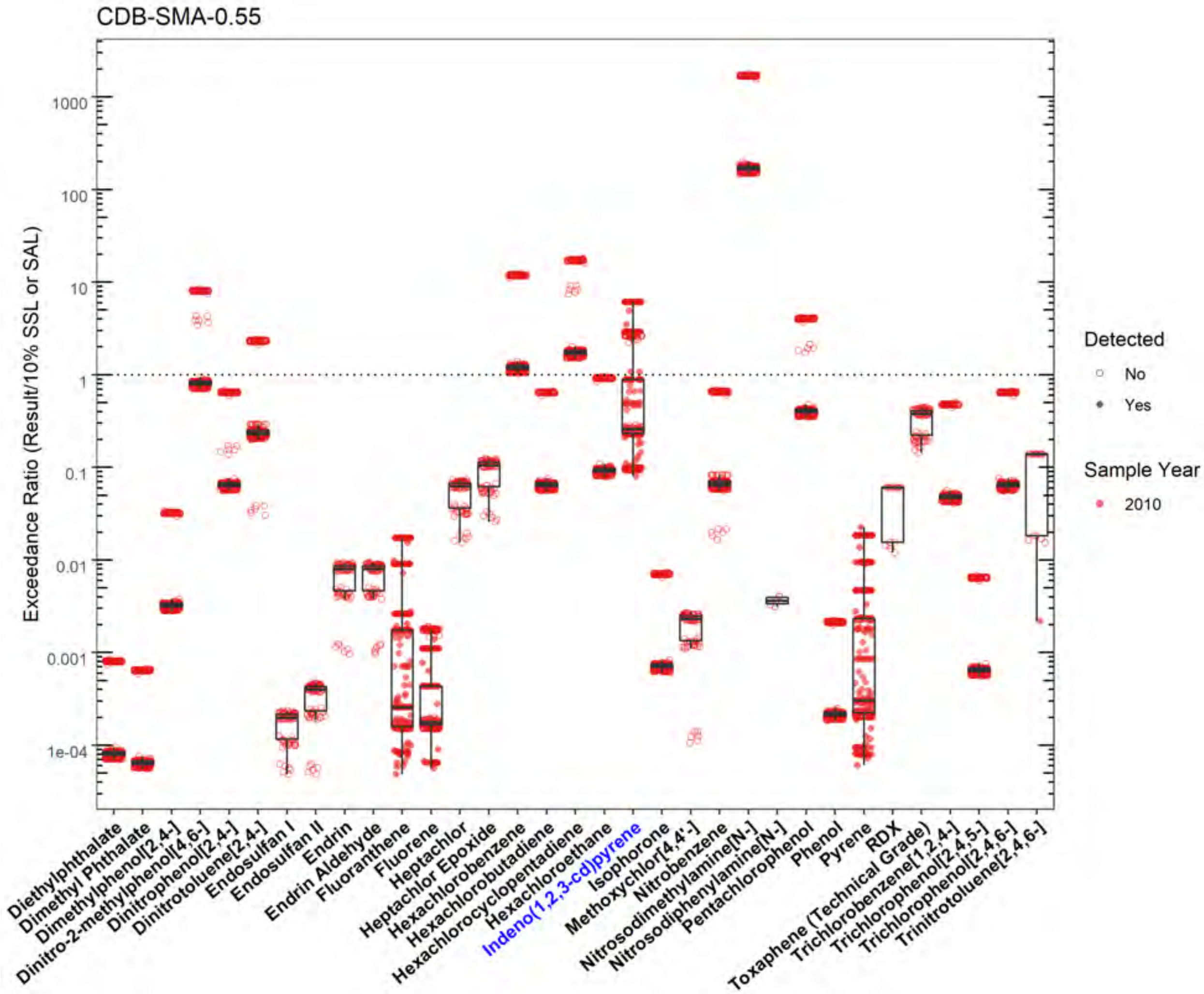


Figure 81.3-3 **Organics Analytical Results from Soil Samples Associated with CDB-SMA-0.55 (Plot 2)**

CDB-SMA-0.55

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	CDB-SMA-0.55	11097-69-1	Y	SSL_0.1	0.114	0.352	2010-02-16
Barium	CDB-SMA-0.55	Ba	Y	BTV	295	340	2010-02-17
Benzo(a)anthracene	CDB-SMA-0.55	56-55-3	Y	SSL_0.1	0.153	1.60	2010-03-17
Benzo(a)pyrene	CDB-SMA-0.55	50-32-8	Y	SSL_0.1	0.112	1.53	2010-03-17
Benzo(b)fluoranthene	CDB-SMA-0.55	205-99-2	Y	SSL_0.1	0.153	2.38	2010-02-16
Cadmium	CDB-SMA-0.55	Cd	Y	BTV	0.400	3.38	2010-03-17
Chromium	CDB-SMA-0.55	Cr	Y	BTV	19.3	114	2010-03-04
Copper	CDB-SMA-0.55	Cu	Y	BTV	14.7	484	2010-01-15
Dibenz(a,h)anthracene	CDB-SMA-0.55	53-70-3	Y	SSL_0.1	0.0153	0.343	2010-02-16
Indeno(1,2,3-cd)pyrene	CDB-SMA-0.55	193-39-5	Y	SSL_0.1	0.153	0.934	2010-02-16
Iron	CDB-SMA-0.55	Fe	Y	BTV	21500	34800	2010-02-15
Lead	CDB-SMA-0.55	Pb	Y	BTV	22.3	235	2010-02-16
Manganese	CDB-SMA-0.55	Mn	Y	BTV	671	680	2010-02-08
Mercury	CDB-SMA-0.55	Hg	Y	BTV	0.100	115	2010-02-19
Nickel	CDB-SMA-0.55	Ni	Y	BTV	15.4	36.9	2010-02-08
Silver	CDB-SMA-0.55	Ag	Y	BTV	1.00	16.8	2010-03-17
Zinc	CDB-SMA-0.55	Zn	Y	BTV	48.8	286	2010-01-12

Figure 81.3-4 **Screening-Level Exceedances from Soil Samples Associated with CDB-SMA-0.55**

81.4 Stormwater Evaluation

81.4.1 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 81.4-1 through 81.4-4.

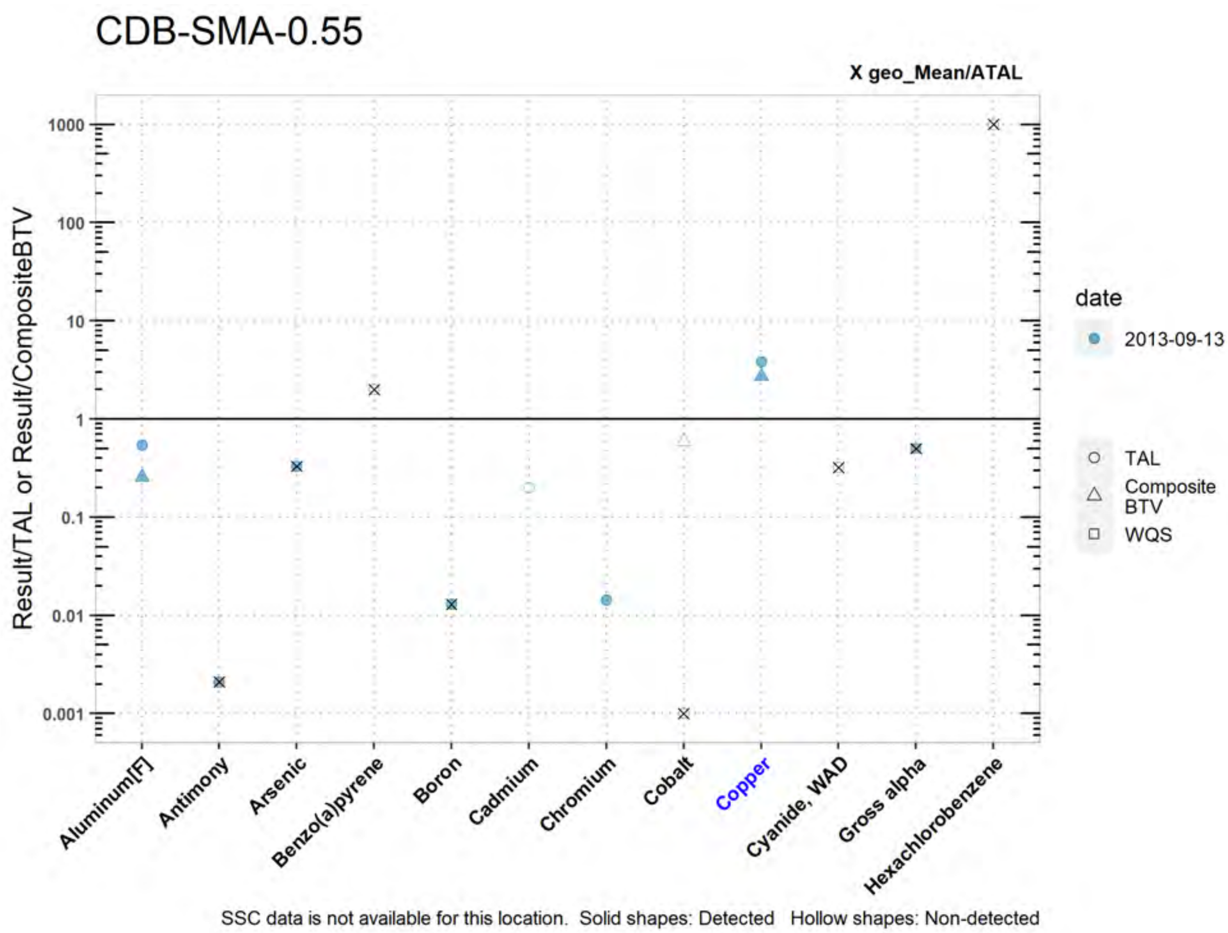


Figure 81.4-1 Analytical Results from Stormwater Sample, CDB-SMA-0.55 (Plot 1)

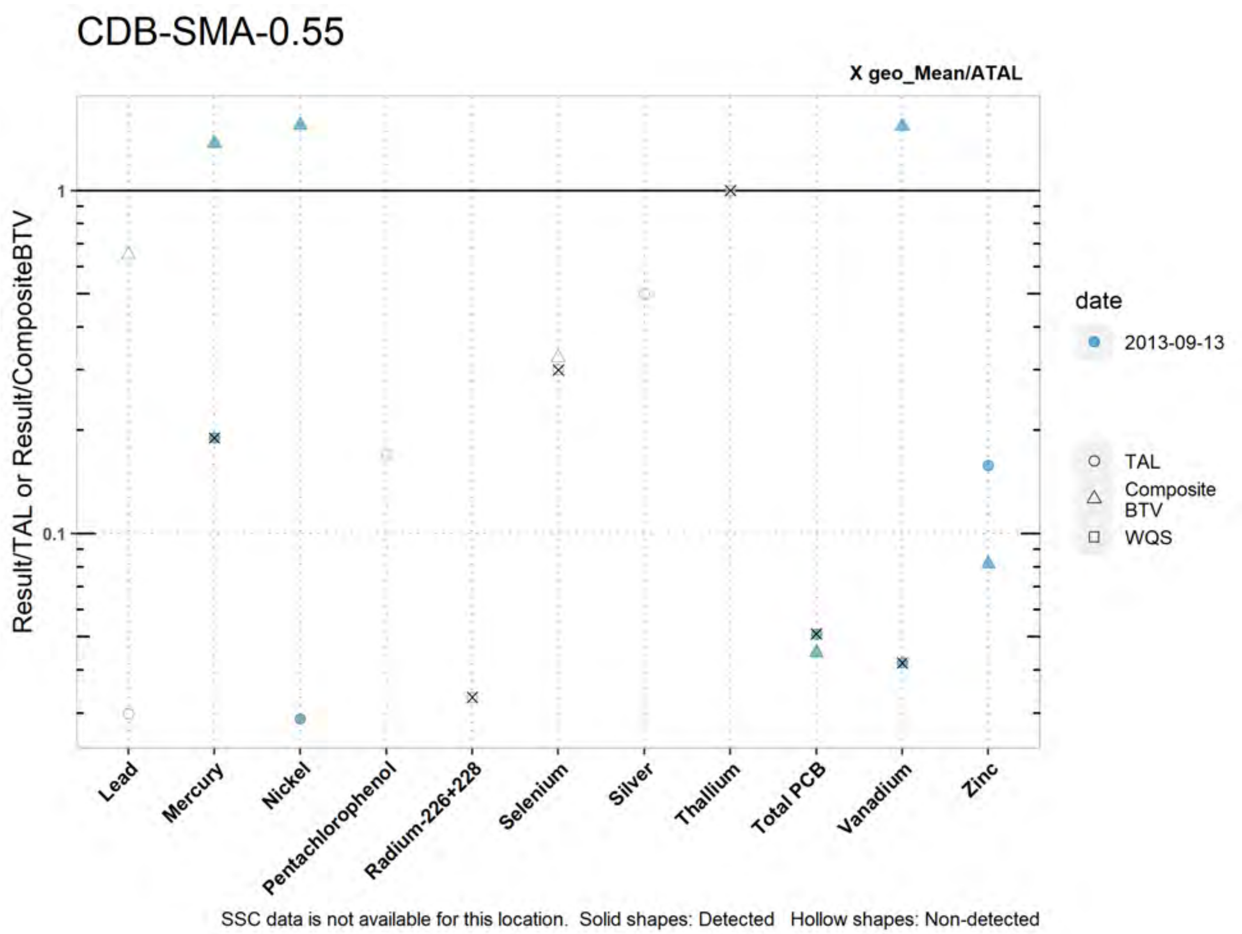


Figure 81.4-2 Analytical Results from Stormwater Sample, CDB-SMA-0.55 (Plot 2)

CDB-SMA-0.55

	Aluminum [F]	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Hexachlorobenzene
MQL	2.5	1	0.5	0.064	100	1	10	50	0.5	10	NA	5
ATAL	NA	640	9	0.18	5000	NA	NA	1000	NA	5.2	15	0.0029
MTAL	750	NA	340	NA	NA	0.583	210	NA	4.25	22	NA	NA
Composite_BTV	1600	NA	NA	NA	NA	NA	NA	1.70	5.99	NA	53.5	NA
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
2013-09-13 result	406	1.34	2.97	*0.319*	64.1	*0.110*	3.00	*1.00*	16.3	*1.67*	7.57	*3.19*
2013-09-13 dT	0.541	0.0021	0.33	NA	0.013	NA	0.0143	NA	3.84	NA	0.50	NA
2013-09-13 dB	0.254	NA	NA	NA	NA	NA	NA	NA	2.72	NA	NA	NA
geo_mean/ATAL	NA	0.0021	0.33	2	0.013	NA	NA	0.0010	NA	0.321	0.50	1000

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

Figure 81.4-3 Analytical Results from Stormwater Sample, CDB-SMA-0.55 (Table 1)

CDB-SMA-0.55

	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226+228	Selenium	Silver	Thallium	Total PCB	Vanadium	Zinc
MQL	0.5	0.005	0.5	5	NA	5	0.5	0.5	0.2	50	20
ATAL	NA	0.77	NA	NA	30	5	NA	0.47	0.014	100	NA
MTAL	16.7	NA	167	19	NA	20	0.394	NA	NA	NA	52.7
Composite_BTV	0.771	0.107	3.10	NA	7.22	4.62	NA	NA	0.0158	2.74	102
unit	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2013-09-13 result	*0.500*	0.147	4.81	*3.19*	*1.00*	*1.50*	*0.200*	*0.450*	0.000711	4.21	8.31
2013-09-13 dT	NA	0.19	0.0288	NA	NA	NA	NA	NA	0.051	0.042	0.158
2013-09-13 dB	NA	1.37	1.55	NA	NA	NA	NA	NA	0.0450	1.54	0.0815
geo_mean/ATAL	NA	0.19	NA	NA	0.0333	0.30	NA	1	0.051	0.042	NA

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

Figure 81.4-4 Analytical Results from Stormwater Sample, CDB-SMA-0.55 (Table 2)

81.4.2 Assessment Unit and Stream Impairments

CDB-SMA-0.55 drains to Cañada del Buey (within LANL), which has impairments for adjusted gross alpha and PCBs. The PCB impairment may be Site-related, based on Site history.

81.5 Site-Specific Demonstration

81.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)anthracene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

Copper exceeded the applicable screening value in soil data and the stormwater TAL, and will be added to the SAP. The remaining metals and Aroclor-1254 that exceeded the applicable 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.

81.5.2 Stormwater Data Summary

Copper exceeded the TAL and composite BTV.

81.5.3 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.2.b.i) for copper. The SMA is also in active monitoring; not all Site-related POCs were analyzed for in past samples.

81.5.4 Sampling and Analysis Plan

Table 81.5-1 is the proposed SAP for CDB-SMA-0.55.

Table 81.5-1 Proposed SAP, CDB-SMA-0.55

Monitoring Constituent	Background for Monitoring
Hexavalent chromium	Site history
Asbestos	Site history
SVOCs	Site history (organics) and soil data
DOC	Permit requirement
SSC	Permit requirement

82.0 CDB-SMA-1

Associated Sites	46-003(c), 46-004(d2), 46-004(f), 46-004(t), 46-004(w), 46-008(g), 46-009(a)
Receiving Water	SWSC Canyon - Tributary to Cañada del Buey
Drainage Area	10.46 acres
Landscape Characteristics	36% impervious, 64% pervious
Consent Order Site Status	SWMU 46-003(c): Pending Receipt of Certificate of Completion. SWMU 46-004(d2): Pending Receipt of Certificate of Completion. SWMU 46-004(f): Pending Receipt of Certificate of Completion. SWMU 46-004(t): In Progress SWMU 46-004(w): Pending Receipt of Certificate of Completion. SWMU 46-008(g): In Progress SWMU 46-009(a): Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the June 2017 field visits, all parties agreed that the current SMA sampling location and boundary was the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

82.1 2010 Administratively Continued Permit Summary

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

Following the August 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 225367), corrective-action monitoring was initiated, and a stormwater sample was collected in September 2013. Analytical results from this sample initiated corrective action.

Following the September 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600911), corrective-action monitoring was initiated and a stormwater sample was collected in August 2021. Corrective-action monitoring for the collection of a second stormwater sample is ongoing.

82.2 Site History

46-003(c) (2/18/2021)

SWMU 46-003(c) is an inactive septic system, approximately 80 ft southeast of building 46-76 at TA-46. The septic system consisted of a septic tank (structure 46-49), a distribution box (structure 46-50), associated inlet and outlet drainlines, a drain field, and an outfall located southeast of building 46-76, beneath an asphalt road outside the security fence at TA-46. This septic system was installed in 1956 and served the restroom facilities, floor drains, roof drains, sinks, and acid sinks in building 46-24, which housed offices, a machine shop, electrical laboratories, and chemical laboratories where fuel rods were handled. In 1958, an acid dry well, located in room B22 of building 46-24, was connected into the SWMU 46-003(c) system; this well drained to the septic tank for less than 1 yr.

The drain field associated with this septic system was removed from service sometime before 1968, and septic tank 46-49 was rerouted to the drain field associated with SWMU 46-003(f). In the 1970s, sanitary waste drainlines that previously discharged to septic tank 46-49 were rerouted to the SWMU 46-002 surface impoundment system, and septic tank 46-49 was reportedly removed from service, emptied, filled, and left in place. No evidence of the septic tank was found during the geophysical survey conducted during the 2010 Phase I Consent Order investigation, indicating that the tank has been removed.

46-004(d2) (2/18/2021)

SWMU 46-004(d2) is an area of potential soil contamination associated with exhaust emissions from stacks on building 46-24 at TA-46. Building 46-24 housed laboratories and offices. During 1960 and 1961, experiments conducted in building 46-24 used, and may have released, beryllium and beryllium oxide from stacks on the building.

46-004(f) (2/18/2021)

SWMU 46-004(f) is an inactive outfall from an industrial drainline that served rooms 101 through 134 of building 46-24 at TA-46. The outfall consists of a 6-in.-diameter VCP that received discharges from a sump, acid sink, several floor and sink drains, and cooling water system. The outfall pipe discharged to a drain approximately 50 ft east of building 46-24. This drain is part of a network of drains that discharge to SWSC Canyon at former NPDES-permitted outfall 04A018. Building 46-24 housed offices, a machine shop, electrical laboratories, and chemical laboratories where fuel rods were handled. All discharges to the outfall from building 46-24 had ceased before the outfall was removed from the NPDES permit in 1995.

46-004(t) (2/18/2021)

SWMU 46-004(t) is a former NPDES-permitted outfall (EPA 04A014) located approximately 60 ft southeast of building 46-76 at TA-46. The outfall is a 4-in.-diameter VCP drainline that received effluent from sink drains in rooms 101 and 102, and from all floor drains in room 104 and the high bay of building 46-88. The drainline discharged at a point approximately 250 ft northeast of building 46-88 on the west side of SWSC Road. Effluent from the outfall flowed to a storm drain culvert under the road and discharged to SWSC Canyon.

Building 46-88 housed a structural laboratory for testing pressure vessels associated with the Rover Program. The building was later used for process chemistry work to isolate nonradioactive isotopes of carbon, oxygen, and nitrogen. All discharges from building 46-88 had ceased before the outfall was removed from the NPDES permit in July 1995.

46-004(w) (2/18/2021)

SWMU 46-004(w) is a former NPDES-permitted outfall located approximately 70 ft south of building 46-24 at TA-46. The outfall is a 2-in.-diameter cast-iron pipe that discharged to a drain south of building 46-24, near the northwest corner of a laser laboratory (building 46-76). The outfall served a sink drain in building 46-59.

SWMU 46-004(w) also received effluent from the SWMU 46-004(r) outfall, and was part of a network of drains that discharged to SWSC Canyon from a former NPDES-permitted outfall (EPA 04A018). Building 46-59 was used for hydraulic and structural testing of components in support of the Rover Program. The outfall was removed from the NPDES permit in December 1995. Before the outfall was removed from the NPDES permit, all discharges to the outfall from building 46-59 ceased.

46-008(g) (6/3/2021)

SWMU 46-008(g) is a former unpaved storage area located south of a laser laboratory (building 46-76) at TA-46. In 1990, 20 drums containing dielectric oil were reported to be stored directly on the ground at this location. The site is a level area bisected by a drainage that flows east into SWSC Canyon through a storm drain culvert.

46-009(a) (6/3/2021)

SWMU 46-009(a) is a surface disposal area located at the head of SWSC Canyon near the southeastern corner of TA-46. The surface disposal area covers approximately 5000 yd^3, extending from the canyon rim to the floor of SWSC Canyon. The disposal area contains a variety of material, including asphalt, concrete, plywood, pipe, and other construction materials. The dates when material was disposed of at the site are not known. Aerial photographs of TA-46 taken in 1958 show the surface disposal area, confirming that disposal had started by at least 1958.

For investigation activities at the Sites, refer to “Supplemental Investigation Report for Upper Cañada del Buey Aggregate Area, Revision 1” (N3B 2020, 701038).

82.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 82.2-1.

Table 82.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
46-003(c)	Septic system	Metals, organic chemicals, PCBs, radionuclides
46-004(d2)	Soil contamination from stack emissions	Beryllium
46-004(f)	Drain associated with building 46-24	Metals, mercury, PCBs, SVOCs, uranium
46-004(t)	Outfall from building 46-88	No applicable POCs
46-004(w)	Outfall from building 46-59	PCBs, SVOCs
46-008(g)	Storage area	PCBs, SVOCs
46-009(a)	Landfill	Metals, asbestos, PCBs, SVOCs, radionuclides

82.3 Consent Order Soil Data

Decision-level data for SWMU 46-003(c) SWMU 46-004(d2), SWMU 46-004(f), SWMU 46-004(t), SWMU 46-004(w), SWMU 46-008(g), and SWMU 46-009(a) consist of results from samples collected in 2010. Analytical results from those samples are presented in Figures 82.3-1 through 82.3-4. Revision 1 of the 2020 supplemental IR (N3B 2020, 701038) concluded that the nature and extent of contamination are defined.

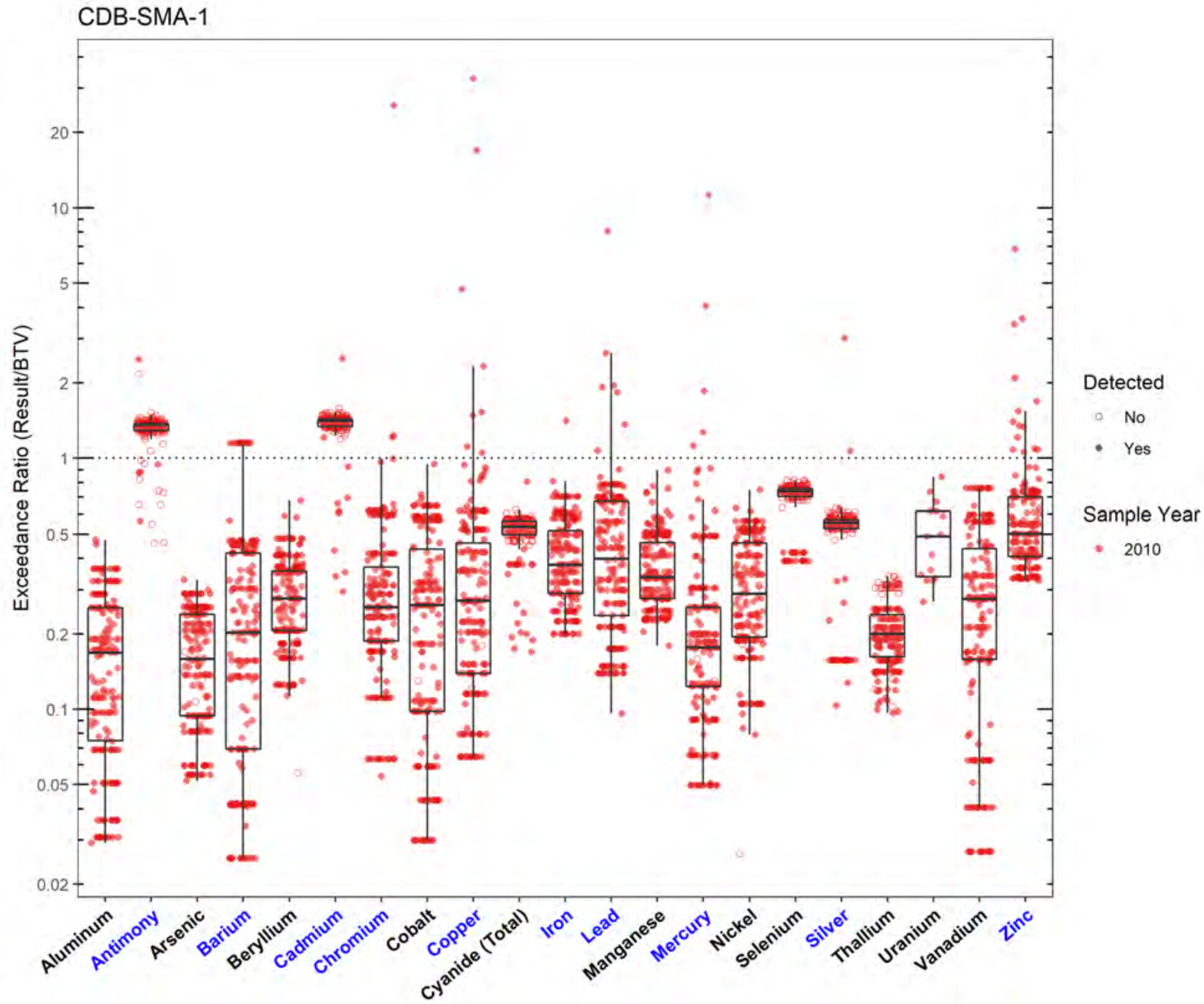


Figure 82.3-1 Inorganics Analytical Results from Soil Samples Associated with CDB-SMA-1

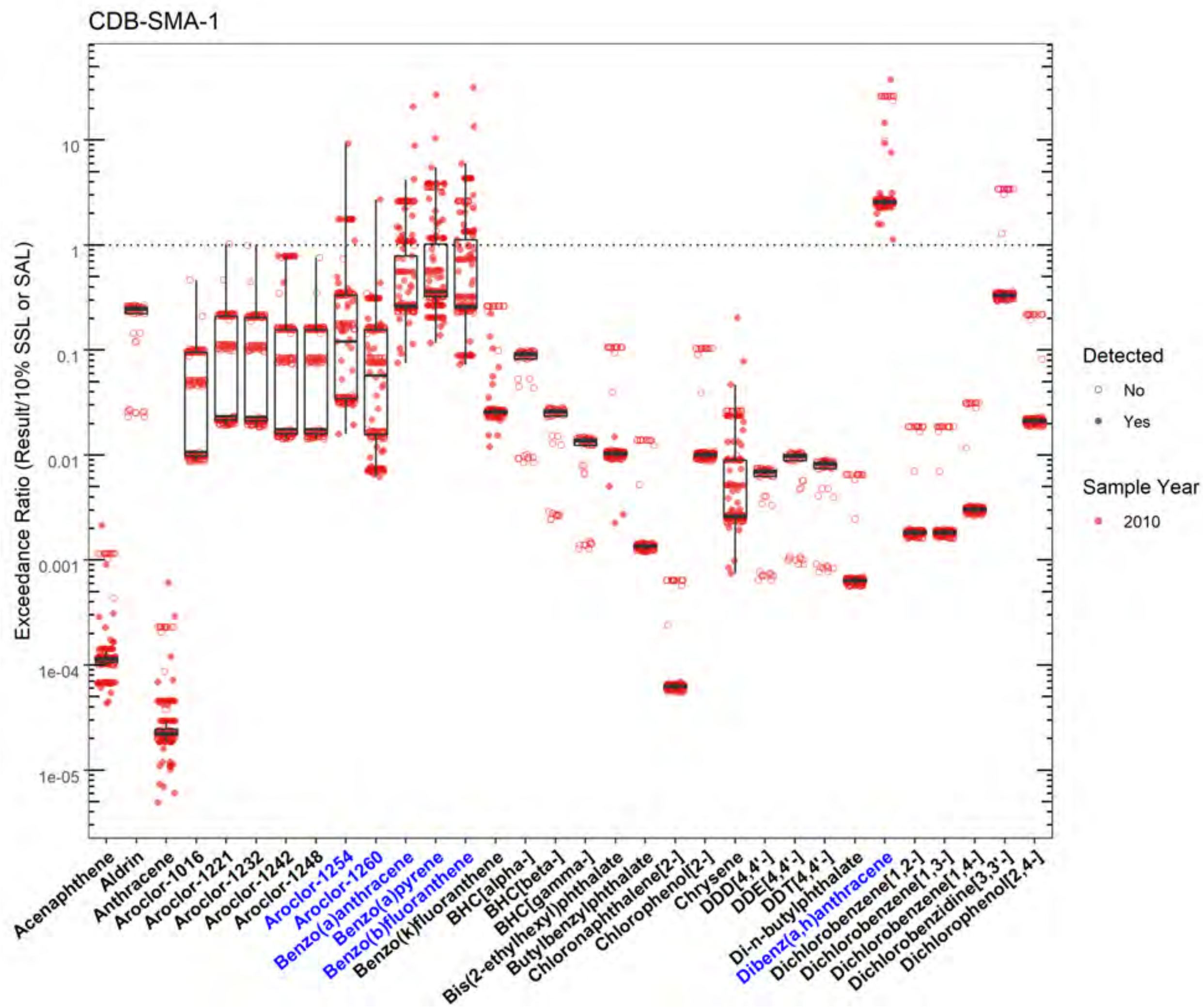


Figure 82.3-2 **Organics Analytical Results from Soil Samples Associated with CDB-SMA-1 (Plot 1)**

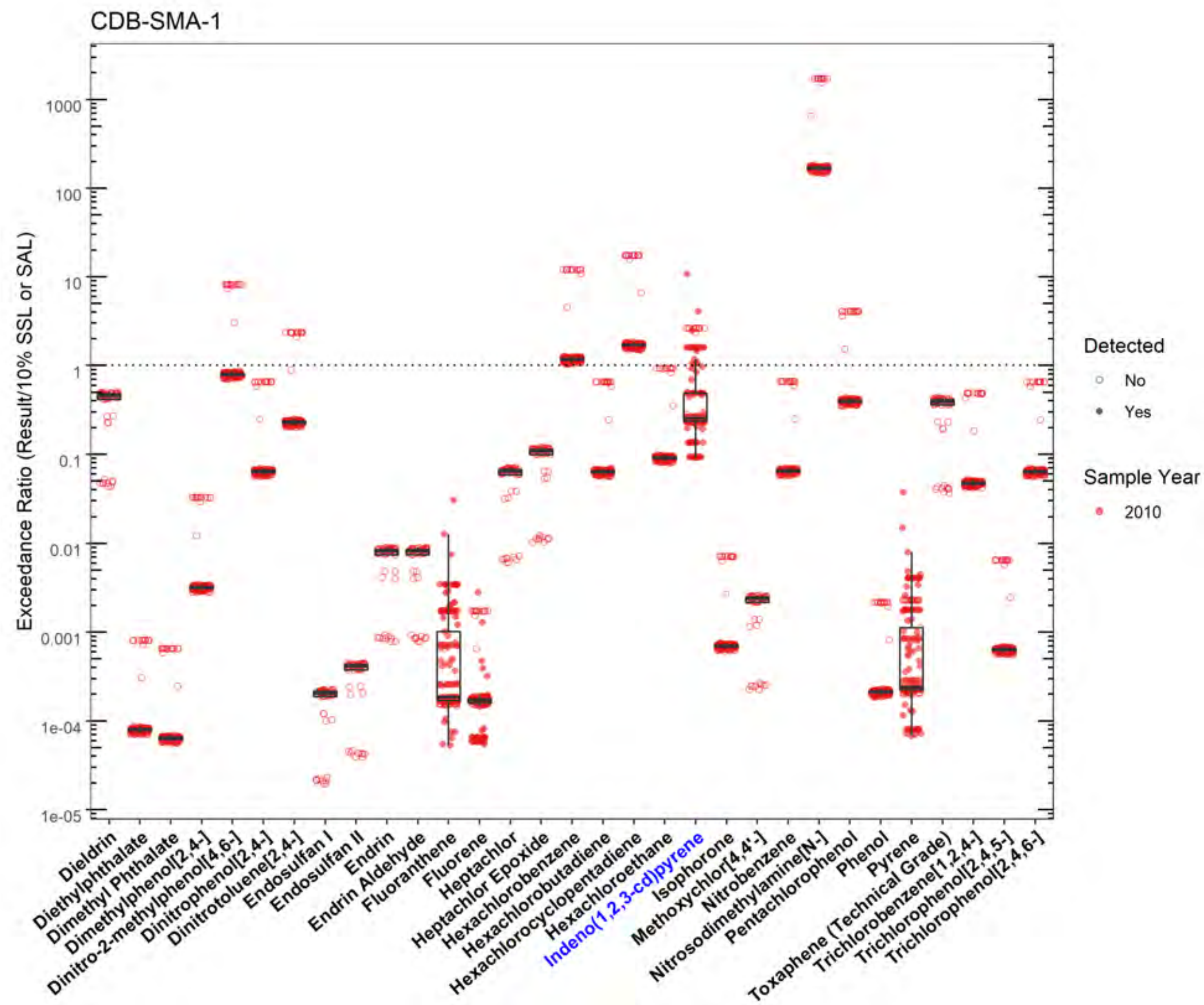


Figure 82.3-3 **Organics Analytical Results from Soil Samples Associated with CDB-SMA-1 (Plot 2)**

CDB-SMA-1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	CDB-SMA-1	Sb	Y	BTV	0.830	2.05	2010-03-02
Aroclor-1254	CDB-SMA-1	11097-69-1	Y	SSL_0.1	0.114	1.06	2010-03-02
Aroclor-1260	CDB-SMA-1	11096-82-5	Y	SSL_0.1	0.243	0.654	2010-03-02
Barium	CDB-SMA-1	Ba	Y	BTV	295	340	2010-02-17
Benzo(a)anthracene	CDB-SMA-1	56-55-3	Y	SSL_0.1	0.153	3.18	2010-03-02
Benzo(a)pyrene	CDB-SMA-1	50-32-8	Y	SSL_0.1	0.112	3.00	2010-03-02
Benzo(b)fluoranthene	CDB-SMA-1	205-99-2	Y	SSL_0.1	0.153	4.83	2010-03-02
Cadmium	CDB-SMA-1	Cd	Y	BTV	0.400	1.00	2010-03-02
Chromium	CDB-SMA-1	Cr	Y	BTV	19.3	494	2010-03-02
Copper	CDB-SMA-1	Cu	Y	BTV	14.7	484	2010-01-15
Dibenz(a,h)anthracene	CDB-SMA-1	53-70-3	Y	SSL_0.1	0.0153	0.573	2010-03-02
Indeno(1,2,3-cd)pyrene	CDB-SMA-1	193-39-5	Y	SSL_0.1	0.153	1.63	2010-03-02
Iron	CDB-SMA-1	Fe	Y	BTV	21500	30300	2010-01-19
Lead	CDB-SMA-1	Pb	Y	BTV	22.3	180	2010-03-02
Mercury	CDB-SMA-1	Hg	Y	BTV	0.100	1.12	2010-01-15
Silver	CDB-SMA-1	Ag	Y	BTV	1.00	3.01	2010-03-02
Zinc	CDB-SMA-1	Zn	Y	BTV	48.8	334	2010-01-19

Figure 82.3-4 Screening-Level Exceedances from Soil Samples Associated with CDB-SMA-1

82.4 Stormwater Evaluation

82.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A confirmation-monitoring stormwater sample was collected in August 2021. Analytical results from that sample are presented in Figures 82.4-1 and 82.4-2.

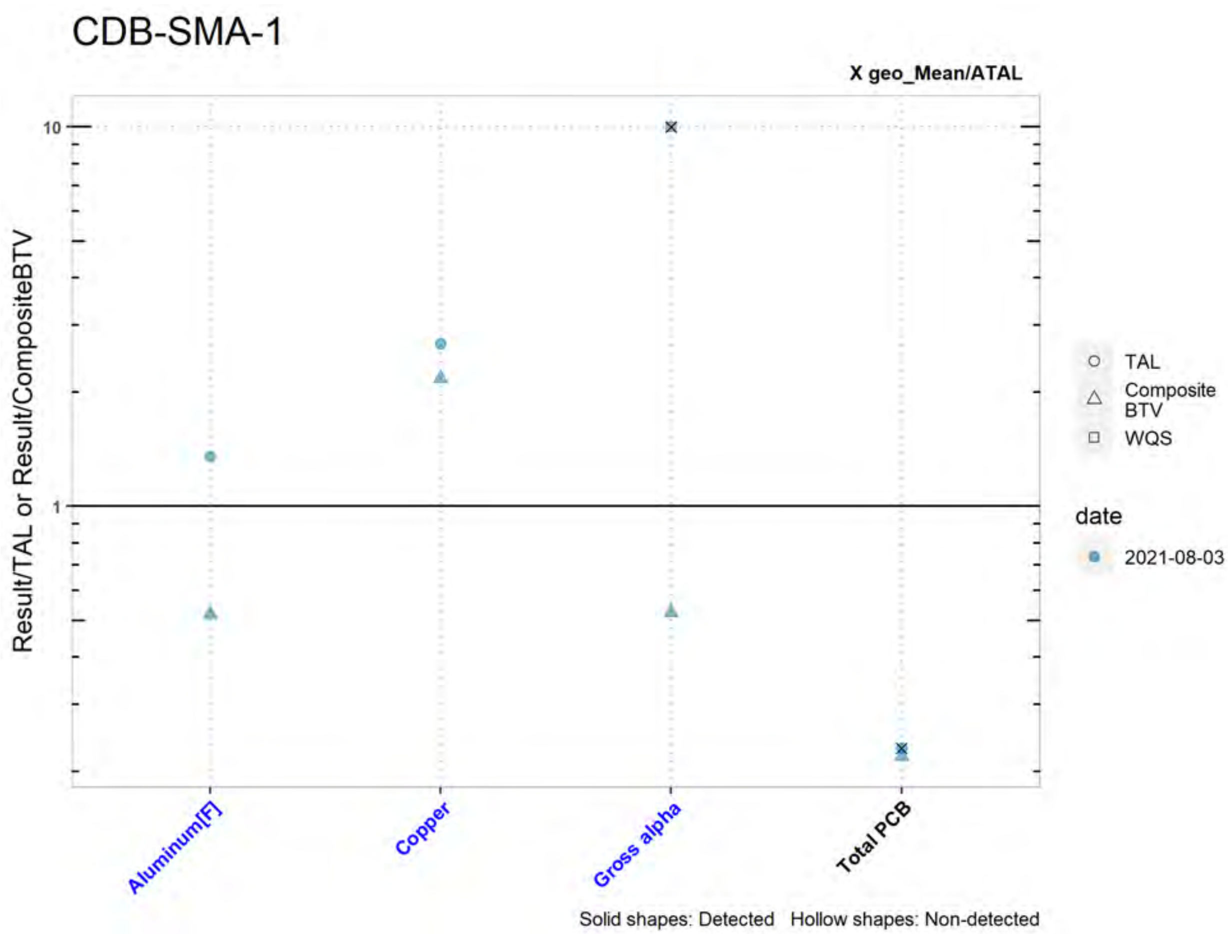


Figure 82.4-1 Analytical Results from Stormwater Sample, CDB-SMA-1 (Plot)

CDB-SMA-1

	Aluminum [F]	Copper	Gross alpha	Total PCB
MQL	2.5	0.5	NA	0.2
ATAL	NA	NA	15	0.014
MTAL	750	4.25	NA	NA
Composite_BTV	1950	5.25	54.5	0.0149
unit	ug/L**	ug/L	pCi/L*	ug/L
2021-08-03 result	1010	11.4	151	0.00327
2021-08-03 dT	1.35	2.68	10	0.23
2021-08-03 dB	0.518	2.17	0.523	0.219
geo_mean/ATAL	NA	NA	10	0.23

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 82.4-2 Analytical Results from Stormwater Sample, CDB-SMA-1 (Table)

82.4.2 Assessment Unit and Stream Impairments

CDB-SMA-1 drains to Cañada del Buey (within LANL), which has impairments for adjusted gross alpha and PCBs. The adjusted gross alpha and PCB impairments may be Site-related, based on Site history.

82.5 Site-Specific Demonstration

82.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,d,3-cd)pyrene.

Copper exceeded the applicable screening value in soil data and the stormwater TAL, and is included in the SAP. The remaining metals, Aroclor-1254, and Aroclor-1260 exceeded the applicable screening value in soil data, but were previously monitored in stormwater data and did not exceed TALs. Therefore, they will not be added to the SAP.

82.5.2 Stormwater Data Summary

Copper exceeded the TAL and composite BTV. Gross alpha and dissolved aluminum exceeded the TAL, but not the BTV.

82.5.3 2022 Permit Status

The SMA is in active monitoring. A second confirmation-monitoring sample has not been collected at this location. Additionally, not all Site-related POCs were analyzed for in past samples.

82.5.4 Sampling and Analysis Plan

Table 82.5-1 is the proposed SAP for CDB-SMA-1.

Table 82.5-1 Proposed SAP, CDB-SMA-1

Monitoring Constituent	Background for Monitoring
Total PCBs (1)	Impairment, Site history, soil data, stormwater data
Dissolved copper (1)	Site history (metals), soil data, and stormwater data
Asbestos	Site history
Strontium-90	Site history (radionuclides)
Tritium	Site history (radionuclides)
SVOCs	Site history (organic chemicals) and soil data
DOC	Permit requirement
SSC	Permit requirement

83.0 CDB-SMA-1.15

Associated Sites	46-004(b), 46-004(y), 46-004(z), 46-006(d)
Receiving Water	Cañada del Buey
Drainage Area	1.14 acres
Landscape Characteristics	4% impervious, 96% pervious
Consent Order Site Status	SWMU 46-004(b): Pending Receipt of Certificate of Completion. SWMU 46-004(y): Pending Receipt of Certificate of Completion. SWMU 46-004(z): Pending Receipt of Certificate of Completion. SWMU 46-006(d): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the June 2017 field visits, all parties agreed that the current SMA sampling location and boundary was the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

83.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, 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.

83.2 Site History

46-004(b) (2/18/2021)

SWMU 46-004(b) is a former alkali-metal cleaning tank (structure 46-81) at Technical Area TA-46. The steel tank measured approximately 4 ft × 8 ft × 6 ft tall, and was located on asphalt pavement within 20 ft of the northwest corner of building 46-31, within the boundary of the SWMU 46-006(d). The tank outlet was plumbed to the SWMU 46-004(c) dry well. The tank was used in the late 1950s and early 1960s to douse laboratory equipment from cesium-plasma diode experiments before the equipment was reused or disposed of. Butanol or kerosene was used on the equipment to dissolve naturally occurring alkali isotopes of cesium and lithium. The tank was removed in 1973. The 1990 SWMU report incorrectly described the tank as being constructed of concrete.

46-004(y) (2/18/2021)

SWMU 46-004(y) is a former NPDES-permitted outfall (EPA 03A043) located approximately 40 ft north of building 46-31 at TA-46. This outfall consisted of a 6-in.-diameter cast-iron pipe that received blowdown from a cooling tower in building 46-31 and effluent from floor drains, roof drains, and laboratory sinks from the building. The outfall pipe discharged into Cañada del Buey.

Building 46-31 housed test cells with electrical furnaces for thermal testing of graphite and uranium-235/uranium-238 fuel rods in support of the Rover Program. Welding experiments involving thorium were also conducted in building 46-31. An historical evaluation of chemicals used in cooling towers indicated that chromium had not been used in the TA-46 cooling towers.

The outfall pipe to the canyon was removed before 1996, the roof drains were rerouted to new storm drains that discharge to the north side of building 46-31, and all floor and sink drains discharging to this outfall were rerouted to the SWSC plant at TA-46. In July 1996, the outfall was removed from the NPDES permit.

46-004(z) (2/18/2021)

SWMU 46-004(z) is an inactive outfall located approximately 60 ft northwest of building 46-31 at TA-46. This outfall consists of a 6-in.-diameter cast-iron pipe that receives stormwater from two roof drains on building 46-31 and discharges into Cañada del Buey. Previously, the outfall also served the floor drains in rooms 160 through 172 of building 46-31. Building 46-31 housed test cells with electrical furnaces for thermal testing of graphite and uranium-235/uranium-238 fuel rods in support of the Rover Program, as well as welding experiments involving thorium. The floor drains leading to this outfall were rerouted to the TA-46 SWSC plant before 1993.

46-006(d) (2/18/2021)

SWMU 46-006(d) is an area of potential soil contamination located on the north side of building 46-31 at TA-46. The area is approximately 50 ft × 300 ft, is paved with asphalt, and is level near building 46-31, but drops steeply towards the northern perimeter fence of TA-46 and into Cañada del Buey. Oils and possibly other materials spilled in the area. Engineering drawings show that a drain from room 111A also discharged to this SWMU. During a 1986 site visit, 55-gal. drums, cans, rusty chemical storage containers, and a thick layer of oil were observed on the northern slope of the site.

For investigation activities at the Sites, refer to “Supplemental Investigation Report for Upper Cañada del Buey Aggregate Area, Revision 1” (N3B 2020, 701038).

83.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 83.2-1.

Table 83.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
46-004(b)	Soil contamination associated with former tank	No applicable POCs
46-004(y)	Outfall from building 46-31	Metals, arsenic, mercury, PCBs, SVOCs, uranium
46-004(z)	Outfall from building 46-31	Metals, mercury, PCBs, SVOCs, uranium
46-006(d)	Operational release	Metals, mercury, PCBs, SVOCs, plutonium, uranium

83.3 Consent Order Soil Data

Decision-level data for SWMU 46-004(b), 46-004(y), SWMU 46-004(z), SWMU 46-004(z), and SWMU 46-006(d) consist of results from samples collected in 2010. Analytical results from those samples are presented in Figures 83.3-1 through 83.3-4. Revision 1 of the 2020 supplemental IR (N3B 2020, 701038) concluded that the nature and extent of contamination are defined.

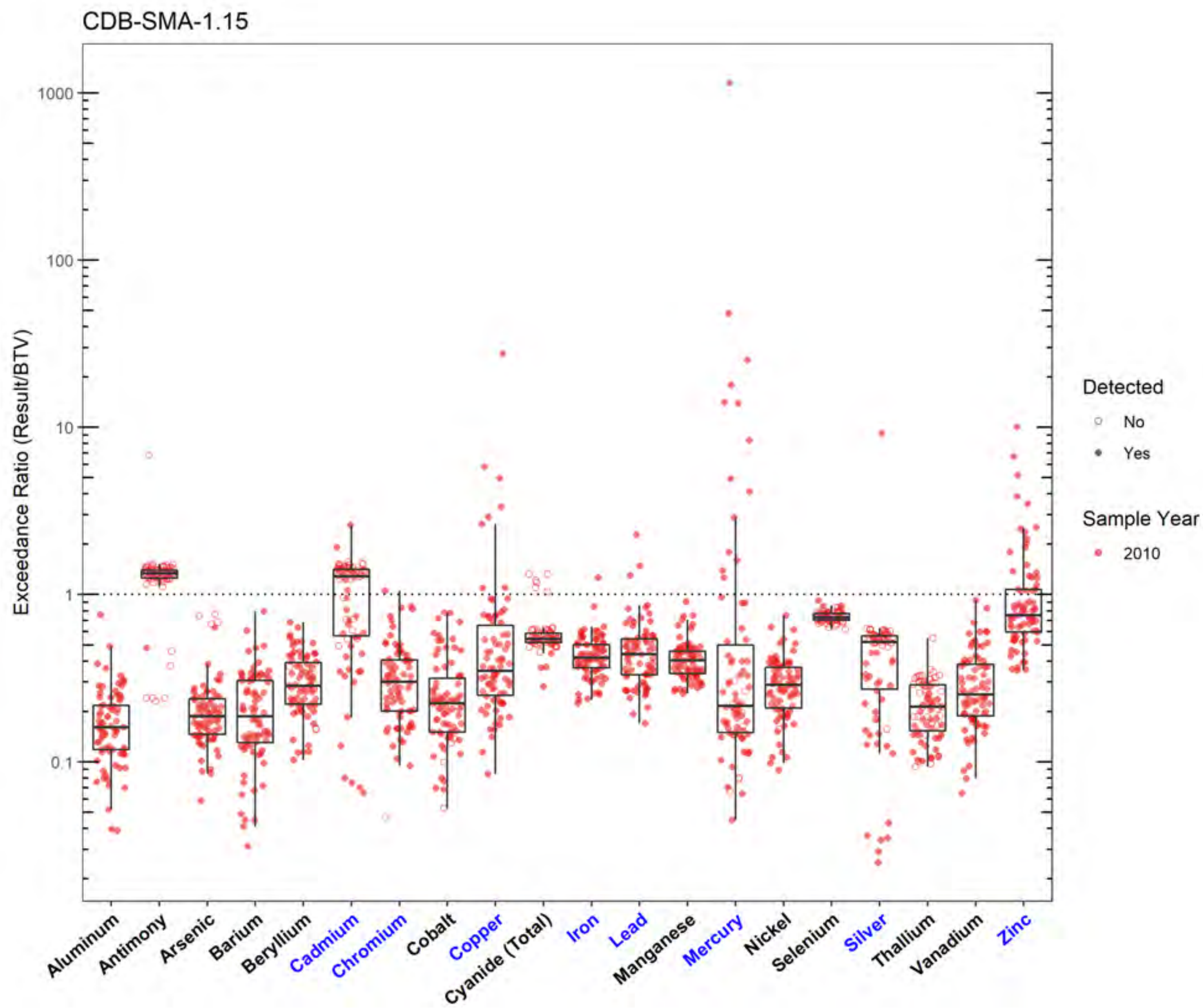


Figure 83.3-1 Inorganics Analytical Results from Soil Samples Associated with CDB-SMA-1.15

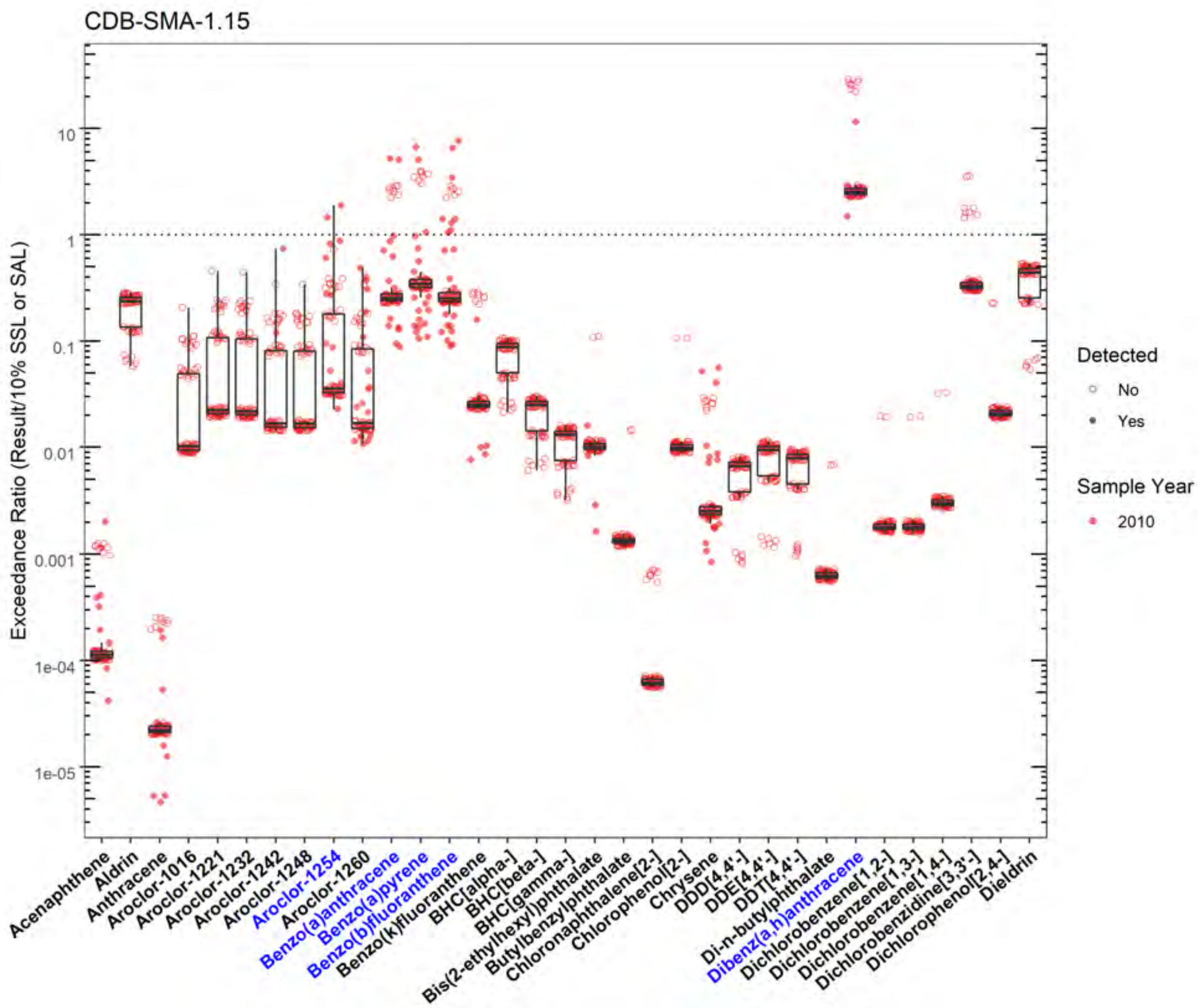


Figure 83.3-2 Organics Analytical Results from Soil Samples Associated with CDB-SMA-1.15 (Plot 1)

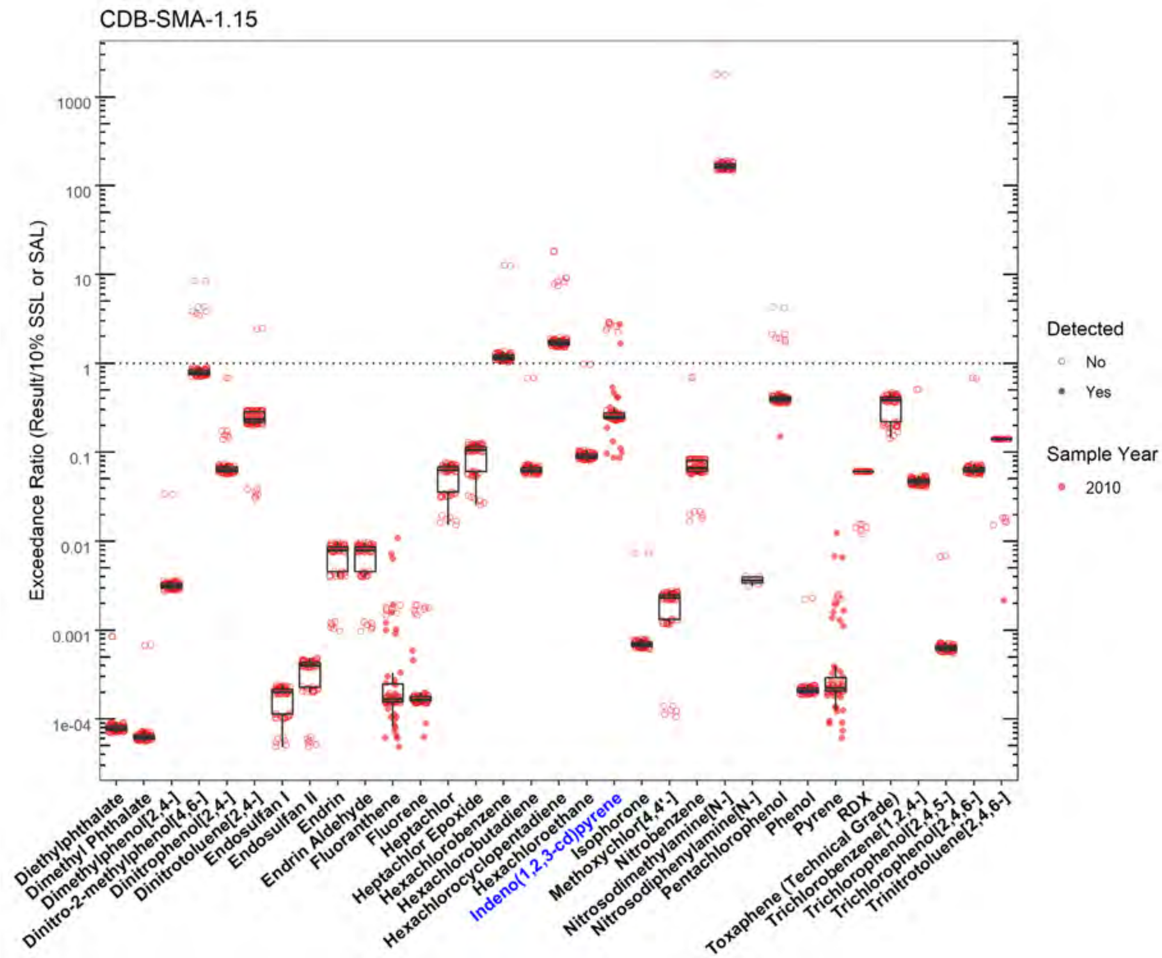


Figure 83.3-3 Organics Analytical Results from Soil Samples Associated with CDB-SMA-1.15 (Plot 2)

CDB-SMA-1.15

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	CDB-SMA-1.15	11097-69-1	Y	SSL_0.1	0.114	0.216	2010-02-12
Benzo(a)anthracene	CDB-SMA-1.15	56-55-3	Y	SSL_0.1	0.153	0.800	2010-03-15
Benzo(a)pyrene	CDB-SMA-1.15	50-32-8	Y	SSL_0.1	0.112	0.746	2010-03-15
Benzo(b)fluoranthene	CDB-SMA-1.15	205-99-2	Y	SSL_0.1	0.153	1.17	2010-03-15
Cadmium	CDB-SMA-1.15	Cd	Y	BTV	0.400	1.04	2010-02-12
Chromium	CDB-SMA-1.15	Cr	Y	BTV	19.3	20.3	2010-02-12
Copper	CDB-SMA-1.15	Cu	Y	BTV	14.7	403	2010-02-19
Dibenz(a,h)anthracene	CDB-SMA-1.15	53-70-3	Y	SSL_0.1	0.0153	0.176	2010-03-16
Indeno(1,2,3-cd)pyrene	CDB-SMA-1.15	193-39-5	Y	SSL_0.1	0.153	0.419	2010-03-15
Iron	CDB-SMA-1.15	Fe	Y	BTV	21500	27100	2010-02-12
Lead	CDB-SMA-1.15	Pb	Y	BTV	22.3	50.9	2010-03-16
Mercury	CDB-SMA-1.15	Hg	Y	BTV	0.100	115	2010-02-19
Silver	CDB-SMA-1.15	Ag	Y	BTV	1.00	9.12	2010-02-23
Zinc	CDB-SMA-1.15	Zn	Y	BTV	48.8	493	2010-02-12

Figure 83.3-4 Screening-Level Exceedances from Soil Samples Associated with CDB-SMA-1.15

83.4 Stormwater Evaluation

83.4.1 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.

83.4.2 Assessment Unit and Stream Impairments

CDB-SMA-1.15 drains to Cañada del Buey (within LANL), which has impairments for adjusted gross alpha and PCBs. The adjusted gross alpha and PCB impairments may be Site-related, based on Site history.

83.5 Site-Specific Demonstration

83.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: Aroclor-1254, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, cadmium, chromium, copper, iron, lead, mercury, silver, and zinc.

83.5.2 Stormwater Data Summary

No confirmation-monitoring data.

83.5.3 2022 Permit Status

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

83.5.4 Sampling and Analysis Plan

Table 83.5-1 is the proposed SAP for CDB-SMA-1.15.

Table 83.5-1 Proposed SAP, CDB-SMA-1.15

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history
Total PCBs	Impairment, Site history, and soil data
SVOCs	Site history and soil data
Dissolved cadmium, chromium, copper, lead, silver, uranium, and zinc	Site history (metals) and soil data
Total mercury and iron	Site history (metals) and soil data
DOC	Permit requirement
SSC	Permit requirement

84.0 CDB-SMA-4

Associated Sites	54-017, 54-018, 54-020
Receiving Water	Cañada del Buey
Drainage Area	2.95 acres
Landscape Characteristics	13% impervious, 87% pervious
Consent Order Site Status	SWMU 54-017: In Progress SWMU 54-018: In Progress SWMU 54-020: In Progress
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the July 2017 field visit, all parties agreed that the current SMA sampling location and boundary was the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

84.1 2010 Administratively Continued Permit Summary

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

Following the August 2014 submittal to EPA of certification of a no-exposure condition for the Sites per Permit part I.E.2(c) (LANL 2014, 260884), investigative 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.

84.2 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. These pits were operational between 1959 and 1980, and received LLW, MLLW, 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. The pits are located in the eastern portion of Area G, with volumes ranging from 1371 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.

54-018 (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 LLW, MLLW, and TRU waste in the form of reactor control rods, D&D waste, contaminated soil, transformers, glove boxes, asbestos, and lab waste. They range in volume from 20,957 to 59,930 yd^3.
- Pit 29 operated until 1986, after which the surface was used to store retrievable TRU waste in cement-filled sections of CMP [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.

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 MLLW. 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 MDA G, SWMU 54-013(b)-99, at TA-54, Revision 3” (LANL 2011, 206324).

84.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 84.2-1.

Table 84.2-1 POCs Known or Suspected to be 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

54-018	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

84.3 Consent Order Soil Data

Decision-level data for SWMU 54-017, SWMU 54-018, and SWMU 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. One sample was within the SMA and was collected at a starting depth of 3 ft bgs or shallower. Analytical results from that sample are presented in Figure 84.3-1.

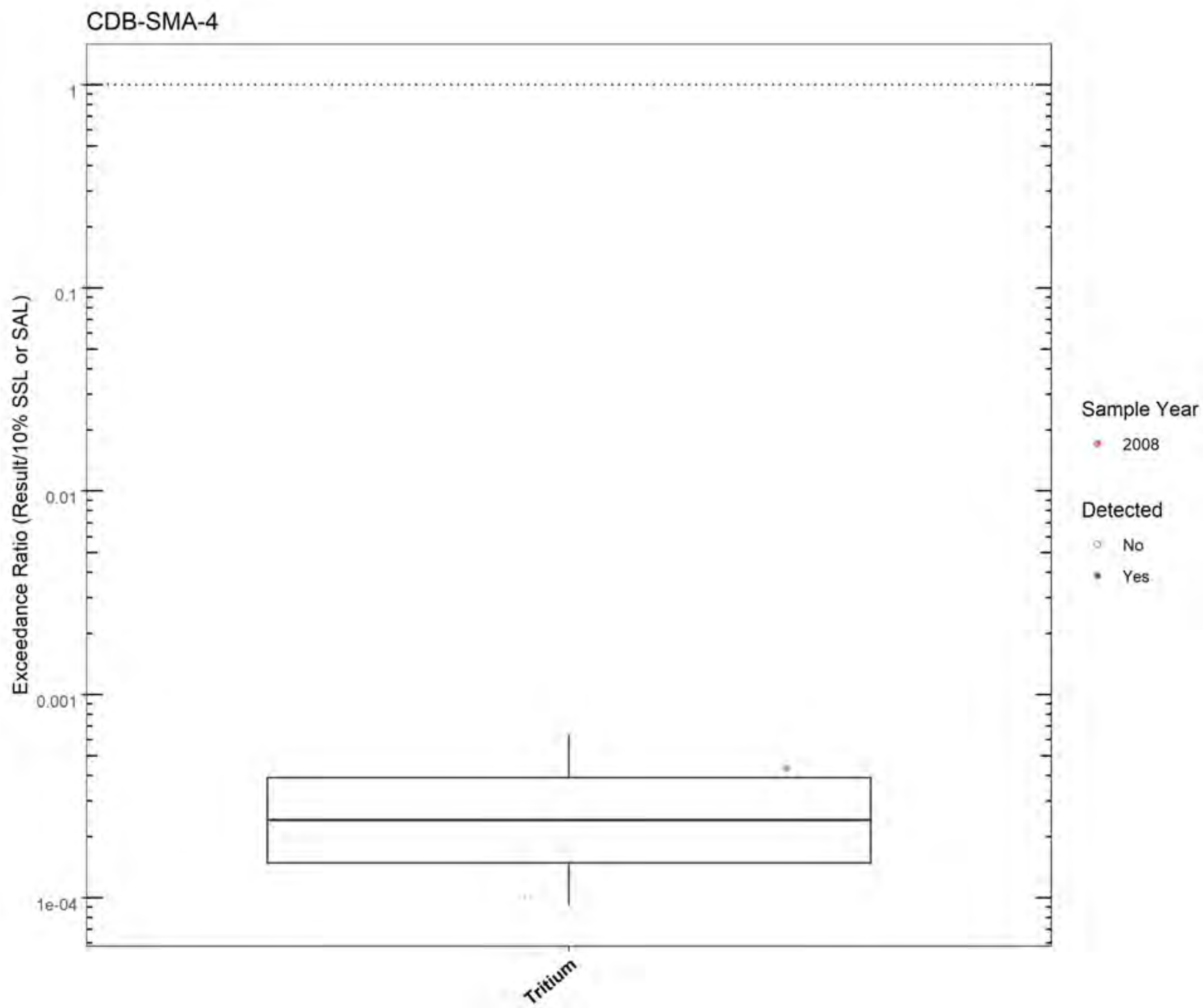


Figure 84.3-1 Analytical Results from Soil Samples Associated with CDB-SMA-4

84.4 Stormwater Evaluation

84.4.1 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.

84.4.2 Assessment Unit and Stream Impairments

CDB-SMA-4 drains to Cañada del Buey (within LANL), which has impairments for adjusted gross alpha and PCBs. The adjusted gross alpha and PCB impairments may be Site-related, based on Site history.

84.5 Site-Specific Demonstration

84.5.1 Soil Data Summary

No exceedances of the applicable screening value in available soil data.

84.5.2 Stormwater Data Summary

Total PCBs exceeded the TAL but not the BTV in the previous monitoring stage. Copper exceeded the TAL and BTV. Gross alpha exceeded the TAL; no SSC data was collected to determine if it exceeded the BTV.

84.5.3 2022 Permit Status

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

84.5.4 Sampling and Analysis Plan

Table 84.5-1 is the proposed SAP for CDB-SMA-4.

Table 84.5-1 Proposed SAP, CDB-SMA-4

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment, Site history, and stormwater data
Asbestos	Site history
Dissolved copper and uranium	Site history (metals) and stormwater data
DOC	Permit requirement
SSC	Permit requirement

85.0 M-SMA-1

Associated Sites	03-050(a), 03-054(e)
Receiving Water	Mortandad Canyon
Drainage Area	29.68 acres
Landscape Characteristics	49% impervious, 51% pervious
Consent Order Site Status	SWMU 03-050(a): In Progress SWMU 03-054(e): Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the August 2016 field visit, the current SMA sampling location and boundary were agreed by all parties to be the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring/Corrective Action

85.1 2010 Administratively Continued Permit Summary

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

Following the December 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 232349), the sampler was moved to a more representative location, and corrective-action monitoring was initiated. Stormwater samples were collected in June and July 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 has not occurred since 2013.

85.2 Site History

03-050(a) (8/31/2017)

SWMU 03-050(a) is an area of potential soil contamination from exhaust emissions from the 24 stacks on the roof of building 03-29, the CMR facility at TA-03. The CMR facility was built in 1961 and consists of 550,000 ft^2, including an administrative wing, an office wing, six laboratory wings, and one area that includes hot cells which provide heavy shielding and remote-handling capabilities for work on highly-radioactive materials. The facility also houses analytical chemistry operations involving uranium, plutonium, iodine, mixed fission products, and tritium. HEPA, Aerosolve 95, and charcoal filters are used to remove radioactive particulates from stack effluent gas. Three wings of the CMR facility are in various stages of shutdown, including D&D.

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

03-054(e) (3/2/2017)

SWMU 03-054(e) is a former NPDES outfall (EPA 03A021), located in upper Mortandad Canyon, that was established to handle effluent originating from several sources at the CMR Building (03-29). These sources included CMR cooling systems, roof drains from the west wing where the towers vent filtered exhaust (air washers), and surface water runoff from the asphalt area around the building, including the dumpster areas identified as SWMUs 03-004(c and d). The outfall typically discharged a steady, low-volume flow of effluent.

The industrial discharges to the outfall ceased in 2010. Air washers were removed from Wings 5 and 7, and the remaining air washers (Wings 1, 2, 3, 4 and 9) operate in a closed-loop (no blowdown) mode. Discharges from the CMR cooling systems were rerouted from the outfall to the Laboratory's TA-46 sanitary WWTP for emergency use. The outfall was removed from the NPDES permit in 2011, and continues to receive stormwater runoff from roof drains on the CMR Building and from asphalt areas around the building.

SWMU 03-054(e) received effluent from an unintentional one-time release from an industrial waste manhole [AOC C-03-006] in 1974. The overflow resulted from a plug in the industrial waste line and was estimated to be between 500 and 1000 gal. of RLW. The overflow spilled to the surrounding paved area, traveled north along Diamond Drive, flowed into the storm sewer through a storm drain grate, and ultimately discharged into upper Mortandad Canyon through the SWMU 03-054(e) outfall. A small dam was built in the streambed at the base of the canyon to contain the effluent. Subsequent cleanup activities, based on residual radioactive contamination cleanup levels of 25 pCi/g, resulted in the removal of approximately 142 ft^3 of contaminated soil from Mortandad Canyon.

For investigation activities, refer to "Supplemental Investigation Report for Upper Mortandad Canyon Aggregate Area, Revision 1" (N3B 2020, 700951).

85.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 85.2-1.

Table 85.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
03-050(a)	Potential soil contamination from stack emissions	Beryllium, mercury, fission products, iodine isotopes, plutonium, tritium, uranium
03-054(e)	Outfall	Metals, PCBs, SVOCs, radionuclides, fission products, iodine isotopes, plutonium, tritium, uranium

85.3 Consent Order Soil Data

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

Decision-level data for SWMU 03-054(e) consist of results from samples collected in 1995 and 2009. Analytical results from that sample are presented in Figures 85.3-1 through 85.3-4. The 2015 supplemental IR (LANL 2015, 601063) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

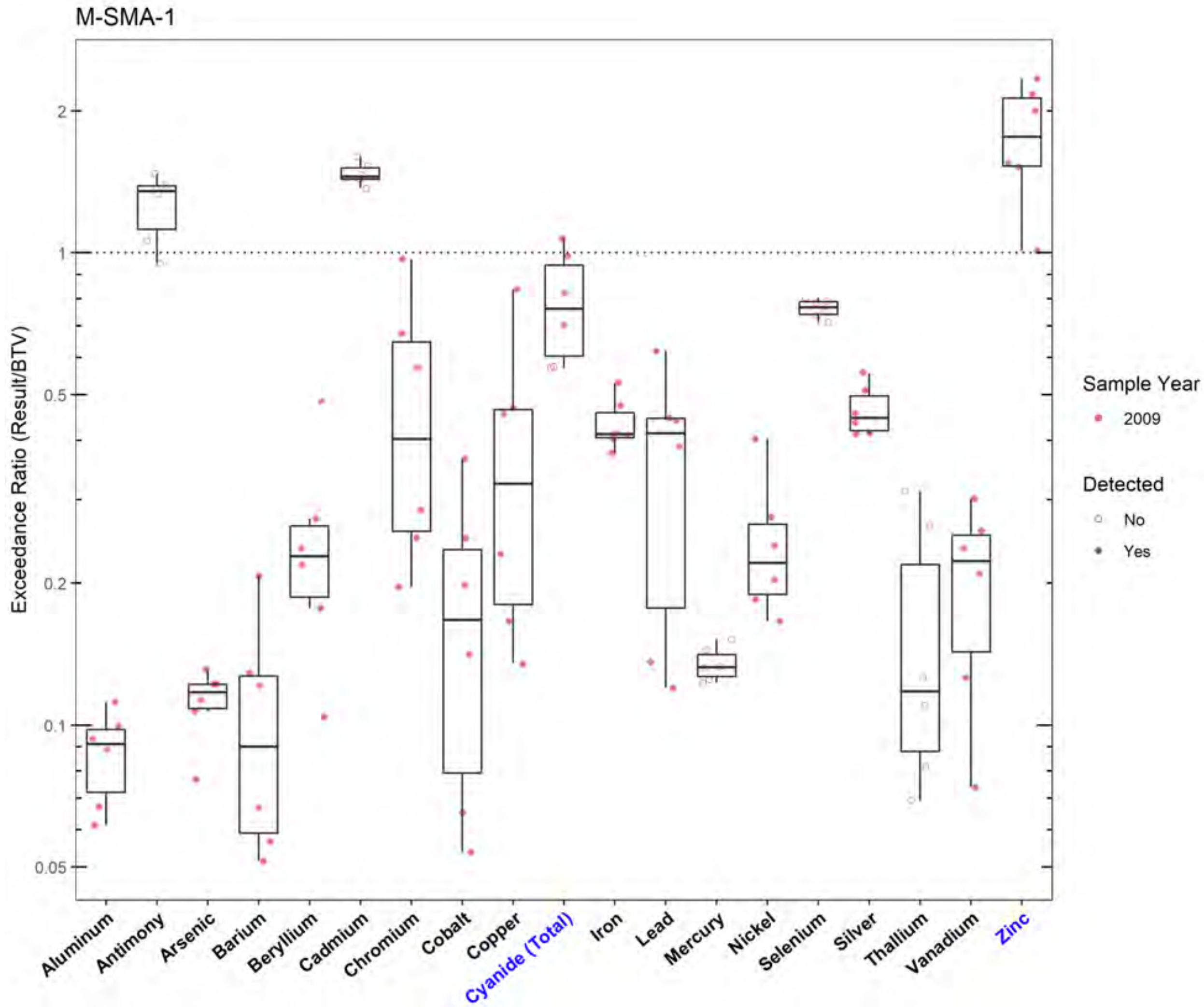


Figure 85.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-1

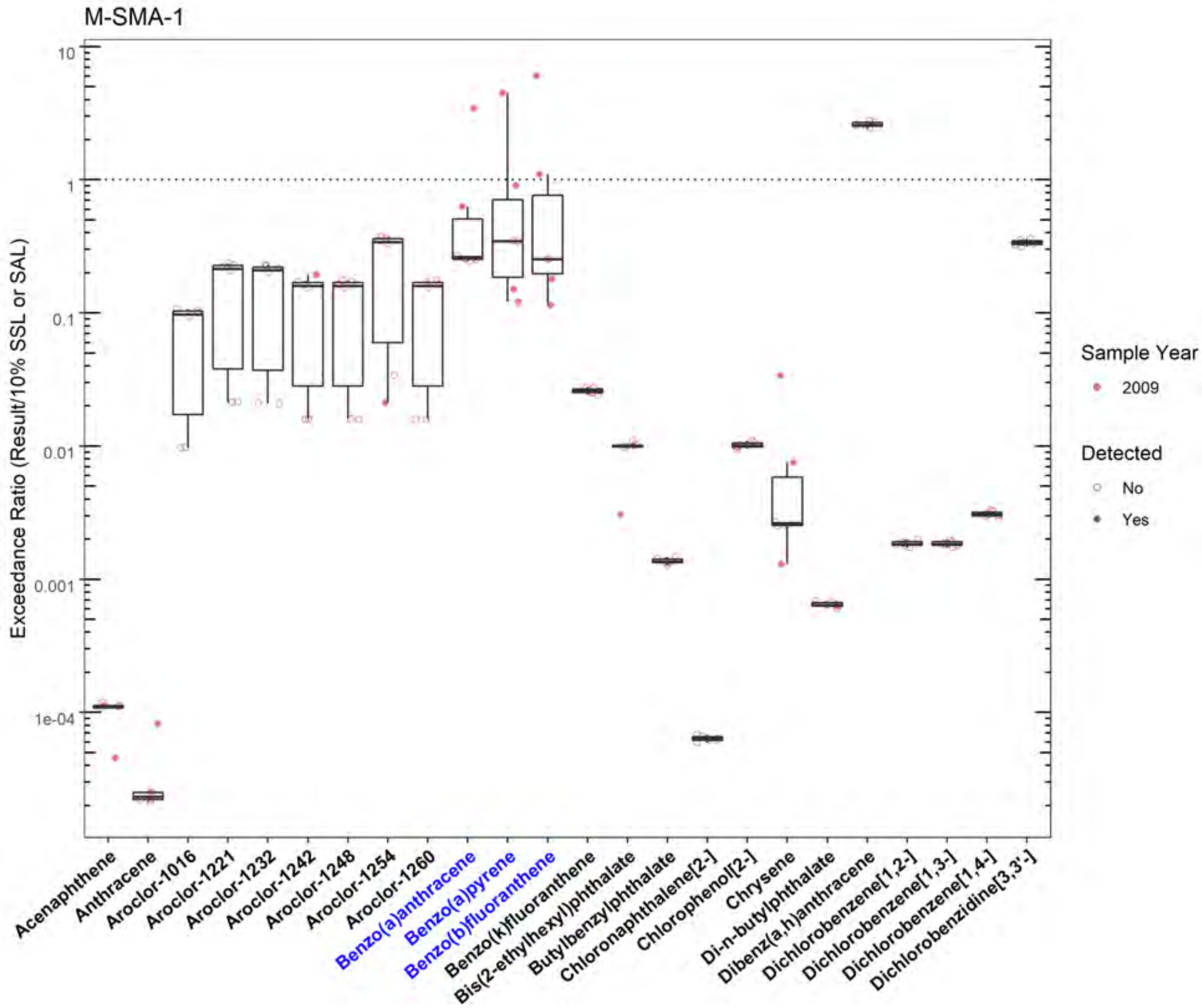


Figure 85.3-2 Organics Analytical Results from Soil Samples Associated with M-SMA-1 (Plot 1)

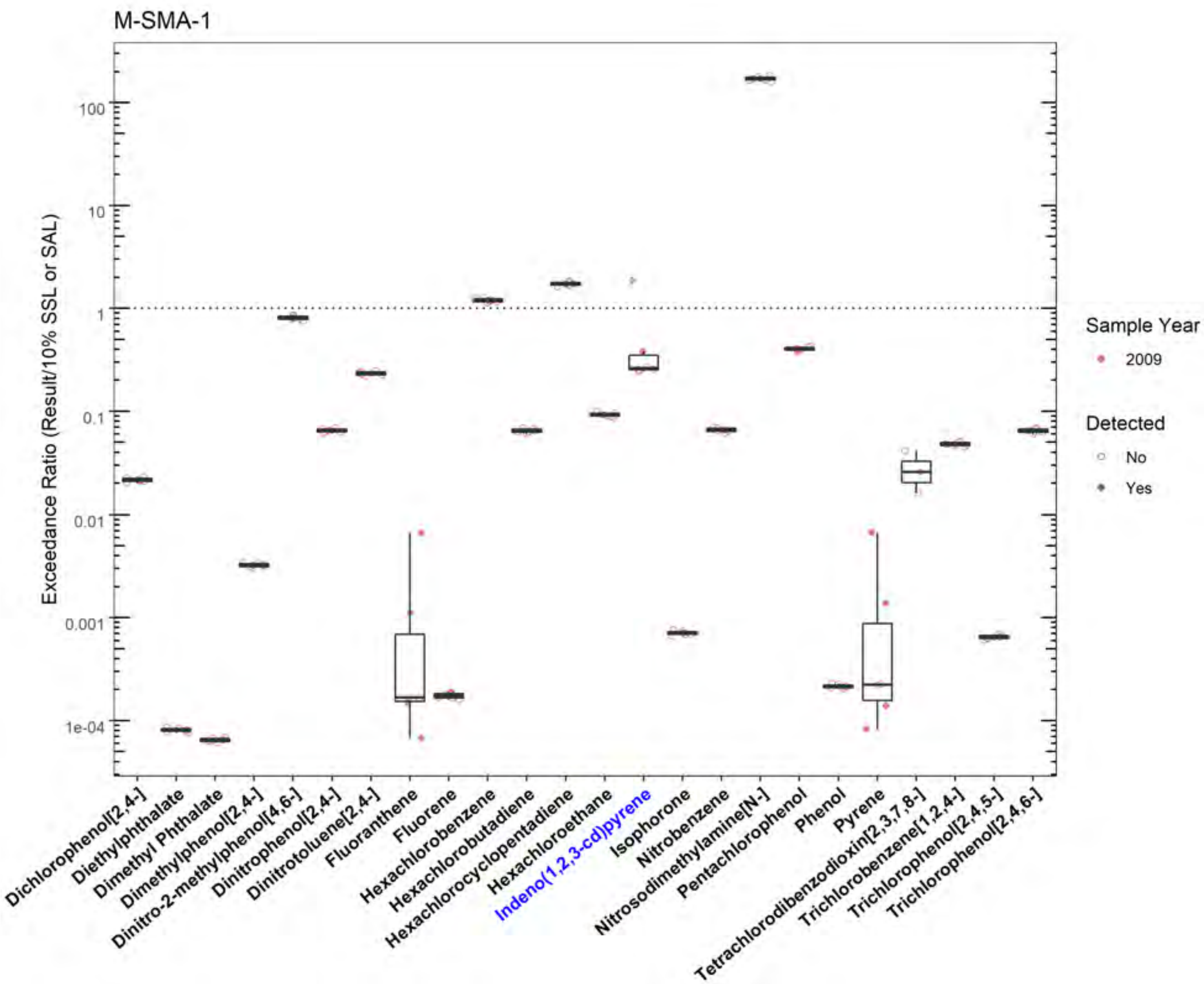


Figure 85.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-1 (Plot 2)

M-SMA-1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	M-SMA-1	56-55-3	Y	SSL_0.1	0.153	0.525	2009-05-29
Benzo(a)pyrene	M-SMA-1	50-32-8	Y	SSL_0.1	0.112	0.501	2009-05-29
Benzo(b)fluoranthene	M-SMA-1	205-99-2	Y	SSL_0.1	0.153	0.924	2009-05-29
Cyanide (Total)	M-SMA-1	CN(TOTAL)	Y	BTV	0.500	0.533	2009-05-29
Indeno(1,2,3-cd)pyrene	M-SMA-1	193-39-5	Y	SSL_0.1	0.153	0.284	2009-05-29
Zinc	M-SMA-1	Zn	Y	BTV	48.8	114	2009-05-29

Figure 85.3-4 Screening-Level Exceedances from Soil Samples Associated with M-SMA-1

85.4 Stormwater Evaluation

85.4.1 Summary of Stormwater Results Compared to TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Corrective-action stormwater samples were collected in June and July 2013. Analytical results from these samples are presented in Figures 85.4-1 and 85.4-2.

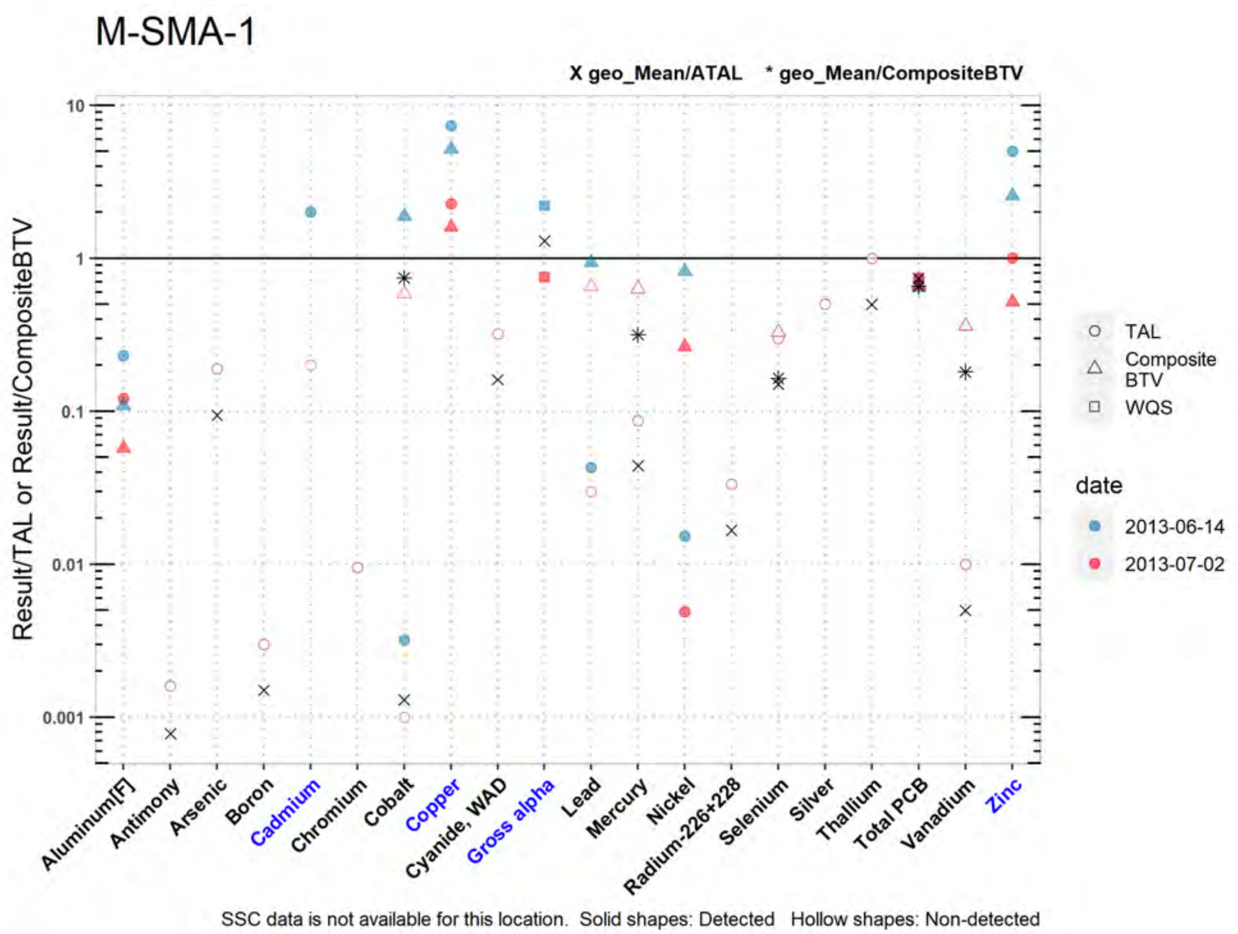


Figure 85.4-1 Analytical Results from Stormwater Samples, M-SMA-1 (Plot)

M-SMA-1

	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	0.583	210	NA	4.25	22	NA	16.7	NA	167	NA	20	0.394	NA	NA	NA	52.7
Composite_BTV	1590	NA	NA	NA	NA	NA	1.71	6.02	NA	53.5	0.765	0.106	3.10	7.24	4.58	NA	NA	0.0158	2.76	103
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	173	*1.00*	*1.70*	*15.0*	0.944	*2.00*	3.23	31.2	*1.67*	32.5	0.717	*0.0670*	2.54	*1.00*	*1.50*	*0.200*	*0.450*	0.0102	*1.00*	264
2013-06-14 dT	0.231	NA	NA	NA	2	NA	0.0032	7.34	NA	2.2	0.0429	NA	0.0152	NA	NA	NA	NA	0.73	NA	5.01
2013-06-14 dB	0.109	NA	NA	NA	NA	NA	1.89	5.18	NA	NA	0.937	NA	0.819	NA	NA	NA	NA	0.646	NA	2.56
2013-07-02 result	91.2	*1.00*	*1.70*	*15.0*	*0.110*	*2.00*	*1.00*	9.66	*1.67*	11.3	*0.500*	*0.0670*	0.817	*1.00*	*1.50*	*0.200*	*0.450*	0.0105	*1.00*	53.4
2013-07-02 dT	0.122	NA	NA	NA	NA	NA	NA	2.27	NA	0.75	NA	NA	0.00489	NA	NA	NA	NA	0.75	NA	1.01
2013-07-02 dB	0.0574	NA	NA	NA	NA	NA	NA	1.60	NA	NA	NA	NA	0.264	NA	NA	NA	NA	0.665	NA	0.518
geo_mean/ATAL	NA	0.00078	0.094	0.0015	NA	NA	0.0013	NA	0.161	1.3	NA	0.044	NA	0.0167	0.15	NA	0.5	0.74	0.0050	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	0.743	NA	NA	NA	NA	0.316	NA	NA	0.164	NA	NA	0.655	0.181	NA

Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV, geo_mean/B=geo_mean/composite_BTV

Figure 85.4-2 Analytical Results from Stormwater Samples, M-SMA-1 (Table)

85.4.2 Assessment Unit and Stream Impairments

M-SMA-1 drains to Mortandad Canyon (within LANL), which has impairments for adjusted gross alpha, PCBs, and dissolved copper. The impairments may be Site-related, based on Site history.

85.5 Site-Specific Demonstration

85.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene.

Cyanide exceeded the applicable screening value in soil data, but was previously measured in stormwater data and did not exceed TAL. Therefore, it will not be added to the SAP.

Zinc exceeded the applicable screening values in soil data and in stormwater, and will be included in the SAP.

85.5.2 Stormwater Data Summary

Gross alpha exceeded in 2013 stormwater data. There was no paired SSC result to confirm whether it was below BTVs. Therefore, it will be added to the SAP. Cadmium exceeded the TAL and there is no BTV for cadmium. Copper and zinc exceeded the TAL and BTV.

85.5.3 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.2.b.i) for cadmium, copper and zinc. The SMA is also in active monitoring; not all Site-related POCs were analyzed for in past samples.

85.5.4 Sampling and Analysis Plan

Table 85.5-1 is the proposed SAP for M-SMA-1.

Table 85.5-1 Proposed SAP, M-SMA-1

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment, Site history, and stormwater data
Dissolved uranium	Site history (metals)
SVOCs	Site history and soil data
Strontium-90	Site history (radionuclides)
Tritium	Site history (radionuclides)
DOC	Permit requirement
SSC	Permit requirement

86.0 M-SMA-1.2

Associated Sites	03-049(a)
Receiving Water	Mortandad Canyon
Drainage Area	1.08 acres
Landscape Characteristics	50% impervious, 50% pervious
Consent Order Site Status	SWMU 03-049(a): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the August 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge at the Site.
2022 Permit Status	Active Monitoring/Corrective Action

86.1 2010 Administratively Continued Permit Summary

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

Following the September 2014 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2014, 261903), corrective-action monitoring was initiated, and a stormwater sample was collected in September 2017. 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 April 2019 (N3B 2019, 700401). No response has been received from EPA, and stormwater monitoring has not occurred since 2017.

86.2 Site History

03-049(a) (11/23/2020)

SWMU 03-049(a) is an active NPDES-permitted outfall (03A022) located south of the Sigma Building (03-66) at TA-03. The outfall formerly discharged treated cooling water from a former cooling tower (former structure 03-127), which served the Sigma Building, and continues to discharge runoff from six roof drains on the Sigma Building.

The cooling tower operated from 1960 to 1999. From 1984 to 1990, the outfall also received discharge from rinse tanks associated with the former electroplating operation in the Sigma Building. The tanks contained the final rinse from electroplating and surface-finishing experimental components. Although the rinse tanks were flushed continually with tap water to reduce contaminant buildup, trace amounts of metals, acids, cyanide, and DU were introduced into the rinse water.

The NPDES permit allowed discharge of 4680 gpd of treated cooling water and 24,000 gpd of electroplating rinse water. The outfall predated the CWA and NPDES and was likely permitted in the mid-1970s; permit monitoring requirements are not available. Discharges of treated cooling water to the outfall ceased by 1999. The outfall in Upper Mortandad Canyon continues to receive stormwater discharges from the roof drains on the southern portion of building 03-66.

For investigation activities, refer to “Supplemental Investigation Report for Upper Mortandad Canyon Aggregate Area, Revision 1” (N3B 2020, 700951).

86.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 86.2-1.

Table 86.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
03-049(a)	NPDES-permitted outfall from cooling tower	Metals, hexavalent chromium, cyanide, DU

86.3 Consent Order Soil Data

Decision-level data for SWMU 03-049(a) consist of results from samples collected in 1997 and 2009. Analytical results from those samples are presented in Figures 86.3-1 through 86.3-4. Revision 1 of the 2020 supplemental IR (N3B 2020, 700951) concluded that the nature and extent of contamination have been defined, excepting the lateral extent of dioxins/furans.

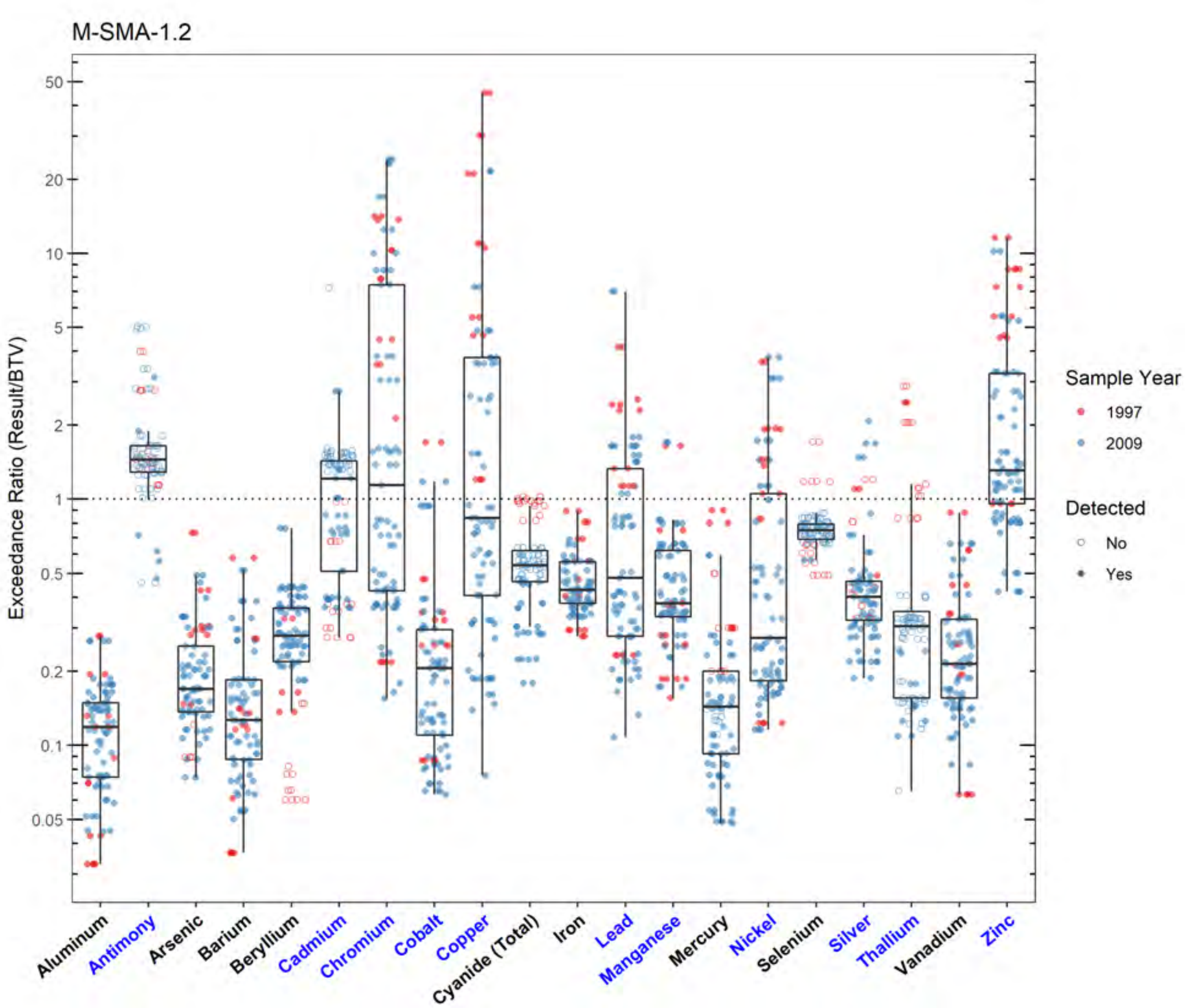


Figure 86.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-1.2

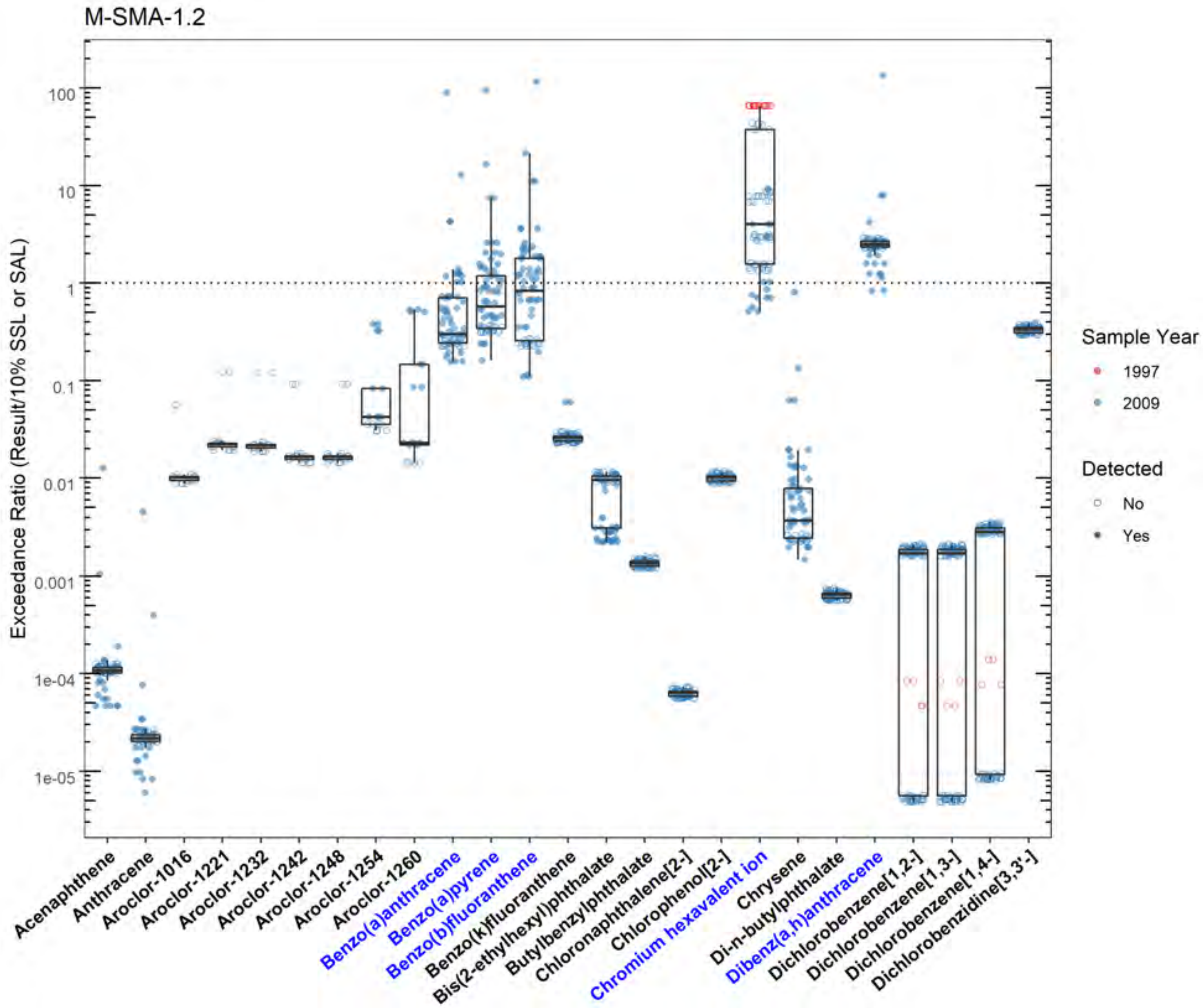


Figure 86.3-2 Organics Analytical Results from Soil Samples Associated with M-SMA-1.2 (Plot 1)

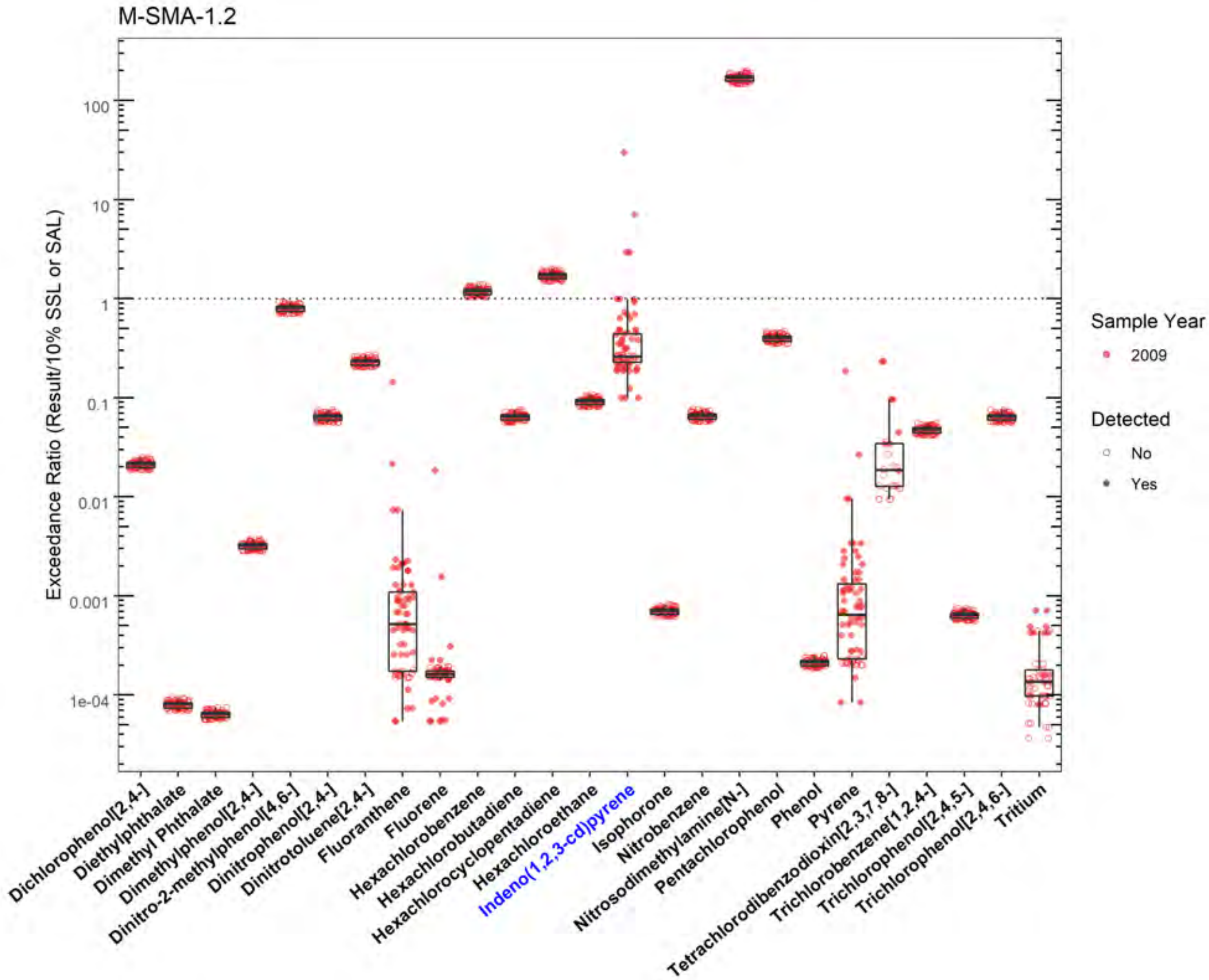


Figure 86.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-1.2 (Plot 2)

M-SMA-1.2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	M-SMA-1.2	Sb	Y	BTV	0.830	2.61	2009-06-15
Benzo(a)anthracene	M-SMA-1.2	56-55-3	Y	SSL_0.1	0.153	13.7	2009-06-15
Benzo(a)pyrene	M-SMA-1.2	50-32-8	Y	SSL_0.1	0.112	10.6	2009-06-15
Benzo(b)fluoranthene	M-SMA-1.2	205-99-2	Y	SSL_0.1	0.153	17.7	2009-06-15
Cadmium	M-SMA-1.2	Cd	Y	BTV	0.400	1.10	2009-06-23
Chromium	M-SMA-1.2	Cr	Y	BTV	19.3	465	2009-06-23
Chromium hexavalent ion	M-SMA-1.2	Cr(VI)	Y	SSL_0.1	0.305	2.80	2009-06-22
Cobalt	M-SMA-1.2	Co	Y	BTV	8.64	14.7	1997-07-14
Copper	M-SMA-1.2	Cu	Y	BTV	14.7	663	1997-07-14
Dibenz(a,h)anthracene	M-SMA-1.2	53-70-3	Y	SSL_0.1	0.0153	2.05	2009-06-15
Indeno(1,2,3-cd)pyrene	M-SMA-1.2	193-39-5	Y	SSL_0.1	0.153	4.55	2009-06-15
Lead	M-SMA-1.2	Pb	Y	BTV	22.3	156	2009-06-23
Manganese	M-SMA-1.2	Mn	Y	BTV	671	1140	2009-06-23
Nickel	M-SMA-1.2	Ni	Y	BTV	15.4	58.4	2009-06-23
Silver	M-SMA-1.2	Ag	Y	BTV	1.00	2.08	2009-06-15
Thallium	M-SMA-1.2	Tl	Y	BTV	0.730	1.80	1997-07-14
Zinc	M-SMA-1.2	Zn	Y	BTV	48.8	564	1997-07-14

Figure 86.3-4 Screening-Level Exceedances from Soil Samples Associated with M-SMA-1.2

86.4 Stormwater Evaluation

86.4.1 Summary of Stormwater Results Compared to TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in September 2017. Analytical results from that sample are presented in Figures 86.4-1 and 86.4-2.

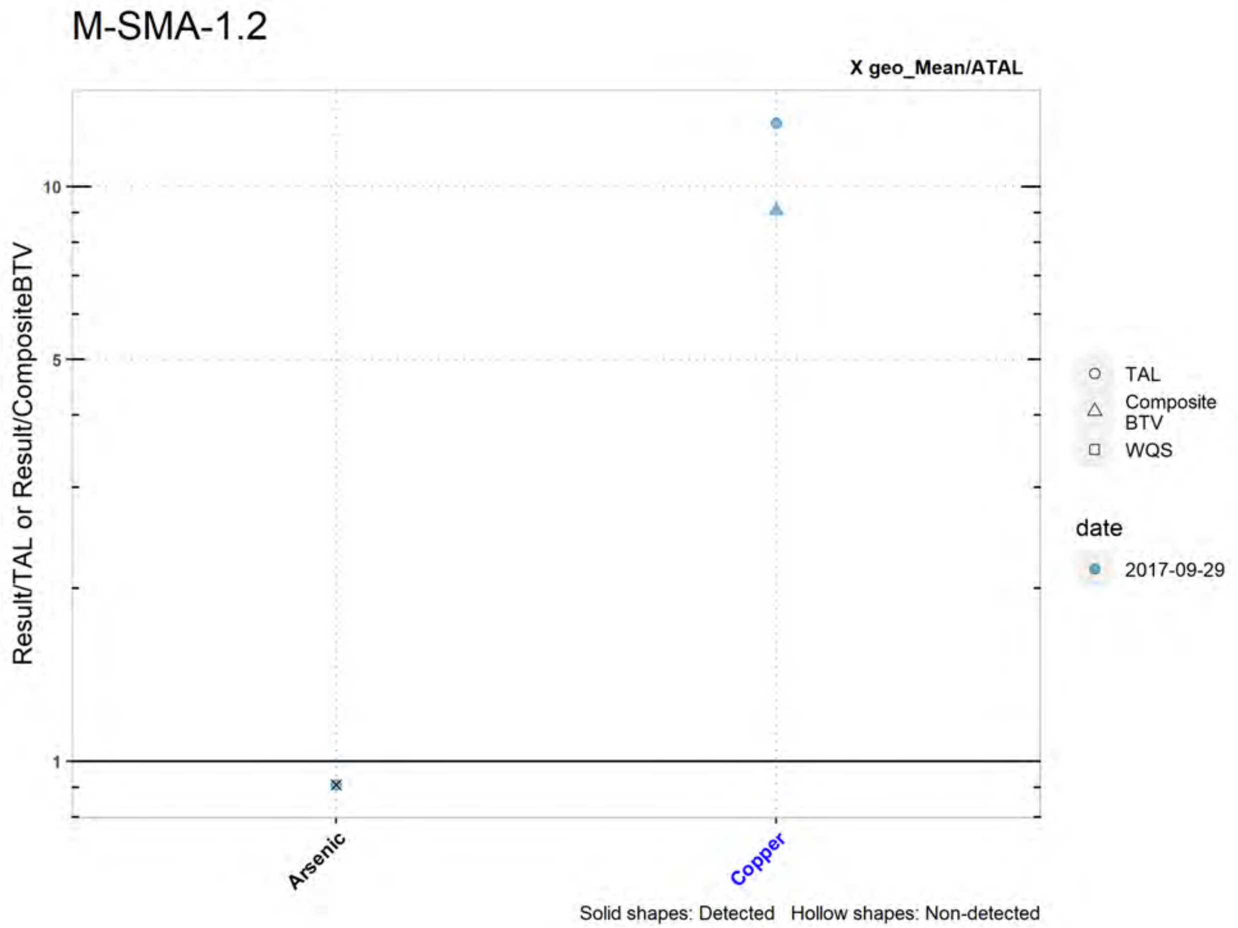


Figure 86.4-1 Analytical Results from Stormwater Sample, M-SMA-1.2 (Plot)

M-SMA-1.2

	Arsenic	Copper
MQL	0.5	0.5
ATAL	9	NA
MTAL	340	4.25
Composite_BTV	NA	6.06
unit	ug/L	ug/L
2017-09-29 result	8.20	55.0
2017-09-29 dT	0.91	12.9
2017-09-29 dB	NA	9.08
geo_mean/ATAL	0.91	NA

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

Figure 86.4-2 Analytical Results from Stormwater Sample, M-SMA-1.2 (Table)

86.4.2 Assessment Unit and Stream Impairments

M-SMA-1.2 drains to Mortandad Canyon (within LANL), which has impairments for adjusted gross alpha, PCBs, and dissolved copper. The adjusted gross alpha and copper impairments may be Site-related, based on Site history.

86.5 Site-Specific Demonstration

86.5.1 Soil Data Summary

Hexavalent chromium is the only Site-related POC that exceeded BVs or 10% of the SSL in soil data and has not yet been measured in storm water.

Copper exceeded the applicable screening values in soil and stormwater and will be retained for monitoring. The remaining Site-related metals that exceeded the applicable 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. Manganese and some SVOCs exceeded the applicable screening value in soil data but they are not Site-related POCs; therefore, they will not be added to the SAP.

86.5.2 Stormwater Data Summary

Copper exceeded TAL and BTV.

86.5.3 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.2.b.i) for copper. The SMA is also in active monitoring; not all Site-related POCs were analyzed for in past samples.

86.5.4 Sampling and Analysis Plan

Table 86.5-1 is the proposed SAP for M-SMA-1.2.

Table 86.5-1 Proposed SAP, M-SMA-1.2

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment, Site history, and stormwater data
Hexavalent chromium	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

87.0 M-SMA-1.21

Associated Sites	03-049(e)
Receiving Water	Mortandad Canyon
Drainage Area	0.40 acres
Landscape Characteristics	93% impervious, 7% pervious
Consent Order Site Status	SWMU 03-049(e): Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	The SMA is being evaluated for a corrective action recommendation.
2016–2018 SIP Actions	Based on the February 2016 SIP map signatures, the current SMA sampling location and boundary were agreed by all parties to be the best representation of stormwater discharge at the Site.
2022 Permit Status	Long-Term Stewardship per Permit Part I.C.3.a criterion

87.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in October 2018. Analytical results from this sample initiated corrective action.

The SMA is being evaluated for a corrective-action recommendation. Stormwater monitoring has not occurred since 2018.

87.2 Site History

03-049(e) (11/23/2020)

SWMU 03-049(e) is an outfall for roof drains on the Sigma Building (building 03-66) in the southeast corner of TA-03. SWMU 03-049(e) is identified in the 1990 SWMU report as an area of potential soil contamination south of the Sigma Building (building 03-66) from an outfall pipe of unknown origin. The 1990 SWMU report also states that the outfall discharged to Mortandad Canyon. Subsequent investigation at the Sigma Building determined that three of the building roof drains connect to a single drainline that discharges to the SWMU 03-049(e) outfall southeast of the building.

For investigation activities, refer to “Supplemental Investigation Report for Upper Mortandad Canyon Aggregate Area, Revision 1” (N3B 2020, 700951).

87.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 87.2-1.

Table 87.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
03-049(e)	Former outfall	Metals

87.3 Consent Order Soil Data

Decision-level data for SWMU 03-049(e) consist of results from samples collected in 2001 and 2009. Analytical results from those samples are presented in Figures 87.3-1 through 87.3-4. The 2020

Revision 1 of the supplemental IR (N3B 2020, 700951) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

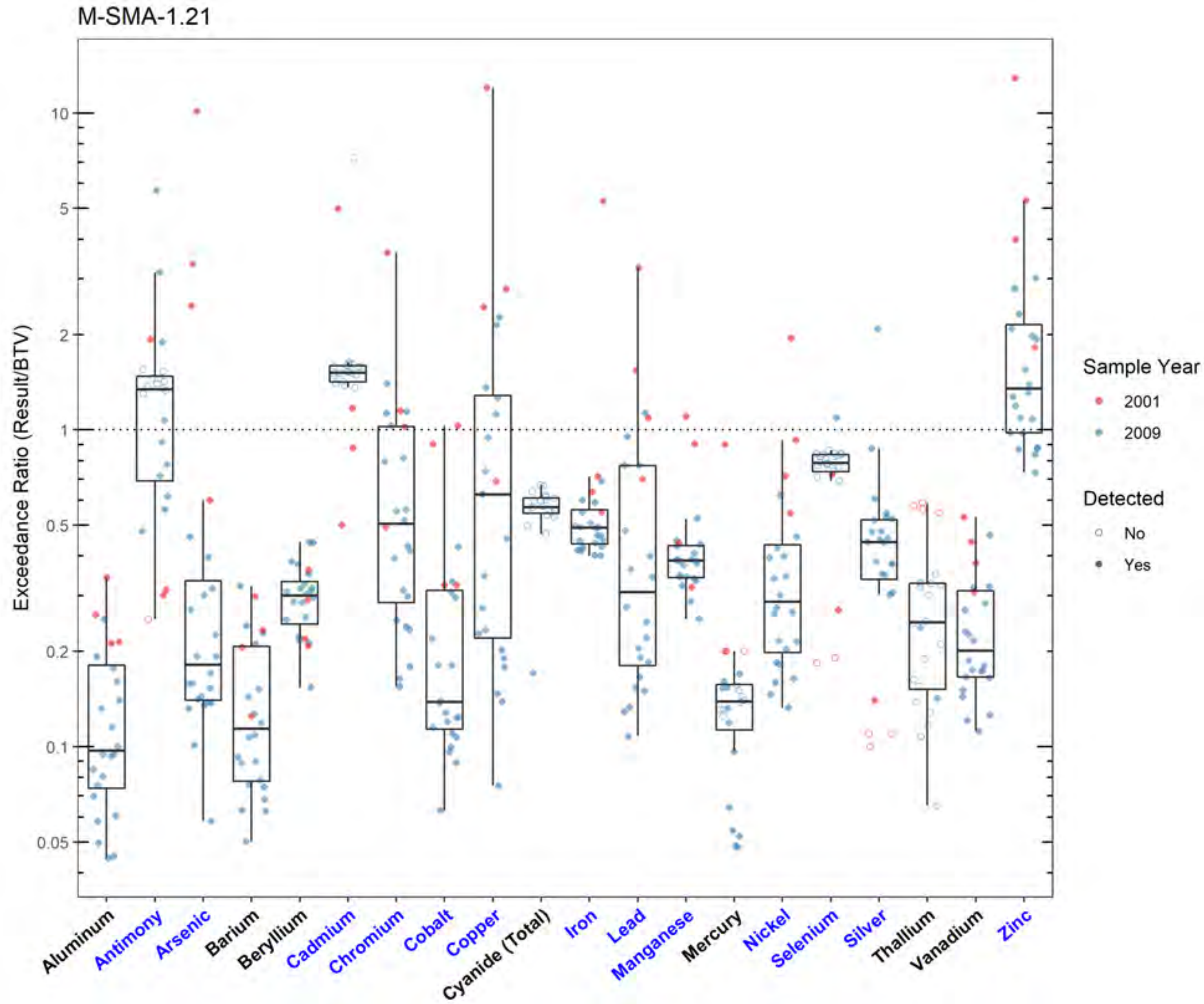


Figure 87.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-1.21

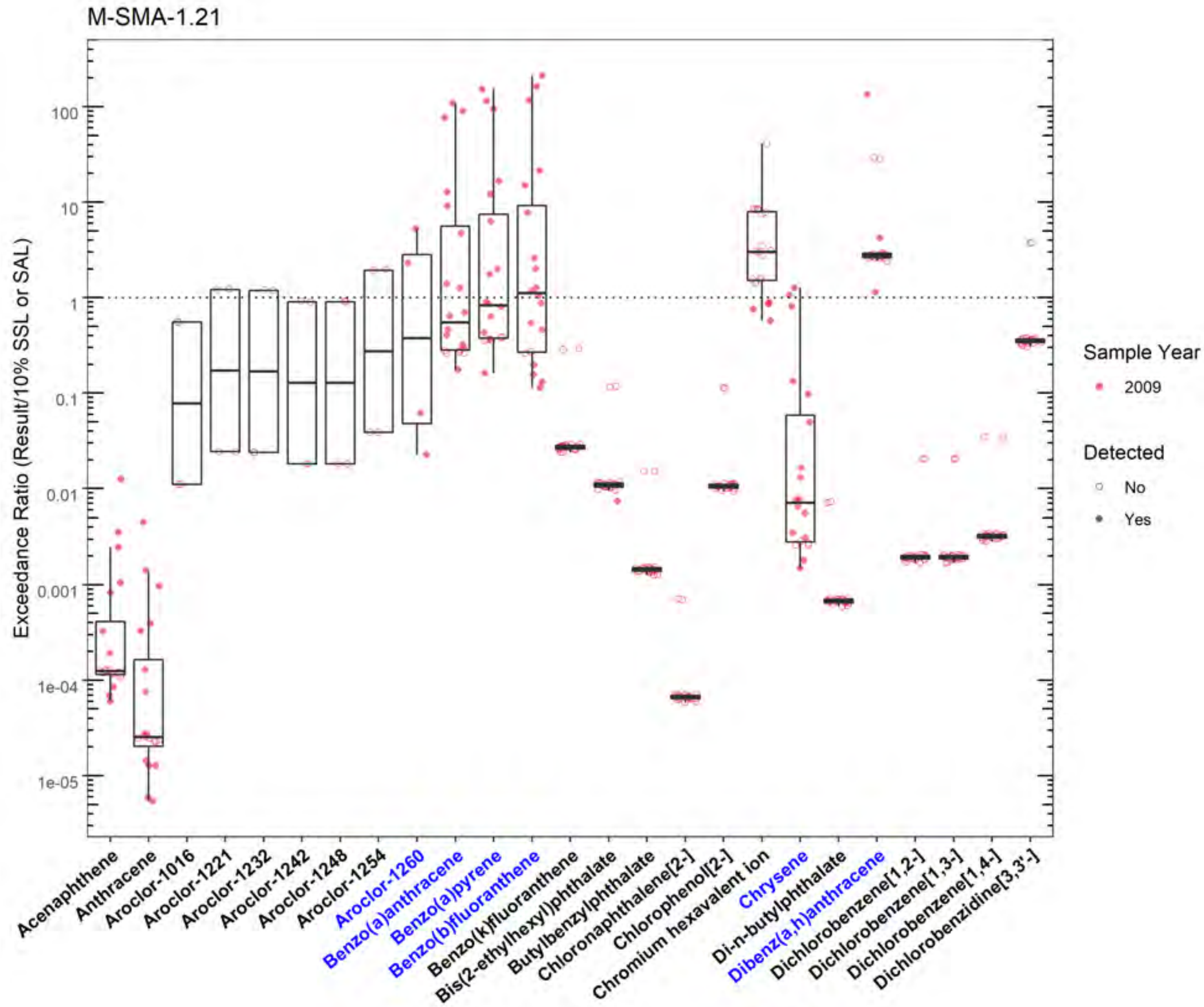


Figure 87.3-2 **Organics Analytical Results from Soil Samples Associated with M-SMA-1.21 (Plot 1)**

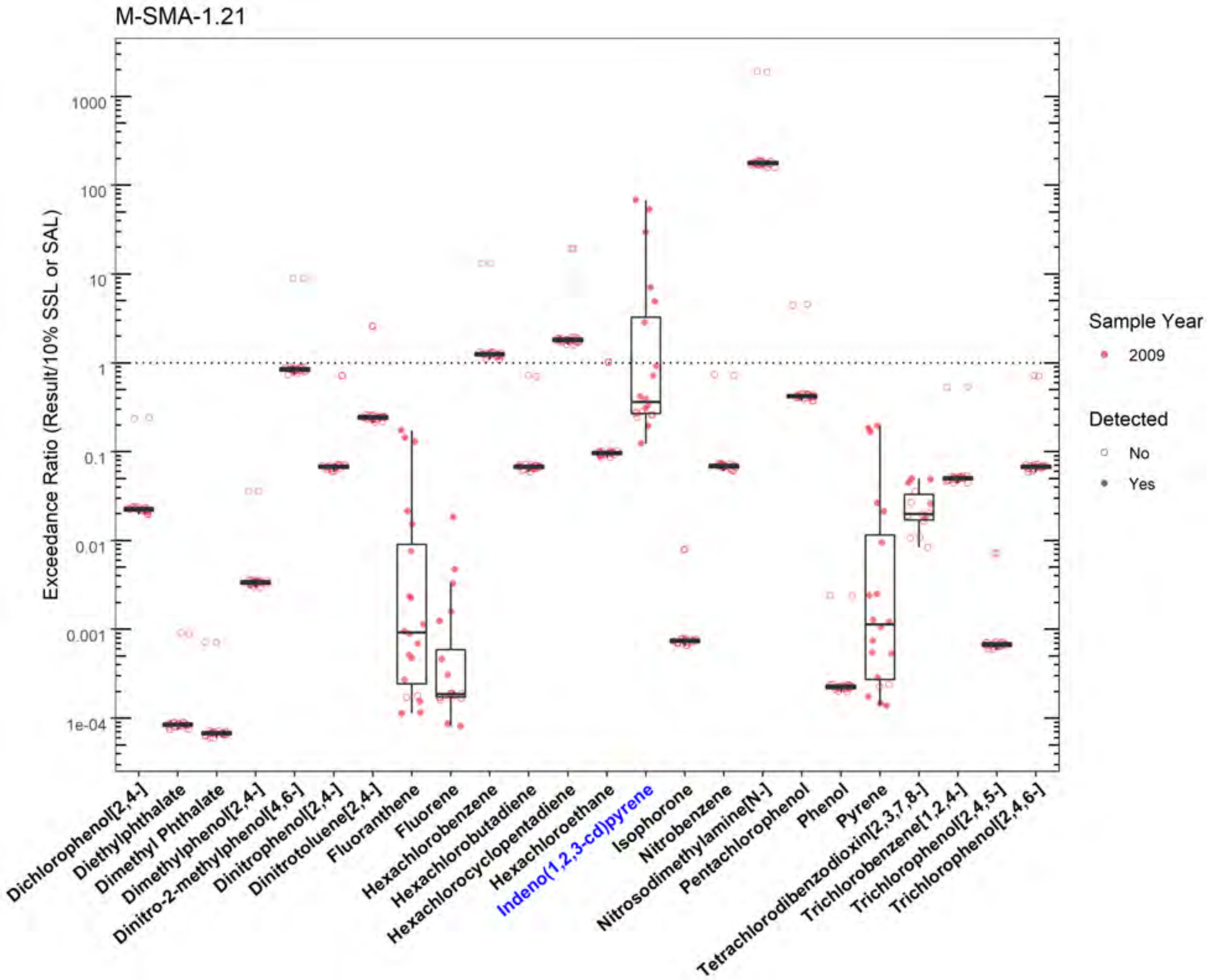


Figure 87.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-1.21 (Plot 2)

M-SMA-1.21

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	M-SMA-1.21	Sb	Y	BTV	0.830	4.72	2009-06-11
Aroclor-1260	M-SMA-1.21	11096-82-5	Y	SSL_0.1	0.243	1.27	2009-06-11
Arsenic	M-SMA-1.21	As	Y	BTV	8.17	82.3	2001-07-23
Benzo(a)anthracene	M-SMA-1.21	56-55-3	Y	SSL_0.1	0.153	16.7	2009-06-11
Benzo(a)pyrene	M-SMA-1.21	50-32-8	Y	SSL_0.1	0.112	17.1	2009-06-11
Benzo(b)fluoranthene	M-SMA-1.21	205-99-2	Y	SSL_0.1	0.153	32.3	2009-06-11
Cadmium	M-SMA-1.21	Cd	Y	BTV	0.400	2.00	2001-07-23
Chromium	M-SMA-1.21	Cr	Y	BTV	19.3	69.8	2001-07-23
Chrysene	M-SMA-1.21	218-01-9	Y	SSL_0.1	15.3	19.4	2009-06-11
Cobalt	M-SMA-1.21	Co	Y	BTV	8.64	8.90	2001-07-23
Copper	M-SMA-1.21	Cu	Y	BTV	14.7	177	2001-07-23
Dibenz(a,h)anthracene	M-SMA-1.21	53-70-3	Y	SSL_0.1	0.0153	2.05	2009-06-15
Indeno(1,2,3-cd)pyrene	M-SMA-1.21	193-39-5	Y	SSL_0.1	0.153	10.4	2009-06-11
Iron	M-SMA-1.21	Fe	Y	BTV	21500	113000	2001-07-23
Lead	M-SMA-1.21	Pb	Y	BTV	22.3	72.5	2001-07-23
Manganese	M-SMA-1.21	Mn	Y	BTV	671	740	2001-07-23
Nickel	M-SMA-1.21	Ni	Y	BTV	15.4	30.1	2001-07-23
Selenium	M-SMA-1.21	Se	Y	BTV	1.52	1.65	2009-06-11
Silver	M-SMA-1.21	Ag	Y	BTV	1.00	2.08	2009-06-15
Zinc	M-SMA-1.21	Zn	Y	BTV	48.8	631	2001-07-23

Figure 87.3-4 Screening-Level Exceedances from Soil Samples Associated with M-SMA-1.21

87.4 Stormwater Evaluation

87.4.1 Summary of Stormwater Results Compared to TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in October 2018. Analytical results from that sample are presented in Figure 87.4-1 through 87.4-4.

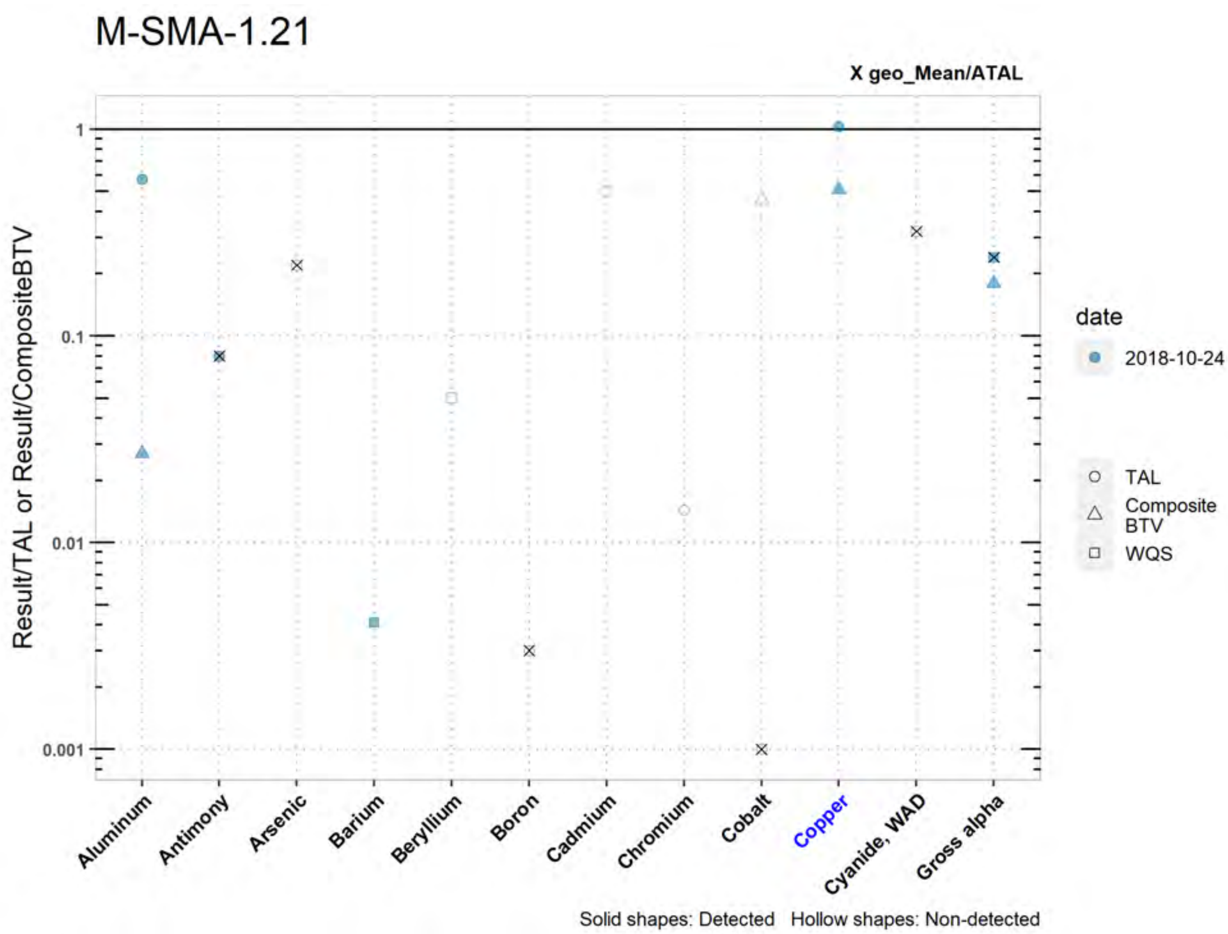


Figure 87.4-1 Analytical Results from Stormwater Sample, M-SMA-1.21 (Plot 1)

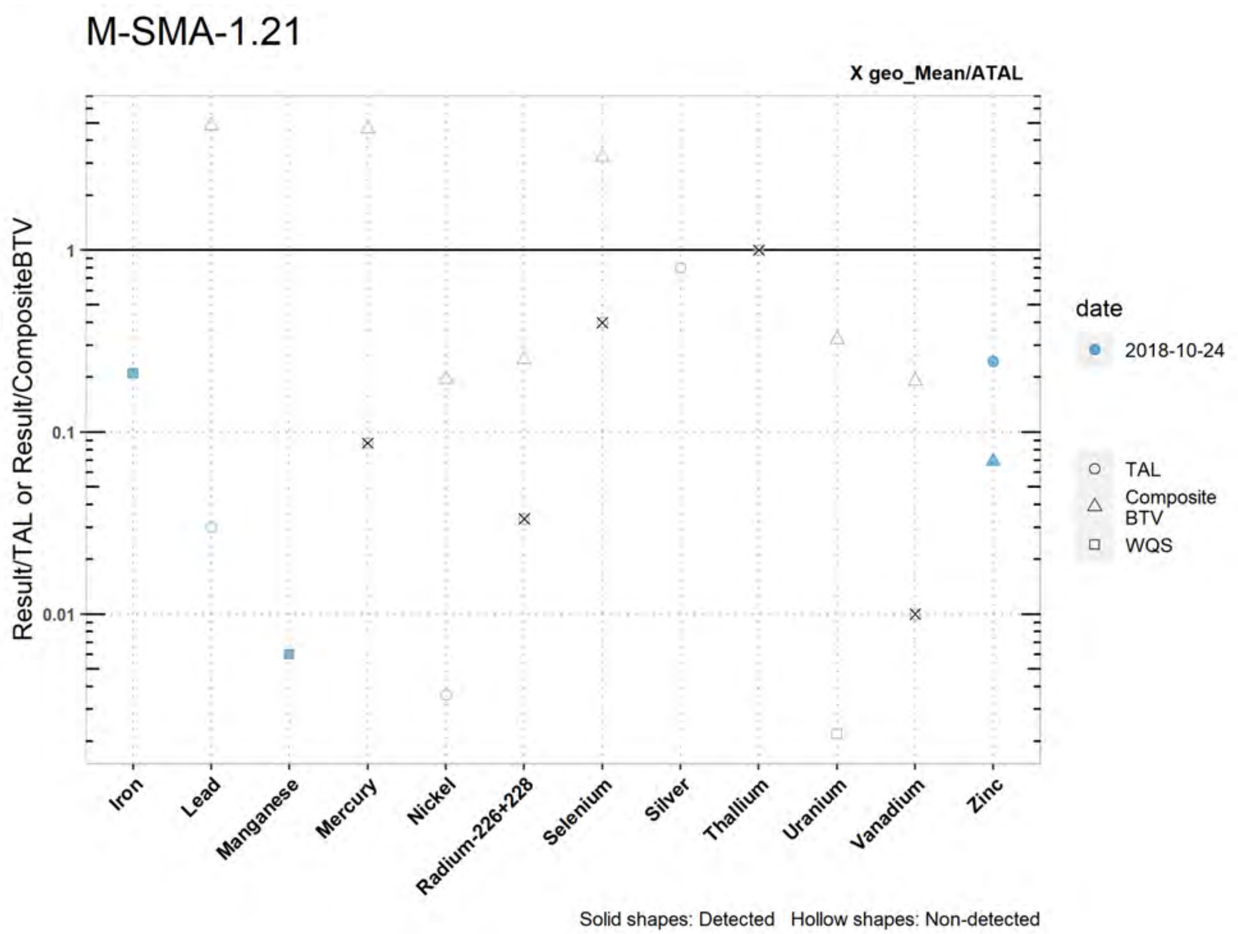


Figure 87.4-2 Analytical Results from Stormwater Sample, M-SMA-1.21 (Plot 2)

M-SMA-1.21

	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	643	NA	340	NA	NA	NA	0.583	210	NA	4.25	22	NA
Composite_BTV	34100	NA	NA	NA	NA	NA	NA	NA	2.19	8.62	NA	50.1
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*
2018-10-24 result	368	50.9	*2.00*	8.26	*0.200*	*15.0*	*0.300*	*3.00*	*1.00*	4.39	*1.67*	3.60
2018-10-24 dT	0.572	0.080	NA	0.0041	NA	NA	NA	NA	NA	1.03	NA	0.24
2018-10-24 dB	0.0270	NA	NA	NA	NA	NA	NA	NA	NA	0.509	NA	0.180
geo_mean/ATAL	NA	0.080	0.22	NA	NA	0.0030	NA	NA	0.0010	NA	0.321	0.24

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 87.4-3 Analytical Results from Stormwater Sample, M-SMA-1.21 (Table 1)

M-SMA-1.21

	Iron	Lead	Manganese	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc
MQL	NA	0.5	NA	0.005	0.5	NA	5	0.5	0.5	NA	50	20
ATAL	NA	NA	NA	0.77	NA	30	5	NA	0.47	NA	100	NA
MTAL	NA	16.7	NA	NA	167	NA	20	0.394	NA	NA	NA	52.7
Composite_BTV	NA	0.104	NA	0.0144	3.09	9.97	0.621	NA	NA	0.208	5.25	187
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
2018-10-24 result	210	*0.500*	6.65	*0.0670*	*0.600*	*1.00*	*2.00*	*0.300*	*0.600*	*0.0670*	*1.00*	12.9
2018-10-24 dT	0.21	NA	0.0060	NA	NA	NA	NA	NA	NA	NA	NA	0.245
2018-10-24 dB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0690
geo_mean/ATAL	NA	NA	NA	0.087	NA	0.0333	0.40	NA	1	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 87.4-4 Analytical Results from Stormwater Sample, M-SMA-1.21 (Table 2)

87.4.2 Assessment Unit and Stream Impairments

M-SMA-1.21 drains to Mortandad Canyon (within LANL), which has impairments for adjusted gross alpha, PCBs, and dissolved copper. The dissolved copper impairment may be Site-related, based on Site history.

87.5 Site-Specific Demonstration

87.5.1 Soil Data Summary

All Site-related POCs that exceeded the applicable 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.

Aroclor-1260, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene exceeded the applicable screening value in soil data, but are not Site-related POCs and will not be added to the SAP.

87.5.2 Stormwater Data Summary

Copper exceeded TAL but not BTV.

87.5.3 2022 Permit Status

The SMA is eligible for long-term stewardship. All Site-related POCs with TALs were below their respective composite BTVs (Part I.C.3a).

88.0 M-SMA-1.22

Associated Sites	03-045(h)
Receiving Water	Mortandad Canyon
Drainage Area	1.84 acres
Landscape Characteristics	52% impervious, 48% pervious
Consent Order Site Status	SWMU 03-045(h): Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the August 2016 field visit, the current SMA sampling location and boundary were agreed by all parties to be the best representation of stormwater discharge at the Site.
2022 Permit Status	Long-Term Stewardship per Permit Part I.C.3.a criterion

88.1 2010 Administratively Continued Permit Summary

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

Following the June 2013 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2013, 242173), corrective-action monitoring was initiated and stormwater samples were collected in September 2013 and July 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.

88.2 Site History

03-045(h) (11/23/2020)

SWMU 03-045(h) is a former NPDES-permitted outfall (EPA 03A024) located at the north perimeter of the Sigma Complex security fence, approximately 50 ft north of a cooling tower (structure 03-187) at TA-03. The outfall was formerly permitted for the discharge of treated cooling water and stormwater. Routine treatment of cooling water began in 1968, and included biocides and fungicides to reduce algae growth, and chelating agents, such as ethylenediaminetetraacetic acid, to inhibit corrosion.

The SWMU 03-045(h) outfall served the former cooling tower from 1953 until the late 1980s, when the cooling tower became inactive. The cooling tower remained inactive until early 1995, when it was reactivated. In 1997, the cooling tower was removed and the outlet drainline from the former cooling tower was plugged. The outfall was removed from the LANL NPDES permit in 2007 since discharges from the cooling tower had ceased.

The area directly downgradient of the outfall measures approximately 3 ft wide × 6 ft long. Effluent drained into a CMP that trends northeast and east of former structure 03-187, where it combined with stormwater runoff from surrounding areas. The drainage channel continues south, joins a storm drainage channel north of Eniwetok Drive, and ultimately discharges into Sandia Canyon. The drainage channel still receives stormwater runoff. The potential soil contamination, resulting from the northward flow of the discharges from the cooling tower outlet drainline into Sandia Canyon, was part of the Upper Sandia Canyon Aggregate Area investigation.

In addition, it is possible that the buried CMP storm drainline into which the cooling tower outlet drainline discharged could not handle the large flow of stormwater from sporadic and heavy storm events. Should this type of event have occurred, the overflow would have drained due south of former structure 03-187 across asphalt pavement to a drainage located southwest of building 03-66. This drainage discharges into upper Mortandad Canyon and was investigated as part of the Upper Mortandad Canyon Aggregate Area investigation.

For investigation activities, refer to "Supplemental Investigation Report for Upper Mortandad Canyon Aggregate Area, Revision 1" (N3B 2020, 700951) and "Supplemental Investigation Report for Upper Sandia Canyon Aggregate Area, Revision 1" (LANL 2015, 600912).

88.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 88.2-1.

Table 88.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
03-045(h)	Outfall	Naturally occurring metals concentrated by evaporation

88.3 Consent Order Soil Data

Decision-level data for SWMU 03-045(h) consist of results from samples collected in 2009. Analytical results from those samples are presented in Figures 88.3-1 through 88.3-4. Revision 1 of the 2020 supplemental IR (N3B 2020, 700951) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

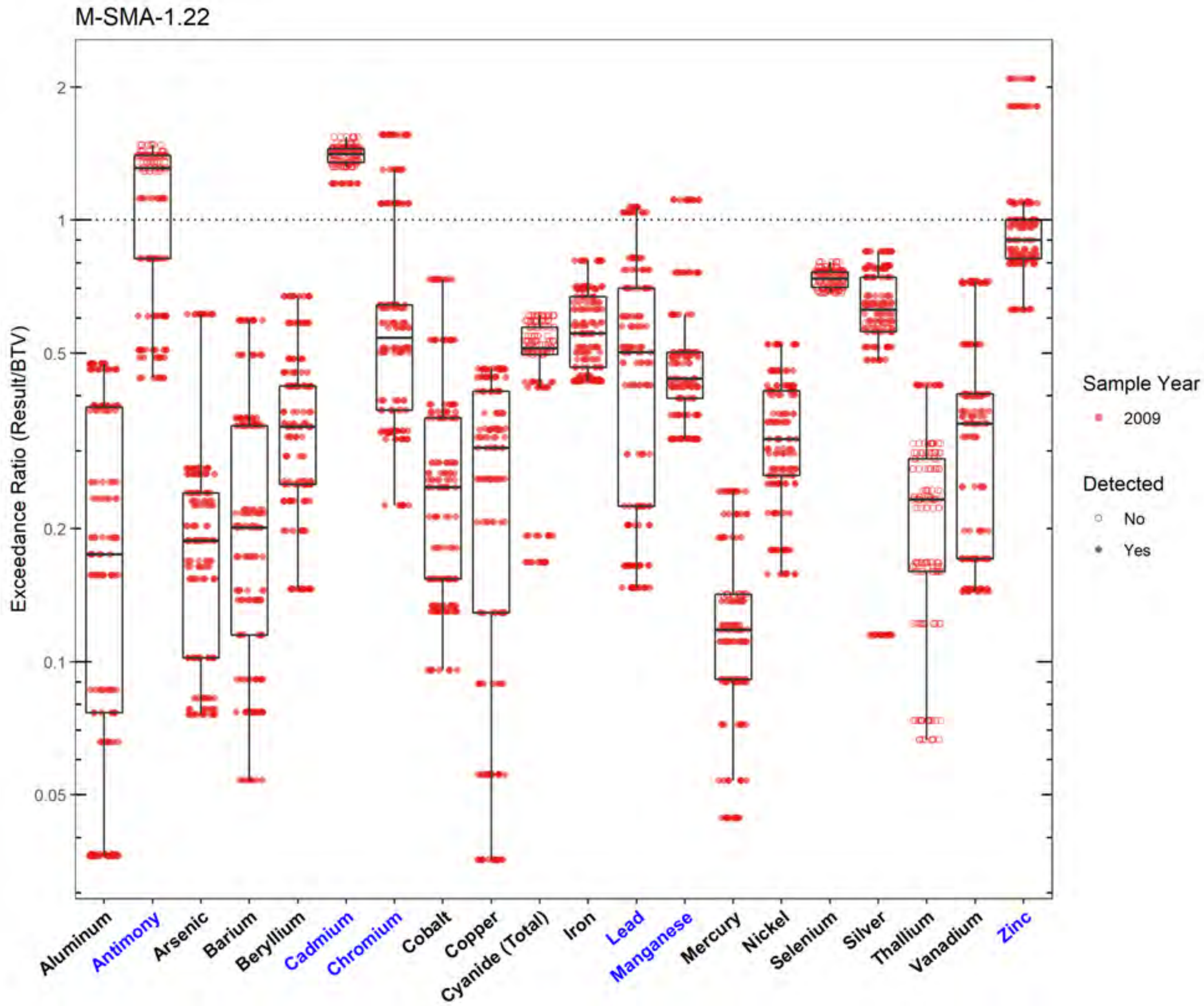


Figure 88.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-1.22

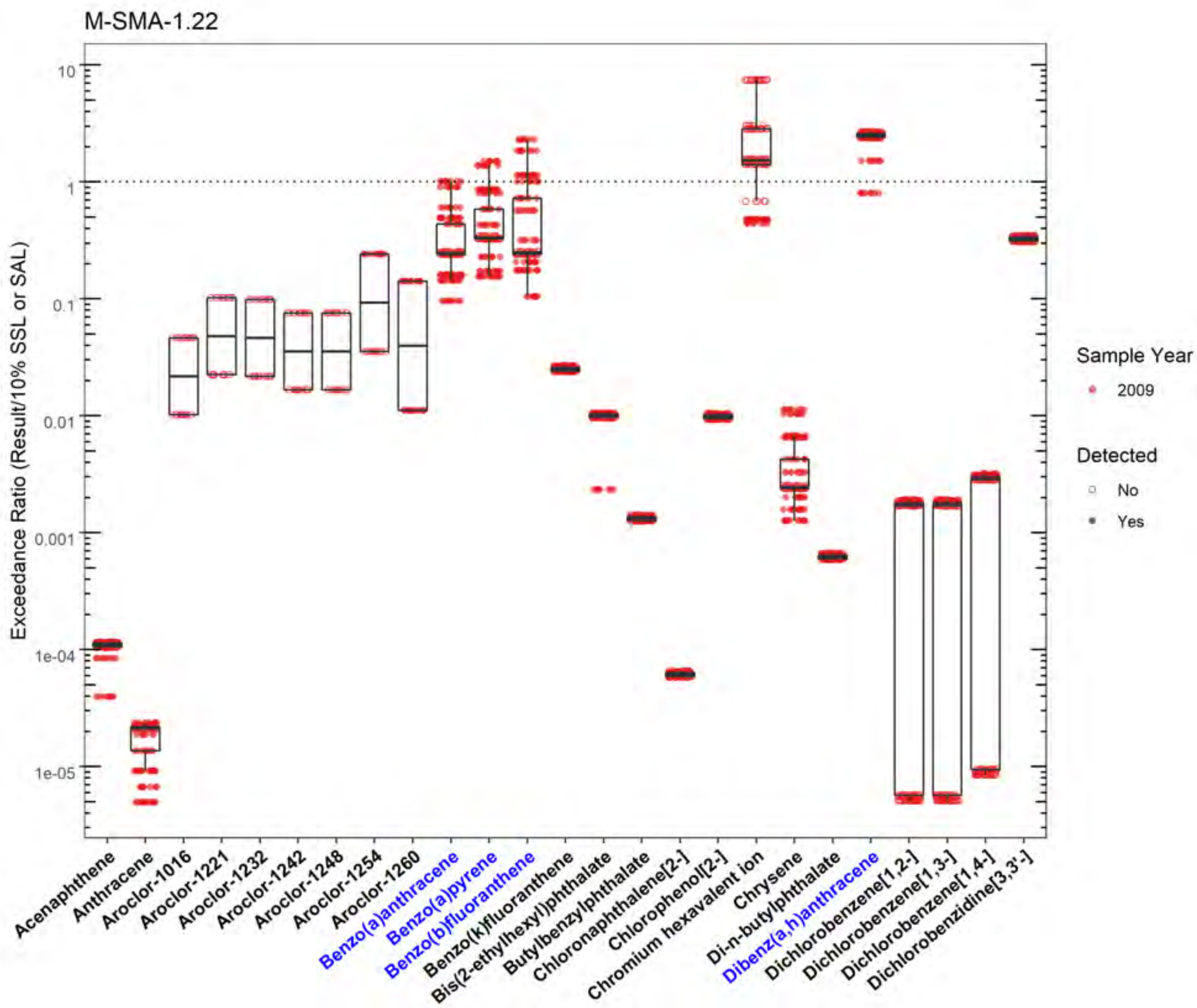


Figure 88.3-2 Organics Analytical Results from Soil Samples Associated with M-SMA-1.22 (Plot 1)

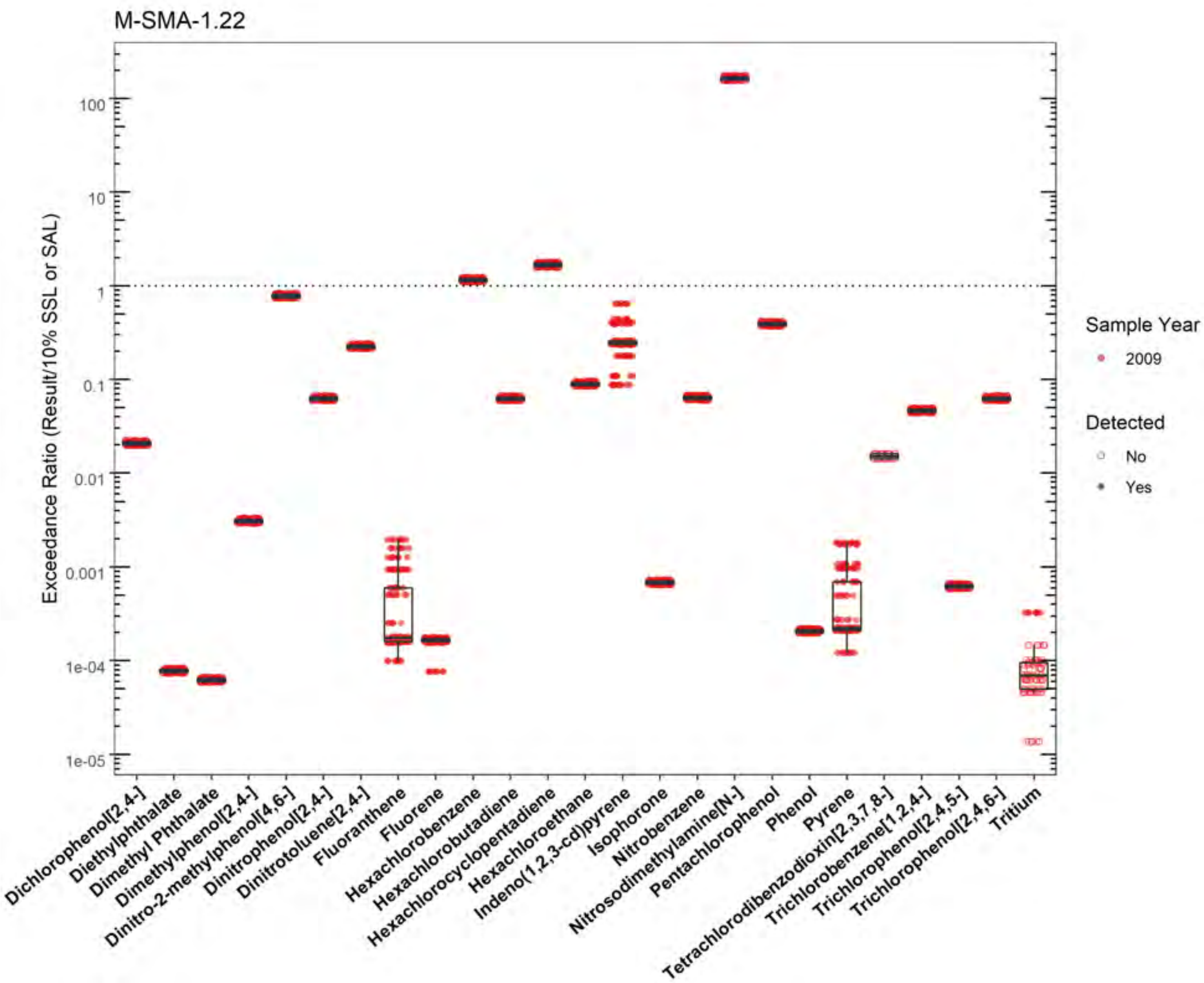


Figure 88.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-1.22 (Plot 2)

M-SMA-1.22

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	M-SMA-1.22	Sb	Y	BTV	0.830	0.930	2009-06-08
Benzo(a)anthracene	M-SMA-1.22	56-55-3	Y	SSL_0.1	0.153	0.155	2009-06-03
Benzo(a)pyrene	M-SMA-1.22	50-32-8	Y	SSL_0.1	0.112	0.168	2009-06-02
Benzo(b)fluoranthene	M-SMA-1.22	205-99-2	Y	SSL_0.1	0.153	0.352	2009-06-02
Cadmium	M-SMA-1.22	Cd	Y	BTV	0.400	0.484	2009-06-03
Chromium	M-SMA-1.22	Cr	Y	BTV	19.3	30.1	2009-06-08
Dibenz(a,h)anthracene	M-SMA-1.22	53-70-3	Y	SSL_0.1	0.0153	0.0231	2009-06-03
Lead	M-SMA-1.22	Pb	Y	BTV	22.3	23.8	2009-06-03
Manganese	M-SMA-1.22	Mn	Y	BTV	671	743	2009-06-03
Zinc	M-SMA-1.22	Zn	Y	BTV	48.8	102	2009-06-02

Figure 88.3-4 Screening-Level Exceedances from Soil Samples Associated with M-SMA-1.22

88.4 Stormwater Evaluation

88.4.1 Summary of Stormwater Results Compared to TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. Corrective-action stormwater samples were collected in September 2013 and July 2014. Analytical results from those samples are presented in Figures 88.4-1 and 88.4-2.

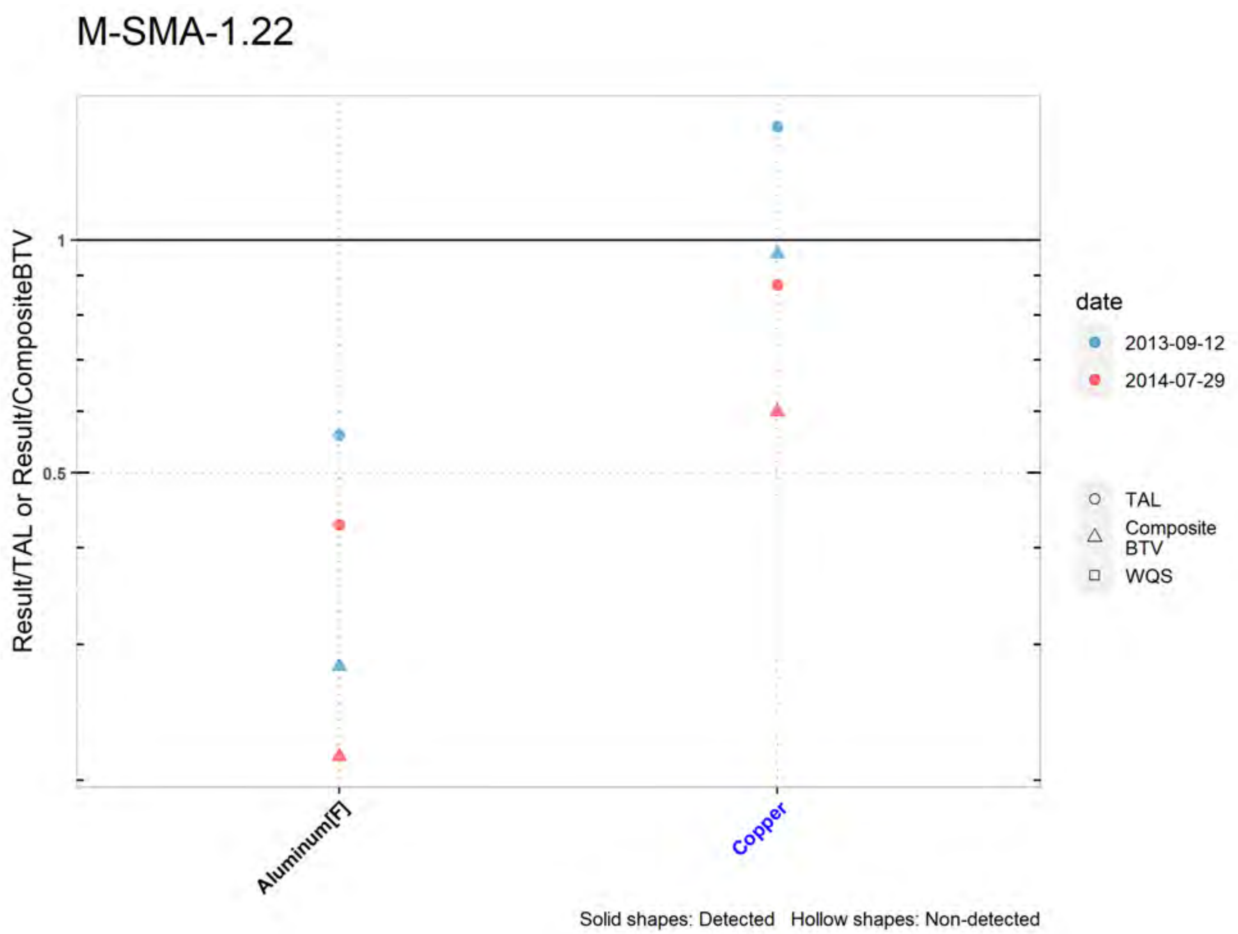


Figure 88.4-1 Analytical Results from Stormwater Samples, M-SMA-1.22 (Plot)

M-SMA-1.22

	Aluminum [F]	Copper
MQL	2.5	0.5
ATAL	NA	NA
MTAL	750	4.25
Composite_BTV	1490	6.21
unit	ug/L	ug/L
2013-09-12 result	419	5.96
2013-09-12 dT	0.559	1.40
2013-09-12 dB	0.281	0.960
2014-07-29 result	321	3.72
2014-07-29 dT	0.428	0.875
2014-07-29 dB	0.215	0.599
geo_mean/ATAL	NA	NA
geo_mean/B	NA	NA

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

Figure 88.4-2 Analytical Results from Stormwater Samples, M-SMA-1.22 (Table)

88.4.2 Assessment Unit and Stream Impairments

M-SMA-1.22 drains to Mortandad Canyon (within LANL), which has impairments for adjusted gross alpha, PCBs, and dissolved copper. The dissolved-copper impairment may be Site-related, based on Site history.

88.5 Site-Specific Demonstration

88.5.1 Soil Data Summary

All Site-related POCs that exceeded the applicable 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.

Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and manganese also exceeded the applicable screening value in soil data but are not Site-related POCs, and will not be added to the SAP.

88.5.2 Stormwater Data Summary

Dissolved aluminum was below TAL and BTV. Copper exceeded TAL but was below BTV.

88.5.3 2022 Permit Status

The SMA is eligible for long-term stewardship. All Site-related POCs with TALs were below their respective composite BTVs (Part I.C.3a).

89.0 M-SMA-3

Associated Sites	48-001, 48-005, 48-007(c)
Receiving Water	Mortandad Canyon
Drainage Area	0.57 acres
Landscape Characteristics	69% impervious, 31% pervious
Consent Order Site Status	AOC 48-001: Pending Receipt of Certificate of Completion. SWMU 48-005: In Progress Deferred per Consent Order SWMU 48-007(c): Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested/Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	No sampler move was recommended from the August 2016 site visit...
2022 Permit Status	Active Monitoring

89.1 2010 Administratively Continued Permit Summary

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

Following the October 2015 submittal to EPA of certification of enhanced control installation as a corrective action for SWMU 48-005 (LANL 2013, 242173), corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume corrective-action sample collection, and monitoring is ongoing for this Site.

The Permittees submitted a request for alternative compliance for AOC 48-001 and SWMU 48-007(c) 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 for these Sites.

89.2 Site History

48-001 (11/23/2020)

AOC 48-001 consists of the air-exhaust system at the main radiochemistry laboratory in building 48-1, and surface soil potentially impacted by the deposition from historical stack emissions at TA-48. The radiochemistry laboratory in building 48-1 was constructed in 1957 to analyze samples collected from nuclear weapons tests. Additional radiochemical analyses were conducted in building 48-1 to support a variety of Laboratory programs.

The building 48-1 exhaust system consists of nine stacks:

- three stacks emitted unfiltered exhaust from chemical hoods,
- three stacks are associated with combustion boilers,
- one stack emits exhaust from individually filtered gloveboxes,
- one stack emitted exhaust-filtered air from former hot cell laboratories, and
- one stack exhausts air from welding and degreasing booths.

Of these stacks, only five are related to radiochemical laboratory activities in building 48-1. The stacks associated with the combustion boilers and the welding and degreasing booths are not part of

AOC 48-001 as they are facility-related (i.e., they supply heat to the occupants and building infrastructure) or are related to operations other than radiochemistry (i.e., welding and degreasing). Emissions from the chemical hoods were not filtered because the chemicals used in the hoods (e.g., perchloric acid) would degrade the filters. However, these hoods were equipped with wet scrubbers.

The glovebox stack (stack FE54) was permitted and monitored under the NESHAP Program of the Clean Air Act. According to the RFI work plan, historical monitoring data are available for stack FE54 beginning in 1967 for plutonium, and beginning in 1974 for uranium and fission products. These data indicate releases of plutonium, uranium, and fission products, principally cesium-137, cerium-144, and strontium-90.

For investigation activities, refer to “Supplemental Investigation Report for Upper Mortandad Canyon Aggregate Area, Revision 1” (N3B 2020, 700951).

48-005 (no date)

SWMU 48-005 consists of inactive RLW lines and an associated outfall at TA-48. From 1957 to 1965, these waste lines were part of the system used to convey RLW from TA-48 to the treatment plant at TA-45 (Consolidated Unit 45-001-00). Beginning in 1963, new waste lines were installed to carry wastes to the new treatment facilities at TA-50. By 1967, the waste lines leading to TA-45 were considered to have been decommissioned. Some of the waste lines were removed in two campaigns conducted in 1981 and 1984.

SWMU 48-005 contains the remaining portions of waste lines, which are all inside the TA-48 security fence. The remaining waste lines are all 3-in.-diameter cast-iron pipe, and consist of a 200-ft section of line 34 running westward from building 48-1, a 300-ft section of line 36 that runs southward from the north wing of building 48-1 to line 36, and a 50-ft section of line 38 that runs southward from building 48-1. These lines are located at depths of 10 to 11 ft and were not removed because they are beneath structures, roadways, or utilities.

The remaining sections of lines 34 and 36 were surveyed during the line removal activities. Line 34 was found to have low levels of alpha activity, and line 36 had no detectable activity. The remaining portion of line 38 was not surveyed.

SWMU 48-005 also includes an outfall, on the edge of Mortandad Canyon north of building 48-1 that was the discharge point of line 37. Line 37 was connected to sumps in the north basement of building 48-1 and was completely removed in 1981.

For investigation activities, refer to “Investigation Report for Upper Mortandad Canyon Aggregate Area, Revision 1” (LANL 2010, 109180.28).

48-007(c) (11/23/2020)

SWMU 48-007(c) is an outfall that previously received discharges from nine floor drains, a trench drain, and six roof drains at building 48-1 in TA-48. This outfall is located north of building 48-1 and discharges into Mortandad Canyon. Former sources of discharge to the floor drains included floor washings, backflow preventers, drainage and condensate from a vacuum pump, steam condensate, a boiler drain, a fire drain, and a water heater pressure relief valve. This outfall previously operated as an NPDES-permitted outfall (EPA 04A131), but was removed from the NPDES permit on January 14, 1998, because industrial wastewater discharges were discontinued. Currently, this outfall receives only stormwater.

For investigation activities, refer to "Supplemental Investigation Report for Upper Mortandad Canyon Aggregate Area, Revision 1" (N3B 2020, 700951).

89.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 89.2-1.

Table 89.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
48-001	Operational release	Fission products, americium-241, cerium-144, cesium-137, plutonium, uranium, strontium-90
48-005	Inactive RLW lines	Heavy metals, organic chemicals, radionuclides
48-007(c)	Floor drain outfall	Naturally occurring metals concentrated by evaporation, radionuclides

89.3 Consent Order Soil Data

Decision-level data for AOC 48-001 consist of results from samples collected in 1993, 1997, and 2009. The samples include those collected for AOC 48-001 as well as surface samples collected at other SWMUs and AOCs within the footprint of AOC 48-001 (i.e., TA-48). The 2020 Revision 1 of the supplemental IR (N3B 2020, 700951) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for SWMU 48-005 consist of results from samples collected in 1993, 1997, and 2009. The approved 2010 IR (LANL 2010, 109180.28) concluded that the lateral and vertical extent of all detected chemicals and radionuclides are defined at SWMU 48-005, except for the lateral and vertical extent of chromium and perchlorate and the inactive waste line portion of SWMU 48-005.

Decision-level data for SWMU 48-007(c) consist of results from samples collected in 1997 and 2009. Samples collected from the Mortandad Canyon drainage during other investigations were also used to determine lateral extent of contamination for SWMU 48-007(c). The 2020 Revision 1 of the supplemental IR (N3B 2020, 700951) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results from all decision-level soil samples collected for M-SMA-3 are presented in Figures 89.3-1 through 89.3-4.

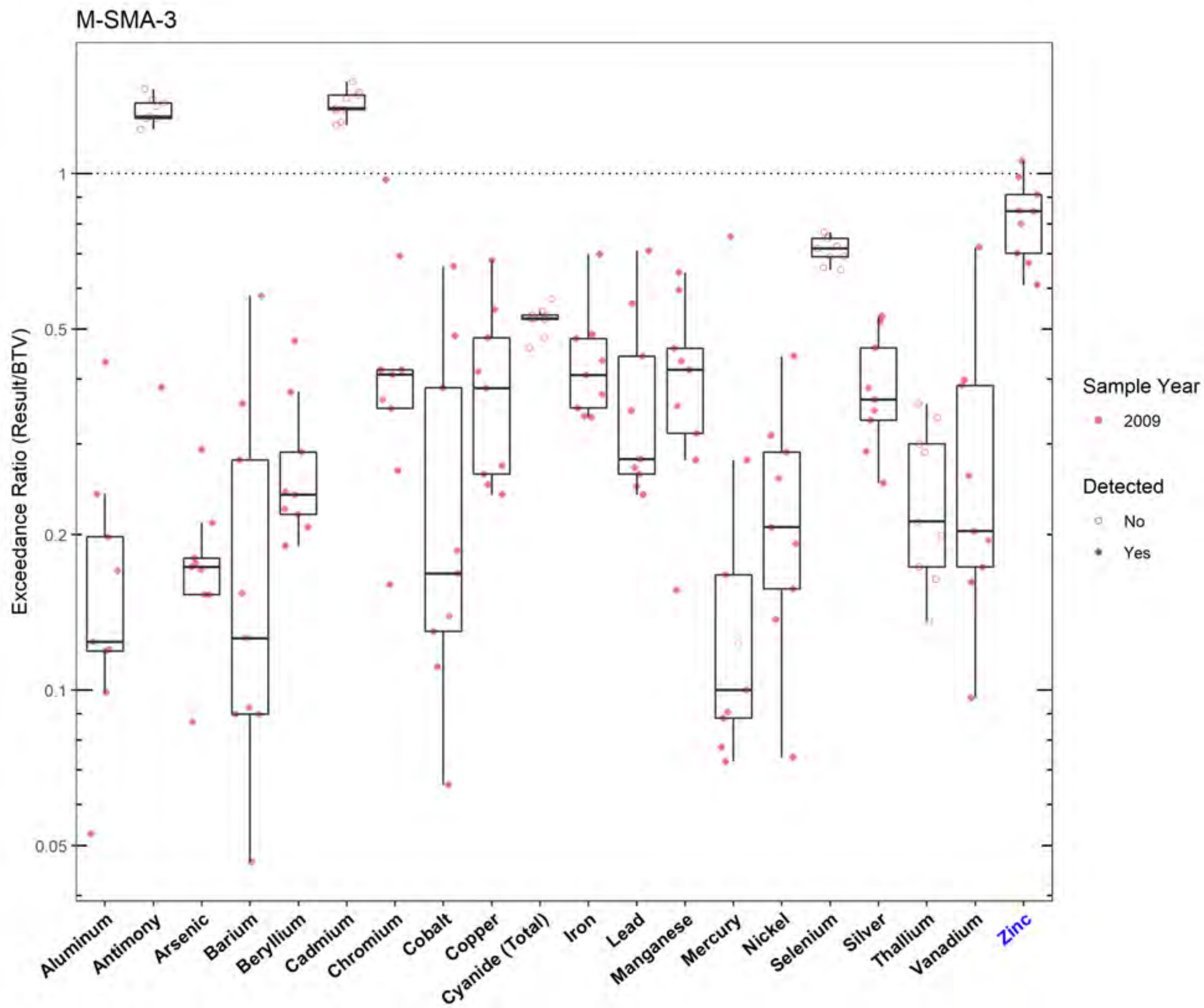


Figure 89.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-3

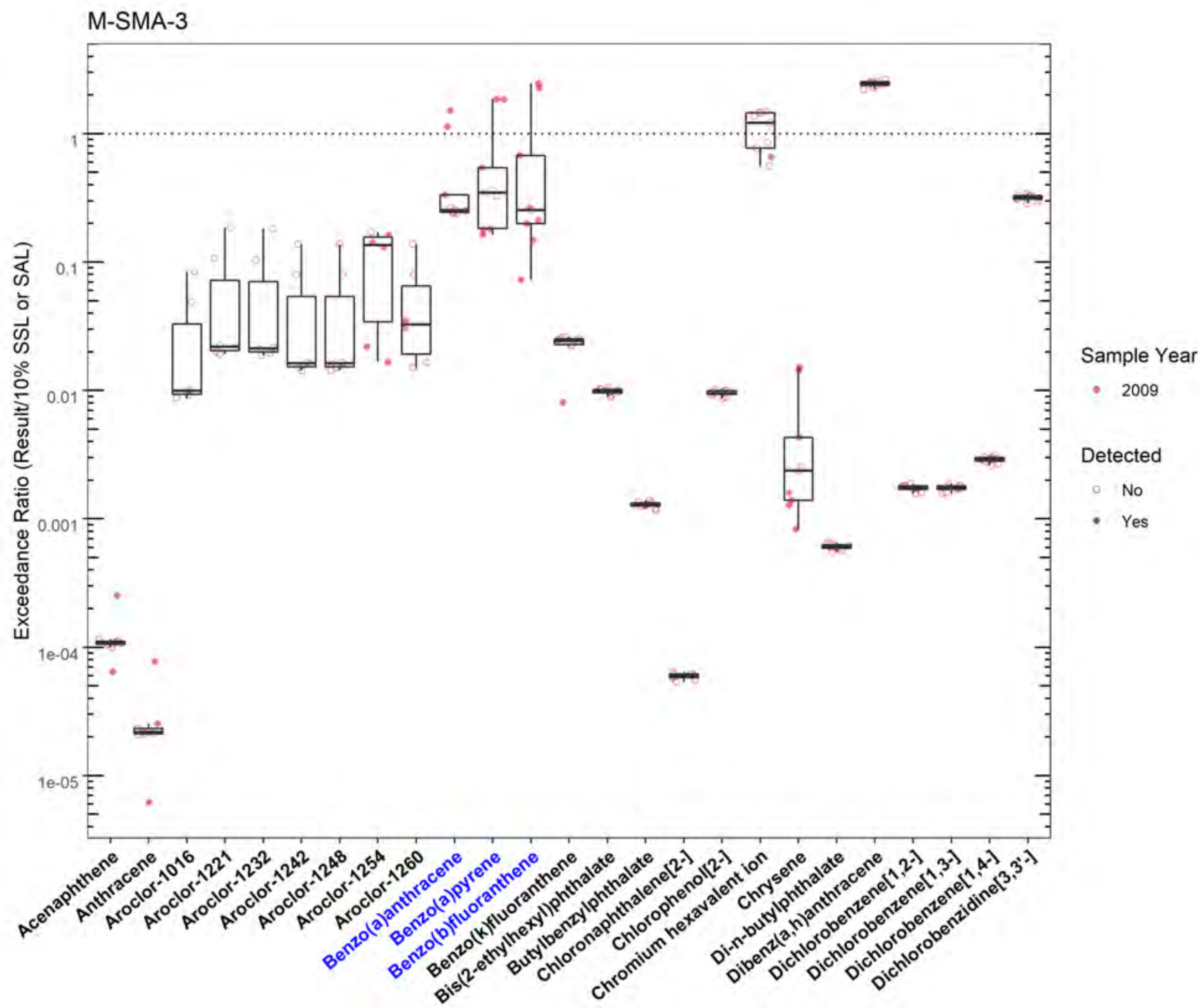


Figure 89.3-2 Organics Analytical Results from Soil Samples Associated with M-SMA-3 (Plot 1)

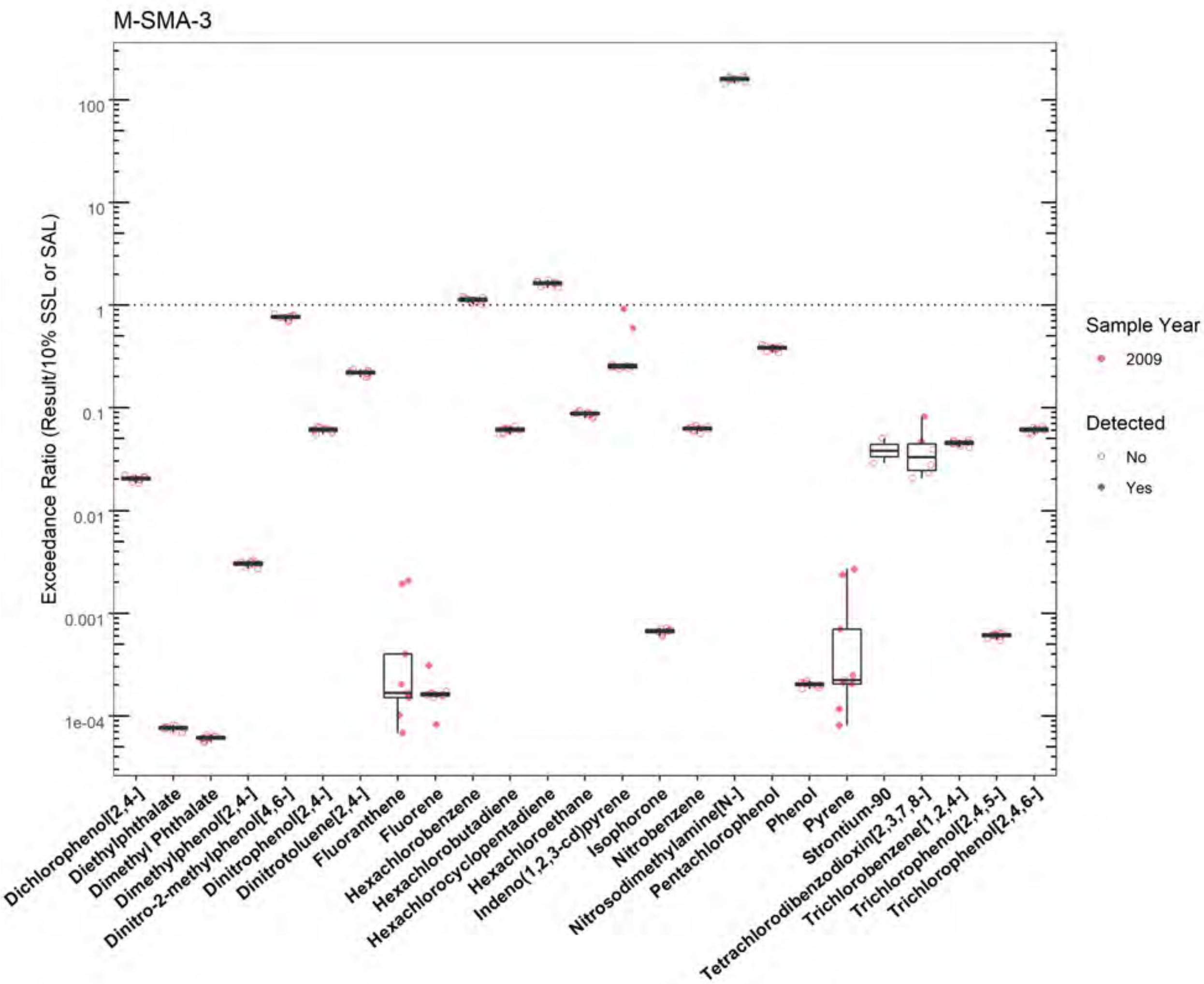


Figure 89.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-3 (Plot 2)

M-SMA-3

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	M-SMA-3	56-55-3	Y	SSL_0.1	0.153	0.231	2009-05-21
Benzo(a)pyrene	M-SMA-3	50-32-8	Y	SSL_0.1	0.112	0.208	2009-05-21
Benzo(b)fluoranthene	M-SMA-3	205-99-2	Y	SSL_0.1	0.153	0.375	2009-05-18
Zinc	M-SMA-3	Zn	Y	BTV	48.8	51.5	2009-05-21

Figure 89.3-4 Screening-Level Exceedances from Soil Samples Associated with M-SMA-3

89.4 Stormwater Evaluation

89.4.1 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 has been collected for the current stage.

89.4.2 Assessment Unit and Stream Impairments

M-SMA-3 drains to Mortandad Canyon (within LANL), which has impairments for adjusted gross alpha, PCBs, and dissolved copper. The adjusted gross alpha, PCBs, and copper impairments may be Site-related, based on Site history.

89.5 Site-Specific Demonstration

89.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene.

Zinc exceeded the applicable screening value in soil but was previously measured in stormwater data and did not exceed TALs. Therefore, it will not be added to the SAP.

89.5.2 Stormwater Data Summary

No data for the current monitoring stage have been collected. Gross alpha and PCBs exceeded TAL in the previous monitoring stage. Because there was no paired SSC result to confirm whether gross alpha was below BTVs, it will be added to the SAP. The PCB result exceeded both the TAL and the composite BTV and is included in the SAP.

89.5.3 2022 Permit Status

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

89.5.4 Sampling and Analysis Plan

Table 89.5-1 is the proposed SAP for M-SMA-3.

Table 89.5-1 Proposed SAP, M-SMA-3

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment, Site history, and stormwater data
Total PCBs	Impairment, Site history (organics), and stormwater data
SVOCs	Site history (organics) and soil data
Tritium	Site history (radionuclides)
DOC	Permit requirement
SSC	Permit requirement

90.0 M-SMA-3.1

Associated Sites	48-001, 48-007(b)
Receiving Water	Mortandad Canyon
Drainage Area	0.01 acres
Landscape Characteristics	15% impervious, 85% pervious
Consent Order Site Status	AOC 48-001: Pending Receipt of Certificate of Completion. SWMU 48-007(b): Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the August 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

90.1 2010 Administratively Continued Permit Summary

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

90.2 Site History

48-001 (11/23/2020)

AOC 48-001 consists of the air-exhaust system at the main radiochemistry laboratory in building 48-1, and surface soil potentially impacted by the deposition from historical stack emissions at TA-48. The radiochemistry laboratory in building 48-1 was constructed in 1957 to analyze samples collected from nuclear weapons tests. Additional radiochemical analyses were conducted in building 48-1 to support a variety of Laboratory programs.

The building 48-1 exhaust system consists of nine stacks:

- three stacks emitted unfiltered exhaust from chemical hoods,
- three stacks are associated with combustion boilers,
- one stack emits exhaust from individually filtered gloveboxes,
- one stack emitted exhaust-filtered air from former hot cell laboratories, and
- one stack exhausts air from welding and degreasing booths.

Of these stacks, only five are related to radiochemical laboratory activities in building 48-1. The stacks associated with the combustion boilers and the welding and degreasing booths are not part of AOC 48-001 as they are facility-related (i.e., they supply heat to the occupants and building infrastructure) or are related to operations other than radiochemistry (i.e., welding and degreasing). Emissions from the chemical hoods were not filtered because the chemicals used in the hoods (e.g., perchloric acid) would degrade the filters. However, these hoods were equipped with wet scrubbers.

The glovebox stack (stack FE54) was permitted and monitored under the NESHAP Program of the Clean Air Act. According to the RFI work plan, historical monitoring data are available for stack FE54 beginning in 1967 for plutonium, and beginning in 1974 for uranium and fission products. These data indicate releases of plutonium, uranium, and fission products, principally cesium-137, cerium-144, and strontium-90.

48-007(b) (11/23/2020)

SWMU 48-007(b) is an outfall that formerly discharged noncontact cooling water used to cool a magnet and laser that were housed in the main radiochemistry laboratory in building 48-1 at TA-48. This outfall is located north of building 48-1, and previously discharged up to 4300 gpd of cooling water. Water discharged from the outfall flows into Mortandad Canyon. The outfall previously operated as a NPDES-permitted outfall (EPA 04A016) but was removed from the NPDES permit on September 19, 1997, because industrial wastewater discharges were discontinued. Presently, the outfall receives only stormwater.

For investigation activities at the Sites, refer to “Supplemental Investigation Report for Upper Mortandad Canyon Aggregate Area, Revision 1” (N3B 2020, 700951).

90.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 90.2-1.

Table 90.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
48-001	Operational release	Fission products, americium-241, cerium-144, cesium-137, plutonium, strontium-90, uranium
48-007(b)	Outfall from building 48-1	Naturally occurring metals concentrated by evaporation, radionuclides

90.3 Consent Order Soil Data

Decision-level data for AOC 48-001 consist of results from samples collected in 1993, 1997, and 2009. The samples include those collected for AOC 48-001, as well as surface samples collected at other SWMUs and AOCs within the footprint of AOC 48-001 (i.e., TA-48). The 2020 Revision 1 of the supplemental IR (N3B 2020, 700951) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for SWMU 48-007(b) consist of results from samples collected in 1997 and 2009. Samples collected from the Mortandad Canyon drainage during other investigations were also used to determine lateral extent of contamination for SWMU 48-007(b). The 2020 Revision 1 of the supplemental IR (N3B 2020, 700951) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results from all decision-level soil samples collected for M-SMA-3.1 are presented in Figures 90.3-1 through 90.3-4.

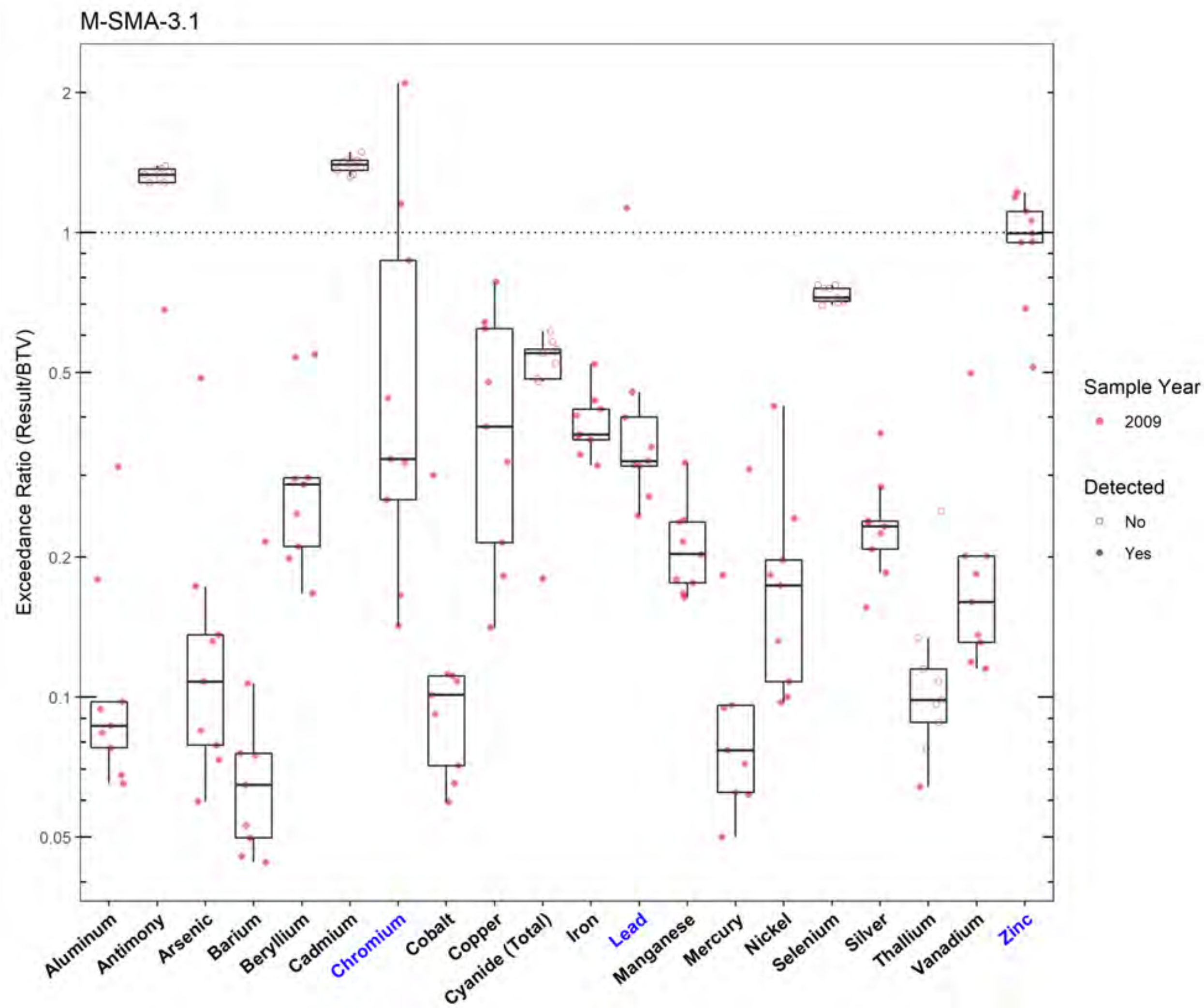


Figure 90.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-3.1

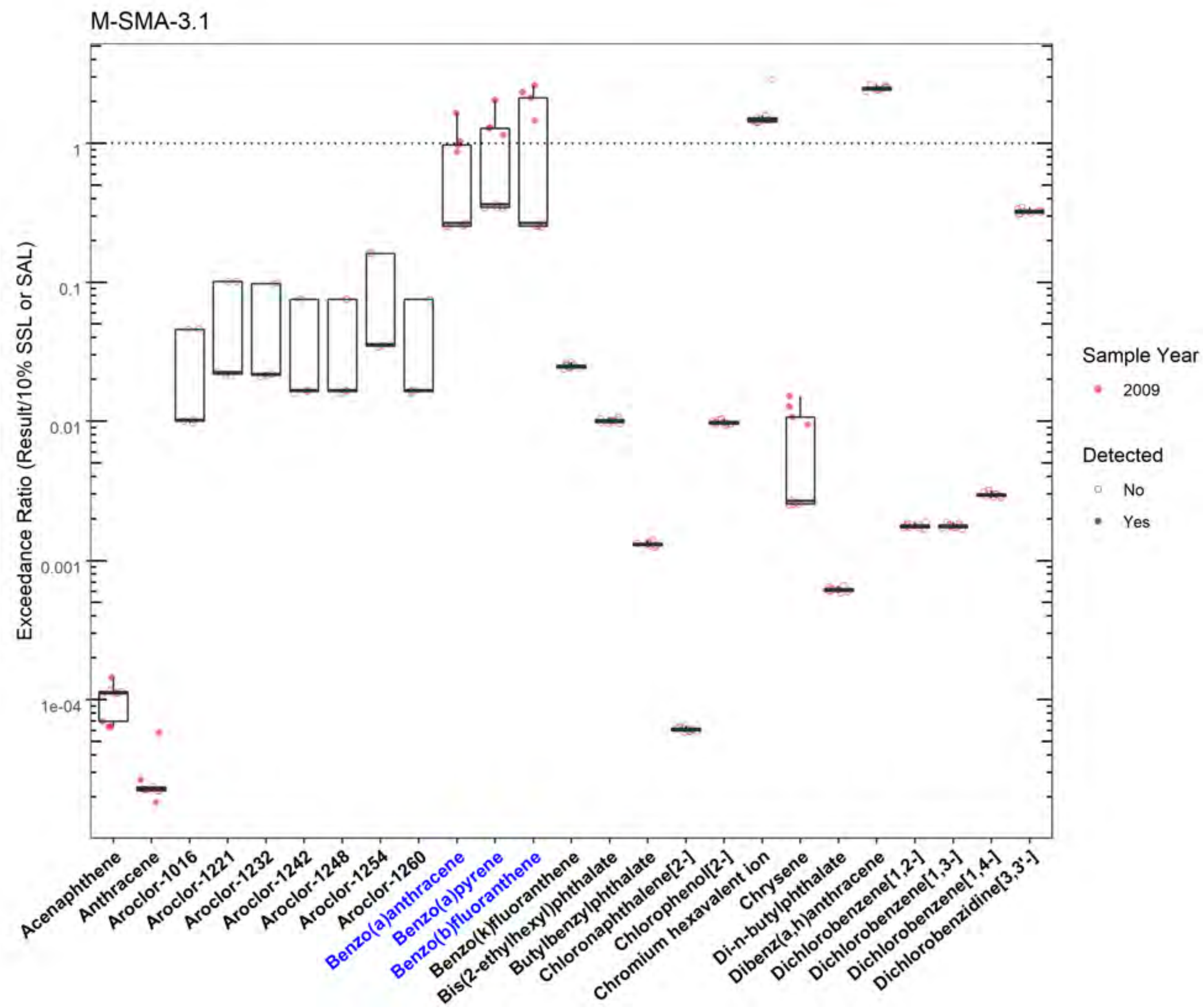


Figure 90.3-2 **Organics Analytical Results from Soil Samples Associated with M-SMA-3.1 (Plot 1)**

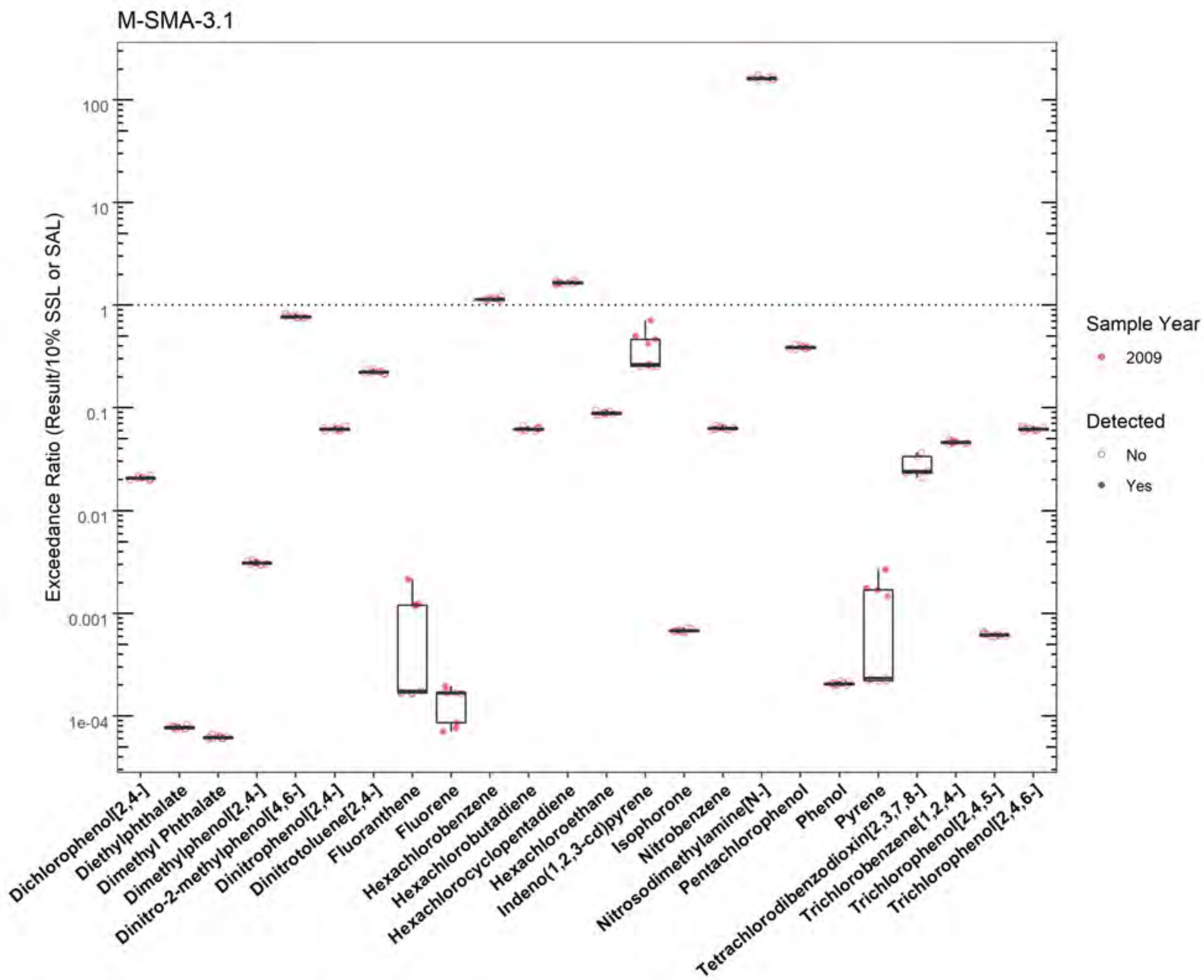


Figure 90.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-3.1 (Plot 2)

M-SMA-3.1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	M-SMA-3.1	56-55-3	Y	SSL_0.1	0.153	0.252	2009-05-20
Benzo(a)pyrene	M-SMA-3.1	50-32-8	Y	SSL_0.1	0.112	0.230	2009-05-20
Benzo(b)fluoranthene	M-SMA-3.1	205-99-2	Y	SSL_0.1	0.153	0.398	2009-05-20
Chromium	M-SMA-3.1	Cr	Y	BTV	19.3	40.6	2009-05-20
Lead	M-SMA-3.1	Pb	Y	BTV	22.3	25.1	2009-05-20
Zinc	M-SMA-3.1	Zn	Y	BTV	48.8	59.6	2009-05-20

Figure 90.3-4 Screening-Level Exceedances from Soil Samples Associated with M-SMA-3.1

90.4 Stormwater Evaluation

90.4.1 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.

90.4.2 Assessment Unit and Stream Impairments

M-SMA-3.1 drains to Mortandad Canyon (within LANL), which has impairments for adjusted gross alpha, PCBs, and dissolved copper. The copper and adjusted gross-alpha impairments may be Site-related, based on Site history.

90.5 Site-Specific Demonstration

90.5.1 Soil Data Summary

Chromium, lead, and zinc are the Site-related POCs that exceeded the applicable screening level in soil data and have not yet been measured in stormwater.

Benzo(b)fluoranthene, benzo(a)pyrene, and benzo(a)anthracene also exceeded the applicable screening level in soil data. However, they are not Site-related POCs, and will not be added to the SAP.

90.5.2 Stormwater Data Summary

No confirmation-monitoring data.

90.5.3 2022 Permit Status

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

90.5.4 Sampling and Analysis Plan

Table 90.5-1 is the proposed SAP for M-SMA-3.1.

Table 90.5-1 Proposed SAP, M-SMA-3.1

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history
Dissolved copper, chromium, lead, uranium, and zinc	Impairment (copper), Site history, and soil data
Strontium-90	Site history
Radium-226 and radium-228	Site history (radionuclides)
Tritium	Site history (radionuclides)
DOC	Permit requirement
SSC	Permit requirement

91.0 M-SMA-3.5

Associated Sites	48-001, 48-003
Receiving Water	Mortandad Canyon
Drainage Area	0.08 acres
Landscape Characteristics	4% impervious, 96% pervious
Consent Order Site Status	AOC 48-001: Pending Receipt of Certificate of Completion. SWMU 48-003: Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the August 2016 site visit and engineered drawings, SWMU 48-003 likely drained to the new SMA drainage area. The sampler was moved.
2022 Permit Status	Active Monitoring

91.1 2010 Administratively Continued Permit Summary

Following the May 2011 submittal to EPA of certification of baseline control installation, 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 re-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.

91.2 Site History

48-001 (11/23/2020)

AOC 48-001 consists of the air-exhaust system at the main radiochemistry laboratory in building 48-1, and surface soil potentially impacted by the deposition from historical stack emissions at TA-48. The radiochemistry laboratory in building 48-1 was constructed in 1957 to analyze samples collected from nuclear weapons tests. Additional radiochemical analyses were conducted in building 48-1 to support a variety of Laboratory programs.

The building 48-1 exhaust system consists of nine stacks:

- three stacks emitted unfiltered exhaust from chemical hoods,
- three stacks are associated with combustion boilers,
- one stack emits exhaust from individually filtered gloveboxes,
- one stack emitted exhaust-filtered air from former hot cell laboratories, and
- one stack exhausts air from welding and degreasing booths.

Of these stacks, only five are related to radiochemical laboratory activities in building 48-1. The stacks associated with the combustion boilers and the welding and degreasing booths are not part of AOC 48-001 as they are facility-related (i.e., they supply heat to the occupants and building infrastructure) or are related to operations other than radiochemistry (i.e., welding and degreasing). Emissions from the chemical hoods were not filtered because the chemicals used in the hoods (e.g., perchloric acid) would degrade the filters. However, these hoods were equipped with wet scrubbers.

The glovebox stack (stack FE54) was permitted and monitored under the NESHAP Program of the Clean Air Act. According to the RFI work plan, historical monitoring data are available for stack FE54 beginning in 1967 for plutonium, and beginning in 1974 for uranium and fission products. These data indicate releases of plutonium, uranium, and fission products, principally cesium-137, cerium-144, and strontium-90.

48-003 (11/23/2020)

SWMU 48-003 consists of a former septic system that served building 48-1, at TA-48, from 1957 to 1986. This septic system consisted of a septic tank (structure 48-5), a dosing chamber, a filter bed (structure 48-6), and an outfall that discharged into Mortandad Canyon. The septic tank and dosing chamber were 21 ft 7 in. long, and the filter bed measured 81 ft 2 in. long × 40 ft 7 in. wide. The septic system operated until 1986, at which time the septic tank and filter bed were decommissioned and removed and the drainlines were abandoned in place. A laboratory and diagnostics facility (building 48-45) was constructed over the site of the septic tank and filter bed.

After the septic system was decommissioned, sanitary wastewater previously handled by the septic system was discharged to the sanitary lagoons at TA-35 and later to the SWSC plant, located at TA-46. Although this septic system primarily received sanitary wastewater from building 48-1, the system potentially received hazardous and radioactive materials through accidental discharges.

For investigation activities at the Sites, refer to “Supplemental Investigation Report for Upper Mortandad Canyon Aggregate Area, Revision 1” (N3B 2020, 700951).

91.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 91.2-1.

Table 91.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
48-001	Operational release	Fission products, americium-241, cerium-144, cesium-137, plutonium, strontium-90, uranium
48-003	Former septic system	Metals, organic chemicals, radionuclides

91.3 Consent Order Soil Data

Decision-level data for AOC 48-001 consist of results from samples collected in 1993, 1997, and 2009. The samples include those collected for AOC 48-001 as well as surface samples collected at other SWMUs and AOCs within the footprint of AOC 48-001 (i.e., TA-48). The 2020 Revision 1 of the supplemental IR (N3B 2020, 700951) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data collected for SWMU 48-003 consist of results from samples collected in 1993, 1997, and 2009. The 2020 Revision 1 of the supplemental IR (N3B 2020, 700951) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results from all samples collected for M-SMA-3.5 are presented in Figures 91.3-1 through 91.3-3.

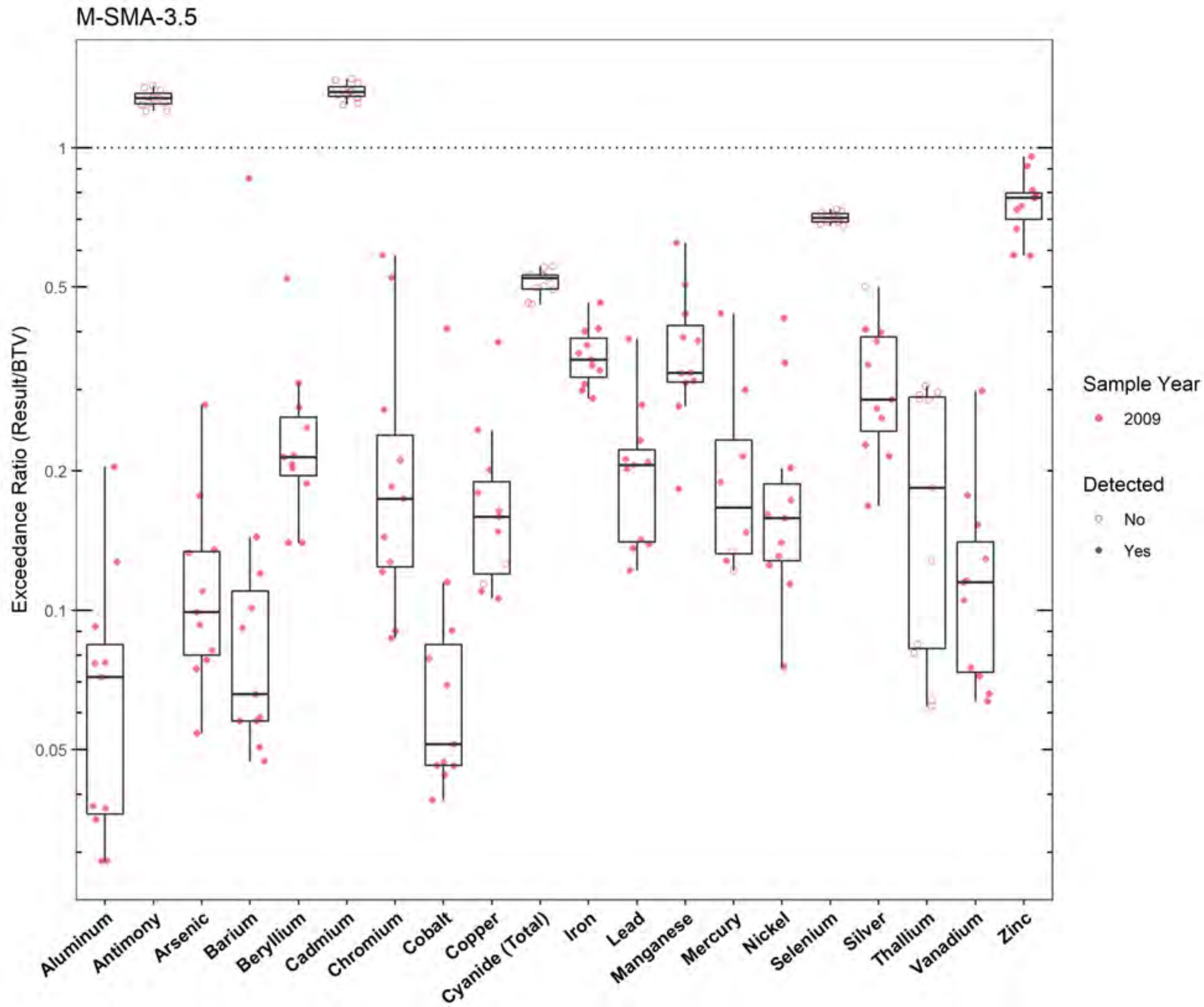


Figure 91.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-3.5

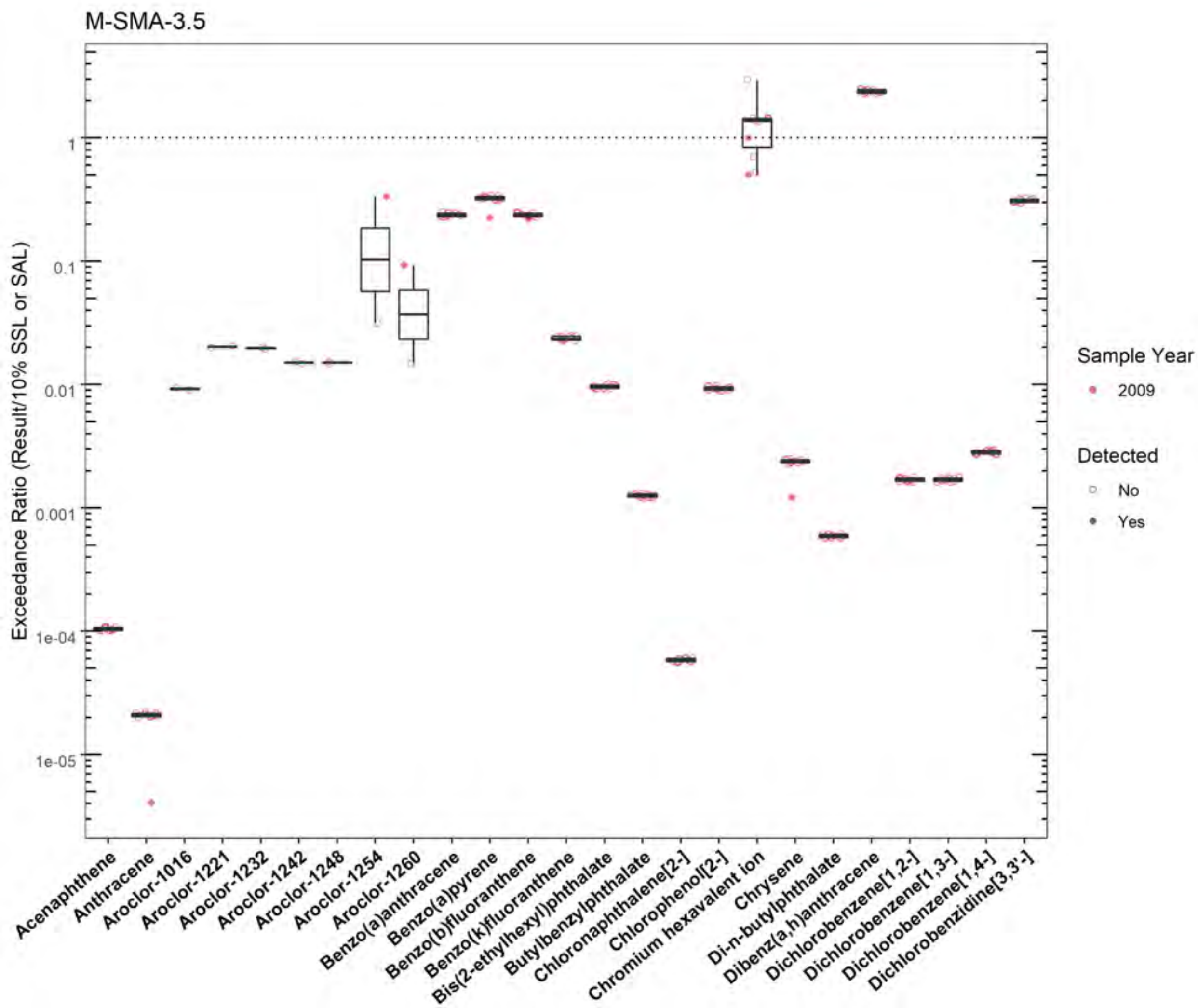


Figure 91.3-2 **Organics Analytical Results from Soil Samples Associated with M-SMA-3.5 (Plot 1)**

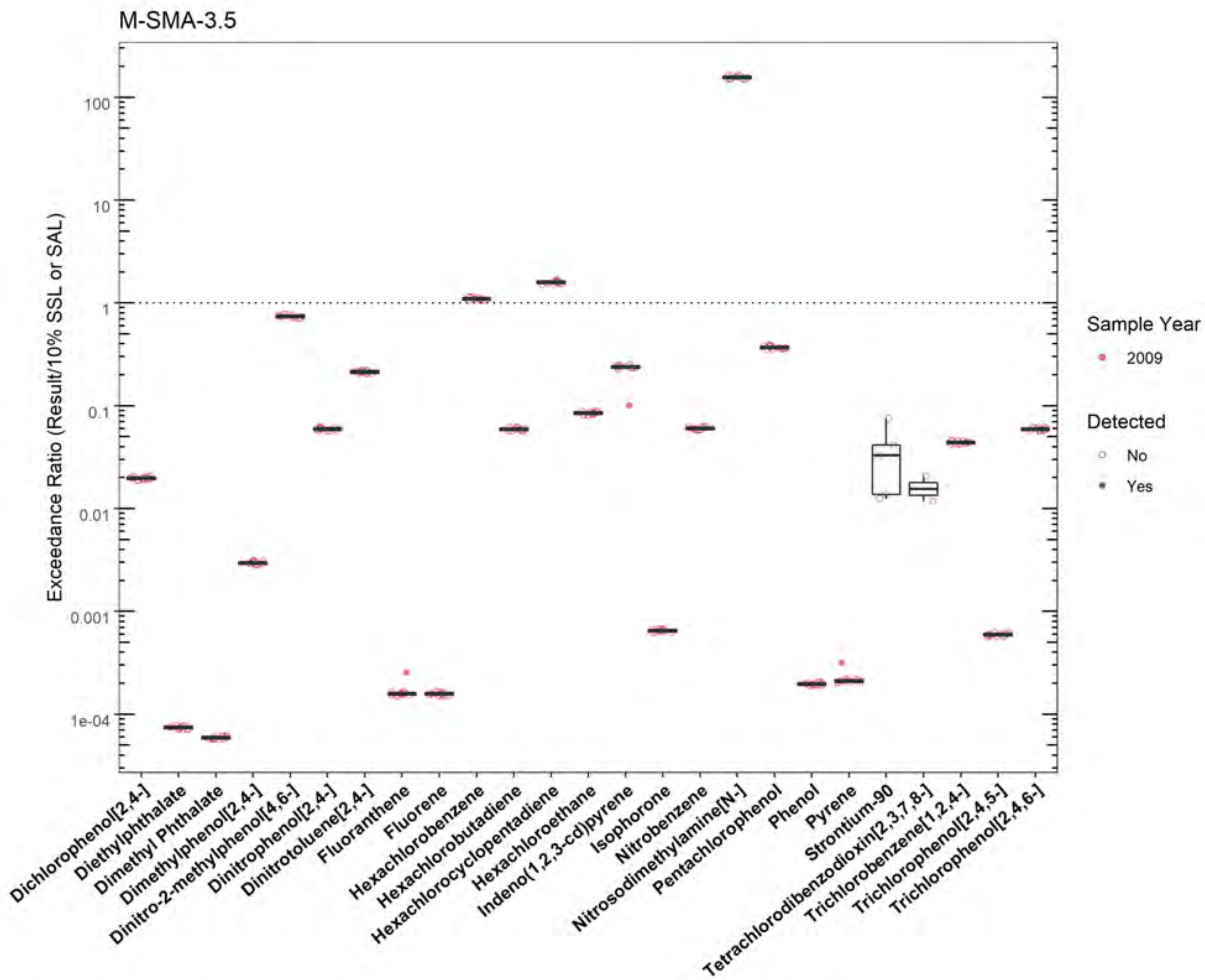


Figure 91.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-3.5 (Plot 2)

91.4 Stormwater Evaluation

91.4.1 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 has been collected.

91.4.2 Assessment Unit and Stream Impairments

M-SMA-3.5 drains to Mortandad Canyon (within LANL), which has impairments for adjusted gross alpha, PCBs, and dissolved copper. The adjusted gross alpha, PCBs and copper impairments may be Site-related, based on Site history.

91.5 Site-Specific Demonstration

91.5.1 Soil Data Summary

There were no exceedances of applicable screening values in soil data.

91.5.2 Stormwater Data Summary

No confirmation-monitoring data.

91.5.3 2022 Permit Status

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

91.5.4 Sampling and Analysis Plan

Table 91.5-1 is the proposed SAP for M-SMA-3.5.

Table 91.5-1 Proposed SAP, M-SMA-3.5

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history
Total PCBs	Impairment and Site history
Dissolved copper	Impairment and Site history
Radium-226 and radium-228	Site history (radionuclides)
Tritium	Site history (radionuclides)
SVOCs	Site history (organics)
DOC	Permit requirement
SSC	Permit requirement

92.0 M-SMA-4

Associated Sites	48-001, 48-005, 48-007(a), 48-007(d), 48-010
Receiving Water	Effluent Canyon - Tributary to Mortandad Canyon
Drainage Area	11.89 acres
Landscape Characteristics	24% impervious, 76% pervious
Consent Order Site Status	AOC 48-001: Pending Receipt of Certificate of Completion. SWMU 48-005: In Progress Deferred per Consent Order SWMU 48-007(a): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls SWMU 48-007(d): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls SWMU 48-010: Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested/Corrective Action Complete
2016–2018 SIP Actions	Chromium is Site-related, and high chromium concentrations have been detected in soil/sediment downgradient of the current sampler location; therefore, the sampler was moved. However, monitoring was not initiated due to the Alternative Compliance Requested/Corrective Action Complete status.
2022 Permit Status	Active Monitoring/Corrective Action

92.1 2010 Administratively Continued Permit Summary

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

SWMUs 48-007(a), 48-007(d), and 48-010 received COCs under the Consent Order from NMED in September 2010. The Permittees submitted a certification of completion of corrective action to EPA per Permit part I.E.2(d) for the Sites in November 2012 (LANL 2012, 232272), and re-submitted the certification in August 2013 (LANL 2013, 250035). Stormwater monitoring has not occurred for these Sites since 2011.

The Permittees submitted a request for alternative compliance for AOC 48-001 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. Following the September 2015 submittal to EPA of certification of a no exposure condition at SWMU 48-005 per Permit Part I.E.2(c) (LANL 2015, 600932), monitoring was initiated for the required investigation sample for the Site. This sample was collected in June 2016 and the analytical results were submitted to EPA in October 2016 (LANL 2016, 601918). Monitoring has not occurred for this Site since 2016.

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

92.2 Site History

48-001 (11/23/2020)

AOC 48-001 consists of the air-exhaust system at the main radiochemistry laboratory in building 48-1, and surface soil potentially impacted by the deposition from historical stack emissions at TA-48. The radiochemistry laboratory in building 48-1 was constructed in 1957 to analyze samples collected from nuclear weapons tests. Additional radiochemical analyses were conducted in building 48-1 to support a variety of Laboratory programs.

The building 48-1 exhaust system consists of nine stacks:

- three stacks emitted unfiltered exhaust from chemical hoods,
- three stacks are associated with combustion boilers,
- one stack emits exhaust from individually filtered gloveboxes,
- one stack emitted exhaust-filtered air from former hot cell laboratories, and
- one stack exhausts air from welding and degreasing booths.

Of these stacks, only five are related to radiochemical laboratory activities in building 48-1. The stacks associated with the combustion boilers and the welding and degreasing booths are not part of AOC 48-001 as they are facility-related (i.e., they supply heat to the occupants and building infrastructure) or are related to operations other than radiochemistry (i.e., welding and degreasing). Emissions from the chemical hoods were not filtered because the chemicals used in the hoods (e.g., perchloric acid) would degrade the filters. However, these hoods were equipped with wet scrubbers.

The glovebox stack (stack FE54) was permitted and monitored under the NESHAP Program of the Clean Air Act. According to the RFI work plan, historical monitoring data are available for stack FE54 beginning in 1967 for plutonium, and beginning in 1974 for uranium and fission products. These data indicate releases of plutonium, uranium, and fission products, principally cesium-137, cerium-144, and strontium-90.

48-005 (no date)

SWMU 48-005 consists of inactive RLW lines and an associated outfall at TA-48. From 1957 to 1965, these waste lines were part of the system used to convey RLW from TA-48 to the treatment plant at TA-45 (Consolidated Unit 45-001-00). Beginning in 1963, new waste lines were installed to carry wastes to the new treatment facilities at TA-50. By 1967, the waste lines leading to TA-45 were considered to have been decommissioned. Some of the waste lines were removed in two campaigns conducted in 1981 and 1984.

SWMU 48-005 contains the remaining portions of waste lines, which are all inside the TA-48 security fence. The remaining waste lines are all 3-in.-diameter cast-iron pipe and consist of a 200-ft section of line 34 running westward from building 48-1, a 300-ft section of line 36 that runs southward from the north wing of building 48-1 to line 36, and a 50-ft section of line 38 that runs southward from building 48-1. These lines are located at depths of 10 to 11 ft, and were not removed because they are beneath structures, roadways, or utilities.

The remaining sections of lines 34 and 36 were surveyed during the line removal activities. Line 34 was found to have low levels of alpha activity, and line 36 had no detectable activity. The remaining portion of line 38 was not surveyed.

SWMU 48-005 also includes an outfall on the edge of Mortandad Canyon north of building 48-1 that was the discharge point of line 37. Line 37 was connected to sumps in the north basement of building 48-1 and was completely removed in 1981.

For investigation activities, refer to "Investigation Report for Upper Mortandad Canyon Aggregate Area, Revision 1" (LANL 2010, 109180.28).

48-007(a) (no date)

SWMU 48-007(a) is an outfall, formerly used to discharge treated cooling tower blowdown from two cooling towers located on the roof of building 48-1. This outfall is located in TA-48 east of building 48-1. Up to 750 gal./hr of cooling tower blowdown were discharged from the outfall. The discharge from this outfall flowed to an unlined surface impoundment, SWMU 48-010. The water used in these cooling towers was treated to control scale, corrosion, and biological growth. Additives used include Garratt Callahan (G. C.) Formula 227 L, a corrosion and scaling inhibitor; and G. C. Formula 314-T, a biocide. The date that this outfall began operation is not known, but building 48-1 was constructed in 1957, so discharges would not have preceded this date.

This outfall formerly operated as an NPDES-permitted outfall (045/046 EPA 03A), but was removed from the Permit on December 6, 1999, because industrial wastewater discharges to the outfall had been discontinued earlier in the year. Currently, the outfall discharges only stormwater.

For investigation activities, refer to "Investigation Report for Upper Mortandad Canyon Aggregate Area, Revision 1" (LANL 2010, 109180.28).

48-007(d) (no date)

SWMU 48-007(d) is an outfall formerly used to discharge noncontact cooling water from a vacuum pump housed in the south end of building 48-1. This outfall is located east of building 48-1. The date the outfall began operation is not known, but building 48-1 was constructed in 1957, so discharges would not have preceded this date. Up to 4000 gpd of cooling water was discharged from the outfall. Discharge from this outfall flowed to SWMU 48-010.

This outfall formerly operated as an NPDES-permitted outfall (153 EPA 04A), but was removed from the Permit on July 20, 1998, because industrial wastewater discharges to the outfall had been discontinued earlier in the year. Stormwater continues to flow through the outfall.

For investigation activities, refer to "Investigation Report for Upper Mortandad Canyon Aggregate Area, Revision 1" (LANL 2010, 109180.28).

48-010 (no date)

SWMU 48-010 is an unlined surface impoundment, located approximately 300 ft east of building 48-1 and 150 ft south of building 48-45, constructed in 1978 by excavating directly into the tuff. . The surface impoundment formerly received cooling tower blowdown discharged from SWMU 48-007(a), noncontact cooling water discharged from SWMU 48-007(d), and stormwater runoff from the parking lot for building 48-45. Currently, the impoundment receives only stormwater from the parking lot. A wetland has developed around the impoundment. The impoundment and surrounding wetland cover approximately 100 ft × 150 ft. SWMU 48-010 discharges to the east into a side canyon that is a tributary to Mortandad Canyon.

For investigation activities at AOC 48-001, refer to "Supplemental Investigation Report for Upper Mortandad Canyon Aggregate Area, Revision 1" (N3B 2020, 700951). For investigation activities at

SWMUs 48-005, 48-007(a), 48-007(d), and 48-010, refer to "Investigation Report for Upper Mortandad Canyon Aggregate Area, Revision 1" (LANL 2010, 109180.28).

92.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 92.2-1.

Table 92.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
48-001	Operational release	Fission products, americium-241, cerium-144, cesium-137, plutonium, strontium-90, uranium
48-005	Inactive RLW lines	Heavy metals, organic chemicals, radionuclides
48-007(a)	Outfall	Arsenic, chromium, hexavalent chromium, chlorine
48-007(d)	Outfall	Naturally occurring metals concentrated by evaporation, arsenic, chromium, hexavalent chromium, inorganic and organic chemicals, radionuclides
48-010	Outfall	Naturally occurring metals concentrated by evaporation, arsenic, chromium, hexavalent chromium, inorganic and organic chemicals, radionuclides

92.3 Consent Order Soil Data

Decision-level data for AOC 48-001 consist of results from samples collected in 1993, 1997, and 2009. The samples include those collected for AOC 48-001, as well as surface samples collected at SWMUs and AOCs within the footprint of AOC 48-001 (i.e., TA-48). The 2020 Revision 1 of the supplemental IR (N3B 2020, 700951) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for SWMU 48-005 consist of results from samples collected in 1993, 1997, and 2009. The approved 2010 IR (LANL 2010, 109180.28) concluded that the lateral and vertical extent of all detected chemicals and radionuclides are defined at SWMU 48-005, except for the lateral and vertical extent of chromium and perchlorate and the inactive waste line portion of SWMU 48-005.

Decision-level data for SWMU 48-007(a) consist of results from samples collected in 1995, 1997, and 2009, in conjunction with the investigation of SWMUs 48-007(d), and 48-010. The 2010 IR, Revision 1 (LANL 2010, 109180.28), concluded that the nature and extent of contaminants are defined.

Analytical results from all decision-level soil samples collected for M-SMA-4 are presented in Figures 92.3-1 through 92.3-4.

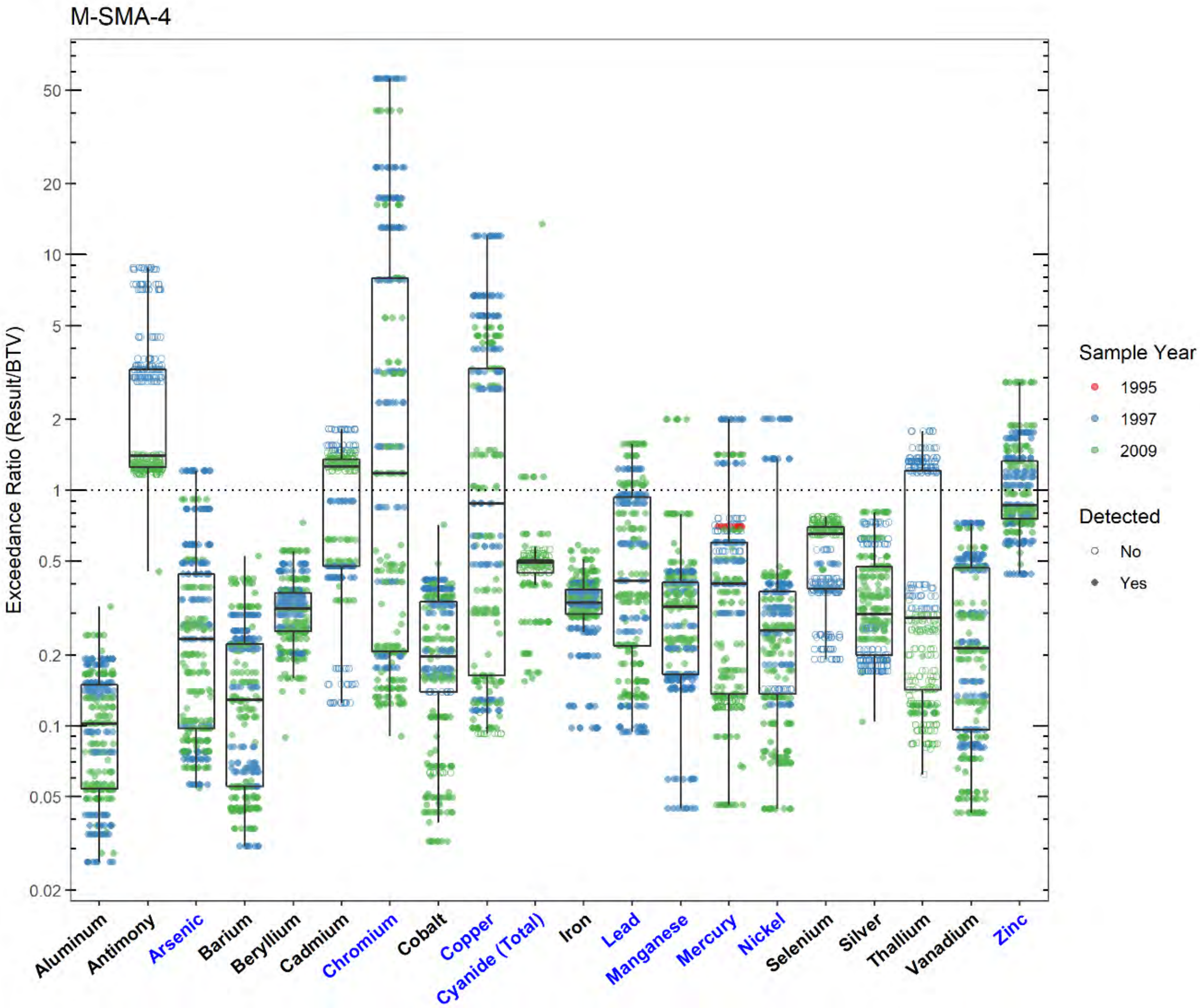


Figure 92.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-4

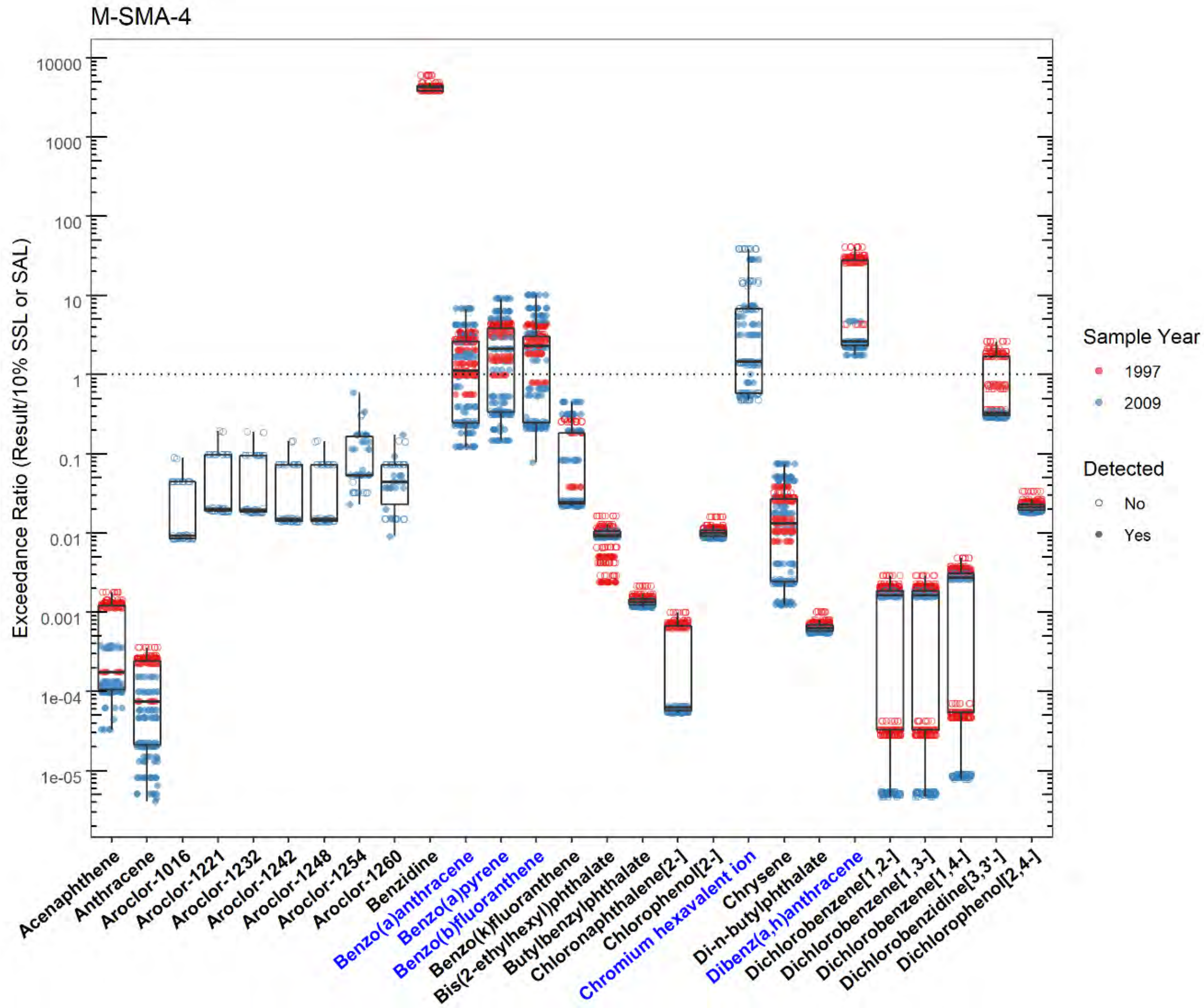


Figure 92.3-2 Organics Analytical Results from Soil Samples Associated with M-SMA-4 (Plot 1)

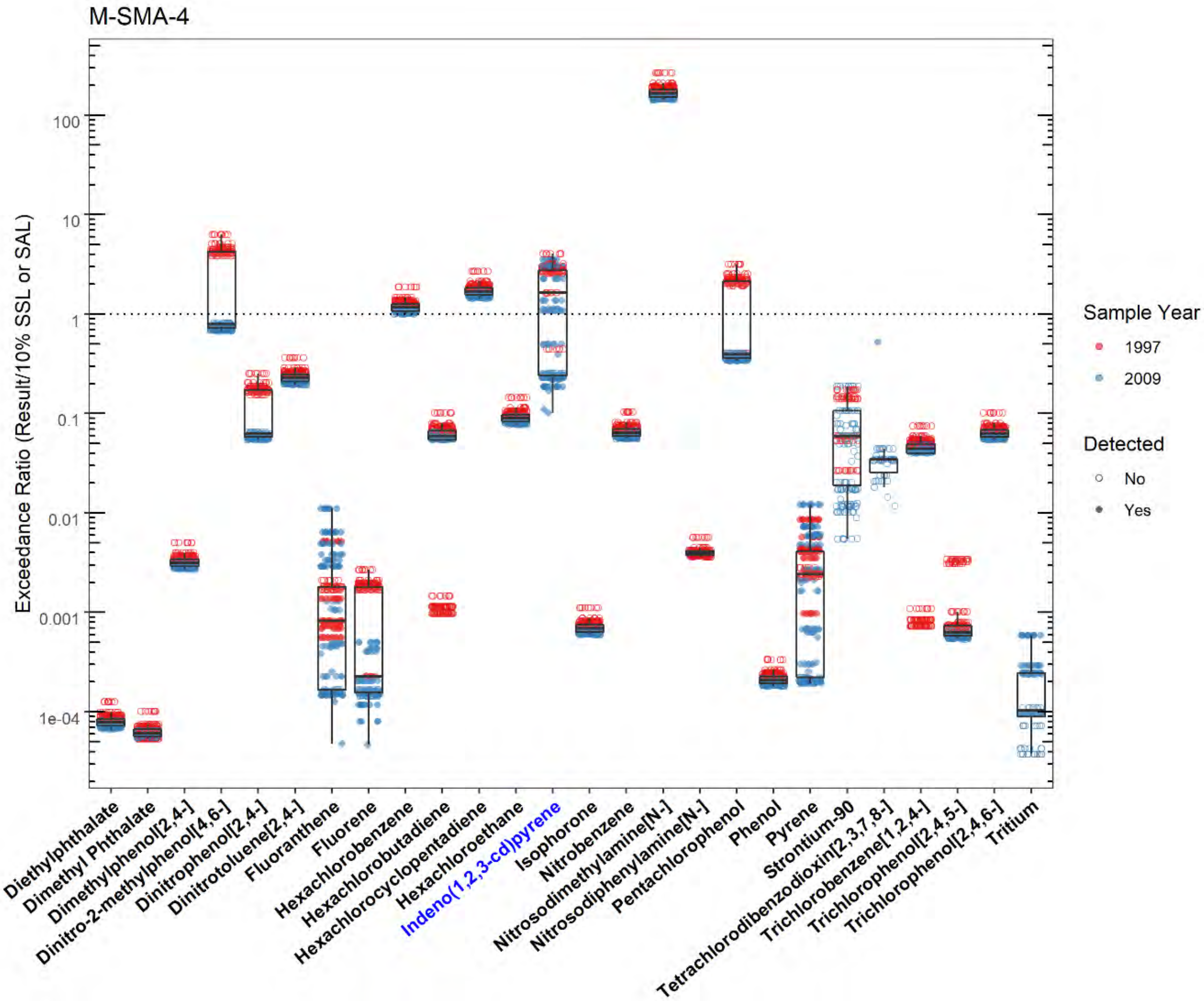


Figure 92.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-4 (Plot 2)

M-SMA-4

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Arsenic	M-SMA-4	As	Y	BTV	8.17	9.90	1997-06-23
Benzo(a)anthracene	M-SMA-4	56-55-3	Y	SSL_0.1	0.153	1.04	2009-05-08
Benzo(a)pyrene	M-SMA-4	50-32-8	Y	SSL_0.1	0.112	1.02	2009-05-08
Benzo(b)fluoranthene	M-SMA-4	205-99-2	Y	SSL_0.1	0.153	1.55	2009-05-08
Chromium	M-SMA-4	Cr	Y	BTV	19.3	1080	1997-06-23
Chromium hexavalent ion	M-SMA-4	Cr(VI)	Y	SSL_0.1	0.305	8.61	2009-05-21
Copper	M-SMA-4	Cu	Y	BTV	14.7	177	1997-06-23
Cyanide (Total)	M-SMA-4	CN(TOTAL)	Y	BTV	0.500	6.75	2009-05-21
Dibenz(a,h)anthracene	M-SMA-4	53-70-3	Y	SSL_0.1	0.0153	0.0717	2009-05-21
Indeno(1,2,3-cd)pyrene	M-SMA-4	193-39-5	Y	SSL_0.1	0.153	0.539	2009-05-08
Lead	M-SMA-4	Pb	Y	BTV	22.3	34.9	2009-05-08
Manganese	M-SMA-4	Mn	Y	BTV	671	1340	2009-05-21
Mercury	M-SMA-4	Hg	Y	BTV	0.100	0.200	1997-06-23
Nickel	M-SMA-4	Ni	Y	BTV	15.4	30.9	1997-03-03
Zinc	M-SMA-4	Zn	Y	BTV	48.8	140	2009-05-08

Figure 92.3-4 Screening-Level Exceedances from Soil Samples Associated with M-SMA-4

92.4 Stormwater Evaluation

92.4.1 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 92.4-1 through 92.4-4.

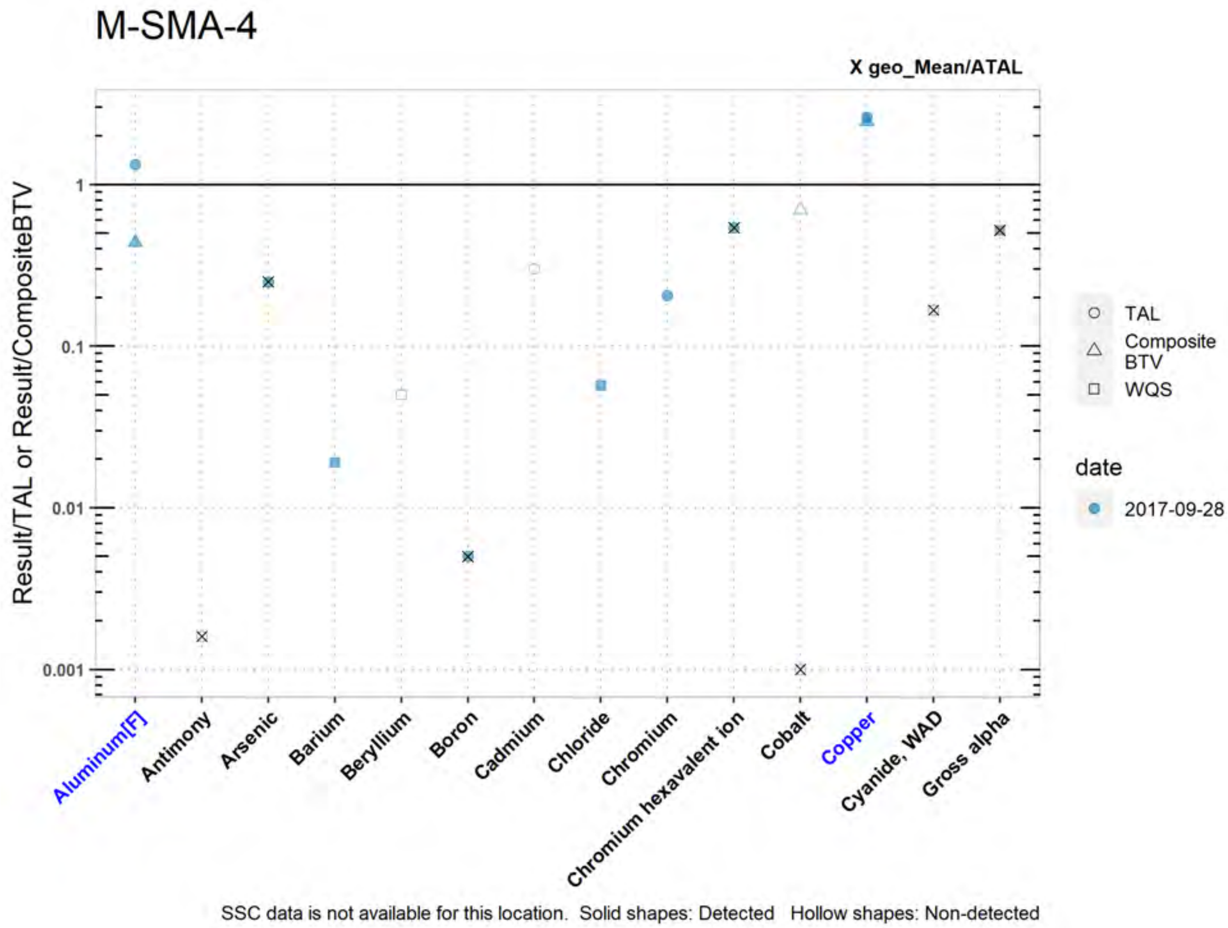


Figure 92.4-1 Analytical Results from Stormwater Sample, M-SMA-4 (Plot 1)

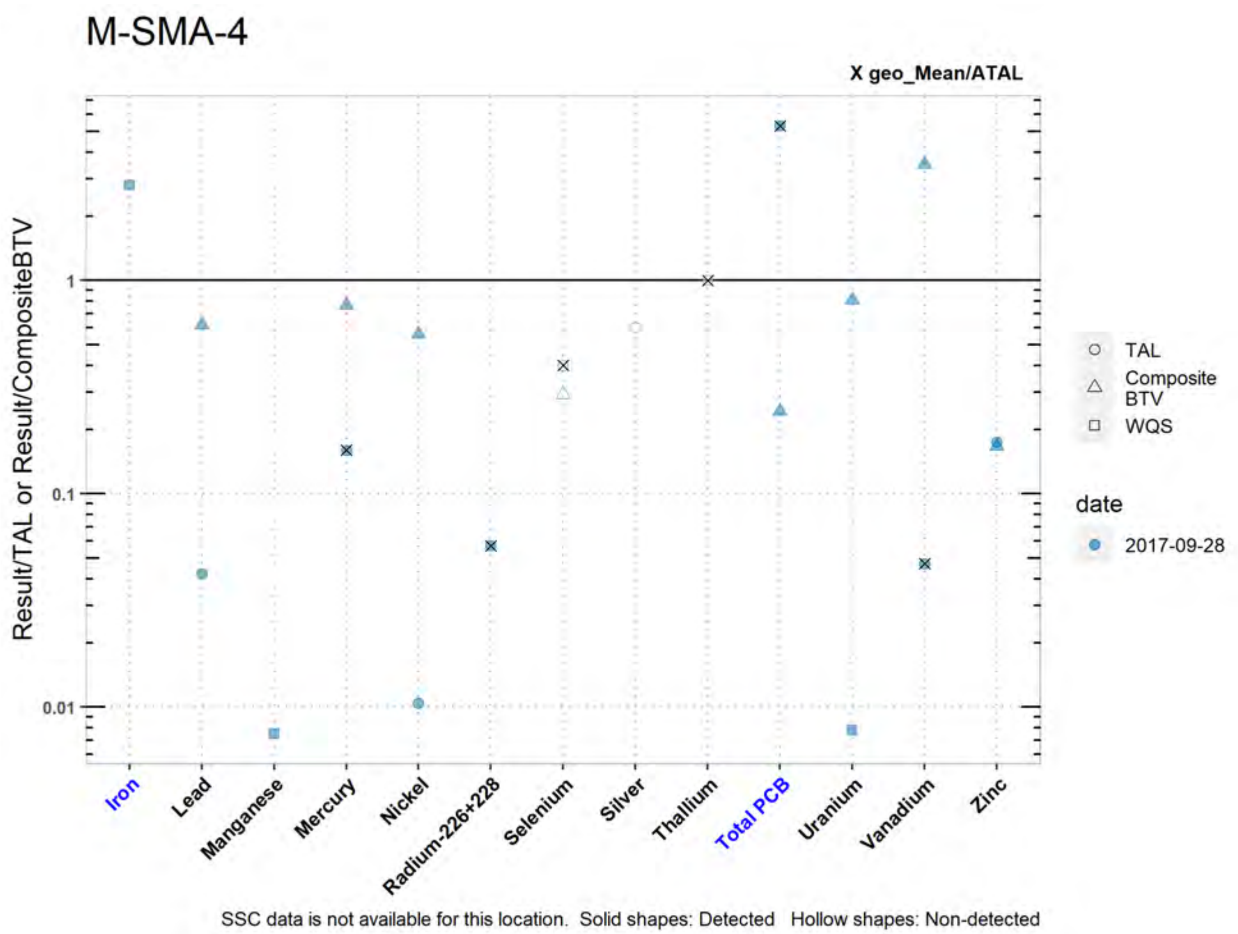


Figure 92.4-2 Analytical Results from Stormwater Sample, M-SMA-4 (Plot 2)

M-SMA-4

	Aluminum [F]	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chloride	Chromium	Chromium hexavalent ion	Cobalt	Copper	Cyanide, WAD	Gross alpha
MQL	2.5	1	0.5	NA	NA	100	1	NA	10	0.155	50	0.5	10	NA
ATAL	NA	640	9	NA	NA	5000	NA	NA	NA	11	1000	NA	5.2	15
MTAL	750	NA	340	NA	NA	NA	0.583	NA	210	16	NA	4.25	22	NA
Composite_BTV	2290	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.44	4.53	NA	55.4
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
2017-09-28 result	1000	*1.00*	2.26	37.6	*0.200*	24.8	*0.300*	13100	43.1	5.98	*1.00*	11.1	*1.67*	7.79
2017-09-28 dT	1.33	NA	0.25	0.019	NA	0.0050	NA	0.057	0.205	0.54	NA	2.61	NA	0.52
2017-09-28 dB	0.437	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.45	NA	NA
geo_mean/ATAL	NA	0.0016	0.25	NA	NA	0.0050	NA	NA	NA	0.54	0.0010	NA	0.321	0.52

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

Figure 92.4-3 Analytical Results from Stormwater Sample, M-SMA-4 (Table 1)

M-SMA-4

	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	0.00064	NA	100	NA
MTAL	NA	16.7	NA	NA	167	NA	20	0.394	NA	NA	NA	NA	52.7
Composite_BTV	NA	1.14	NA	0.158	3.10	5.68	6.84	NA	NA	0.0140	0.288	1.34	55.2
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
2017-09-28 result	2800	0.707	8.25	0.121	1.74	1.71	*2.00*	*0.300*	*0.600*	0.00340	0.233	4.70	9.22
2017-09-28 dT	2.8	0.0423	0.0075	0.16	0.0104	0.0570	NA	NA	NA	5.3	0.0078	0.047	0.175
2017-09-28 dB	NA	0.620	NA	0.766	0.561	NA	NA	NA	NA	0.243	0.809	3.51	0.167
geo_mean/ATAL	NA	NA	NA	0.16	NA	0.0570	0.40	NA	1	5.3	NA	0.047	NA

Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 92.4-4 Analytical Results from Stormwater Sample, M-SMA-4 (Table 2)

92.4.2 Assessment Unit and Stream Impairments

M-SMA-4 drains to Effluent Canyon (Mortandad Canyon to headwaters), which has not been assessed for impairments.

92.5 Site-Specific Demonstration

92.5.1 Soil Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

Copper exceeded the applicable screening value in soil and TAL in stormwater. The remaining metals and chromium hexavalent ion exceeded the applicable screening value in soil, were previously measured in stormwater data and did not exceed TALs. Therefore, they will be added to the SAP to collect one additional sample in this stage.

92.5.2 Stormwater Data Summary

Filtered aluminum exceeded the TAL but not the BTV; it will be added to the SAP for total aluminum. Copper exceeded both TAL and BTV. PCBs exceeded TAL but not BTV, so they will not be added to the SAP. Iron exceeded the water quality standard; however, there is no TAL in the Permit for iron. Only POCs with TALs are used in the SSD.

92.5.3 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.2.b.i) for copper. The SMA is also in active monitoring; not all Site-related POCs were analyzed for in past samples.

92.5.4 Sampling and Analysis Plan

Table 92.5-1 is the proposed SAP for M-SMA-4.

Table 92.5-1 Proposed SAP, M-SMA-4

Monitoring Constituent	Background for Monitoring
SVOCs	Site history (organics) and soil data
DOC	Permit requirement
SSC	Permit requirement

93.0 M-SMA-5

Associated Sites	42-001(a), 42-001(b), 42-001(c), 42-002(a), 42-002(b)
Receiving Water	Effluent Canyon - Tributary to Mortandad Canyon
Drainage Area	0.60 acres
Landscape Characteristics	1% impervious, 99% pervious
Consent Order Site Status	SWMU 42-001(a): Pending Receipt of Certificate of Completion. SWMU 42-001(b): Pending Receipt of Certificate of Completion. SWMU 42-001(c): Pending Receipt of Certificate of Completion. AOC 42-002(a): Pending Receipt of Certificate of Completion. SWMU 42-002(b): Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	During the SIP Field visit, the sampler was moved to increase the chances of collecting a sample.
2022 Permit Status	Active Monitoring

93.1 2010 Administratively Continued Permit Summary

Following the May 2011 submittal to EPA of certification of baseline control installation, 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; baseline monitoring was re-initiated at the new location after the sampler was moved. To date, stormwater flow has not been sufficient for full-volume sample collection; monitoring is ongoing until one confirmation sample is collected from this SMA.

93.2 Site History

42-001(a) (11/23/2020)

SWMU 42-001(a) is a former radioactive-waste incinerator that was located adjacent to the interior north wall in former building 42-1 at former TA-42, within the northern boundary of TA-55. Construction of the incinerator and building 42-1 was completed in 1951. Building 42-1 was a 2000-ft^2, steel-frame structure with a corrugated-metal roof. In addition to the incinerator, building 42-1 housed the feed port and operational systems for the incinerator.

The incinerator unit was designed to burn radioactive-contaminated waste in a cylindrical chamber with a throughput of between 45.5 and 90.8 kg per hour. Combustion products passed through an off-gas treatment system before being released to the atmosphere through an exhaust stack. The off-gas system consisted of a Venturi scrubber, a filter bank, and an ash separator. Ash trapped in the off-gas system and incinerator was transported by underground drainlines to two former holding tanks [SWMUs 42-001(b) and 42-001(c)], located immediately north of the incinerator.

LLW generated at the Laboratory was to be incinerated in this unit; however, due to the poor performance of the incinerator and operational problems with the off-gas treatment system, very little waste was actually incinerated. The incinerator operated for little more than one year between 1951 and 1952; sporadic additional attempts to use the incinerator were made until 1954. Pressure excursions in the incinerator resulted in releases of radionuclides within and adjacent to building 42-1.

From 1957 to 1969, building 42-1 was used to store and decontaminate radioactively-contaminated equipment [SWMU 42-002(a)]. In 1969, an unsuccessful attempt was made to reactivate the incinerator to burn uncontaminated classified wastes. By 1970, all operations were discontinued and all combustibles were removed from building 42-1. The entire facility underwent D&D between 1975 and 1978.

42-001(b) and 42-001(c) (11/23/2020)

SWMUs 42-001(b) and 42-001(c) are the historical locations of two former aboveground ash-holding tanks (former structures 42-2 and 42-3) and inlet ash drainlines associated with the former incinerator complex [former building 42-1, SWMU 42-001(a)] at former TA-42, which is located within the northern boundary of TA-55. The tanks were built in 1951 and removed in 1978. Each tank was 22 ft in diameter and approximately 13 ft high, with a volume of 37,000 gal. Ash trapped in the incinerator's off-gas system and in the incinerator was transported by underground drainlines to the two former holding tanks [SWMUs 42-001(b) and 42-001(c)], located immediately north of the incinerator.

When the holding tanks were decommissioned in 1978, the contents were assayed and analyzed for plutonium. Contaminated sludge was removed, mixed with cement, and taken to MDA G for storage. The tanks were excavated and disposed of at Area G at TA-54. The tank drainlines were filled with hot asphalt to contain radioactive contamination. It is not known if the drainlines were removed.

42-002(a) (11/23/2020)

AOC 42-002(a) is the former location of an indoor storage and decontamination area that was located in former building 42-1 at former TA-42, which is located within the northern boundary of TA-55. Building 42-1 was a 2000-ft^2, steel-frame structure covered with corrugated metal that housed the waste incinerator [SWMU 42-001(a)]. Incinerator operations had basically ceased by 1954. Between 1956 and 1969, the main floor of former building 42-1 was used to store and decontaminate contaminated equipment [AOC 42-002(a)]. During decontamination activities, a vacublaster was used to remove radionuclides and other contaminants from various pieces of equipment. The process generated wastes, some of which are believed to have been discharged to the septic system for the building [SWMU 42-003]. It is believed that wastes from AOC 42-002(a), in the form of fine solid residues, were bagged and disposed of at MDA G at TA-54. The entire facility underwent D&D between 1975 and 1978.

42-002(b) (11/23/2020)

SWMU 42-002(b) is the location of an outdoor decontamination area at former TA-42. Former TA-42 is located within the northern boundary of TA-55. Building 42-1 was a 2000-ft^2, steel-frame structure covered with corrugated metal that housed the [SWMU 42-001(a)] waste incinerator. Incinerator operations had basically ceased by 1954. Between 1956 and 1969, the main floor of former building 42-1 was used to store and decontaminate contaminated equipment [AOC 42-002(a)].

During D&D in 1978, a vacublaster removed radionuclides and other contaminants from various pieces of equipment. Objects such as vehicles that were too large to take inside the building were decontaminated at the end of the asphalt driveway, located west and north of building 42-1 [SWMU 42-002(b)]. Wash water from this activity flowed down an embankment on the northwest side of the parking lot. Potentially contaminated soil in that area was not addressed during the D&D activities. The process generated wastes, some of which are believed to have been discharged to the septic system for the building (SWMU 42-003). It is believed that wastes from SWMU 42-002(b) in the form of fine solid residues were bagged and disposed of at MDA G at TA-54.

For investigation activities at the Sites, refer to "Supplemental Investigation Report for Upper Mortandad Canyon Aggregate Area, Revision 1" (N3B 2020, 700951).

93.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 93.2-1.

Table 93.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
42-001(a)	Former incinerator	Metals, dioxins/furans, radionuclides, lanthanum-140, plutonium
42-001(b)	Former ash tank	Metals, dioxins/furans, radionuclides, lanthanum-140, plutonium
42-001(c)	Former ash tank	Metals, dioxins/furans, radionuclides, lanthanum-140, plutonium
42-002(a)	Former indoor storage and decontamination area	Metals, lanthanum-140, plutonium
42-002(b)	Former indoor storage and decontamination area	Metals, lanthanum-140, plutonium

93.3 Consent Order Soil Data

Decision-level data for SWMUs 42-001(a), 42-001(b), 42-001(c), 42-002(a), and 42-002(b) consist of results from samples collected in 1992 and 2009. The 2020 Revision 1 of the supplemental IR (N3B 2020, 700951) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for SWMU 42-001(b) consist of results from 169 samples collected at 44 locations in 1992 and 2009, in conjunction with the investigation of SWMUs 42-001(b and c), 42-002(b), and 42-003, and AOC 42-002(a). The 2020 Revision 1 of the supplemental IR (N3B 2020, 700951) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results from all decision-level soil samples collected for M-SMA-5 are presented in Figures 93.3-1 through 93.3-4.

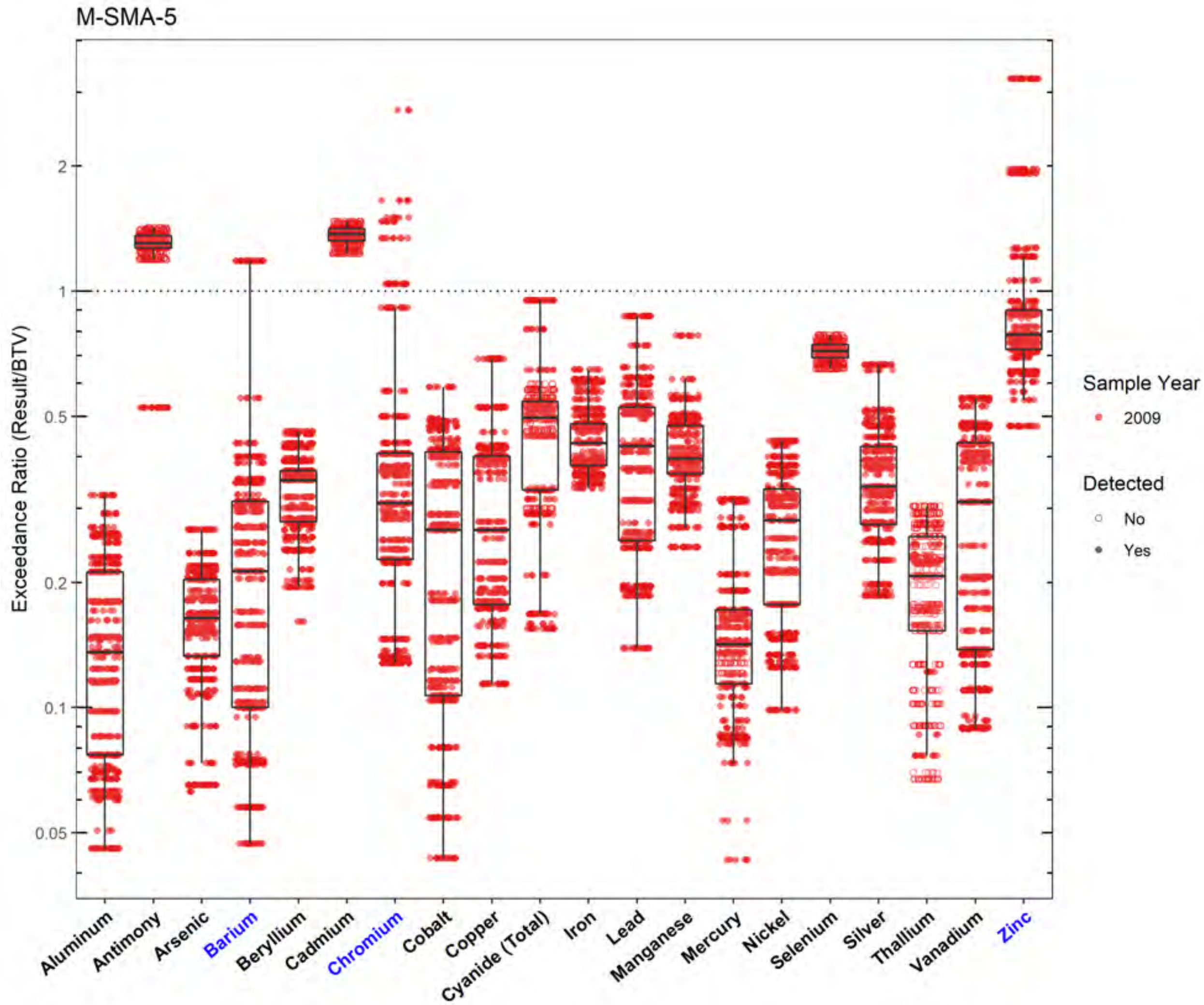


Figure 93.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-5

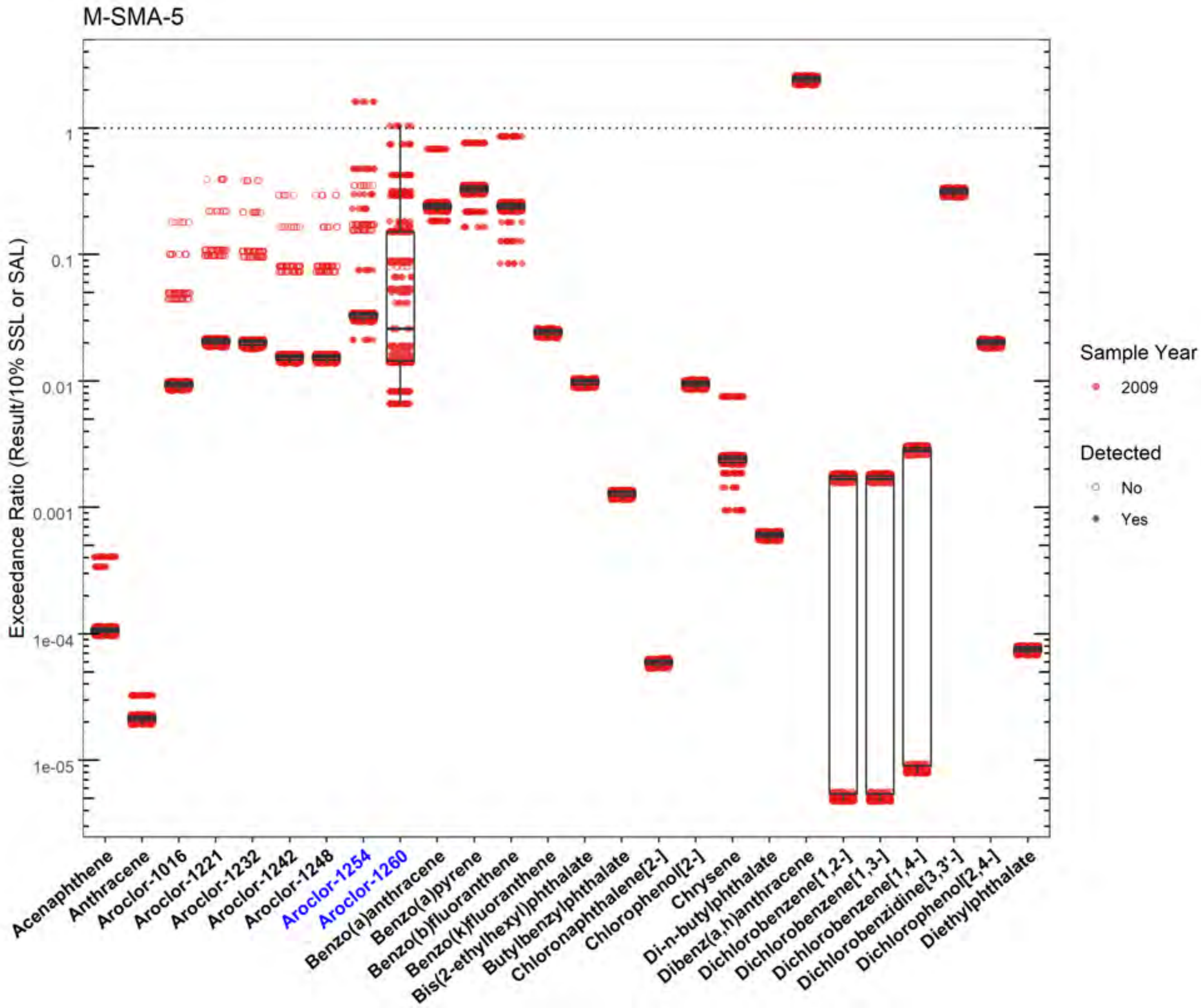


Figure 93.3-2 Organics Analytical Results from Soil Samples Associated with M-SMA-5 (Plot 1)

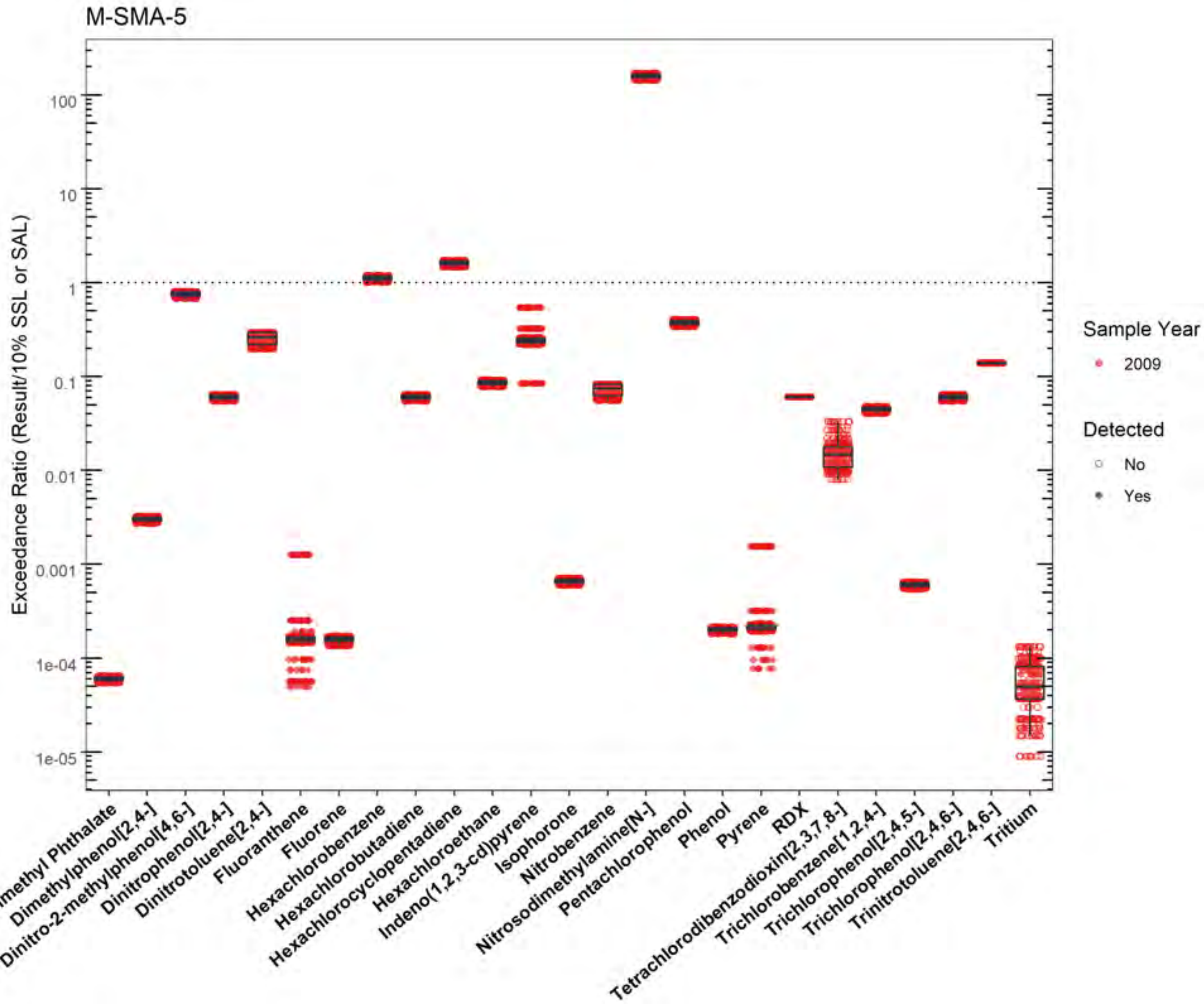


Figure 93.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-5 (Plot 2)

M-SMA-5

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	M-SMA-5	11097-69-1	Y	SSL_0.1	0.114	0.184	2009-04-08
Aroclor-1260	M-SMA-5	11096-82-5	Y	SSL_0.1	0.243	0.252	2009-04-08
Barium	M-SMA-5	Ba	Y	BTV	295	349	2009-04-17
Chromium	M-SMA-5	Cr	Y	BTV	19.3	52.4	2009-05-06
Zinc	M-SMA-5	Zn	Y	BTV	48.8	158	2009-04-24

Figure 93.3-4 Screening-Level Exceedances from Soil Samples Associated with M-SMA-5

93.4 Stormwater Evaluation

93.4.1 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.

93.4.2 Assessment Unit and Stream Impairments

M-SMA-5 drains to Effluent Canyon (Mortandad Canyon to headwaters), which has not been assessed for impairments.

93.5 Site-Specific Demonstration

93.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: barium, chromium, and zinc.

Aroclor-1254 and Aroclor-1260 also exceeded the applicable screening value in soil data, but are not Site-related POCs and will not be added to the SAP.

93.5.2 Stormwater Data Summary

No confirmation-monitoring data.

93.5.3 2022 Permit Status

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

93.5.4 Sampling and Analysis Plan

Table 93.5-1 is the proposed SAP for M-SMA-5.

Table 93.5-1 Proposed SAP, M-SMA-5

Monitoring Constituent	Background for Monitoring
Dissolved barium, chromium, and zinc	Site history and soil data
SVOCs	Site history (PAHs)
Gross alpha	Site history (radionuclides)
Strontium-90	Site history (radionuclides)
Radium-226 and radium-228	Site history (radionuclides)
DOC	Permit requirement
SSC	Permit requirement

94.0 M-SMA-6

Associated Sites	35-016(h)
Receiving Water	Effluent Canyon - Tributary to Mortandad Canyon
Drainage Area	0.16 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	AOC 35-016(h): Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the July 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site
2022 Permit Status	Corrective Action

94.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, baseline stormwater monitoring was initiated. In 2011, the sampler location was relocated to a more representative location for the Site after changes in drainage pattern were observed. A baseline stormwater sample was collected in October 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.

94.2 Site History

35-016(h) (11/23/2020)

AOC 35-016(h) consists of outfalls from three storm drains located north of building 35-213 at TA-35. The storm drains were installed in 1979 to handle stormwater runoff from roof drains on building 213, runoff from the nearby parking lot, and brine from a water deionizer in building 35-213. The deionizer brine was rerouted to the RLW drain system in the mid-1990s. The storm drain that handles the runoff from roof drains is located on the north side of building 35-213.

The storm drain that formerly handled discharge from the water deionizer is located on the northeast side of building 35-213. This storm drain currently handles only stormwater runoff from the area around building 35-213. The third storm drain, which handles stormwater from the nearby parking lot, is located northwest of building 35-213. All three storm drains discharge into Mortandad Canyon.

For investigation activities, refer to “Supplemental Investigation Report for Upper Mortandad Canyon Aggregate Area, Revision 1” (N3B 2020, 700951).

94.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 94.2-1.

Table 94.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
35-016(h)	Storm drains and outfall associated with building 35-213	Metals, tritium

94.3 Consent Order Soil Data

Decision-level data for AOC 35-016(h) consist of results from samples collected in 1997 and 2009. Analytical results from those samples are presented in Figures 94.3-1 through 94.3-4. The 2020 Revision 1 of the supplemental IR (N3B 2020, 700951) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

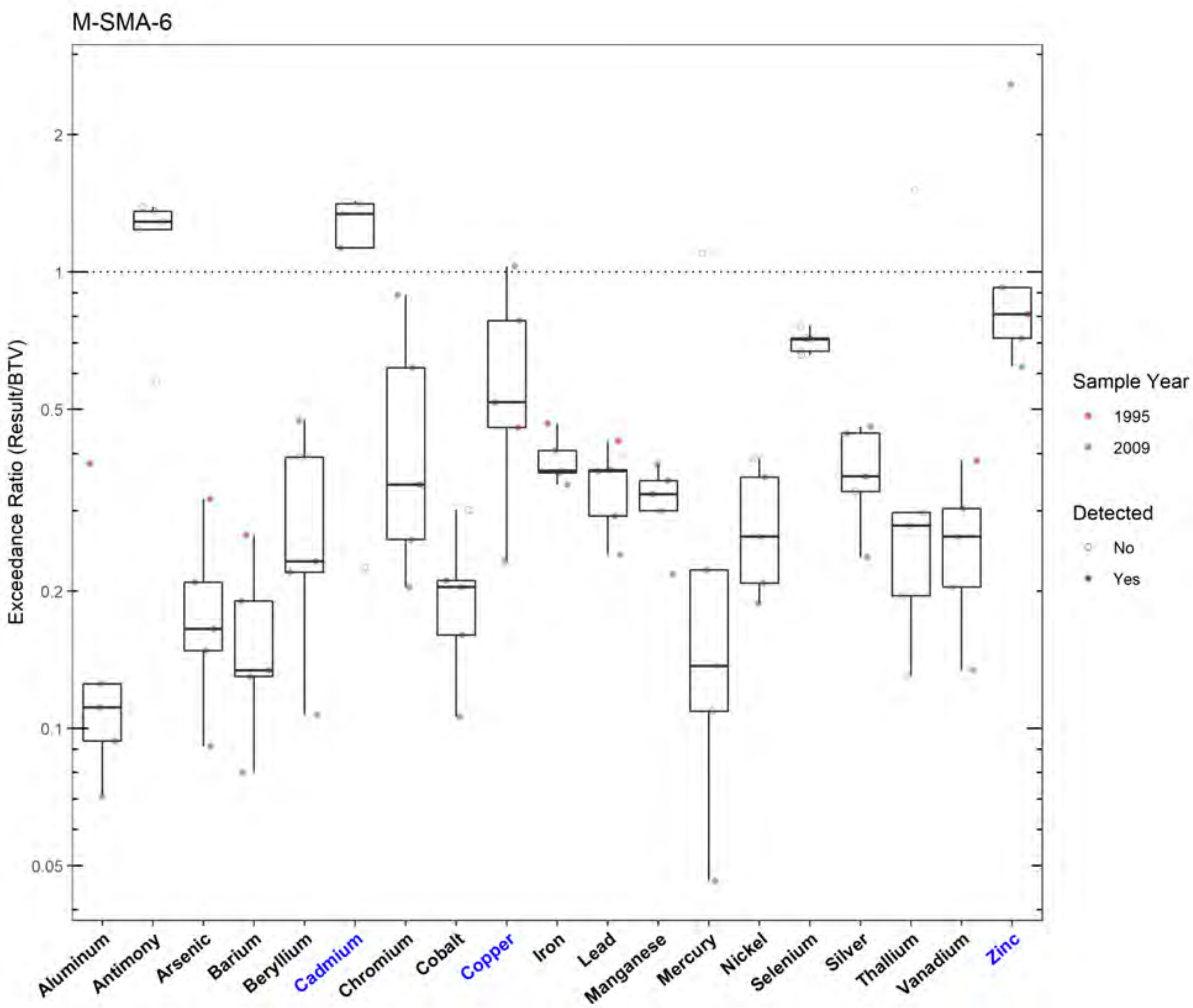


Figure 94.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-6

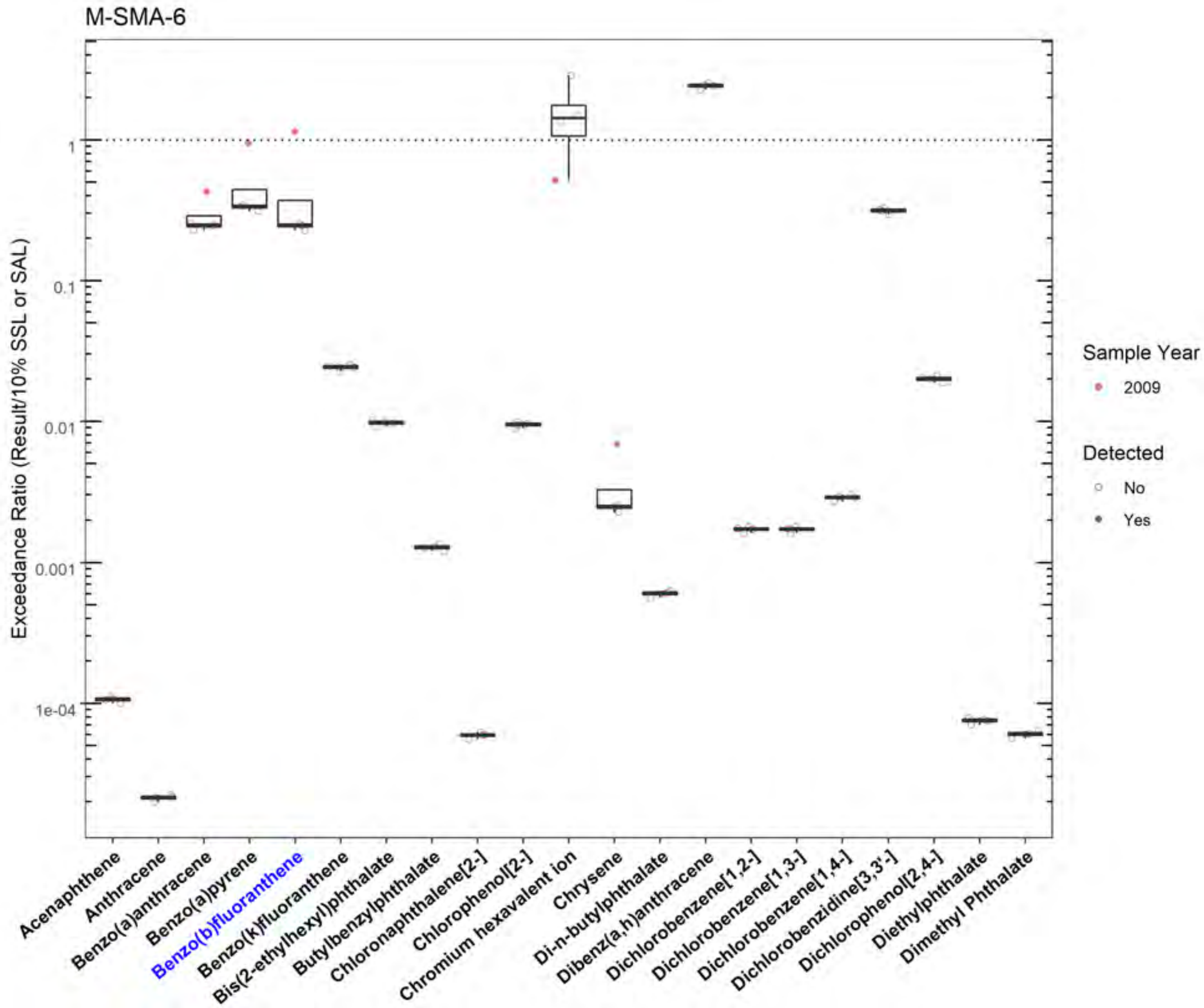


Figure 94.3-2 Organics Analytical Results from Soil Samples Associated with M-SMA-6 (Plot 1)

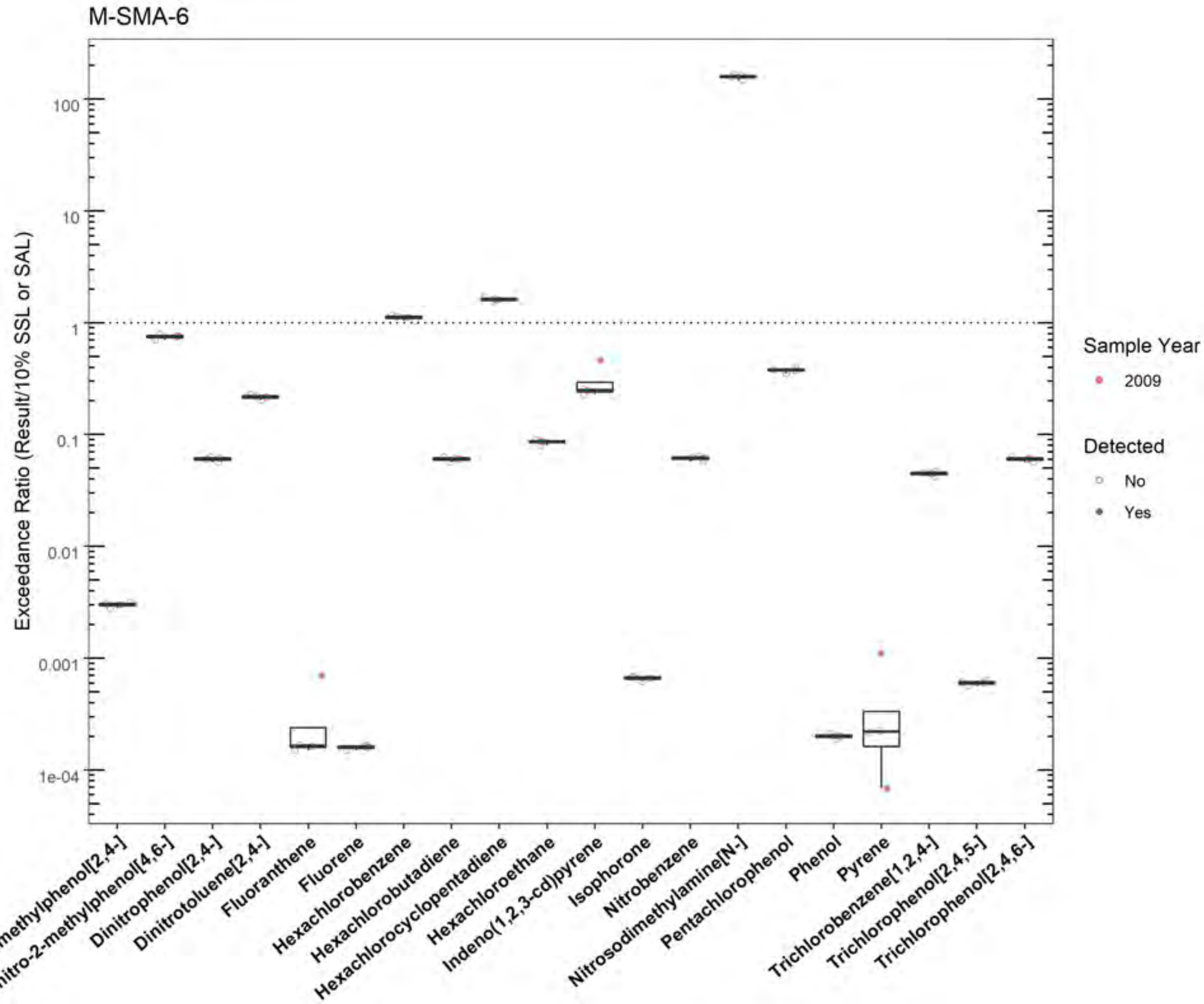


Figure 94.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-6 (Plot 2)

M-SMA-6

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(b)fluoranthene	M-SMA-6	205-99-2	Y	SSL_0.1	0.153	0.175	2009-06-24
Cadmium	M-SMA-6	Cd	Y	BTV	0.400	0.452	2009-06-24
Copper	M-SMA-6	Cu	Y	BTV	14.7	15.1	2009-06-24
Zinc	M-SMA-6	Zn	Y	BTV	48.8	126	2009-06-24

Figure 94.3-4 Screening-Level Exceedances from Soil Samples Associated with M-SMA-6

94.4 Stormwater Evaluation

94.4.1 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 October 2012. Analytical results from that sample are presented in Figures 94.4-1 and 94.4-2.

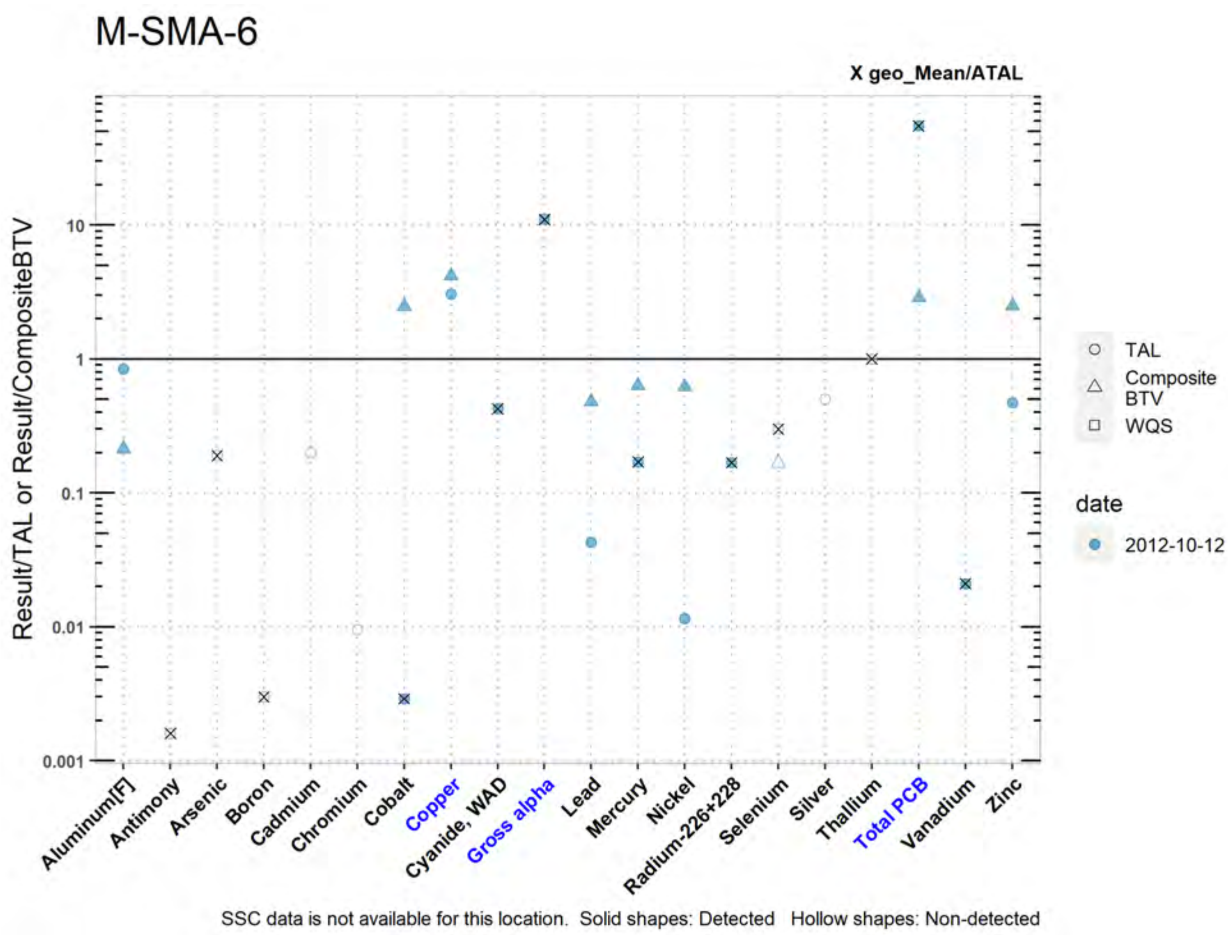


Figure 94.4-1 Analytical Results from Stormwater Sample, M-SMA-6 (Plot)

M-SMA-6

	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	0.583	210	NA	4.25	22	NA	16.7	NA	167	NA	20	0.394	NA	NA	NA	52.7
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	0.0122	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
2012-10-12 result	628	*1.00*	*1.70*	*15.0*	*0.110*	*2.00*	2.91	13.0	2.21	168	0.715	0.131	1.92	5.04	*1.50*	*0.200*	*0.450*	0.0349	2.07	24.8
2012-10-12 dT	0.837	NA	NA	NA	NA	NA	0.0029	3.06	0.425	11	0.0428	0.17	0.0115	0.168	NA	NA	NA	55	0.021	0.471
2012-10-12 dB	0.213	NA	NA	NA	NA	NA	2.47	4.17	NA	NA	0.477	0.630	0.619	NA	NA	NA	NA	2.86	NA	2.48
geo_mean/ATAL	NA	0.0016	0.19	0.0030	NA	NA	0.0029	NA	0.425	11	NA	0.17	NA	0.168	0.30	NA	1	55	0.021	NA

Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 94.4-2 Analytical Results from Stormwater Sample, M-SMA-6 (Table)

94.4.2 Assessment Unit and Stream Impairments

M-SMA-6 drains to Effluent Canyon (Mortandad Canyon to headwaters), which has not been assessed for impairments.

94.5 Site-Specific Demonstration

94.5.1 Soil Data Summary

Copper exceeded BV in soil data and TAL in stormwater. Cadmium and zinc exceeded the applicable screening value in soil data, but were previously measured in stormwater data and did not exceed TALs. Therefore, they will not be added to the SAP. Benzo(b)fluoranthene exceeded the applicable screening value in soil data, but is not a Site-related POC, and will not be added to the SAP.

94.5.2 Stormwater Data Summary

Copper and PCBs exceeded TALs and BTVs. Gross alpha exceeded the TAL, but is not known to be Site-related.

94.5.3 2022 Permit Status

Due to the exceedance of a composite BTV and/or TAL, corrective action will be initiated at this SMA for copper and PCBs (Part I.C.2.b.i).

95.0 M-SMA-7

Associated Sites	35-016(g)
Receiving Water	Effluent Canyon - Tributary to Mortandad Canyon
Drainage Area	0.25 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	AOC 35-016(g): Pending Receipt of Certificate of Completion.
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the July 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site
2022 Permit Status	Active Monitoring/Corrective Action

95.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, baseline stormwater monitoring was initiated, and 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.

95.2 Site History

35-016(g) (11/23/2020)

AOC 35-016(g) consists of a former NPDES-permitted outfall and the CMP culvert at TA-35, which collected reject water from a reverse-osmosis plant and cooling tower blowdown from room 29 in building 35-213, the Target Fabrication Facility, as well as stormwater runoff from the building roof and parking lot. The cooling tower blowdown may have contained chemicals added to the cooling water to prevent corrosion, scaling, and algal growth. The outfall was removed from the LANL NPDES permit in 1997, after non-stormwater discharges from the outfall ceased. Stormwater runoff from the roof and parking lot is still collected in the CMP and discharged to the outfall.

For investigation activities, refer to “Supplemental Investigation Report for Upper Mortandad Canyon Aggregate Area, Revision 1” (N3B 2020, 700951).

95.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 95.2-1.

Table 95.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
35-016(g)	Drain and outfall from building 35-213	Metals, tritium

95.3 Consent Order Soil Data

Decision-level data for AOC 35-016(g) consist of results from samples collected in 1997 and 2009. Analytical results from those samples are presented in Figures 95.3-1 through 95.3-4. The 2020 Revision 1 of the supplemental IR (N3B 2020, 700951) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

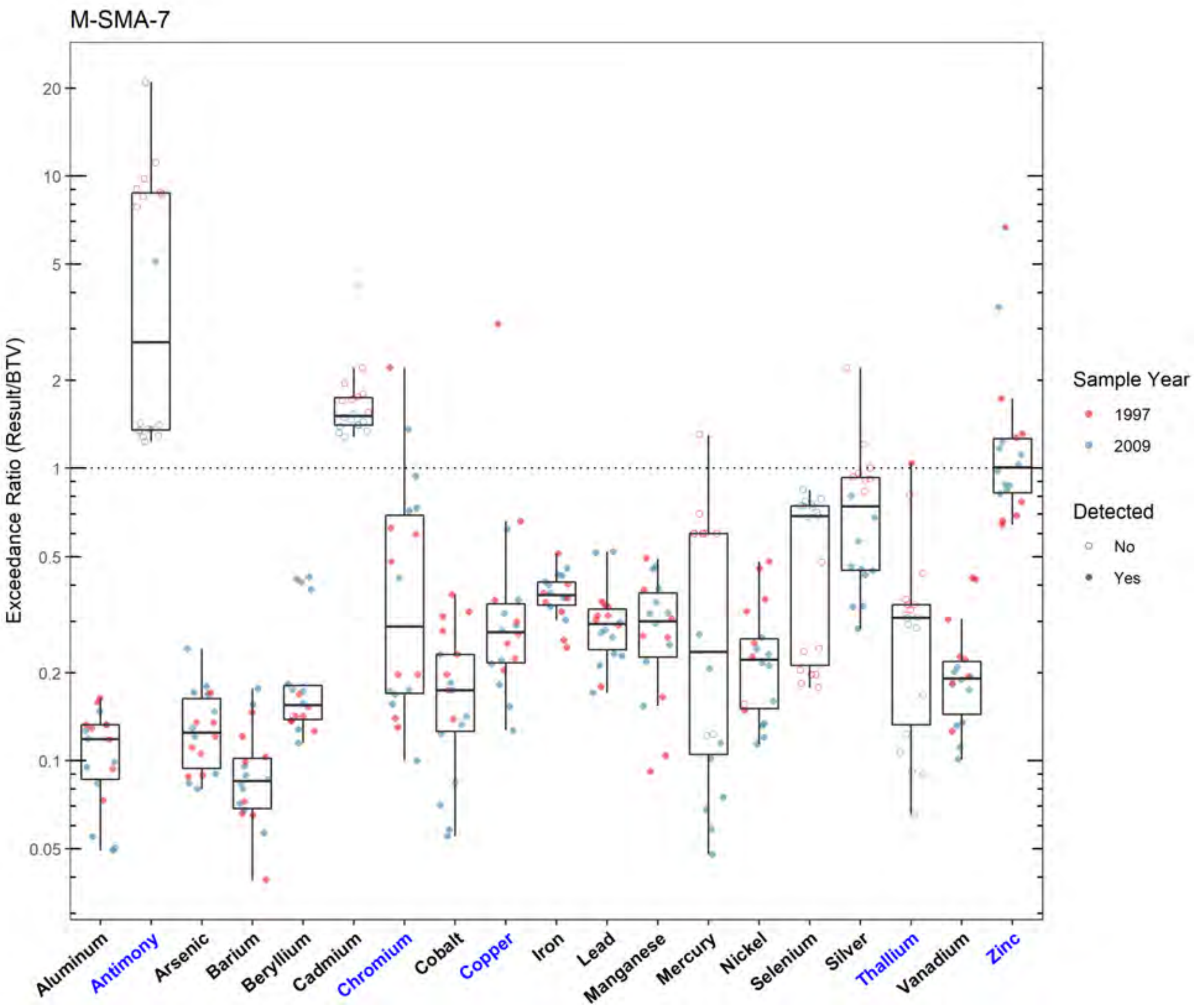


Figure 95.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-7

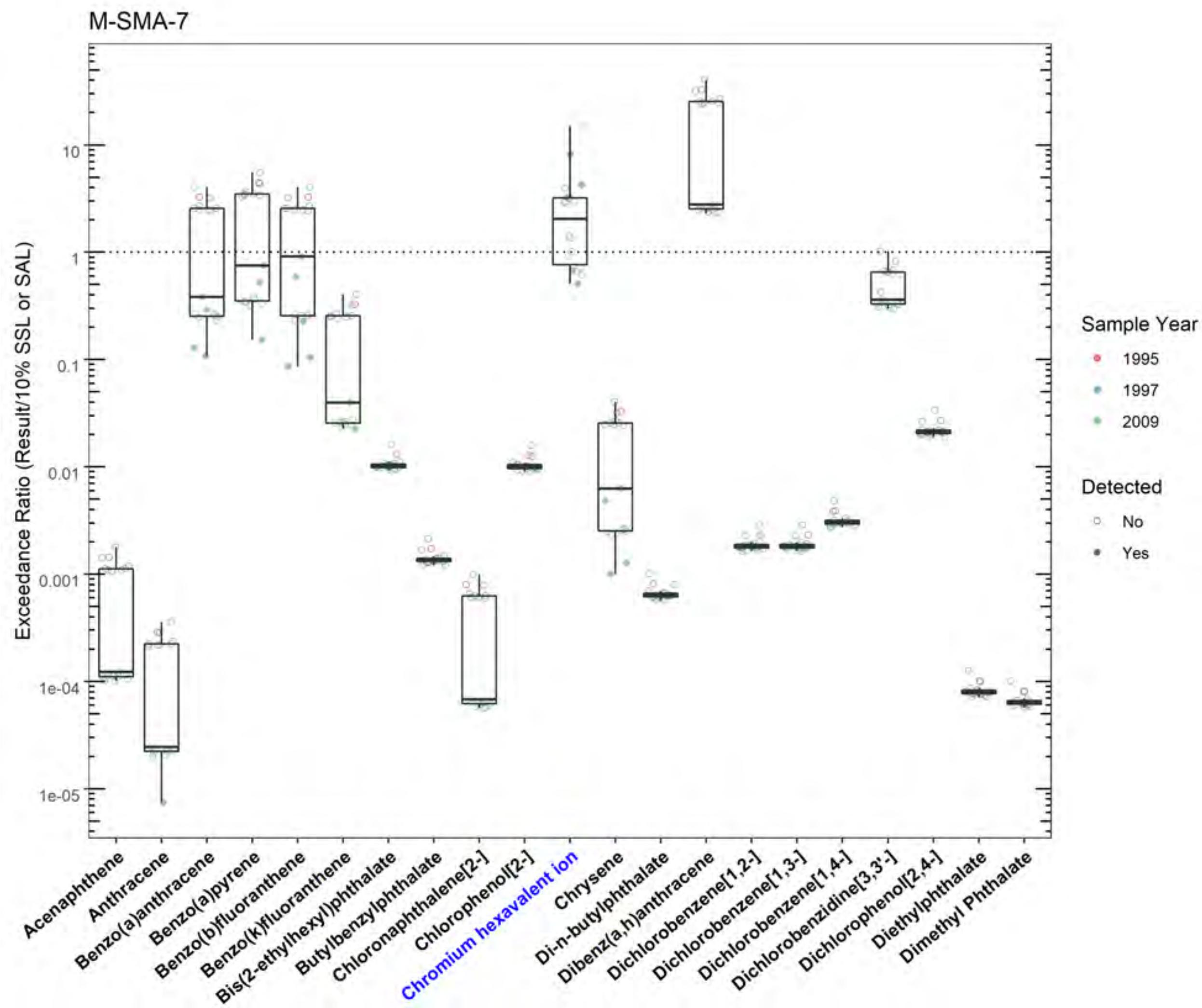


Figure 95.3-2 Organics Analytical Results from Soil Samples Associated with M-SMA-7 (Plot 1)

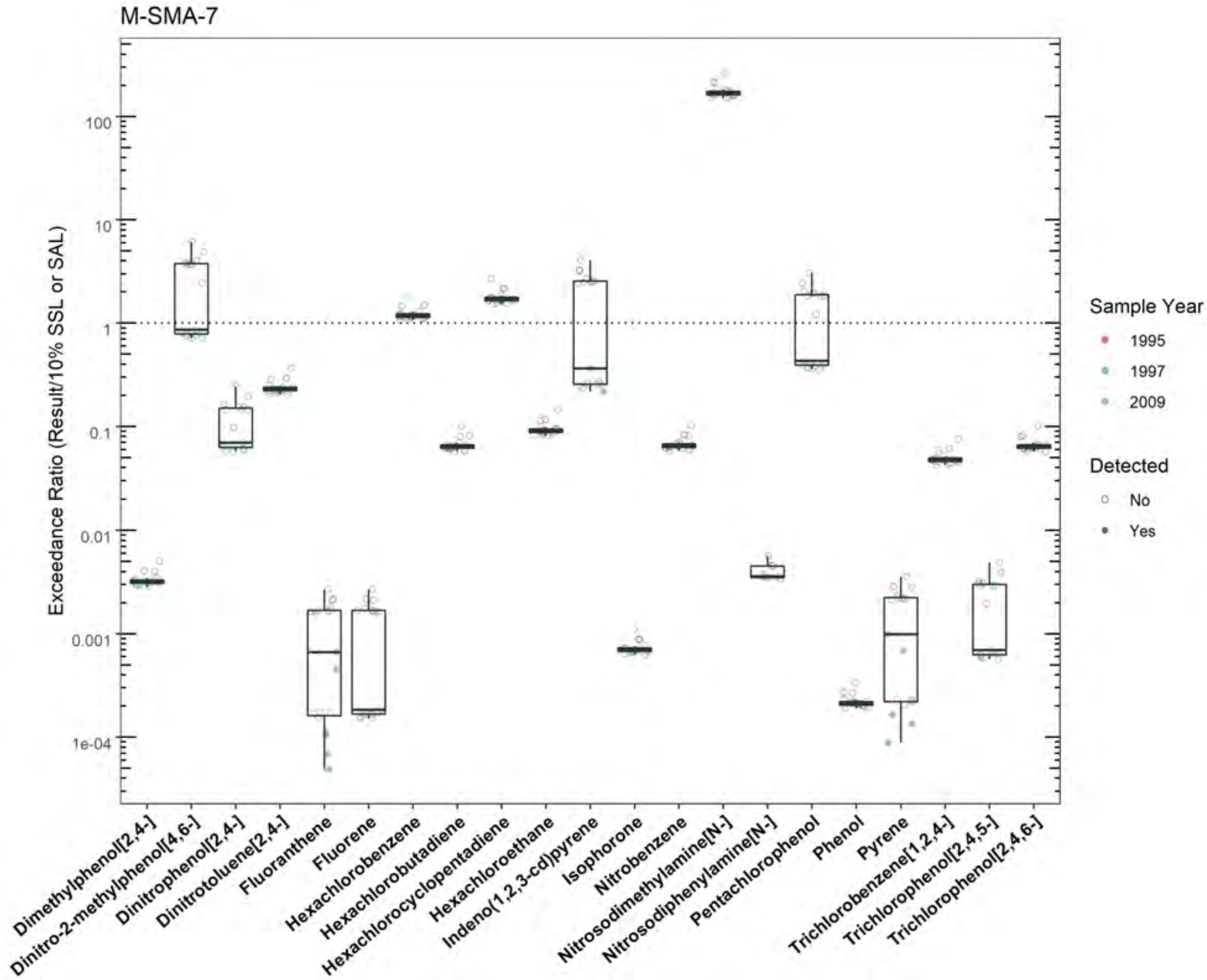


Figure 95.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-7 (Plot 2)

M-SMA-7

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	M-SMA-7	Sb	Y	BTV	0.830	4.22	2009-05-06
Chromium	M-SMA-7	Cr	Y	BTV	19.3	42.6	1997-05-13
Chromium hexavalent ion	M-SMA-7	Cr(VI)	Y	SSL_0.1	0.305	2.50	1997-05-13
Copper	M-SMA-7	Cu	Y	BTV	14.7	45.9	1997-05-13
Thallium	M-SMA-7	Tl	Y	BTV	0.730	0.760	1997-05-13
Zinc	M-SMA-7	Zn	Y	BTV	48.8	325	1997-05-13

Figure 95.3-4 Screening-Level Exceedances from Soil Samples Associated with M-SMA-7

95.4 Stormwater Evaluation

95.4.1 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 95.4-1 and 95.4-2.

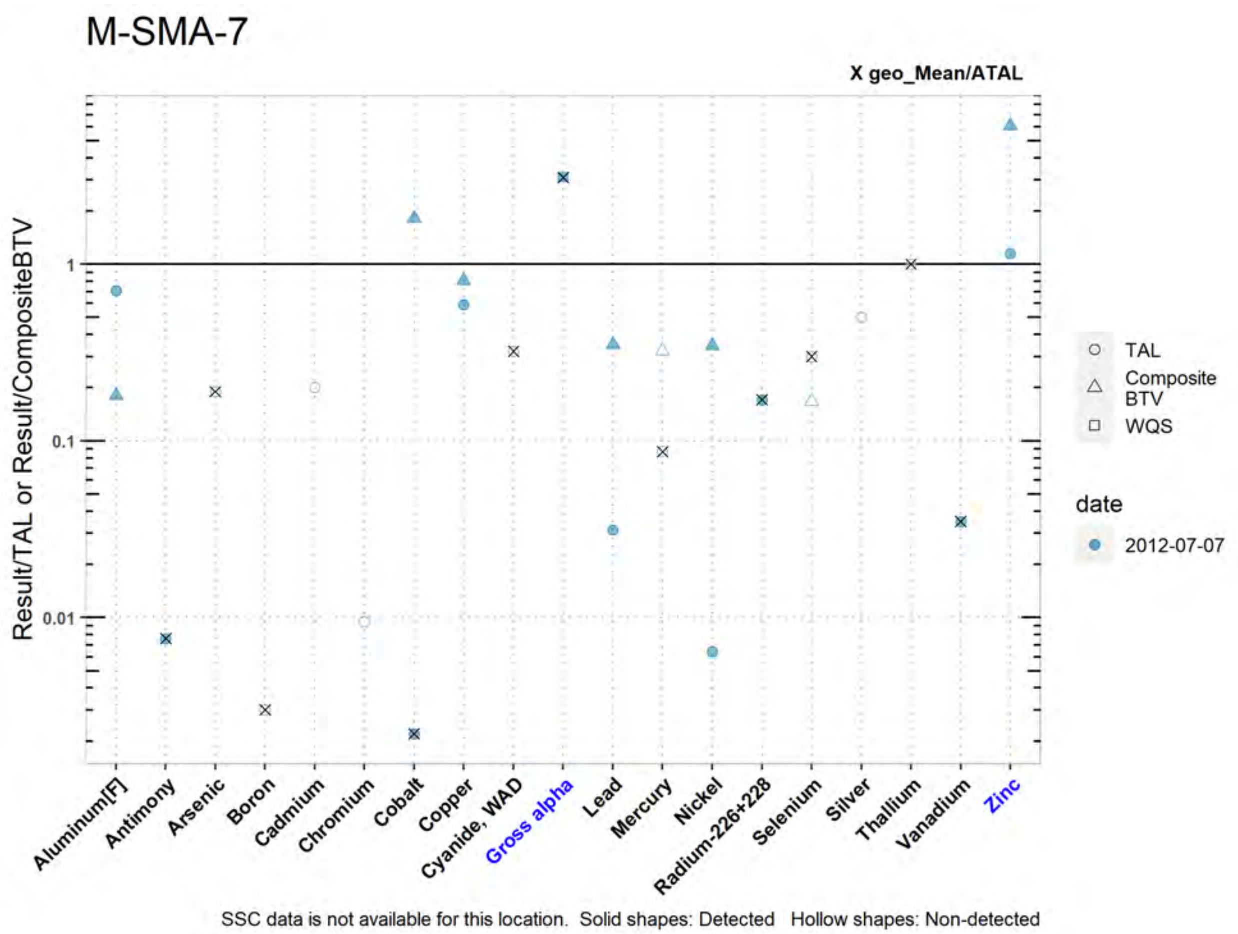


Figure 95.4-1 Analytical Results from Stormwater Sample, M-SMA-7 (Plot)

M-SMA-7

	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	0.583	210	NA	4.25	22	NA	16.7	NA	167	NA	20	0.394	NA	NA	52.7
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
2012-07-07 result	530	4.84	*1.70*	*15.0*	*0.110*	*2.00*	2.15	2.51	*1.67*	46.3	0.525	*0.0670*	1.07	5.14	*1.50*	*0.200*	*0.450*	3.53	60.6
2012-07-07 dT	0.707	0.0076	NA	NA	NA	NA	0.0022	0.591	NA	3.1	0.0314	NA	0.00641	0.171	NA	NA	NA	0.035	1.15
2012-07-07 dB	0.180	NA	NA	NA	NA	NA	1.82	0.804	NA	NA	0.350	NA	0.345	NA	NA	NA	NA	NA	6.06
geo_mean/ATAL	NA	0.0076	0.19	0.0030	NA	NA	0.0022	NA	0.321	3.1	NA	0.087	NA	0.171	0.30	NA	1	0.035	NA

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

Figure 95.4-2 Analytical Results from Stormwater Sample, M-SMA-7 (Table)

95.4.2 Assessment Unit and Stream Impairments

M-SMA-7 drains to Effluent Canyon (Mortandad Canyon to headwaters), which has not been assessed for impairments.

95.5 Site-Specific Demonstration

95.5.1 Soil Data Summary

Zinc exceeded the applicable screening value in soil data and TAL in stormwater data. The remaining metals that exceeded the applicable screening value in soil data did not exceed TALs in stormwater data. Therefore, they will not be added to the SAP.

95.5.2 Stormwater Data Summary

Zinc exceeded TAL and BTV. Gross alpha exceeded TAL but is not known to be Site-related and will not be added to the SAP.

95.5.3 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.2.b.i) for zinc. The SMA is also in active monitoring; not all Site-related POCs were analyzed for in past samples.

95.5.4 Sampling and Analysis Plan

Table 95.5-1 is the proposed SAP for M-SMA-7.

Table 95.5-1 Proposed SAP, M-SMA-7

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

96.0 M-SMA-7.9

Associated Sites	50-006(d)
Receiving Water	Effluent Canyon - Tributary to Mortandad Canyon
Drainage Area	69.44 acres
Landscape Characteristics	15% impervious, 85% pervious
Consent Order Site Status	SWMU 50-006(d): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the July 2016 field visit, the sampler was moved into the channel to a more representative location, but monitoring was not initiated due to the Corrective Action Complete status.
2022 Permit Status	Active Monitoring

96.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, baseline stormwater monitoring was initiated, and a baseline stormwater sample was collected in September 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 April 2014 (LANL 2014, 255538). No response has been received from EPA, and stormwater monitoring has not occurred since 2013.

The sampler move that had been recommended in December 2016 was instituted in 2017, but no samples were collected at the new location under the Administratively Continued Permit.

96.2 Site History

50-006 (d) (4/6/2017)

SWMU 50-006(d) was identified in the 1990 SWMU Report as an ongoing operational release of treated effluent from the TA-50 RLWTF (building 50-1), and from an associated drainline (structure 50-64) and associated NPDES-permitted Outfall 051, to Effluent Canyon, a tributary of Mortandad Canyon. Data from effluent samples collected in the early 1980s showed inorganic chemical and radionuclides present above background levels.

Structure 50-64 is a 6-in.-diameter iron discharge pipe that was rerouted in 1983 to accommodate construction of the TA-35 target fabrication facility (building 35-213). In 1985, the U.S. EPA Region 6 issued an administrative order to the DOE requiring modification of the outfall to mitigate ongoing stream-bank erosion caused by the discharge pipe ending 25 ft short of the Mortandad Canyon stream channel. DOE extended the pipe into the stream channel, and EPA Region 6 closed the order in 1986.

No discharges to Outfall 051 have occurred since November 2010; the effluent is currently evaporated using a mechanical evaporator. However, the outfall is still permitted under the LANL's NPDES industrial and sanitary Permit, NM0028355 and may be used in the future to discharge treated effluent.

For investigation activities, refer to “Supplemental Investigation Report for Upper Mortandad Canyon Aggregate Area, Revision 1” (N3B 2020, 700951).

96.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 96.2-1.

Table 96.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
50-006(d)	Drainline and outfall	Metals, radionuclides

96.3 Consent Order Soil Data

Decision-level data for SWMU 50-006(d) consist of results from samples collected in 1997 and 2009. Analytical results from those samples are presented in Figures 96.3-1 through 96.3-4. The 2020 Revision 1 of the supplemental IR (N3B 2020, 700951) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

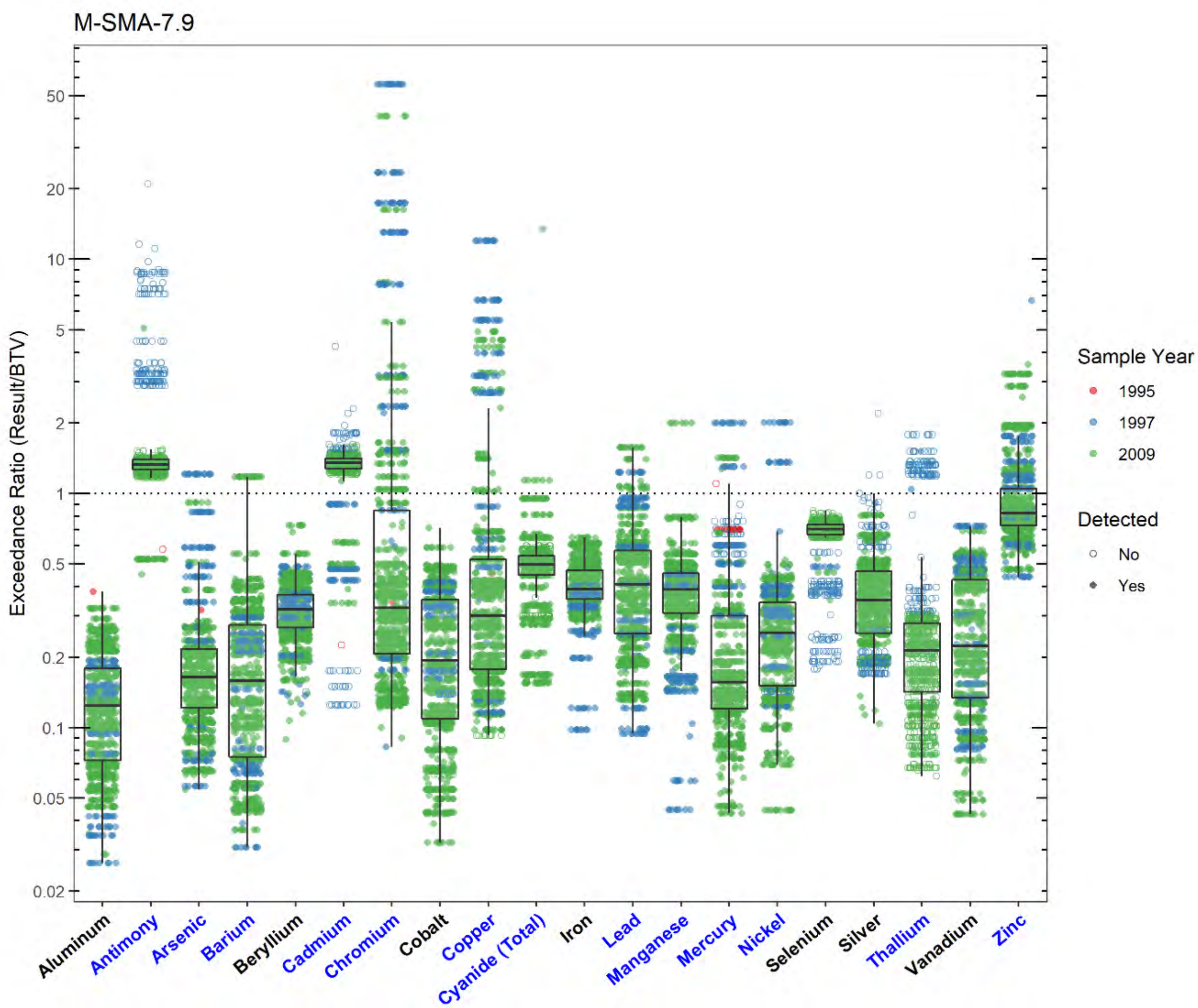


Figure 96.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-7.9

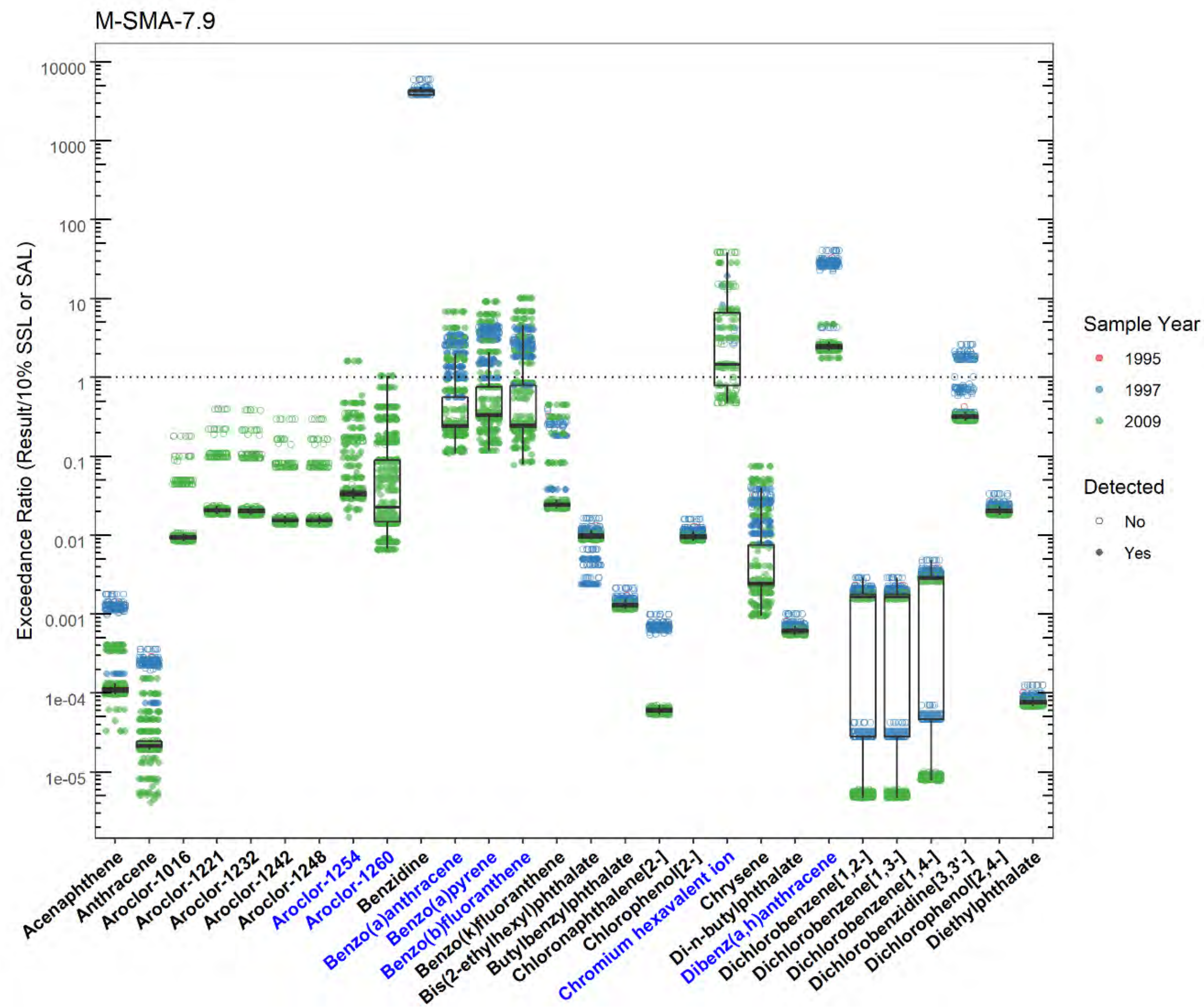


Figure 96.3-2 **Organics Analytical Results from Soil Samples Associated with M-SMA-7.9 (Plot 1)**

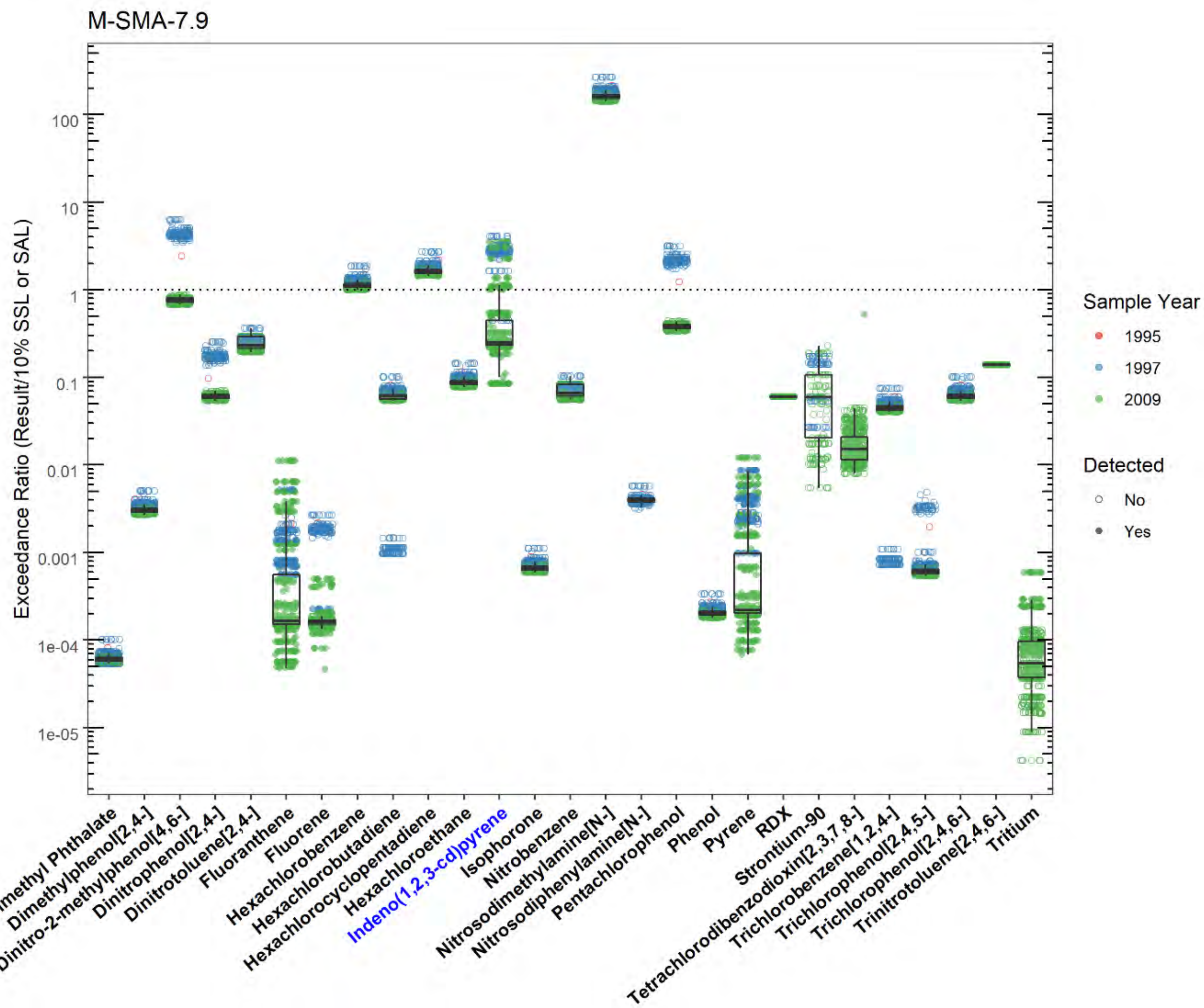


Figure 96.3-3 **Organics Analytical Results from Soil Samples Associated with M-SMA-7.9 (Plot 2)**

M-SMA-7.9

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	M-SMA-7.9	Sb	Y	BTV	0.830	4.22	2009-05-06
Aroclor-1254	M-SMA-7.9	11097-69-1	Y	SSL_0.1	0.114	0.184	2009-04-08
Aroclor-1260	M-SMA-7.9	11096-82-5	Y	SSL_0.1	0.243	0.252	2009-04-08
Arsenic	M-SMA-7.9	As	Y	BTV	8.17	9.90	1997-06-23
Barium	M-SMA-7.9	Ba	Y	BTV	295	349	2009-04-17
Benzo(a)anthracene	M-SMA-7.9	56-55-3	Y	SSL_0.1	0.153	1.04	2009-05-08
Benzo(a)pyrene	M-SMA-7.9	50-32-8	Y	SSL_0.1	0.112	1.02	2009-05-08
Benzo(b)fluoranthene	M-SMA-7.9	205-99-2	Y	SSL_0.1	0.153	1.55	2009-05-08
Cadmium	M-SMA-7.9	Cd	Y	BTV	0.400	0.452	2009-06-24
Chromium	M-SMA-7.9	Cr	Y	BTV	19.3	1080	1997-06-23
Chromium hexavalent ion	M-SMA-7.9	Cr(VI)	Y	SSL_0.1	0.305	8.61	2009-05-21
Copper	M-SMA-7.9	Cu	Y	BTV	14.7	177	1997-06-23
Cyanide (Total)	M-SMA-7.9	CN(TOTAL)	Y	BTV	0.500	6.75	2009-05-21
Dibenz(a,h)anthracene	M-SMA-7.9	53-70-3	Y	SSL_0.1	0.0153	0.0717	2009-05-21
Indeno(1,2,3-cd)pyrene	M-SMA-7.9	193-39-5	Y	SSL_0.1	0.153	0.539	2009-05-08
Lead	M-SMA-7.9	Pb	Y	BTV	22.3	34.9	2009-05-08
Manganese	M-SMA-7.9	Mn	Y	BTV	671	1340	2009-05-21
Mercury	M-SMA-7.9	Hg	Y	BTV	0.100	0.200	1997-06-23
Nickel	M-SMA-7.9	Ni	Y	BTV	15.4	30.9	1997-03-03
Thallium	M-SMA-7.9	Tl	Y	BTV	0.730	1.10	1997-05-13
Zinc	M-SMA-7.9	Zn	Y	BTV	48.8	325	1997-05-13

Figure 96.3-4 Screening-Level Exceedances from Soil Samples Associated with M-SMA-7.9

96.4 Stormwater Evaluation

96.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No sampling results are available from the current sampling location.

96.4.2 Assessment Unit and Stream Impairments

M-SMA-7.9 drains to Effluent Canyon (Mortandad Canyon to headwaters), which has not been assessed for impairments.

96.5 Site-Specific Demonstration

96.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater at the current monitoring location: antimony, arsenic, barium, cadmium, chromium, copper, lead, manganese, mercury, nickel, thallium, and zinc.

96.5.2 Stormwater Data Summary

No stormwater data available for current monitoring stage and current monitoring location.

96.5.3 2022 Permit Status

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

96.5.4 Sampling and Analysis Plan

Table 96.5-1 is the proposed SAP for M-SMA-7.9.

Table 96.5-1 Proposed SAP, M-SMA-7.9

Monitoring Constituent	Background for Monitoring
Total mercury	Site history (metals) and soil data
Dissolved antimony, arsenic, barium, cadmium, chromium, copper, lead, manganese, nickel, thallium, and zinc	Site history (metals) and soil data
Gross alpha	Site history (radionuclides)
Radium-226 and radium-228	Site history (radionuclides)
DOC	Permit requirement
SSC	Permit requirement

97.0 M-SMA-10

Associated Sites	35-008, 35-014(e)
Receiving Water	Mortandad Canyon
Drainage Area	1.46 acres
Landscape Characteristics	23% impervious, 77% pervious
Consent Order Site Status	SWMU 35-008: Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 35-014(e): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the May 2017 field visit, all parties agreed that the current SMA sampling location and boundary was the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

97.1 2010 Administratively Continued Permit Summary

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

SWMUs 35-008 and 35-014(e) received COCs under the Consent Order from NMED in October 2015. The Permittees submitted a certification of completion of corrective action to EPA per Permit part I.E.2(d) for the Sites in October 2015 (LANL 2015, 600977). Stormwater monitoring has not occurred for these Sites since 2013.

97.2 Site History

35-008 (no date)

SWMU 35-008 is the location of an inactive surface-disposal area, located north of building 35-85 on the edge of Mortandad Canyon. The surface disposal area has likely been in existence since 1977 when the nearby Chemical Laser Facility (building 35-85) was constructed. Debris at the site consists of construction debris, including scrap metal and pipe, paint cans, a 55-gal. drum, and miscellaneous building-materials refuse, such as a large concrete slab, conduits, asphalt, pipe, and reinforcing rods.

During a site inspection in 1991, only a small amount of debris, including tubing, scrap metal, and soda cans, was observed at the site. Debris associated with SWMU 35-008 extends from the canyon rim to the canyon floor. Some of the dielectric oil associated with SWMU 35-014(e) flowed northward to the mesa edge, and partially down the mesa slope over portions of the SWMU 35-008 disposal area.

35-014(e) (no date)

SWMU 35-014(e) is an area of oil-stained soil on the northern edge of Ten Site Mesa, directly north of building 35-85. The 1990 SWMU report described SWMU 35-014(e) as three dielectric-oil spill areas associated with building 35-85; however, the 1992 RFI work plan described each spill area as a separate SWMU.

The stained soil associated with SWMU 35-014(e) may have been a result of a non-PCB (<50 mg/kg) dielectric-oil spill that occurred east of building 35-188 when a forklift punctured an aboveground oil-storage tank. The oil-storage tank was removed before 1992. The non-PCB dielectric oil was used in laser experiments conducted in building 35-85. The volume of oil released is not known. However, it was reported that oil from the release flowed northward to the mesa edge and partially down the mesa slope over portions of the SWMU 35-008 disposal area. A 1984 photograph shows that the spill did flow down the side of the mesa. Reports also suggest that oil-stained soil may have been pushed over the mesa during the cleanup of the spill (the spill cleanup is not documented).

After the oil spill, an extension to building 35-85 was constructed between building 35-188 and the edge of the mesa to house laser experiments. The building extension covers a portion of the area of the reported oil spill. The construction of this extension may have included site leveling, soil stabilization, and extension and stabilization of the mesa edge by backfilling with soil and riprap materials. During a site visit in 1997, stained soil was visible on the slope near the edge of the mesa; the stain covered an area measuring approximately 15 ft × 10 ft. No stained soils or odors were apparent on the mesa top north of building 35-85.

For investigation activities at the Sites, refer to “Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2” (LANL 2008, 102187).

97.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 97.2-1.

Table 97.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
35-008	Surface disposal area	Metals, organic chemicals
35-014(e)	Operational release	PCBs, organic chemicals

97.3 Consent Order Soil Data

SWMUs 35-008 and 35-014(e) were investigated together in 2004 as part of Consolidated Unit 35-008-00. Decision-level data for Consolidated Unit 35-008-00 consist of results from samples collected in 1994, 1995, 1997, and 2004. Analytical results from those samples are presented in Figures 97.3-1 through 97.3-4. The approved IR (LANL 2008, 102187) concluded that the nature and extent of all detected chemicals and radionuclides are defined at Consolidated Unit 35-008-00.

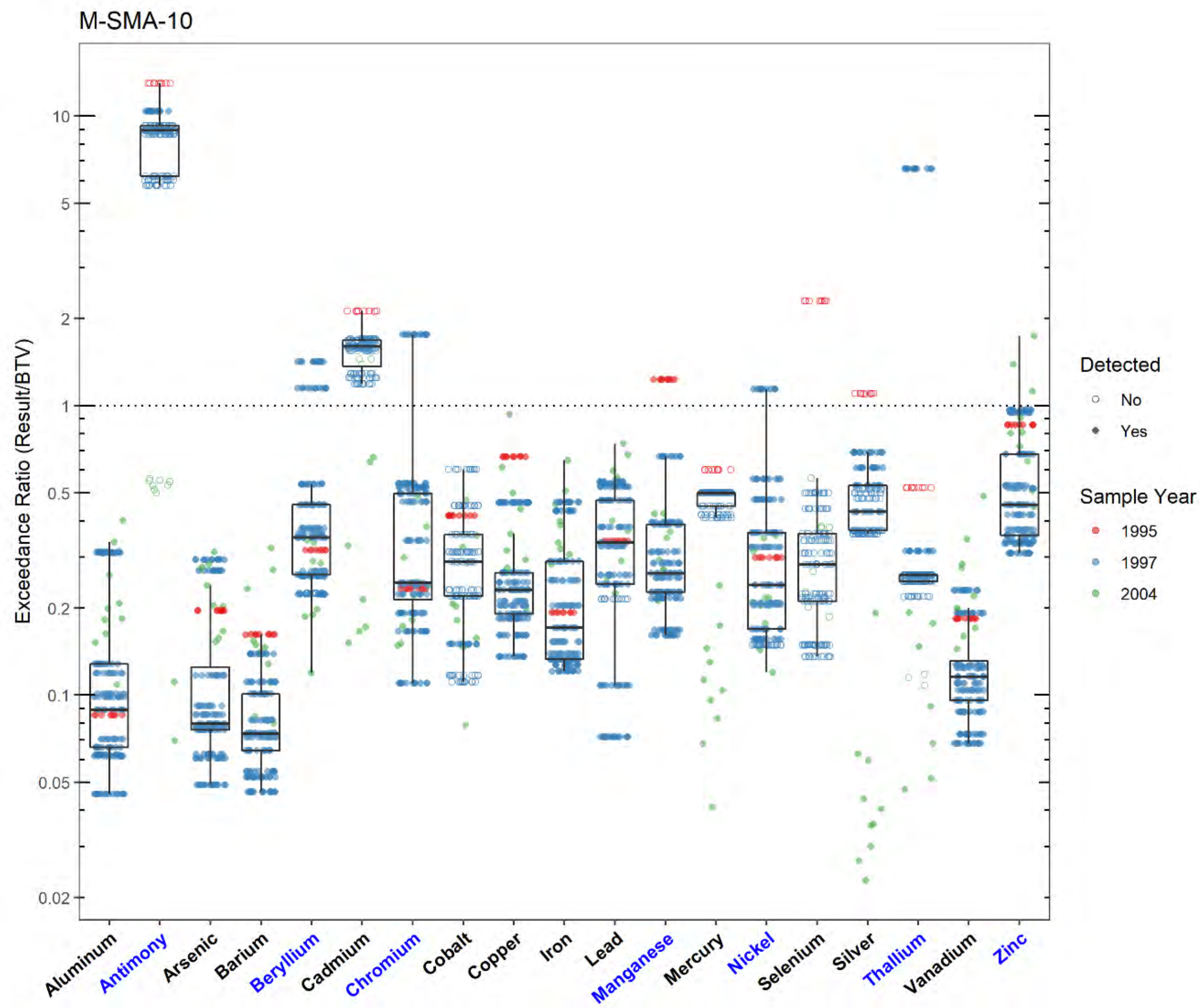


Figure 97.3-1 **Inorganics Analytical Results from Soil Samples Associated with M-SMA-10**

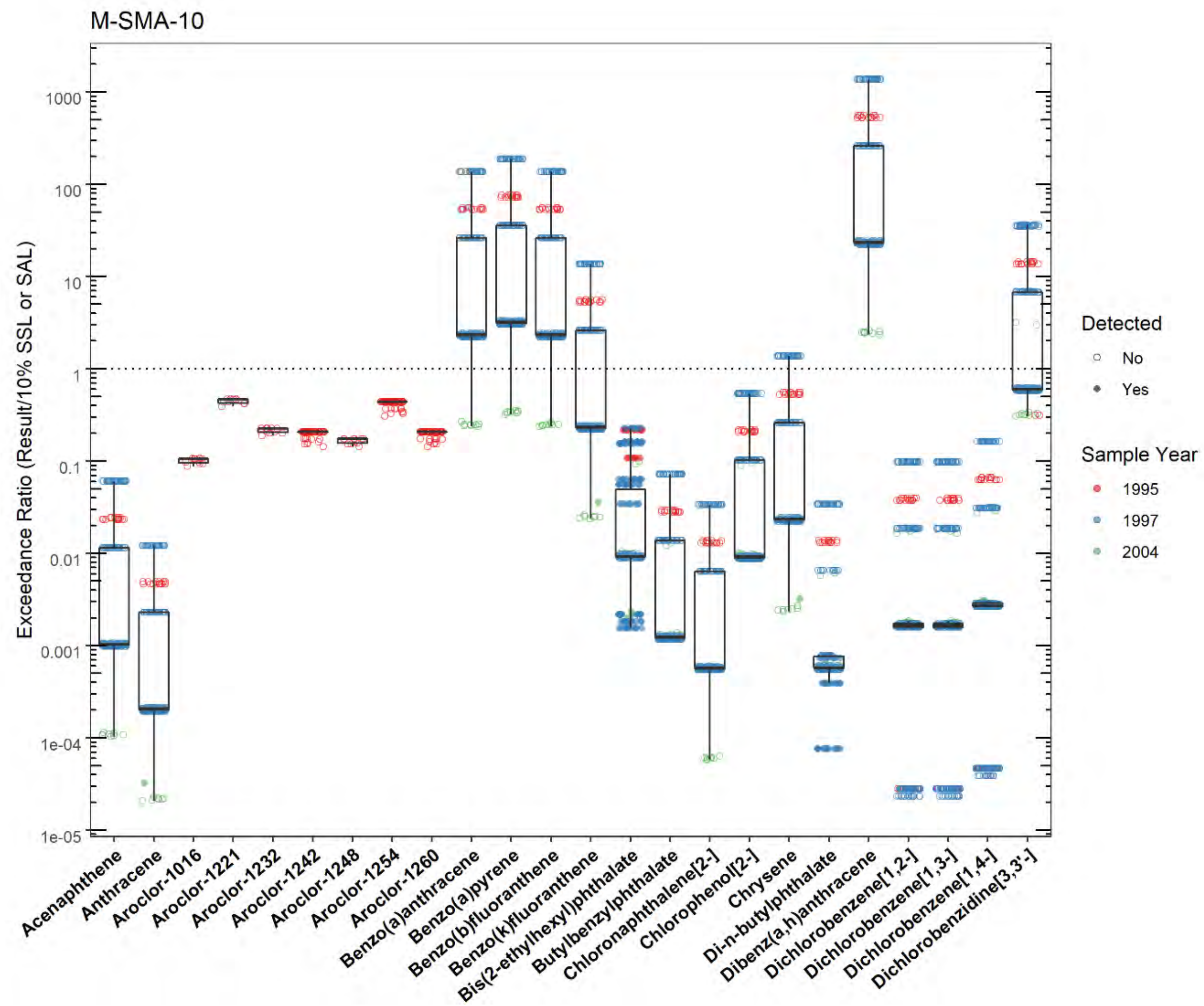


Figure 97.3-2 Organics Analytical Results from Soil Samples Associated with M-SMA-10 (Plot 1)

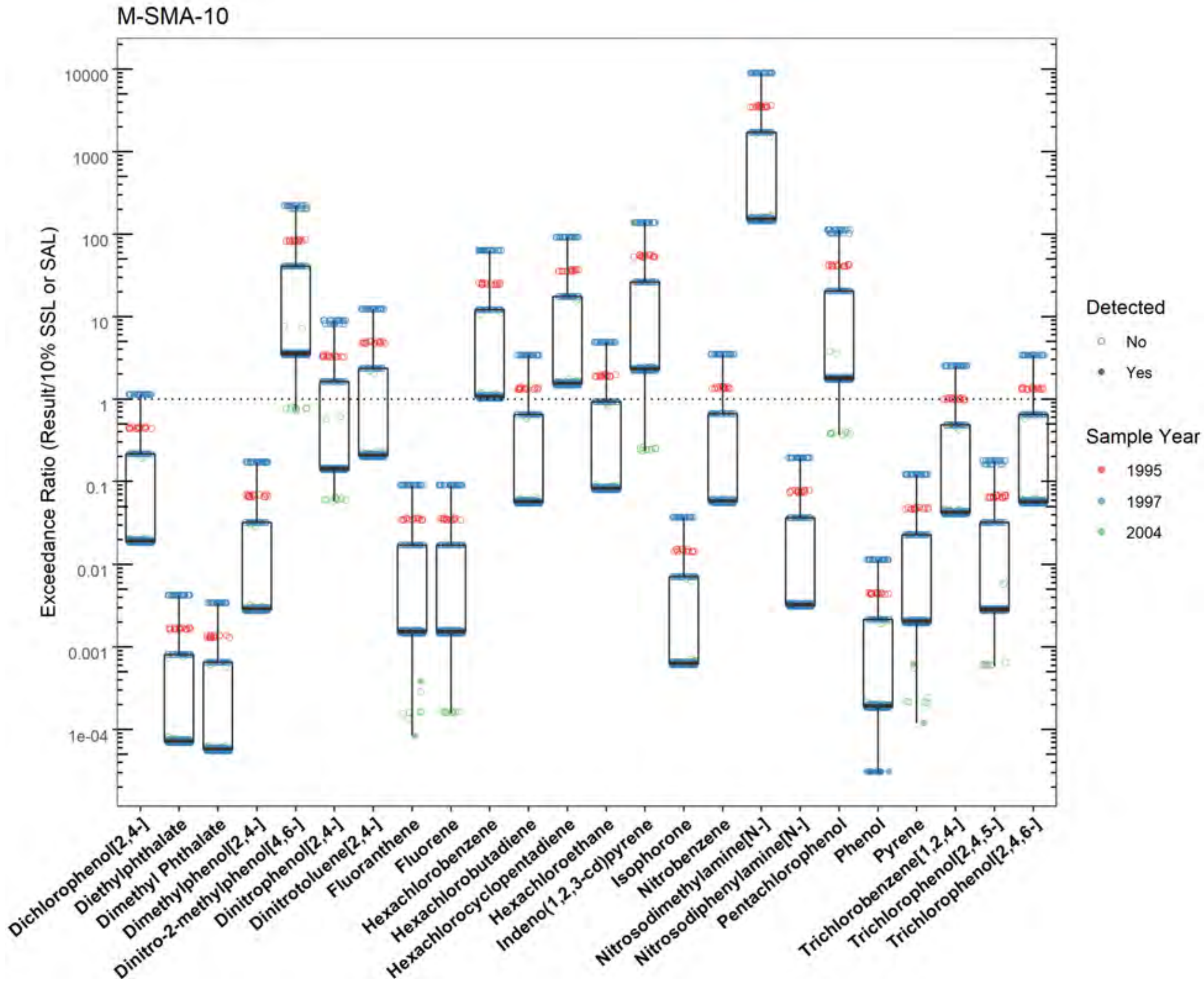


Figure 97.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-10 (Plot 2)

M-SMA-10

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	M-SMA-10	Sb	Y	BTV	0.830	8.60	1997-07-10
Beryllium	M-SMA-10	Be	Y	BTV	1.83	2.60	1997-07-10
Chromium	M-SMA-10	Cr	Y	BTV	19.3	34.0	1997-07-09
Manganese	M-SMA-10	Mn	Y	BTV	671	822	1995-12-11
Nickel	M-SMA-10	Ni	Y	BTV	15.4	17.5	1997-07-09
Thallium	M-SMA-10	Tl	Y	BTV	0.730	4.80	1997-07-10
Zinc	M-SMA-10	Zn	Y	BTV	48.8	84.7	2004-11-03

Figure 97.3-4 Screening-Level Exceedances from Soil Samples Associated with M-SMA-10

97.4 Stormwater Evaluation

97.4.1 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 June 2013. Analytical results from that sample are presented in Figures 97.4-1 and 97.4-2.

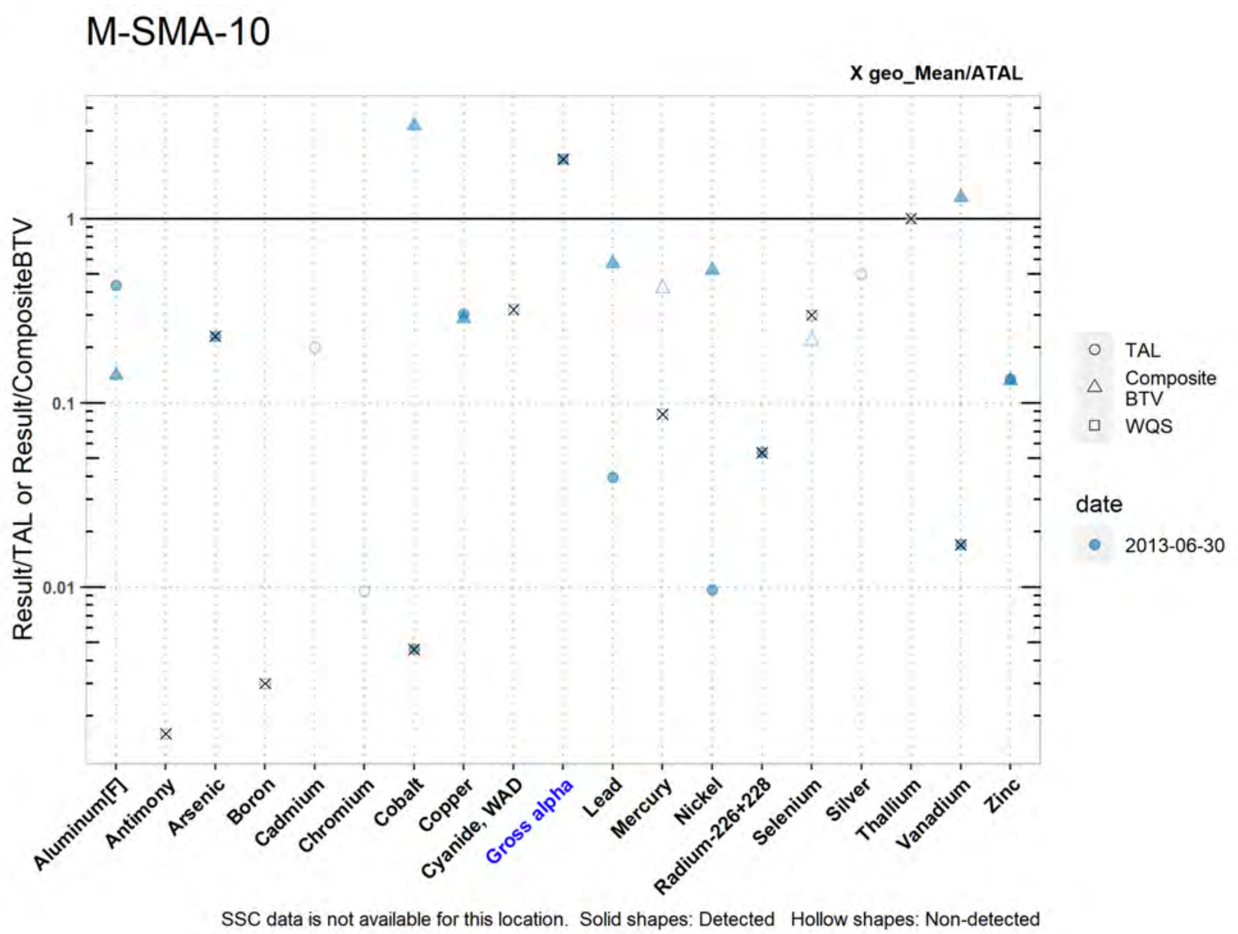


Figure 97.4-1 Analytical Results from Stormwater Sample, M-SMA-10 (Plot)

M-SMA-10

	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	0.583	210	NA	4.25	22	NA	16.7	NA	167	NA	20	0.394	NA	NA	52.7
Composite_BTV	2300	NA	NA	NA	NA	NA	1.43	4.49	NA	55.4	1.15	0.160	3.10	5.65	6.90	NA	NA	1.31	54.1
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
2013-06-30 result	325	*1.00*	2.11	*15.0*	*0.110*	*2.00*	4.56	1.29	*1.67*	32.2	0.657	*0.0670*	1.62	1.61	*1.50*	*0.200*	*0.450*	1.70	7.13
2013-06-30 dT	0.433	NA	0.23	NA	NA	NA	0.0046	0.304	NA	2.1	0.0393	NA	0.00970	0.0537	NA	NA	NA	0.017	0.135
2013-06-30 dB	0.141	NA	NA	NA	NA	NA	3.19	0.287	NA	NA	0.571	NA	0.523	NA	NA	NA	NA	1.30	0.132
geo_mean/ATAL	NA	0.0016	0.23	0.0030	NA	NA	0.0046	NA	0.321	2.1	NA	0.087	NA	0.0537	0.30	NA	1	0.017	NA

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

Figure 97.4-2 Analytical Results from Stormwater Sample, M-SMA-10 (Table)

97.4.2 Assessment Unit and Stream Impairments

M-SMA-10 drains to Mortandad Canyon (within LANL), which has impairments for adjusted gross alpha, PCBs, and dissolved copper. The PCBs and copper impairments may be Site-related, based on Site history.

97.5 Site-Specific Demonstration

97.5.1 Soil Data Summary

The Site-related POCs that exceeded the applicable screening value in soil data did not exceed TALs in stormwater data. Therefore, they will not be added to the SAP.

97.5.2 Stormwater Data Summary

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

97.5.3 2022 Permit Status

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

97.5.4 Sampling and Analysis Plan

Table 97.5-1 is the proposed SAP for M-SMA-10.

Table 97.5-1 Proposed SAP, M-SMA-10

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

98.0 M-SMA-10.01

Associated Sites	35-016(e)
Receiving Water	Mortandad Canyon
Drainage Area	0.35 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	AOC 35-016(e): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the May 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Long-Term Stewardship per Permit Part I.C.3.c criterion

98.1 2010 Administratively Continued Permit Summary

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

Following the October 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 228781), the sampler was moved to a more representative location and corrective-action monitoring was initiated. A stormwater sample was collected in October 2012. Analytical results from this sample initiated corrective action.

AOC 35-016(e) received a COC under the Consent Order from NMED in October 2015. The Permittees submitted a certification of completion of corrective action for the Site to EPA per Permit part I.E.2(d) in October 2015 (LANL 2015, 600977). Stormwater monitoring has not occurred since 2015.

98.2 Site History

35-016(e) (no date)

AOC 35-016(e) is a former NPDES-permitted outfall established in 1977 to discharge only noncontact cooling water from the chemical laser facility (building 35-85). The outfall consists of two adjacent 2-in.-diameter steel pipes, insulated with fiberglass and wrapped with protective aluminum coating, that originate from cooling towers on the roof of building 35-85. The outfall is located north of building 35-85 on the rim of Mortandad Canyon. The volume of water released is not documented, but significant erosion was evident below the outfall. The outfall was deleted from the NPDES permit in April 1987 and decommissioned in 1992.

For investigation activities, refer to “Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2” (LANL 2008, 102187).

98.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 98.2-1.

Table 98.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
35-016(e)	Drainlines and outfall from building 35-85	No known POCs

98.3 Consent Order Soil Data

Data from SWMUs 35-008 and 35-016(e), which were investigated together in 2004 as part of Consolidated Unit 35-008-00, were also used to characterize AOC 35-016(e). Decision-level data for Consolidated Unit 35-008-00 [and AOC 35-016(e)] consist of results from samples collected in 1994, 1995, 1997, and 2004. Analytical results from those samples are presented in Figures 98.3-1 through 98.3-4. The approved IR (LANL 2008, 102187) concluded that the nature and extent of all detected chemicals and radionuclides are defined at Consolidated Unit 35-008-00 [and AOC 35-016(e)].

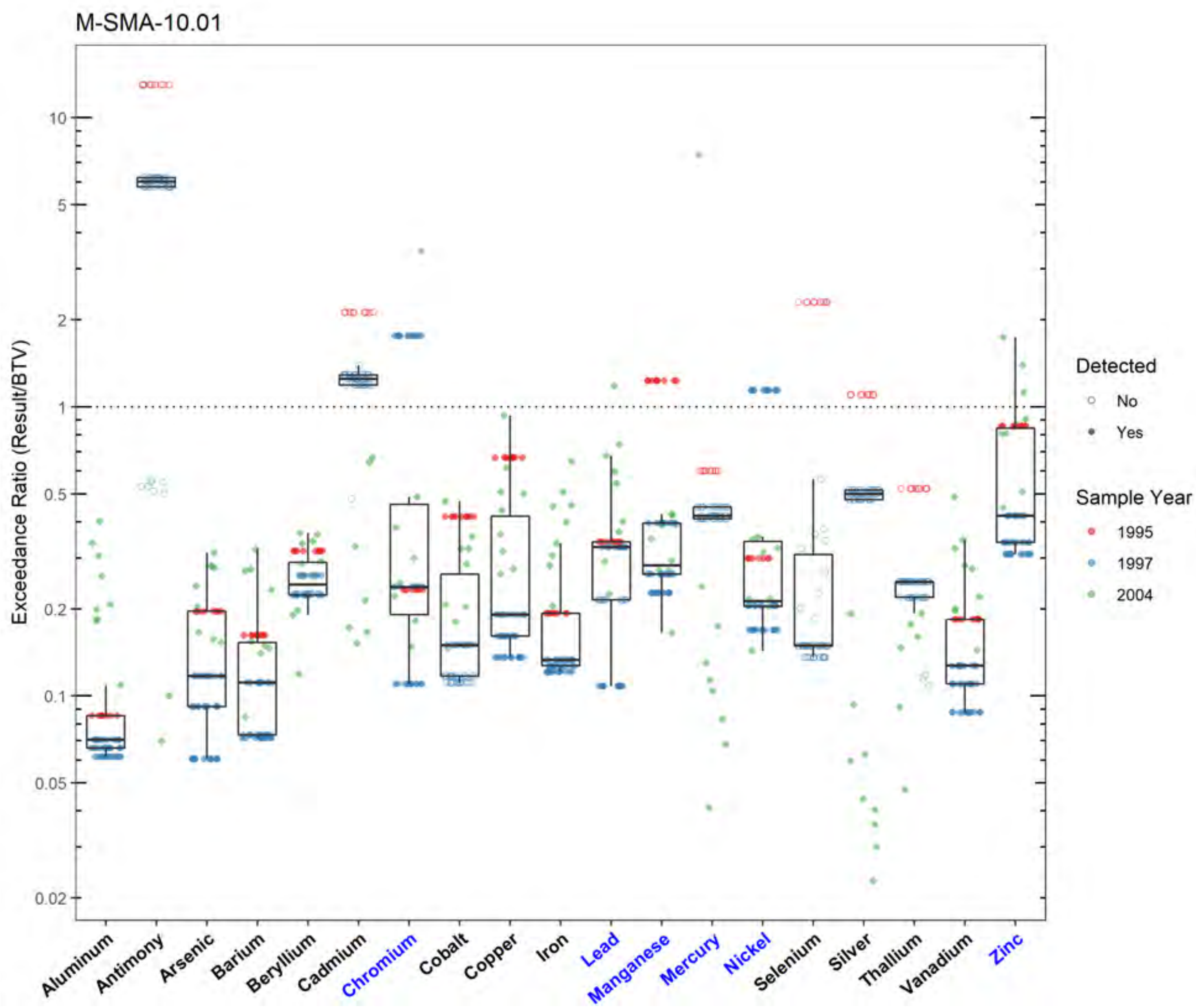


Figure 98.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-10.01

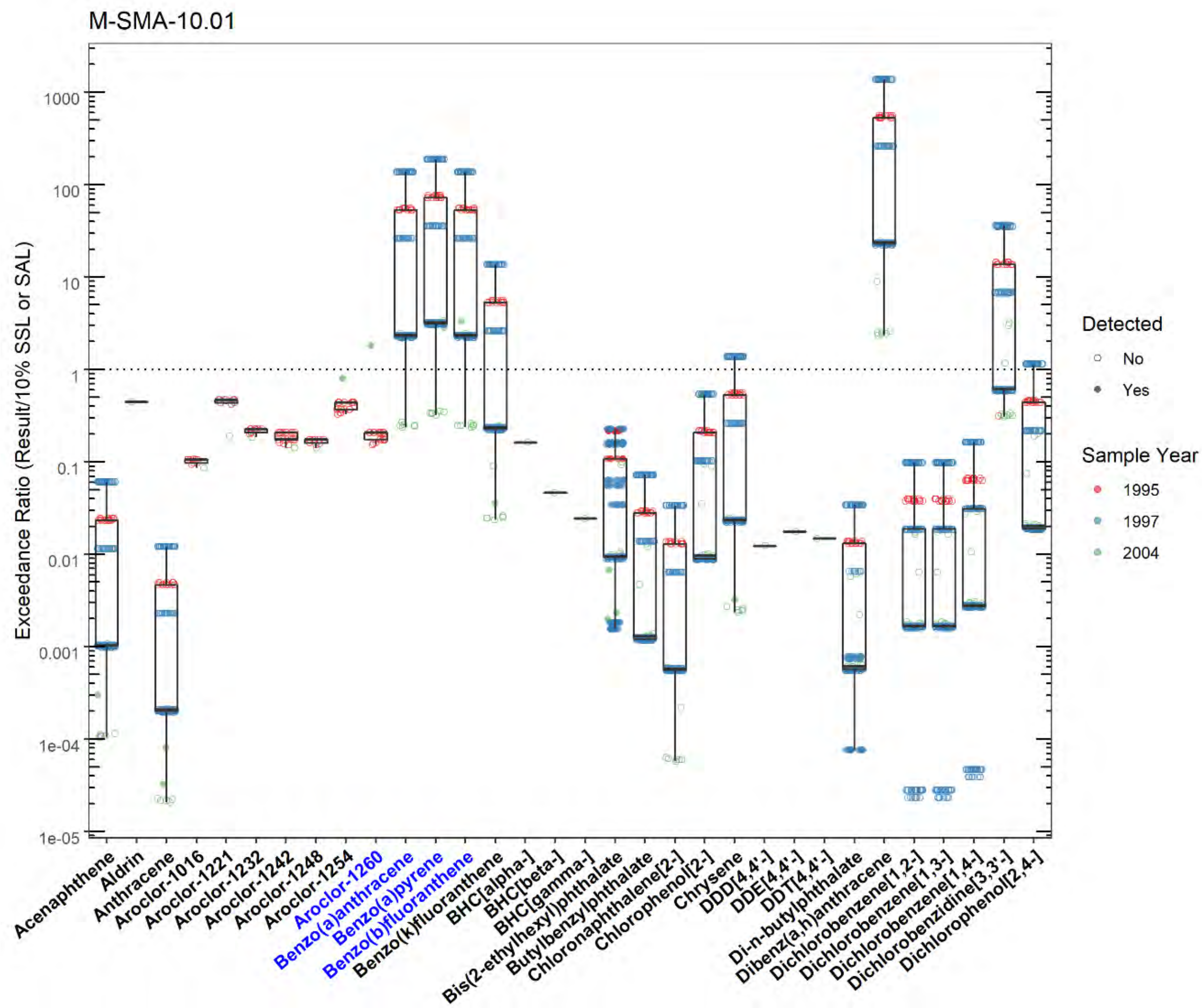


Figure 98.3-2 Organics Analytical Results from Soil Samples Associated with M-SMA-10.01 (Plot 1)

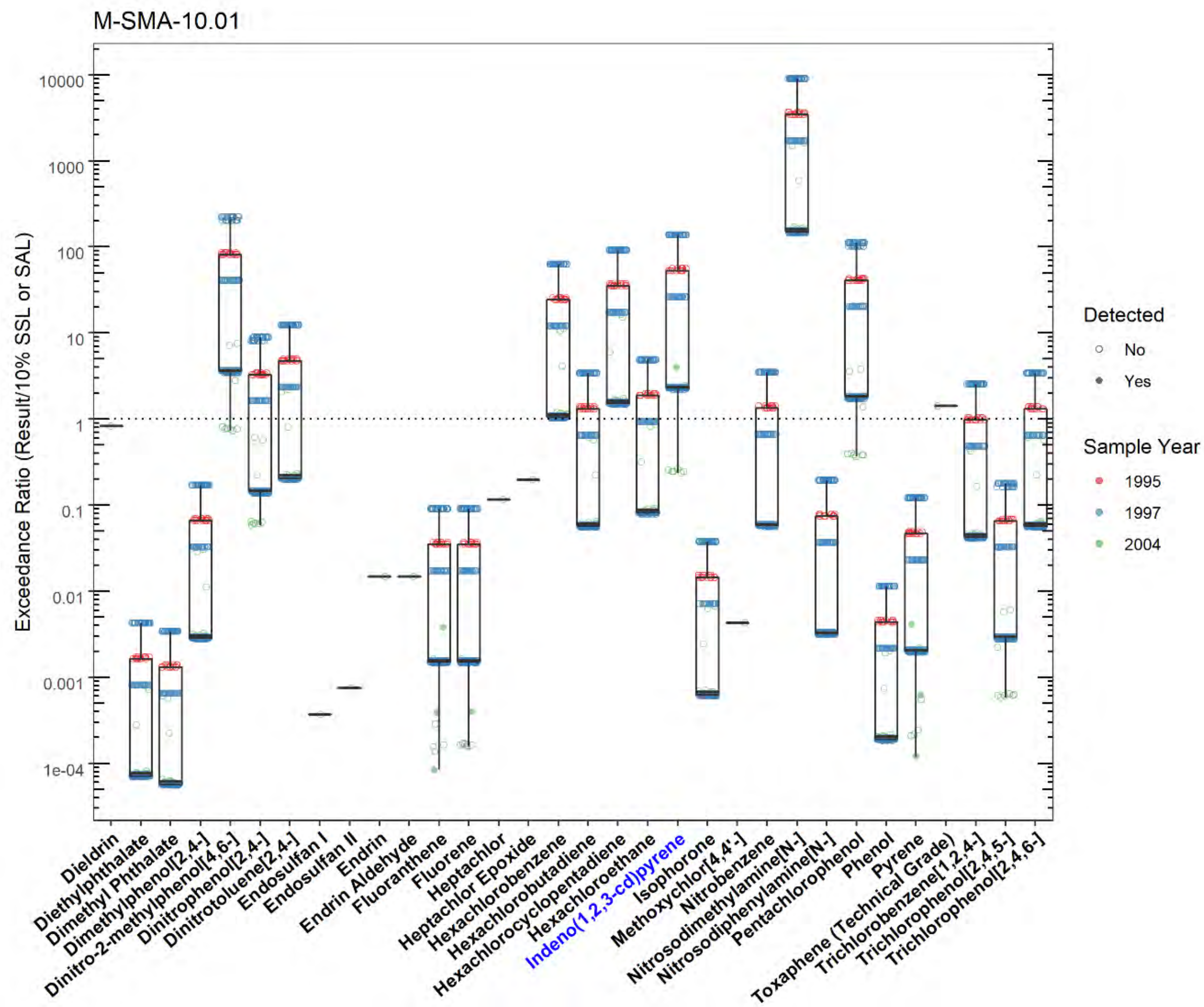


Figure 98.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-10.01 (Plot 2)

M-SMA-10.01

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1260	M-SMA-10.01	11096-82-5	Y	SSL_0.1	0.243	0.440	2004-09-17
Benzo(a)anthracene	M-SMA-10.01	56-55-3	Y	SSL_0.1	0.153	0.331	2004-09-17
Benzo(a)pyrene	M-SMA-10.01	50-32-8	Y	SSL_0.1	0.112	0.320	2004-09-17
Benzo(b)fluoranthene	M-SMA-10.01	205-99-2	Y	SSL_0.1	0.153	0.510	2004-09-17
Chromium	M-SMA-10.01	Cr	Y	BTV	19.3	66.6	2004-09-17
Indeno(1,2,3-cd)pyrene	M-SMA-10.01	193-39-5	Y	SSL_0.1	0.153	0.610	2004-09-17
Lead	M-SMA-10.01	Pb	Y	BTV	22.3	26.3	2004-09-17
Manganese	M-SMA-10.01	Mn	Y	BTV	671	822	1995-12-11
Mercury	M-SMA-10.01	Hg	Y	BTV	0.100	0.745	2004-09-17
Nickel	M-SMA-10.01	Ni	Y	BTV	15.4	17.5	1997-07-09
Zinc	M-SMA-10.01	Zn	Y	BTV	48.8	84.7	2004-11-03

Figure 98.3-4 Screening-Level Exceedances from Soil Samples Associated with M-SMA-10.01

98.4 Stormwater Evaluation

98.4.1 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 October 2012. Analytical results from that sample are presented in Figures 98.4-1 and 98.4-2.

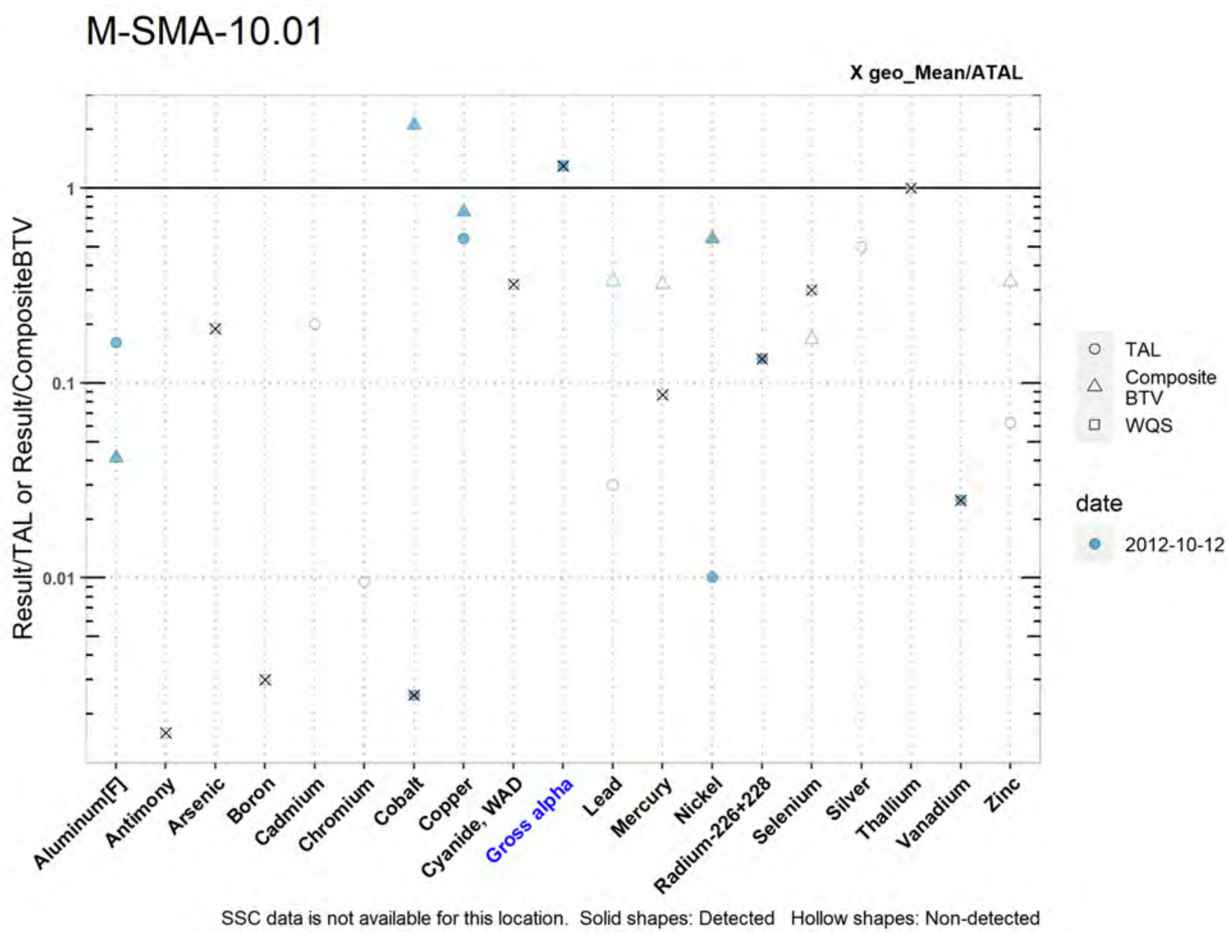


Figure 98.4-1 Analytical Results from Stormwater Sample, M-SMA-10.01 (Plot)

M-SMA-10.01

	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	0.583	210	NA	4.25	22	NA	16.7	NA	167	NA	20	0.394	NA	NA	52.7
Composite_BTV	2940	NA	NA	NA	NA	NA	1.18	3.11	NA	57.1	1.50	0.208	3.09	4.20	8.96	NA	NA	NA	9.98
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
2012-10-12 result	121	*1.00*	*1.70*	*15.0*	*0.110*	*2.00*	2.48	2.35	*1.67*	19.6	*0.500*	*0.0670*	1.69	3.99	*1.50*	*0.200*	*0.450*	2.49	*3.30*
2012-10-12 dT	0.161	NA	NA	NA	NA	NA	0.0025	0.553	NA	1.3	NA	NA	0.0101	0.133	NA	NA	NA	0.025	NA
2012-10-12 dB	0.0412	NA	NA	NA	NA	NA	2.10	0.756	NA	NA	NA	NA	0.547	NA	NA	NA	NA	NA	NA
geo_mean/ATAL	NA	0.0016	0.19	0.0030	NA	NA	0.0025	NA	0.321	1.3	NA	0.087	NA	0.133	0.30	NA	1	0.025	NA

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

Figure 98.4-2 Analytical Results from Stormwater Sample, M-SMA-10.01 (Table)

98.4.2 Assessment Unit and Stream Impairments

M-SMA-10.01 drains to Mortandad Canyon (within LANL), which has impairments for adjusted gross alpha, PCBs, and dissolved copper. The impairments are not likely Site-related, based on Site history.

98.5 Site-Specific Demonstration

98.5.1 Soil Data Summary

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

98.5.2 Stormwater Data Summary

Gross alpha exceeded TAL in stormwater data.

98.5.3 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.

99.0 M-SMA-10.3

Associated Sites	35-014(e2), 35-016(i)
Receiving Water	Mortandad Canyon
Drainage Area	1.61 acres
Landscape Characteristics	64% impervious, 36% pervious
Consent Order Site Status	AOC 35-014(e2): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls SWMU 35-016(i): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the May 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Corrective Action

99.1 2010 Administratively Continued Permit Summary

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

AOC 35-014(e2) and SWMU 35-016(i) received COCs under the Consent Order from NMED in September 2013. The Permittees submitted a certification of completion of corrective action for the Sites to EPA per Permit part I.E.2(d) in October 2013 (LANL 2013, 250453). Stormwater monitoring has not occurred since 2011.

99.2 Site History

35-014(e2) (no date)

AOC 35-014(e2) is the site of a former oil spill at TA-35, which originated from overflows of a gunite-lined, surface waste-oil impoundment used to store waste dielectric oil in the early 1980s. When the impoundment was operative, the oil was periodically pumped out of the impoundment and recycled. The impoundment was drained in 1988 and decommissioned in 1989. Documented releases from the impoundment consisted of oil spills. Soil samples from oil-stained areas showed detectable PCB concentrations.

35-016(i) (no date)

SWMU 35-016(i) is a stormwater outfall that originates from stormwater drains south of building 35-85 along Pecos Drive. This outfall consists of an 18-in. CMP that discharges to Mortandad Canyon and was installed around 1977 when building 35-85 was constructed. The area below the outfall also receives surface runoff from AOC 35-014(e2), and may have provided a pathway for oil spills associated with the former waste-oil impoundment.

For investigation activities at the Sites, refer to “Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2” (LANL 2008, 102187).

99.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 99.2-1.

Table 99.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
35-014(e2)	Soil contamination associated with overflows from waste oil impoundment	PCBs
35-016(i)	Storm drain and outfall	No known POCs

99.3 Consent Order Soil Data

SWMUs 35-014(e2) and 35-016(i) were investigated together in 2004 as part of Consolidated Unit 35-016(i)-00. Decision-level data for Consolidated Unit 35-016(i)-00 consist of results from samples collected in 1995 and 2004. Analytical results from those samples are presented in Figures 99.3-1 through 99.3-4.The approved IR (LANL 2008, 102187) concluded that the nature and extent of all detected chemicals and radionuclides are defined at Consolidated Unit 35-016(i)-00.

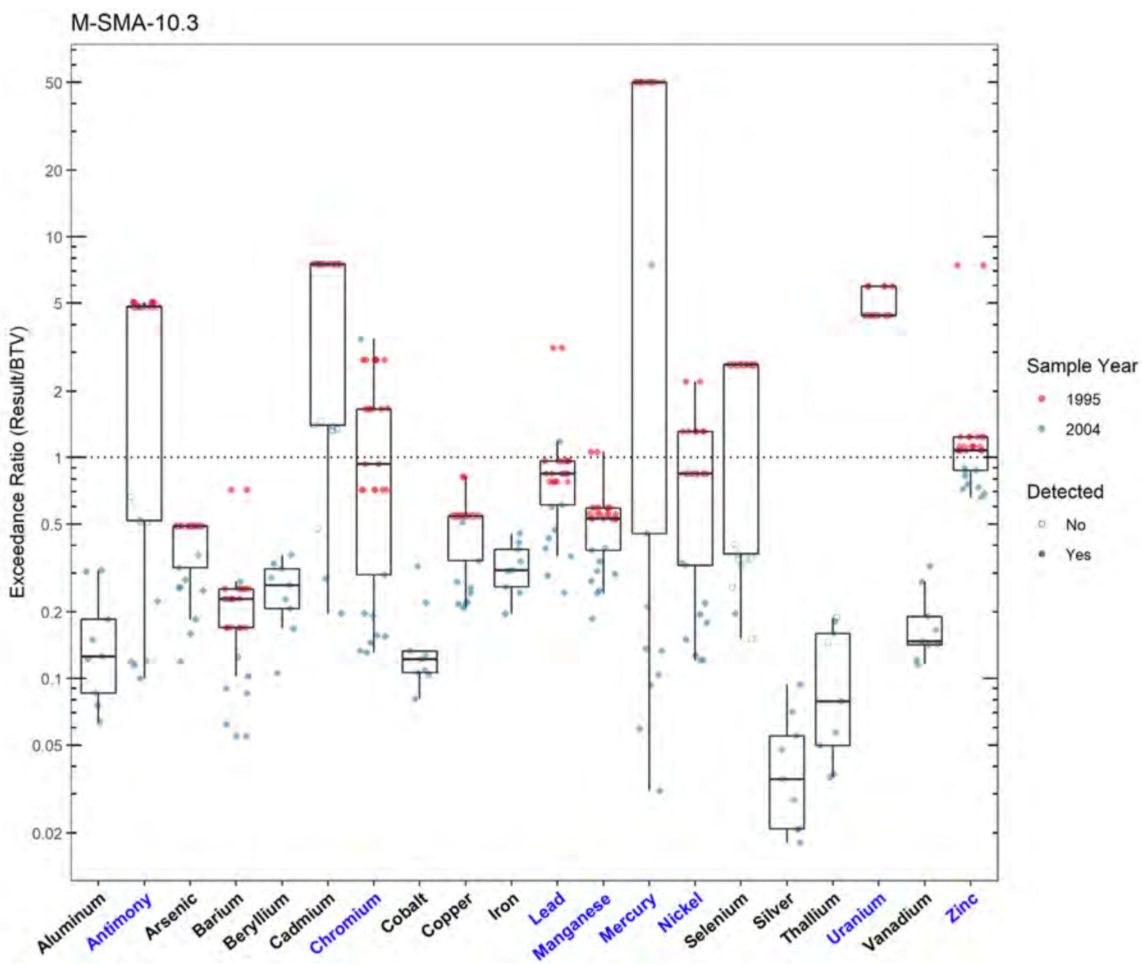


Figure 99.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-10.3

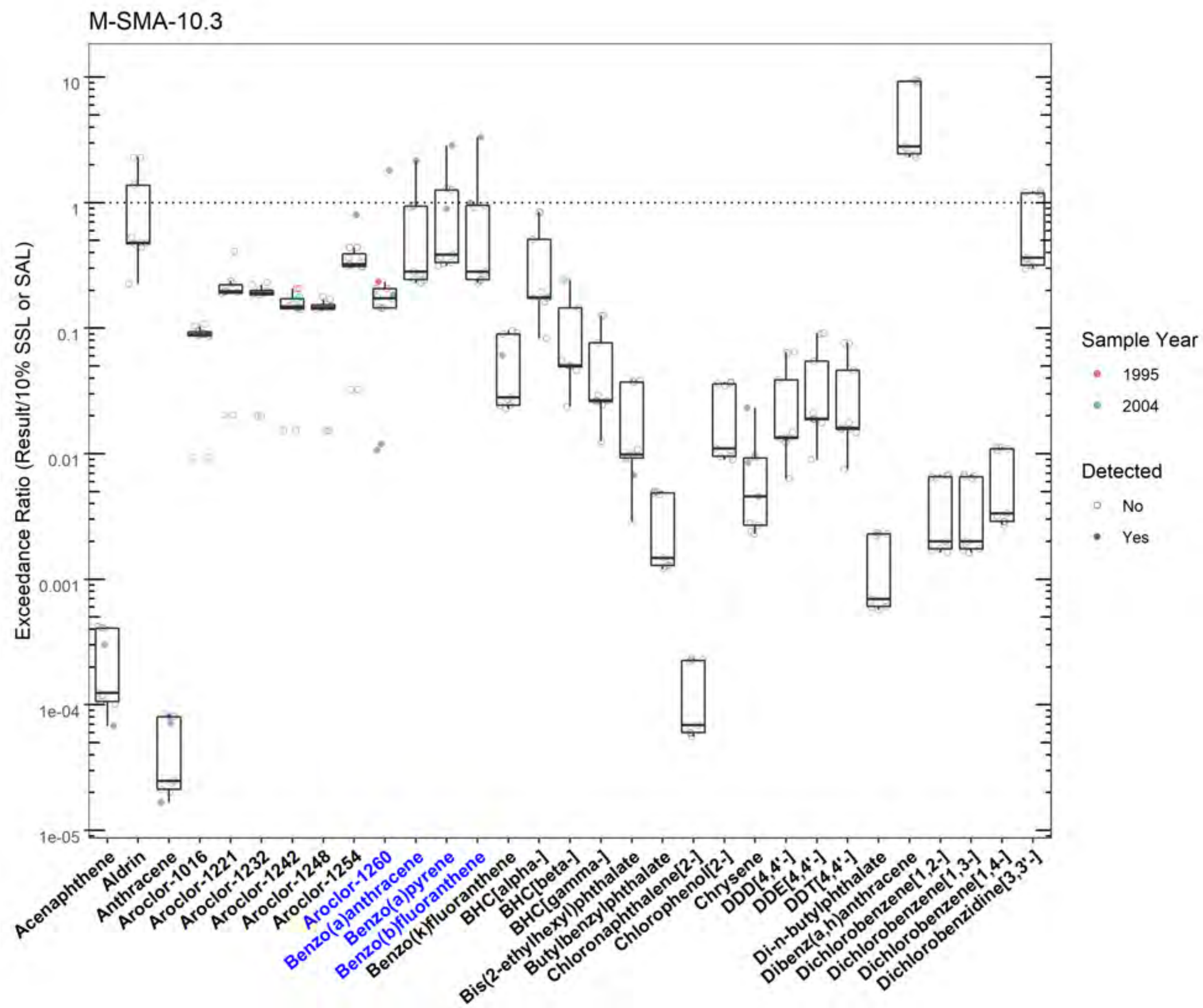


Figure 99.3-2 Organics Analytical Results from Soil Samples Associated with M-SMA-10.3 (Plot 1)

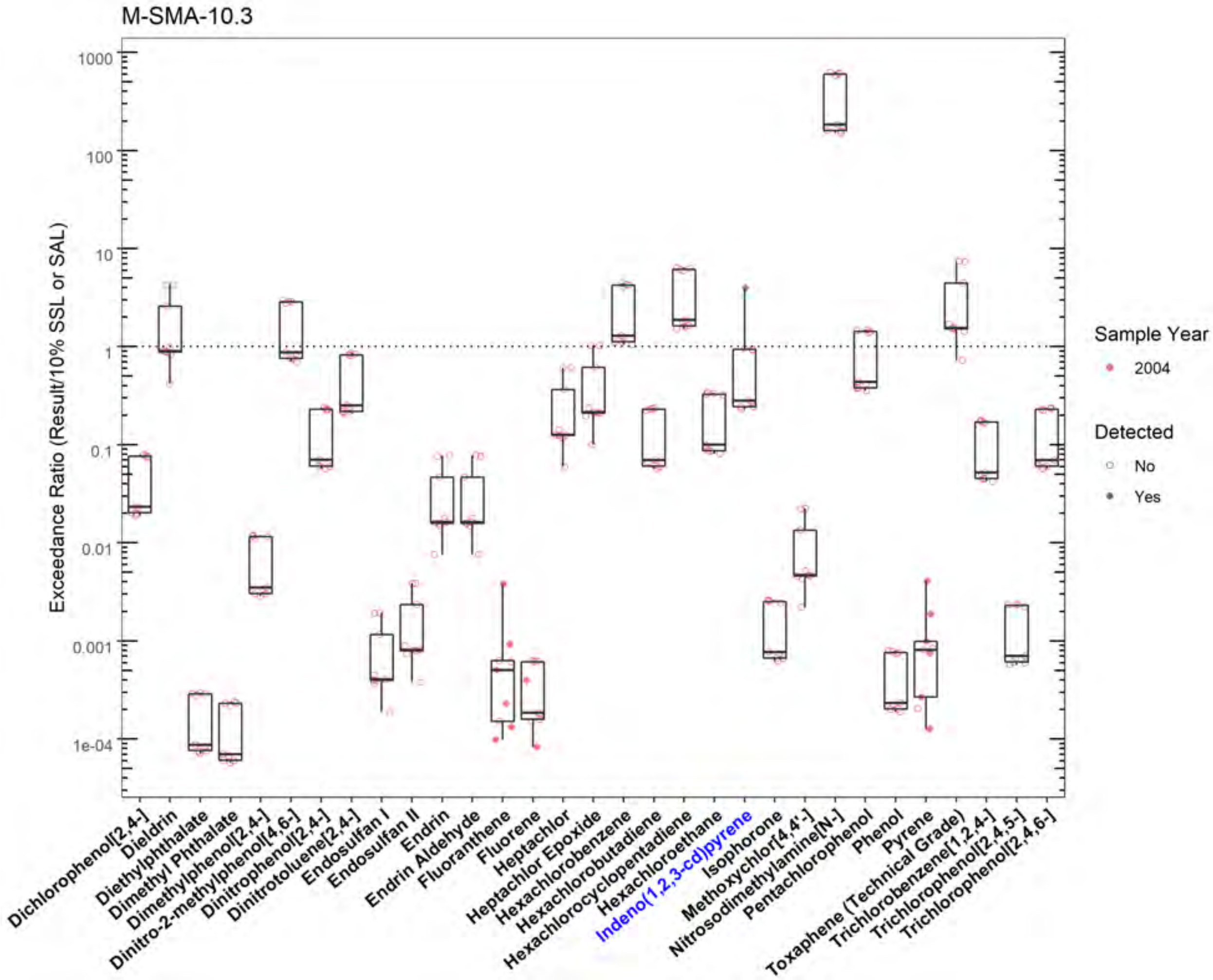


Figure 99.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-10.3 (Plot 2)

M-SMA-10.3

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	M-SMA-10.3	Sb	Y	BTV	0.830	4.19	1995-03-27
Aroclor-1260	M-SMA-10.3	11096-82-5	Y	SSL_0.1	0.243	0.440	2004-09-17
Benzo(a)anthracene	M-SMA-10.3	56-55-3	Y	SSL_0.1	0.153	0.331	2004-09-17
Benzo(a)pyrene	M-SMA-10.3	50-32-8	Y	SSL_0.1	0.112	0.320	2004-09-17
Benzo(b)fluoranthene	M-SMA-10.3	205-99-2	Y	SSL_0.1	0.153	0.510	2004-09-17
Chromium	M-SMA-10.3	Cr	Y	BTV	19.3	66.6	2004-09-17
Indeno(1,2,3-cd)pyrene	M-SMA-10.3	193-39-5	Y	SSL_0.1	0.153	0.610	2004-09-17
Lead	M-SMA-10.3	Pb	Y	BTV	22.3	70.0	1995-03-24
Manganese	M-SMA-10.3	Mn	Y	BTV	671	709	1995-03-24
Mercury	M-SMA-10.3	Hg	Y	BTV	0.100	0.745	2004-09-17
Nickel	M-SMA-10.3	Ni	Y	BTV	15.4	34.0	1995-03-24
Uranium	M-SMA-10.3	U	Y	BTV	1.82	10.8	1995-03-27
Zinc	M-SMA-10.3	Zn	Y	BTV	48.8	362	1995-03-24

Figure 99.3-4 Screening-Level Exceedances from Soil Samples Associated with M-SMA-10.3

99.4 Stormwater Evaluation

99.4.1 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 those samples are presented in Figures 99.4-1 and 99.4-2.

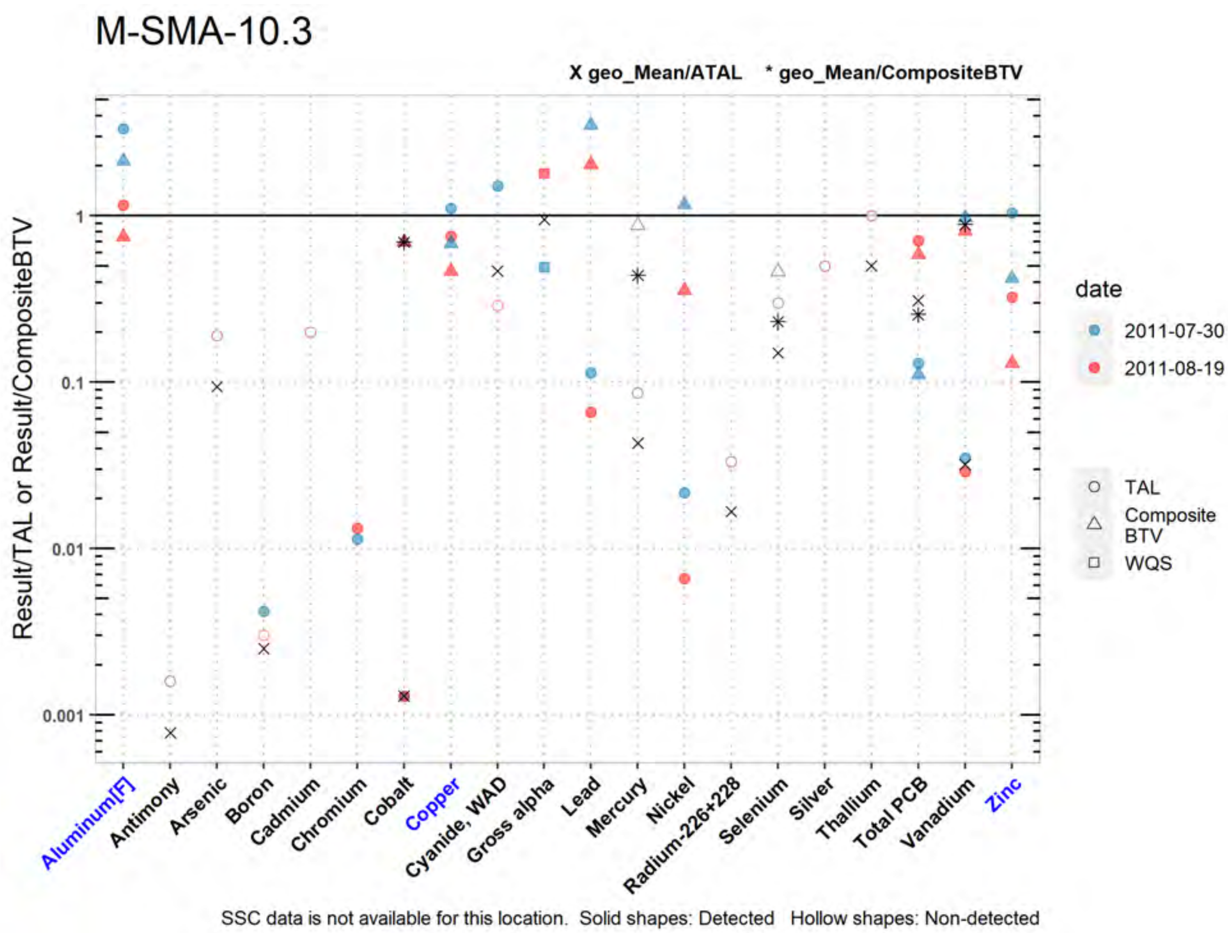


Figure 99.4-1 Analytical Results from Stormwater Samples, M-SMA-10.3 (Plot)

M-SMA-10.3

	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	0.583	210	NA	4.25	22	NA	16.7	NA	167	NA	20	0.394	NA	NA	NA	52.7
Composite_BTV	1170	NA	NA	NA	NA	NA	1.87	6.89	NA	52.4	0.543	0.0753	3.09	8.16	3.25	NA	NA	0.0169	3.60	131
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
2011-07-30 result	2500	*1.00*	*1.70*	20.9	*0.110*	2.40	1.30	4.70	7.83	7.36	1.90	*0.0660*	3.60	*1.00*	*1.50*	*0.200*	*0.450*	0.00188	3.50	55.0
2011-07-30 dT	3.33	NA	NA	0.0042	NA	0.0114	0.0013	1.11	1.51	0.49	0.114	NA	0.0216	NA	NA	NA	NA	0.13	0.035	1.04
2011-07-30 dB	2.14	NA	NA	NA	NA	NA	0.695	0.682	NA	NA	3.50	NA	1.17	NA	NA	NA	NA	0.111	0.972	0.420
2011-08-19 result	873	*1.00*	*1.70*	*15.0*	*0.110*	2.80	1.30	3.20	*1.50*	27.4	1.10	*0.0660*	1.10	*1.00*	*1.50*	*0.200*	*0.450*	0.00988	2.90	17.0
2011-08-19 dT	1.16	NA	NA	NA	NA	0.0133	0.0013	0.753	NA	1.8	0.0659	NA	0.00659	NA	NA	NA	NA	0.71	0.029	0.323
2011-08-19 dB	0.746	NA	NA	NA	NA	NA	0.695	0.464	NA	NA	2.03	NA	0.356	NA	NA	NA	NA	0.585	0.806	0.130
geo_mean/ATAL	NA	0.00078	0.094	0.0025	NA	NA	0.0013	NA	0.466	0.95	NA	0.043	NA	0.0167	0.15	NA	0.5	0.31	0.032	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	0.695	NA	NA	NA	NA	0.438	NA	NA	0.231	NA	NA	0.255	0.885	NA

Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV, geo_mean/B=geo_mean/composite_BTV

Figure 99.4-2 Analytical Results from Stormwater Samples, M-SMA-10.3 (Table)

99.4.2 Assessment Unit and Stream Impairments

M-SMA-10.3 drains to Mortandad Canyon (within LANL), which has impairments for adjusted gross alpha, PCBs, and dissolved copper. The PCB impairment may be Site-related, based on Site history.

99.5 Site-Specific Demonstration

99.5.1 Soil Data Summary

Aroclor-1260 exceeded the applicable screening value in soil data.

The metals that exceeded the applicable screening value in soil were measured in stormwater data and did not exceed TALs. Therefore, they will not be added to the SAP.

99.5.2 Stormwater Data Summary

Copper and zinc were measured above TALs but below BTVs, so they will not be added to the SAP. Dissolved aluminum was measured above TAL and BTV.

PCBs were previously monitored in stormwater data and did not exceed the TAL.

99.5.3 2022 Permit Status

Due to the exceedance of a composite BTV and/or TAL, corrective action will be initiated at this SMA for aluminum (Part I.C.2.b.i)

100.0 M-SMA-11.1

Associated Sites	35-016(o)
Receiving Water	Mortandad Canyon
Drainage Area	0.09 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 35-016(o): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the January 2017 field visit no sampler move was recommended.
2022 Permit Status	Active Monitoring

100.1 2010 Administratively Continued Permit Summary

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

100.2 Site History

35-016(o) (no date)

SWMU 35-016(o) is an active stormwater system established in 1951 to collect and manage stormwater runoff from the first laboratory and office building (35-02) constructed at TA-35. The three cast-iron storm drainlines channel stormwater to three outfalls located on the east side of the mesa, and discharge to the south slope of Mortandad Canyon, approximately 20 ft below the mesa edge. Effluent from floor drains in building 35-2 may have been discharged to this storm drain system.

In addition, overflow from the septic system designated as SWMU 35-009(c) was discharged into Mortandad Canyon from two outfalls, located at the east and west ends of septic system leach fields; the outfall at the east end of the leach field coincides with one of the SWMU 35-016(o) drainage channels. The associated septic system [SWMU 35-009(c)] was decommissioned in 1992 and underwent a VCA in 1996.

For investigation activities, refer to “Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2” (LANL 2008, 102187).

100.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 100.2-1.

Table 100.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
35-016(o)	Storm drains and outfalls	PCBs, inorganic and organic chemicals, radionuclides

100.3 Consent Order Soil Data

Decision-level data for SWMU 35-016(o) consist of results from samples collected in 1994, 1997, and 2004. Analytical results from those samples are presented in Figures 100.3-1 through 100.3-4. The approved IR (LANL 2008, 102187) concluded that the nature and extent of all detected chemicals and radionuclides are defined at SWMU 35-016(o).

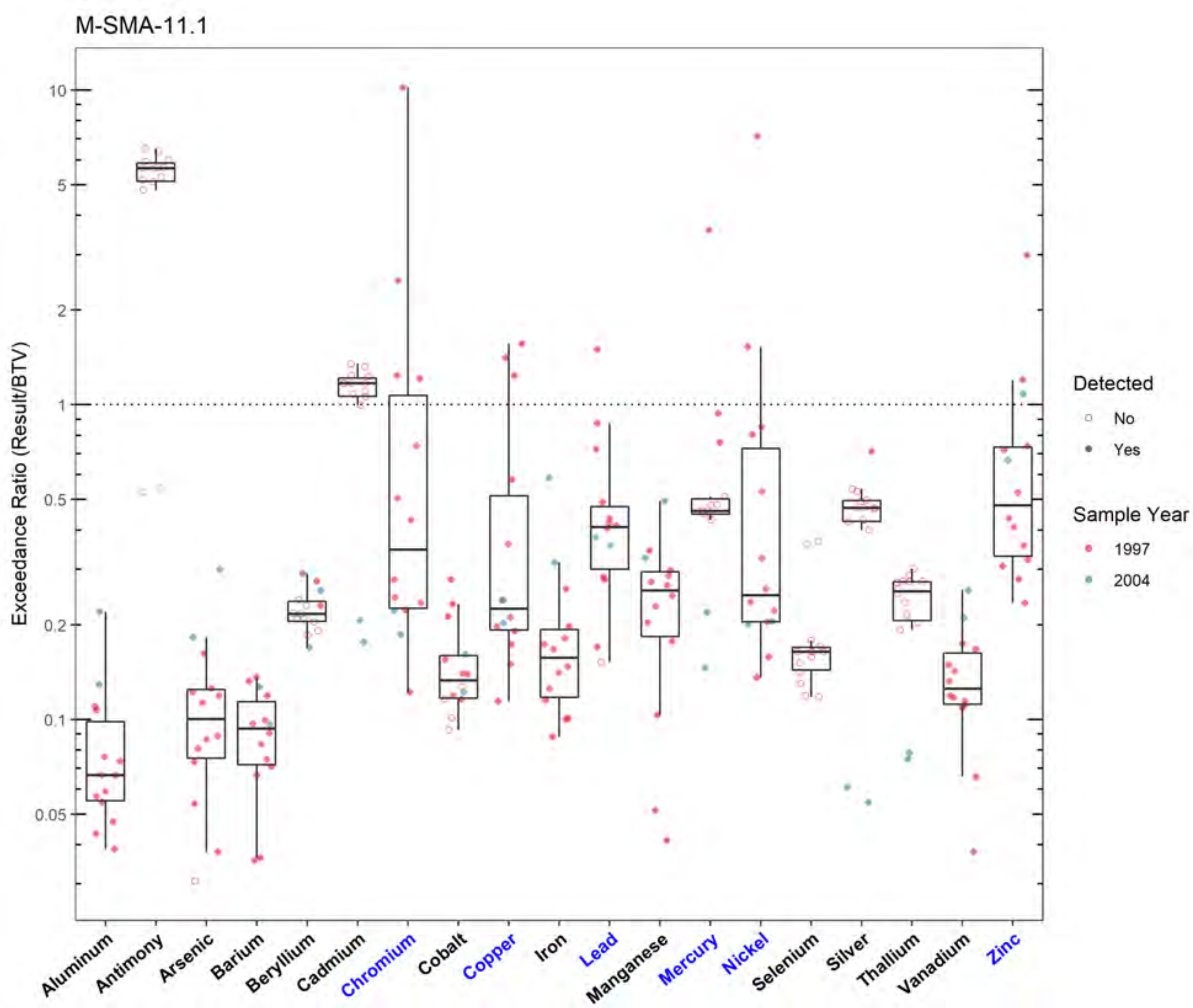


Figure 100.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-11.1

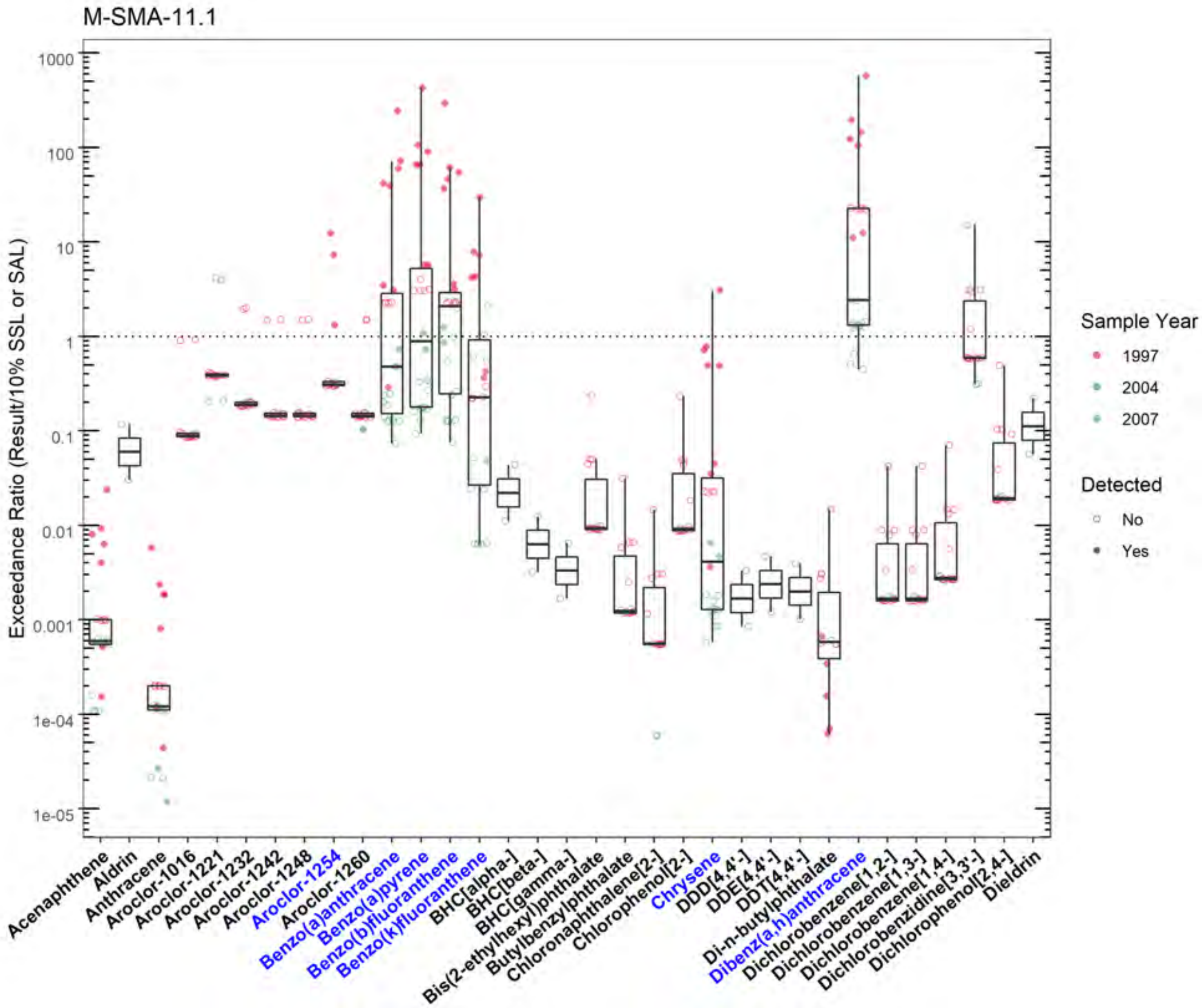


Figure 100.3-2 **Organics Analytical Results from Soil Samples Associated with M-SMA-11.1 (Plot 1)**

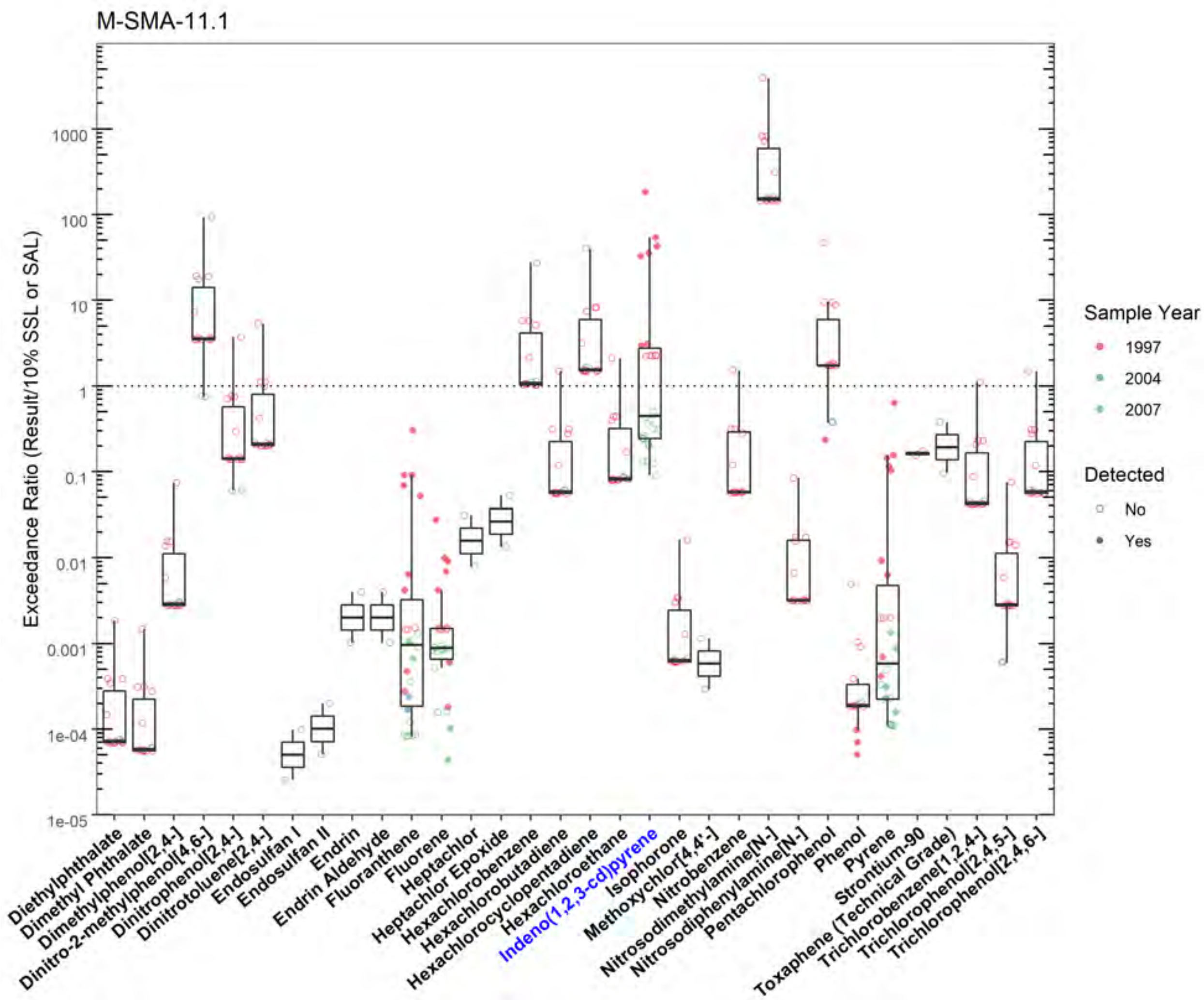


Figure 100.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-11.1 (Plot 2)

M-SMA-11.1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	M-SMA-11.1	11097-69-1	Y	SSL_0.1	0.114	1.40	1997-07-07
Benzo(a)anthracene	M-SMA-11.1	56-55-3	Y	SSL_0.1	0.153	37.0	1997-07-07
Benzo(a)pyrene	M-SMA-11.1	50-32-8	Y	SSL_0.1	0.112	48.0	1997-07-07
Benzo(b)fluoranthene	M-SMA-11.1	205-99-2	Y	SSL_0.1	0.153	45.0	1997-07-07
Benzo(k)fluoranthene	M-SMA-11.1	207-08-9	Y	SSL_0.1	1.53	45.0	1997-07-07
Chromium	M-SMA-11.1	Cr	Y	BTV	19.3	197	1997-07-07
Chrysene	M-SMA-11.1	218-01-9	Y	SSL_0.1	15.3	47.0	1997-07-07
Copper	M-SMA-11.1	Cu	Y	BTV	14.7	23.0	1997-07-07
Dibenz(a,h)anthracene	M-SMA-11.1	53-70-3	Y	SSL_0.1	0.0153	8.80	1997-07-07
Indeno(1,2,3-cd)pyrene	M-SMA-11.1	193-39-5	Y	SSL_0.1	0.153	28.0	1997-07-07
Lead	M-SMA-11.1	Pb	Y	BTV	22.3	33.5	1997-07-07
Mercury	M-SMA-11.1	Hg	Y	BTV	0.100	0.360	1997-07-07
Nickel	M-SMA-11.1	Ni	Y	BTV	15.4	110	1997-07-07
Zinc	M-SMA-11.1	Zn	Y	BTV	48.8	146	1997-07-07

Figure 100.3-4 Screening-Level Exceedances from Soil Samples Associated with M-SMA-11.1

100.4 Stormwater Evaluation

100.4.1 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.

100.4.2 Assessment Unit and Stream Impairments.

M-SMA-11.1 drains to Mortandad Canyon (within LANL), which has impairments for adjusted gross alpha, PCBs, and dissolved copper. The impairments may be Site-related, based on Site history.

100.5 Site-Specific Demonstration

100.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data, and have not yet been measured in stormwater: Aroclor-1254, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, chromium, chrysene, copper, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, mercury, nickel, lead, and zinc.

100.5.2 Stormwater Data Summary

No confirmation-monitoring data.

100.5.3 2022 Permit Status

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

100.5.4 Sampling and Analysis Plan

Table 100.5-1 is the proposed SAP for M-SMA-11.1.

Table 100.5-1 Proposed SAP, M-SMA-11.1

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment, Site history (organics), and soil data
Gross alpha	Impairment and Site history (radionuclides)
Dissolved chromium, copper, nickel, lead, and zinc	Impairment (copper), Site history (inorganics), and soil data
Radium-226 and radium-228	Site history (radionuclides)
Tritium	Site history (radionuclides)
SVOCs	Site history (organics) and soil data
Total mercury	Site history (inorganics) and soil data
DOC	Permit requirement
SSC	Permit requirement

101.0 M-SMA-12

Associated Sites	35-016(p)
Receiving Water	Mortandad Canyon
Drainage Area	0.45 acres
Landscape Characteristics	70% impervious, 30% pervious
Consent Order Site Status	SWMU 35-016(p): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the January 12, 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater drainage from the Site.
2022 Permit Status	Corrective Action

101.1 2010 Administratively Continued Permit Summary

Following the April 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in July 2015. Analytical results from this sample initiated corrective action.

SWMU 35-016(p) received a COC under the Consent Order from NMED in October 2015. The Permittees submitted a certification of completion of corrective action for the Site to EPA per Permit part I.E.2(d) in October 2015 (LANL 2015, 600977). Stormwater monitoring has not occurred since 2015.

101.2 Site History

35-016(p) (no date)

SWMU 35-016(p) is an active stormwater system that has handled stormwater runoff from the roof of the Nuclear Safeguards Research Building (35-27) since it was constructed in 1964. The north and east sides of building 35-27 are equipped with 6-in.-diameter roof leaders that direct roof runoff into CMP storm drains. The storm drains connect to a storm-drain manhole located approximately 25 ft northeast of the northeast corner of building 35-27. An 18-in. CMP storm drain originates at this manhole and extends northward toward the edge of Ten Site Mesa. The outfall is located 40 ft below the mesa edge on the south slope of Mortandad Canyon, approximately 60 ft north of the security fence around building 35-27.

For investigation activities, refer to “Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2” (LANL 2008, 102187).

101.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 101.2-1.

Table 101.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
35-016(p)	Outfall from building 35-27	No known POCs

101.3 Consent Order Soil Data

Decision-level data for SWMU 35-016(p) consist of results from samples collected in 1994, 1997, and 2004. Analytical results from those samples are presented in Figures 101.3-1 through 101.3-4. The approved IR (LANL 2008, 102187) concluded that the nature and extent of all detected chemicals and radionuclides are defined at SWMU 35-016(p).

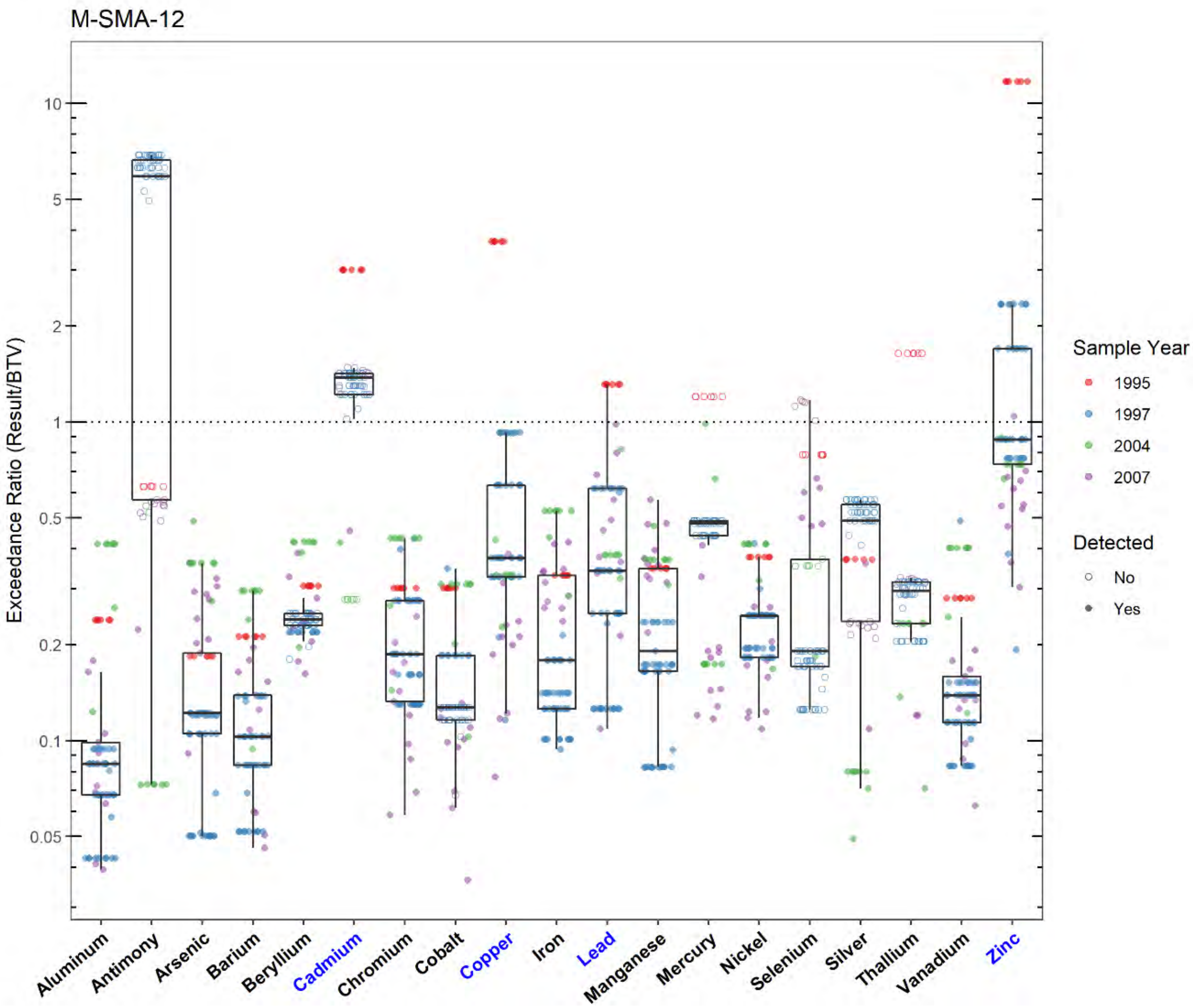


Figure 101.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-12

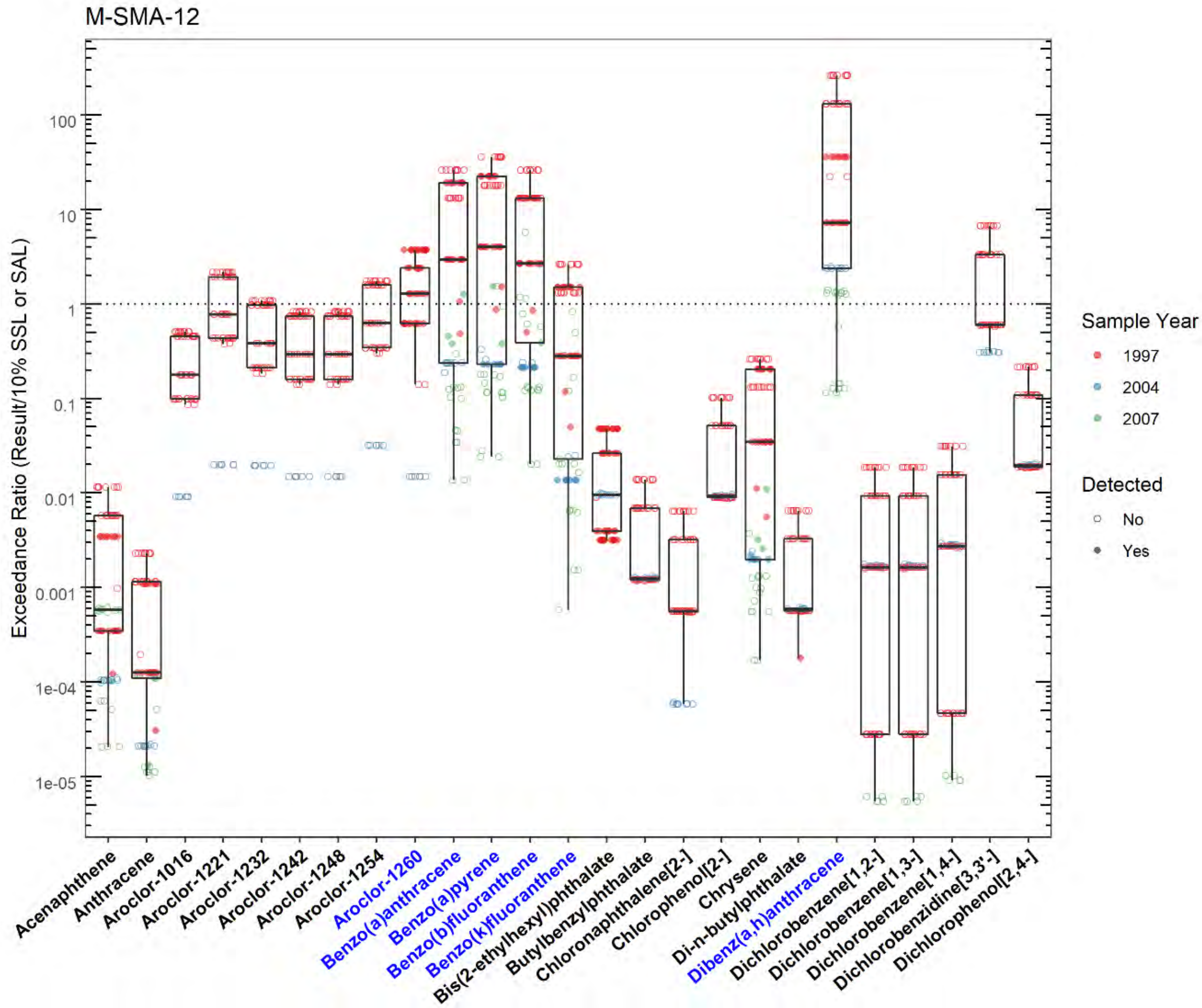


Figure 101.3-2 Organics Analytical Results from Soil Samples Associated with M-SMA-12 (Plot 1)

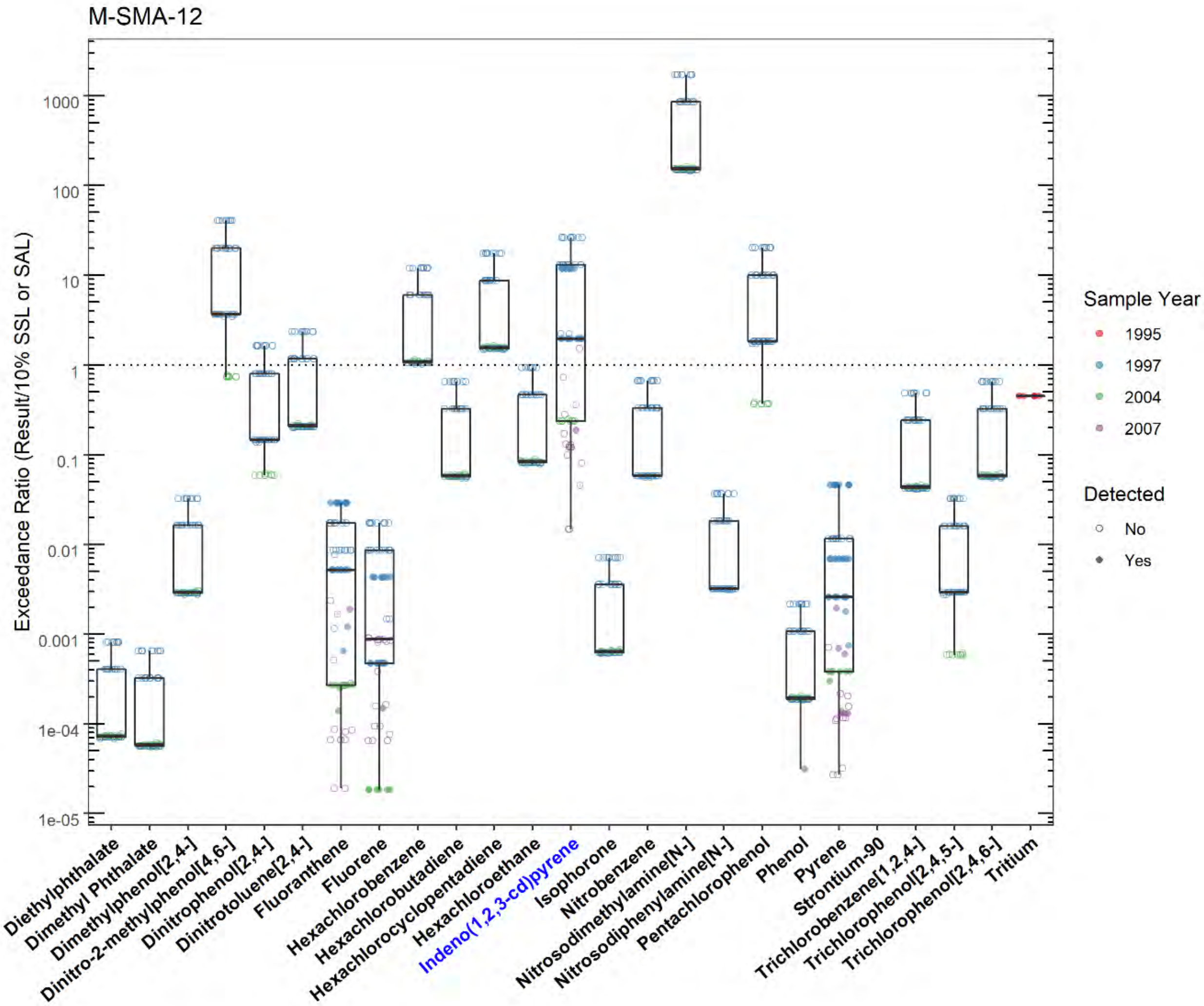


Figure 101.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-12 (Plot 2)

M-SMA-12

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1260	M-SMA-12	11096-82-5	Y	SSL_0.1	0.243	0.910	1997-07-08
Benzo(a)anthracene	M-SMA-12	56-55-3	Y	SSL_0.1	0.153	2.90	1997-07-08
Benzo(a)pyrene	M-SMA-12	50-32-8	Y	SSL_0.1	0.112	2.50	1997-07-08
Benzo(b)fluoranthene	M-SMA-12	205-99-2	Y	SSL_0.1	0.153	2.00	1997-07-08
Benzo(k)fluoranthene	M-SMA-12	207-08-9	Y	SSL_0.1	1.53	2.30	1997-07-08
Cadmium	M-SMA-12	Cd	Y	BTV	0.400	1.20	1995-02-27
Copper	M-SMA-12	Cu	Y	BTV	14.7	54.1	1995-02-27
Dibenz(a,h)anthracene	M-SMA-12	53-70-3	Y	SSL_0.1	0.0153	0.550	1997-07-08
Indeno(1,2,3-cd)pyrene	M-SMA-12	193-39-5	Y	SSL_0.1	0.153	1.80	1997-07-08
Lead	M-SMA-12	Pb	Y	BTV	22.3	29.2	1995-02-27
Zinc	M-SMA-12	Zn	Y	BTV	48.8	573	1995-02-27

Figure 101.3-4 Screening-Level Exceedances from Soil Samples Associated with M-SMA-12

101.4 Stormwater Evaluation

101.4.1 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 2015. Analytical results from that sample are presented in Figures 101.4-1 and 101.4-2.

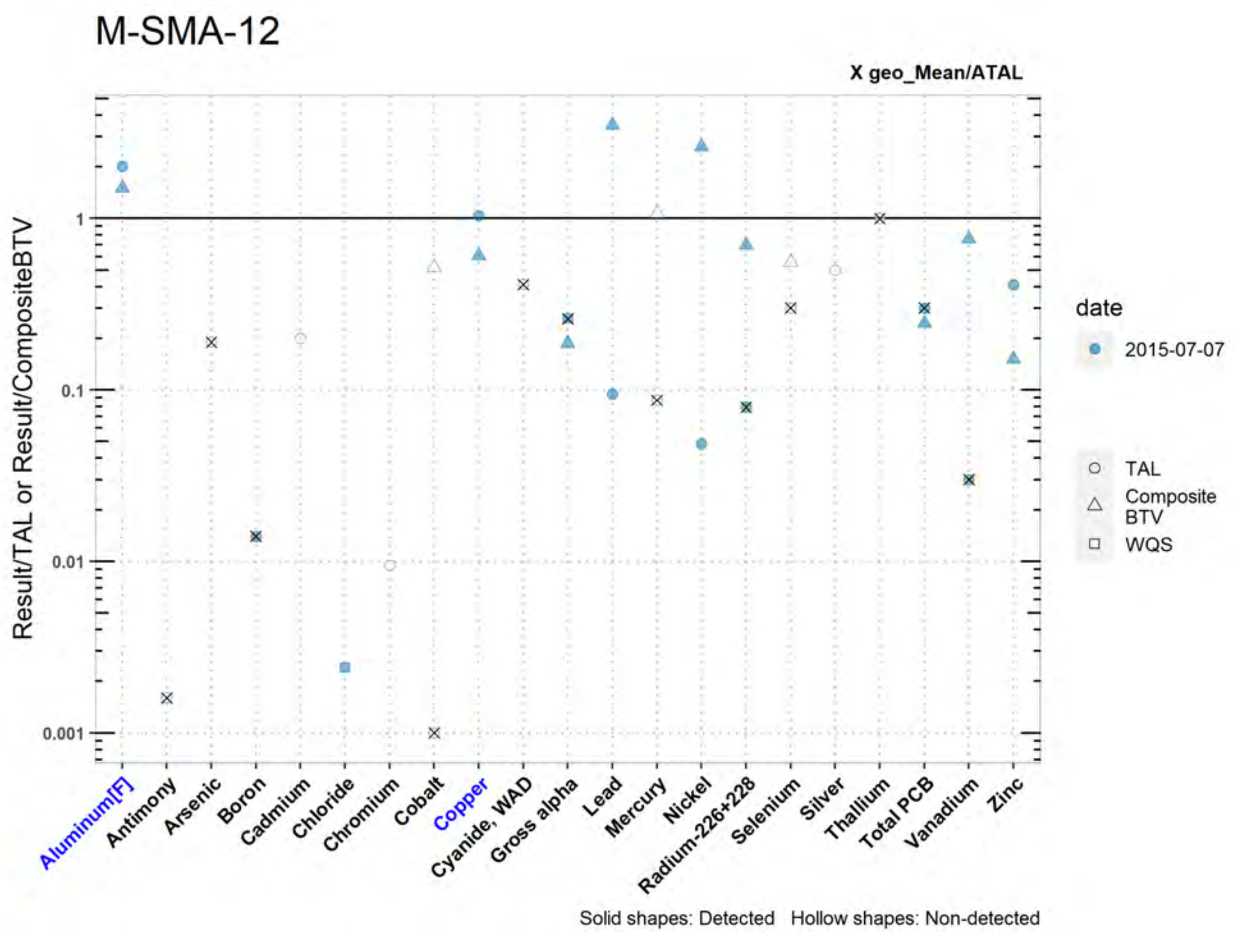


Figure 101.4-1 Analytical Results from Stormwater Sample, M-SMA-12 (Plot)

M-SMA-12

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chloride	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha
MQL	2.5	1	0.5	100	1	NA	10	50	0.5	10	NA
ATAL	NA	640	9	5000	NA	NA	NA	1000	NA	5.2	15
MTAL	750	NA	340	NA	0.583	NA	210	NA	4.25	22	NA
Composite_BTV	1010	NA	NA	NA	NA	NA	NA	1.93	7.25	NA	51.9
unit	ug/L**	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L*
2015-07-07 result	1510	*1.00*	*1.70*	67.9	*0.110*	557	*2.00*	*1.00*	4.41	*2.14*	3.88
2015-07-07 dT	2.01	NA	NA	0.014	NA	0.0024	NA	NA	1.04	NA	0.26
2015-07-07 dB	1.50	NA	NA	NA	NA	NA	NA	NA	0.608	NA	0.187
geo_mean/ATAL	NA	0.0016	0.19	0.014	NA	NA	NA	0.0010	NA	0.412	0.26

	Lead	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Total PCB	Vanadium	Zinc
MQL	0.5	0.005	0.5	NA	5	0.5	0.5	0.2	50	20
ATAL	NA	0.77	NA	30	5	NA	0.47	0.014	100	NA
MTAL	16.7	NA	167	NA	20	0.394	NA	NA	NA	52.7
Composite_BTV	0.453	0.0628	3.09	8.53	2.71	NA	NA	0.0174	3.94	143
unit	ug/L	ug/L	ug/L	pCi/L*	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2015-07-07 result	1.58	*0.0670*	8.09	2.38	*1.50*	*0.200*	*0.450*	0.00427	2.99	21.6
2015-07-07 dT	0.0946	NA	0.0484	0.0793	NA	NA	NA	0.30	0.030	0.410
2015-07-07 dB	3.49	NA	2.62	0.698	NA	NA	NA	0.245	0.759	0.151
geo_mean/ATAL	NA	0.087	NA	0.0793	0.30	NA	1	0.30	0.030	NA

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 101.4-2 Analytical Results from Stormwater Sample, M-SMA-12 (Table)

101.4.2 Assessment Unit and Stream Impairments

M-SMA-12 drains to Mortandad Canyon (within LANL), which has impairments for adjusted gross alpha, PCBs, and dissolved copper. These impairments are not likely to be Site-related, based on Site history.

101.5 Site-Specific Demonstration

101.5.1 Soil Data Summary

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

101.5.2 Stormwater Data Summary

Copper exceeded TAL but not BTV so it will not be added to the SAP. Dissolved aluminum exceeded both TAL and BTV.

101.5.3 2022 Permit Status

Due to the exceedance of a composite BTV and/or TAL, corrective action will be initiated at this SMA for aluminum (Part I.C.2.b.i).

102.0 M-SMA-12.5

Associated Sites	05-005(b), 05-006(c)
Receiving Water	Mortandad Canyon
Drainage Area	0.39 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 05-005(b): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 05-006(c): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the May 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Corrective Action

102.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in July 2019. Analytical results from this sample initiated corrective action.

SWMUs 05-005(b) and 05-006(c) received COCs under the Consent Order from NMED in May 2019. The Permittees submitted a certification of completion of corrective action for the Sites to EPA per Permit part I.E.2(d) in December 2019 (N3B 2019, 700724). Stormwater monitoring has not occurred since 2019.

102.2 Site History

05-005(b) (6/5/2019)

SWMU 05-005(b) is a former outfall and associated outlet drainline that served former building 05-05 [SWMU 05-006(c)] at TA-05. The outfall was located on the edge of the canyon, approximately 80 ft south of building 05-05. Former building 05-05 [SWMU 05-006(c) was used as a shop, a calibration facility, and as a photographic darkroom from 1944 to 1947, to process photographs of experiments conducted at the TA-05 firing sites. In 1952, building 05-05 was used to calibrate high-range radiation meters. A 1959 memorandum indicates that this structure was contaminated with HE, as does a 1959 list generated by the H-3 Group. Potential soil contamination associated with SWMU 05-006(c) was reported to also include uranium. The building was operational from about 1944 to 1959, and was destroyed by intentional burning in May 1960.

The outfall was identified during a 1987 ER Program site reconnaissance, when a capped drainline was found at the former location of building 05-05 [SWMU 05-006(c)]. The drainline, measuring about 18 in. long, was removed along with building debris at SWMU 05-006(c). A drainage channel that collects most of the runoff from the site is present at the edge of the mesa.

05-006(c) (6/5/2019)

SWMU 05-006(c) is an area of potentially-contaminated soil associated with the location of former building 05-05 at TA-05. The shop area in former building 05-05 was a 16-ft^2 structure with a 6-ft-wide × 9-ft-long darkroom. The building was operational from about 1944 to 1959. The structure was originally used to support firing-site activities, including processing photographs of experiments conducted at the TA-05 firing sites. In 1952, J Division temporarily used the building to calibrate high-range radiation meters. A 1959 memorandum indicates that this structure was contaminated with HE, as does a 1959 list generated by the H-3 Group. Potential soil contamination associated with SWMU 05-006(c) was reported to also include uranium. Building 05-05 was destroyed by intentional burning on March 5, 1960.

During the 2011 investigation activities, a small amount of burned debris (charred wood, melted glass, and metal) was removed from the former location of building 05-05. An 18-in.-long capped pipe potentially associated with SWMU 05-005(b) was also removed.

For investigation activities at the Sites, refer to "Investigation Report for Lower Mortandad/Cedro Canyons Aggregate Area, Revision 1" (LANL 2012, 225284).

102.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 102.2-1.

Table 102.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
05-005(b)	Former outfall	Silver, cyanide
05-006(c)	Area of potential soil contamination	Silver, cyanide, HE, uranium

102.3 Consent Order Soil Data

Decision-level data for SWMU 05-005(b) consist of results from samples collected in 1995 and 2011. Revision 1 of the 2012 IR (LANL 2012, 225284) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for SWMU 05-006(c) consist of results from samples collected in 1995 and 2011. Revision 1 of the 2012 IR (LANL 2012, 225284) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results from all decision-level soil samples collected for M-SMA-12.5 are presented in Figures 102.3-1 through 102.3-4.

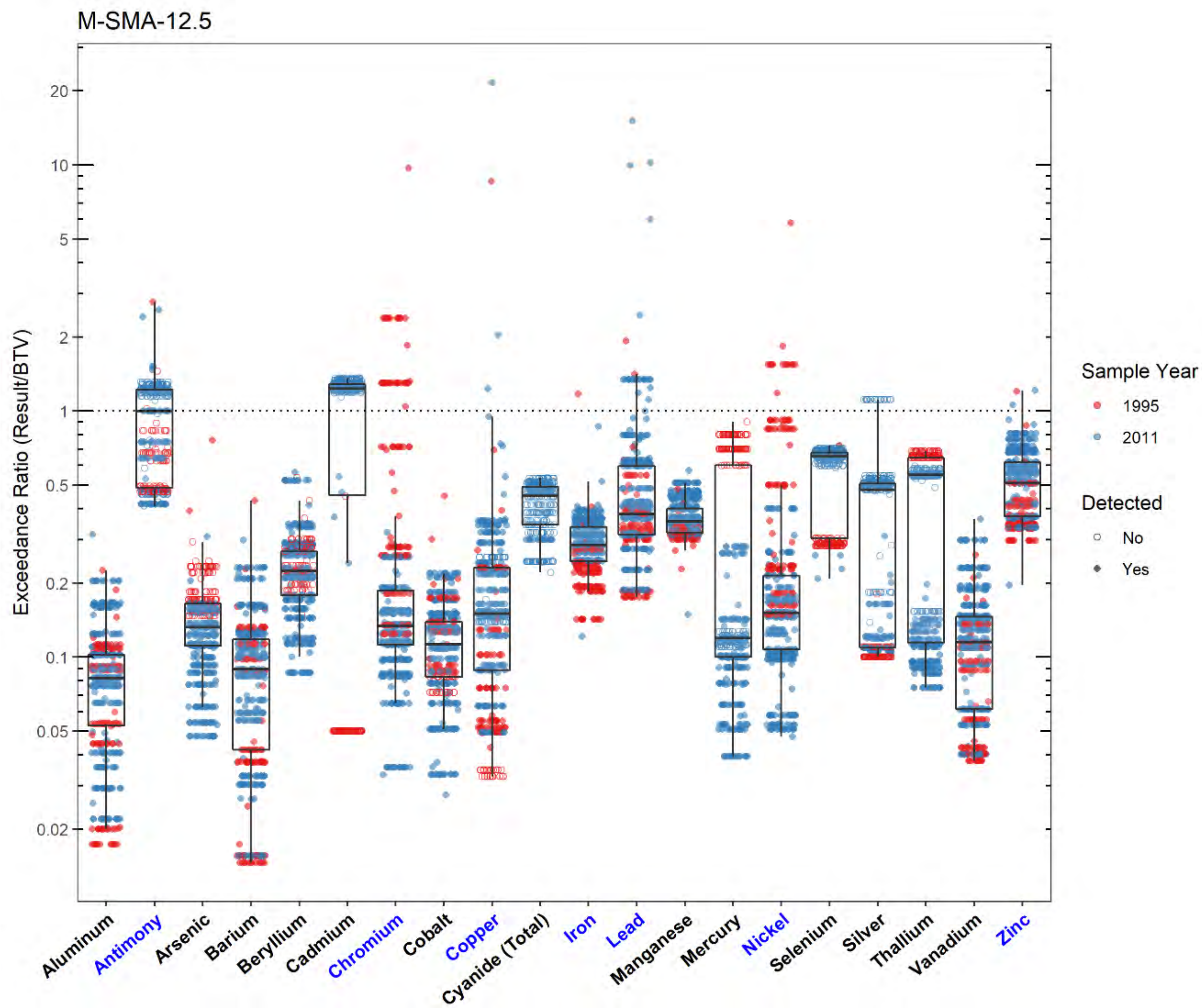


Figure 102.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-12.5

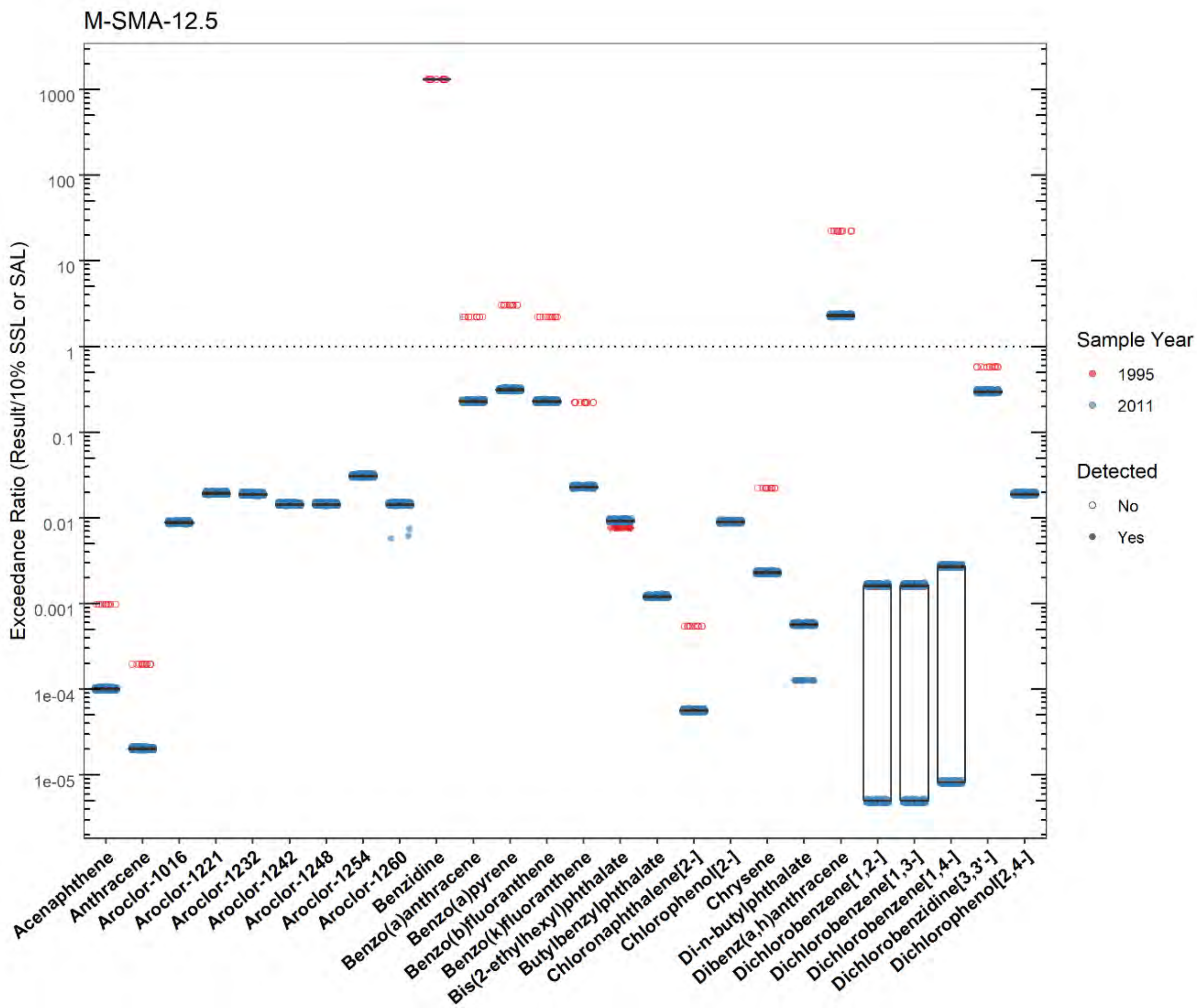


Figure 102.3-2 Organics Analytical Results from Soil Samples Associated with M-SMA-12.5 (Plot 1)

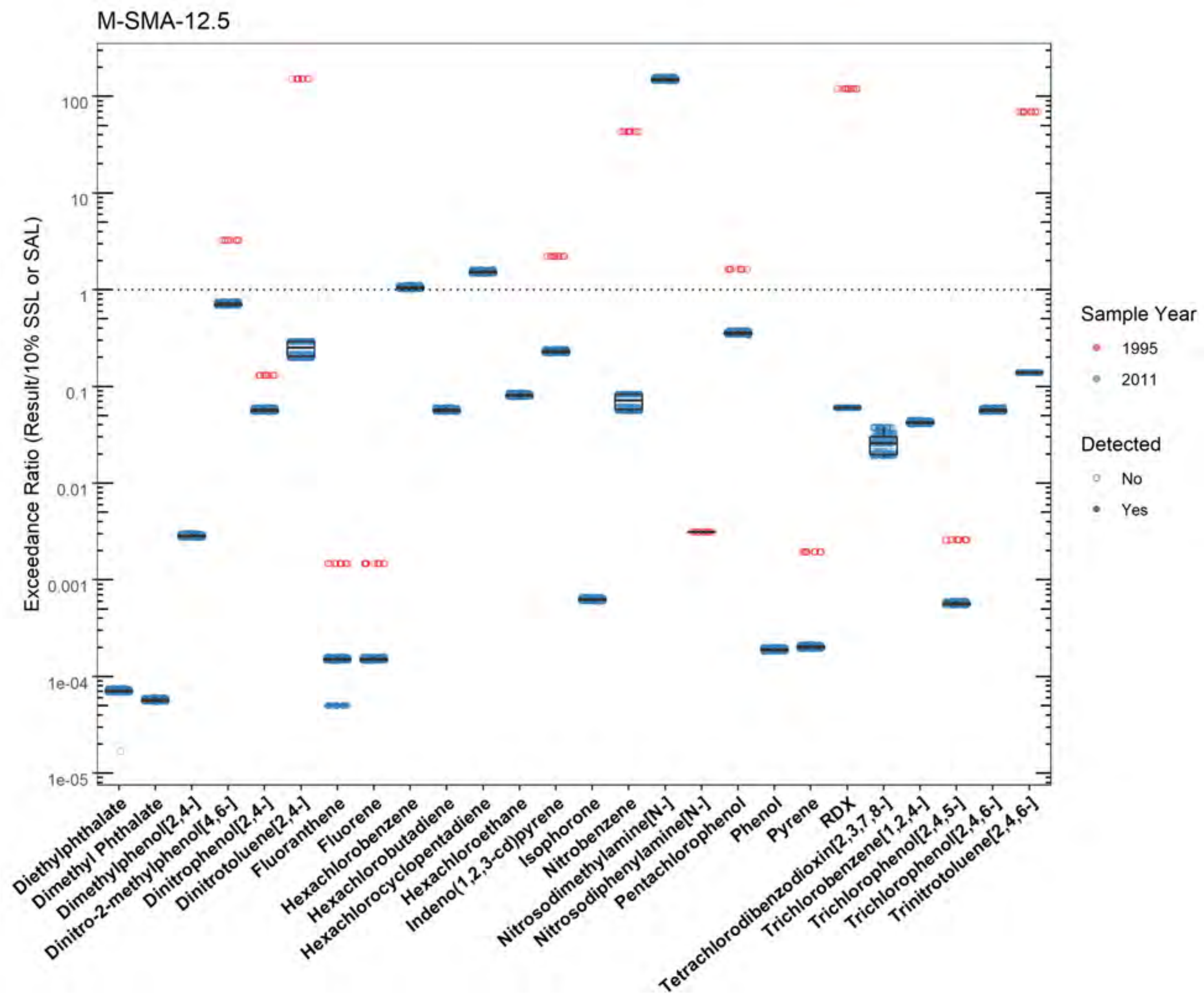


Figure 102.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-12.5 (Plot 2)

M-SMA-12.5

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	M-SMA-12.5	Sb	Y	BTV	0.830	2.30	1995-07-05
Chromium	M-SMA-12.5	Cr	Y	BTV	19.3	187	1995-07-05
Copper	M-SMA-12.5	Cu	Y	BTV	14.7	317	2011-02-18
Iron	M-SMA-12.5	Fe	Y	BTV	21500	25100	1995-07-05
Lead	M-SMA-12.5	Pb	Y	BTV	22.3	337	2011-02-18
Nickel	M-SMA-12.5	Ni	Y	BTV	15.4	89.4	1995-07-05
Zinc	M-SMA-12.5	Zn	Y	BTV	48.8	59.0	2011-02-18

Figure 102.3-4 Screening-Level Exceedances from Soil Samples Associated with M-SMA-12.5

102.4 Stormwater Evaluation

102.4.1 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 2019. Analytical results from that sample are presented in Figures 102.4-1 through 102.4-4.

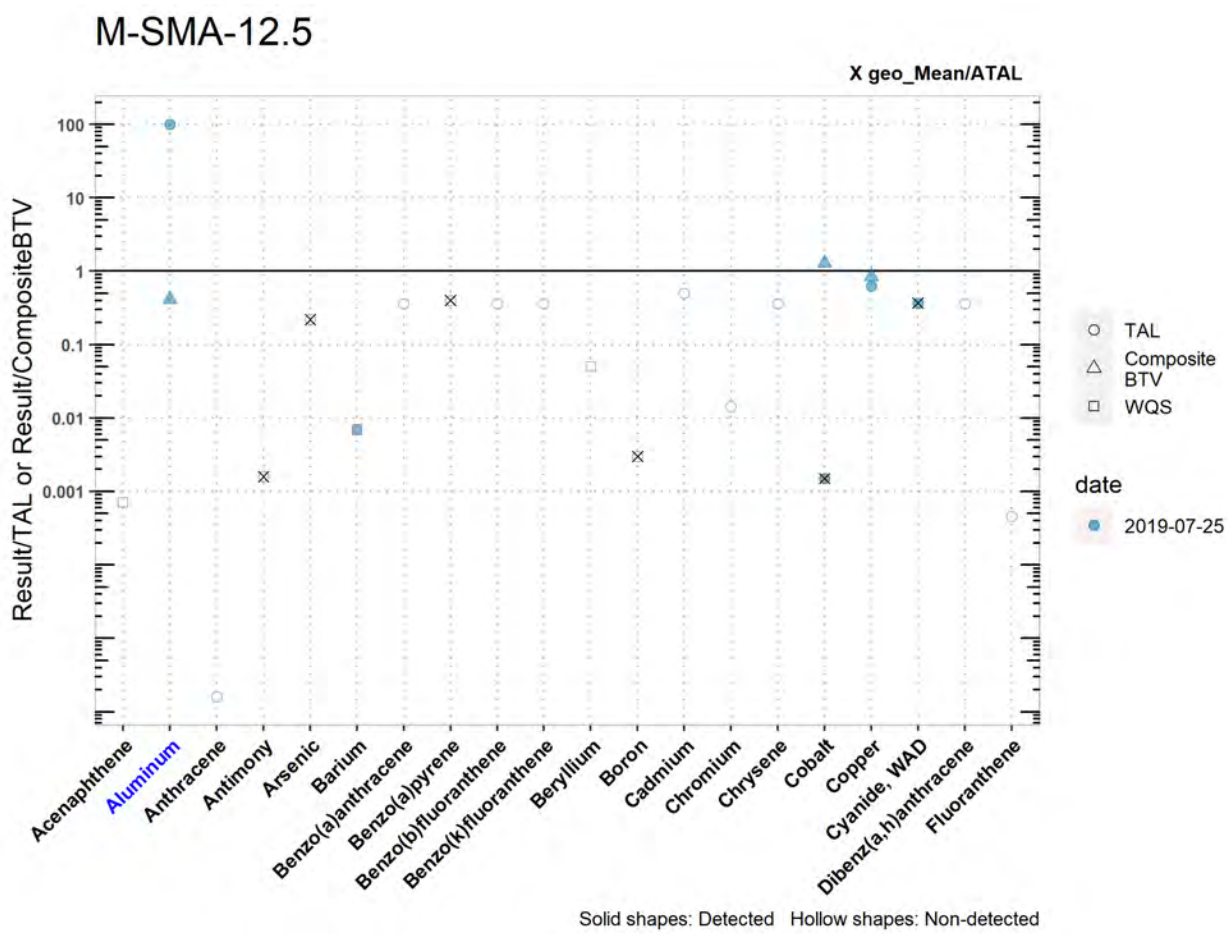


Figure 102.4-1 Analytical Results from Stormwater Sample, M-SMA-12.5 (Plot 1)

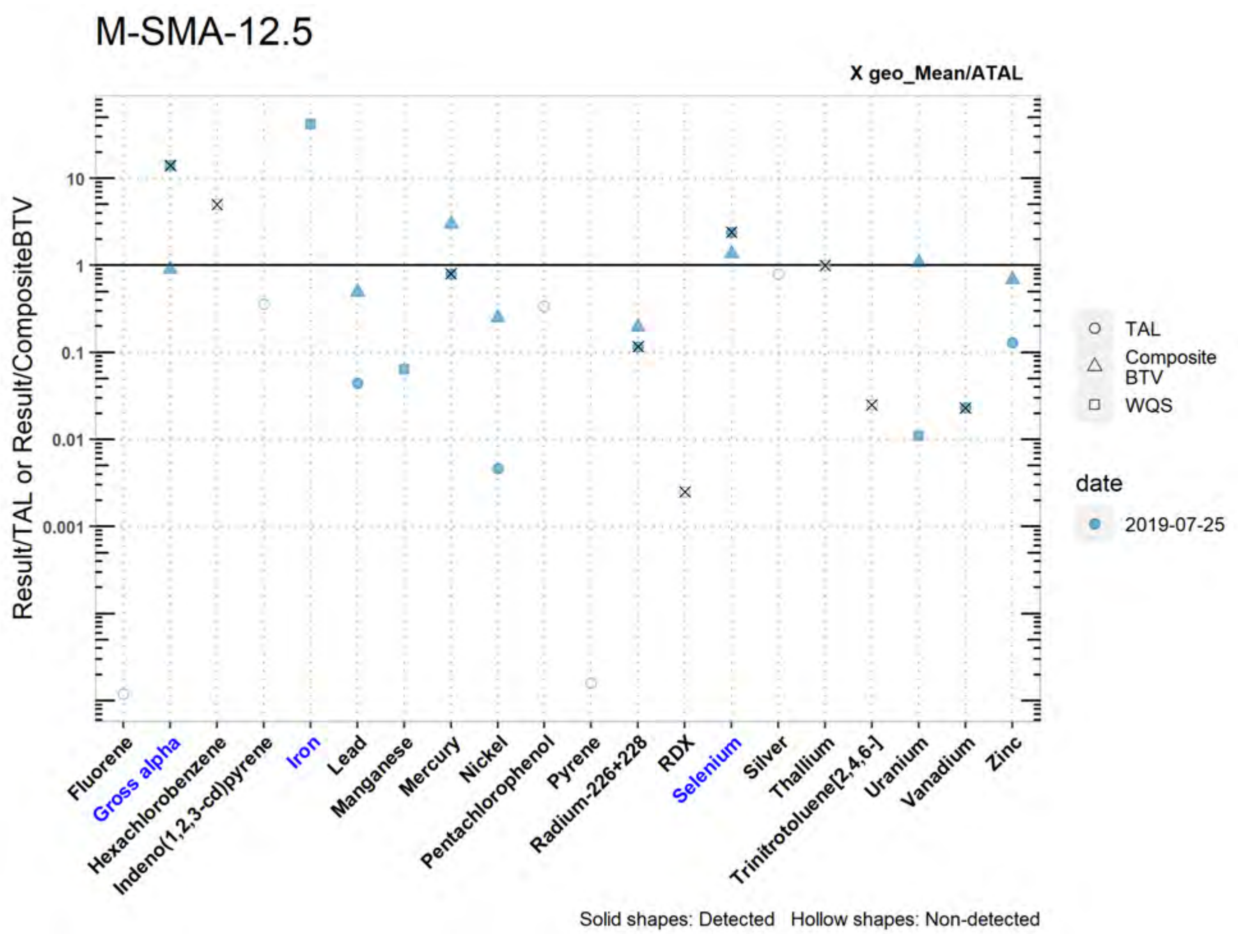


Figure 102.4-2 Analytical Results from Stormwater Sample, M-SMA-12.5 (Plot 2)

M-SMA-12.5

	Acenaphthene	Aluminum	Anthracene	Antimony	Arsenic	Barium	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Beryllium	Boron	Cadmium	Chromium	Chrysene	Cobalt	Copper	Cyanide, WAD	Dibenz(a,h)anthracene	Fluoranthene
MQL	NA	2.5	0.064	1	0.5	NA	0.064	0.064	0.064	0.064	NA	100	1	10	0.064	50	0.5	10	0.064	0.064
ATAL	NA	NA	NA	640	9	NA	NA	0.18	NA	NA	NA	5000	NA	NA	NA	1000	NA	5.2	NA	NA
MTAL	NA	643	NA	NA	340	NA	0.18	NA	0.18	0.18	NA	NA	0.583	210	0.18	NA	4.25	22	0.18	140
Composite_BTV	NA	37400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.18	3.12	NA	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
2019-07-25 result	*0.0642*	64500	*0.0642*	*1.00*	*2.00*	13.8	*0.0642*	*0.0642*	*0.0642*	*0.0642*	*0.200*	*15.0*	*0.300*	*3.00*	*0.0642*	1.51	2.65	1.92	*0.0642*	*0.0642*
2019-07-25 dT	NA	100	NA	NA	NA	0.0069	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0015	0.624	0.369	NA	NA
2019-07-25 dB	NA	0.411	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.28	0.849	NA	NA	NA
geo_mean/ATAL	NA	NA	NA	0.0016	0.22	NA	NA	0.4	NA	NA	NA	0.0030	NA	NA	NA	0.0015	NA	0.369	NA	NA

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

Figure 102.4-3 Analytical Results from Stormwater Sample, M-SMA-12.5 (Table 1)

M-SMA-12.5

	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	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	15	0.0029	NA	NA	NA	NA	0.77	NA	NA	NA	30	200	5	NA	0.47	20	NA	100	NA
MTAL	5300	NA	NA	0.18	NA	16.7	NA	NA	167	19	4000	NA	NA	20	0.394	NA	NA	NA	NA	52.7
Composite_BTV	NA	57.2	NA	NA	NA	1.50	NA	0.208	3.10	NA	NA	4.21	NA	8.98	NA	NA	NA	0.315	NA	10.0
unit	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
2019-07-25 result	*0.0642*	217	*0.0145*	*0.0642*	41600	0.741	70.1	0.618	0.772	*6.42*	*0.0642*	3.47	*0.495*	12.2	*0.300*	*0.600*	*0.495*	0.338	2.29	6.85
2019-07-25 dT	NA	14	NA	NA	42	0.0444	0.064	0.80	0.00462	NA	NA	0.116	NA	2.4	NA	NA	NA	0.011	0.023	0.130
2019-07-25 dB	NA	0.903	NA	NA	NA	0.494	NA	2.97	0.249	NA	NA	0.196	NA	1.36	NA	NA	NA	1.07	NA	0.685
geo_mean/ATAL	NA	14	5	NA	NA	NA	NA	0.80	NA	NA	NA	0.116	0.0025	2.4	NA	1	0.025	NA	0.023	NA

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

Figure 102.4-4 Analytical Results from Stormwater Sample, M-SMA-12.5 (Table 2)

102.4.2 Assessment Unit and Stream Impairments

M-SMA-12.5 drains to Mortandad Canyon (within LANL), which has impairments for adjusted gross alpha, PCBs, and dissolved copper. The gross alpha impairment may be Site-related, based on Site history.

102.5 Site-Specific Demonstration

102.5.1 Soil Data Summary

There are no known POCs for these Sites. With the exception of iron, all the metals that exceeded the applicable screening value in soil data have been measured in stormwater data and did not exceed TALs, so they will not be added to the SAP. Iron exceeded the applicable screening value in soil data, but the Permit does not have a TAL for iron. Only POCs with TALs are used in the SSD.

102.5.2 Stormwater Data Summary

Total aluminum and gross alpha exceeded TALs but not BTVs. Selenium exceeded both TAL and BTV. Therefore, corrective action will be initiated. Iron exceeded the WQS, but the Permit does not have a TAL for iron. Only POCs with TALs are used in the SSD.

102.5.3 2022 Permit Status

Due to the exceedance of a composite BTV and/or TAL corrective action will be initiated at this SMA for selenium (Part I.C.2.b.i).

103.0 M-SMA-12.6

Associated Sites	05-004
Receiving Water	Mortandad Canyon
Drainage Area	0.37 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 05-004: Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the May 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

103.1 2010 Administratively Continued Permit Summary

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

SWMU 05-004 received a COC under the Consent Order from NMED in March 2019. The Permittees submitted a certification of completion of corrective action for the Site to EPA per Permit part I.E.2(d) in March 2019 (N3B 2019, 700437). Stormwater monitoring has not occurred since 2013.

103.2 Site History

05-004 (6/5/2019)

SWMU 05-004 is a former industrial septic system that served former building 05-01 at the west end of TA-05 near the edge of Mortandad Canyon. The septic system consisted of a reinforced concrete septic tank (former structure 05-13) that measured 5 ft × 5 ft × 7 ft deep, associated inlet and outlet drainlines, and an outfall discharging south into an unnamed tributary of Mortandad Canyon. The system was installed in May 1948 to serve building 05-01 (a former laboratory), and received industrial waste from laboratory building 05-01 until 1949. A 1952 memorandum states that the septic system was no longer needed to support use of building 05-01, and the structure was being returned to Engineering Division for disposition. The septic system was decommissioned and abandoned in place in December 1959. The types of materials used in building 05-01 are not known, but the septic tank was suspected of being contaminated with acid.

During the 1985 LASCP, building 05-01 was removed. The septic tank and associated drainlines had been removed prior to the 1985 LASCP activities, which was confirmed during re-excavation of the area. The outfall area is a 2-ft-wide by 1-ft-deep trench cut into the tuff located at the edge of the mesa.

For investigation activities, refer to “Investigation Report for Lower Mortandad/Cedro Canyons Aggregate Area, Revision 1” (LANL 2012, 225284).

103.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 103.2-1.

Table 103.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
05-004	Former septic system	Metals and organic chemicals

103.3 Consent Order Soil Data

Decision-level data for SWMU 05-004 consist of results from samples collected in 1995, 1998, and 2011. Analytical results from those samples are presented in Figures 103.3-1 through 103.3-3. Revision 1 of the 2012 IR (LANL 2012, 225284) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

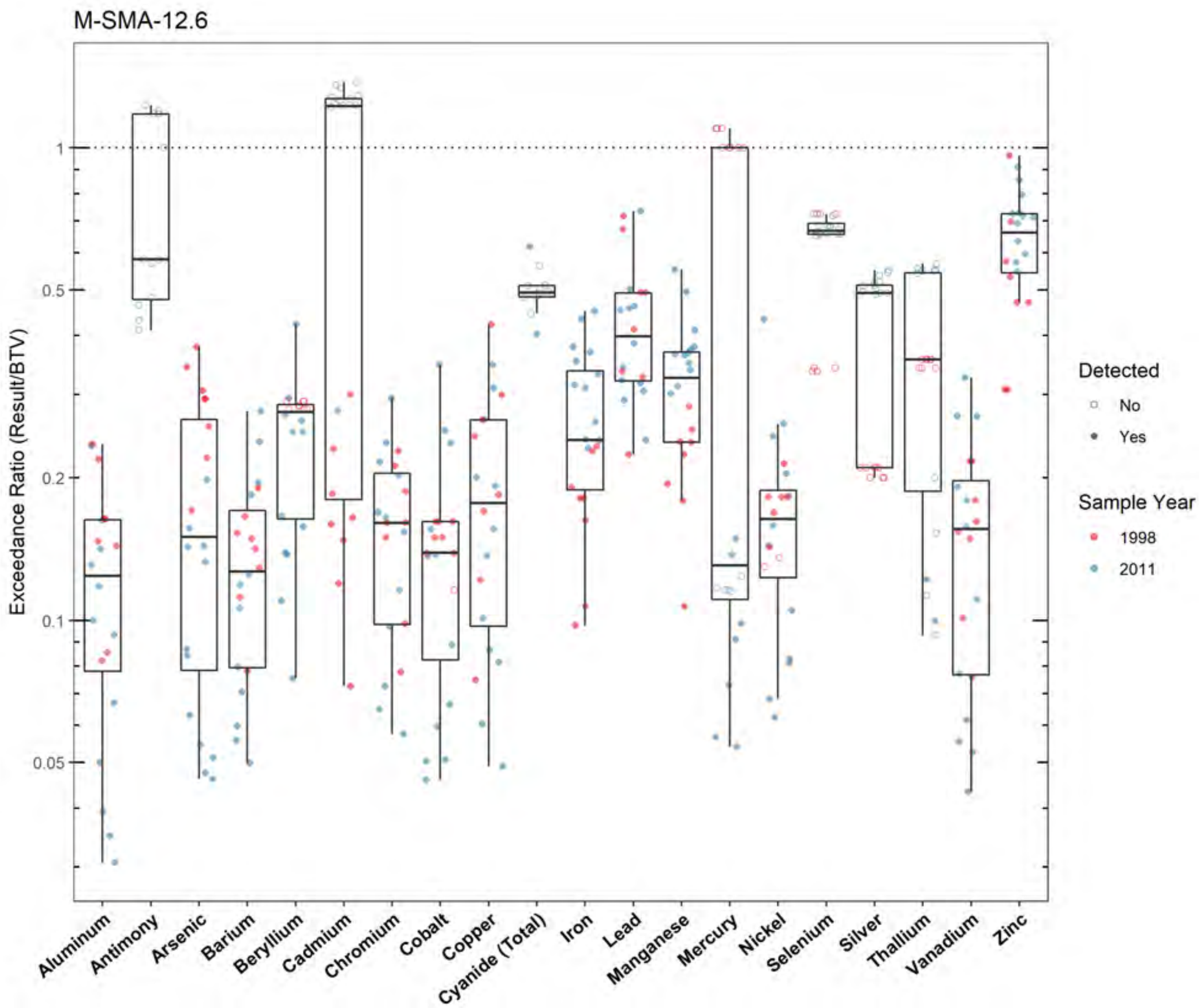


Figure 103.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-12.6

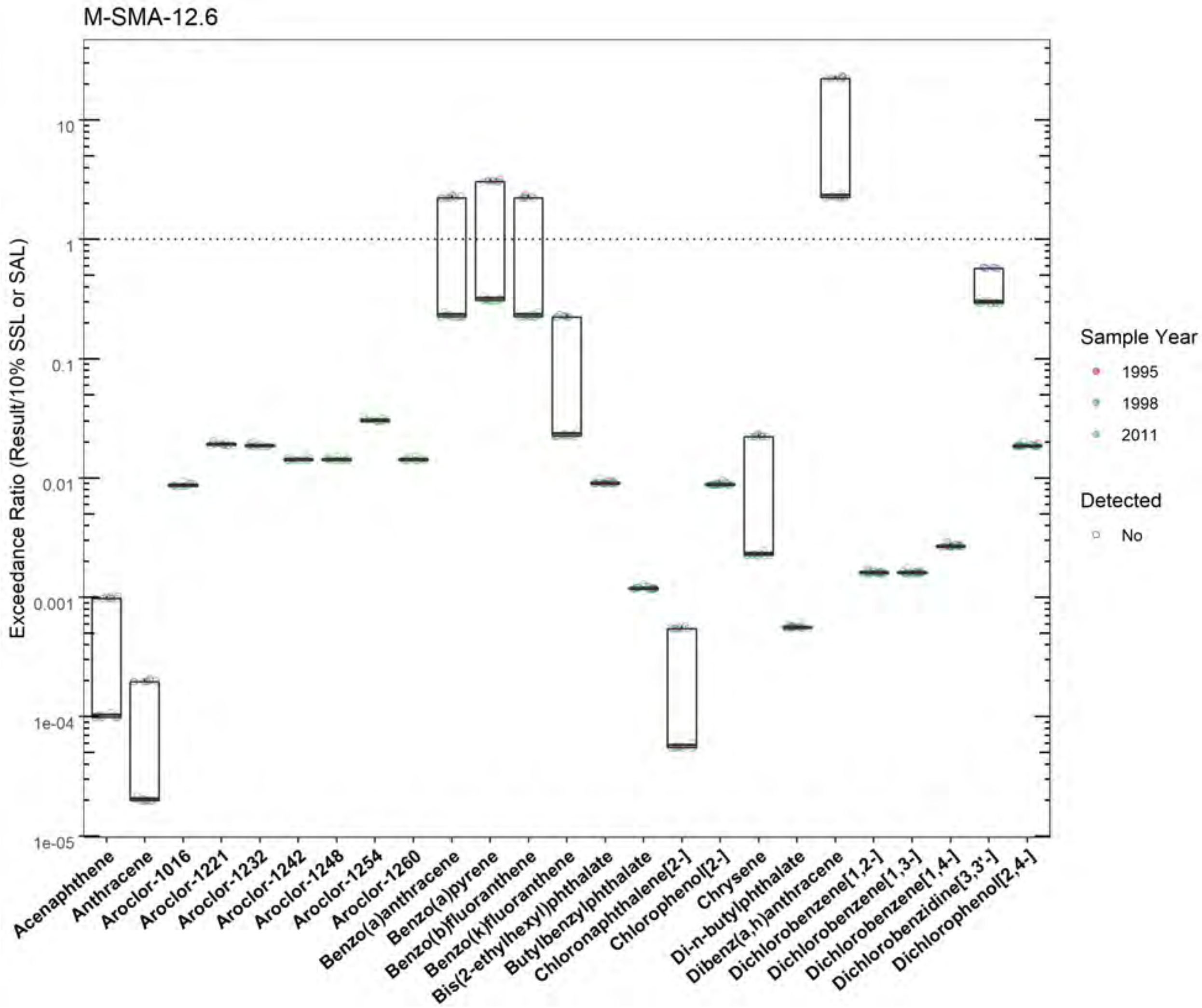


Figure 103.3-2 Organics Analytical Results from Soil Samples Associated with M-SMA-12.6 (Plot 1)

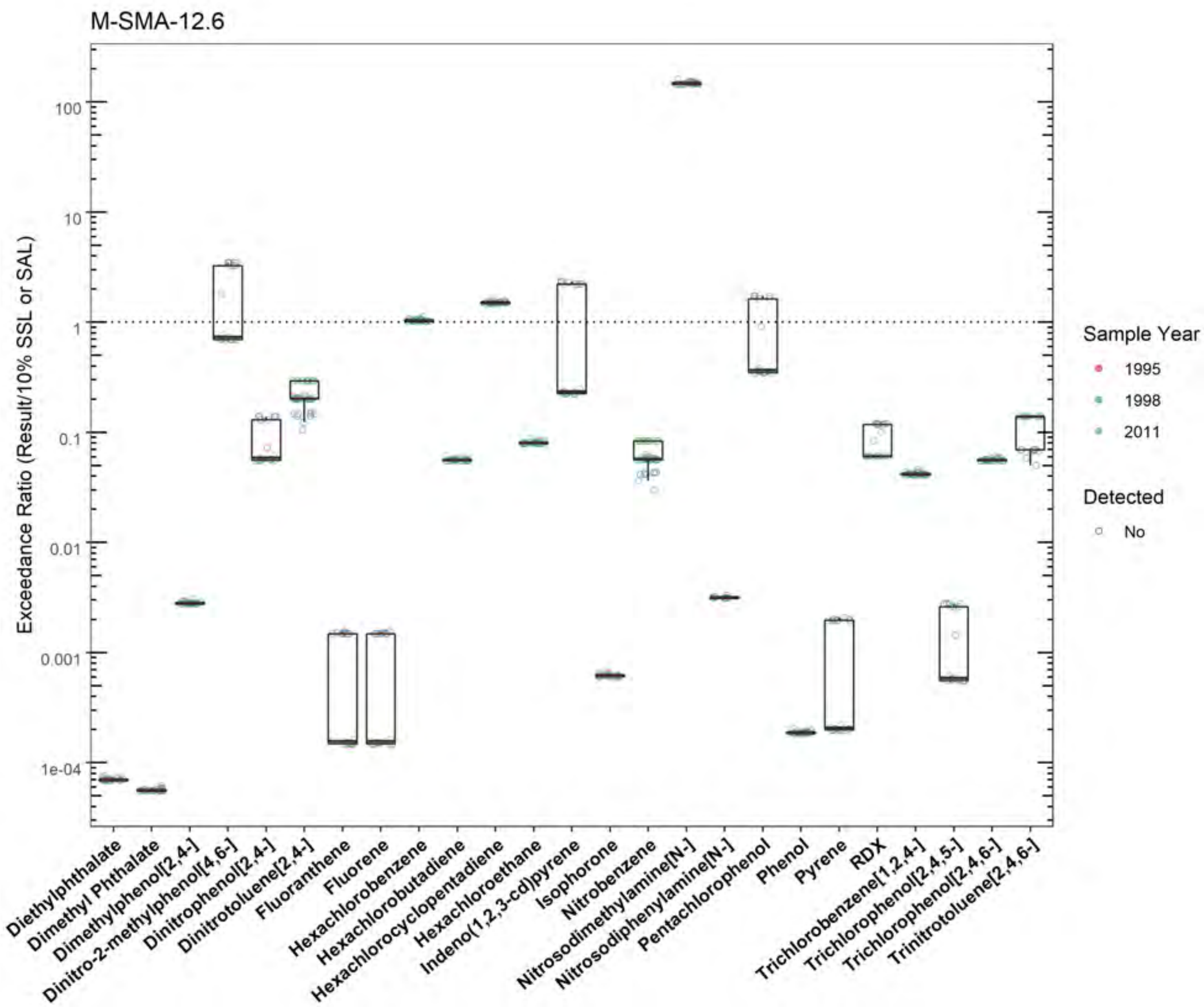


Figure 103.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-12.6 (Plot 2)

103.4 Stormwater Evaluation

103.4.1 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 103.4-1 through 103.4-4.

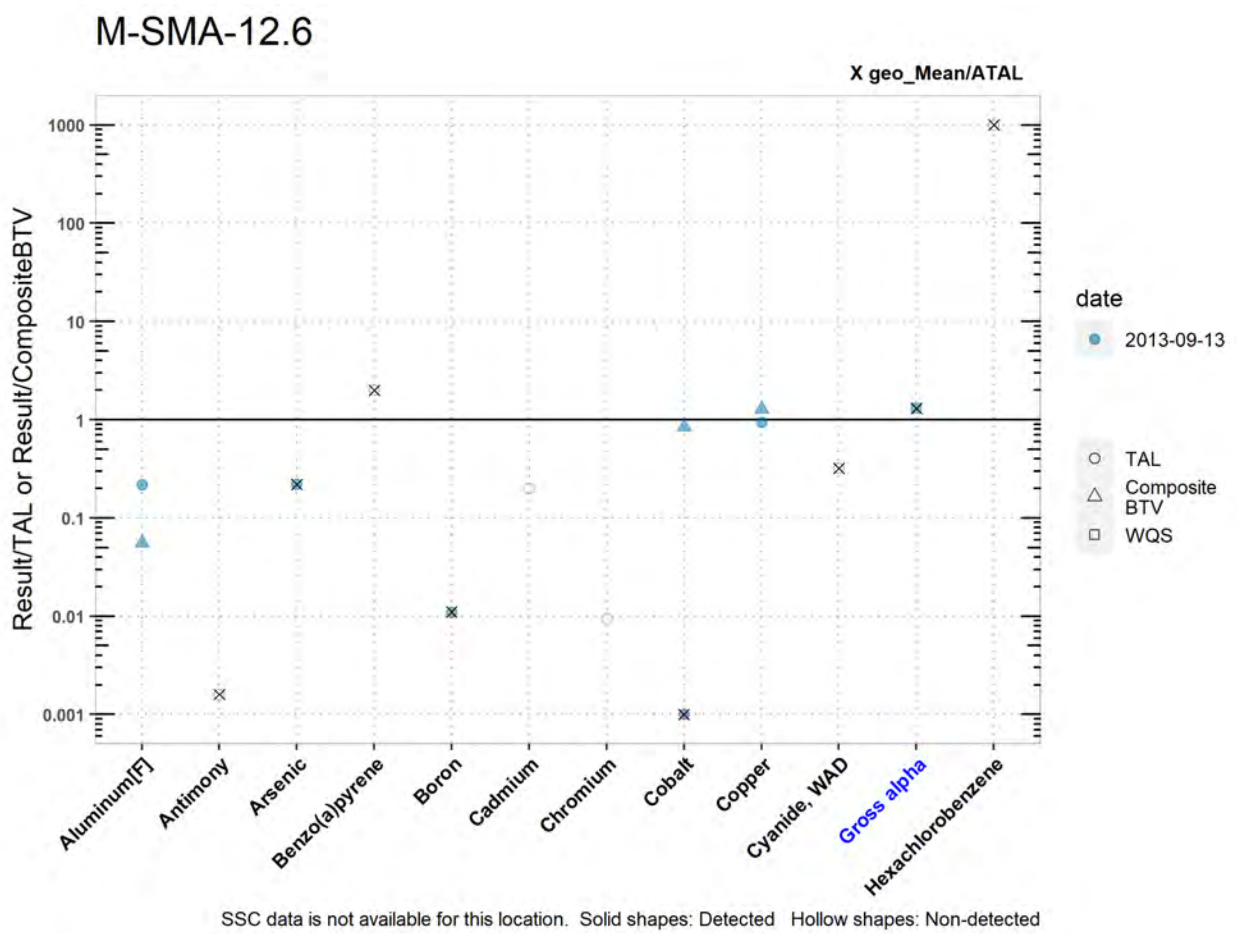


Figure 103.4-1 Analytical Results from Stormwater Sample, M-SMA-12.6 (Plot 1)

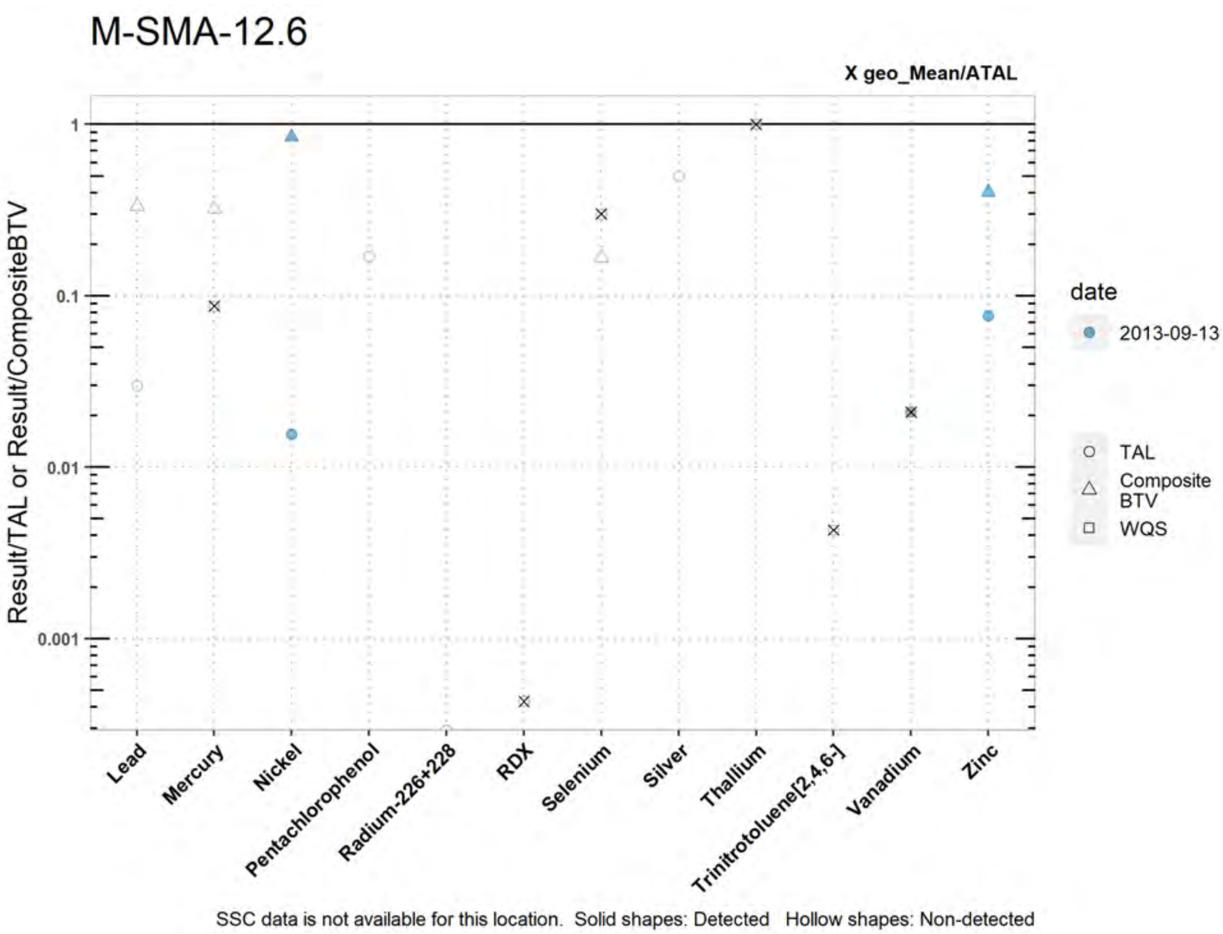


Figure 103.4-2 Analytical Results from Stormwater Sample, M-SMA-12.6 (Plot 2)

M-SMA-12.6

	Aluminum [F]	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Hexachlorobenzene
MQL	2.5	1	0.5	0.064	100	1	10	50	0.5	10	NA	5
ATAL	NA	640	9	0.18	5000	NA	NA	1000	NA	5.2	15	0.0029
MTAL	750	NA	340	NA	NA	0.583	210	NA	4.25	22	NA	NA
Composite_BTV	2950	NA	NA	NA	NA	NA	NA	1.18	3.12	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	pCi/L	ug/L
2013-09-13 result	164	*1.00*	2.01	*0.319*	57.4	*0.110*	*2.00*	1.00	3.99	*1.67*	19.2	*3.19*
2013-09-13 dT	0.219	NA	0.22	NA	0.011	NA	NA	0.0010	0.939	NA	1.3	NA
2013-09-13 dB	0.0556	NA	NA	NA	NA	NA	NA	0.847	1.28	NA	NA	NA
geo_mean/ATAL	NA	0.0016	0.22	2	0.011	NA	NA	0.0010	NA	0.321	1.3	1000

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

Figure 103.4-3 Analytical Results from Stormwater Sample, M-SMA-12.6 (Table 1)

M-SMA-12.6

	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
MQL	0.5	0.005	0.5	5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	0.77	NA	NA	30	200	5	NA	0.47	20	100	NA
MTAL	16.7	NA	167	19	NA	NA	20	0.394	NA	NA	NA	52.7
Composite_BTV	1.50	0.208	3.10	NA	4.21	NA	8.98	NA	NA	NA	NA	10.0
unit	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2013-09-13 result	*0.500*	*0.0670*	2.61	*3.19*	*NA*	*0.0856*	*1.50*	*0.200*	*0.450*	*0.0856*	2.09	4.03
2013-09-13 dT	NA	NA	0.0156	NA	NA	NA	NA	NA	NA	NA	0.021	0.0765
2013-09-13 dB	NA	NA	0.842	NA	NA	NA	NA	NA	NA	NA	NA	0.403
geo_mean/ATAL	NA	0.087	NA	NA	NA	0.00043	0.30	NA	1	0.0043	0.021	NA

Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 103.4-4 Analytical Results from Stormwater Sample, M-SMA-12.6 (Table 2)

103.4.2 Assessment Unit and Stream Impairments

M-SMA-12.6 drains to Mortandad Canyon (within LANL), which has impairments for adjusted gross alpha, PCBs, and dissolved copper. The copper and PCB impairments may be Site-related, based on Site history.

103.5 Site-Specific Demonstration

103.5.1 Soil Data Summary

No Site-related POCs exceeded screening levels.

103.5.2 Stormwater Data Summary

Gross alpha exceeded TAL.

103.5.3 2022 Permit Status

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

103.5.4 Sampling and Analysis Plan

Table 103.5-1 is the proposed SAP for M-SMA-12.6.

Table 103.5-1 Proposed SAP, M-SMA-12.6

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

104.0 M-SMA-12.7

Associated Sites	05-002, 05-005(a), 05-006(b), 05-006(e)
Receiving Water	Mortandad Canyon
Drainage Area	1.15 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 05-002: Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 05-005(a): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 05-006(b): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 05-006(e): 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 May 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

104.1 2010 Administratively Continued Permit Summary

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

104.2 Site History

05-002 (no date)

SWMUs 05-001(a), 05-001(b), 05-002, and 05-006(h) are associated with the historical Beta Site, established in 1944 as an adjunct test-firing site to Alpha Site [SWMUs 04-001, 04-002, and 04-003(b)] for Manhattan Project personnel. SWMU 05-002 is a canyon-side disposal site associated with firing pits 1 and 2 [SWMUs 05-001(a) and 05-001(b)]. This Site was used extensively for 3 yr. As debris from experimental shots at the firing pits accumulated, a bulldozer was used to push the debris northward to the edge of Mortandad Canyon. The debris zone extended to the canyon bottom.

A 1976 radiation study showed contamination at this Site. During 1985 LASCP activities, visible surface shot debris was removed. Waste potentially disposed of at this Site included shot debris, cables, wire, and trace amounts of lead, uranium, beryllium, cadmium, and uranium-contaminated aluminum or steel. During the 1985 LASCP cleanup effort, all debris present at the Site was removed from SWMU 05-002.

SWMUs 05-001(a), 05-001(b) and 05-002 were investigated together during the 1995 Phase I RFI, and later in 2004. Based on the human-health risk-screening assessment results, no potential unacceptable risks or doses from COPCs exist for the residential scenario at SWMUs 05-001(a), 05-001(b), 05-002, and 05-006(h), and no potential ecological risk was found for any receptor.

05-005(a) (no date)

SWMUs 05-005(a), 05-006(b), and 05-006(e) are associated with the historical Beta Site, established in 1944 as an adjunct test-firing site to Alpha Site [SWMUs 04-001, 04-002, and 04-003(b)] for Manhattan Project personnel. SWMU 05-005(a) was a French drain that ran north from the firing site control building (05-4) toward Mortandad Canyon. The drain was constructed in 1945 and became inactive along with the control building in 1959. The control building was removed in 1960; however, the drainline was not removed until 1985 during the LASCP.

Radioactive contamination associated with building 05-4 was detected during the 1985 LASCP; there is no record of a release of radionuclides or chemicals to the drainline. The entire area was razed when building 05-4 was removed in 1985. The associated SWMUs are no longer individually distinguishable.

After firing activities at Beta Site were halted in the late 1940s, other LANL groups used the site for various experiments involving radiation. In 1959, the experimental reactors Little Eva and Godiva operated at Beta Site. Beta Site officially ceased operations in 1959 but was used for periodic testing until the 1970s. Most of the 1985 D&D work revolved around a central area where DU contamination was detected. The area encompassed building 05-9, structures 05-7 and 05-15, and a platform.

05-006(b) (no date)

SWMUs 05-005(a), 05-006(b), and 05-006(e) are associated with the historical Beta Site, established in 1944 as an adjunct test-firing site to Alpha Site [SWMUs 04-001, 04-002, and 04-003(b)] for Manhattan Project personnel. SWMU 05-006(b) is an area of potentially contaminated soil at the location of former control building 05-4. After firing activities were halted in the late 1940s, other LANL groups used the Site for various experiments involving radiation. In 1959, the experimental reactors Little Eva and Godiva operated at Beta Site. Beta Site officially ceased operations in 1959 but was used for periodic testing until the 1970s.

During 1985 LASCP D&D activities at TA-05, uranium-contaminated soil was encountered at the former site of building 05-4. The entire area was razed when building 05-4 was removed in 1985. As a consequence, the associated SWMUs are no longer individually distinguishable. Most of the 1985 D&D work revolved around a central area where DU contamination was detected. The area encompassed building 05-9, structures 05-7 and 05-15, and a platform.

05-006(e) (no date)

SWMUs 05-005(a), 05-006(b), and 05-006(e) are associated with the historical Beta Site, established in 1944 as an adjunct test-firing site to Alpha Site [SWMUs 04-001, 04-002, and 04-003(b)] for Manhattan Project personnel. SWMU 05-006(e) is an area of potentially contaminated soil at TA-05 associated with a former platform (structure 05-19) next to building 05-04. The platform was a 6-ft × 6-ft wood structure that was mounted 26 ft above the ground on two 45-ft-tall wood poles. It was built in about 1953 and left in place when the site ceased operations in 1959.

After firing activities were halted in the late 1940s, other LANL groups used the site for various experiments involving radiation. In 1959, the experimental reactors Little Eva and Godiva operated at Beta Site. Beta Site officially ceased operations in 1959 but was used for periodic testing until the 1970s. The entire area was razed when building 05-04 was removed in 1985. As a consequence, the associated SWMUs are no longer individually distinguishable.

Most of the 1985 D&D work revolved around a central area where DU contamination was detected. The area encompassed building 05-9, structures 05 7 and 05-15, and a platform not included in these

SWMUs. TA-05 is currently used as a security buffer zone and contains physical support facilities, such as an electrical substation, test wells, several archeological sites, and environmental monitoring areas.

For investigation activities for the Sites, refer to “Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2” (LANL 2008, 102187).

104.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 104.2-1.

Table 104.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
05-002	Surface disposal area	Aluminum, beryllium, cadmium, copper, lead, HE, uranium, DU
05-005(a)	Surface disposal area	Uranium, DU
05-006(b)	Potential soil contamination from former control building	Uranium, DU
05-006(e)	Area of potential soil contamination	Uranium, DU

104.3 Consent Order Soil Data

Decision-level data for SWMU 05-002 consist of results from samples collected in 1995, 2004, and 2007, in conjunction with the investigation of SWMUs 05-001(a), 05-001(b), and 05-006(h). The 2008 IR, Revision 2 (LANL 2008, 102187), concluded that the nature and extent of all detected chemicals and radionuclides are defined.

Decision-level data for SWMU 05-005(a), 05-006(b), and 05-006(e) consist of results from samples collected in 1995 and 2004. The 2008 IR, Revision 2 (LANL 2008, 102187), concluded that the nature and extent of all detected chemicals and radionuclides are defined.

Analytical results from all decision-level soil samples collected for M-SMA-12.7 are presented in Figures 104.3-1 through 104.3-4.

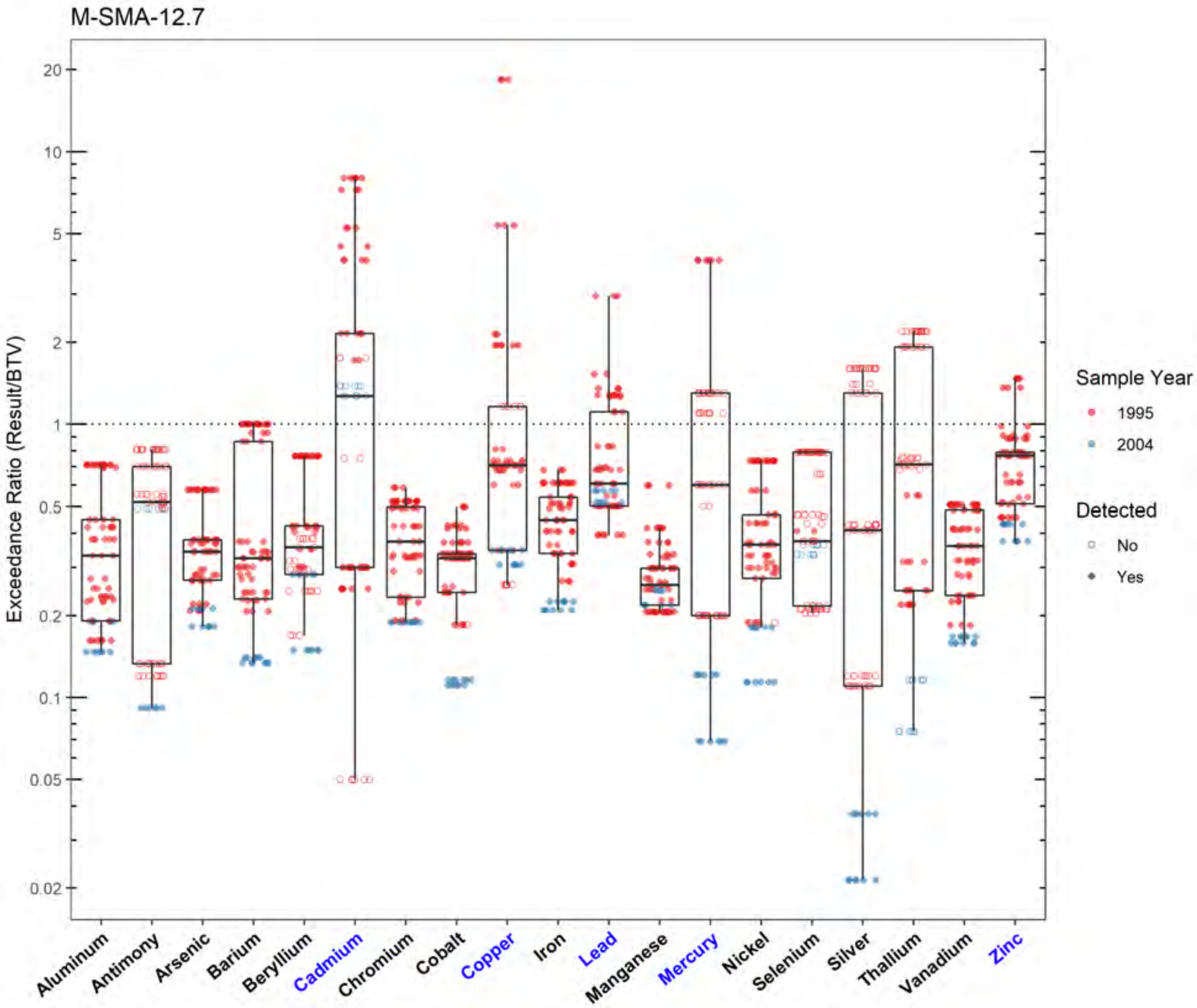


Figure 104.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-12.7

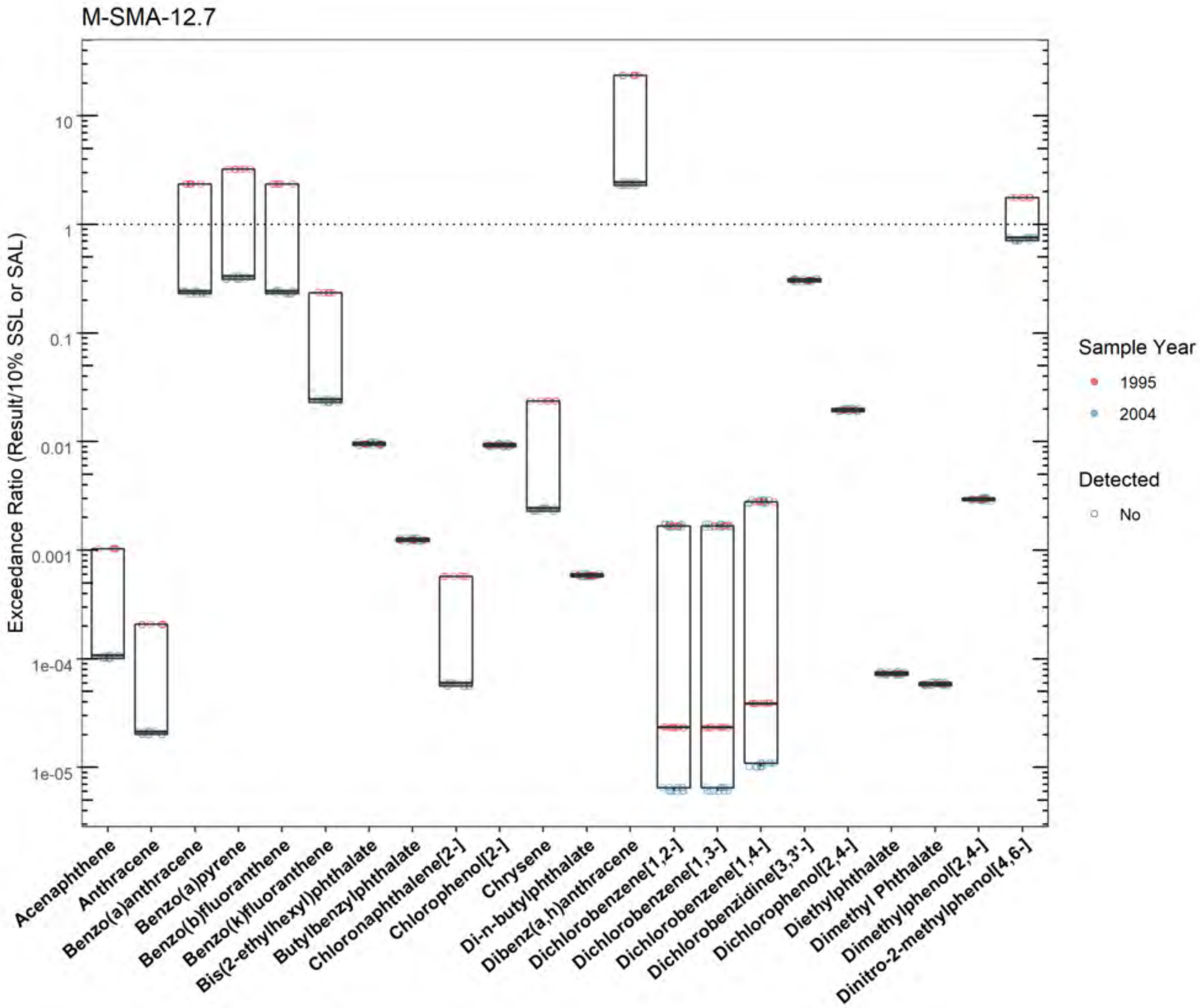


Figure 104.3-2 Organics Analytical Results from Soil Samples Associated with M-SMA-12.7 (Plot 1)

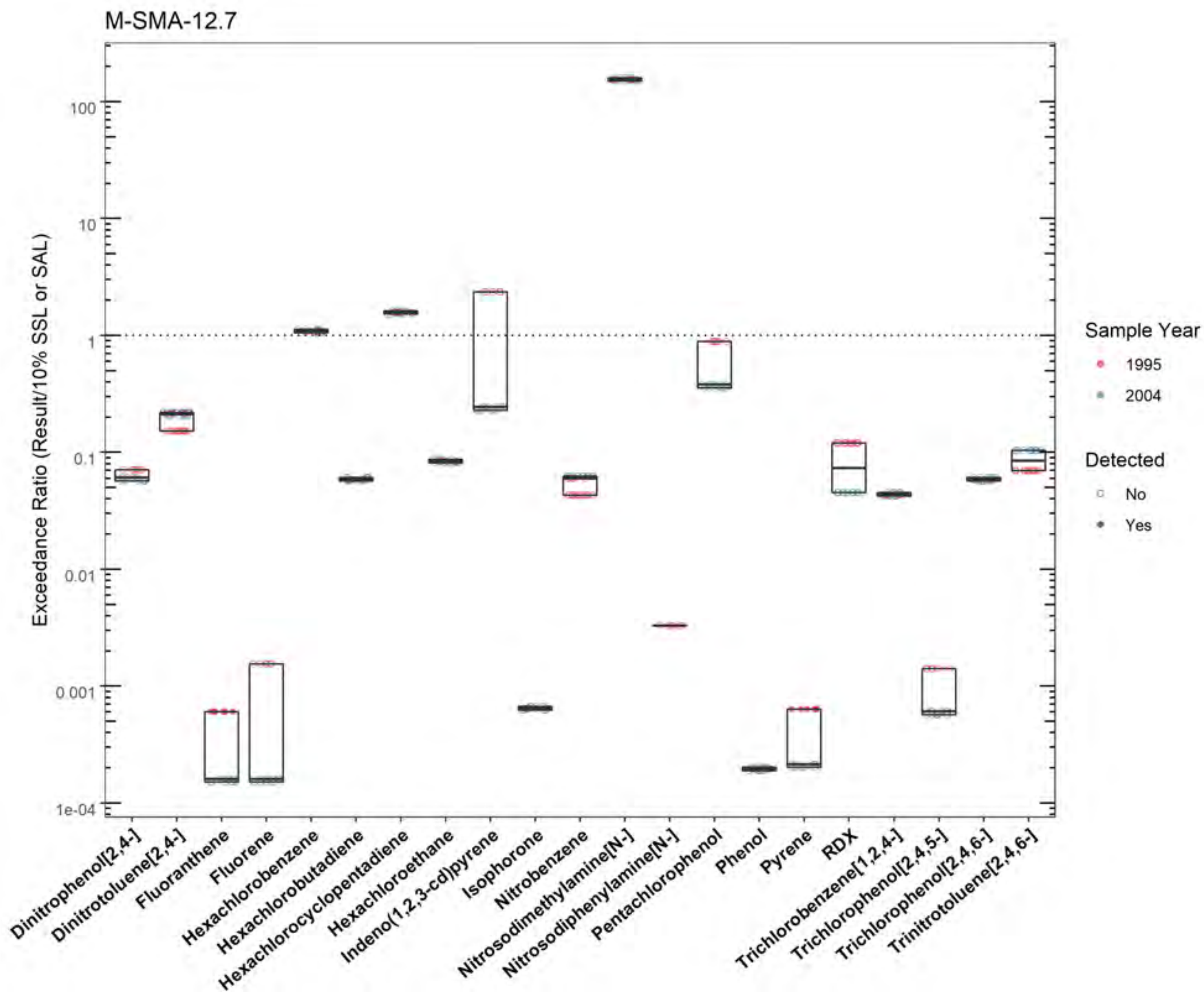


Figure 104.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-12.7 (Plot 2)

M-SMA-12.7

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Cadmium	M-SMA-12.7	Cd	Y	BTV	0.400	3.20	1995-06-21
Copper	M-SMA-12.7	Cu	Y	BTV	14.7	270	1995-06-21
Lead	M-SMA-12.7	Pb	Y	BTV	22.3	66.1	1995-06-21
Mercury	M-SMA-12.7	Hg	Y	BTV	0.100	0.400	1995-06-23
Zinc	M-SMA-12.7	Zn	Y	BTV	48.8	71.7	1995-06-21

Figure 104.3-4 Screening-Level Exceedances from Soil Samples Associated with M-SMA-12.7

104.4 Stormwater Evaluation

104.4.1 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.

104.4.2 Assessment Unit and Stream Impairments

M-SMA-12.7 drains to Mortandad Canyon (within LANL), which has impairments for adjusted gross alpha, PCBs, and dissolved copper. The adjusted gross alpha and copper impairments may be Site-related, based on Site history.

104.5 Site-Specific Demonstration

104.5.1 Soil Data Summary

The following Site-related POCs exceeded BVs or 10% of the SSL in soil data and have not yet been measured in stormwater: cadmium, copper, lead, mercury, and zinc.

104.5.2 Stormwater Data Summary

No confirmation-monitoring data.

104.5.3 2022 Permit Status

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

104.5.4 Sampling and Analysis Plan

Table 104.5-1 is the proposed SAP for M-SMA-12.7.

Table 104.5-1 Proposed SAP, M-SMA-12.7

Monitoring Constituent	Background for Monitoring
Dissolved cadmium, copper, lead, uranium and zinc	Impairment (copper), Site history, and soil data
Gross alpha	Impairment and Site history (uranium)
Total mercury	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

105.0 M-SMA-12.8

Associated Sites	05-001(a), 05-002
Receiving Water	Mortandad Canyon
Drainage Area	0.76 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 05-001(a): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 05-002: Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the May 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Corrective Action

105.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in July 2019. Analytical results from this sample initiated corrective action.

SWMUs 05-001(a) and 05-002 received COCs under the Consent Order from NMED in September 2015. The Permittees submitted a certification of completion of corrective action for the Sites to EPA per Permit part I.E.2(d) in December 2019 (N3B 2019, 700724). Stormwater monitoring has not occurred for these Sites since 2019.

105.2 Site History

05-001(a) (no date)

SWMU 05-001(a) is a former steel barricade firing pit, designated No. 1 (structure 05-07). The site was used for implosion tests from 1944 to 1947. During the 1985 LASCP cleanup effort at structure 05-07, steel plates around the pit, a control box, and a wood platform were removed. No contamination was detected on the surface of the structures or in the soil directly beneath the firing pit. The soil in the area was contaminated in several spots; consequently, structure 05-7 and other material were taken to TA-54 for disposal. The pit was cleaned of all debris and backfilled.

SWMUs 05-001(a), 05-001(b), 05-002, and 05-006(h) are associated with the historical Beta Site. SWMUs 05-001(a), 05-00(b), and 05-002 were investigated together during the 1995 Phase I RFI, and later in 2004. Based on the human-health risk-screening assessment results, no potential unacceptable risks or doses from COPCs exist for the residential scenario at SWMUs 05-001(a), 05-001(b), 05-002, and 05-006(h), and no potential ecological risk was found for any receptor.

05-002 (no date)

SWMU 05-002 is a canyon-side disposal site associated with firing pits 1 and 2 [SWMUs 05-001(a) and 05-001(b)]. This Site was used extensively for 3 yr. As debris from experimental shots at the firing pits accumulated, a bulldozer was used to push the debris northward to the edge of Mortandad Canyon. The debris zone extended to the canyon bottom.

A 1976 radiation study showed contamination at this Site. Waste potentially disposed of at this Site included shot debris, cables, wire, and trace amounts of lead, uranium, beryllium, cadmium, and uranium-contaminated aluminum or steel. During the 1985 LASCP cleanup effort, all debris present at the Site was removed from SWMU 05-002.

SWMUs 05-001(a), 05-001(b), 05-002, and 05-006(h) are associated with the historical Beta Site. SWMUs 05-001(a), 05-001(b) and 05-002 were investigated together during the 1995 Phase I RFI, and later in 2004. Based on the human-health risk-screening assessment results, no potential unacceptable risks or doses from COPCs exist for the residential scenario at SWMUs 05-001(a), 05-001(b), 05-002, and 05-006(h), and no potential ecological risk was found for any receptor.

For investigation activities for all Sites associated with M-SMA-12.8, refer to "Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2" (LANL 2008, 102187).

105.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 105.2-1.

Table 105.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
05-001(a)	Firing pit	Aluminum, beryllium, cadmium, copper, lead, HE, uranium, DU
05-002	Surface disposal area	Aluminum, beryllium, cadmium, copper, lead, HE, uranium, DU

105.3 Consent Order Soil Data

Decision-level data for SWMUs 05-001(a) and 05-002 consist of results from samples collected in 1995, 2004, and 2007, in conjunction with the investigation of SWMUs 05-001(b) and 05-006(h). Analytical results from those samples are presented in Figures 105.3-1 through 105.3-4. The 2008 IR, Revision 2 (LANL 2008, 102187), concluded that the nature and extent of all detected chemicals and radionuclides are defined.

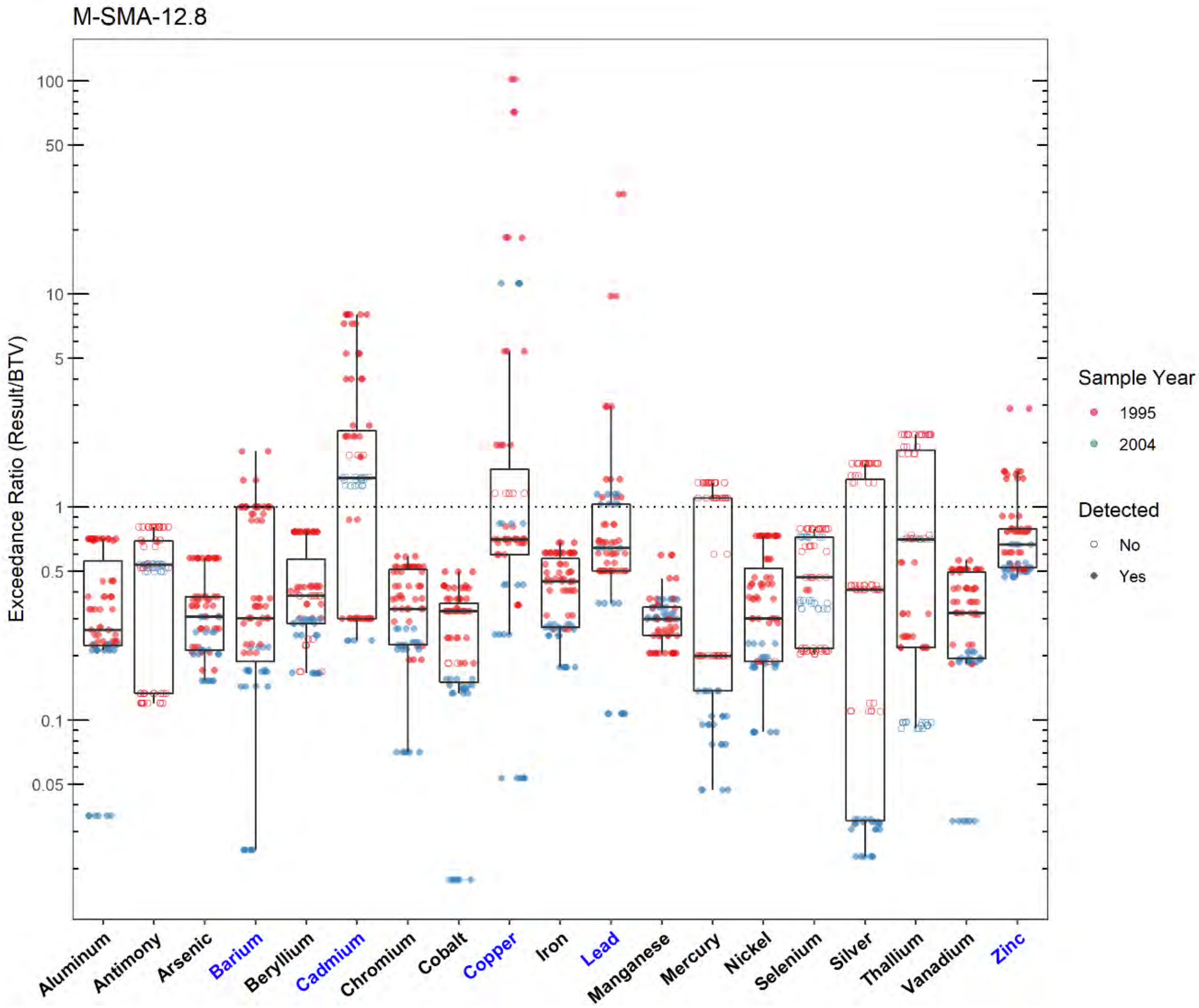


Figure 105.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-12.8

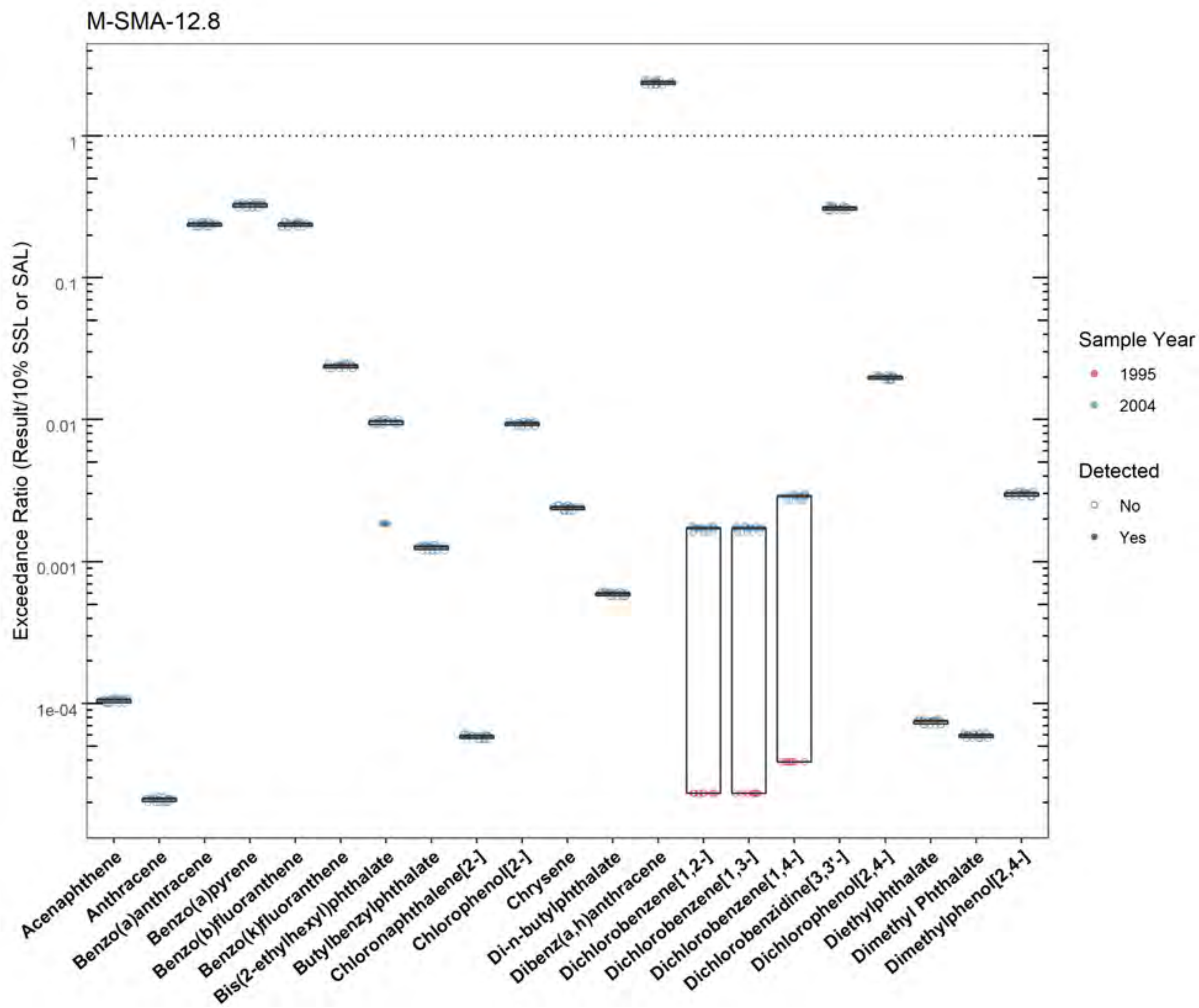


Figure 105.3-2 Organics Analytical Results from Soil Samples Associated with M-SMA-12.8 (Plot 1)

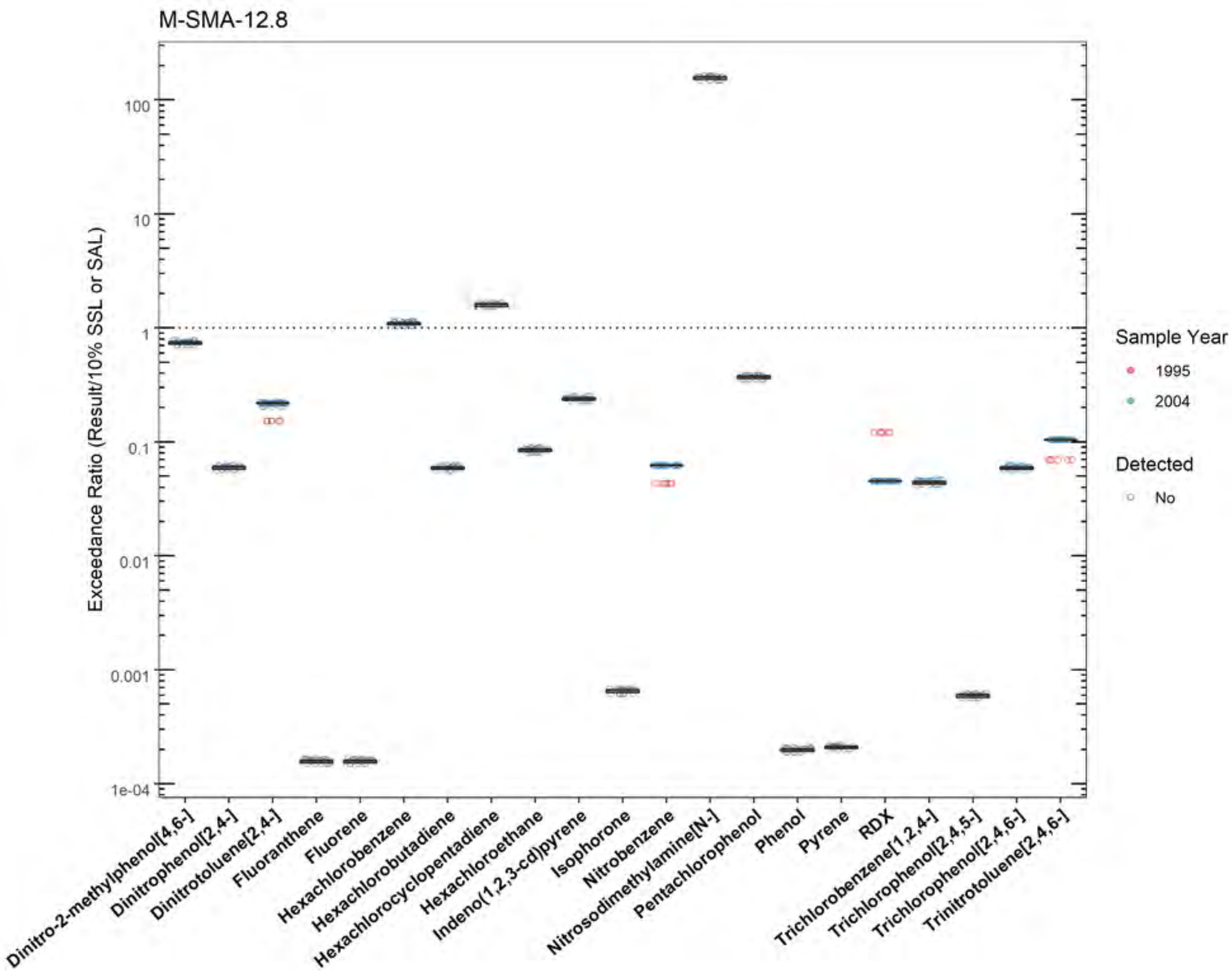


Figure 105.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-12.8 (Plot 2)

M-SMA-12.8

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Barium	M-SMA-12.8	Ba	Y	BTV	295	539	1995-06-20
Cadmium	M-SMA-12.8	Cd	Y	BTV	0.400	3.20	1995-06-21
Copper	M-SMA-12.8	Cu	Y	BTV	14.7	1500	1995-06-20
Lead	M-SMA-12.8	Pb	Y	BTV	22.3	655	1995-06-20
Zinc	M-SMA-12.8	Zn	Y	BTV	48.8	141	1995-06-20

Figure 105.3-4 Screening-Level Exceedances from Soil Samples Associated with M-SMA-12.8

105.4 Stormwater Evaluation

105.4.1 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 2019. Analytical results from that sample are presented in Figures 105.4-1 through 105.4-4.

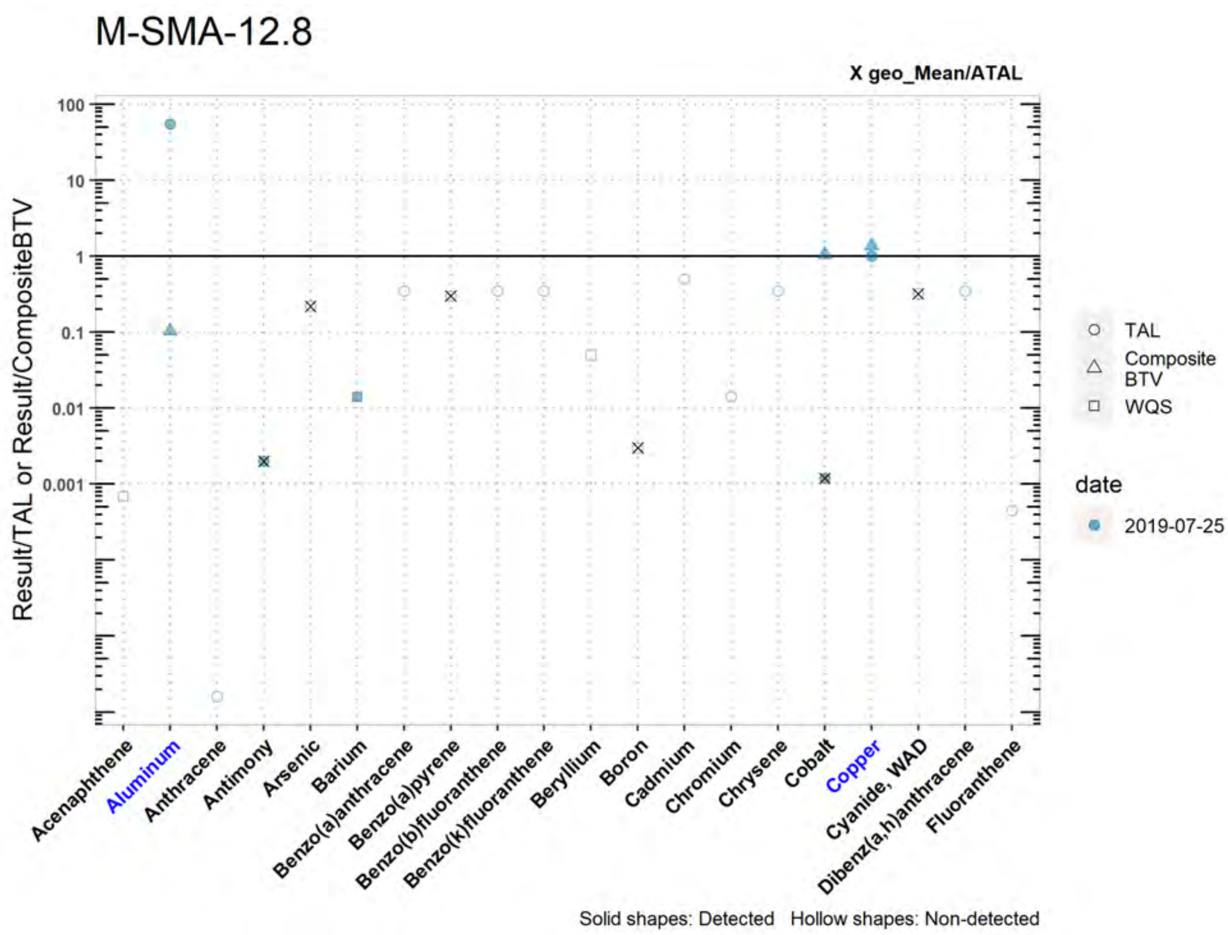


Figure 105.4-1 Analytical Results from Stormwater Sample, M-SMA-12.8 (Plot 1)

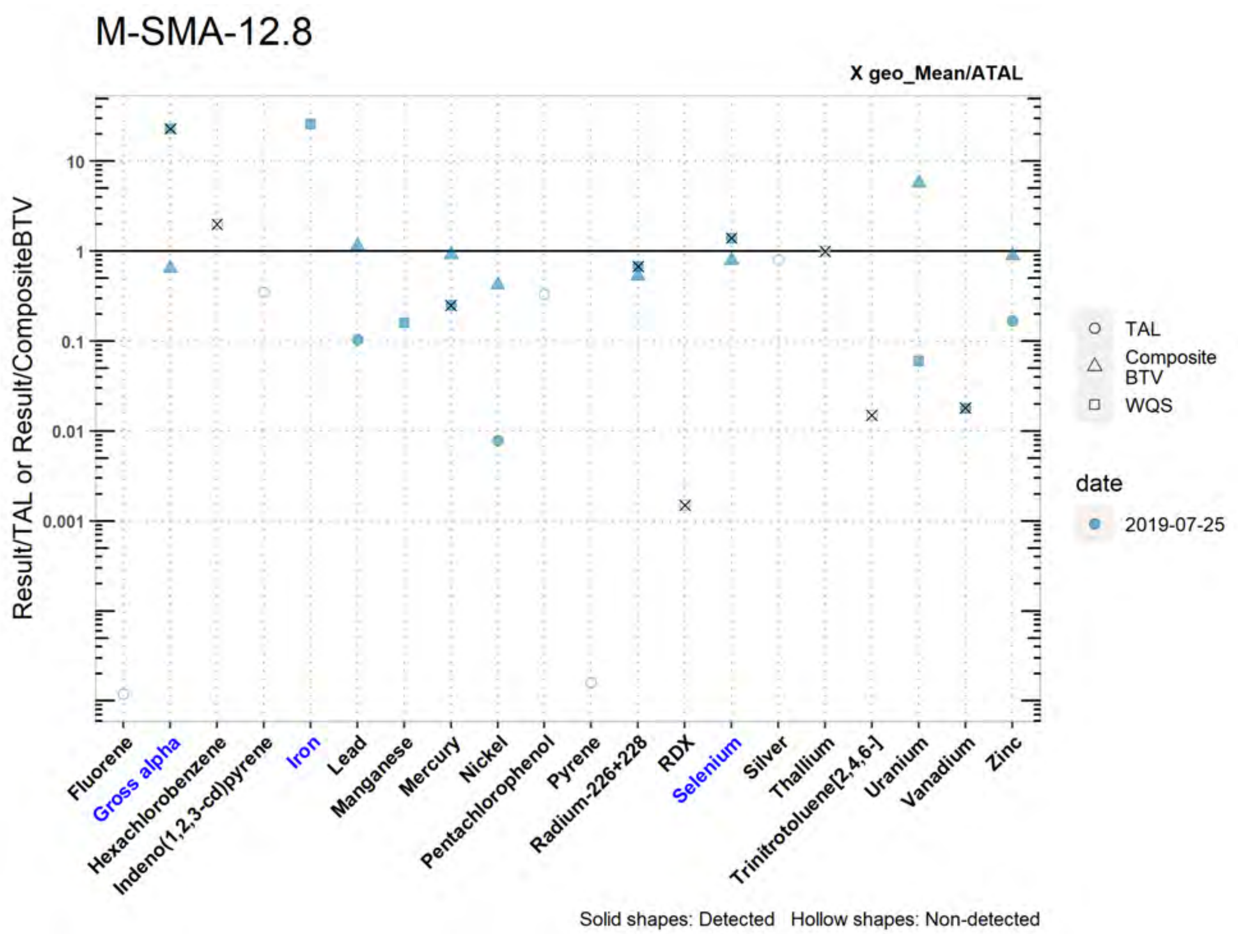


Figure 105.4-2 Analytical Results from Stormwater Sample, M-SMA-12.8 (Plot 2)

M-SMA-12.8

	Acenaphthene	Aluminum	Anthracene	Antimony	Arsenic	Barium	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Beryllium	Boron	Cadmium	Chromium	Chrysene	Cobalt	Copper	Cyanide, WAD	Dibenz(a,h)anthracene	Fluoranthene
MQL	NA	2.5	0.064	1	0.5	NA	0.064	0.064	0.064	0.064	NA	100	1	10	0.064	50	0.5	10	0.064	0.064
ATAL	NA	NA	NA	640	9	NA	NA	0.18	NA	NA	NA	5000	NA	NA	NA	1000	NA	5.2	NA	NA
MTAL	NA	643	NA	NA	340	NA	0.18	NA	0.18	0.18	NA	NA	0.583	210	0.18	NA	4.25	22	0.18	140
Composite_BTV	NA	37400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.18	3.12	NA	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
2019-07-25 result	*0.0625*	35500	*0.0625*	1.26	*2.00*	27.6	*0.0625*	*0.0625*	*0.0625*	*0.0625*	*0.200*	*15.0*	*0.300*	*3.00*	*0.0625*	1.24	4.29	*1.67*	*0.0625*	*0.0625*
2019-07-25 dT	NA	55.2	NA	0.0020	NA	0.014	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0012	1.01	NA	NA	NA
2019-07-25 dB	NA	0.104	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.05	1.38	NA	NA	NA
geo_mean/ATAL	NA	NA	NA	0.0020	0.22	NA	NA	0.3	NA	NA	NA	0.0030	NA	NA	NA	0.0012	NA	0.321	NA	NA

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

Figure 105.4-3 Analytical Results from Stormwater Sample, M-SMA-12.8 (Table 1)

M-SMA-12.8

	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	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	15	0.0029	NA	NA	NA	NA	0.77	NA	NA	NA	30	200	5	NA	0.47	20	NA	100	NA
MTAL	5300	NA	NA	0.18	NA	16.7	NA	NA	167	19	4000	NA	NA	20	0.394	NA	NA	NA	NA	52.7
Composite_BTV	NA	57.2	NA	NA	NA	1.50	NA	0.208	3.10	NA	NA	4.21	NA	8.98	NA	NA	NA	0.315	NA	10.0
unit	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
2019-07-25 result	*0.0625*	338	*0.00679*	*0.0625*	25500	1.73	174	0.190	1.31	*6.25*	*0.0625*	20.4	*0.304*	7.07	*0.300*	*0.600*	*0.304*	1.81	1.83	8.85
2019-07-25 dT	NA	23	NA	NA	26	0.104	0.16	0.25	0.00784	NA	NA	0.680	NA	1.4	NA	NA	NA	0.060	0.018	0.168
2019-07-25 dB	NA	0.649	NA	NA	NA	1.15	NA	0.913	0.423	NA	NA	0.532	NA	0.787	NA	NA	NA	5.75	NA	0.885
geo_mean/ATAL	NA	23	2	NA	NA	NA	NA	0.25	NA	NA	NA	0.680	0.0015	1.4	NA	1	0.015	NA	0.018	NA

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

Figure 105.4-4 Analytical Results from Stormwater Sample, M-SMA-12.8 (Table 2)

105.4.2 Assessment Unit and Stream Impairments

M-SMA-12.8 drains to Mortandad Canyon (within LANL), which has impairments for adjusted gross alpha, PCBs, and dissolved copper. The adjusted gross alpha and copper impairments may be Site-related, based on Site history.

105.5 Site-Specific Demonstration

105.5.1 Soil Data Summary

Copper exceeded in soil and stormwater, and will be added to the SAP. The remaining metals, which exceeded the applicable screening value in soil data, have been previously measured in stormwater data and did not exceed TALs. Therefore, they will not be added to the SAP.

105.5.2 Stormwater Data Summary

Total aluminum, gross alpha, and selenium were above TAL but below BTV. Copper was above TAL and BTV, initiating corrective action. Iron exceeded the WQS. However, there is no TAL in the Permit for iron; only POCs with TALs are used in the SSD.

105.5.3 2022 Permit Status

Due to the exceedance of a composite BTV and/or TAL, corrective action will be initiated at this SMA for copper (Part I.C.2.b.i)

106.0 M-SMA-12.9

Associated Sites	05-001(b), 05-002
Receiving Water	Mortandad Canyon
Drainage Area	0.17 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 05-001(b): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 05-002: Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the May 2017 field visit and follow-up field review of the site topography, soil sample locations, and results, the SIP team determined that the current SMA sampler does encompass stormwater from soil sample locations of concern at this Site, and the current location is representative.
2022 Permit Status	Corrective Action

106.1.0 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in July 2015. Analytical results from this samples initiated corrective action.

SWMUs 05-001(b) and 05-002 received COCs under the Consent Order from NMED in September 2015. The Permittees submitted a certification of completion of corrective action for the Sites to EPA per Permit part I.E.2(d) in October 2015 (LANL 2015, 600978). Stormwater monitoring has not occurred since 2015.

106.2 Site History

05-001(b) (no date)

SWMU 05-001(b) is a former steel barricade firing pit, designated No.2 (structure 05-15). The pit was constructed in 1944 and was taken out of service in 1959. Experimental shots were set up at the site and fired on open ground. As debris accumulated, a bulldozer cleared the pit area by pushing scrap and debris north to the edge of Mortandad Canyon. The shrapnel zone included the canyon sides, canyon bottom, and about 200 ft around the firing pits.

During 1985 D&D activities, the firing pit was removed, and uranium contamination was found in the soil to a depth of 15 ft. The area was decontaminated and backfilled with clean soil.

SWMUs 05-001(a), 05-001(b), 05-002, and 05-006(h) are associated with the historical Beta Site at TA-05. SWMUs 05-001(a), 05-001(b), and 05-002 were investigated together during the 1995 Phase I RFI, and later in 2004. Based on the human-health risk-screening assessment results, no potential unacceptable risks or doses from COPCs exist for the residential scenario at SWMUs 05-001(a), 05-001(b), 05-002, and 05 006(h), and no potential ecological risk was found for any receptor.

05-002 (no date)

SWMU 05-002 is a canyon-side disposal site associated with firing pits 1 and 2 [SWMUs 05-001(a) and 05-001(b)]. This Site was used extensively for 3 yr. As debris from experimental shots at the firing pits accumulated, a bulldozer was used to push the debris northward to the edge of Mortandad Canyon. The debris zone extended to the canyon bottom.

Waste potentially disposed of at this Site included shot debris, cables, wire, and trace amounts of lead, uranium, beryllium, cadmium, and uranium-contaminated aluminum or steel. A 1976 radiation study showed contamination. During the 1985 LASCP cleanup effort, all debris present at the Site was removed from SWMU 05-002.

SWMUs 05-001(a), 05-001(b), 05-002, and 05-006(h) are associated with the historical Beta Site. SWMUs 05-001(a), 05-001(b) and 05-002 were investigated together during the 1995 Phase I RFI and later in 2004. Based on the human-health risk-screening assessment results, no potential unacceptable risks or doses from COPCs exist for the residential scenario at SWMUs 05-001(a), 05-001(b), 05-002, and 05-006(h), and no potential ecological risk was found for any receptor.

For investigation activities for the Sites, refer to “Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2” (LANL 2008, 102187).

106.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 106.2-1.

Table 106.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
05-001(b)	Firing pit	Aluminum, beryllium, cadmium, copper, lead, HE, uranium, DU
05-002	Surface disposal area	Aluminum, beryllium, cadmium, copper, lead, HE, uranium, DU

106.3 Consent Order Soil Data

Decision-level data for SWMUs 05-001(b) and 05-002 consist of results from samples collected in 1995, 2004, and 2007, in conjunction with the investigation of SWMUs 05-001(a) and 05-006(h). Analytical results from those samples are presented in Figures 106.3-1 through 106.3-4. The 2008 IR, Revision 2 (LANL 2008, 102187), concluded that the nature and extent of all detected chemicals and radionuclides are defined.

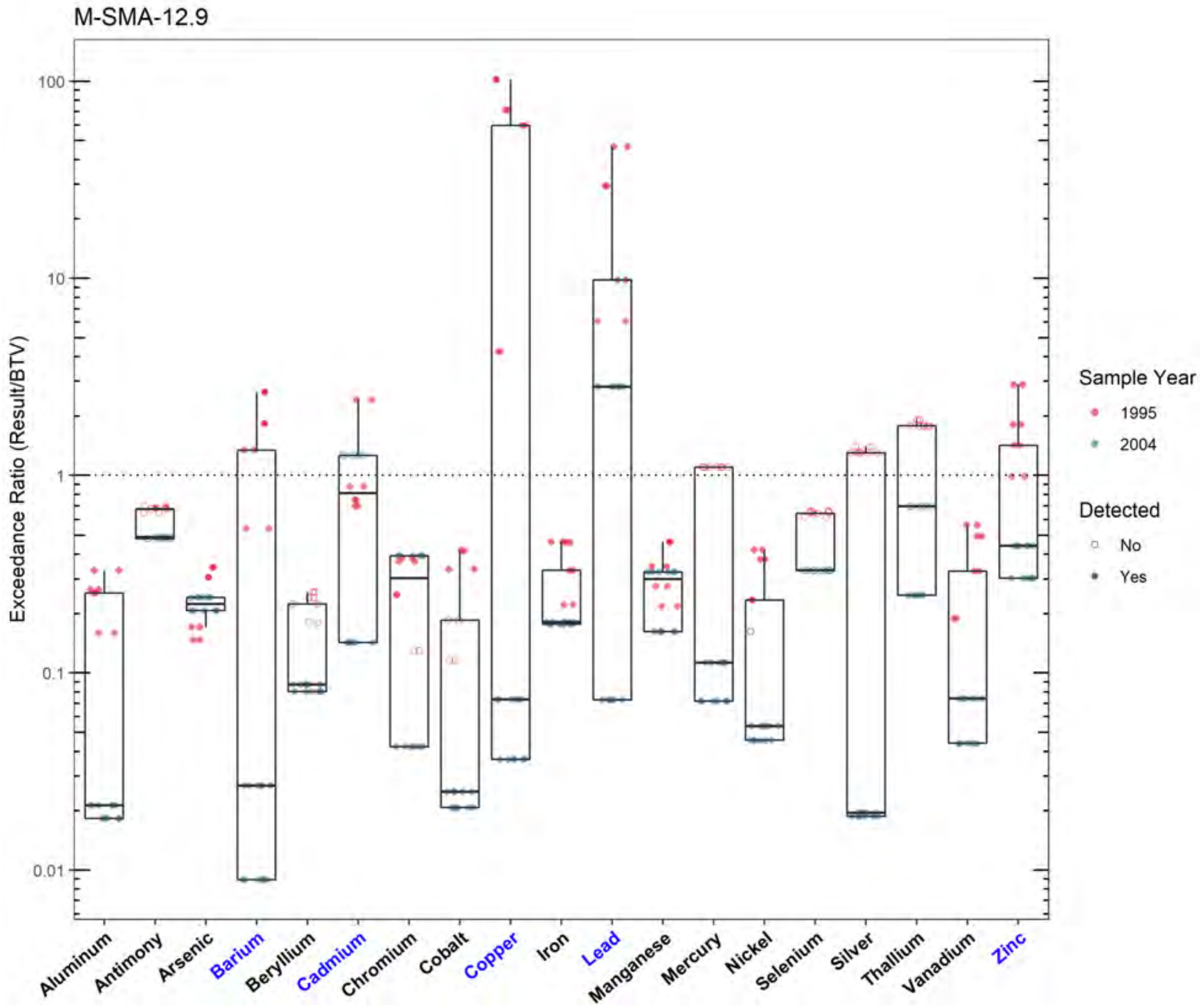


Figure 106.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-12.9

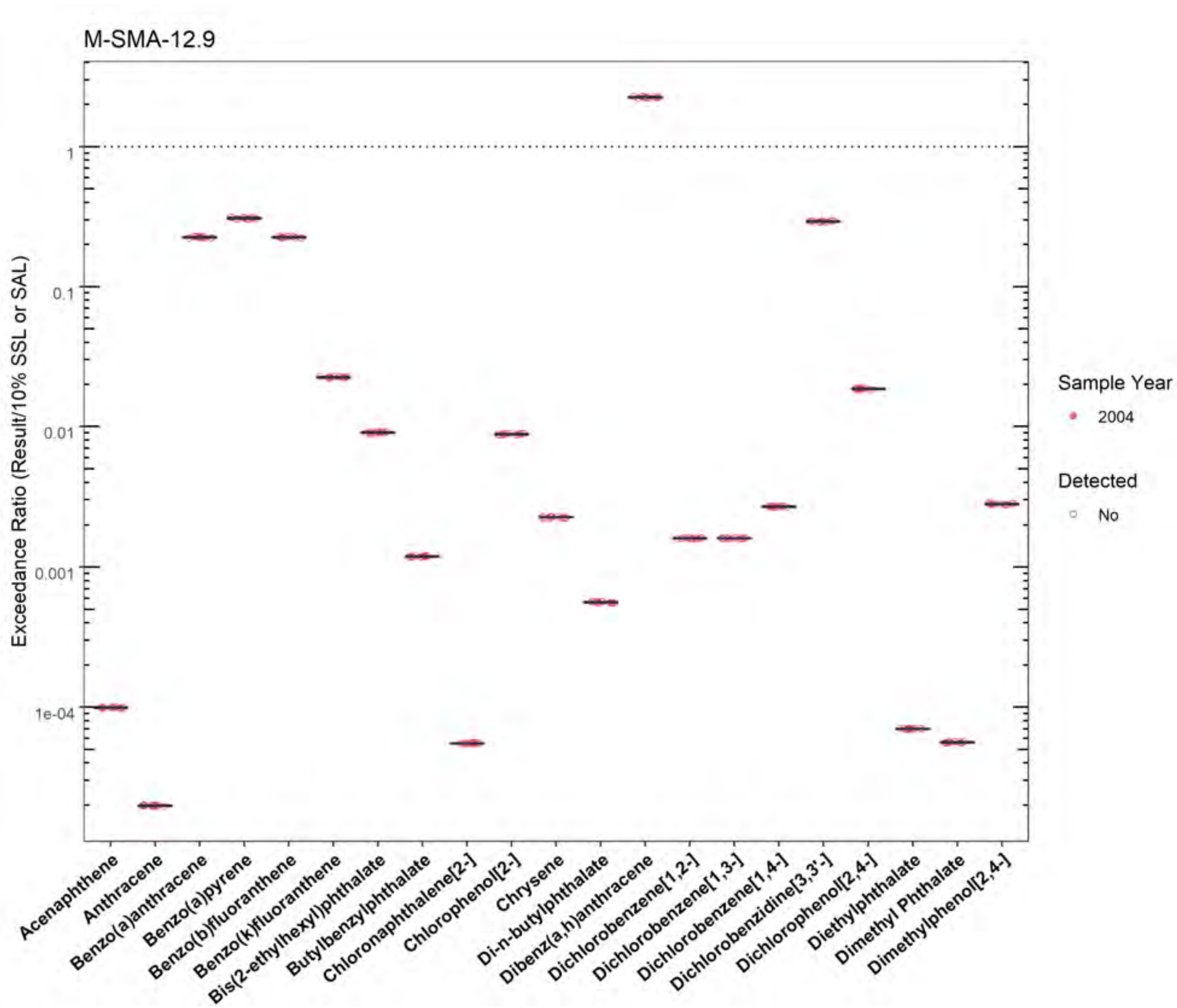


Figure 106.3-2 Organics Analytical Results from Soil Samples Associated with M-SMA-12.9 (Plot 1)

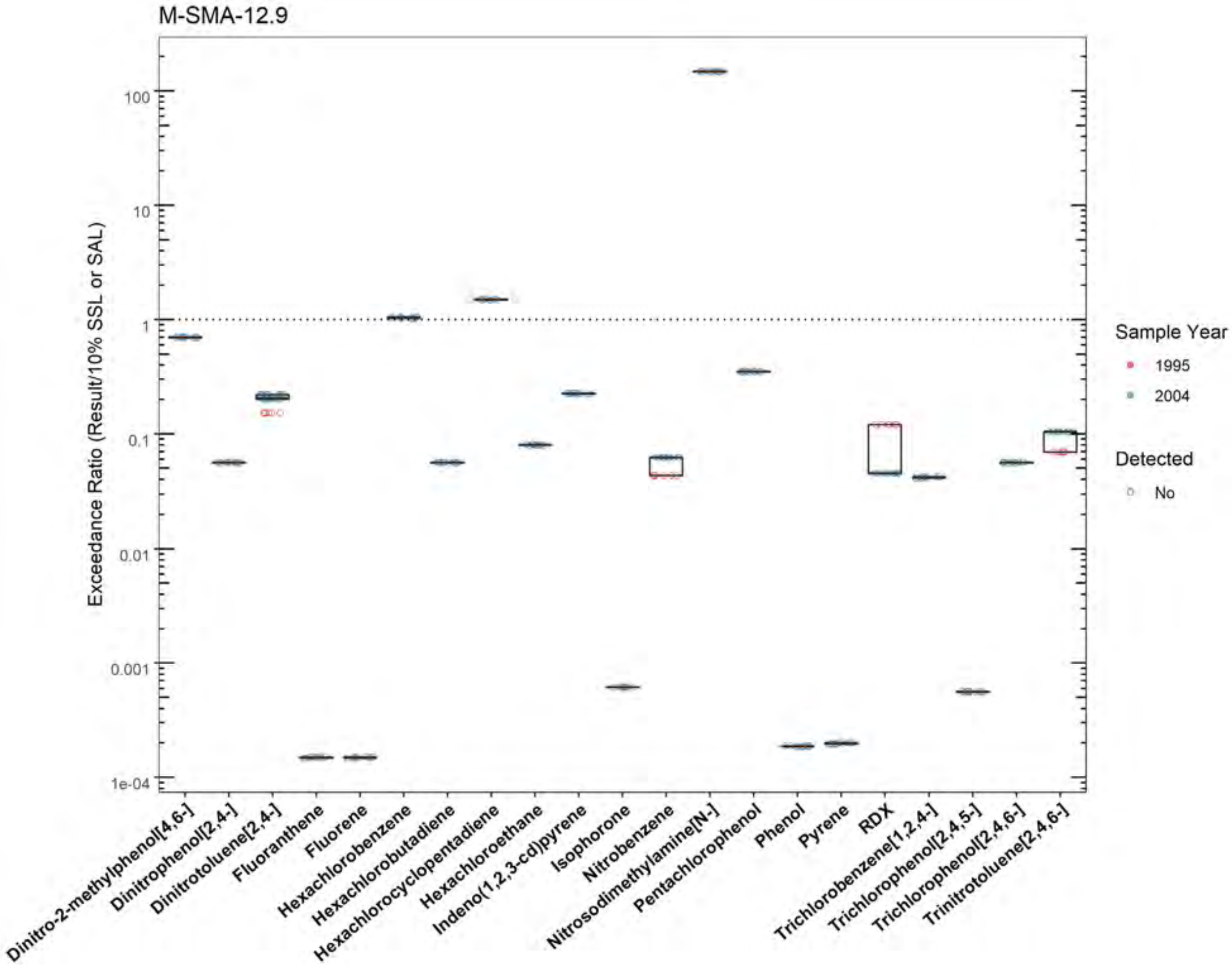


Figure 106.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-12.9 (Plot 2)

M-SMA-12.9

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Barium	M-SMA-12.9	Ba	Y	BTV	295	781	1995-06-20
Cadmium	M-SMA-12.9	Cd	Y	BTV	0.400	0.970	1995-06-20
Copper	M-SMA-12.9	Cu	Y	BTV	14.7	1500	1995-06-20
Lead	M-SMA-12.9	Pb	Y	BTV	22.3	1040	1995-06-20
Zinc	M-SMA-12.9	Zn	Y	BTV	48.8	141	1995-06-20

Figure 106.3-4 Screening-Level Exceedances from Soil Samples Associated with M-SMA-12.9

106.4 Stormwater Evaluation

106.4.1 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 2015. Analytical results from that sample are presented in Figures 106.4-1 through 106.4-4.

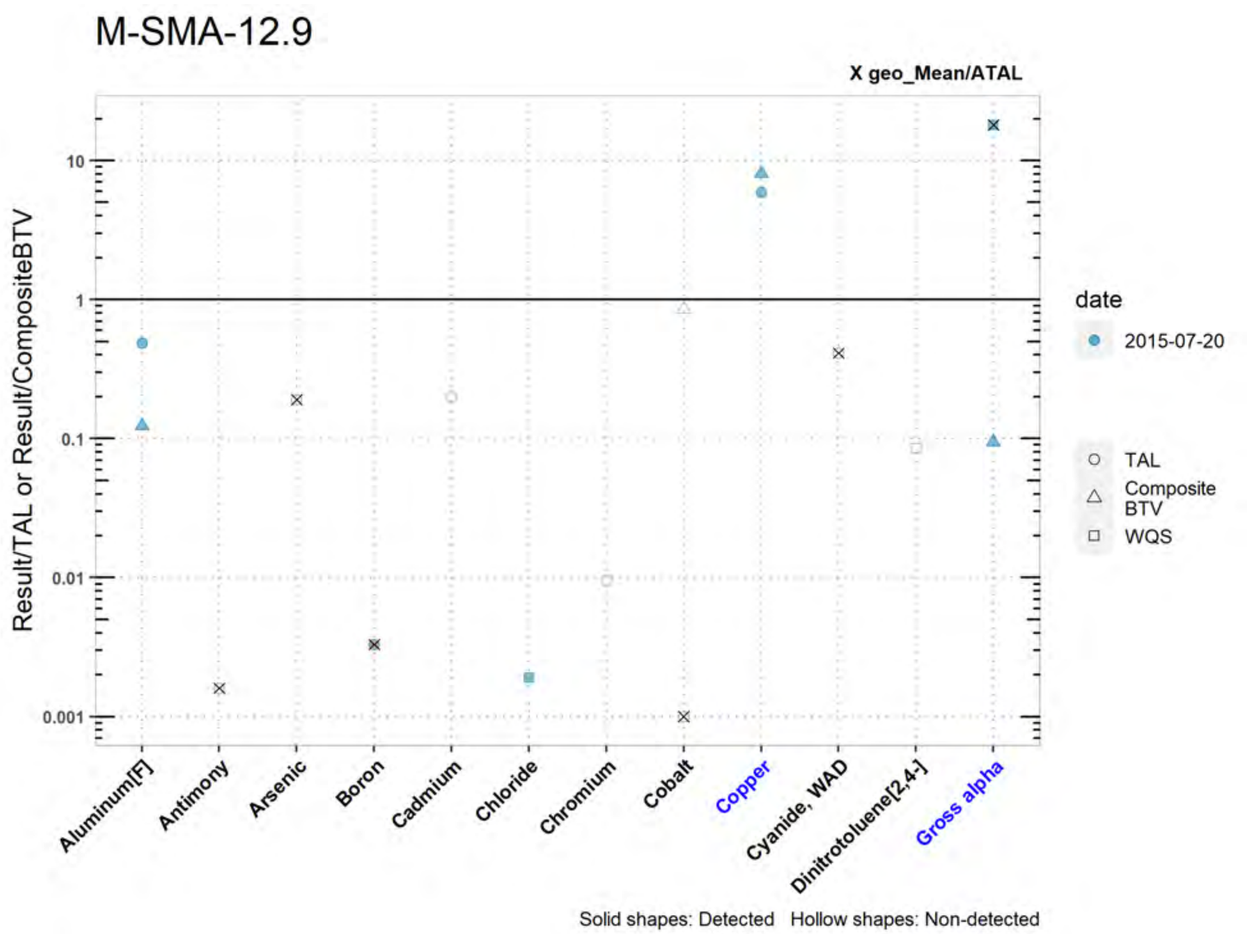


Figure 106.4-1 Analytical Results from Stormwater Sample, M-SMA-12.9 (Plot 1)

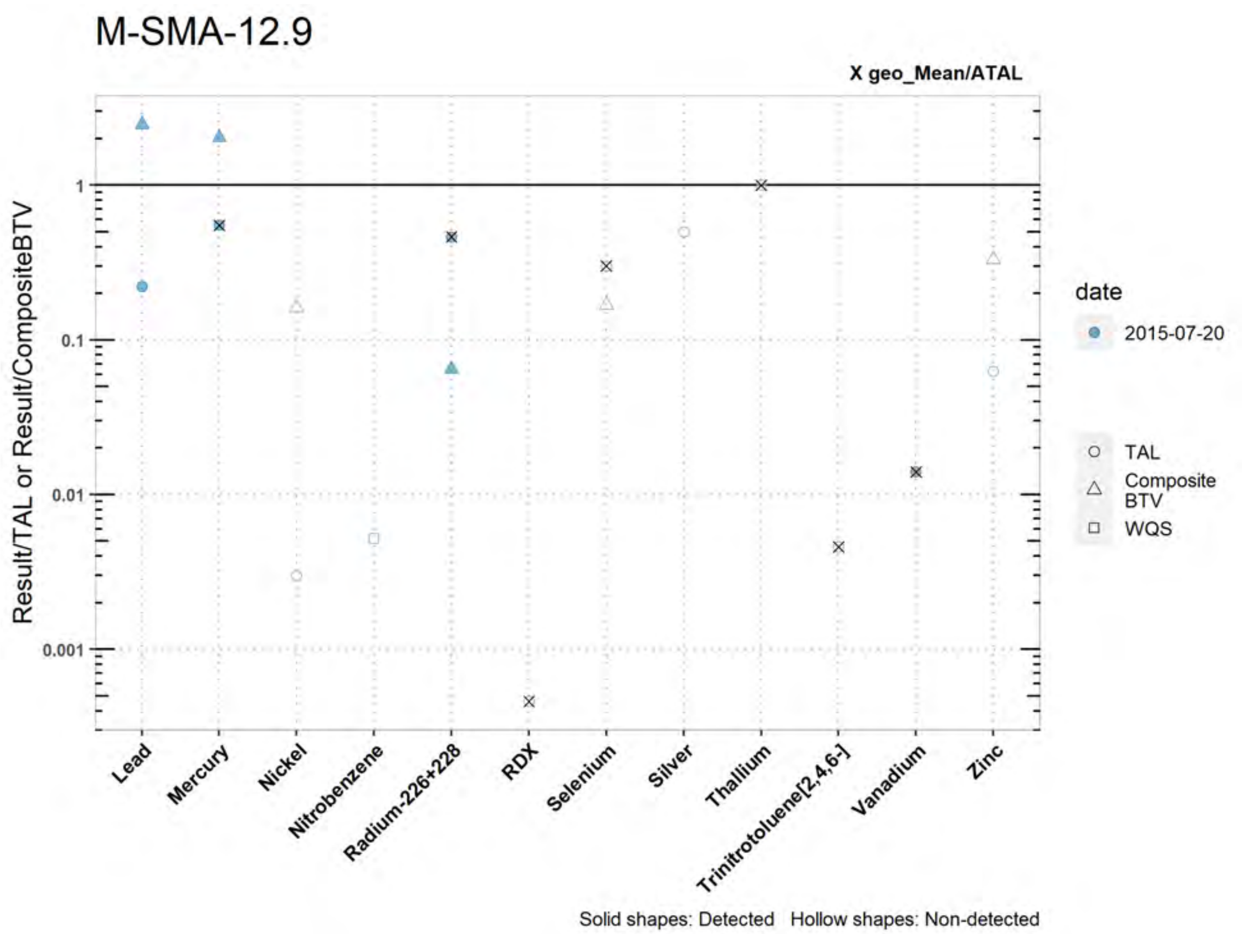


Figure 106.4-2 Analytical Results from Stormwater Sample, M-SMA-12.9 (Plot 2)

M-SMA-12.9

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chloride	Chromium	Cobalt	Copper	Cyanide, WAD	Dinitrotoluene [2,4-]	Gross alpha
MQL	2.5	1	0.5	100	1	NA	10	50	0.5	10	NA	NA
ATAL	NA	640	9	5000	NA	NA	NA	1000	NA	5.2	NA	15
MTAL	750	NA	340	NA	0.583	NA	210	NA	4.25	22	NA	NA
Composite_BTV	2950	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	pCi/L*
2015-07-20 result	363	*1.00*	*1.70*	16.4	*0.110*	440	*2.00*	*1.00*	25.1	*2.14*	*0.0930*	276
2015-07-20 dT	0.484	NA	NA	0.0033	NA	0.0019	NA	NA	5.91	NA	NA	18
2015-07-20 dB	0.123	NA	NA	NA	NA	NA	NA	NA	8.04	NA	NA	0.0942
geo_mean/ATAL	NA	0.0016	0.19	0.0033	NA	NA	NA	0.0010	NA	0.412	NA	18

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 106.4-3 Analytical Results from Stormwater Sample, M-SMA-12.9 (Table 1)

M-SMA-12.9

	Lead	Mercury	Nickel	Nitrobenzene	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
MQL	0.5	0.005	0.5	NA	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	0.77	NA	NA	30	200	5	NA	0.47	20	100	NA
MTAL	16.7	NA	167	NA	NA	NA	20	0.394	NA	NA	NA	52.7
Composite_BTV	1.50	0.208	3.10	NA	4.21	NA	8.98	NA	NA	NA	NA	10.0
unit	ug/L	ug/L	ug/L	ug/L	pCi/L*	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2015-07-20 result	3.71	0.420	*0.500*	*0.0930*	13.9	*0.0930*	*1.50*	*0.200*	*0.450*	*0.0930*	1.39	*3.30*
2015-07-20 dT	0.222	0.55	NA	NA	0.463	NA	NA	NA	NA	NA	0.014	NA
2015-07-20 dB	2.47	2.02	NA	NA	0.0645	NA	NA	NA	NA	NA	NA	NA
geo_mean/ATAL	NA	0.55	NA	NA	0.463	0.00046	0.30	NA	1	0.0046	0.014	NA

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

Figure 106.4-4 Analytical Results from Stormwater Sample, M-SMA-12.9 (Table 2)

106.4.2 Assessment Unit and Stream Impairments

M-SMA-12.9 drains to Mortandad Canyon (within LANL), which has impairments for adjusted gross alpha, PCBs, and dissolved copper. The adjusted gross alpha and copper impairments may be Site-related, based on Site history.

106.5 Site-Specific Demonstration

106.5.1 Soil Data Summary

Barium exceeded the applicable screening value in soil data but is not a Site-related POC. Therefore, it will not be added to the SAP. Copper exceeded the applicable screening value in soil and exceeded TAL in stormwater. The remaining metals that exceeded the applicable 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.

106.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL but not the BTV. Copper exceeded the TAL and BTV, initiating corrective action.

106.5.3 2022 Permit Status

Due to the exceedance of a composite BTV and TAL, corrective action will be initiated at this SMA for copper (Part I.C.2.b.i).

107.0 M-SMA-12.92

Associated Sites	00-001
Receiving Water	Mortandad Canyon
Drainage Area	741.71 acres
Landscape Characteristics	9% impervious, 91% pervious
Consent Order Site Status	SWMU 00-001: In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the May 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

107.1 2010 Administratively Continued Permit Summary

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

107.2 Site History

00-001 (no date)

SWMU 00-001 is the area of the historical and current sediment traps in Mortandad Canyon. The site is approximately 900 ft long × 200 ft wide within the Mortandad Canyon stream channel, downstream from and east of the confluence of Mortandad and Ten Site Canyons. The two original traps were built in 1976 with a capacity of approximately 20,000 gal. each. In 1980, a third trap was built with a capacity of approximately 225,000 gal.

Currently, trap 1, the most upstream, has a capacity of approximately 286,000 gal. Trap 2, the next trap downstream, has a current capacity of 628,000 gal., and trap 3, the downstream trap, has a current capacity of 287,000 gal. The sediment traps are approximately 1.5 mi downstream from the TA-50 RLWTF outfall, and about 1.4 mi upstream from, and west of, the LANL boundary.

The three traps were re-excavated in 1992 after they were filled following several storms. The excavated sediment was stockpiled next to the traps. Major maintenance of the sediment traps was performed as part of the post-Cerro Grande fire recovery work.

- Excavation of sediment trap 1 was conducted in July 2000. Approximately 384 yd^3 of soil from sediment trap 1 was excavated.
- Excavation of the soil piles north and adjacent to sediment trap 1 was completed in August 2000. Approximately 1308 yd^3 of soil from the piles were excavated.
- Excavation of sediment trap 3 was conducted in August 2000. Approximately 5040 yd^3 of soil from sediment trap 3 was excavated.

All soil excavated during the 2000 maintenance was transported to, and disposed of at, TA 54, Area G.

In July 2002, LANL requested and obtained NMED concurrence that the environmental media generated during this routine maintenance does not warrant management as F-listed hazardous wastes.

For investigation activities, refer to "Mortandad Canyon Sediment Trap Maintenance Final Closeout Report" (WGII 2000, 070735).

107.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 107.2-1.

Table 107.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
00-001	Sediment traps	Metals, organic chemicals, radionuclides

107.3 Consent Order Soil Data

Consent Order investigations are complete for SWMU 00-001. Analytical results from decision-level soil all samples collected for M-SMA-12.92 are presented in Figures 107.3-1 through 107.3-4.

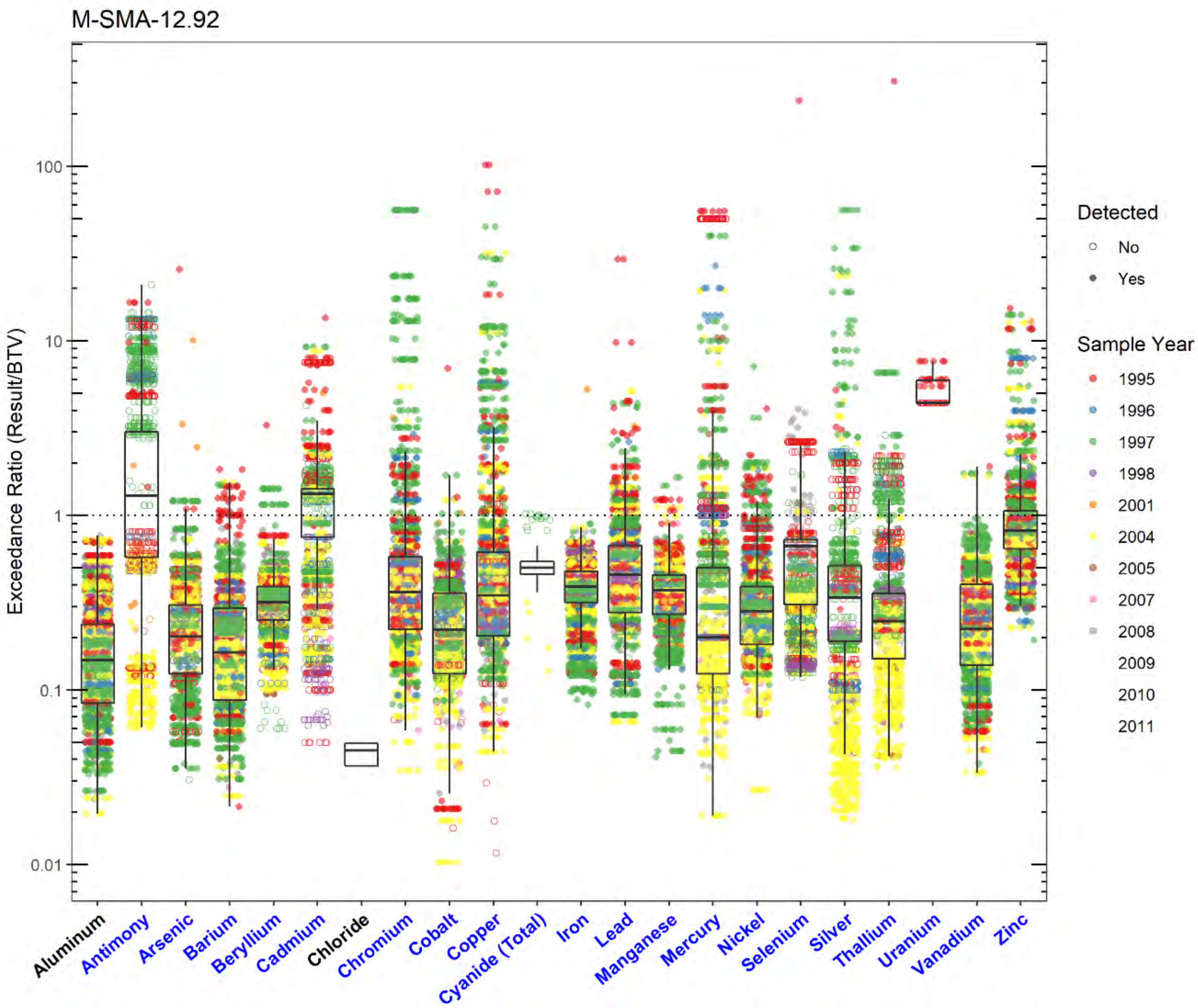


Figure 107.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-12.92

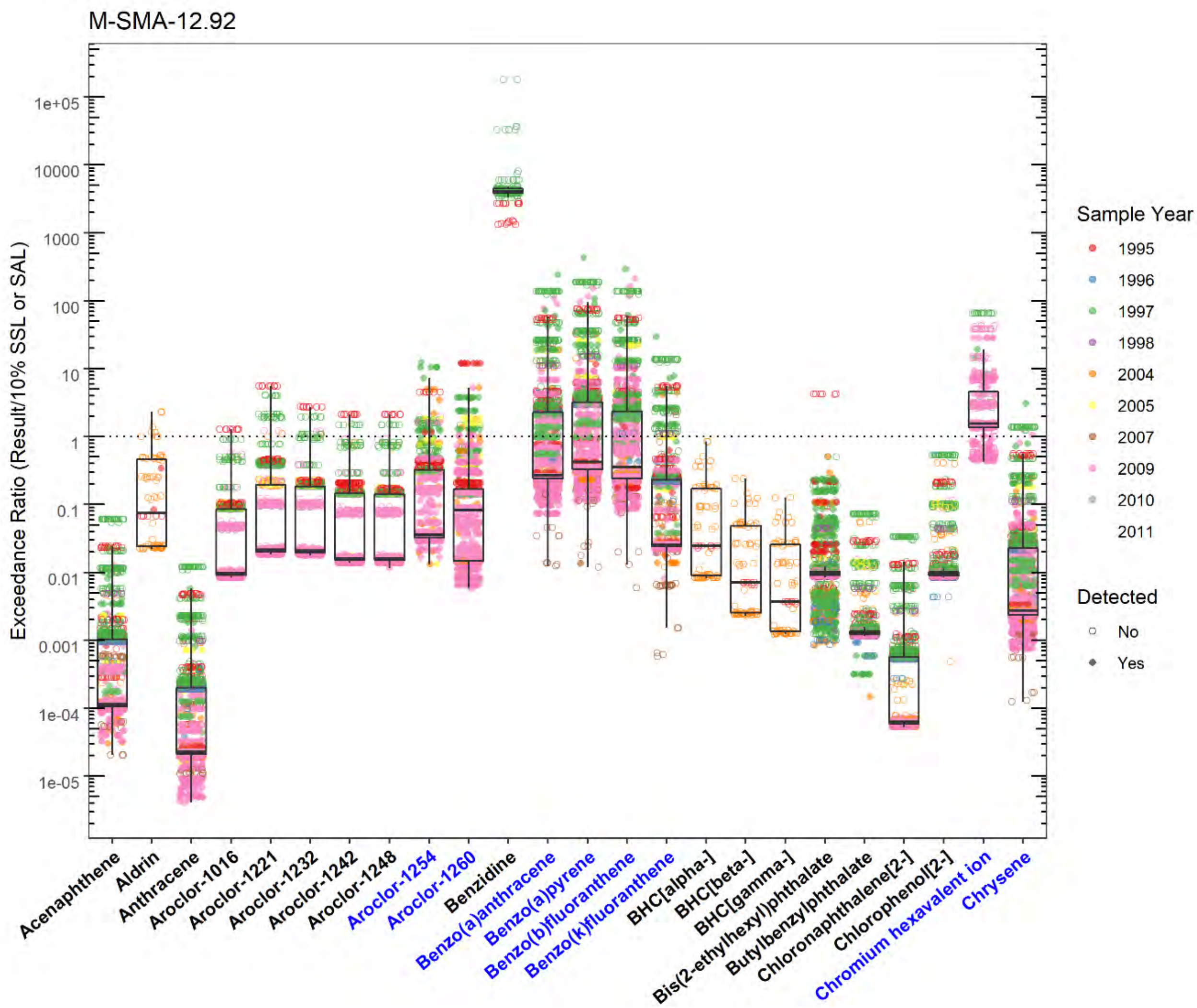


Figure 107.3-2 **Organics Analytical Results from Soil Samples Associated with M-SMA-12.92 (Plot 1)**

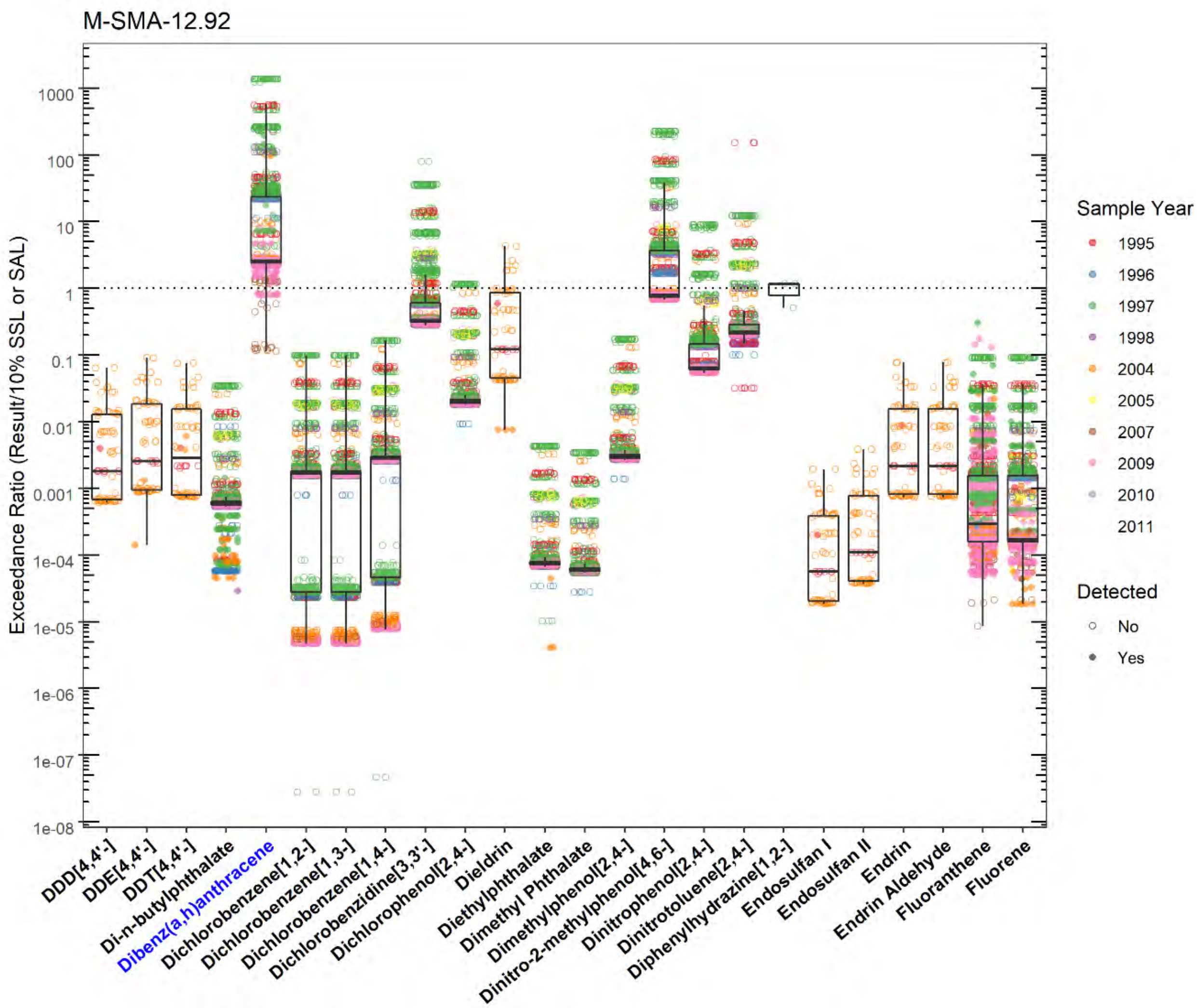


Figure 107.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-12.92 (Plot 2)

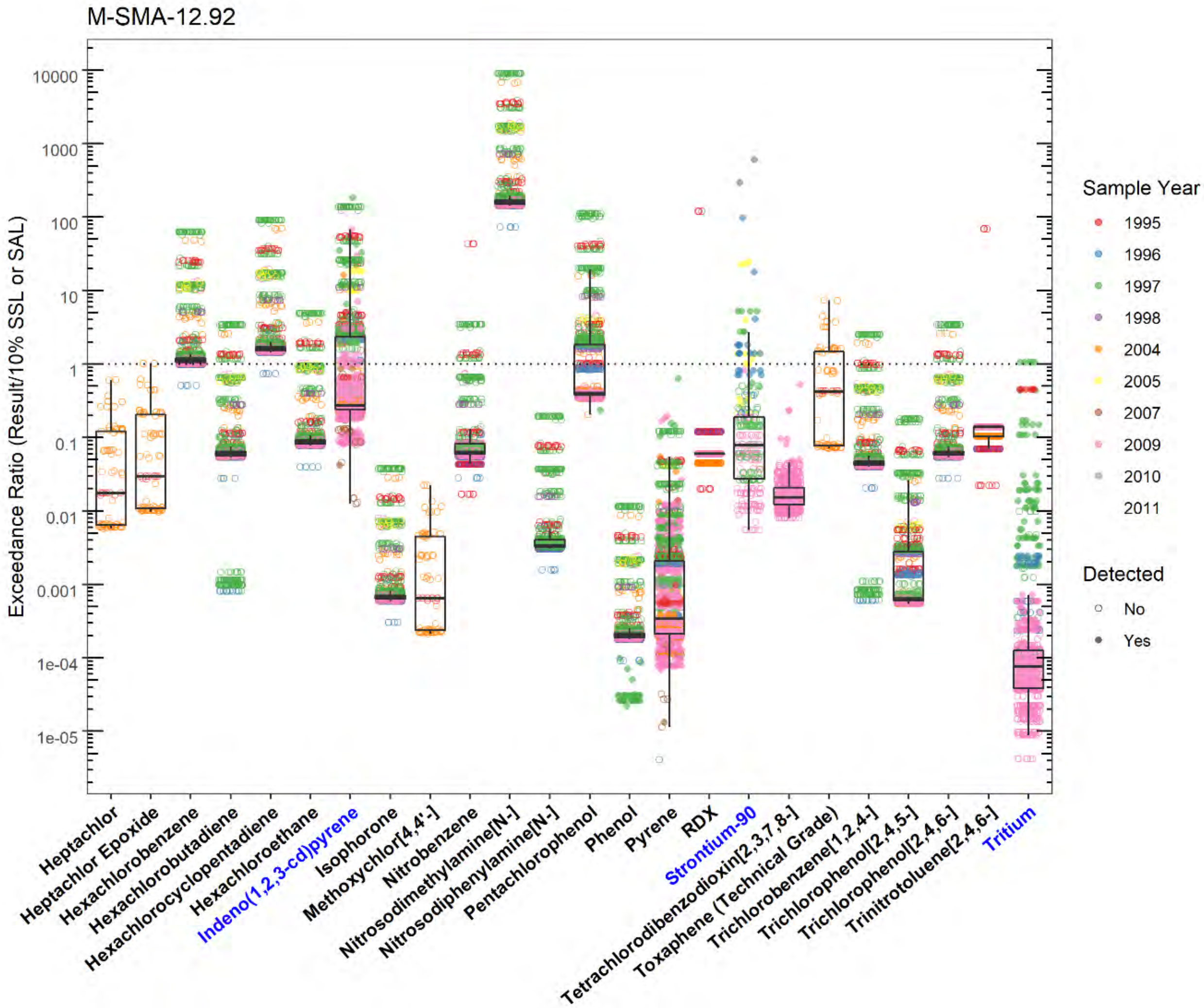


Figure 107.3-4 Organics Analytical Results from Soil Samples Associated with M-SMA-12.92 (Plot 3)

M-SMA-12.92

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	M-SMA-12.92	Sb	Y	BTV	0.830	13.8	1995-03-06
Aroclor-1254	M-SMA-12.92	11097-69-1	Y	SSL_0.1	0.114	1.40	1997-07-07
Aroclor-1260	M-SMA-12.92	11096-82-5	Y	SSL_0.1	0.243	2.90	1995-12-18
Arsenic	M-SMA-12.92	As	Y	BTV	8.17	210	1995-06-27
Barium	M-SMA-12.92	Ba	Y	BTV	295	539	1995-06-20
Benzo(a)anthracene	M-SMA-12.92	56-55-3	Y	SSL_0.1	0.153	37.0	1997-07-07
Benzo(a)pyrene	M-SMA-12.92	50-32-8	Y	SSL_0.1	0.112	48.0	1997-07-07
Benzo(b)fluoranthene	M-SMA-12.92	205-99-2	Y	SSL_0.1	0.153	45.0	1997-07-07
Benzo(k)fluoranthene	M-SMA-12.92	207-08-9	Y	SSL_0.1	1.53	45.0	1997-07-07
Beryllium	M-SMA-12.92	Be	Y	BTV	1.83	6.00	1995-06-27
Cadmium	M-SMA-12.92	Cd	Y	BTV	0.400	5.40	1995-06-27
Chromium	M-SMA-12.92	Cr	Y	BTV	19.3	1080	1997-06-23
Chromium hexavalent ion	M-SMA-12.92	Cr(VI)	Y	SSL_0.1	0.305	8.61	2009-05-21
Chrysene	M-SMA-12.92	218-01-9	Y	SSL_0.1	15.3	47.0	1997-07-07
Cobalt	M-SMA-12.92	Co	Y	BTV	8.64	60.2	1995-06-27
Copper	M-SMA-12.92	Cu	Y	BTV	14.7	1500	1995-06-20
Cyanide (Total)	M-SMA-12.92	CN(TOTAL)	Y	BTV	0.500	6.75	2009-05-21
Dibenz(a,h)anthracene	M-SMA-12.92	53-70-3	Y	SSL_0.1	0.0153	8.80	1997-07-07
Indeno(1,2,3-cd)pyrene	M-SMA-12.92	193-39-5	Y	SSL_0.1	0.153	28.0	1997-07-07
Iron	M-SMA-12.92	Fe	Y	BTV	21500	113000	2001-07-23
Lead	M-SMA-12.92	Pb	Y	BTV	22.3	655	1995-06-20
Manganese	M-SMA-12.92	Mn	Y	BTV	671	1340	2009-05-21
Mercury	M-SMA-12.92	Hg	Y	BTV	0.100	5.53	1995-03-06
Nickel	M-SMA-12.92	Ni	Y	BTV	15.4	110	1997-07-07
Selenium	M-SMA-12.92	Se	Y	BTV	1.52	361	1995-06-27
Silver	M-SMA-12.92	Ag	Y	BTV	1.00	56.0	1997-07-15
Strontium-90	M-SMA-12.92	Sr-90	Y	SAL_0.1	1.50	904	1996-10-02
Thallium	M-SMA-12.92	Tl	Y	BTV	0.730	225	1995-06-27
Tritium	M-SMA-12.92	H-3	Y	SAL_0.1	170	178	1997-07-15
Uranium	M-SMA-12.92	U	Y	BTV	1.82	13.9	1995-03-06
Vanadium	M-SMA-12.92	V	Y	BTV	39.6	75.7	1995-06-27
Zinc	M-SMA-12.92	Zn	Y	BTV	48.8	752	1995-04-12

Figure 107.3-5 Screening-Level Exceedances from Soil Samples Associated with M-SMA-12.92

107.4 Stormwater Evaluation

107.4.1 Summary of Stormwater Results Compared with TALs and BTVs

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

107.4.2 Assessment Unit and Stream Impairments

M-SMA-12.92 drains to Mortandad Canyon (within LANL), which has impairments for adjusted gross alpha, PCBs, and dissolved copper. The impairments may be Site-related, based on Site history.

107.5 Site-Specific Demonstration

107.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: antimony, Aroclor-1260, Aroclor-1254, arsenic, barium, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, beryllium, cadmium, chromium, chromium hexavalent ion, chrysene, cobalt, copper, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, iron, lead, manganese, mercury, nickel, selenium, silver, strontium-90, thallium, tritium, uranium, vanadium, and zinc.

107.5.2 Stormwater Data Summary

No confirmation-monitoring data.

107.5.3 2022 Permit Status

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

107.5.4 Sampling and Analysis Plan

Table 107.5-1 is the proposed SAP for M-SMA-12.92.

Table 107.5-1 Proposed SAP, M-SMA-12.92

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment, Site history (organics), and soil data
Dissolved antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, silver, thallium, uranium, vanadium, and zinc	Impairment (copper), Site history (metals), and soil data
Gross alpha	Impairment and Site history (radionuclides)
SVOCs	Site history (organics) and soil data
Total iron, mercury, and selenium	Site history (metals) and soil data
Strontium-90 and tritium	Site history (radionuclides) and soil data
Radium-226 and radium-228	Site history (radionuclides)
DOC	Permit requirement
SSC	Permit requirement

108.0 M-SMA-13

Associated Sites	05-001(c)
Receiving Water	Mortandad Canyon
Drainage Area	4.27 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	AOC 05-001(c): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the July 2017 signatures of the SIP map, all parties agreed that the current SMA sampling location and boundary was the best representation of stormwater discharge from the Site.
2022 Permit Status	Corrective Action

108.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in September 2013. This sample had no TAL exceedances, and stormwater monitoring ceased until 2020. Baseline confirmation-monitoring resumed in 2020 to attempt collection of a second sample with no exceedances below the applicable MTAL or ATAL, which would allow the Permittees to make a Site deletion request per Permit part I.I.2. The second baseline stormwater sample was collected in August 2021. Analytical results from this sample showed TAL exceedances and initiated corrective action.

AOC 05-001(c) received a COC under the Consent Order from NMED in September 2015. The Permittees submitted a certification of completion of corrective action for the Site to EPA per Permit part I.E.2(d) in December 2021 (N3B 2021, 701813). Stormwater monitoring has not occurred since 2021.

108.2 Site History

05-001(c) (no date)

AOC 05-001(c) is a former firing point designated as the larger Beta Far Point Site at TA-05, and is known only by references on maps and memoranda. It reportedly was located several hundred feet east of SWMU 05-001(b) [now part of Consolidated Unit 05-001(a)-99], but as reported in the 1990 SWMU Report, its exact location, dates of operation, and types of potential releases are not known.

Ultimately, Beta Far Point Site is believed to have been located 600 to 700 ft south-southeast of Firing Points 1 [SWMU 05-001(a)] and 2 [SWMU 05-001(b)], in Cañada del Buey off the toe of the south mesa, 20 to 30 ft below the mesa top. Two or three 2500-lb shots were detonated at the site during its period of operation. Shot debris consisted of cabling, tuballoy, steel, aluminum, and wood. The shot debris radius was estimated to be 100 to 200 yd from the firing point.

AOC 05-001(c) was investigated in 1995, and later as part of the Middle Mortandad/Ten Site Aggregate Area investigation in 2004 and 2005. The approved 2010 IR (LANL 2010, 109180.28) concluded that, based on the human-health risk-screening assessment results, no potential unacceptable risks or doses from COPCs exist at AOC 05-001(c). Additionally, no potential ecological risk was found for any receptor. All detected chemicals concentrations and radionuclides activities were below residential SSLs and SALs.

For investigation activities, refer to "Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2" (LANL 2008, 102187).

108.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 108.2-1.

Table 108.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
05-001(c)	Firing site	Aluminum, barium, copper, iron, lead, HE, uranium

108.3 Consent Order Soil Data

Decision-level data for AOC 05-001(c) consist of results from samples collected in 1995, 2004, and 2005. Analytical results from those samples are presented in Figures 108.3-1 through 108.3-4. The approved 2010 IR (LANL 2010, 109180.28) concluded that the lateral and vertical extent of all inorganic chemicals, organic chemicals, and radionuclides are defined at AOC 05-001(c).

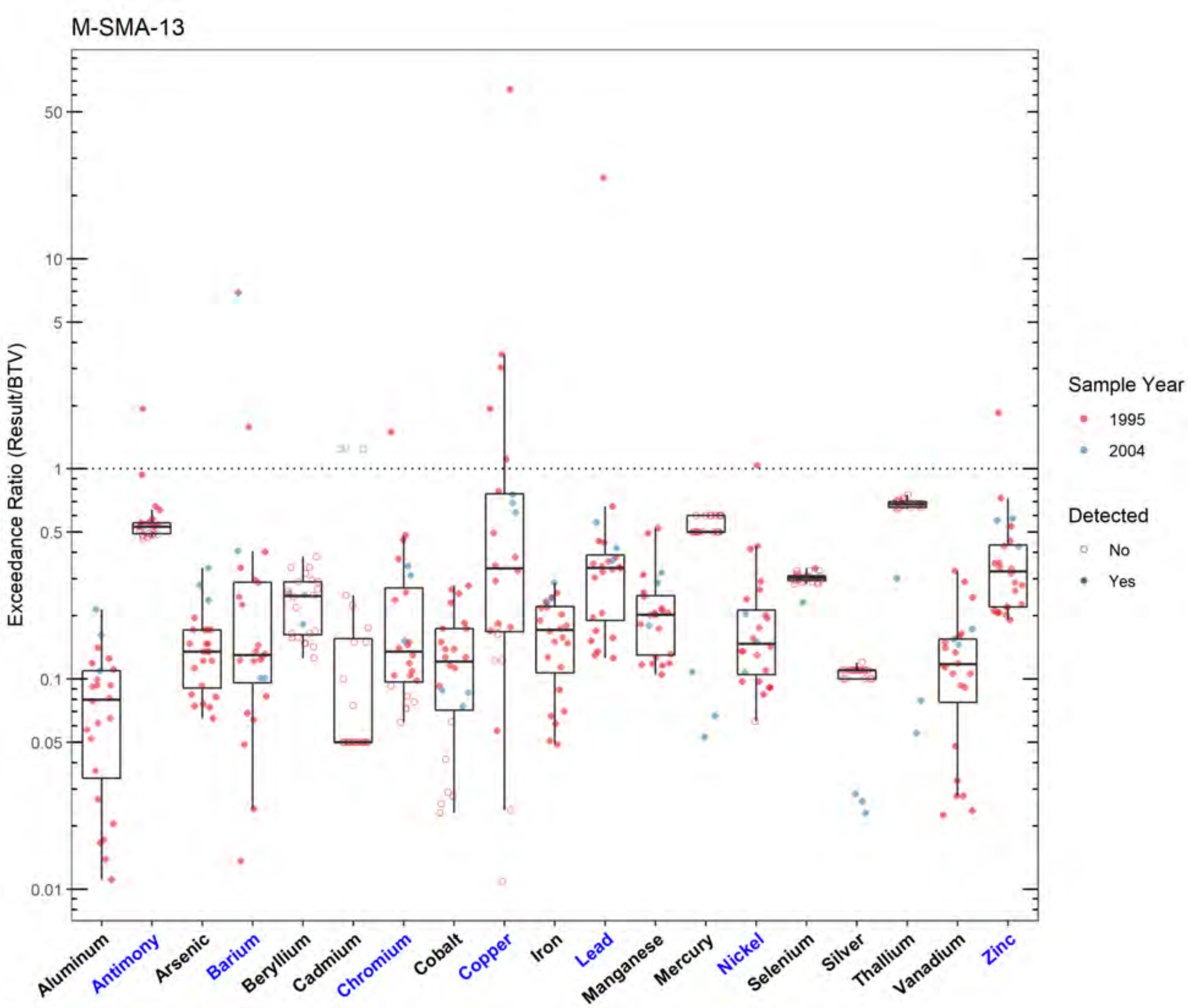


Figure 108.3-1 Inorganics Analytical Results from Soil Samples Associated with M-SMA-13

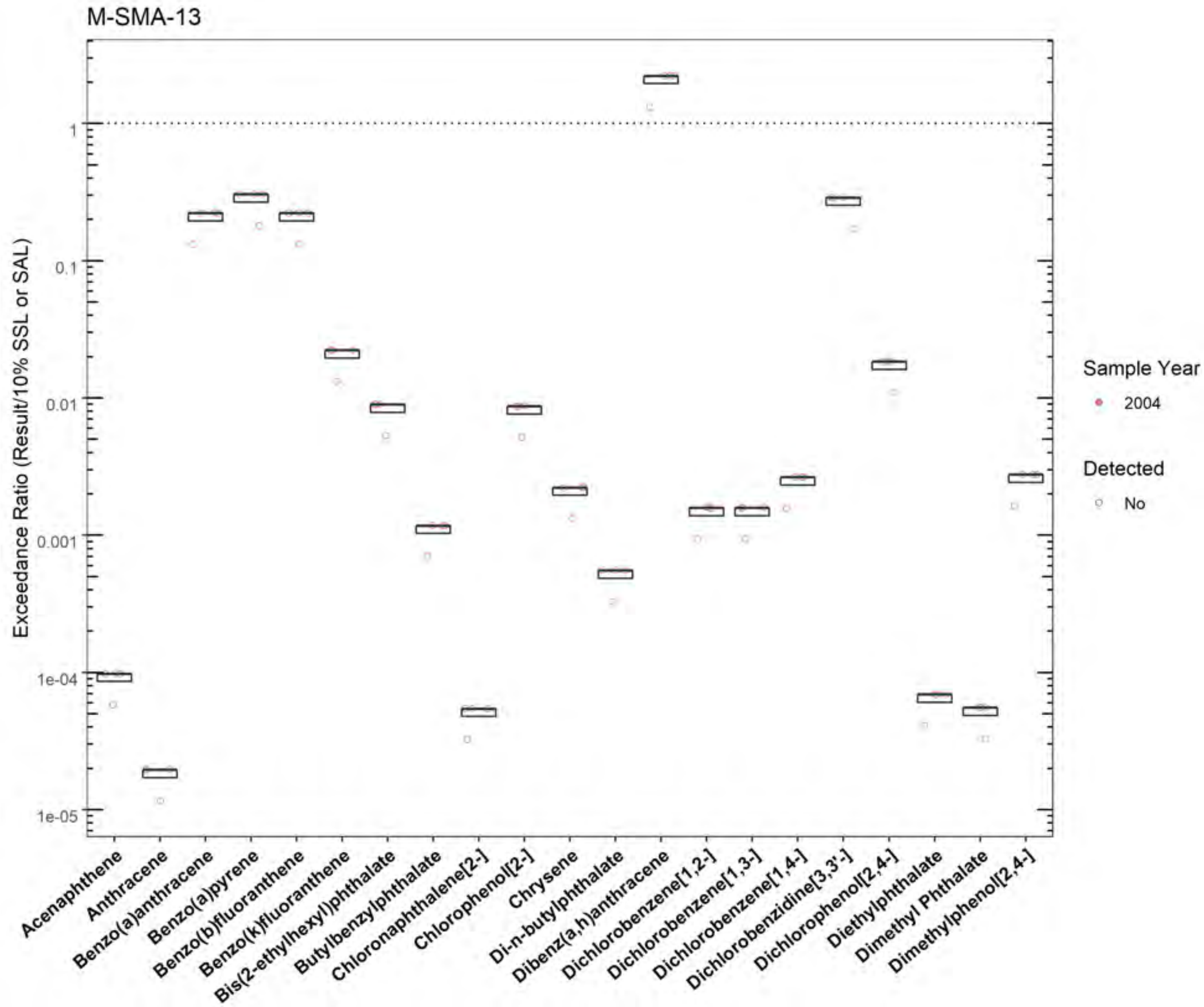


Figure 108.3-2 Organics Analytical Results from Soil Samples Associated with M-SMA-13 (Plot 1)

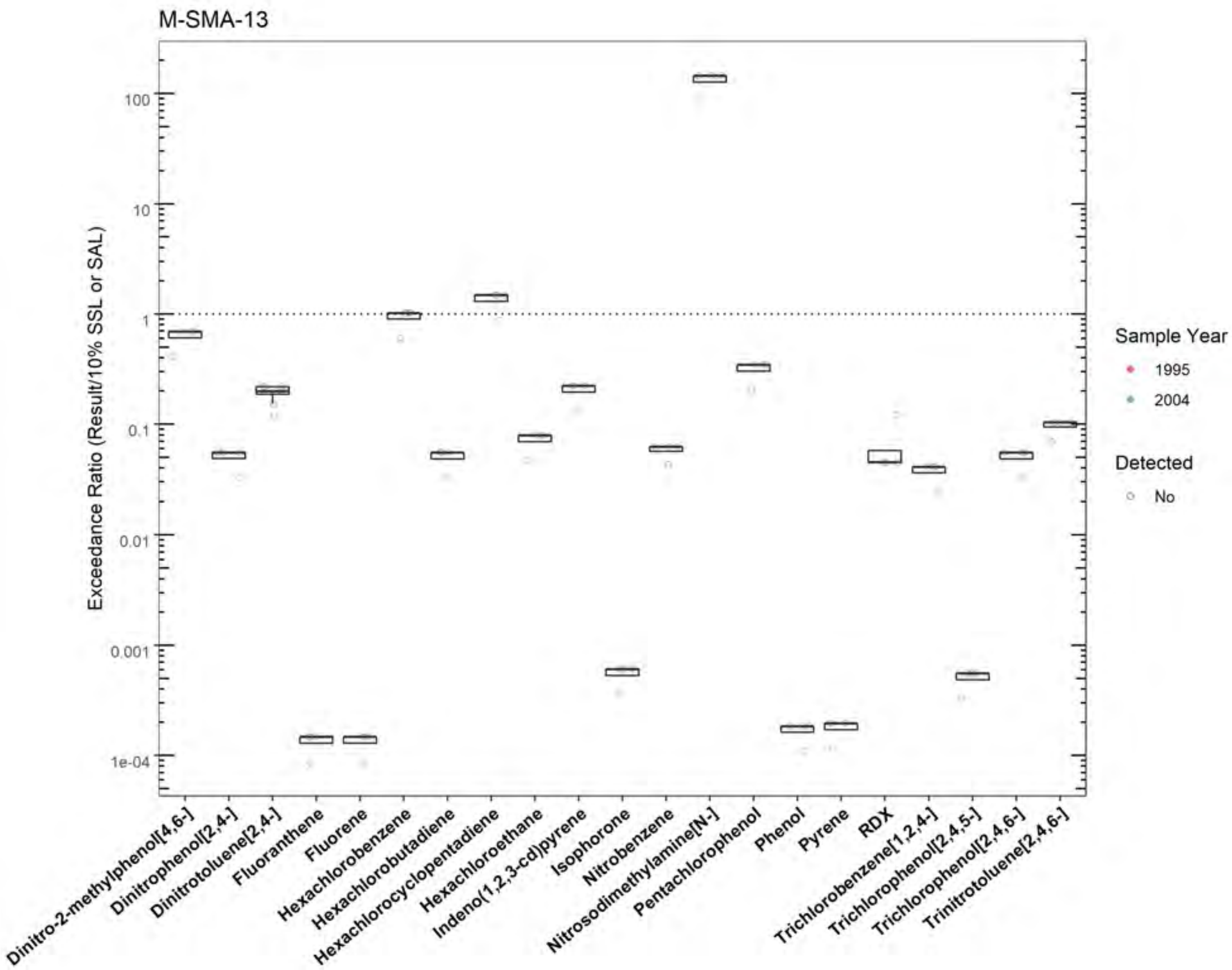


Figure 108.3-3 Organics Analytical Results from Soil Samples Associated with M-SMA-13 (Plot 2)

M-SMA-13

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	M-SMA-13	Sb	Y	BTV	0.830	1.60	1995-06-29
Barium	M-SMA-13	Ba	Y	BTV	295	2030	1995-06-29
Chromium	M-SMA-13	Cr	Y	BTV	19.3	29.0	1995-06-29
Copper	M-SMA-13	Cu	Y	BTV	14.7	941	1995-06-29
Lead	M-SMA-13	Pb	Y	BTV	22.3	539	1995-06-29
Nickel	M-SMA-13	Ni	Y	BTV	15.4	16.0	1995-06-29
Zinc	M-SMA-13	Zn	Y	BTV	48.8	90.2	1995-06-29

Figure 108.3-4 Screening-Level Exceedances from Soil Samples Associated with M-SMA-13

108.4 Stormwater Evaluation

108.4.1 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 September 2013 and August 2021. Analytical results from those samples are presented in Figures 108.4-1 through 108.4-4.

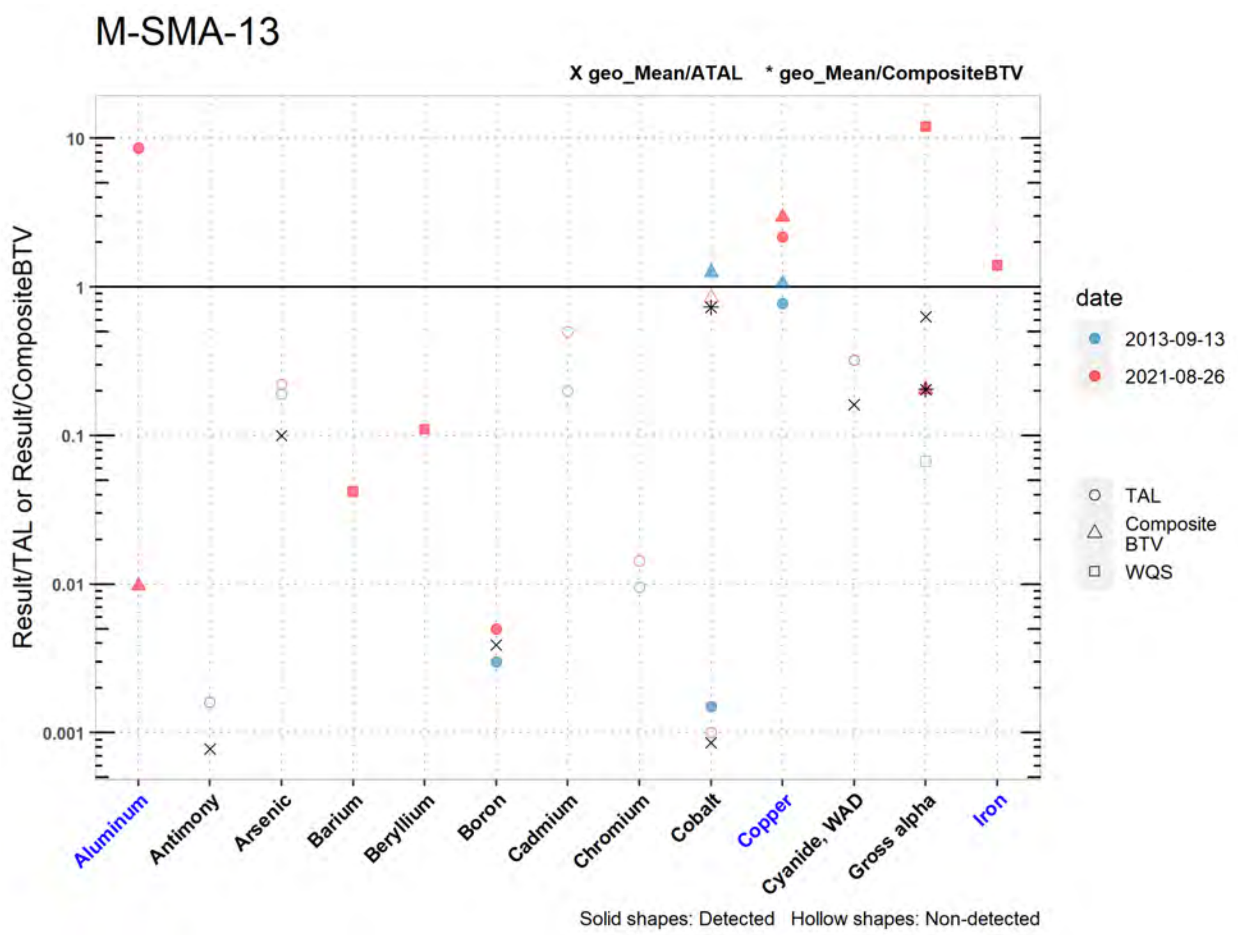


Figure 108.4-1 Analytical Results from Stormwater Samples, M-SMA-13 (Plot 1)

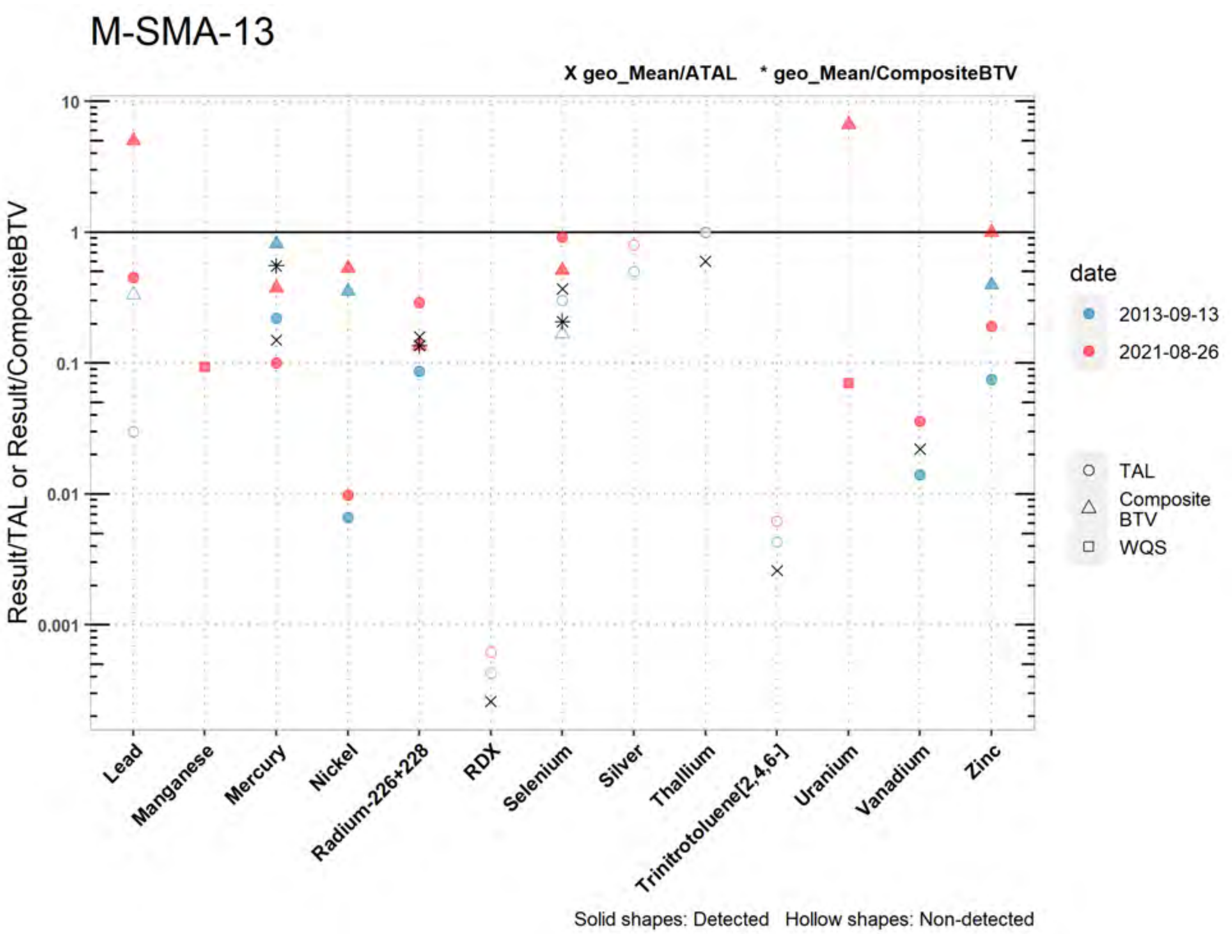


Figure 108.4-2 Analytical Results from Stormwater Samples, M-SMA-13 (Plot 2)

M-SMA-13

	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Iron
MQL	2.5	1	0.5	NA	NA	100	1	10	50	0.5	10	NA	NA
ATAL	NA	640	9	NA	NA	5000	NA	NA	1000	NA	5.2	15	NA
MTAL	643	NA	340	NA	NA	NA	0.583	210	NA	4.25	22	NA	NA
Composite_BTV	37400	NA	NA	NA	NA	NA	NA	NA	1.18	3.12	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	pCi/L*	ug/L
2013-09-13 result	NA	*1.00*	*1.70*	NA	NA	15.1	*0.110*	*2.00*	1.48	3.29	*1.67*	*1.00*	NA
2013-09-13 dT	NA	NA	NA	NA	NA	0.0030	NA	NA	0.0015	0.774	NA	NA	NA
2013-09-13 dB	NA	NA	NA	NA	NA	NA	NA	NA	1.25	1.05	NA	NA	NA
2021-08-26 result	5530	*1.00*	*2.00*	83.7	0.427	25.0	*0.300*	*3.00*	*1.00*	9.21	*1.67*	177	1440
2021-08-26 dT	8.60	NA	NA	0.042	0.11	0.0050	NA	NA	NA	2.17	NA	12	1.4
2021-08-26 dB	0.00973	NA	NA	NA	NA	NA	NA	NA	NA	2.95	NA	0.204	NA
geo_mean/ATAL	NA	0.00078	0.10	NA	NA	0.0039	NA	NA	0.00086	NA	0.161	0.63	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	NA	NA	0.729	NA	NA	0.204	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 108.4-3 Analytical Results from Stormwater Samples, M-SMA-13 (Table 1)

M-SMA-13

	Lead	Manganese	Mercury	Nickel	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Uranium	Vanadium	Zinc
MQL	0.5	NA	0.005	0.5	NA	NA	5	0.5	0.5	NA	NA	50	20
ATAL	NA	NA	0.77	NA	30	200	5	NA	0.47	20	NA	100	NA
MTAL	16.7	NA	NA	167	NA	NA	20	0.394	NA	NA	NA	NA	52.7
Composite_BTV	1.50	NA	0.208	3.10	4.21	NA	8.98	NA	NA	NA	0.315	NA	10.0
unit	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
2013-09-13 result	*0.500*	NA	0.170	1.10	2.59	*0.0851*	*1.50*	*0.200*	*0.450*	*0.0851*	NA	1.38	3.96
2013-09-13 dT	NA	NA	0.22	0.00659	0.0863	NA	NA	NA	NA	NA	NA	0.014	0.0751
2013-09-13 dB	NA	NA	0.817	0.355	NA	NA	NA	NA	NA	NA	NA	NA	0.396
2021-08-26 result	7.51	102	0.0780	1.64	8.73	*0.124*	4.61	*0.300*	*0.600*	*0.124*	2.10	3.65	9.99
2021-08-26 dT	0.450	0.093	0.10	0.00982	0.291	NA	0.92	NA	NA	NA	0.070	0.036	0.190
2021-08-26 dB	5.01	NA	0.375	0.529	0.136	NA	0.513	NA	NA	NA	6.67	NA	0.999
geo_mean/ATAL	NA	NA	0.15	NA	0.159	0.00026	0.37	NA	0.6	0.0026	NA	0.022	NA
geo_mean/B	NA	NA	0.554	NA	0.136	NA	0.207	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 108.4-4 Analytical Results from Stormwater Samples, M-SMA-13 (Table 2)

108.4.2 Assessment Unit and Stream Impairments

M-SMA-13 drains to Mortandad Canyon (within LANL), which has impairments for adjusted gross alpha, PCBs, and dissolved copper. The adjusted gross alpha and copper impairments may be Site-related, based on Site history.

108.5 Site-Specific Demonstration

108.5.1 Soil Data Summary

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

108.5.2 Stormwater Data Summary

Total aluminum exceeded TAL but not BTV. Copper exceeded both TAL and BTV, initiating corrective action. Iron exceeded the WQS. However, there is no TAL in the Permit for iron; only POCs with TALs are used in the SSD.

108.5.3 2022 Permit Status

Due to the exceedance of a composite BTV and TAL, corrective action will be initiated at this SMA for copper (Part I.C.2.b.i).

109.0 PRATT-SMA-1.05

Associated Sites	35-003(h), 35-003(p), 35-003(r), 35-004(h), 35-009(d), 35-014(b), 35-015(b), 35-016(k), 35-016(l), 35-016(m), 35-018(a)
Receiving Water	Pratt Canyon – Tributary to Ten Site Canyon
Drainage Area	10.25 acres
Landscape Characteristics	14% impervious, 86% pervious
Consent Order Site Status	SWMU 35-003(h): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls SWMU 35-003(p): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls AOC 35-003(r): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls SWMU 35-009(d): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 35-014(b): Certificate of Completion Received With Controls. Pending Inclusion in Permit Modification Request SWMU 35-015(b): Certificate of Completion Received With Controls. Pending Inclusion in Permit Modification Request AOC 35-016(l): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls AOC 35-018(a): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the January 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater drainage from the Sites.
2022 Permit Status	Active Monitoring

109.1 2010 Administratively Continued Permit Summary

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

Following the May 2014 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2014, 256772), corrective-action monitoring was conducted through 2015.

All the Sites received COCs under the Consent Order from NMED in October 2015. The Permittees submitted a certification of completion of corrective action for the Sites [excluding 35-014(b), 35-015(b), and 35-018(a)] to EPA per Permit part I.E.2(d) in October 2015 (LANL 2015, 600977). Stormwater monitoring has not occurred since 2015.

Sites 35-014(b), 35-015(b), and 35-018(a) were not monitored on the administratively continued Permit but were added to the 2022 Individual Permit based on NMED’s state certification.

109.2 Site History

35-003(h) (no date)

SWMU 35-003(h) is the former location of a concrete retention tank that was added to the TA-35 WWTP in 1961. The retention tank had dimensions of 8 ft × 12 ft × 10 ft deep, and was connected to buildings 35-10 and 35-41 by 4-in.-diameter stainless-steel underground pipes. The retention tank and associated piping were removed in February 1985 during LANL's RLW treatment consolidation project. During decommissioning, no leaks or discharges from the tank were documented. The tank and excavated soil were field-screened for radioactivity during removal; no radioactivity above background levels was detected.

35-003(p) (no date)

SWMU 35-003(p) is the location of the former air filter building (35-7). Radioactively-contaminated air from work areas in building 35-2 was filtered in building 35-7. The air filters were cleaned with tap water or wastewater from the TA-35 WWTP tank farm [SWMUs 35-003(a–c, e–h, m–o) and AOC 35-003(misc.)]; the wastewater was contaminated with strontium-89 and strontium-90, which are beta emitters. Buildup of isotopic strontium in the air filters required increased filter washings, which produced more radioactive wastewater. The large volumes of wastewater exceeded the storage capacity of the system, leading to unplanned spills and overflows to Pratt Canyon. The air filter building was decommissioned in 1980 and removed in 1996.

35-003(r) (no date)

AOC 35-003(r) is the location of a former outfall for liquid sludge effluent associated with the former Tank Farm 35-10 holding tanks, SWMU 35-003(d), and the former TA-35 WWTP. This site is located in Pratt Canyon and extends from the eastern edge of Ten Site Mesa (the headwall of Pratt Canyon) to the confluence of Pratt and Ten Site Canyons.

The former TA-35 WWTP received and processed air and liquid wastes from radiochemistry laboratories and from the operation of radioactive lanthanum-140 hot cells located in building 35-2, where kilocurie sources of lanthanum-140 were prepared during the 1950s. The liquid wastes from the building 35-2 laboratories were acidic and included beta emitters barium-140, lanthanum-140, strontium-89, strontium-90, and yttrium-90. From 1951 to 1955, the treated wastewater was stored in four concrete tanks (Tank Farm 35-10) for approximately 6 months to allow the lanthanum-140 to decay. The water was either allowed to evaporate or used to wash air-cleaning filters from the filter building.

If the incoming waste volumes were greater than losses through evaporation, the stored water was released to Pratt Canyon, a small side canyon east of the TA-35 WWTP. Because the Tank Farm 35-10 holding tanks did not have a gravity drainline to the canyon, all contents were pumped through building 35-7 (the air filter building) for treatment and discharged through a daylight diversion channel into Pratt Canyon. Several reports mention that the 35-10 holding tanks occasionally overfilled and spilled contaminated liquids directly into Pratt Canyon. These spills were the only discharges that did not flow through the daylight diversion channel.

The TA-35 WWTP operated from 1951 to 1963, when the new RLWTF came on line at TA-50. All buildings, foundations, and structures associated with SWMUs 35-003(d, l, and q) were removed during D&D activities in 1981 and 1985. After the 1985 removal, the area was backfilled with clean fill material and native tuff.

35-009(d) (no date)

SWMU 35-009(d) is an inactive septic system that comprises a 1600-gal. septic tank (structure 35-65), a cleanout manhole (structure 35-64), and an associated leach field. The septic system is located east of the northeast corner of building 35-27. An outfall from the east end of the septic system discharged to the south into Pratt Canyon. The leach field covers an area of approximately 1800 ft^2 and consists of fine- to coarse-grained sandstone and cobble filter bed material. Consolidated tuff is reached at depths of 8 to 10 ft bgs in the leach field.

This septic system served the Nuclear Safeguards Research Building (35-27) and other laboratory buildings at TA-35 from 1966 to 1990 when it was taken out of service. The tank was reportedly pumped on a weekly basis. The septic tank may have received laboratory wastes in addition to sanitary wastes. During the 1996 VCA conducted at SWMU 35-009(d), the contents of the septic tank were removed and disposed of off-site, and the tank and manhole were filled with concrete.

35-014(b) (no date)

SWMU 35-014(b) is the former site of a leaking barrel of dielectric oil southeast of building 35-2 at TA-35. The barrel was a 55-gal. drum containing PCBs at a concentration of 50.4 µg/g and labeled “DIALA AX, S03287, Shell Oil,” which was discovered to be leaking in 1985. The drum was removed and the site was remediated by Laboratory group HSE-7. The site was backfilled in 1988 or 1989 with clean soil material and covered with asphalt to create a parking area.

35-015(b) (6/6/2018)

SWMU 35-015(b) is the former site of an oil-handling facility located on the southwest side of building 35-29 at TA-35. The facility was installed in 1974 and used to treat oil from the Gemini gas laser. This facility was found to be leaking dielectric oil in 1988 and was removed in 1989 or 1990. The volume of the leak is not documented, and there is no documentation of a cleanup effort after the leak was discovered. The site was covered with clean fill material and paved with asphalt to create a parking area.

35-016(l) (no date)

AOC 35-016(l) consists of active stormwater drainage channels established in 1961 to handle runoff from building 35-29 and sterilized water leaks from an ultraviolet water sterilizer in room 001A of building 35-29 in TA-35. The drainages flow eastward to a 24-in. CMP outfall located on the north side of the security fence for building 35-27, discharging to the same channel as SWMU 35-016(k) into Pratt Canyon. A concrete catch basin located at the head of the drainage channels collects and detains stormwater runoff before discharging to the drainage channels. Stained areas from past dielectric oil spills are present in the source areas for these channels. One of the areas at the head of the channel is the site of a transformer near the southwest corner of building 35-29 that leaked transformer oil. A VCA conducted at the Site removed soil contaminated with PCBs and PAHs.

35-018(a) (1/17/2020)

AOC 35-018(a) is the site of a former electrical transformer (ID No. 5024) located at Substation 35-32 near the southwest corner of building 35-29 in TA-35. Substation 35-32 was installed in 1961 and is still operating. The transformer (PCB ID No. 5024) formerly contained oil with PCB concentrations greater than 500 parts per million.

During a survey of the transformer in 1985, it was reported that the transformer was dripping coolant fluid containing PCBs onto a concrete pad that had no spill containment and no drip pan. The extent of the release to the underlying pad was not documented. The transformer was added to a daily transformer inspection list in 1987. During a subsequent site inspection in August 1991, no evidence of past or present leakage was observed. The PCB-containing dielectric oil coolant was removed from the transformer in 1994, and the equipment was replaced with a non-PCB-containing coolant.

During the 1995 RFI, site inspections did not find oil staining on the concrete pad, although some oil-stained soil was located adjacent to the pad. The site was cleaned up during a 1996 VCA; 9 yd^3 of PCB-contaminated waste was removed.

AOC 35-018(a) has been referred to as SWMU 35-018(a) in historical documents.

For investigation activities for all Sites associated with PRATT-SMA-1.05, refer to "Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2" (LANL 2008, 102187) and the submittal of the "Response to the Approval with Direction and Replacement Pages for the Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2" (LANL 2008, 101667).

109.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 109.2-1.

Table 109.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
35-003(h)	Former concrete retention tank	Metals, organic chemicals, plutonium, strontium-90, uranium
35-003(p)	Former air-filter building	Metals, organic chemicals, plutonium, strontium-90, uranium
35-003(r)	Former air-filter building	Metals, organic chemicals, plutonium, strontium-90, uranium
35-009(d)	Inactive septic tank	Metals, organic chemicals
35-014(b)	Operational release from former building 35-7	PCBs
35-015(b)	Soil contamination from former waste oil treatment facility	PCBs
35-016(l)	Storm drain	PCBs
35-018(a)	Former transformer	PCBs, PAHs

109.3 Consent Order Soil Data

SWMU 35-003(h) was investigated in 2004 as part of Consolidated Unit 35-003(a)-99. Decision-level data for Consolidated Unit 35-003(a)-99 consist of results from samples collected in 1994 and 2004. The approved IR (LANL 2008, 102187) concluded that the nature and extent of all detected chemicals and radionuclides are defined at Consolidated Unit 35-003(a)-99.

SWMU 35-003(p) was investigated in 2004, along with SWMUs 35-003(a–c, e–h, m–o) and AOC 35-003(misc.). Decision-level data for SWMUs 35-003(a–c, e–h, m–p) and AOC 35-003(misc.) consist of results from samples collected from 64 locations in 1994 and 2004. The approved IR (LANL 2008, 102187) concluded that the nature and extent of all detected chemicals and radionuclides are defined at SWMU 35-003(p).

AOC 35-003(r) was investigated in 2004, along with SWMUs 35-003(d, l, and q). Decision-level data for AOC 35-003(r) and SWMUs 35-003(d, l, and q) consist of results from 149 samples collected from 44 locations in 1994/1995, 1997, 1998, and 2004. The approved IR (LANL 2008, 102187) concluded that the nature and extent of all detected chemicals and radionuclides are defined at AOC 35-003(r).

Decision-level data for SWMU 35-009(d) consist of results from samples collected in 1994, 1995, and 2004. The approved IR (LANL 2008, 102187) concluded that the nature and extent of all detected chemicals and radionuclides are defined at SWMU 35-009(a). Based on the human-health risk-screening assessment results, no potential unacceptable risks or doses from COPCs exist for the residential scenario at SWMU 35-009(d), and no potential ecological risk was found for any receptor.

SWMU 35-016(k) and AOC 35-016(l) were investigated together during the 2004 investigation. Decision-level data for SWMU 35-016(k) and AOC 35-016(l) consist of results from 11 samples collected from 6 locations in 1995 and 2004. The approved IR (LANL 2008, 102187) concluded that the nature and extent of all detected chemicals and radionuclides are defined at SWMU 35-016(k) and AOC 35-016(l).

Decision-level data are not available for 35-014(b), 35-015(b), or 35-018(a).

Analytical results from all decision-level soil samples collected for PRATT-SMA-1.05 are presented in Figures 109.3-1 through 109.3-4.

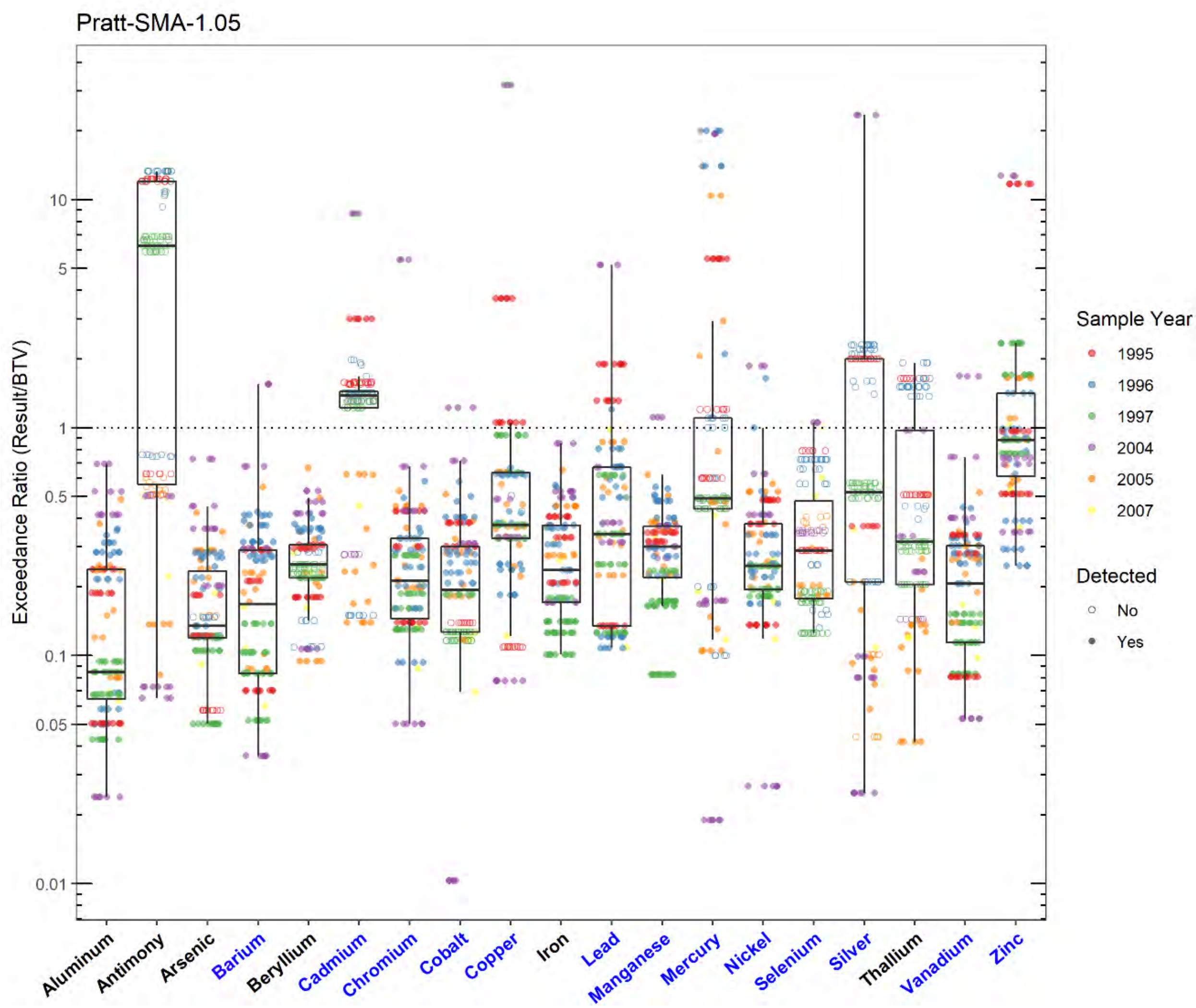


Figure 109.3-1 Inorganics Analytical Results from Soil Samples Associated with PRATT-SMA-1.05

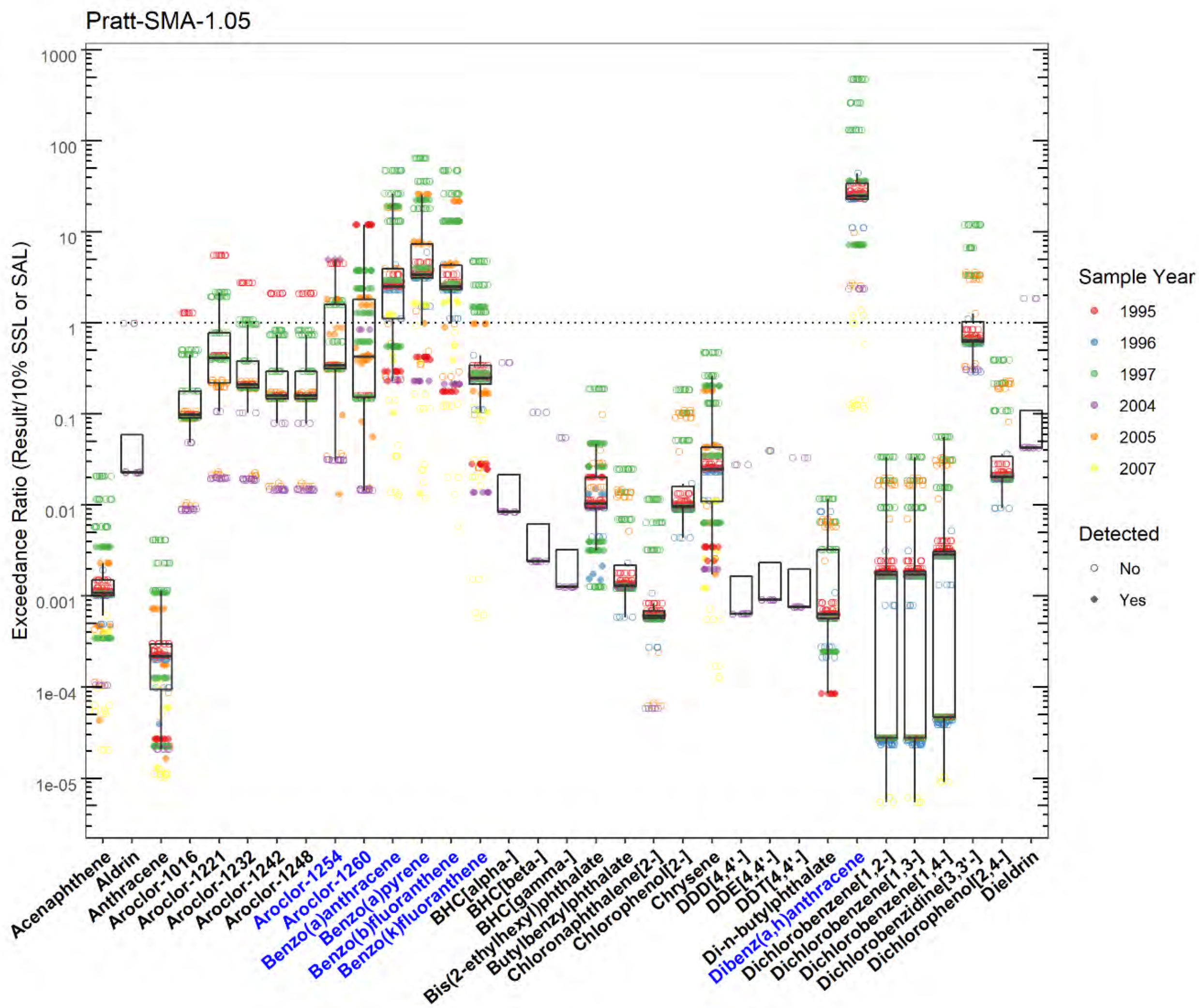


Figure 109.3-2 Organics Analytical Results from Soil Samples Associated with PRATT-SMA-1.05 (Plot 1)

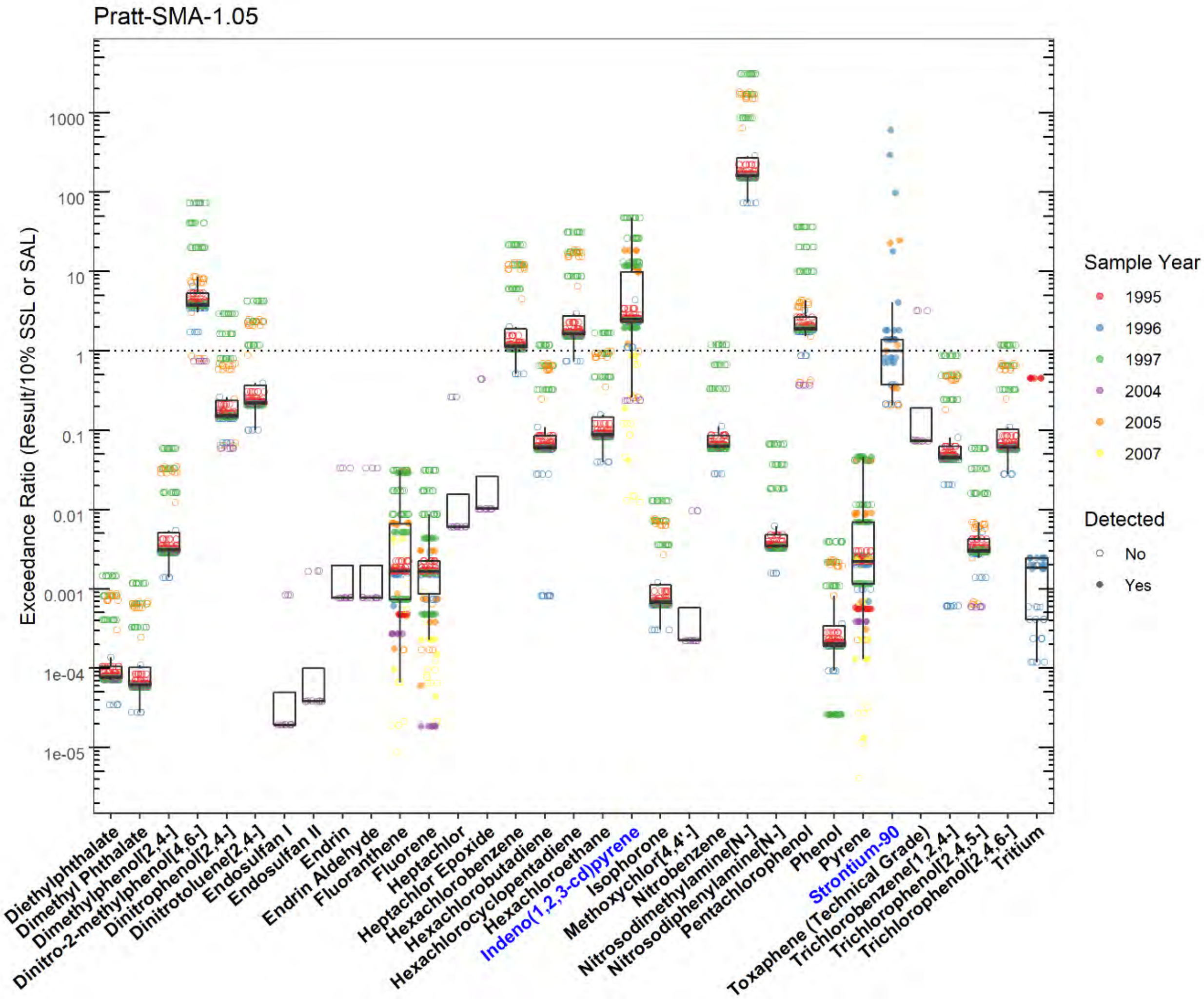


Figure 109.3-3 Organics Analytical Results from Soil Samples Associated with PRATT-SMA-1.05 (Plot 2)

Pratt-SMA-1.05

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	Pratt-SMA-1.05	11097-69-1	Y	SSL_0.1	0.114	0.563	2004-09-29
Aroclor-1260	Pratt-SMA-1.05	11096-82-5	Y	SSL_0.1	0.243	2.90	1995-12-18
Barium	Pratt-SMA-1.05	Ba	Y	BTV	295	458	2004-09-29
Benzo(a)anthracene	Pratt-SMA-1.05	56-55-3	Y	SSL_0.1	0.153	2.90	1997-07-08
Benzo(a)pyrene	Pratt-SMA-1.05	50-32-8	Y	SSL_0.1	0.112	2.90	2005-02-27
Benzo(b)fluoranthene	Pratt-SMA-1.05	205-99-2	Y	SSL_0.1	0.153	3.34	2005-02-27
Benzo(k)fluoranthene	Pratt-SMA-1.05	207-08-9	Y	SSL_0.1	1.53	2.30	1997-07-08
Cadmium	Pratt-SMA-1.05	Cd	Y	BTV	0.400	3.48	2004-09-29
Chromium	Pratt-SMA-1.05	Cr	Y	BTV	19.3	105	2004-09-29
Cobalt	Pratt-SMA-1.05	Co	Y	BTV	8.64	10.5	2004-09-29
Copper	Pratt-SMA-1.05	Cu	Y	BTV	14.7	467	2004-09-29
Dibenz(a,h)anthracene	Pratt-SMA-1.05	53-70-3	Y	SSL_0.1	0.0153	0.550	1997-07-08
Indeno(1,2,3-cd)pyrene	Pratt-SMA-1.05	193-39-5	Y	SSL_0.1	0.153	2.80	2005-02-27
Lead	Pratt-SMA-1.05	Pb	Y	BTV	22.3	115	2004-09-29
Manganese	Pratt-SMA-1.05	Mn	Y	BTV	671	746	2004-09-29
Mercury	Pratt-SMA-1.05	Hg	Y	BTV	0.100	2.00	1996-12-18
Nickel	Pratt-SMA-1.05	Ni	Y	BTV	15.4	28.7	2004-09-29
Selenium	Pratt-SMA-1.05	Se	Y	BTV	1.52	1.59	2004-09-29
Silver	Pratt-SMA-1.05	Ag	Y	BTV	1.00	23.5	2004-09-29
Strontium-90	Pratt-SMA-1.05	Sr-90	Y	SAL_0.1	1.50	904	1996-10-02
Vanadium	Pratt-SMA-1.05	V	Y	BTV	39.6	66.7	2004-09-29
Zinc	Pratt-SMA-1.05	Zn	Y	BTV	48.8	621	2004-09-29

Figure 109.3-4 Screening-Level Exceedances from Soil Samples Associated with PRATT-SMA-1.05

109.4 Stormwater Evaluation

109.4.1 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.

109.4.2 Assessment Unit and Stream Impairments

Pratt-SMA-1.05 drains to Ten Site Canyon (Mortandad Canyon to headwaters), which has impairments for PCBs and adjusted gross alpha. The adjusted gross alpha and PCB impairments may be Site related, based on Site history.

109.5 Site-Specific Demonstration

109.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: benzo(b)fluoranthene, benzo(a)pyrene, benzo(a)anthracene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and strontium-90.

Mercury, and total PCBs exceeded the applicable screening value in soil data, and the stormwater TAL and will be added to the SAP. The remaining Site-related POCs that exceeded the applicable 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.

109.5.2 Stormwater Data Summary

No confirmation-monitoring data for the current monitoring stage have been collected. Mercury and PCBs exceeded their respective TALs and BTVs in the previous monitoring stage and will be added to the SAP. Aluminum exceeded the TAL but not BTV. Gross alpha exceeded the TAL.

109.5.3 2022 Permit Status

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

109.5.4 Sampling and Analysis Plan

Table 109.5-1 is the proposed SAP for PRATT-SMA-1.05.

Table 109.5-1 Proposed SAP, PRATT-SMA-1.05

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment, Site history, and stormwater data
Total PCBs	Impairment, Site history, soil data, and stormwater data
Strontium-90	Site history and soil data
Total mercury	Site history, soil data, and stormwater data
SVOCs	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

110.0 T-SMA-1

Associated Sites	50-006(a), 50-009
Receiving Water	Ten Site Canyon
Drainage Area	1.19 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 50-006(a): Pending Receipt of Certificate of Completion SWMU 50-009: In Progress
2010 Administratively Continued Permit Final Status	Force Majeure Request/Corrective Action Complete
2016–2018 SIP Actions	Based on the August 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Corrective Action

110.1 2010 Administratively Continued Permit Summary

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

The Permittees submitted a force majeure request for an extension for completion of corrective action at SWMU 50-006(a) per Permit part I.E.4(c) in September 2013 (LANL 2013, 250038).Following the May 2014 submittal to EPA of certification of enhanced control installation as a corrective action at SWMU 50-006(a) (LANL 2014, 256772), corrective-action monitoring was not initiated. No response has been received from EPA for these submittals, and stormwater monitoring has not occurred for this Site since 2011.

Following the October 2013 submittal to EPA of certification of a no-exposure condition at SWMU 50-009 per Permit Part I.E.2(c) (LANL 2013, 250960), monitoring was initiated for the required investigation sample for the Site. This sample was collected in October 2021, and the analytical results were submitted to EPA in November 2021 (N3B 2021, 701780). Monitoring has not occurred since 2021.

110.2 Site History

50-006(a) (11/23/2020)

SWMU 50-006(a) is a former outfall area at the head of Ten Site Canyon which was impacted by two accidental operational releases of RLW when a sump in a pumping station (building 50-2) overflowed, causing untreated RLW to be released to waste lines 55 and 67 (the waste lines for treated effluent from the RLWTF) and discharged to the head of Ten Site Canyon at TA-50. The releases occurred in July and September 1974.

In February 1975, waste line 67 was plugged at the outfall; results from a soil sample collected within the outfall area when waste line 67 was plugged showed elevated levels of gross-alpha radioactivity. Analysis of additional soil samples collected below the waste line 67 outfall in September 1976 showed elevated levels of gross-alpha radioactivity extending 984 ft downgradient of the outfall into Ten Site Canyon. In 1981, both waste lines 55 and 67 were completely removed. During waste line removal, elevated levels of radionuclides, including plutonium-239, ruthenium-106, cesium-137, strontium-89, and yttrium-90, were detected. As a result, the outfall area was partially remediated by the removal of 70 m^3 of contaminated soil from the outfall location, and the excavated area was backfilled with clean fill.

For investigation activities, refer to "Supplemental Investigation Report for Upper Mortandad Canyon Aggregate Area, Revision 1" (N3B 2020, 700951).

50-009 (no date)

SWMU 50-009 is an inactive, 11.8-acre landfill known as MDA C, consisting of 7 disposal pits and 108 shafts. Solid waste containing hazardous constituents as well as radioactive waste was disposed of in the landfill between 1948 and 1974. The depths of the 7 pits at MDA C range from 12 to 25 ft below the original ground surface, and the depths of the 108 shafts range from 10 to 25 ft below the original ground surface (the surface beneath the cover that was placed over the site in 1984).

The pits and shafts are constructed in the Tshirege Member of the Bandelier Tuff. The topography of MDA C is relatively flat, although the slope descends to the north where the northeast corner of MDA C abuts the south wall of Ten Site Canyon. The pits were subsequently covered with varying amounts of crushed tuff and fill material. The shafts were sealed by filling with crushed tuff followed by concrete. The surface of the Site is covered with native grasses. The dimensions and operation dates of the pits and shafts are listed in the historical IR for MDA C (LANL 2006, 094688).

Wastes routinely disposed of in the pits consisted of boxes and bags of trash from chemistry laboratories, and containerized sludge from WWTPs. The general operating procedure at MDA C was to deposit a single layer of waste over the course of several days, and then cover the waste with crushed tuff. Another layer of waste would be emplaced, covered, and the process repeated until the capacity of the pit was reached. The crushed tuff acted as a temporary cover to prevent exposure of workers to the waste. Placement of all waste in the pit below the original land surface ensured that the waste was contained within the disposal pit and prevented exposure to stormwater runoff during the operational life of each pit.

When MDA C was decommissioned in 1974, most of the surface was covered with crushed tuff and fill, and the new surface was recontoured and seeded. In 1984, approximately 1.5 ft of crushed tuff, followed by 0.5 to 3 ft of topsoil, was placed over the surface of the pits. The above-mentioned original ground surface consists of the base of this 1984 fill layer. The thickness of the fill was verified by reviewing borehole logs from Consent Order investigations conducted at MDA C in 2004–2007 and 2008–2009.

For investigation activities, refer to "Corrective Measures Evaluation Report for Material Disposal Area C, Solid Waste Management Unit 50-009, at Technical Area 50, Revision 1" (N3B 2021, 701508).

110.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 110.2-1.

Table 110.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
50-006(a)	Outfall	Cesium-137, plutonium-239, ruthenium-160, strontium-89, yttrium-90
50-009	MDA C	Metals, radionuclides

110.3 Consent Order Soil Data

Decision-level data collected at SWMU 50-006(a) and within Ten Site Canyon consist of results from samples collected in 1993 and 2009. The 2020 Revision 1 of the supplemental IR (N3B 2020, 700951) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data collected at SWMU 50-009 consist of results from samples collected from 1993 to 2021. The 2021 corrective measure evaluation report (N3B 2021, 701508) concluded that the nature and extent of contamination have been defined for industrial and ecological risk levels. However, the report recommends installation of institutional controls to minimize future risk.

Analytical results from all decision-level soil samples collected for T-SMA-1 are presented in Figures 110.3-1 through 110.3-4.

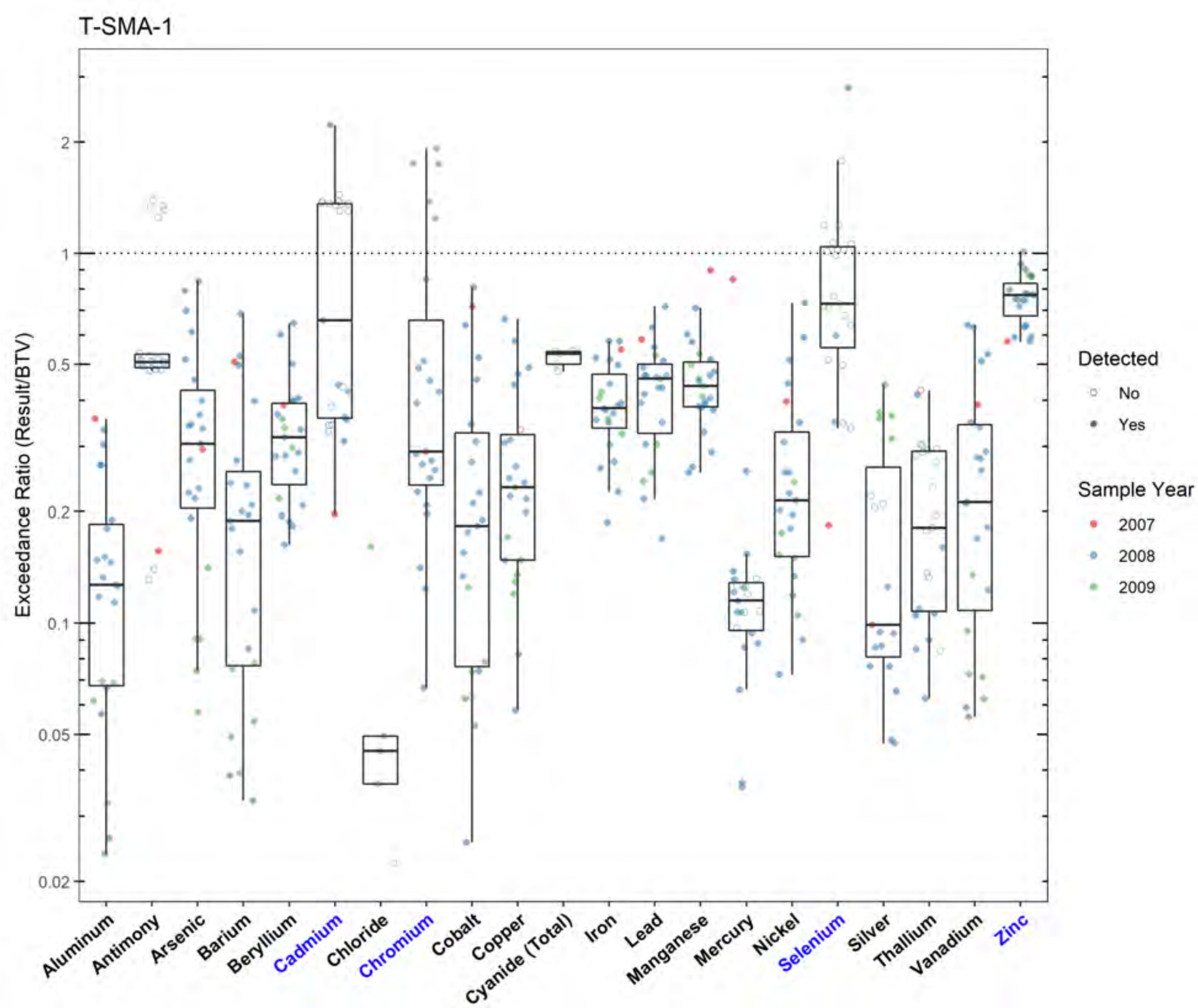


Figure 110.3-1 Inorganics Analytical Results from Soil Samples Associated with T-SMA-1

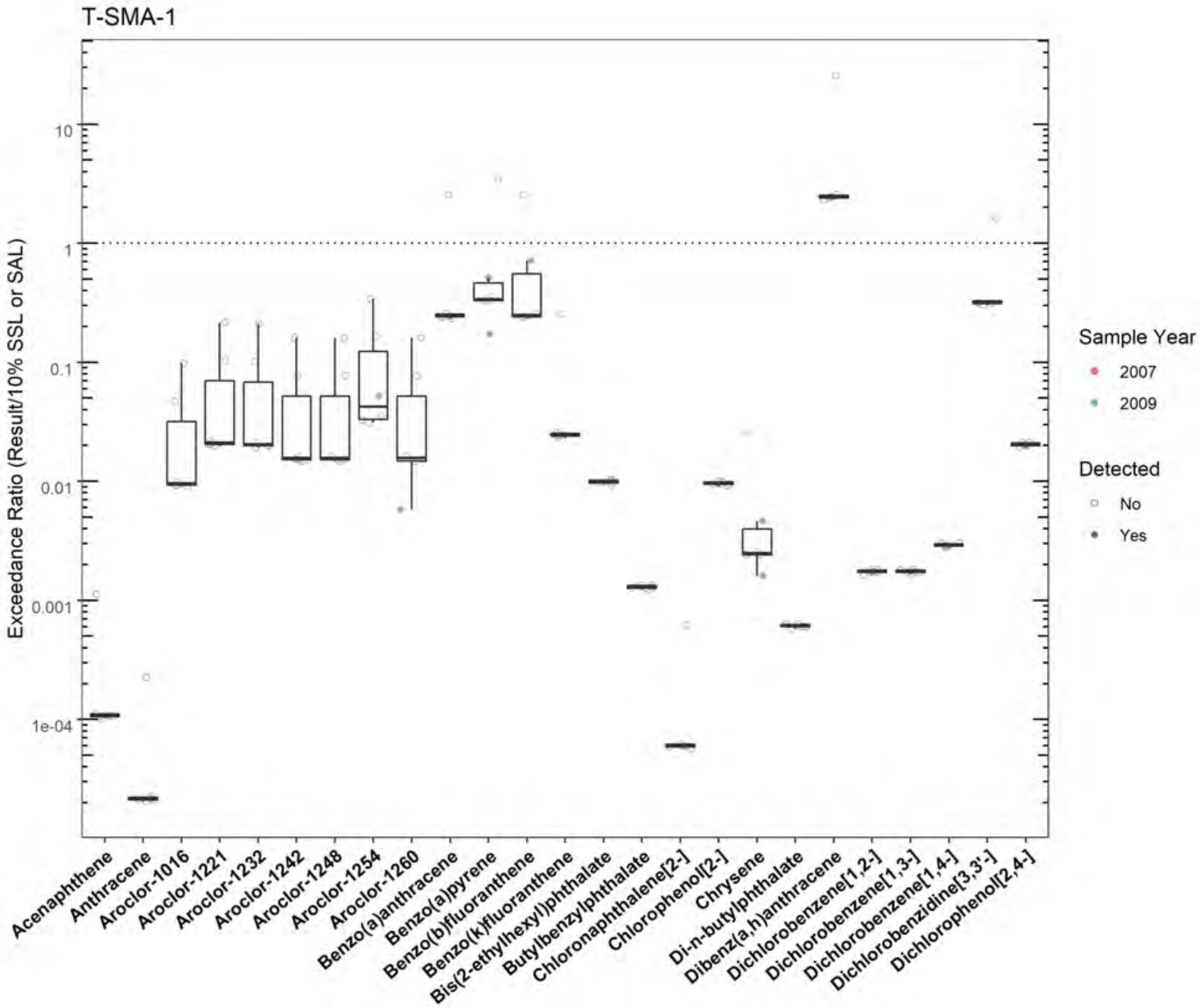


Figure 110.3-2 Organics Analytical Results from Soil Samples Associated with T-SMA-1 (Plot 1)

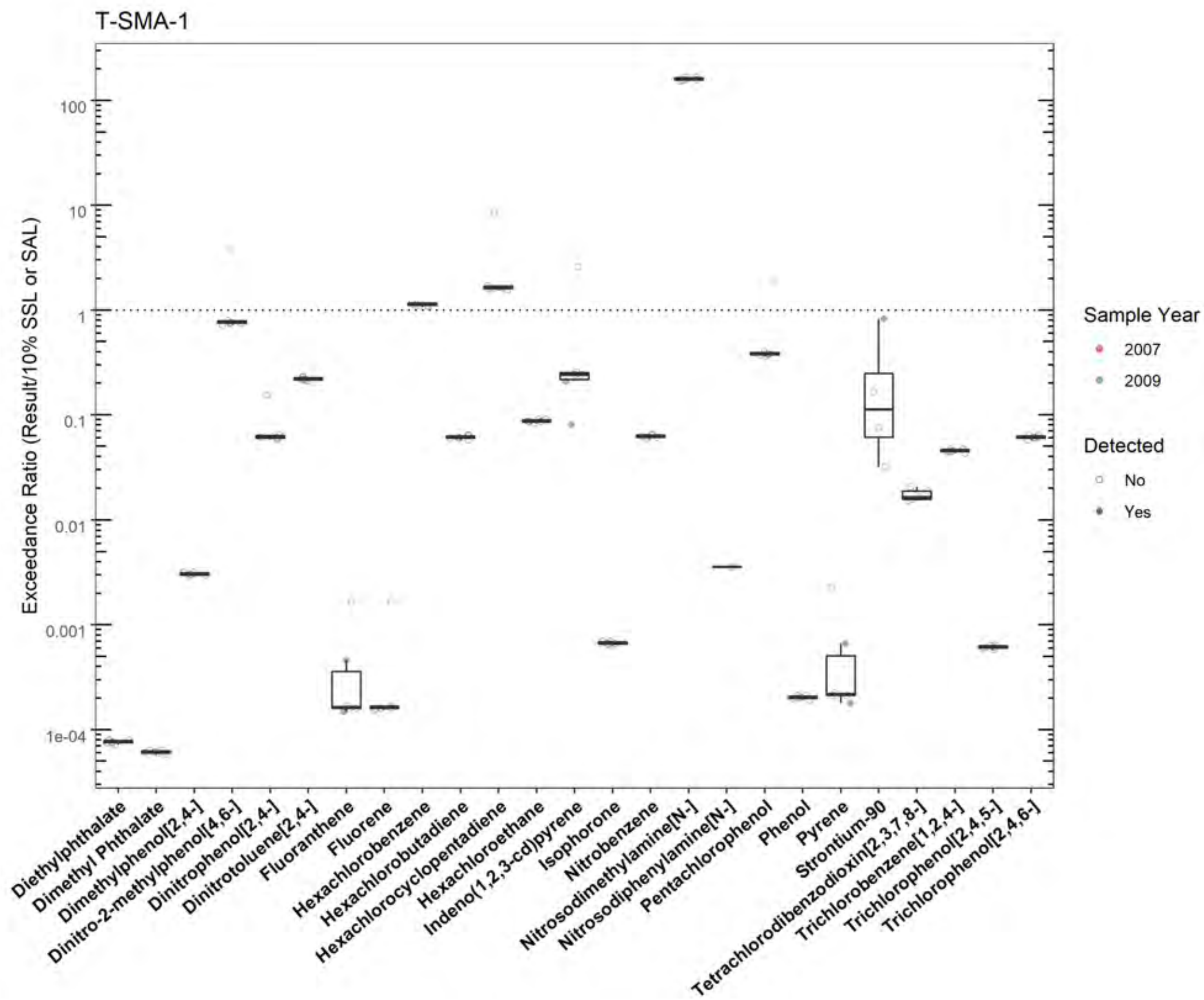


Figure 110.3-3 Organics Analytical Results from Soil Samples Associated with T-SMA-1 (Plot 2)

T-SMA-1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Cadmium	T-SMA-1	Cd	Y	BTV	0.400	0.887	2008-05-09
Chromium	T-SMA-1	Cr	Y	BTV	19.3	37.0	2009-05-26
Selenium	T-SMA-1	Se	Y	BTV	1.52	4.27	2008-05-09
Zinc	T-SMA-1	Zn	Y	BTV	48.8	49.3	2009-05-26

Figure 110.3-4 Screening-Level Exceedances from Soil Samples Associated with T-SMA-1

110.4 Stormwater Evaluation

110.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. The sample collected in 2021 was site-specific to 50-009 and is no longer applicable for use in the SSD. Because of the reactivation of monitoring for 50-006(a), the N3B SIP team has determined that the original baseline monitoring location for T-SMA-1 is now the most representative of the SMA and Sites. Baseline-monitoring stormwater samples were collected at this location in July and August 2011. Analytical results from those samples are presented in Figures 110.4.1-1 and 110.4-2.

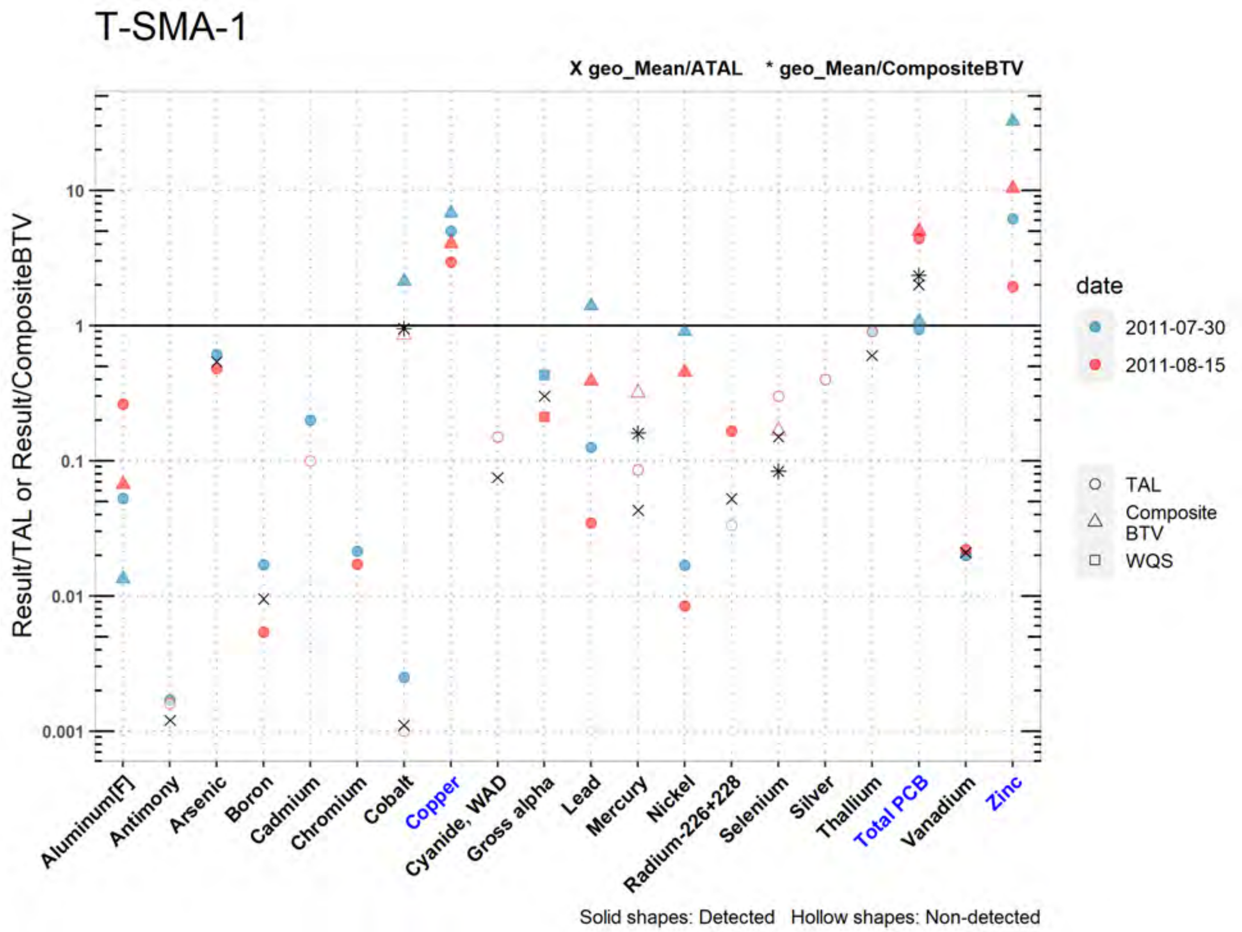


Figure 110.4-1 Analytical Results from Stormwater Samples, T-SMA-1 (Plot)

T-SMA-1

	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	0.583	210	NA	4.25	22	NA	16.7	NA	167	NA	20	0.394	NA	NA	NA	52.7
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	0.0122	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
2011-07-30 result	39.5	1.10	5.50	83.7	0.250	4.50	2.50	21.2	*1.50*	6.42	2.10	*0.0660*	2.80	*1.00*	*1.50*	*0.200*	0.460	0.0132	2.00	324
2011-07-30 dT	0.0527	0.0017	0.61	0.017	0.4	0.0214	0.0025	4.99	NA	0.43	0.126	NA	0.0168	NA	NA	NA	1	0.94	0.020	6.15
2011-07-30 dB	0.0134	NA	NA	NA	NA	NA	2.12	6.79	NA	NA	1.40	NA	0.903	NA	NA	NA	NA	1.08	NA	32.4
2011-08-15 result	197	*1.00*	4.30	27.0	*0.110*	3.60	*1.00*	12.6	*1.50*	3.22	0.580	*0.0660*	1.40	4.94	*1.50*	*0.200*	*0.450*	0.0610	2.20	103
2011-08-15 dT	0.263	NA	0.48	0.0054	NA	0.0171	NA	2.96	NA	0.21	0.0347	NA	0.00838	0.165	NA	NA	NA	4.4	0.022	1.95
2011-08-15 dB	0.0668	NA	NA	NA	NA	NA	NA	4.04	NA	NA	0.387	NA	0.452	NA	NA	NA	NA	5.00	NA	10.3
geo_mean/ATAL	NA	0.0012	0.54	0.0095	NA	NA	0.0011	NA	0.144	0.30	NA	0.043	NA	0.0524	0.15	NA	0.7	2.0	0.021	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	0.947	NA	NA	NA	NA	0.159	NA	NA	0.0835	NA	NA	2.33	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 **SSC normalized unit is mg/kg

110.4-3 Analytical Results from Stormwater Samples, T-SMA-1 (Table)

110.4.2 Assessment Unit and Stream Impairments

T-SMA-1 drains to Ten Site Canyon (Mortandad Canyon to headwaters), which has impairments for PCBs and adjusted gross alpha. The adjusted gross alpha impairment may be Site related, based on Site history.

110.5 Site-Specific Demonstration

110.5.1 Soil Data Summary

Cadmium, chromium, and selenium exceeded the applicable screening values in soil data, but were previously monitored in stormwater data and did not exceed TAL and BTV, Therefore, they will not be added to the SAP. Zinc exceeded the applicable screening values in soil data and exceeded TAL and BTV in stormwater, and will be added to the SAP.

110.5.2 Stormwater Data Summary

In the stormwater samples collected in 2011, which was prior to certification for no exposure for 50-009, copper, PCBs, and zinc exceeded the TAL and BTV.

110.5.3 2022 Permit Status

Due to the exceedance of a composite BTV and/or TAL, corrective action will be initiated at this SMA for copper, PCBs, and zinc (Part I.C.2.b.i).

111.0 T-SMA-2.5

Associated Sites	35-014(g3)
Receiving Water	Ten Site Canyon
Drainage Area	0.22 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	AOC 35-014(g3): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the January 2017 field visit, the affected media was determined to not be adequately addressed by the current SMA. Therefore, the sampler was moved below soil sampling location 35-23203.
2022 Permit Status	Active Monitoring

111.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, baseline monitoring was initiated. During development of the 2017 SAP, a decision was made to implement the monitoring location move recommended during the 2017 SIP review, and monitoring was reinitiated. A baseline stormwater sample was collected in July 2019. Analytical results from this sample initiated corrective action.

AOC 35-014(g3) received a COC under the Consent Order from NMED in October 2015. The Permittees submitted a certification of completion of corrective action to EPA for the Site per Permit part I.E.2(d) in December 2019 (N3B 2019, 700724). Stormwater monitoring has not occurred since 2019.

111.2 Site History

35-014(g3) (no date)

AOC 35-014(g3) is an oil-stained area resulting from an oil spill that occurred in 1984 near the former tank farm [(SWMU) 35-015(a)] on the west side of the CO2 laser building (35-86). The source of the spill was an oil tanker truck; however, the quantity of oil released is not documented. The spill flowed southward through a culvert under the road on the south side of building 35-86, across the parking lot west of building 35-207, and south through a natural drainage channel [AOC 35-016(n)] into Ten Site Canyon. Staining from the spill is clearly visible in a 1986 aerial photograph. The stained area was observed during an August 1991 site visit. At that time, vegetation in the path of the spill was dead, and a petroleum hydrocarbon odor was evident. During the 2004, Consent Order investigation, no petroleum hydrocarbon odor was evident, and no staining was visible in the drainage.

For investigation activities, refer to “Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2” (LANL 2008, 102187) and the submittal of the “Response to the Approval with Direction and Replacement Pages for the Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2” (LANL 2008, 101667).

111.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 111.2-1.

Table 111.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
35-014(g3)	Spill/non-intentional release	PAHs

111.3 Consent Order Soil Data

Decision-level data for AOC 35-014(g3) consist of results from samples collected in 1995, 1997, and 2004. Analytical results from those samples are presented in Figures 111.3-1 through 111.3-4. The approved IR (LANL 2008, 102187) concluded that the nature and extent of all detected chemicals and radionuclides are defined at AOC 35-014(g3).

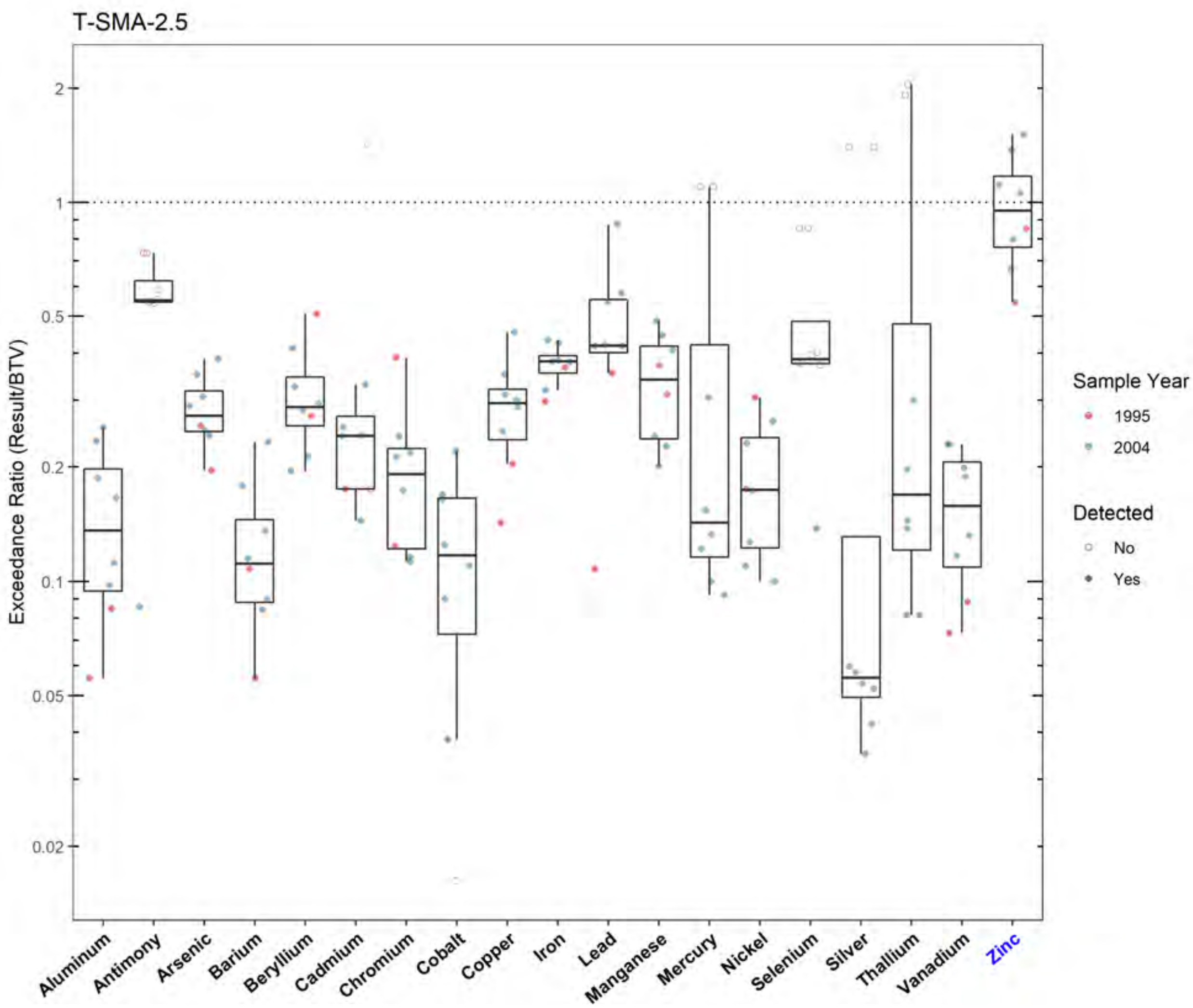


Figure 111.3-1 Inorganics Analytical Results from Soil Samples Associated with T-SMA-2.5

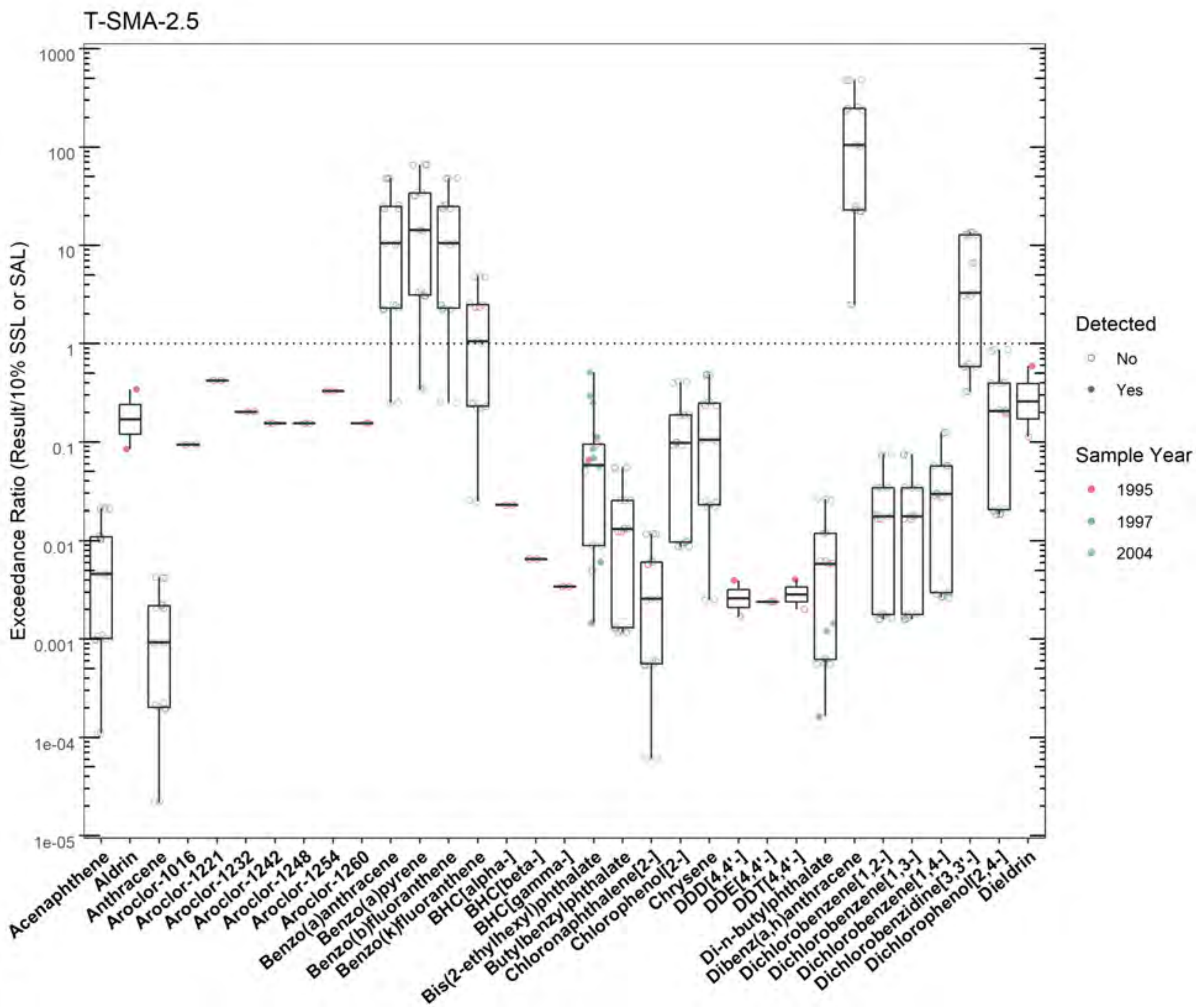


Figure 111.3-2 Organics Analytical Results from Soil Samples Associated with T-SMA-2.5 (Plot 1)

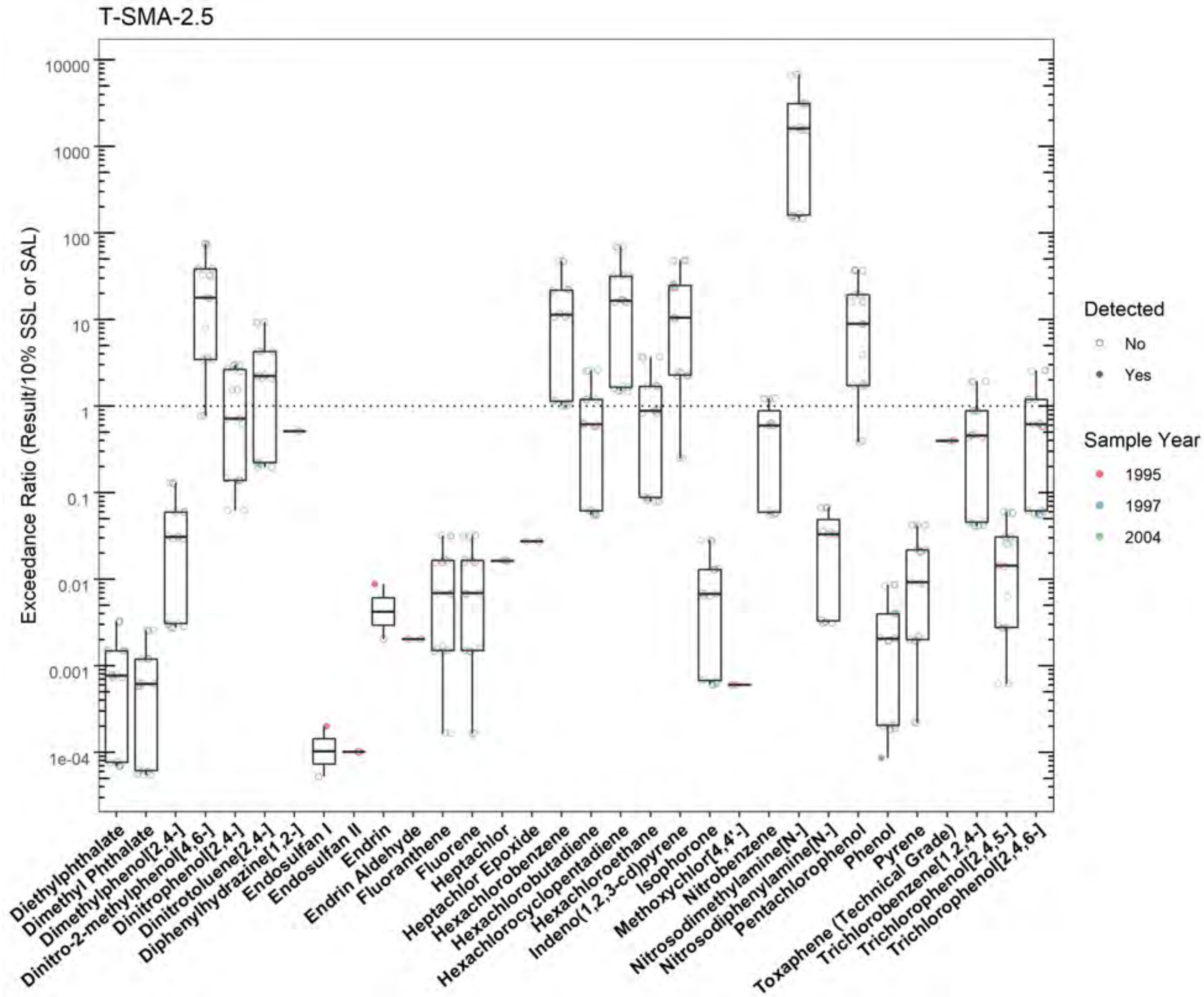


Figure 111.3-3 Organics Analytical Results from Soil Samples Associated with T-SMA-2.5 (Plot 2)

T-SMA-2.5

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Zinc	T-SMA-2.5	Zn	Y	BTV	48.8	73.6	2004-10-26

Figure 111.3-4 Screening-Level Exceedances from Soil Samples Associated with T-SMA-2.5

111.4 Stormwater Evaluation

111.4.1 Summary of Stormwater Results Compared to TALs (TALs) and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in July 2019. Analytical results from that sample are presented in Figures 111.4-1 through 111.4-4.

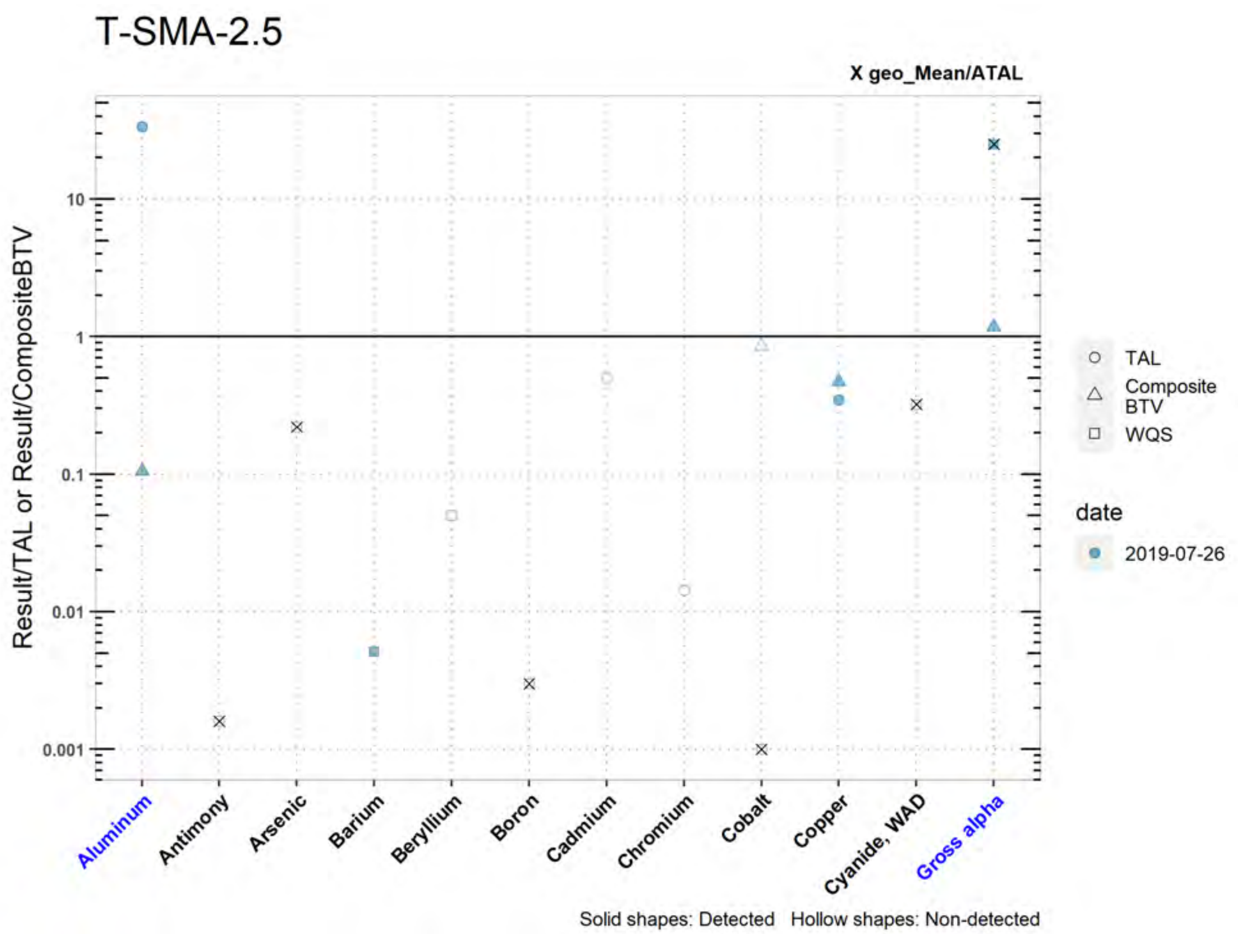


Figure 111.4-1 Analytical Results from Stormwater Sample, T-SMA-2.5 (Plot 1)

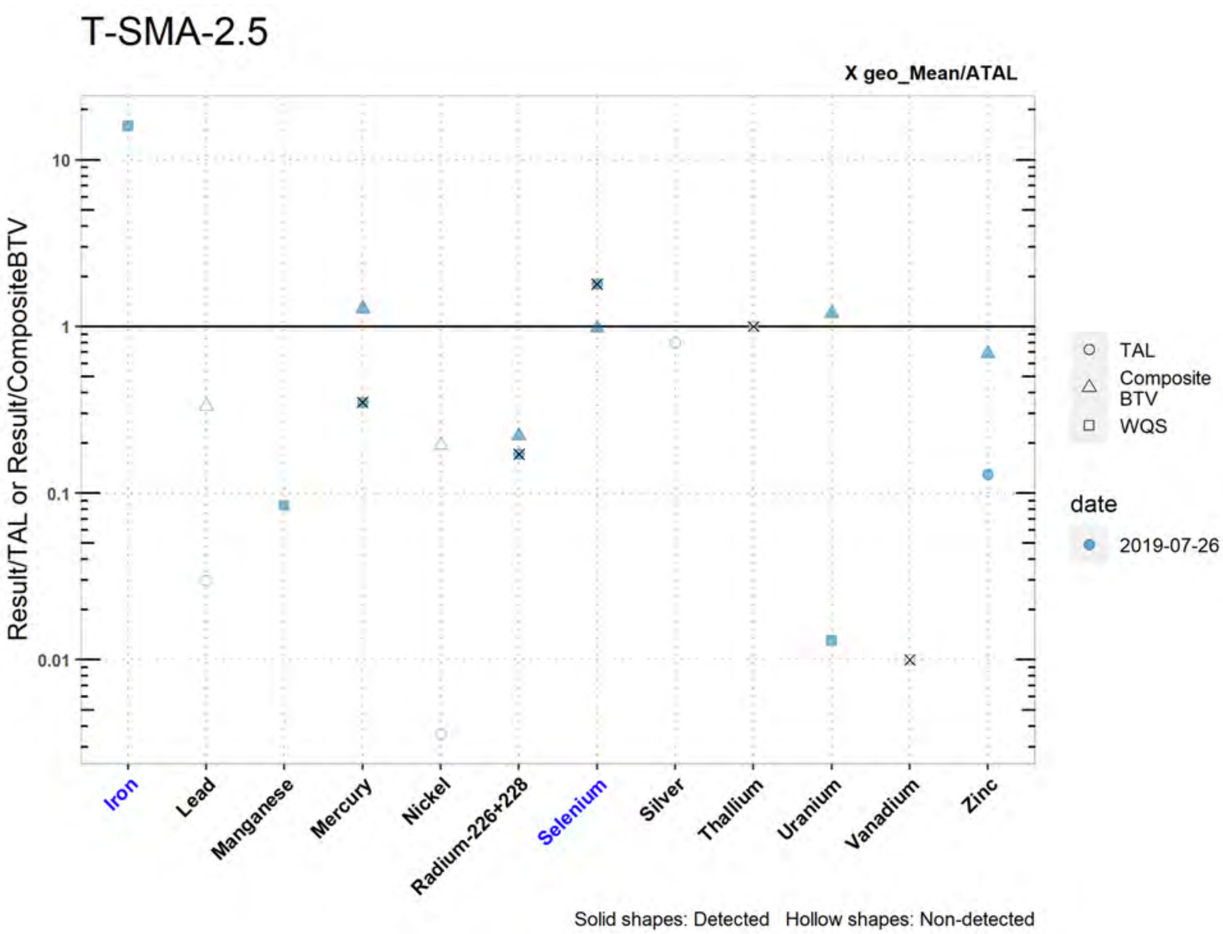


Figure 111.4-2 Analytical Results from Stormwater Sample, T-SMA-2.5 (Plot 2)

T-SMA-2.5

	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	643	NA	340	NA	NA	NA	0.583	210	NA	4.25	22	NA
Composite_BTV	37400	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	pCi/L*
2019-07-26 result	21600	*1.00*	*2.00*	10.2	*0.200*	*15.0*	*0.300*	*3.00*	*1.00*	1.47	*1.67*	369
2019-07-26 dT	33.6	NA	NA	0.0051	NA	NA	NA	NA	NA	0.346	NA	25
2019-07-26 dB	0.105	NA	NA	NA	NA	NA	NA	NA	NA	0.471	NA	1.17
geo_mean/ATAL	NA	0.0016	0.22	NA	NA	0.0030	NA	NA	0.0010	NA	0.321	25

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 111.4-3 Analytical Results from Stormwater Sample, T-SMA-2.5 (Table 1)

T-SMA-2.5

	Iron	Lead	Manganese	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc
MQL	NA	0.5	NA	0.005	0.5	NA	5	0.5	0.5	NA	50	20
ATAL	NA	NA	NA	0.77	NA	30	5	NA	0.47	NA	100	NA
MTAL	NA	16.7	NA	NA	167	NA	20	0.394	NA	NA	NA	52.7
Composite_BTV	NA	1.50	NA	0.208	3.10	4.21	8.98	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
2019-07-26 result	16200	*0.500*	92.6	0.266	*0.600*	5.12	8.79	*0.300*	*0.600*	0.379	*1.00*	6.87
2019-07-26 dT	16	NA	0.084	0.35	NA	0.171	1.8	NA	NA	0.013	NA	0.130
2019-07-26 dB	NA	NA	NA	1.28	NA	0.221	0.979	NA	NA	1.20	NA	0.687
geo_mean/ATAL	NA	NA	NA	0.35	NA	0.171	1.8	NA	1	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 111.4-4 Analytical Results from Stormwater Sample, T-SMA-2.5 (Table 2)

111.4.2 Assessment Unit and Stream Impairments

T-SMA-2.5 drains to Ten Site Canyon (Mortandad Canyon to headwaters), which has impairments for PCBs and adjusted gross alpha. Based on Site history, the impairments are not likely Site-related.

111.5 Site-Specific Demonstration

111.5.1 Soil Data Summary

Zinc exceeded the applicable screening value in soil data but was previously measured in stormwater data and did not exceed TAL. Therefore, it will not be added to the SAP.

111.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL and BTV in the 2019 sample. However, condition c of permit Part I.C.3 has been met, and further monitoring is not required at this time. Aluminum and selenium exceeded the TALs, but not the BTVs. Iron exceeded the WQS. However, there is no TAL in the Permit for iron; only POCs with TALs are used in the SSD.

111.5.3 2022 Permit Status

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

111.5.4 Sampling and Analysis Plan

Table 111.5-1 is the proposed SAP for T-SMA-2.5.

Table 111.5-1 Proposed SAP, T-SMA-2.5

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

112.0 T-SMA-2.85

Associated Sites	35-014(g), 35-016(n)
Receiving Water	Ten-Site Canyon
Drainage Area	0.84 acres
Landscape Characteristics	36% impervious, 64% pervious
Consent Order Site Status	SWMU 35-014(g): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls AOC 35-016(n): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	The January 2017 field visit determined that the affected area for TPH-DRO was not adequately addressed by the current SMA. Therefore, the sampler was moved below soil sampling location 35-23209, but monitoring was not initiated due to the Corrective Action Complete status.
2022 Permit Status	Active Monitoring

112.1 2010 Administratively Continued Permit Summary

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

SWMU 35-014(g) and AOC 35-016(n) received COCs under the Consent Order from NMED in October 2015. The Permittees submitted a certification of completion of corrective action for the Sites to EPA per Permit part I.E.2(d) in October 2015 (LANL 2015, 600977). Stormwater monitoring has not occurred since 2013.

The sampler move recommended in November 2016 was instituted in 2017, but no samples were collected under the Administratively Continued Permit.

112.2 Site History

35-014(g) (no date)

SWMU 35-014(g) is stained concrete next to an asphalt-paved catchment basin, located at the northeast corner of an experimental support laboratory (building 35-207). The concrete is stained as a result of a former oil spill. A catchment basin directs stormwater flow to a CMP outfall and daylight drainage channel [AOC 35-016(n)].

The origin and date of the spill are not known, but it was reportedly cleaned up in the late 1980s during the D&D of the former tank farm and waste-oil treatment facility. A small oil stain remains visible on the concrete. However, no obvious oil staining is apparent in the catchment basin or the outfall. There is currently no visible sign of the spill or any sign of continued releases at the CMP outfall.

35-016(n) (no date)

AOC 35-016(n) consists of a 10-in.-diameter CMP outfall and natural daylight drainage channel that received stormwater runoff from the roof of the CO2 laser building (35-86); a paved area south of the laser building; and a grassy slope adjacent to an experimental support laboratory (building 35-207). The source of the outfall is a daylight drainage channel that leads to an asphalt-paved catchment basin. The outfall receives flow from the catchment basin through an intake grate. Because the decommissioned tank farm and waste-oil treatment facility [SWMU 35-015(a)] was formerly located west of building 35-86, recycled, separated water was also discharged into Ten Site Canyon through a storm sewer that leads to AOC 35-016(n). The tank farm and treatment facility were decommissioned and removed in late 1988 or 1989.

For investigation activities for the Sites, refer to "Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2" (LANL 2008, 102187) and the submittal of the "Response to the Approval with Direction and Replacement Pages for the Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2" (LANL 2008, 101667).

112.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 112.2-1.

Table 112.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
35-014(g)	Spill/non-intentional release	PAHs
35-016(n)	Storm drains and outfall associated with Building 35-86	No applicable POCs

112.3 Consent Order Soil Data

SWMU 35-014(g) and AOC 35-016(n) were investigated together in 2004 as part of Consolidated Unit 35-014(g)-00. Decision-level data for Consolidated Unit 35-014(g)-00 consist of results from samples collected in 1995 and 2004. Analytical results from those samples are presented in Figures 112.3-1 through 112.3-4. The approved IR (LANL 2008, 102187) concluded that the nature and extent of all detected chemicals and radionuclides are defined at Consolidated Unit 35-014(g)-00.

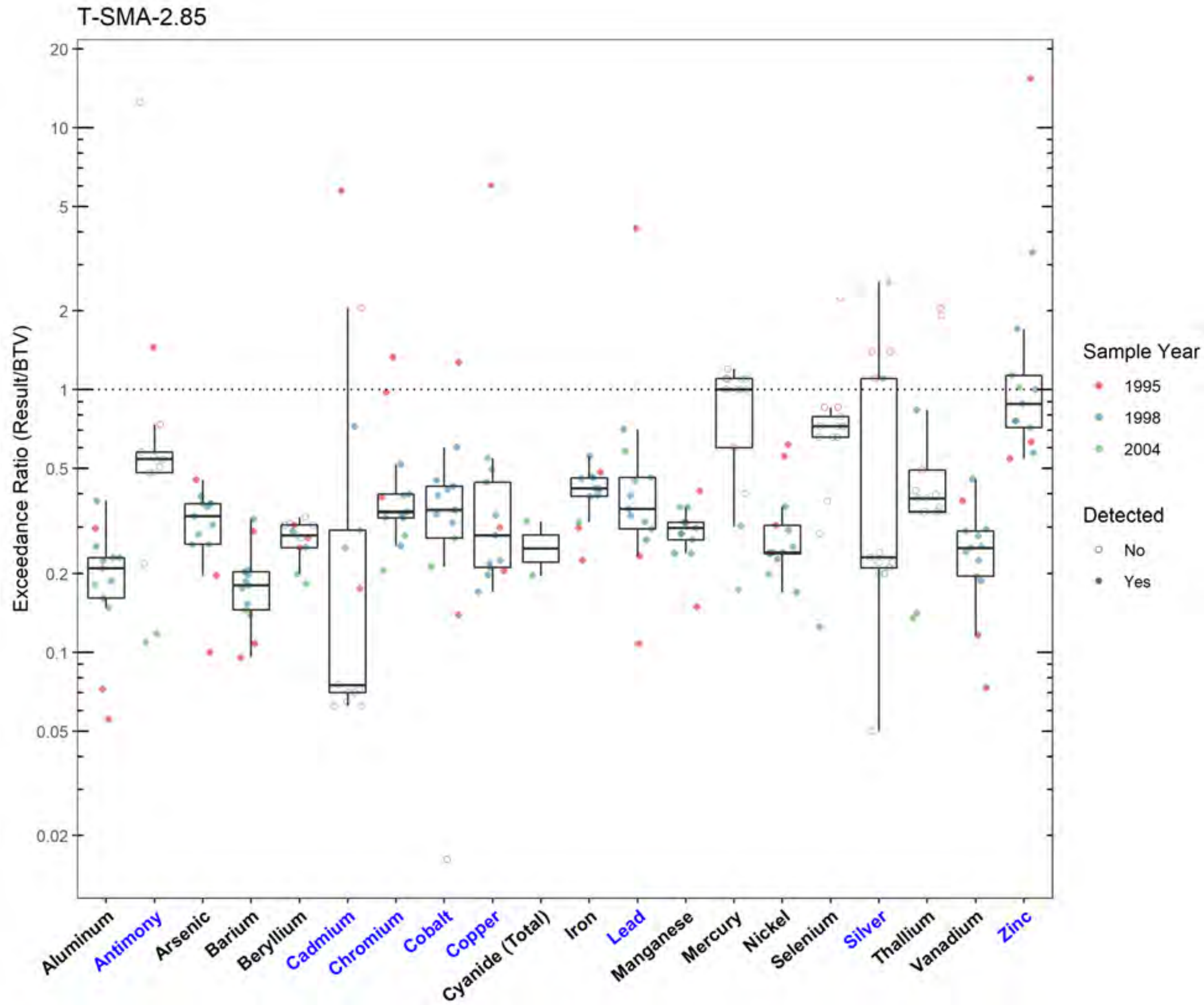


Figure 112.3-1 Inorganics Analytical Results from Soil Samples Associated with T-SMA-2.85

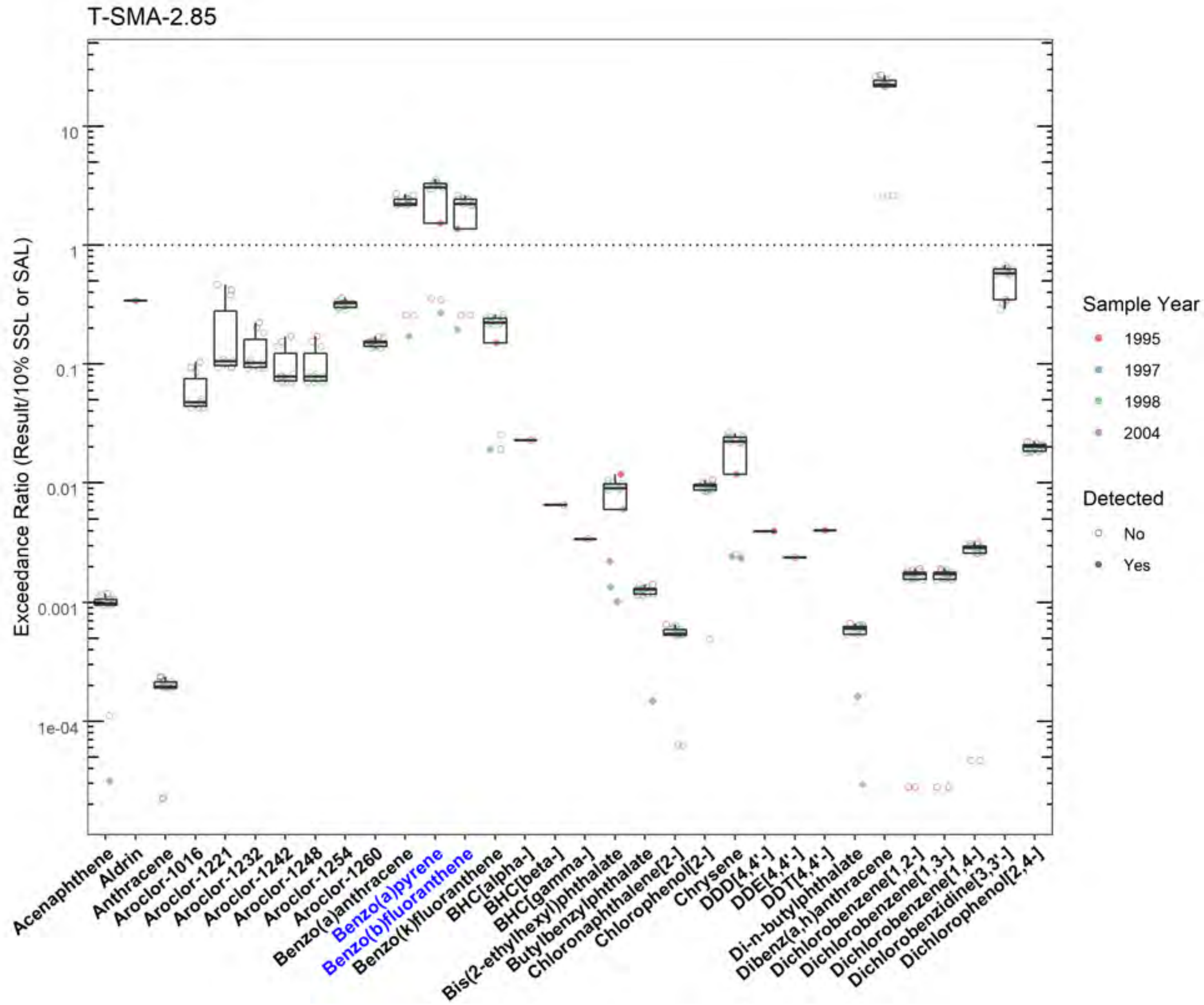


Figure 112.3-2 Organics Analytical Results from Soil Samples Associated with T-SMA-2.85 (Plot 1)

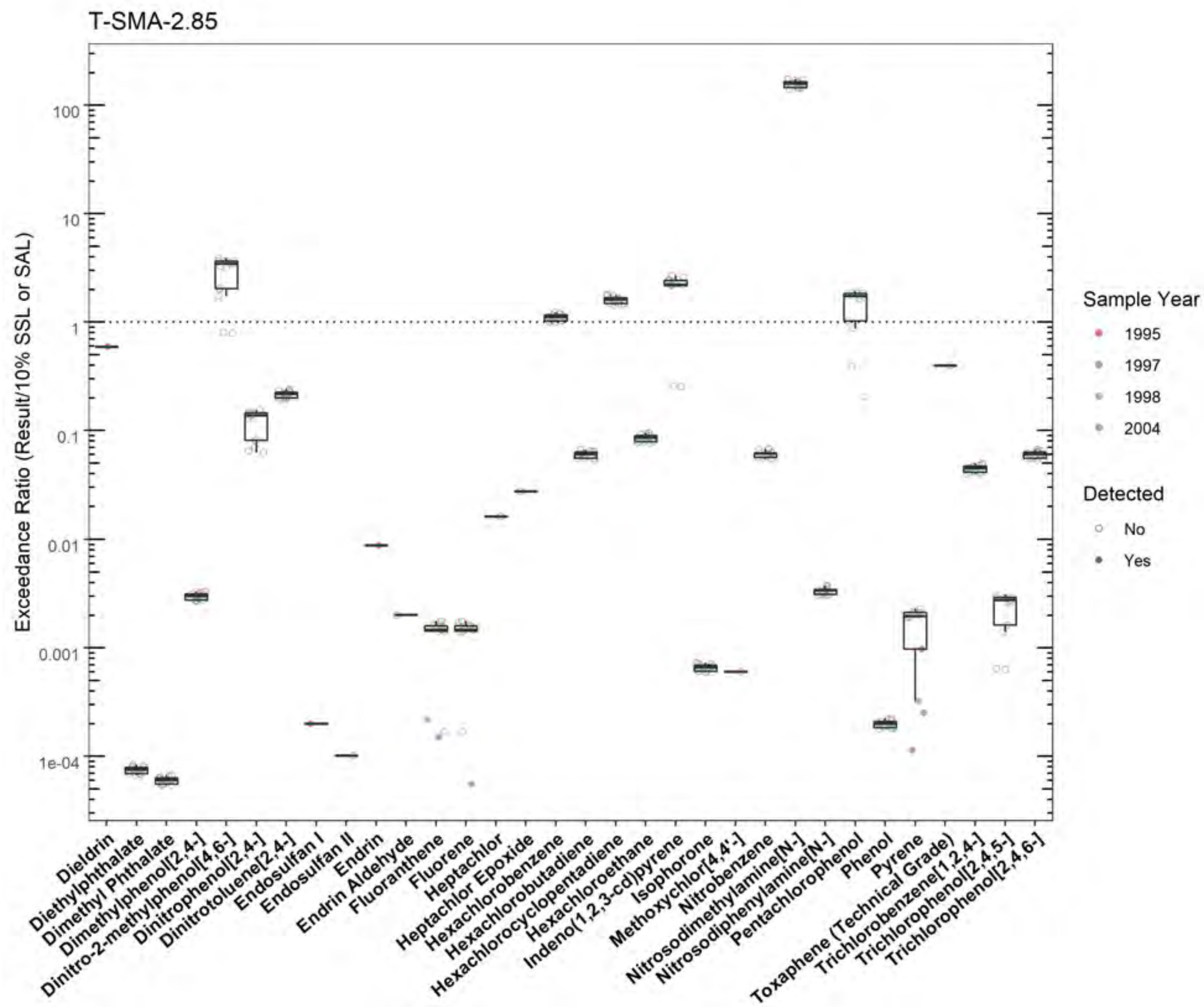


Figure 112.3-3 Organics Analytical Results from Soil Samples Associated with T-SMA-2.85 (Plot 2)

T-SMA-2.85

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	T-SMA-2.85	Sb	Y	BTV	0.830	1.20	1995-04-12
Benzo(a)pyrene	T-SMA-2.85	50-32-8	Y	SSL_0.1	0.112	0.170	1995-04-12
Benzo(b)fluoranthene	T-SMA-2.85	205-99-2	Y	SSL_0.1	0.153	0.210	1995-04-12
Cadmium	T-SMA-2.85	Cd	Y	BTV	0.400	2.30	1995-04-12
Chromium	T-SMA-2.85	Cr	Y	BTV	19.3	25.7	1995-04-12
Cobalt	T-SMA-2.85	Co	Y	BTV	8.64	11.0	1995-04-12
Copper	T-SMA-2.85	Cu	Y	BTV	14.7	88.3	1995-04-12
Lead	T-SMA-2.85	Pb	Y	BTV	22.3	92.0	1995-04-12
Silver	T-SMA-2.85	Ag	Y	BTV	1.00	2.58	2004-12-14
Zinc	T-SMA-2.85	Zn	Y	BTV	48.8	752	1995-04-12

Figure 112.3-4 Screening-Level Exceedances from Soil Samples Associated with T-SMA-2.85

112.4 Stormwater Evaluation

112.4.1 Summary of Stormwater Results Compared to TALs and BTVs

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

112.4.2 Assessment Unit and Stream Impairments

T-SMA-2.85 drains to Ten Site Canyon (Mortandad Canyon to headwaters), which has impairments for PCBs and adjusted gross alpha. The impairments are not likely to be Site-related, based on Site history.

112.5 Site-Specific Demonstration

112.5.1 Soil Data Summary

Benzo(b)fluoranthene and benzo(a)pyrene are the only Site-related POCs that exceeded the applicable screening values in soil data and have not yet been measured in stormwater.

112.5.2 Stormwater Data Summary

No confirmation-monitoring data.

112.5.3 2022 Permit Status

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

112.5.4 Sampling and Analysis Plan

Table 112.5-1 is the proposed SAP for T-SMA-2.85.

Table 112.5-1 Proposed SAP, T-SMA-2.85

Monitoring Constituent	Background for Monitoring
SVOCs	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

113.0 T-SMA-3

Associated Sites	35-016(b)
Receiving Water	Ten-Site Canyon
Drainage Area	3.24 acres
Landscape Characteristics	35% impervious, 65% pervious
Consent Order Site Status	AOC 35-016(b): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	The January 12, 2017 field visit determined that the affected area for silver was not adequately addressed by the current SMA. Therefore, the sampler was moved below soil sampling location 35-23207, but monitoring was not initiated due to the Corrective Action Complete status.
2022 Permit Status	Active Monitoring

113.1 2010 Administratively Continued Permit Summary

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

AOC 35-016(b) received a COC under the Consent Order from NMED in October 2015. The Permittees submitted a certification of completion of corrective action for the Site to EPA per Permit part I.E.2(d) in October 2015 (LANL 2015, 600977). Stormwater monitoring has not occurred since 2012.

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

113.2 Site History

35-016(b)

AOC 35-016(b) is an outfall in Ten Site Canyon that formerly served roof, floor, and sink drains in building 35-87. Previously, the effluent discharge volume, limited to 3000 gpd, was released to Ten Site Canyon. Photographic solutions were historically processed through a silver- and cyanide-recovery process and released through this outfall. By 1992, the three photographic laboratory floor waste drains formerly routed to this outfall were plugged, while the three sink drains were rerouted to the sanitary sewer system.

For investigation activities, refer to “Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2” (LANL 2008, 102187) and the submittal of the “Response to the Approval with Direction and Replacement Pages for the Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2” (LANL 2008, 101667).

113.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 113.2-1.

Table 113.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
35-016(b)	Drain and outfall from building 35-87	Silver, cyanide

113.3 Consent Order Soil Data

Decision-level data for AOC 35-016(b) consist of results from samples collected in 1995, 1997, and 2004. Analytical results from those samples are presented in Figures 113.3-1 through 113.3-4. The approved IR (LANL 2008, 102187) concluded that the nature and extent of all detected chemicals and radionuclides are defined at AOC 35-016(b).

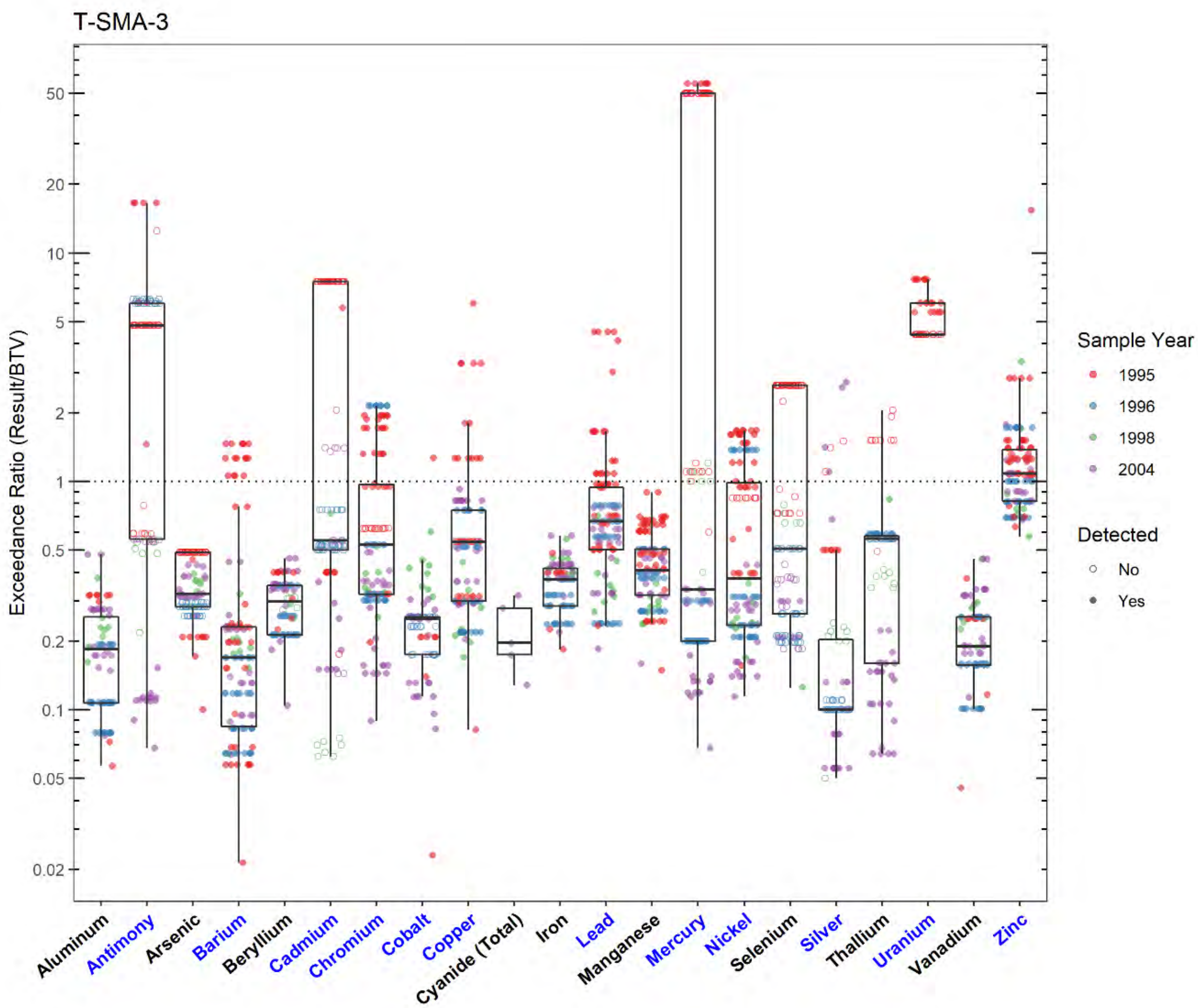


Figure 113.3-1 Inorganics Analytical Results from Soil Samples Associated with T-SMA-3

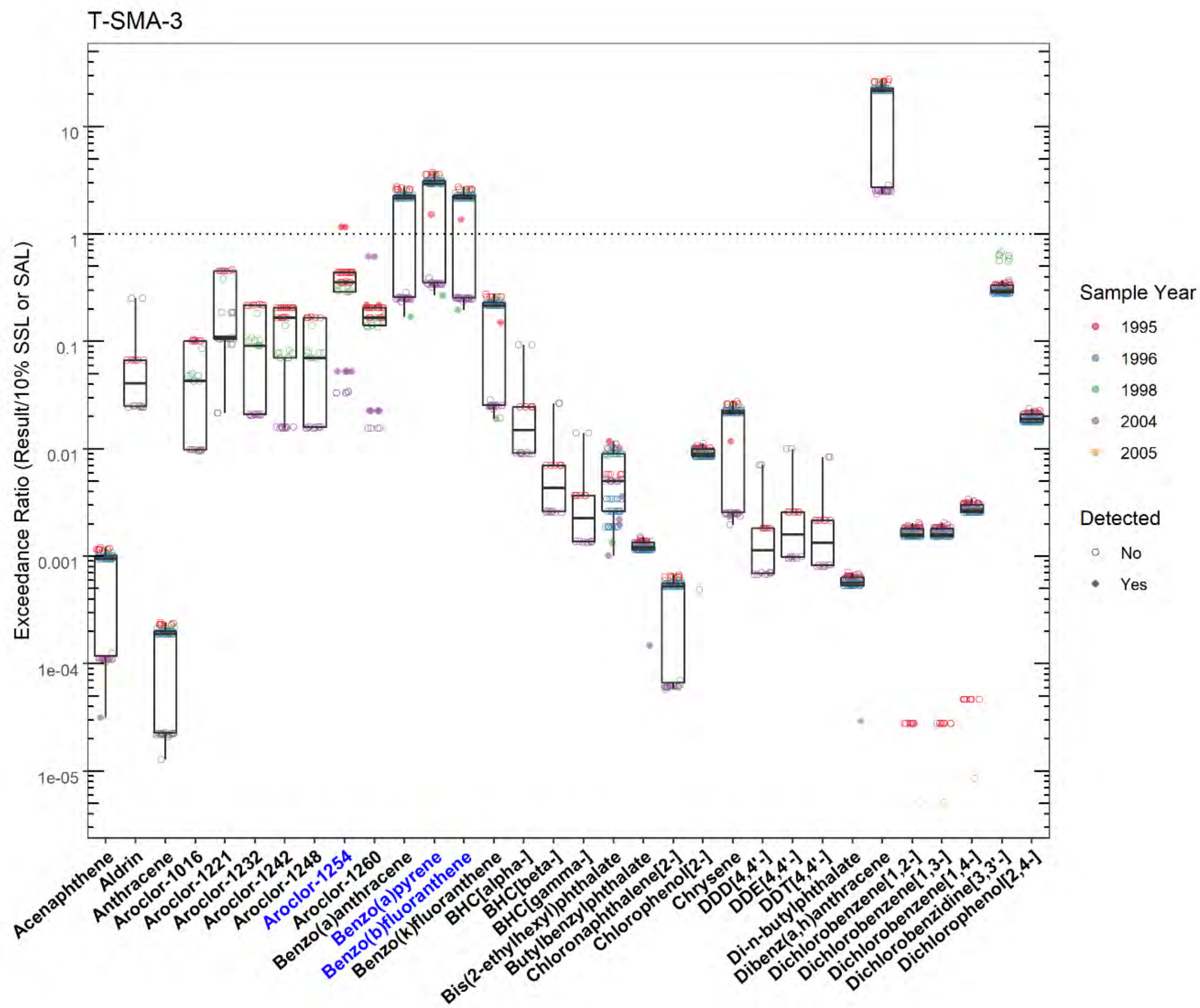


Figure 113.3-2 Organics Analytical Results from Soil Samples Associated with T-SMA-3 (Plot 1)

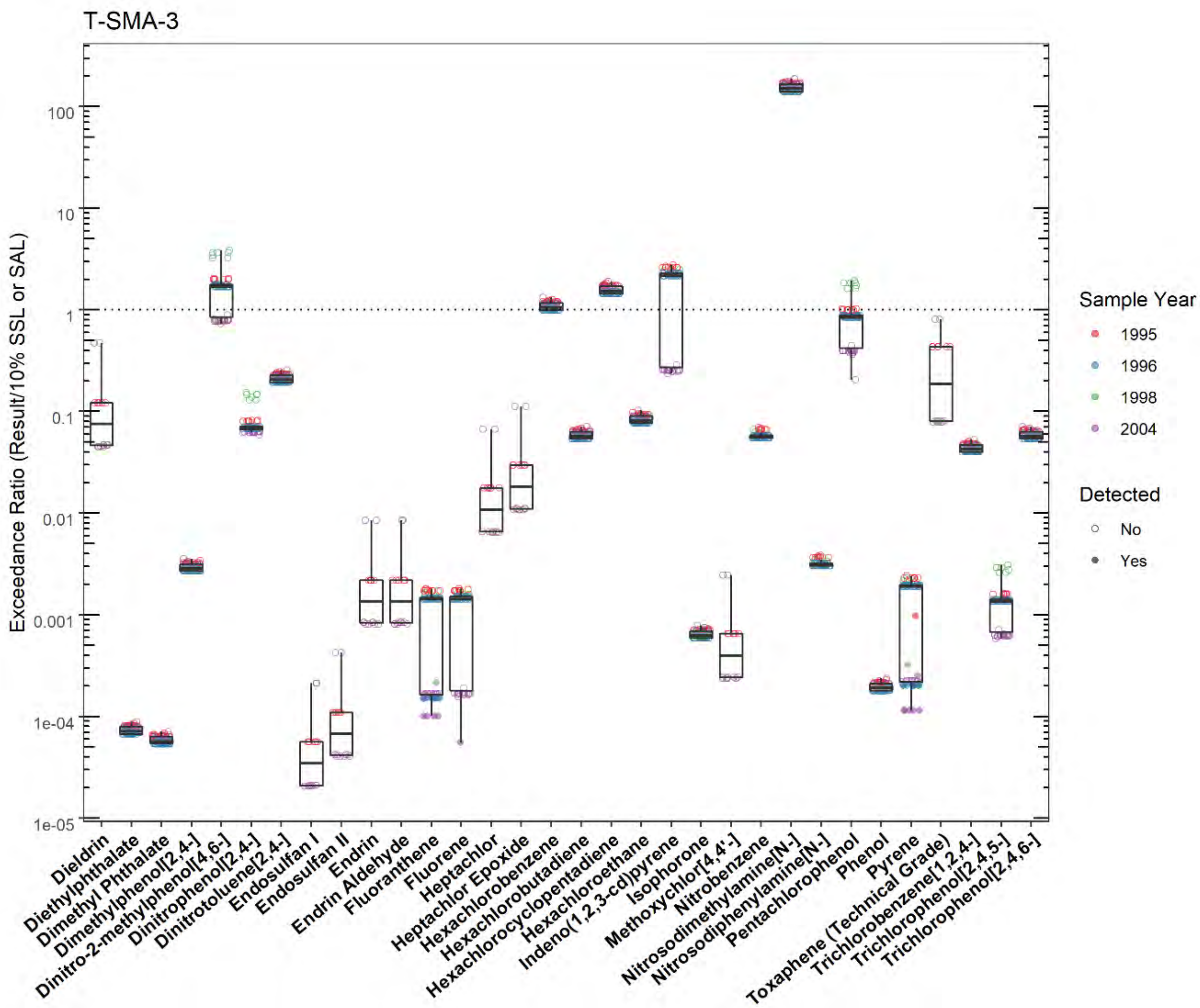


Figure 113.3-3 Organics Analytical Results from Soil Samples Associated with T-SMA-3 (Plot 2)

T-SMA-3

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	T-SMA-3	Sb	Y	BTV	0.830	13.8	1995-03-06
Aroclor-1254	T-SMA-3	11097-69-1	Y	SSL_0.1	0.114	0.132	1995-03-06
Barium	T-SMA-3	Ba	Y	BTV	295	431	1995-03-06
Benzo(a)pyrene	T-SMA-3	50-32-8	Y	SSL_0.1	0.112	0.170	1995-04-12
Benzo(b)fluoranthene	T-SMA-3	205-99-2	Y	SSL_0.1	0.153	0.210	1995-04-12
Cadmium	T-SMA-3	Cd	Y	BTV	0.400	2.30	1995-04-12
Chromium	T-SMA-3	Cr	Y	BTV	19.3	41.3	1996-06-05
Cobalt	T-SMA-3	Co	Y	BTV	8.64	11.0	1995-04-12
Copper	T-SMA-3	Cu	Y	BTV	14.7	88.3	1995-04-12
Lead	T-SMA-3	Pb	Y	BTV	22.3	101	1995-03-06
Mercury	T-SMA-3	Hg	Y	BTV	0.100	5.53	1995-03-06
Nickel	T-SMA-3	Ni	Y	BTV	15.4	25.8	1995-03-06
Silver	T-SMA-3	Ag	Y	BTV	1.00	2.72	2004-12-14
Uranium	T-SMA-3	U	Y	BTV	1.82	13.9	1995-03-06
Zinc	T-SMA-3	Zn	Y	BTV	48.8	752	1995-04-12

Figure 113.3-4 Screening-Level Exceedances from Soil Samples Associated with T-SMA-3

113.4 Stormwater Evaluation

113.4.1 Summary of Stormwater Results Compared to 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 location recommended in the SIP. This sample is eligible as a corrective-action stormwater sample for the 2022 Permit SSD. Analytical results from that sample are presented in Figures 113.4-1 through 113.4-4.

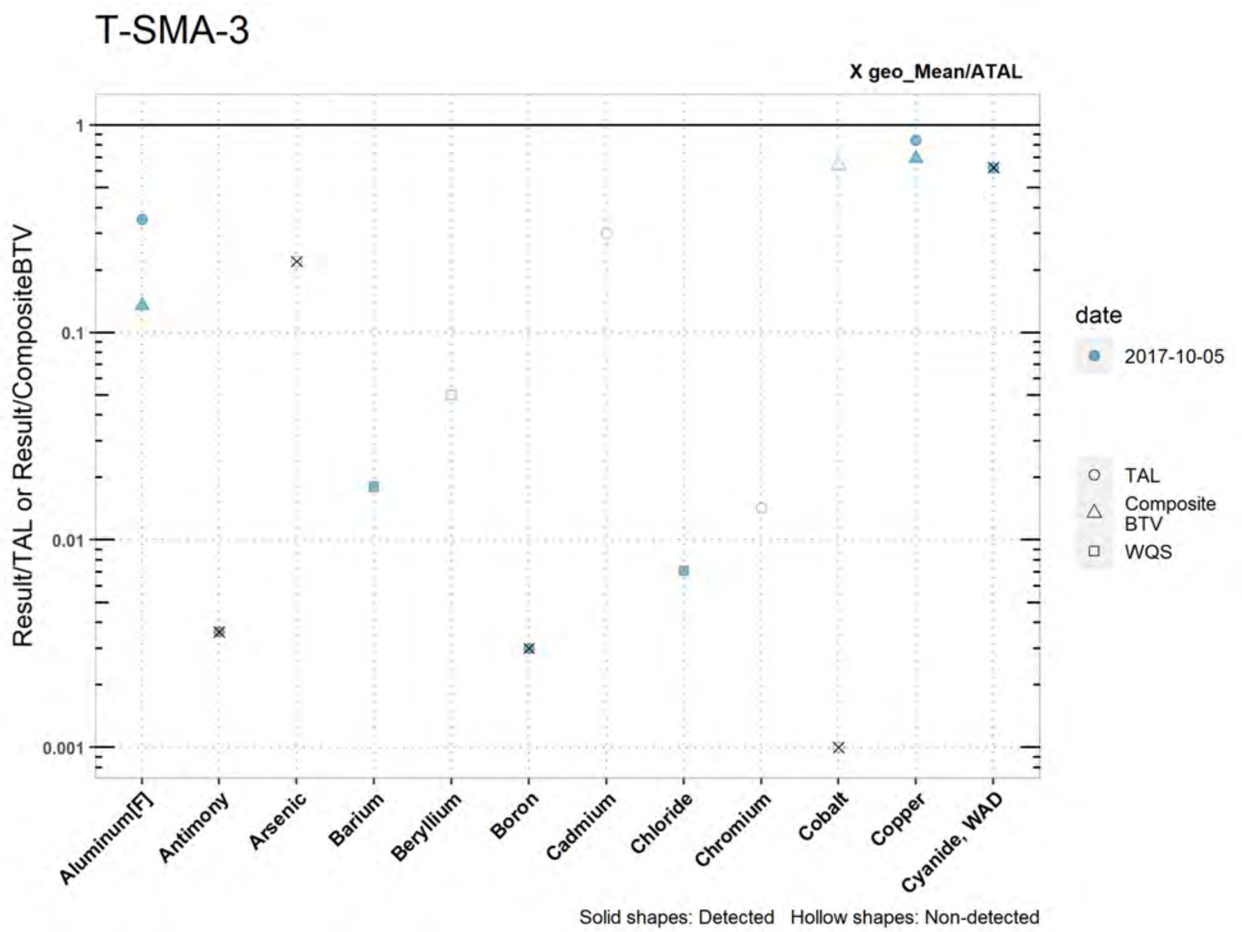


Figure 113.4-1 Analytical Results from Stormwater Sample, T-SMA-3 (Plot 1)

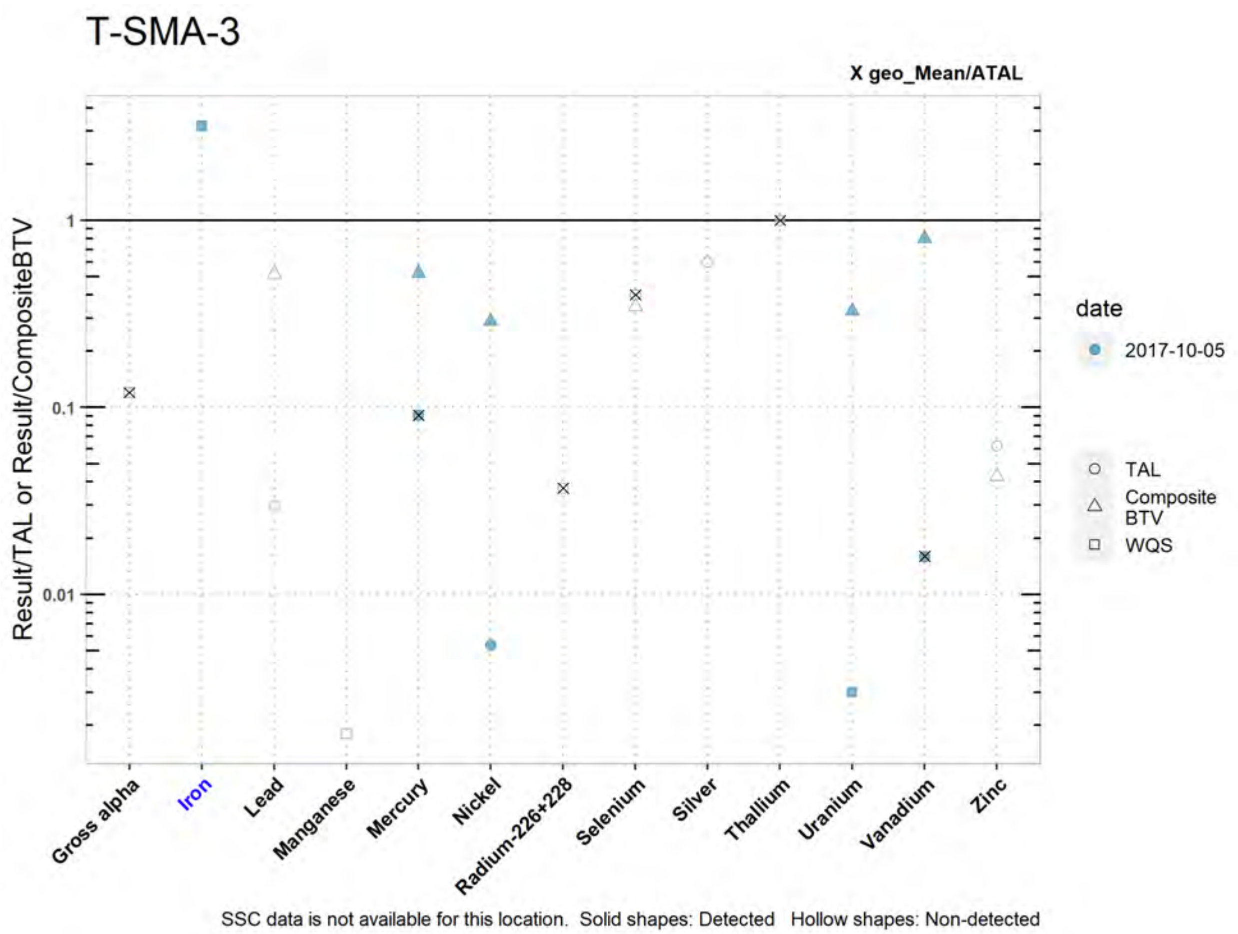


Figure 113.4-2 Analytical Results from Stormwater Sample, T-SMA-3 (Plot 2)

T-SMA-3

	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	0.583	NA	210	NA	4.25	22
Composite_BTV	1960	NA	NA	NA	NA	NA	NA	NA	NA	1.56	5.21	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
2017-10-05 result	264	2.30	*2.00*	36.0	*0.200*	15.1	*0.300*	1630	*3.00*	*1.00*	3.60	6.24
2017-10-05 dT	0.352	0.0036	NA	0.018	NA	0.0030	NA	0.0071	NA	NA	0.847	1.20
2017-10-05 dB	0.135	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.691	NA
geo_mean/ATAL	NA	0.0036	0.22	NA	NA	0.0030	NA	NA	NA	0.0010	NA	1.20

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

Figure 113.4-3 Analytical Results from Stormwater Sample, T-SMA-3 (Table 1)

T-SMA-3

	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	16.7	NA	NA	167	NA	20	0.394	NA	NA	NA	52.7
Composite_BTV	54.5	NA	0.969	NA	0.134	3.10	6.40	5.80	NA	NA	0.274	2.00	77.3
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
2017-10-05 result	*1.87*	3160	*0.500*	*2.00*	0.0700	0.897	*1.11*	*2.00*	*0.300*	*0.600*	0.0900	1.60	*3.30*
2017-10-05 dT	NA	3.2	NA	NA	0.091	0.00537	NA	NA	NA	NA	0.0030	0.016	NA
2017-10-05 dB	NA	NA	NA	NA	0.522	0.289	NA	NA	NA	NA	0.328	0.800	NA
geo_mean/ATAL	0.12	NA	NA	NA	0.091	NA	0.0370	0.40	NA	1	NA	0.016	NA

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

Figure 113.4-4 Analytical Results from Stormwater Sample, T-SMA-3 (Table 2)

113.4.2 Assessment Unit and Stream Impairments

T-SMA-3 drains to Ten Site Canyon (Mortandad Canyon to headwaters), which has impairments for PCBs and adjusted gross alpha. The impairments are not likely to be Site related, based on Site history.

113.5 Site-Specific Demonstration

113.5.1 Soil Data Summary

Silver exceeded the applicable screening value in soil data and will be added to the SAP.

113.5.2 Stormwater Data Summary

Dissolved aluminum did not exceed TAL or BTV, so it will not be added to 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.

113.5.3 2022 Permit Status

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

113.5.4 Sampling and Analysis Plan

Table 113.5-1 is the proposed SAP for T-SMA-3.

Table 113.5-1 Proposed SAP, T-SMA-3

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

114.0 T-SMA-4

Associated Sites	35-004(a), 35-009(a), 35-009(b), 35-016(c), 35-016(d)
Receiving Water	Ten-Site Canyon
Drainage Area	3.22 acres
Landscape Characteristics	31% impervious, 69% pervious
Consent Order Site Status	SWMU 35-004(a): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 35-009(a): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls SWMU 35-009(b): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 35-016(c): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls SWMU 35-016(d): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the January 12, 2017 field visit, all parties agreed that the current SMA sampling location and boundary were not the best representation of stormwater discharge from 35-009(a). However, all parties also agreed that the location and boundary were representative of all other Sites in the SMA, and no sampler relocation was recommended.
2022 Permit Status	Active Monitoring

114.1 2010 Administratively Continued Permit Summary

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

Following the October 2015 submittal to EPA of certification of enhanced control installation as a corrective action at 50-006(a) (LANL 2015, 600948), the sampler was relocated to a more representative location, and corrective-action monitoring was initiated from October to December 2015. SWMUs 35-004(a), 35-009(a), 35-016(c), and 35-016(d) received COCs under the Consent Order from NMED in October 2015. The Permittees submitted a certification of completion of corrective action to EPA per Permit part I.E.2(d) for the Site in October 2015 (LANL 2015, 600977). Stormwater monitoring has not occurred since 2015.

Site 35-009(b) was not monitored on the Administratively Continued Permit, and will be added to the 2022 Individual Permit based on NMED's State Certification.

114.2 Site History

35-004(a) (no date)

SWMU 35-004(a) consists of a former outdoor SAA located on asphalt adjacent to the southeast corner of building 35-25. Waste that was accumulated in the SAA reportedly included small quantities of waste oils and solvents. Staining was observed at the site during a 1988 reconnaissance and during a 1990 inspection, but they were reportedly cleaned up before the 1992 RFI work plan was completed. A temporary, metal, flammable storage structure (35-386) was placed at the site in 1990 and used as the SAA. According to the LANL RCRA database, the SWMU 35-004(a) SAA was taken out of service for hazardous-waste accumulation in April 1997; however, structure 35-386 remains at the site for hazardous-materials storage.

35-009(a) (no date)

SWMU 35-009(a) is an inactive septic system that served building 35-2 from 1951 to 1975. The septic system is located near the southwest corner of building 35-4, and consists of a septic tank (structure 35-14), dosing chamber (structure 35-15), distribution box (structure 35-16), clean-out, associated drainline, and a leach field located on the south-facing slope of Ten Site Canyon. The septic tank is approximately 4 ft bgs and measures 10 ft long × 4 ft wide × 5 ft deep, with a capacity of 1500 gal. The location of the drainline is not known.

The septic system received sanitary wastes from building 35-2. Historical operations at building 35-2 involved the use of lanthanum-140. In addition, two nuclear reactors were housed in building 35-2, as well as plutonium laboratories and lithium titride operations. A 1968 memorandum indicates that the leach field was plugged and the system was daylighted. In 1975, the remainder of the septic system was taken out of service but left in place. Portions of the leach field were excavated when the new sanitary sewer lines were routed to the sewage lagoons [Consolidated Unit 35-010(a)-99] located east of TA-35 in Ten Site Canyon.

35-009(b) (5/31/2018)

SWMU 35-009(b) is an abandoned, inactive sanitary septic system located about 30 ft south of a warehouse (building 35-67), near the southern edge of Ten Site Mesa at TA-35. The septic system included a septic tank (structure 35-76), dosing chamber and distribution box (structure 35-77), and associated leach field. The septic tank was a steel or steel-lined concrete tank (4 ft × 4 ft × 4 ft), with the base about 10 ft bgs. The dimensions of the dosing chamber are not documented but the bottom of the chamber is also 10 ft bgs. The distribution box, located about 20 ft west of the dosing chamber, is a 15-ft deep manhole lined with corrugated metal pipe. The leach field is located southwest of the septic tank and at a lower ground surface, and drained southward toward Ten Site Canyon.

The septic system operated from 1966 to 1975. It received sanitary wastes may have received industrial wastes including radionuclides. Specific waste streams and the volumes of discharge are not documented, however potential contaminants include radionuclides, VOCs, SVOCs and inorganics.

No sign of the leach field is apparent as far back as 1996, but the results of drilling and subsurface sampling confirmed its location. No outfall pipes were found during the engineering surveys, and it is not known if outfall pipes were part of the leach field design. A VCA conducted in 1996 included removal and disposal of the tank contents and filling the tank with concrete. The site was covered will clean fill material.

35-016(c) (no date)

SWMU 35-016(c) consists of two former NPDES-permitted outfalls, established in 1964 to discharge noncontact cooling water from building 35-67. Building 35-67 housed offices, and heating and cooling systems in support of other TA-35 buildings. The drainline to one outfall ran about 75 ft southward to its point of discharge into Ten Site Canyon. The other outfall, deactivated in 1987, ran about 125 ft from building 35-67 to its point of discharge into Ten Site Canyon. The two outfalls were combined by 1985. The noncontact cooling water was from building cooling systems and was not process-related specific.

35-016(d)

SWMU 35-016(d) is a former NPDES-permitted outfall constructed in 1962 to handle noncontact cooling water from the reactor components development building (35-46). Building 35-46 housed offices, and heating and cooling systems in support of other TA-35 buildings. The drainline runs about 50 ft southward to its point of discharge into Ten Site Canyon. By 1990, this outfall had been removed from the NPDES permit. The noncontact cooling water was from building cooling systems and was not process-related.

For investigation activities, refer to “Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2” (LANL 2008, 102187) and the submittal of the “Response to the Approval with Direction and Replacement Pages for the Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2” (LANL 2008, 101667).

114.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 114.2-1.

Table 114.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
35-004(a)	Container storage area	No applicable POCs
35-009(a)	Outfall from building 35-27	Inorganic chemicals, organic chemicals, radionuclides
35-009(b)	Septic system	Inorganic chemicals, SVOCs, radionuclides
35-016(c)	Drain and outfall from building 35-67	No known POCs
35-016(d)	Drain and outfall from building 35-46	No known POCs

114.3 Consent Order Soil Data

Decision-level data for SWMU 35-004(a) consist of results from samples collected in 1995 and 2004. The approved IR (LANL 2008, 102187) concluded that the nature and extent of all detected chemicals and radionuclides are defined at SWMU 35-004(a).

Decision-level data for SWMU 35-009(a) consist of results from samples collected in 1994, 1995, 1996, and 2004. The approved IR (LANL 2008, 102187) concluded that the nature and extent of all detected chemicals and radionuclides are defined at SWMU 35-009(a).

SWMUs 35-016(c) and 35-016(d) were investigated together in 2004 as Consolidated Unit 35-016(c)-00. Decision-level data for Consolidated Unit 35-016(c)-00 consist of results from samples collected in 1996 and 2004. The approved IR (LANL 2008, 102187) concluded that the nature and extent of all detected chemicals and radionuclides are defined at Consolidated Unit 35-016(c)-00.

Analytical results from all decision-level soil samples collected for T-SMA-4 are presented in Figures 114.3-1 through 114.3-4.

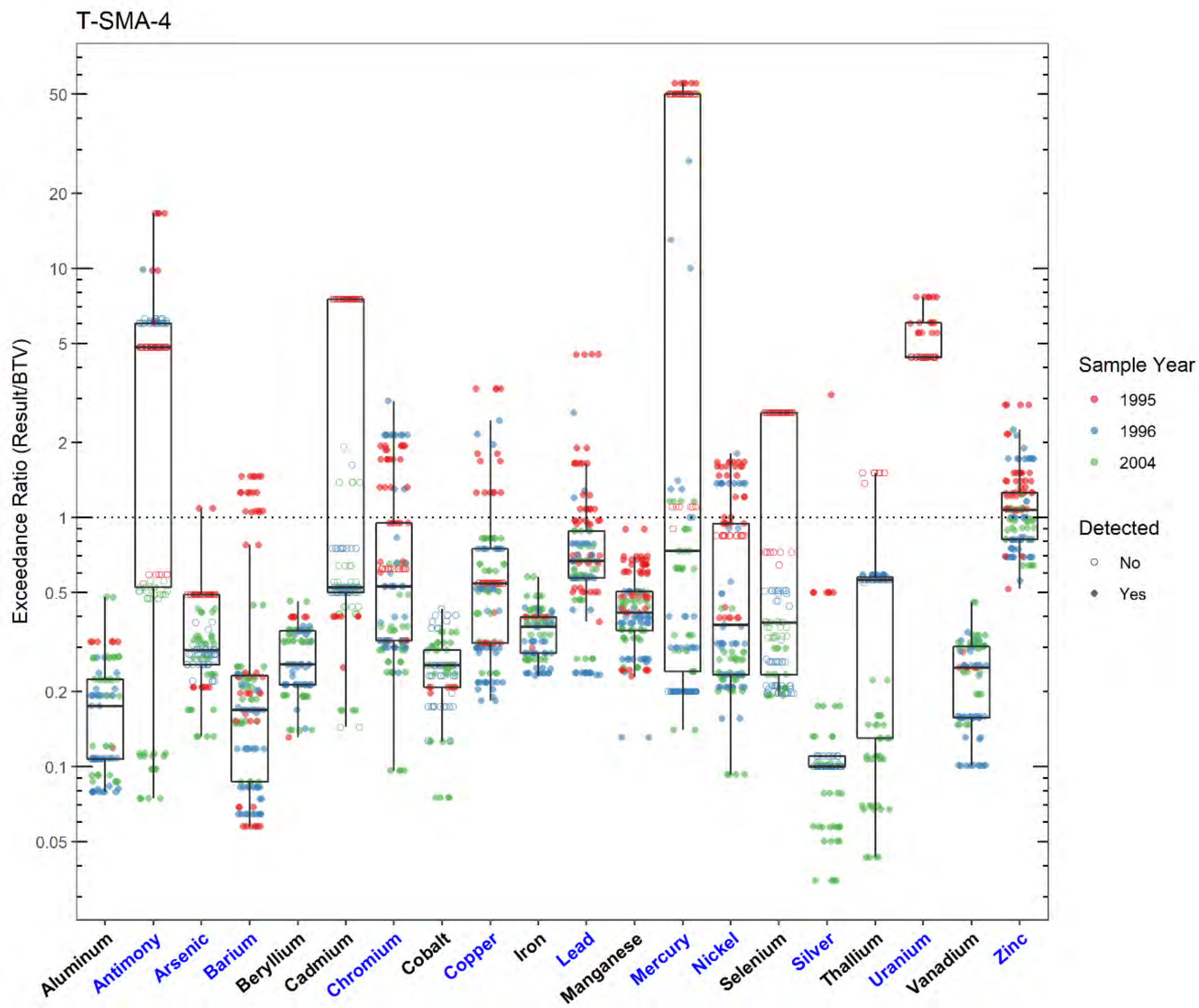


Figure 114.3-1 Inorganics Analytical Results from Soil Samples Associated with T-SMA-4

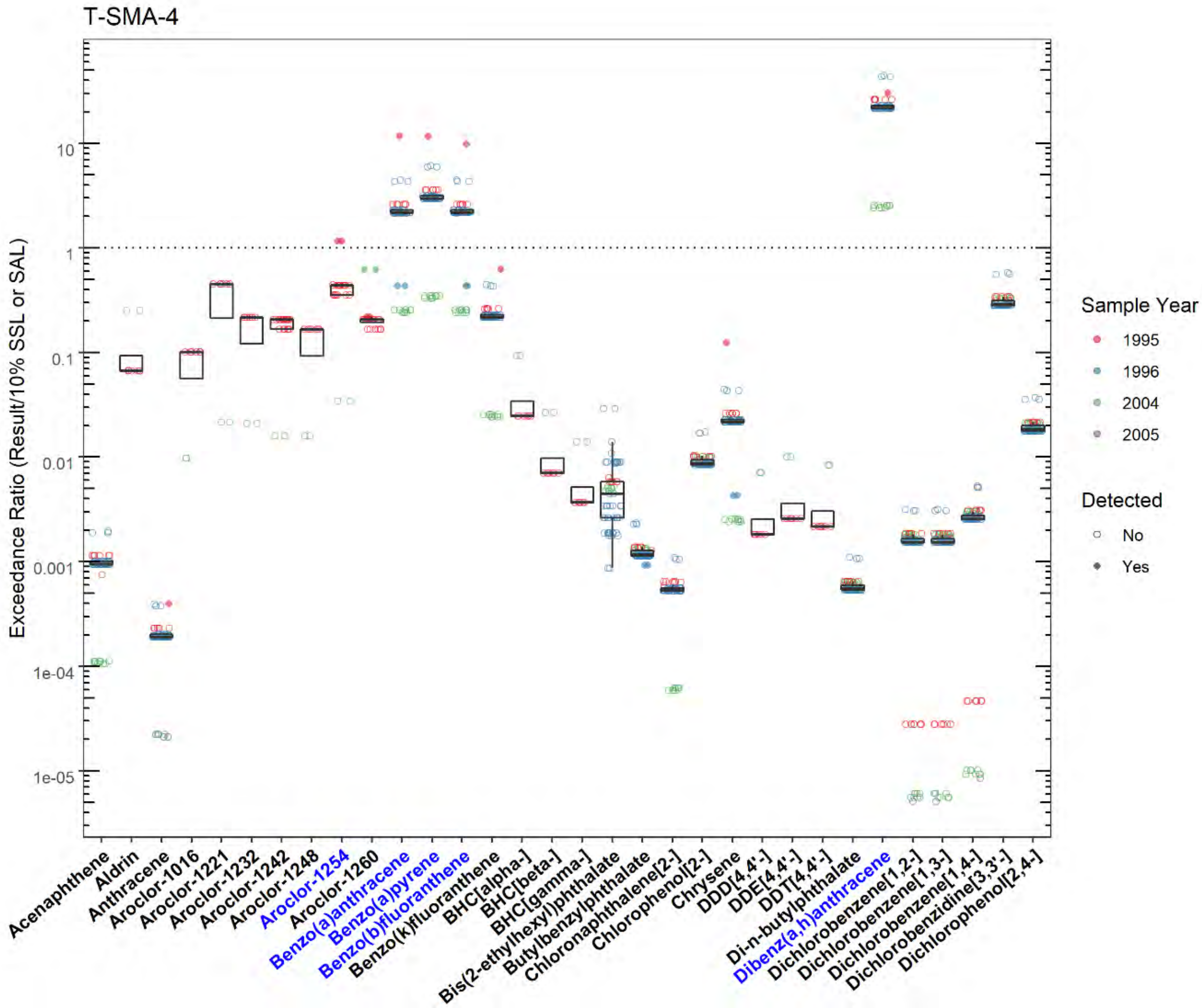


Figure 114.3-2 Organics Analytical Results from Soil Samples Associated with T-SMA-4 (Plot 1)

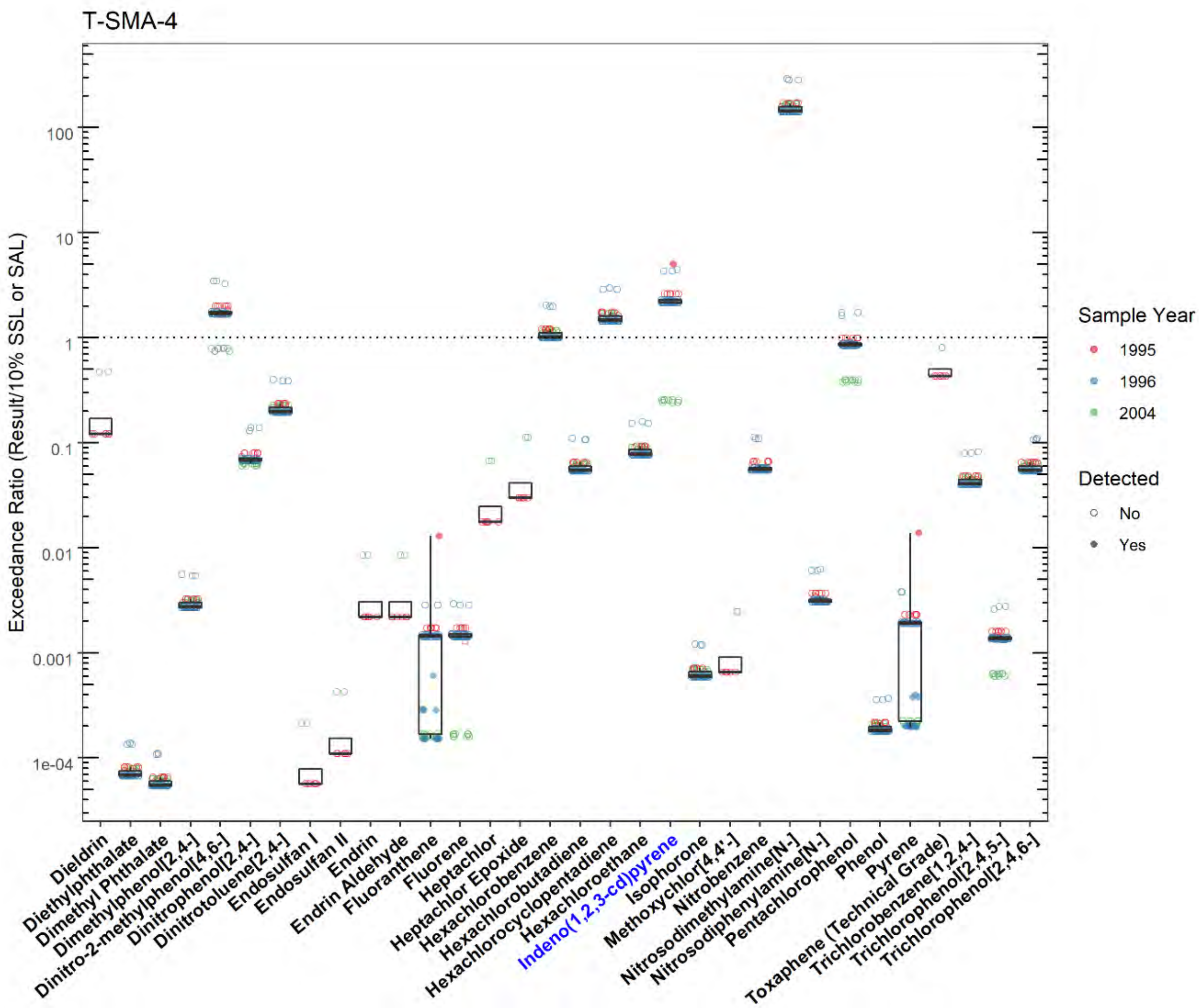


Figure 114.3-3 Organics Analytical Results from Soil Samples Associated with T-SMA-4 (Plot 2)

T-SMA-4

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	T-SMA-4	Sb	Y	BTV	0.830	13.8	1995-03-06
Aroclor-1254	T-SMA-4	11097-69-1	Y	SSL_0.1	0.114	0.132	1995-03-06
Arsenic	T-SMA-4	As	Y	BTV	8.17	8.89	1995-03-06
Barium	T-SMA-4	Ba	Y	BTV	295	431	1995-03-06
Benzo(a)anthracene	T-SMA-4	56-55-3	Y	SSL_0.1	0.153	1.80	1995-03-06
Benzo(a)pyrene	T-SMA-4	50-32-8	Y	SSL_0.1	0.112	1.30	1995-03-06
Benzo(b)fluoranthene	T-SMA-4	205-99-2	Y	SSL_0.1	0.153	1.50	1995-03-06
Chromium	T-SMA-4	Cr	Y	BTV	19.3	56.6	1996-06-05
Copper	T-SMA-4	Cu	Y	BTV	14.7	48.2	1995-03-06
Dibenz(a,h)anthracene	T-SMA-4	53-70-3	Y	SSL_0.1	0.0153	0.460	1995-03-06
Indeno(1,2,3-cd)pyrene	T-SMA-4	193-39-5	Y	SSL_0.1	0.153	0.770	1995-03-06
Lead	T-SMA-4	Pb	Y	BTV	22.3	101	1995-03-06
Mercury	T-SMA-4	Hg	Y	BTV	0.100	5.53	1995-03-06
Nickel	T-SMA-4	Ni	Y	BTV	15.4	27.9	1996-06-05
Silver	T-SMA-4	Ag	Y	BTV	1.00	3.10	1995-03-06
Uranium	T-SMA-4	U	Y	BTV	1.82	13.9	1995-03-06
Zinc	T-SMA-4	Zn	Y	BTV	48.8	138	1995-03-06

Figure 114.3-4 Screening-Level Exceedances from Soil Samples Associated with T-SMA-4

114.4 Stormwater Evaluation

114.4.1 Summary of Stormwater Results Compared to 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.

114.4.2 Assessment Unit and Stream Impairments

T-SMA-4 drains to Ten Site Canyon (Mortandad Canyon to headwaters), which has impairments for PCBs and adjusted gross alpha. The adjusted gross alpha and PCB impairments may be Site-related, based on Site history.

114.5 Site-Specific Demonstration

114.5.1 Soil Data Summary

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

Antimony, arsenic, chromium, lead, nickel, silver, and zinc exceeded the applicable screening value in soil data, but were previously monitored in stormwater data and did not exceed TALs. Copper and mercury exceeded the applicable screening value in soil and TALs. However, this sampling was not conducted at the current monitoring location; all metals that exceeded BV in soil data will be added to the SAP.

114.5.2 Stormwater Data Summary

No confirmation-monitoring data.

114.5.3 2022 Permit Status

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

114.5.4 Sampling and Analysis Plan

Table 114.5-1 is the proposed SAP for T-SMA-4.

Table 114.5-1 Proposed SAP, T-SMA-4

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment, Site history (radionuclides), and soil data (uranium)
Total PCBs	Impairment, soil data, and Site history
SVOCs	Site history and soil data
Strontium-90	Site history (radionuclides)
Radium-226 and radium-228	Site history (radionuclides)
Tritium	Site history (radionuclides)
Dissolved antimony, arsenic, barium, chromium, copper, lead, nickel, silver, uranium, and zinc	Site history (inorganics) and soil data
Total mercury	Site history (inorganics) and soil data
DOC	Permit requirement
SSC	Permit requirement

115.0 T-SMA-5

Associated Sites	35-004(a), 35-009(a), 35-016(a), 35-016(q)
Receiving Water	Ten-Site Canyon
Drainage Area	1.35 acres
Landscape Characteristics	30% impervious, 70% pervious
Consent Order Site Status	SWMU 35-004(a): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 35-009(a): Pending Inclusion in Permit Modification Request. Certificate of Completion Received With Controls SWMU 35-016(a): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 35-016(q): 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 January 12, 2017 field visit, all parties agreed that the current SMA sampling location and boundary were not the best representation of stormwater discharge from the Site. However, a sampler move was not recommended.
2022 Permit Status	Active Monitoring

115.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, 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.

115.2 Site History

35-004(a) (no date)

SWMU 35-004(a) consists of a former outdoor SAA, located on asphalt adjacent to the southeast corner of building 35-25. Waste that was accumulated in the SAA reportedly included small quantities of waste oils and solvents. Staining was observed at the site during a 1988 reconnaissance and during a 1990 inspection, but they were reportedly cleaned up before the 1992 RFI work plan was completed. A temporary, metal, flammable storage structure (35-386) was placed at the site in 1990 and used as the SAA. According to the LANL RCRA database, the SWMU 35-004(a) SAA was taken out of service for hazardous waste accumulation in April 1997; however, structure 35-386 remains at the site for hazardous materials storage.

35-009(a) (no date)

SWMU 35-009(a) is an inactive septic system that served building 35-2 from 1951 to 1975. The septic system is located near the southwest corner of building 35-4 and consists of a septic tank (structure 35-14), dosing chamber (structure 35-15), distribution box (structure 35-16), clean out, associated drainline, and a leach field located on the south-facing slope of Ten Site Canyon. The septic tank is approximately 4 ft bgs and measures 10 ft long × 4 ft wide × 5 ft deep with a capacity of 1500 gal. The location of the drainline is not known.

The septic system received sanitary wastes from building 35-2. Historical operations at building 35-2 involved the use of lanthanum-140. In addition, two nuclear reactors were housed in building 35-2, as well as plutonium laboratories and lithium titride operations. A 1968 memorandum indicates that the leach field was plugged and the system was daylighted. In 1975, the remainder of the septic system was taken out of service but left in place. Portions of the leach field were excavated when the new sanitary sewer lines were routed to the sewage lagoons [CU 35-010(a)-99] located east of TA-35 in Ten Site Canyon.

35-016(a) (no date)

SWMU 35-016(a) is a former NPDES-permitted outfall that originally consisted of an 8-in.-diameter metal pipe with a valve and a 6-in. VCP placed in a trench cut into the tuff that discharged into Ten Site Canyon. The outfall was established in 1958 to handle noncontact cooling water from the sodium testing building (35-34). SWMU 35-016(a) discharges to the same location as the SWMU 35-016(q) stormwater outfall in Ten Site Canyon

Aerial photographs from 1965 show a diagonal trench extending from the north end of SWMU 35-016(a) in a southeasterly direction that appears to connect with the north end of SWMU 35-016(q). Aerial photographs from 1974 show that the diagonal trench and approximately two-thirds of the northern portion of the SWMU were no longer present and may have been backfilled. The drainlines were decommissioned and removed in 1987; the remaining section of the trench now serves as a stormwater collection channel for a small area on the south side of Ten Site Mesa at TA-35. The mid-90s aerial photographs show this site to be much the same as it appeared in 1974. The outfall was eliminated from the NPDES permit in 1985 when discharges to the outfall ceased.

35-016(q) (no date)

SWMU 35-016(q) consists of a stormwater trench cut into the tuff, parallel to and about 60 ft east of SWMU 35-016(a). Constructed in 1958, the trench includes several active stormwater collection basins located between building 35-34 and the edge of Ten Site Canyon. The trench discharges stormwater to the same area in Ten Site Canyon as SWMU 35-016(a).

For investigation activities, refer to “Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2” (LANL 2008, 102187) and the submittal of the “Response to the Approval with Direction and Replacement Pages for the Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2” (LANL 2008, 101667).

115.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 115.2-1.

Table 115.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
35-004(a)	Container storage area	No applicable POCs
35-009(a)	Outfall from building 35-27	Inorganic and organic chemical, radionuclides
35-016(a)	Drain and outfall from building 35-34	No known POCs
35-016(q)	Stormwater collection trench	Inorganic and organic chemicals

115.3 Consent Order Soil Data

Decision-level data for SWMU 35-004(a) consist of results from samples collected in 1995 and 2004. The approved IR (LANL 2008, 102187) concluded that the nature and extent of all detected chemicals and radionuclides are defined at SWMU 35-004(a).

Decision-level data for SWMU 35-009(a) consist of results from samples collected in 1994, 1995, 1996, and 2004. The approved IR (LANL 2008, 102187) concluded that the nature and extent of all detected chemicals and radionuclides are defined at SWMU 35-009(a).

SWMUs 35-016(a) and 35-016(q) were investigated together in 2004 as Consolidated Unit 35-016(a)-00. Decision-level data for Consolidated Unit 35-016(a)-00 consist of results from samples collected in 1995, 1996, 1997, and 2004. The approved IR (LANL 2008, 102187) concluded that the nature and extent of all detected chemicals and radionuclides are defined at Consolidated Unit 35-016(a)-00.

Analytical results from all decision-level soil samples collected for T-SMA-5 are presented in Figures 115.3-1 through 115.3-4.

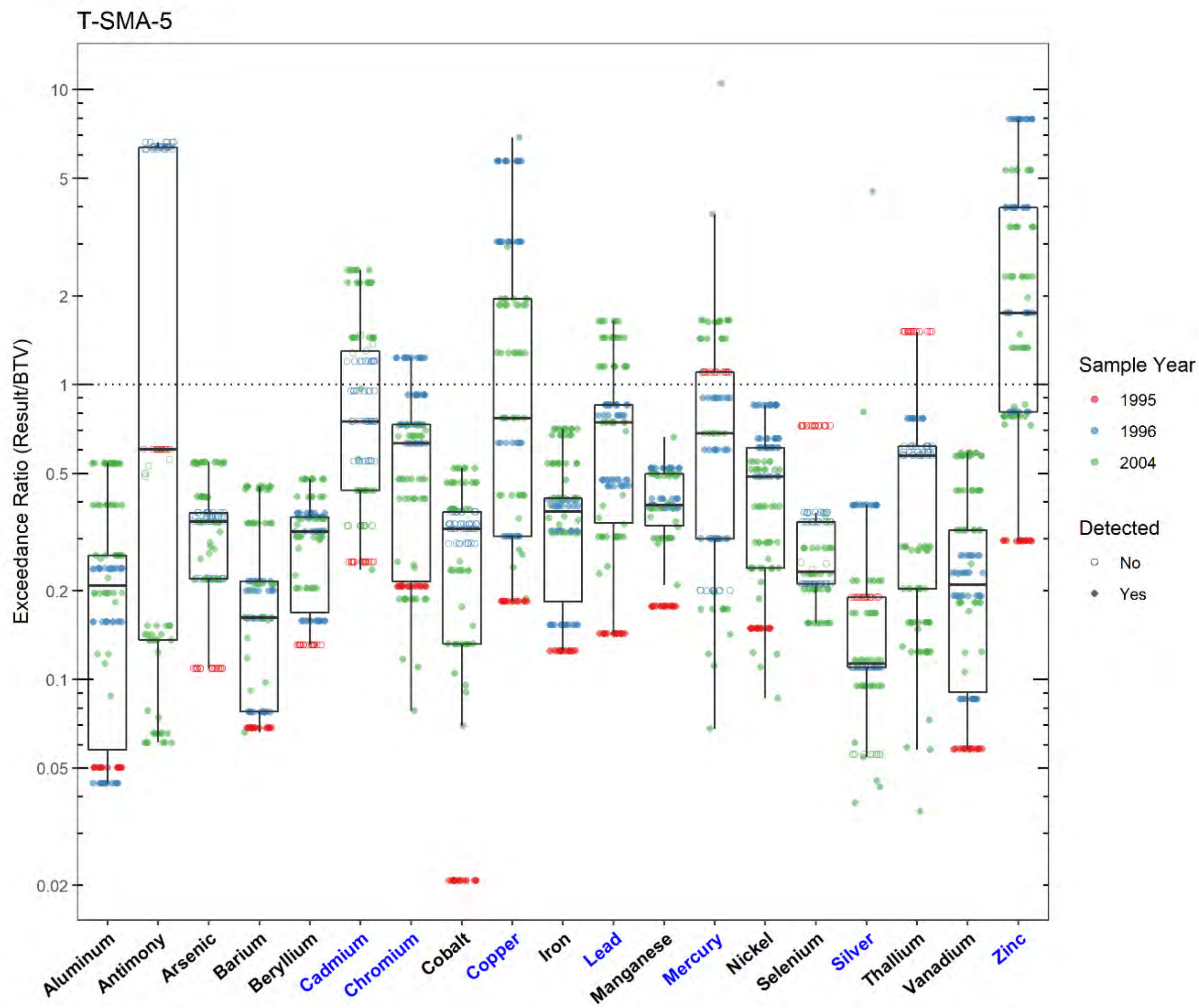


Figure 115.3-1 Inorganics Analytical Results from Soil Samples Associated with T-SMA-5

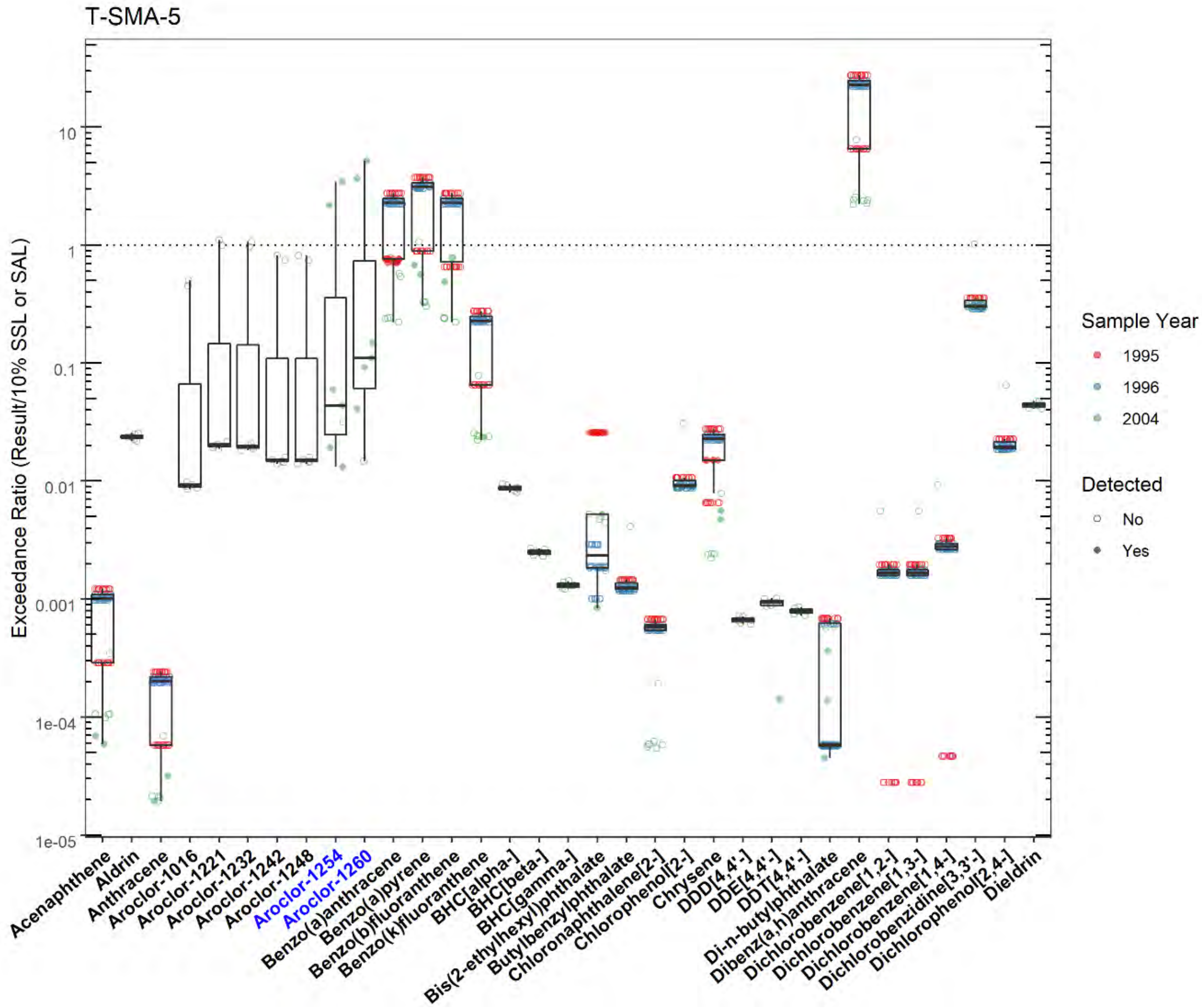


Figure 115.3-2 Organics Analytical Results from Soil Samples Associated with T-SMA-5 (Plot 1)

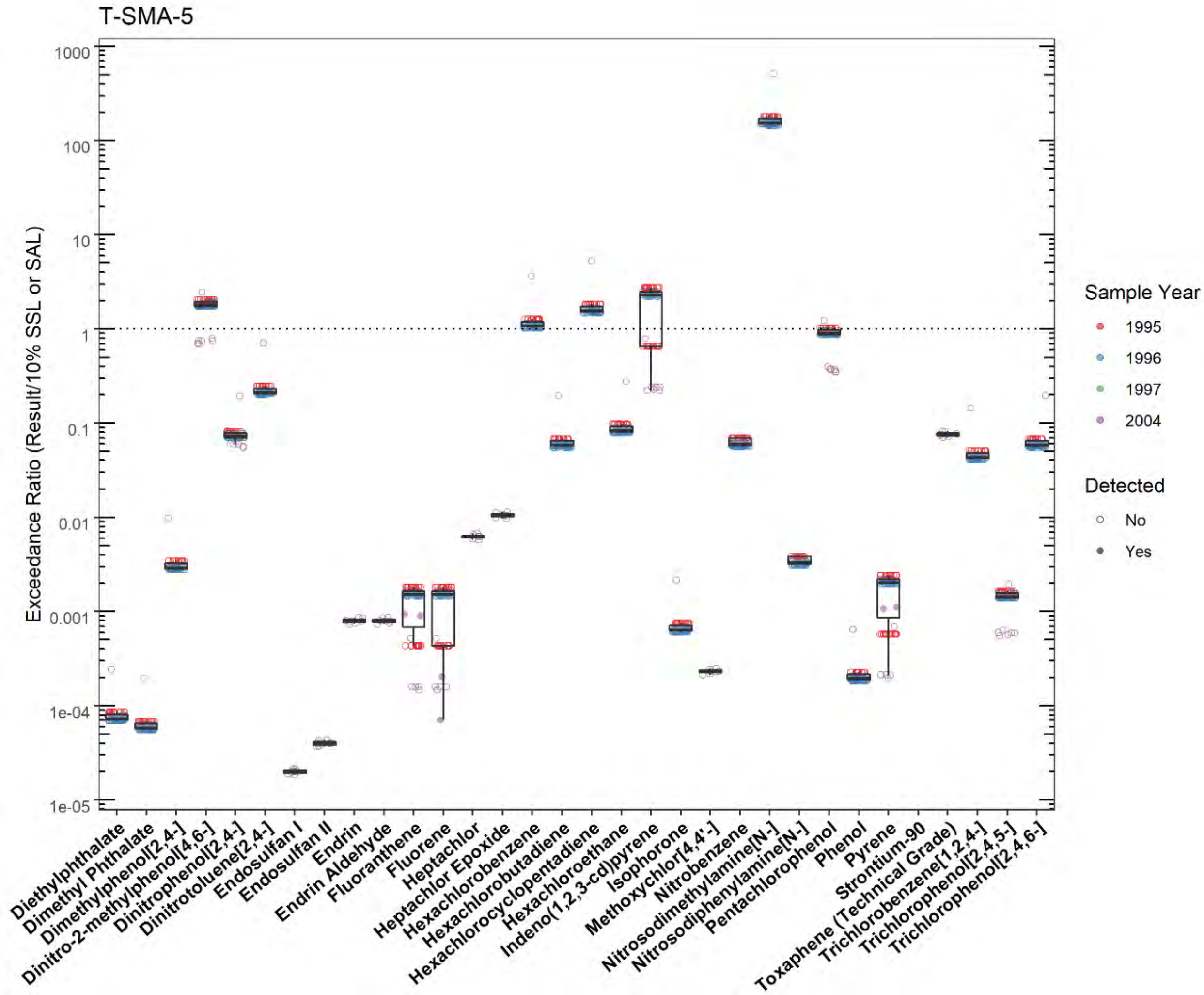


Figure 115.3-3 Organics Analytical Results from Soil Samples Associated with T-SMA-5 (Plot 2)

T-SMA-5

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	T-SMA-5	11097-69-1	Y	SSL_0.1	0.114	0.393	2004-12-17
Aroclor-1260	T-SMA-5	11096-82-5	Y	SSL_0.1	0.243	1.26	2004-12-17
Cadmium	T-SMA-5	Cd	Y	BTV	0.400	0.976	2004-09-13
Chromium	T-SMA-5	Cr	Y	BTV	19.3	23.8	1996-06-05
Copper	T-SMA-5	Cu	Y	BTV	14.7	101	2004-12-17
Lead	T-SMA-5	Pb	Y	BTV	22.3	36.5	2004-09-13
Mercury	T-SMA-5	Hg	Y	BTV	0.100	1.05	2004-12-17
Silver	T-SMA-5	Ag	Y	BTV	1.00	4.51	2004-12-17
Zinc	T-SMA-5	Zn	Y	BTV	48.8	387	1996-06-05

Figure 115.3-4 Screening-Level Exceedances from Soil Samples Associated with T-SMA-5

115.4 Stormwater Evaluation

115.4.1 Summary of Stormwater Results Compared to 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.

115.4.2 Assessment Unit and Stream Impairments

T-SMA-5 drains to Ten Site Canyon (Mortandad Canyon to headwaters), which has impairments for PCBs and adjusted gross alpha. The impairments may be Site-related, based on Site history.

115.5 Site-Specific Demonstration

115.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: Aroclor-1254, Aroclor-1260, cadmium, chromium, copper, lead, mercury, silver, and zinc.

115.5.2 Stormwater Data Summary

No confirmation-monitoring data.

115.5.3 2022 Permit Status

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

115.5.4 Sampling and Analysis Plan

Table 115.5-1 is the proposed SAP for T-SMA-5.

Table 115.1-1 Proposed SAP, T-SMA-5

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history
Total PCBs	Impairment, Site history, and soil data
Radium-226 and radium-228	Site history
Tritium	Site history
Total mercury	Site history (inorganics) and soil data
Dissolved cadmium, chromium, copper, lead, silver, and zinc	Site history (inorganics) and soil data
SVOCs	Site history
DOC	Permit requirement
SSC	Permit requirement

116.0 T-SMA-6.8

Associated Sites	35-010(e)
Receiving Water	Ten-Site Canyon
Drainage Area	131.33 acres
Landscape Characteristics	14% impervious, 86% pervious
Consent Order Site Status	AOC 35-010(e): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	The January 12, 2017 field visit determined that the current sampler should be moved down the drainage area to include more of the affected area, but monitoring was not initiated due to the Corrective Action Complete status.
2022 Permit Status	Active Monitoring/Corrective Action

116.1 2010 Administratively Continued Permit Summary

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

AOC 35-010(e) received a COC under the Consent Order from NMED in October 2015. The Permittees submitted a certification of completion of corrective action for the Site to EPA per Permit part I.E.2(d) in October 2015 (LANL 2015, 600977). Stormwater monitoring has not occurred since 2014.

The sampler move recommended in January 2017 was instituted in 2017, and two investigative samples were collected at the new location under the Administratively Continued Permit. Those samples will be used as compliance samples in the 2022 Individual Permit.

116.2 Site History

35-010(e) (no date)

AOC 35-010(e) is a former NPDES-permitted outfall that discharged from the SWMU 35-010(d) filter beds into Ten Site Canyon. A depth-recording gauge station is located at the outfall to measure the effluent level above a small v-shaped weir discharge point. A rock dissipater apron is emplaced below the discharge point. Compiled flow records of the outfall show that the average flow rate was approximately 45,000 gpd, exceeding the planned capacity of 12,000 gpd.

AOC 35-010(e) is a component of the former TA-35 WWTP, which was used for the biological treatment of liquid waste. It received sanitary and industrial wastewater from TA-35, TA-48, TA-50, and TA-55 from 1975 to 1992 when all discharges from the filters beds ceased.

For investigation activities, refer to “Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2” (LANL 2008, 102187) and the submittal of the “Response to the Approval with Direction and Replacement Pages for the Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2” (LANL 2008, 101667).

116.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 116.2-1.

Table 116.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
35-010(e)	Outfall associated with filter beds	Silver, inorganic chemicals, cyanide, organic chemicals, radionuclides

116.3 Consent Order Soil Data

AOC 35-010(e) was investigated in 2004 as part of Consolidated Unit 35-010(a)-99. Decision-level data for Consolidated Unit 35-010(a)-99 consist of results from samples collected in 1994, 1995, 1997, 1998, and 2004. Analytical results from those samples are presented in Figures 116.3-1 through 116.3-5. The approved IR (LANL 2008, 102187) concluded that the nature and extent of all detected chemicals and radionuclides are defined at Consolidated Unit 35-010(a)-99.

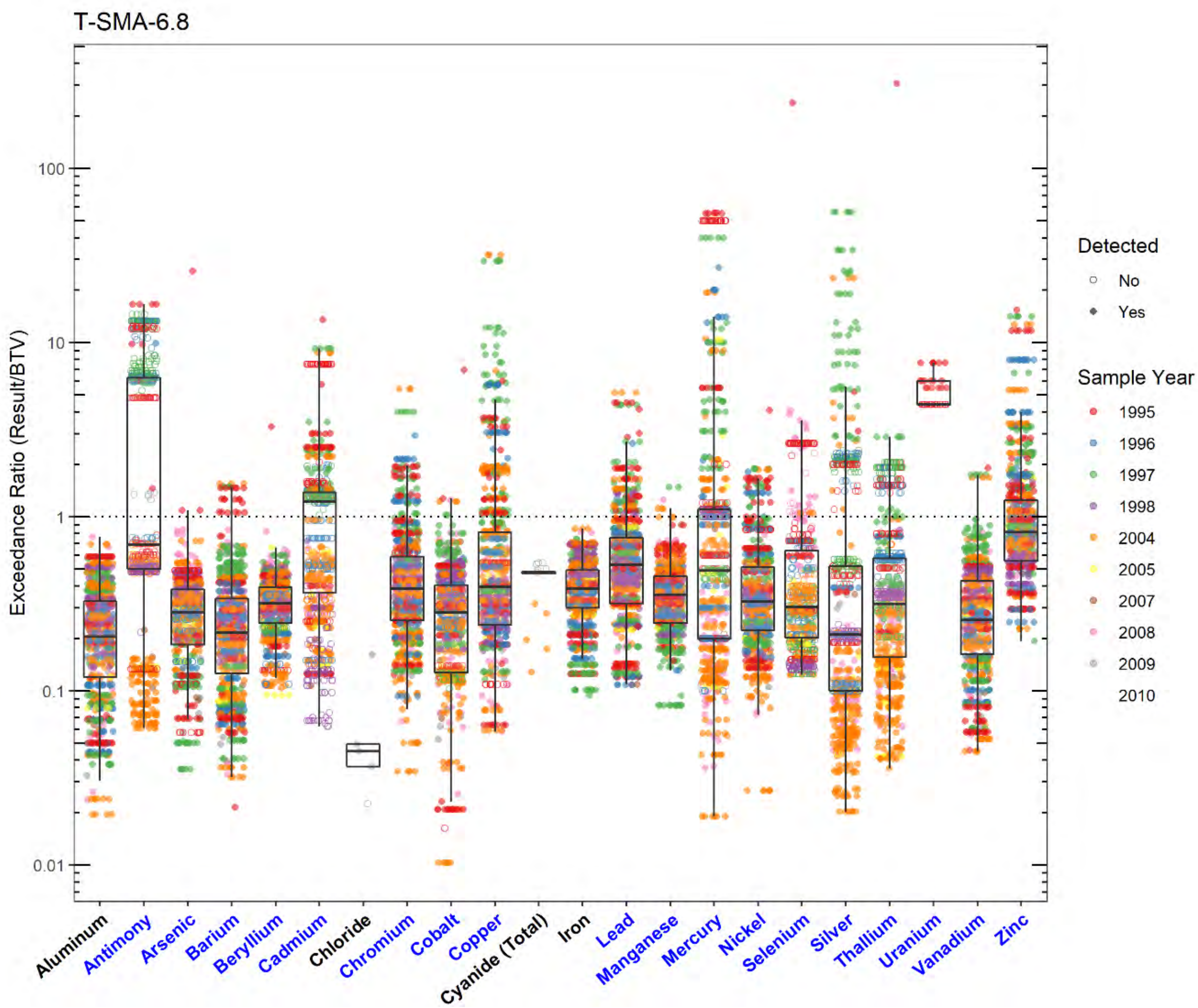


Figure 116.3-1 Inorganics Analytical Results from Soil Samples Associated with T-SMA-6.8

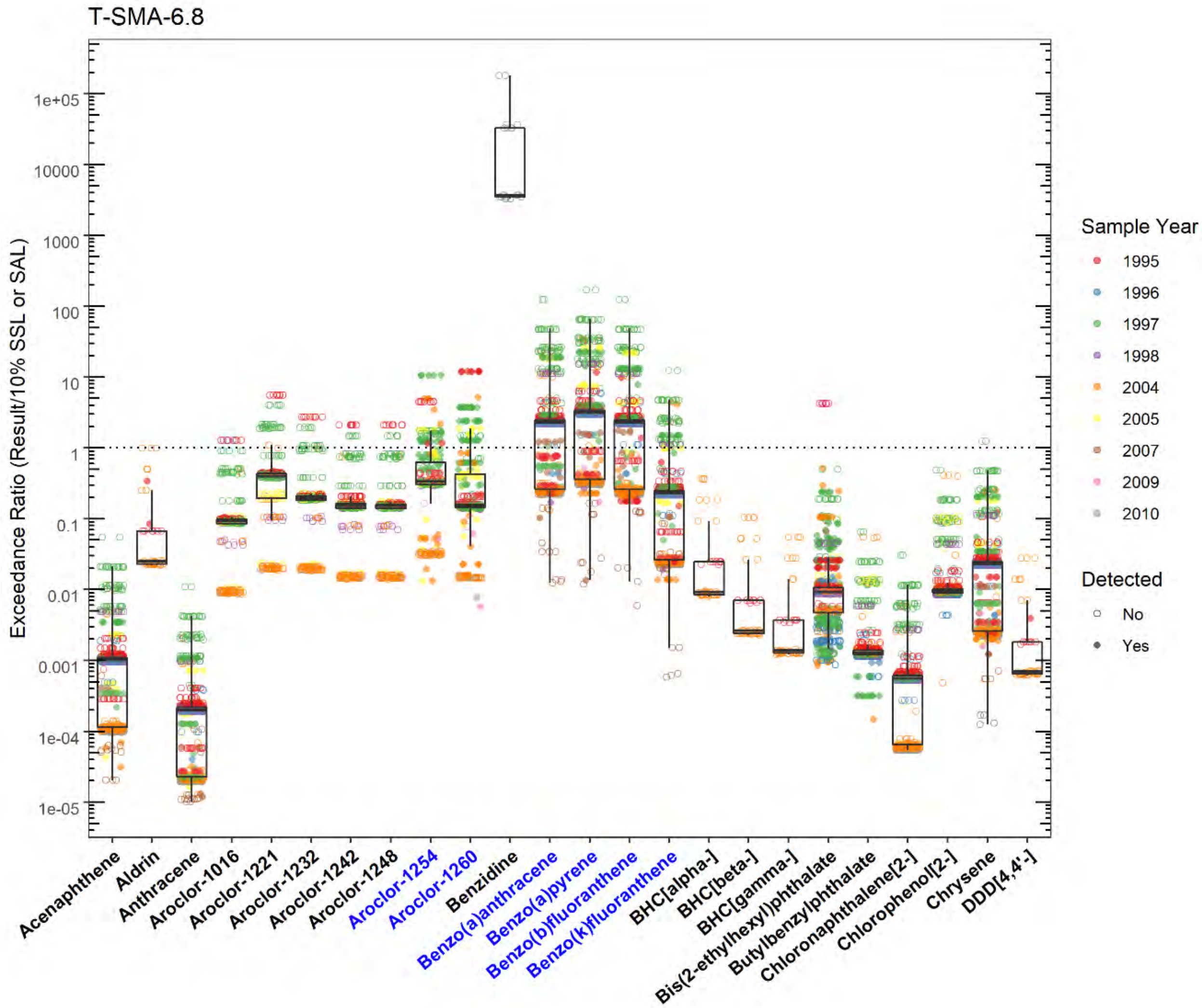


Figure 116.3-2 Organics Analytical Results from Soil Samples Associated with T-SMA-6.8 (Plot 1)

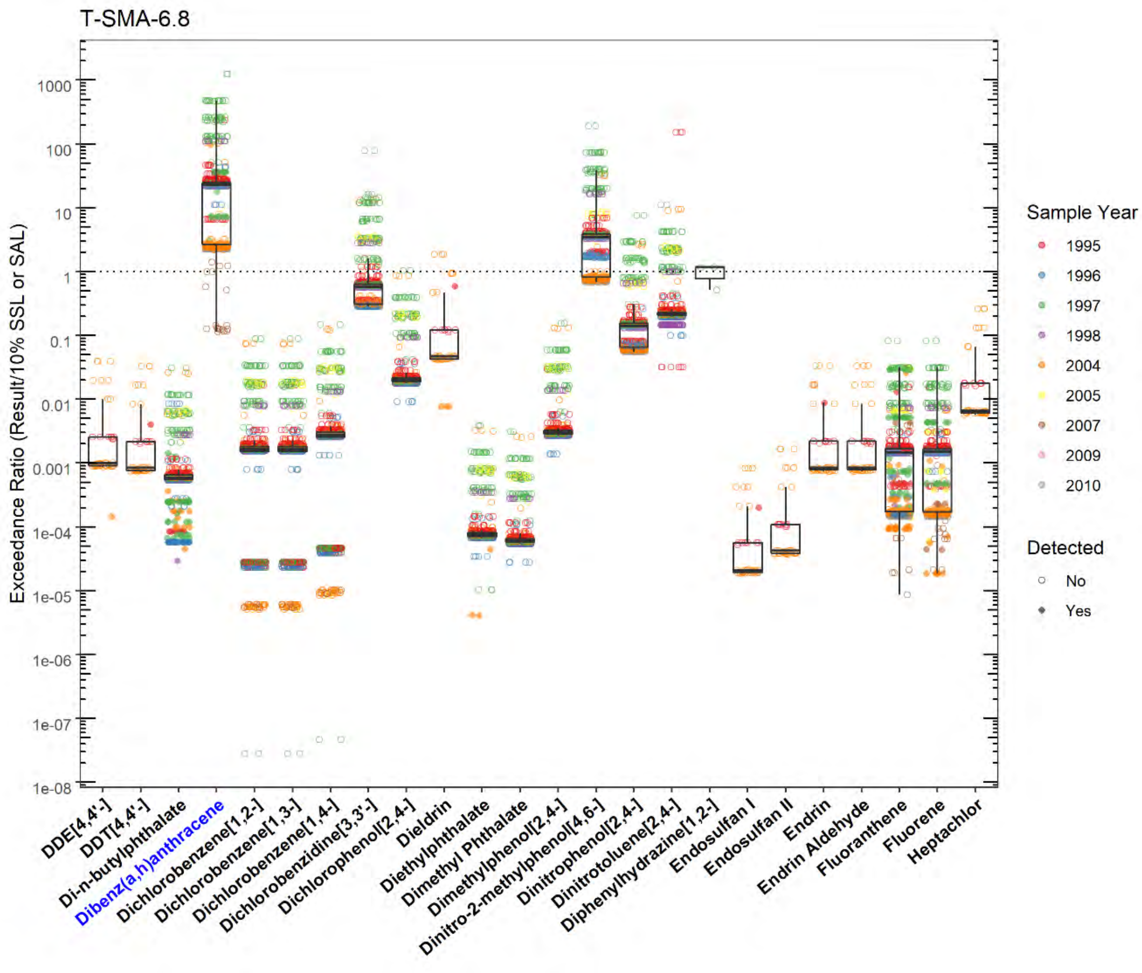


Figure 116.3-3 **Organics Analytical Results from Soil Samples Associated with T-SMA-6.8 (Plot 2)**

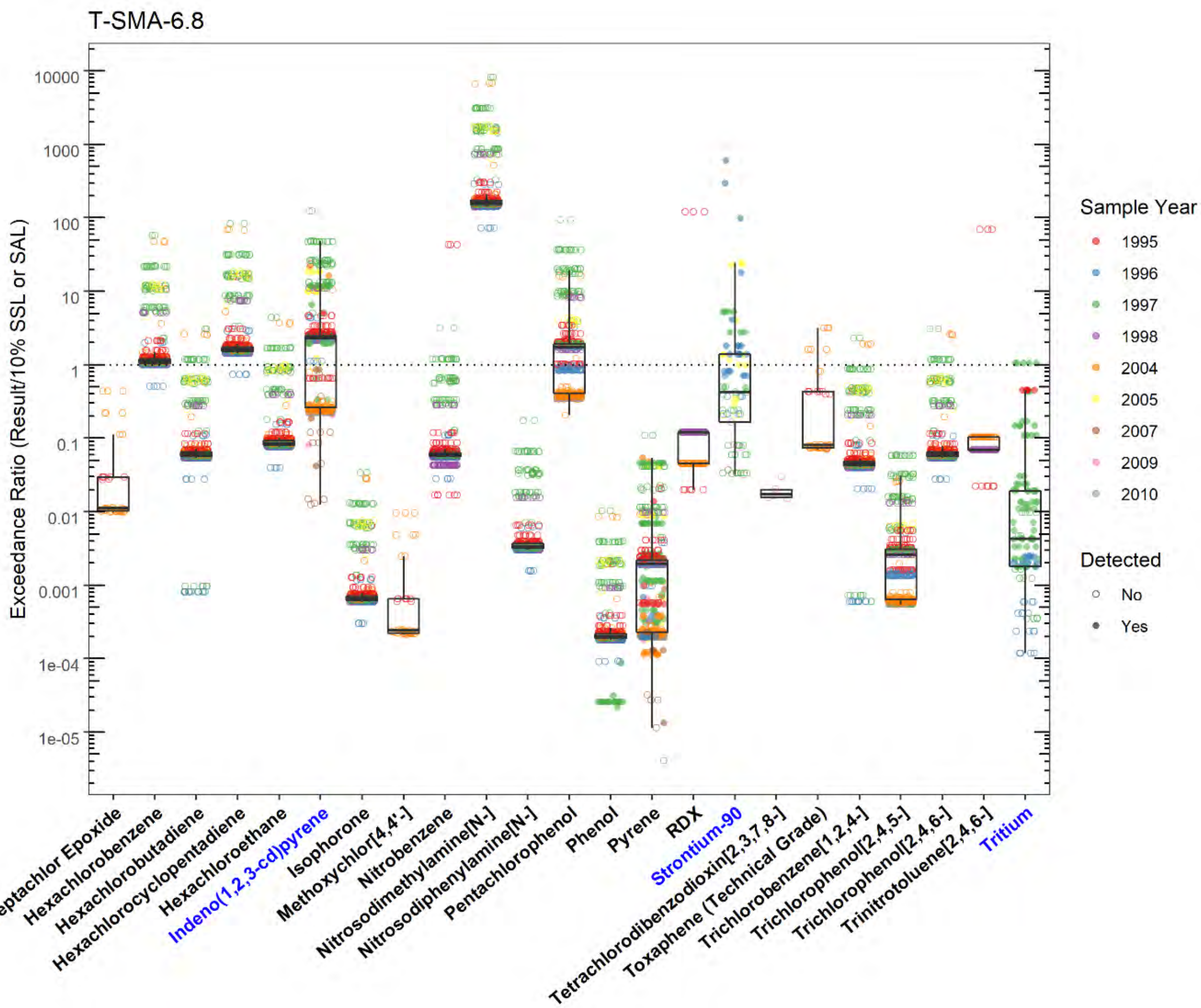


Figure 116.3-4 Organics Analytical Results from Soil Samples Associated with T-SMA-6.8 (Plot 3)

T-SMA-6.8

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	T-SMA-6.8	Sb	Y	BTV	0.830	13.8	1995-03-06
Aroclor-1254	T-SMA-6.8	11097-69-1	Y	SSL_0.1	0.114	1.20	1997-07-15
Aroclor-1260	T-SMA-6.8	11096-82-5	Y	SSL_0.1	0.243	2.90	1995-12-18
Arsenic	T-SMA-6.8	As	Y	BTV	8.17	210	1995-06-27
Barium	T-SMA-6.8	Ba	Y	BTV	295	458	2004-09-29
Benzo(a)anthracene	T-SMA-6.8	56-55-3	Y	SSL_0.1	0.153	3.00	2004-11-19
Benzo(a)pyrene	T-SMA-6.8	50-32-8	Y	SSL_0.1	0.112	3.90	2004-11-19
Benzo(b)fluoranthene	T-SMA-6.8	205-99-2	Y	SSL_0.1	0.153	3.34	2005-02-27
Benzo(k)fluoranthene	T-SMA-6.8	207-08-9	Y	SSL_0.1	1.53	6.75	2004-11-19
Beryllium	T-SMA-6.8	Be	Y	BTV	1.83	6.00	1995-06-27
Cadmium	T-SMA-6.8	Cd	Y	BTV	0.400	5.40	1995-06-27
Chromium	T-SMA-6.8	Cr	Y	BTV	19.3	105	2004-09-29
Cobalt	T-SMA-6.8	Co	Y	BTV	8.64	60.2	1995-06-27
Copper	T-SMA-6.8	Cu	Y	BTV	14.7	467	2004-09-29
Dibenz(a,h)anthracene	T-SMA-6.8	53-70-3	Y	SSL_0.1	0.0153	1.47	2004-11-19
Indeno(1,2,3-cd)pyrene	T-SMA-6.8	193-39-5	Y	SSL_0.1	0.153	3.31	2004-11-19
Lead	T-SMA-6.8	Pb	Y	BTV	22.3	115	2004-09-29
Manganese	T-SMA-6.8	Mn	Y	BTV	671	994	1997-07-17
Mercury	T-SMA-6.8	Hg	Y	BTV	0.100	5.53	1995-03-06
Nickel	T-SMA-6.8	Ni	Y	BTV	15.4	63.0	1995-06-27
Selenium	T-SMA-6.8	Se	Y	BTV	1.52	361	1995-06-27
Silver	T-SMA-6.8	Ag	Y	BTV	1.00	56.0	1997-07-15
Strontium-90	T-SMA-6.8	Sr-90	Y	SAL_0.1	1.50	904	1996-10-02
Thallium	T-SMA-6.8	Tl	Y	BTV	0.730	225	1995-06-27
Tritium	T-SMA-6.8	H-3	Y	SAL_0.1	170	178	1997-07-15
Uranium	T-SMA-6.8	U	Y	BTV	1.82	13.9	1995-03-06
Vanadium	T-SMA-6.8	V	Y	BTV	39.6	75.7	1995-06-27
Zinc	T-SMA-6.8	Zn	Y	BTV	48.8	752	1995-04-12

Figure 116.3-5 Screening-Level Exceedances from Soil Samples Associated with T-SMA-6.8

116.4 Stormwater Evaluation

116.4.1 Summary of Stormwater Results Compared to 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 location recommended in the SIP. These samples are eligible as corrective-action stormwater samples for the 2022 Permit SSD. Analytical results from those samples are presented in Figures 116.4-1 through 116.4-4.

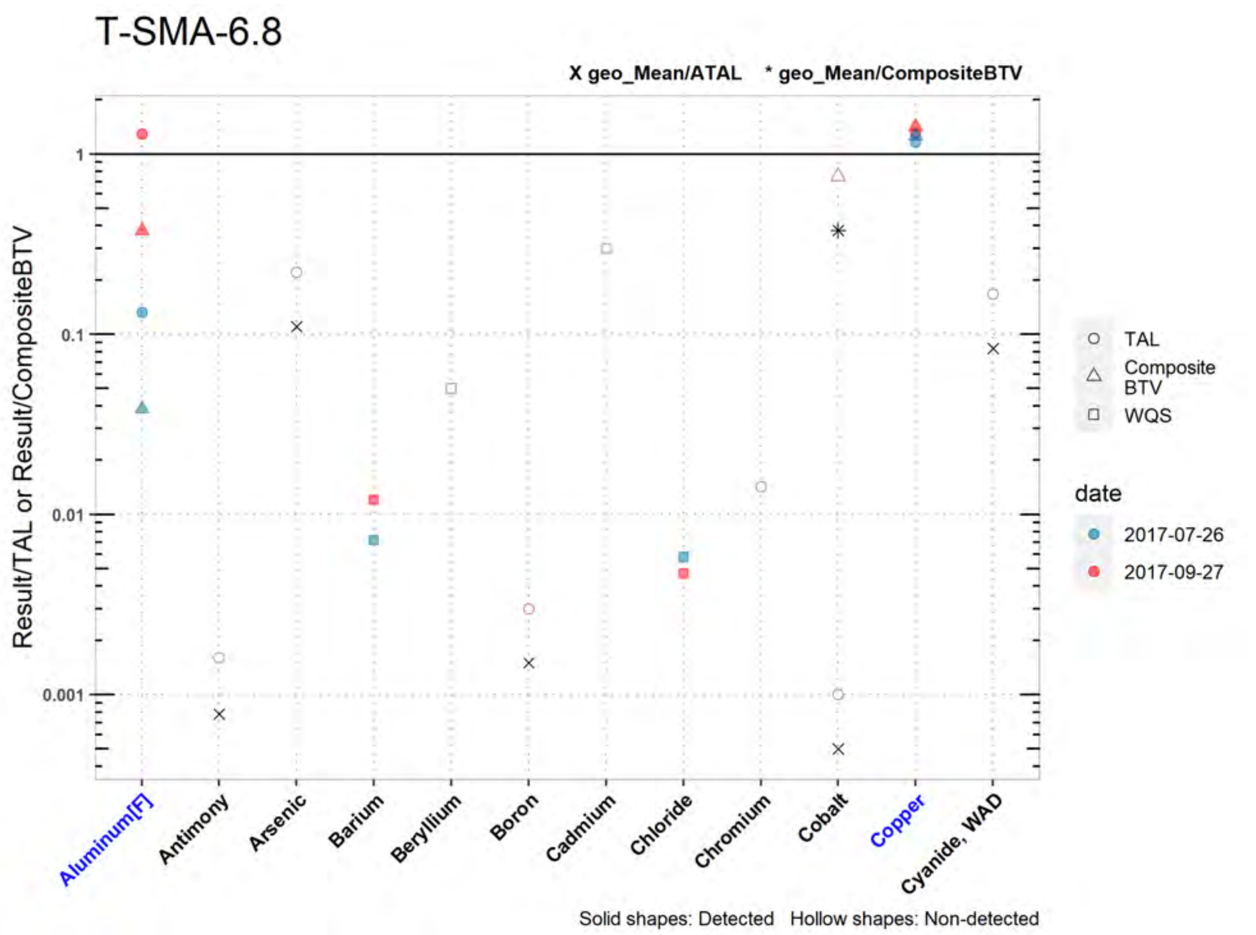


Figure 116.4-1 Analytical Results from Stormwater Samples, T-SMA-6.8 (Plot 1)

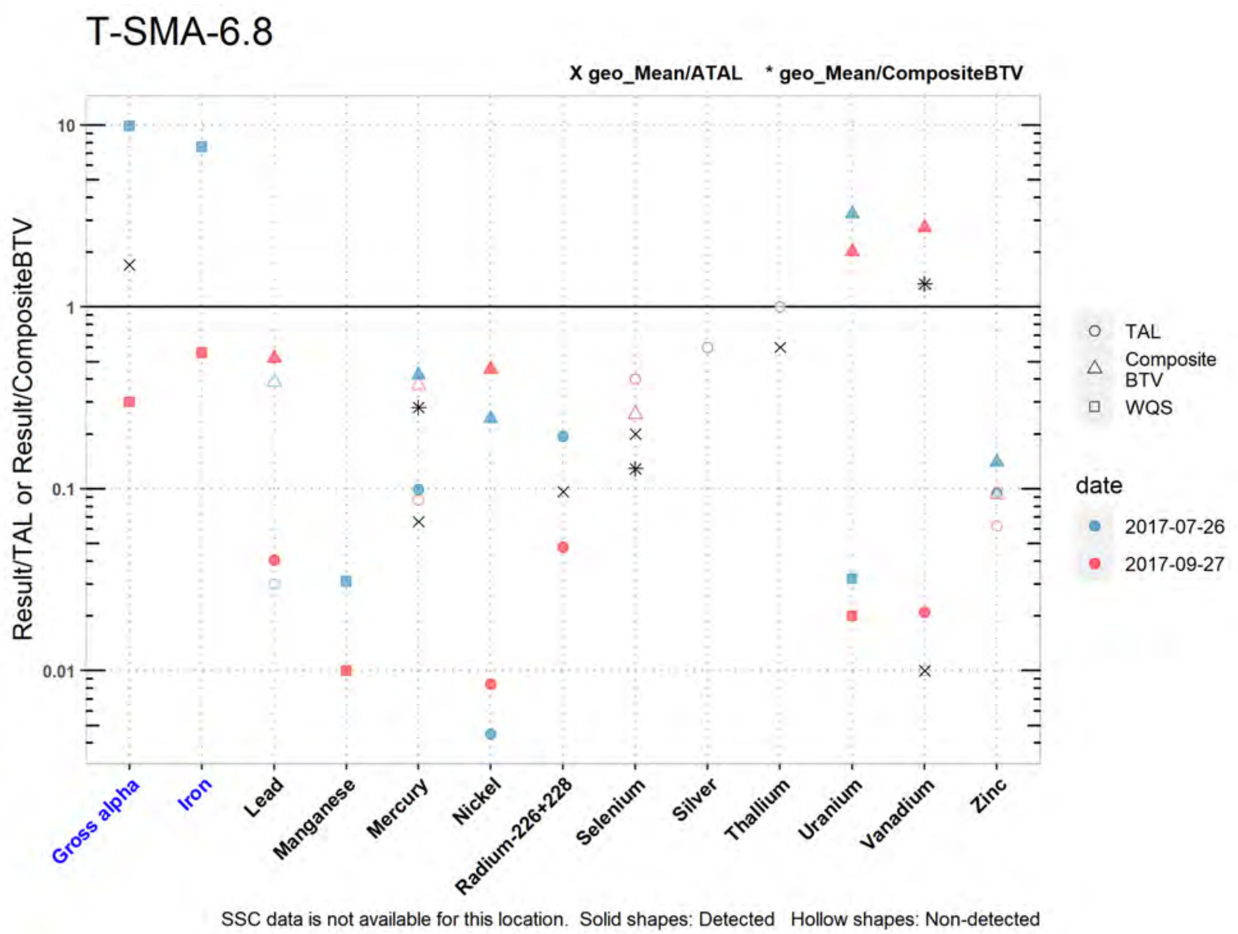


Figure 116.4-2 Analytical Results from Stormwater Samples, T-SMA-6.8 (Plot 2)

T-SMA-6.8

	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	0.583	NA	210	NA	4.25	22
Composite_BTV	2570	NA	NA	NA	NA	NA	NA	NA	NA	1.33	3.92	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	99.0	*1.00*	*2.00*	14.5	*0.200*	*15.0*	*0.300*	1330	*3.00*	*1.00*	4.95	*1.67*
2017-07-26 dT	0.132	NA	NA	0.0072	NA	NA	NA	0.0058	NA	NA	1.16	NA
2017-07-26 dB	0.0385	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.26	NA
2017-09-27 result	967	*1.00*	*2.00*	23.3	*0.200*	*15.0*	*0.300*	1070	*3.00*	*1.00*	5.57	*1.67*
2017-09-27 dT	1.29	NA	NA	0.012	NA	NA	NA	0.0047	NA	NA	1.31	NA
2017-09-27 dB	0.376	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.42	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	0.376	NA	NA

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

Figure 116.4-3 Analytical Results from Stormwater Samples, T-SMA-6.8 (Table 1)

T-SMA-6.8

	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	16.7	NA	NA	167	NA	20	0.394	NA	NA	NA	52.7
Composite_BTV	56.2	NA	1.30	NA	0.180	3.10	5.05	7.77	NA	NA	0.299	0.761	35.6
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	149	7570	*0.500*	33.7	0.0760	0.752	5.84	*2.00*	*0.300*	*0.600*	0.965	*1.00*	4.99
2017-07-26 dT	9.9	7.6	NA	0.031	0.099	0.00450	0.195	NA	NA	NA	0.032	NA	0.0947
2017-07-26 dB	NA	NA	NA	NA	0.422	0.243	NA	NA	NA	NA	3.23	NA	0.140
2017-09-27 result	4.55	560	0.677	11.2	*0.0670*	1.41	1.43	*2.00*	*0.300*	*0.600*	0.602	2.08	*3.30*
2017-09-27 dT	0.30	0.56	0.0405	0.010	NA	0.00844	0.0477	NA	NA	NA	0.020	0.021	NA
2017-09-27 dB	NA	NA	0.521	NA	NA	0.455	NA	NA	NA	NA	2.01	2.73	NA
geo_mean/ATAL	1.7	NA	NA	NA	0.066	NA	0.0963	0.20	NA	0.6	NA	0.010	NA
geo_mean/B	NA	NA	NA	NA	0.280	NA	NA	0.129	NA	NA	NA	1.34	NA

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

Figure 116.4-4 Analytical Results from Stormwater Samples, T-SMA-6.8 (Table 2)

116.4.2 Assessment Unit and Stream Impairments

T-SMA-6.8 drains to Ten Site Canyon (Mortandad Canyon to headwaters), which has impairments for PCBs and adjusted gross alpha. The impairments may be Site-related, based on Site history.

116.5 Site-Specific Demonstration

116.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening value in soil data and have not yet been measured in stormwater: Aroclor-1254, Aroclor-1260, benzo(a)anthracene, benzo(b)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene; and strontium-90.

Copper exceeded the applicable screening value in soil data and exceeded TALs in stormwater, and will be added to the SAP. The remaining metals that exceeded the applicable screening value in soil data were previously monitored in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

116.5.2 Stormwater Data Summary

Gross alpha exceeded TAL in 2017 stormwater data, but there was no paired SSC result to confirm whether it was below BTVs.

Filtered aluminum exceeded TAL and did not exceed BTV,, it will be added to the SAP. Copper exceeded both the TAL and BTV.

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

116.5.3 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.2.b.i) for copper. The SMA is also in active monitoring; not all Site-related POCs were analyzed for in past samples.

116.5.4 Sampling and Analysis Plan

Table 116.5-1 is the proposed SAP for T-SMA-6.8.

Table 116.5-1 Proposed SAP, T-SMA-6.8

Monitoring Constituent	Background for Monitoring
Gross alpha (1)	Impairment, Site history, and stormwater data
Total PCBs	Impairment, Site history, and soil data
Radium-226 and radium-228	Site history
SVOCs	Site history and soil data
Strontium-90	Site history and soil data
Tritium	Site history and soil data
Total aluminum (F10) (1)	Stormwater data
DOC	Permit requirement
SSC	Permit requirement

117.0 T-SMA-7

Associated Sites	04-003(b)
Receiving Water	Ten-Site Canyon
Drainage Area	0.44 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 04-003(b): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the January 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater drainage from the Site.
2022 Permit Status	Active Monitoring

117.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in September 2017. Analytical results from this sample initiated corrective action.

SWMU04-003(b) received a COC under the Consent Order from NMED in May 2015. The Permittees submitted a certification of completion of corrective action for the Site to EPA per Permit part I.E.2(d) in December 2019 (N3B 2019, 700724). Stormwater monitoring has not occurred since 2017.

117.2 Site History

04-003(b) (no date)

SWMU 04-003(b) is the former drainline and outfall from a former laboratory control building (04-3), located at former TA-04. The outfall discharged about 20 ft north of building 04-3 into Mortandad Canyon. No radioactivity was detected in a 1953 survey, and the building was demolished and partially removed in 1956. The concrete storm drain, electrical conduit, wood and other surface debris, and the drainpipe were removed during the 1985 LASCP cleanup effort. During the LASCP cleanup, no radioactive contamination was detected using a portable radiation monitor. In a 1988 survey, gamma radiation was detected at nearly twice the background level.

For investigation activities, refer to “Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2” (LANL 2008, 102187) and the submittal of the “Response to the Approval with Direction and Replacement Pages for the Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2” (LANL 2008, 101667).

117.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 117.2-1.

Table 117.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
04-003(b)	Former drainline and outfall	Metals, organic chemicals, radionuclides

117.3 Consent Order Soil Data

Decision-level data for Consolidated Unit 04-001-99 consist of results from samples collected in 1995 and 2004. Analytical results from those samples are presented in Figures 117.3-1 through 117.3-4. The approved IR (LANL 2008, 102187) concluded that the nature and extent of all detected chemicals and radionuclides are defined at Consolidated Unit 04-001-99.

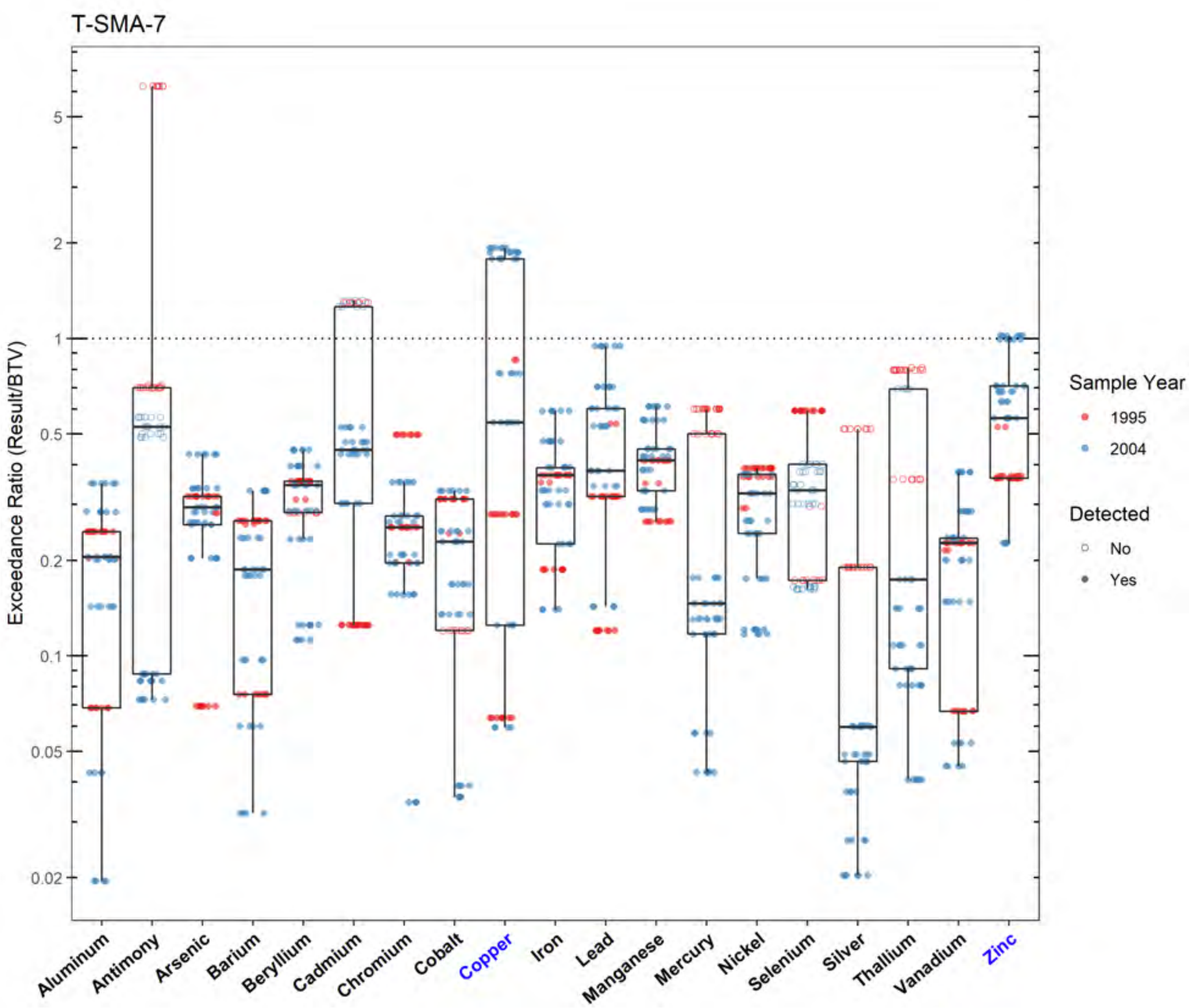


Figure 117.3-1 Inorganics Analytical Results from Soil Samples Associated with T-SMA-7

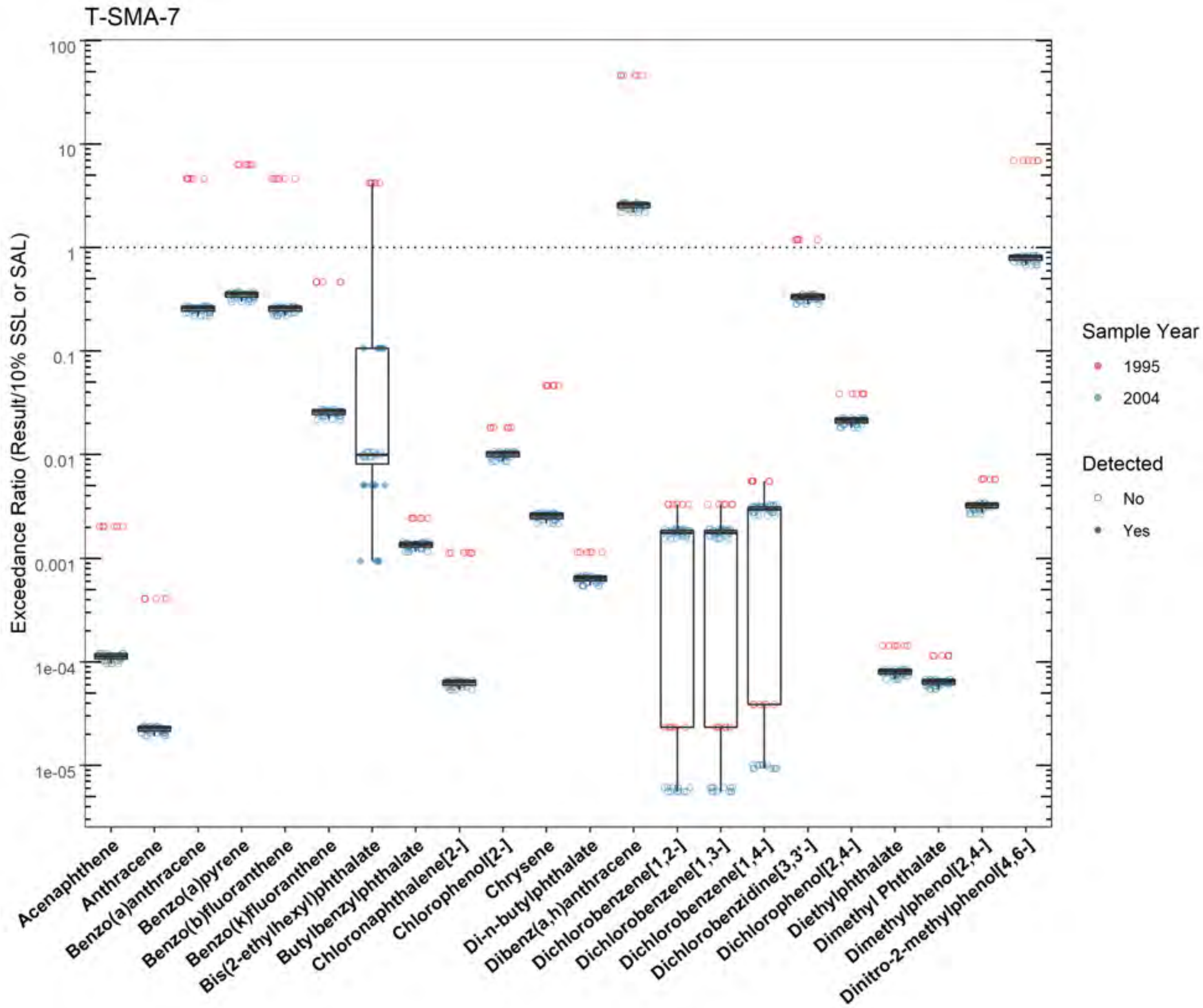


Figure 117.3-2 Organics Analytical Results from Soil Samples Associated with T-SMA-7 (Plot 1)

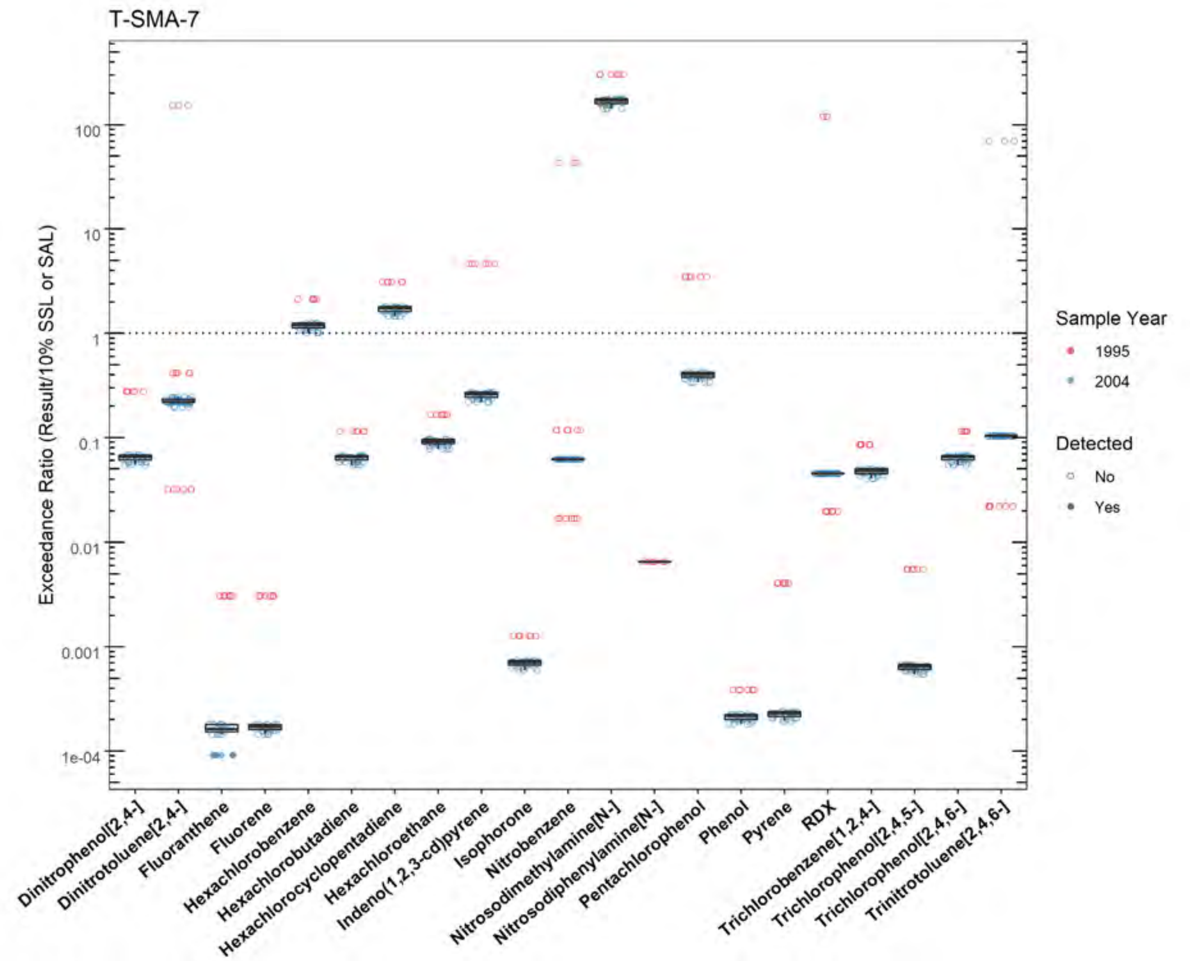


Figure 117.3-3 Organics Analytical Results from Soil Samples Associated with T-SMA-7 (Plot 2)

T-SMA-7

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Copper	T-SMA-7	Cu	Y	BTV	14.7	28.4	2004-10-04
Zinc	T-SMA-7	Zn	Y	BTV	48.8	50.0	2004-10-04

Figure 117.3-4 Screening-Level Exceedances from Soil Samples Associated with T-SMA-7

117.4 Stormwater Evaluation

117.4.1 Summary of Stormwater Results Compared to TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in September 2017. Analytical results from that sample are presented in Figures 117.4-1 through 117.4-4.

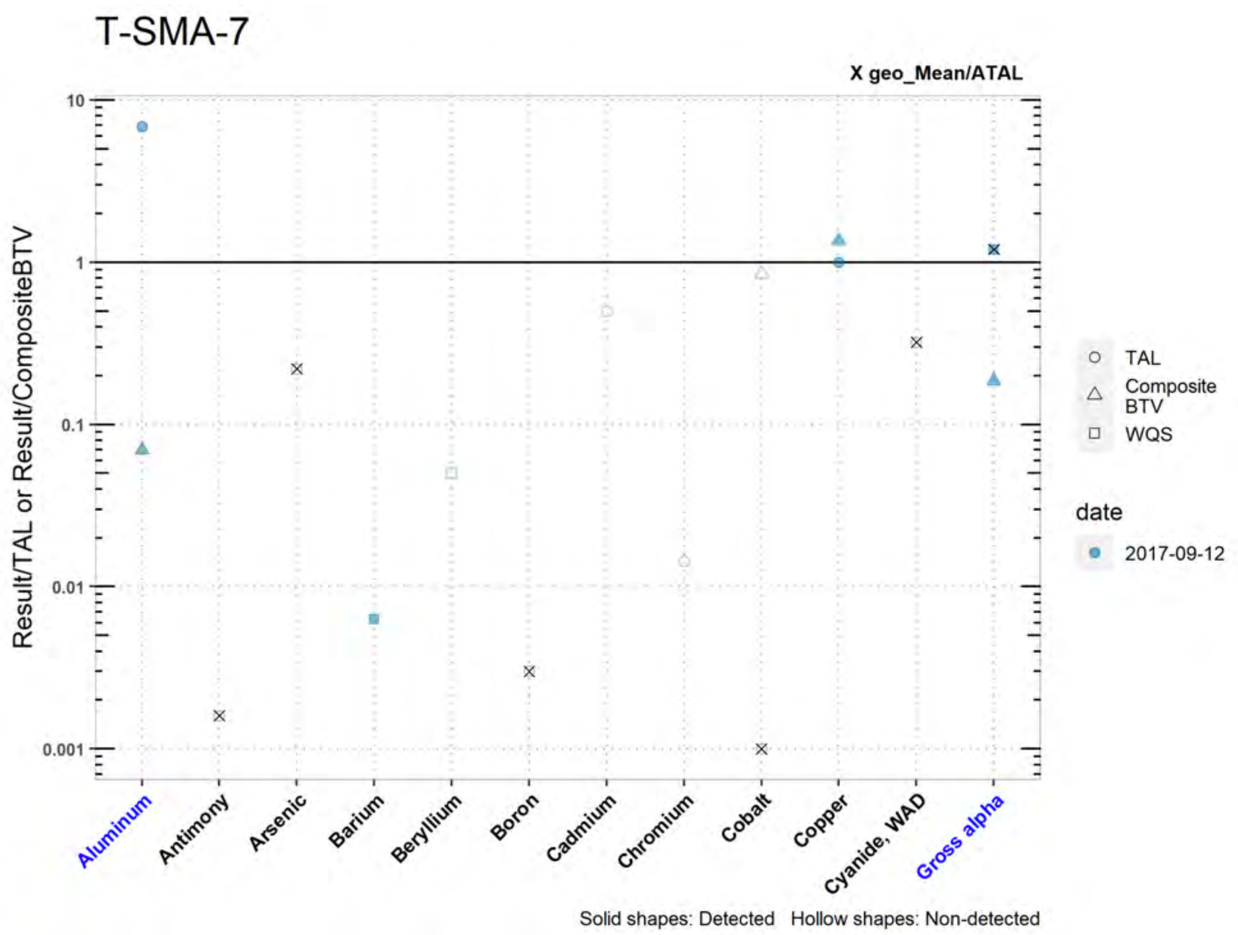


Figure 117.4-1 Analytical Results from Stormwater Sample, T-SMA-7 (Plot 1)

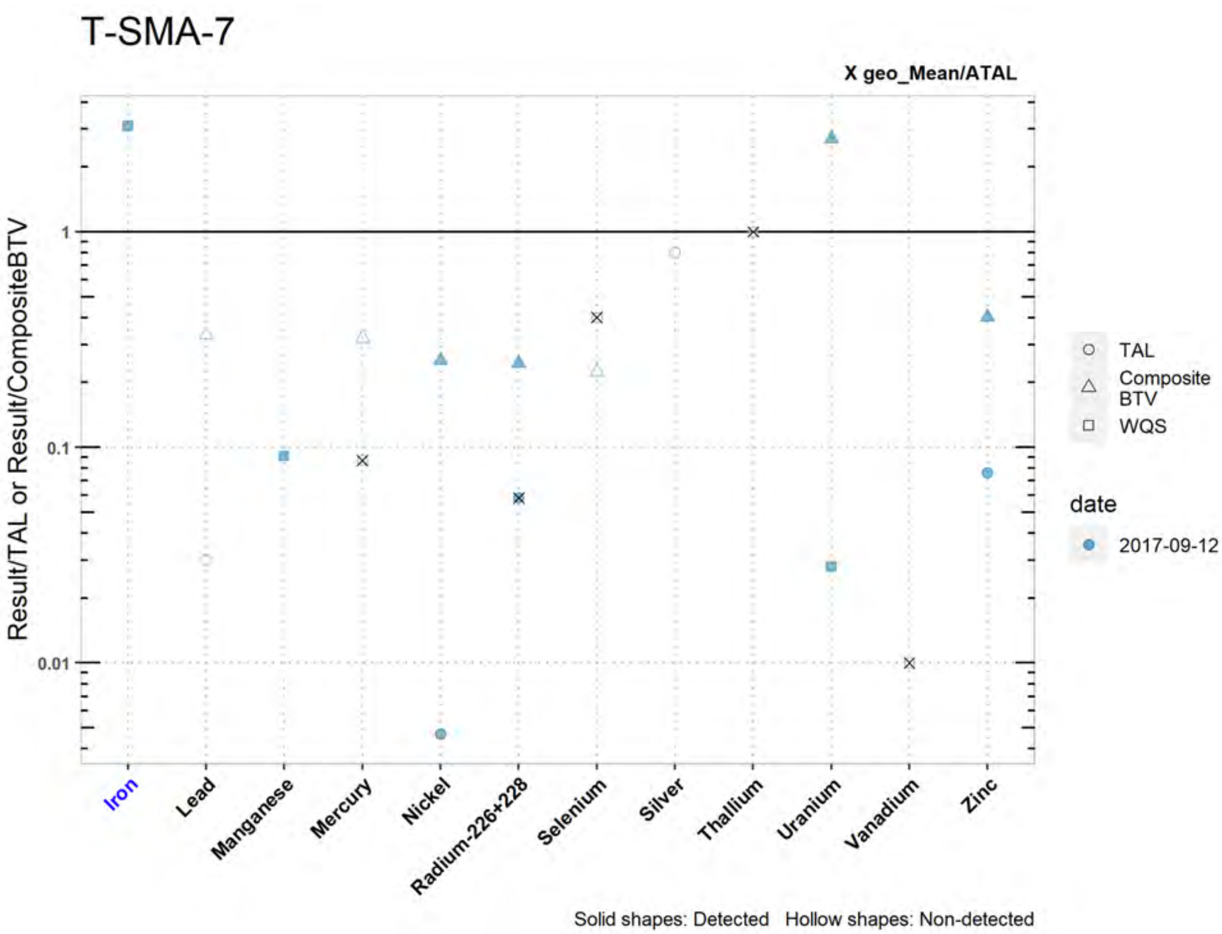


Figure 117.4-2 Analytical Results from Stormwater Sample, T-SMA-7 (Plot 2)

T-SMA-7

	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	643	NA	340	NA	NA	NA	0.583	210	NA	4.25	22	NA
Composite_BTV	37400	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	pCi/L*
2017-09-12 result	4410	*1.00*	*2.00*	12.6	*0.200*	*15.0*	*0.300*	*3.00*	*1.00*	4.24	*1.67*	18.1
2017-09-12 dT	6.86	NA	NA	0.0063	NA	NA	NA	NA	NA	0.998	NA	1.2
2017-09-12 dB	0.0694	NA	NA	NA	NA	NA	NA	NA	NA	1.36	NA	0.186
geo_mean/ATAL	NA	0.0016	0.22	NA	NA	0.0030	NA	NA	0.0010	NA	0.321	1.2

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 117.4-3 Analytical Results from Stormwater Sample, T-SMA-7 (Table 1)

T-SMA-7

	Iron	Lead	Manganese	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc
MQL	NA	0.5	NA	0.005	0.5	NA	5	0.5	0.5	NA	50	20
ATAL	NA	NA	NA	0.77	NA	30	5	NA	0.47	NA	100	NA
MTAL	NA	16.7	NA	NA	167	NA	20	0.394	NA	NA	NA	52.7
Composite_BTV	NA	1.50	NA	0.208	3.10	4.21	8.98	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
2017-09-12 result	3060	*0.500*	99.9	*0.0670*	0.784	1.75	*2.00*	*0.300*	*0.600*	0.854	*1.00*	4.02
2017-09-12 dT	3.1	NA	0.091	NA	0.00469	0.0583	NA	NA	NA	0.028	NA	0.0763
2017-09-12 dB	NA	NA	NA	NA	0.253	0.245	NA	NA	NA	2.71	NA	0.402
geo_mean/ATAL	NA	NA	NA	0.087	NA	0.0583	0.40	NA	1	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 117.4-4 Analytical Results from Stormwater Sample, T-SMA-7 (Table 2)

117.4.2 Assessment Unit and Stream Impairments

T-SMA-7 drains to Ten Site Canyon (Mortandad Canyon to headwaters), which has impairments for PCBs and adjusted gross alpha. The impairments may be Site-related, based on Site history.

117.5 Site-Specific Demonstration

117.5.1 Soil Data Summary

The Site-related POCs that exceeded the applicable screening value in soil data were previously monitored in stormwater data and did not exceed TALs in the first of two sample in this monitoring stage; they will be added to the SAP in an attempt to collect a second sample.

117.5.2 Stormwater Data Summary

Aluminum and gross alpha exceeded the TAL but were below background. Iron exceeded the WQS. However, there is no TAL in the Permit for iron; only POCs with TALs are used in the SSD.

117.5.3 2022 Permit Status

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

117.5.4 Sampling and Analysis Plan

Table 117.5-1 is the proposed SAP for T-SMA-7.

Table 117.5-1 Proposed SAP, T-SMA-7

Monitoring Constituent	Background for Monitoring
Gross alpha (1)	Impairment and Site history (radionuclides)
Total PCBs	Impairment and Site history (organics)
SVOCs	Site history (organics)
Strontium-90	Site history (radionuclides)
Radium-226 and radium-228 (1)	Site history (radionuclides)
Tritium	Site history (radionuclides)
Dissolved copper (1) and zinc (1)	Site history (metals) and soil data
DOC	Permit requirement
SSC	Permit requirement

118.0 T-SMA-7.1

Associated Sites	04-001, 04-002
Receiving Water	Ten-Site Canyon
Drainage Area	0.45 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 04-001: Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 04-002: Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Although copper concentrations in soil are below 1.8 times the maximum background concentration, all surface samples at 04-001 have copper detected above background. Copper was used at the Sites. Therefore, based on the January 2017 field visit, the sampler was moved past location 04-23236 to address the affected area
2022 Permit Status	Active Monitoring/Corrective Action

118.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, baseline monitoring was initiated. While developing the 2017 SAP, a decision was made to implement the monitoring location move recommended during the 2017 SIP review, and monitoring was reinitiated. A baseline stormwater sample was collected in July 2019. Analytical results from this sample initiated corrective action.

SWMUs 04-001 and 04-002 received COC under the Consent Order from NMED in May 2015. The Permittees submitted a certification of completion of corrective action for the Sites to EPA per Permit part I.E.2(d) in December 2019 (N3B 2019, 700724). Stormwater monitoring has not occurred since 2019.

118.2 Site History

04-001 (no date)

SWMU04-001 was a 10-ft^2 firing pit constructed in 1945. Debris in the vicinity of the firing pit included wire and shrapnel. The energy source for the firing experiments was HE, and shot sizes ranged from 0.5 to 2000 lb of HE. Use of the pit ceased in 1946. The pit was cleaned of all debris, backfilled, and recontoured in 1985 during the LASCP cleanup effort.

04-002 (no date)

SWMU 04-002 is the 20-ft-wide canyon-side disposal site associated with 04-001. The Site is located on the north-facing slope of Mortandad Canyon, immediately north of SWMU 04-001. After a shot, residual material from the firing site was bulldozed over the edge of the canyon to the area designated as the surface disposal site. The shot debris consisted of cables, wires, and possibly small amounts of uranium, beryllium, lead, aluminum, and HE. The material was not covered, and this Site was not addressed during the 1985 LASCP.

For investigation activities, refer to “Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2” (LANL 2008, 102187) and the submittal of the “Response to the Approval with Direction and Replacement Pages for the Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2” (LANL 2008, 101667).

118.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 118.2-1.

Table 118.2-1 POCs Known or Suspected to be Used Historically at the Site

Site	Potential POC Source	Potential POCs
04-001	Firing site	Beryllium, copper, lead, HE, uranium isotopes, DU
04-002	Surface disposal area	Aluminum, beryllium, copper, lead, HE, uranium isotopes, DU

118.3 Consent Order Soil Data

Decision-level data for Consolidated Unit 04-001-99 consist of results from samples collected in 1995 and 2004. Analytical results from those samples are presented in Figures 118.3-1 through 118.3-4. The approved IR (LANL 2008, 102187) concluded that the nature and extent of all detected chemicals and radionuclides are defined at Consolidated Unit 04-001-99.

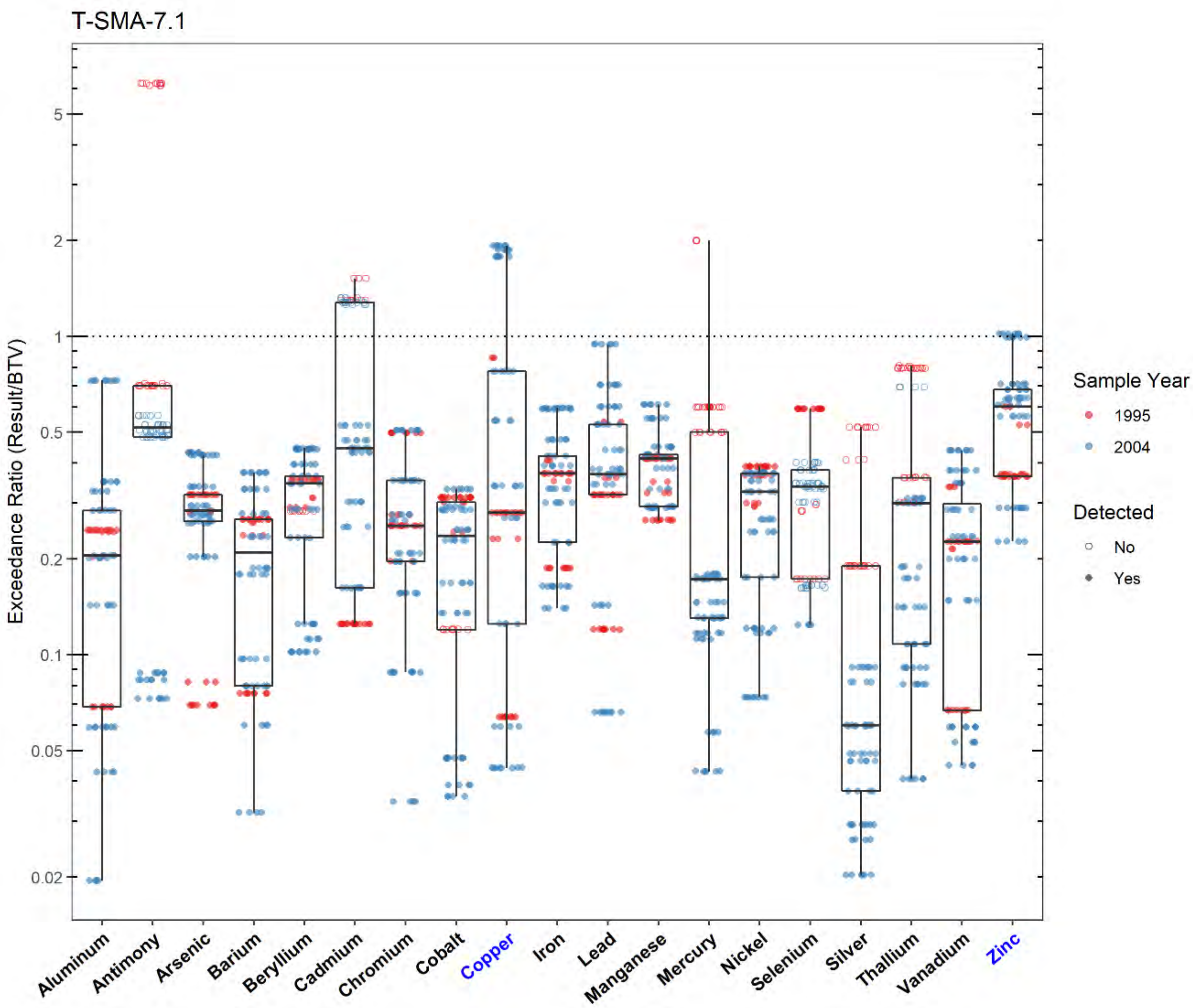


Figure 118.3-1 Inorganics Analytical Results from Soil Samples Associated with T-SMA-7.1

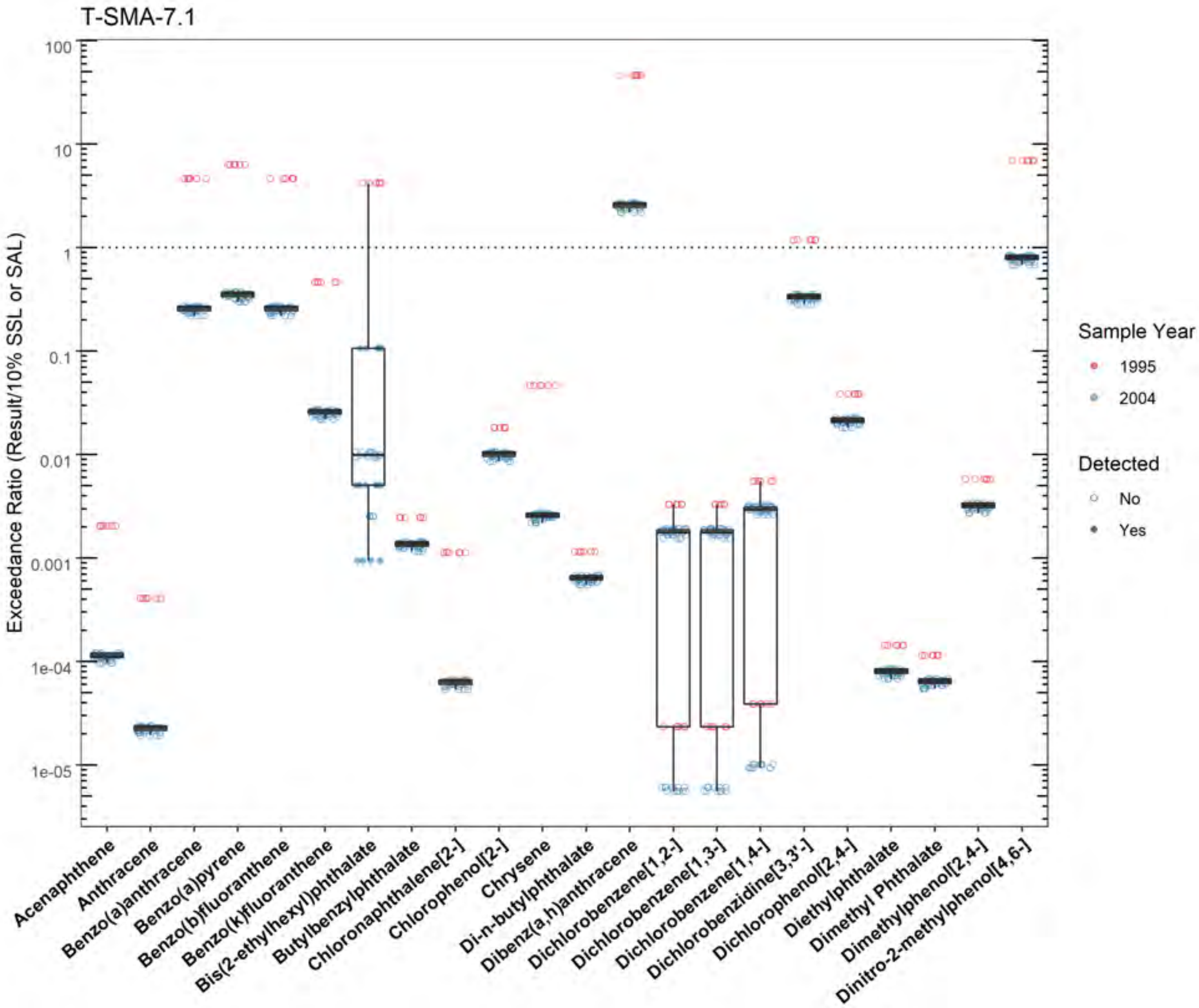


Figure 118.3-2 Organics Analytical Results from Soil Samples Associated with T-SMA-7.1 (Plot 1)

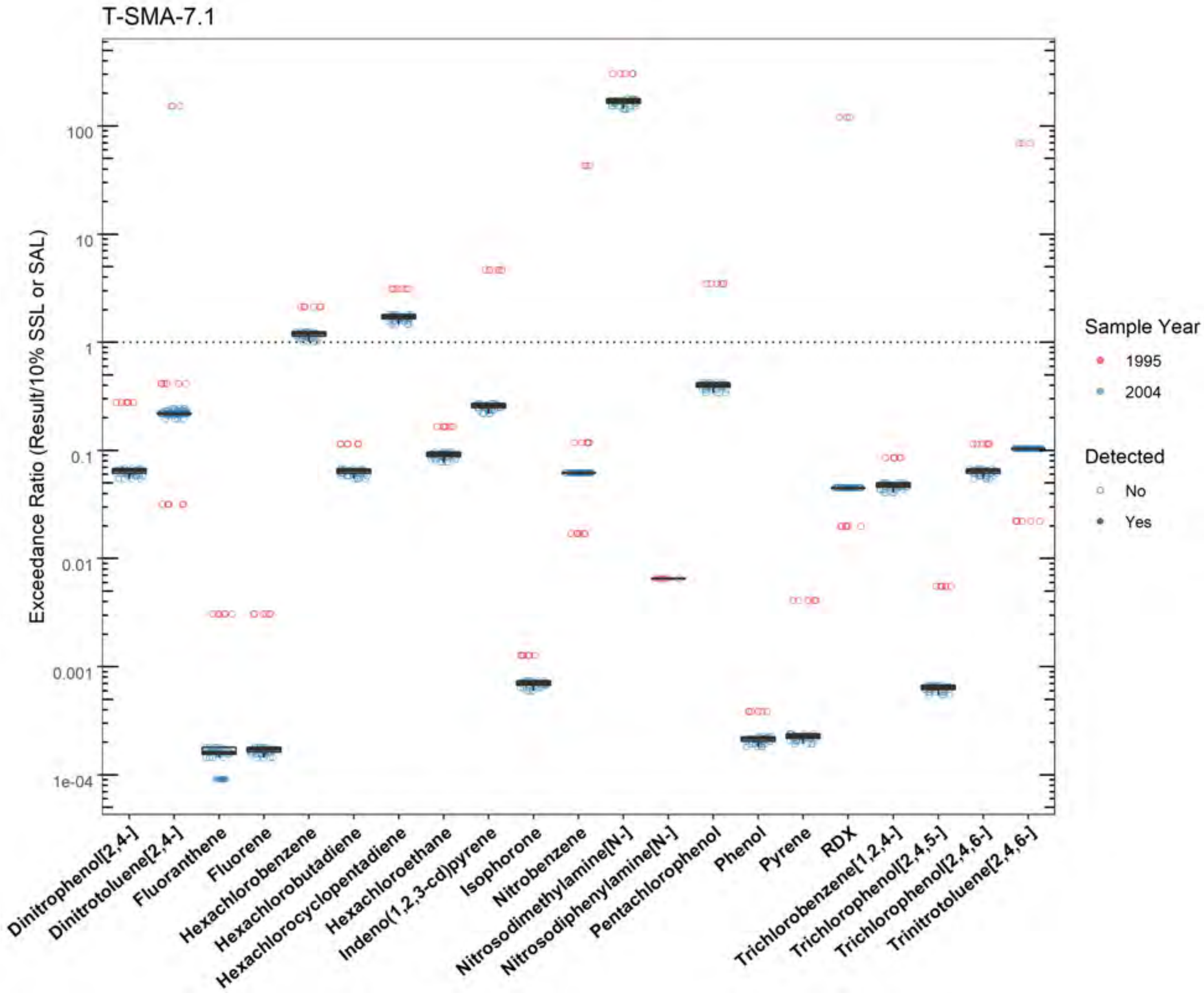


Figure 118.3-3 Organics Analytical Results from Soil Samples Associated with T-SMA-7.1 (Plot 2)

T-SMA-7.1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Copper	T-SMA-7.1	Cu	Y	BTV	14.7	28.4	2004-10-04
Zinc	T-SMA-7.1	Zn	Y	BTV	48.8	50.0	2004-10-04

Figure 118.3-4 Screening-Level Exceedances from Soil Samples Associated with T-SMA-7.1

118.4 Stormwater Evaluation

118.4.1 Summary of Stormwater Results Compared to TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. A corrective-action stormwater sample was collected in July 2019. Analytical results from that sample are presented in Figures 118.4-1 through 118.4-4.

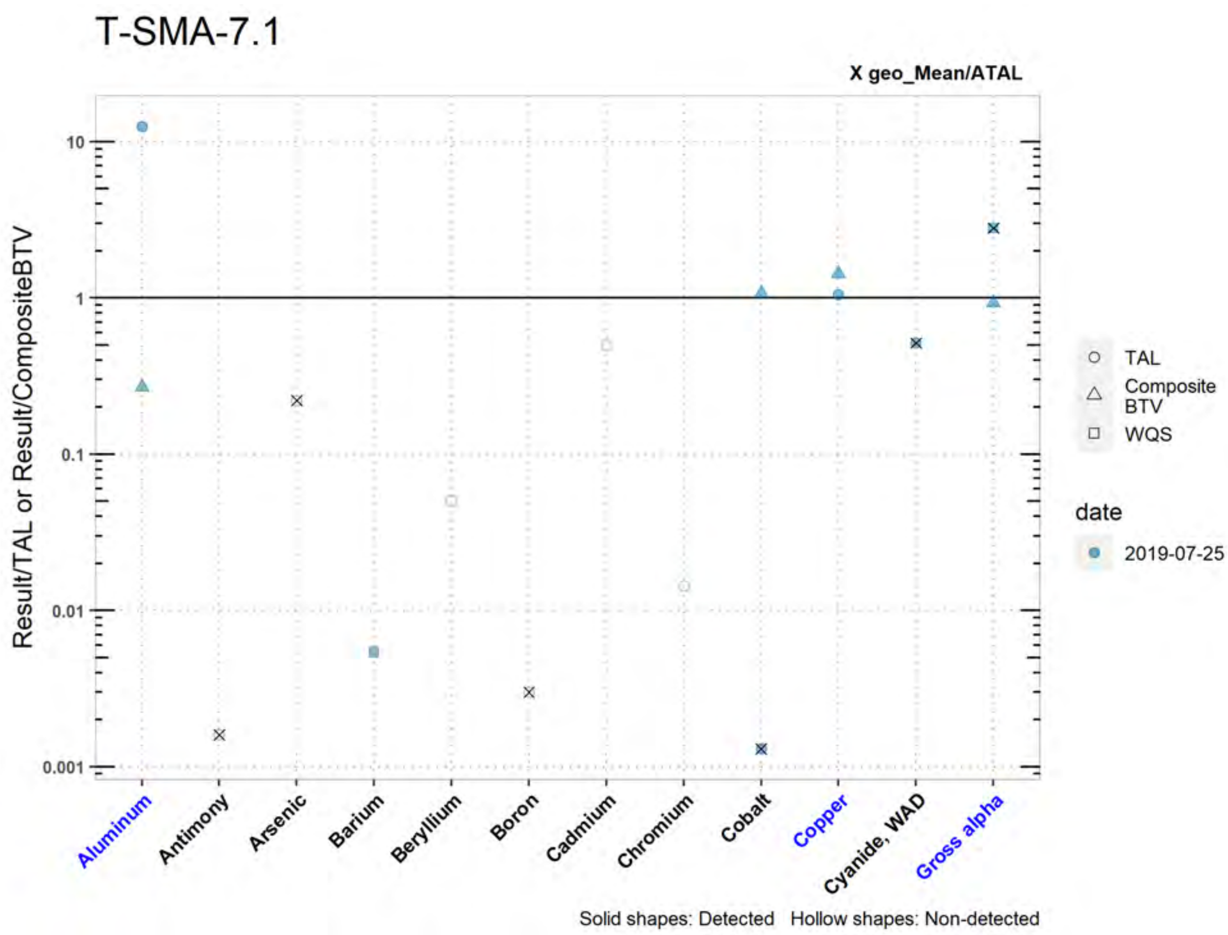


Figure 118.4-1 Analytical Results from Stormwater Sample, T-SMA-7.1 (Plot 1)

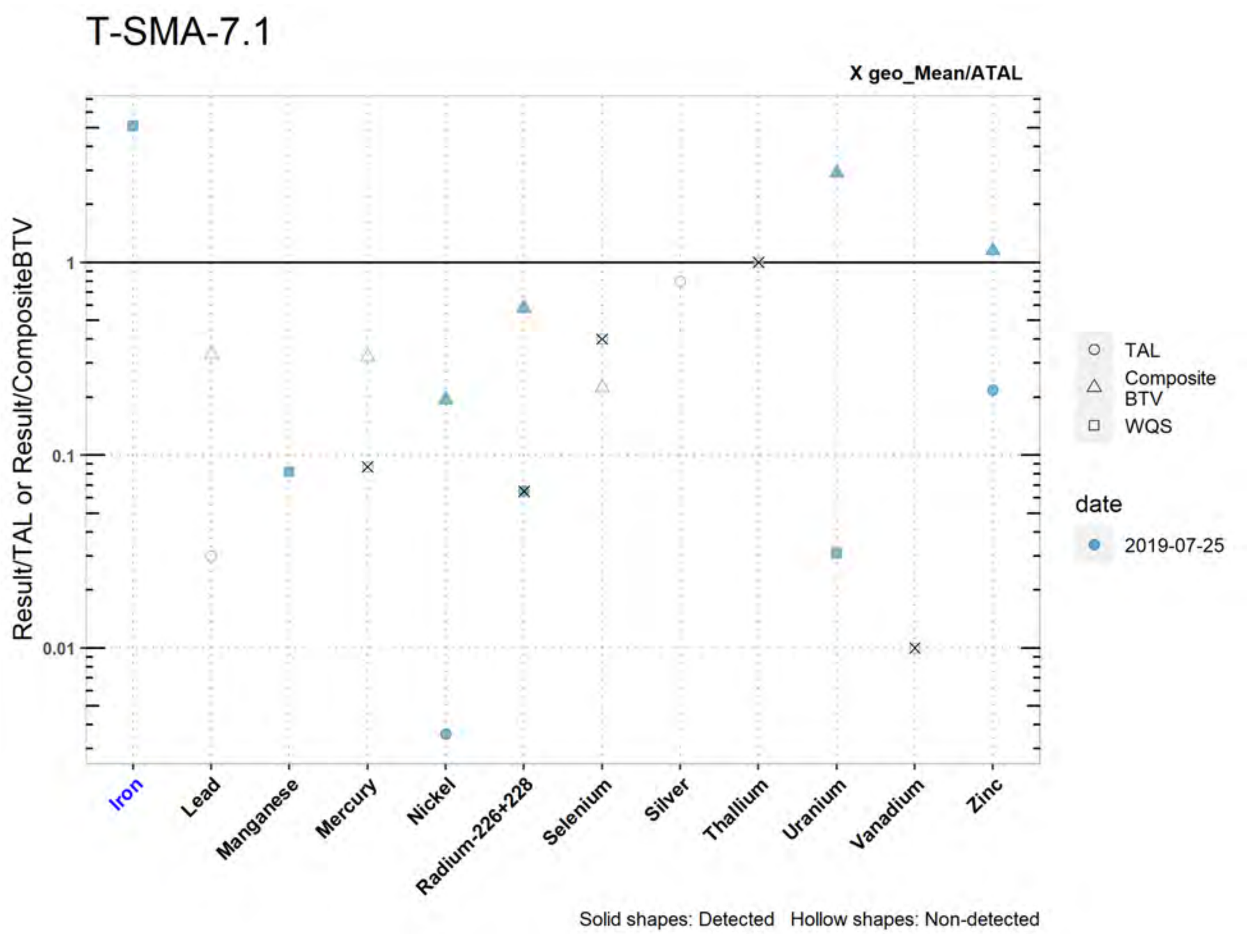


Figure 118.4-2 Analytical Results from Stormwater Sample, T-SMA-7.1 (Plot 2)

T-SMA-7.1

	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	643	NA	340	NA	NA	NA	0.583	210	NA	4.25	22	NA
Composite_BTV	37400	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	pCi/L*
2019-07-25 result	8050	*1.00*	*2.00*	10.9	*0.200*	*15.0*	*0.300*	*3.00*	1.26	4.46	2.68	42.5
2019-07-25 dT	12.5	NA	NA	0.0054	NA	NA	NA	NA	0.0013	1.05	0.515	2.8
2019-07-25 dB	0.269	NA	NA	NA	NA	NA	NA	NA	1.07	1.43	NA	0.929
geo_mean/ATAL	NA	0.0016	0.22	NA	NA	0.0030	NA	NA	0.0013	NA	0.515	2.8

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 118.4-3 Analytical Results from Stormwater Sample, T-SMA-7.1 (Table 1)

T-SMA-7.1

	Iron	Lead	Manganese	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc
MQL	NA	0.5	NA	0.005	0.5	NA	5	0.5	0.5	NA	50	20
ATAL	NA	NA	NA	0.77	NA	30	5	NA	0.47	NA	100	NA
MTAL	NA	16.7	NA	NA	167	NA	20	0.394	NA	NA	NA	52.7
Composite_BTV	NA	1.50	NA	0.208	3.10	4.21	8.98	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
2019-07-25 result	5080	*0.500*	90.0	*0.0670*	0.600	1.95	*2.00*	*0.300*	*0.600*	0.918	*1.00*	11.5
2019-07-25 dT	5.1	NA	0.082	NA	0.00359	0.0650	NA	NA	NA	0.031	NA	0.218
2019-07-25 dB	NA	NA	NA	NA	0.194	0.579	NA	NA	NA	2.91	NA	1.15
geo_mean/ATAL	NA	NA	NA	0.087	NA	0.0650	0.40	NA	1	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 118.4-4 Analytical Results from Stormwater Sample, T-SMA-7.1 (Table 2)

118.4.2 Assessment Unit and Stream Impairments

T-SMA-7.1 drains to Ten Site Canyon (Mortandad Canyon to headwaters), which has impairments for PCBs and adjusted gross alpha. The adjusted gross alpha impairment may be Site-related, based on Site history.

118.5 Site-Specific Demonstration

118.5.1 Soil Data Summary

Copper exceeded the applicable screening value in soil data and exceeded the TAL and BTV in stormwater and will be added to the SAP. Zinc exceeded applicable screening value in soil data and was previously monitored in stormwater data and did not exceed TAL; therefore, it will not be added to the SAP.

118.5.2 Stormwater Data Summary

Aluminum and gross alpha exceeded the TALs but not the BTVs. Copper exceeded the TAL and BTV. Iron exceeded the WQS. However, there is no TAL in the Permit for iron; only POCs with TALs are used in the SSD.

118.5.3 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.2.b.i) for copper. The SMA is also in active monitoring; not all Site-related POCs were analyzed for in past samples.

118.5.4 Sampling and Analysis Plan

Table 118.5-1 is the proposed SAP for T-SMA-7.1.

Table 118.5-1 Proposed SAP, T-SMA-7.1

Monitoring Constituent	Background for Monitoring
Dissolved uranium	Site history
DOC	Permit requirement
SSC	Permit requirement

2022 Annual Sampling Implementation Plan

NPDES Permit No. NM0030759

June 2023

Pajarito Watershed

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

Volume 3

CONTENTS

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.

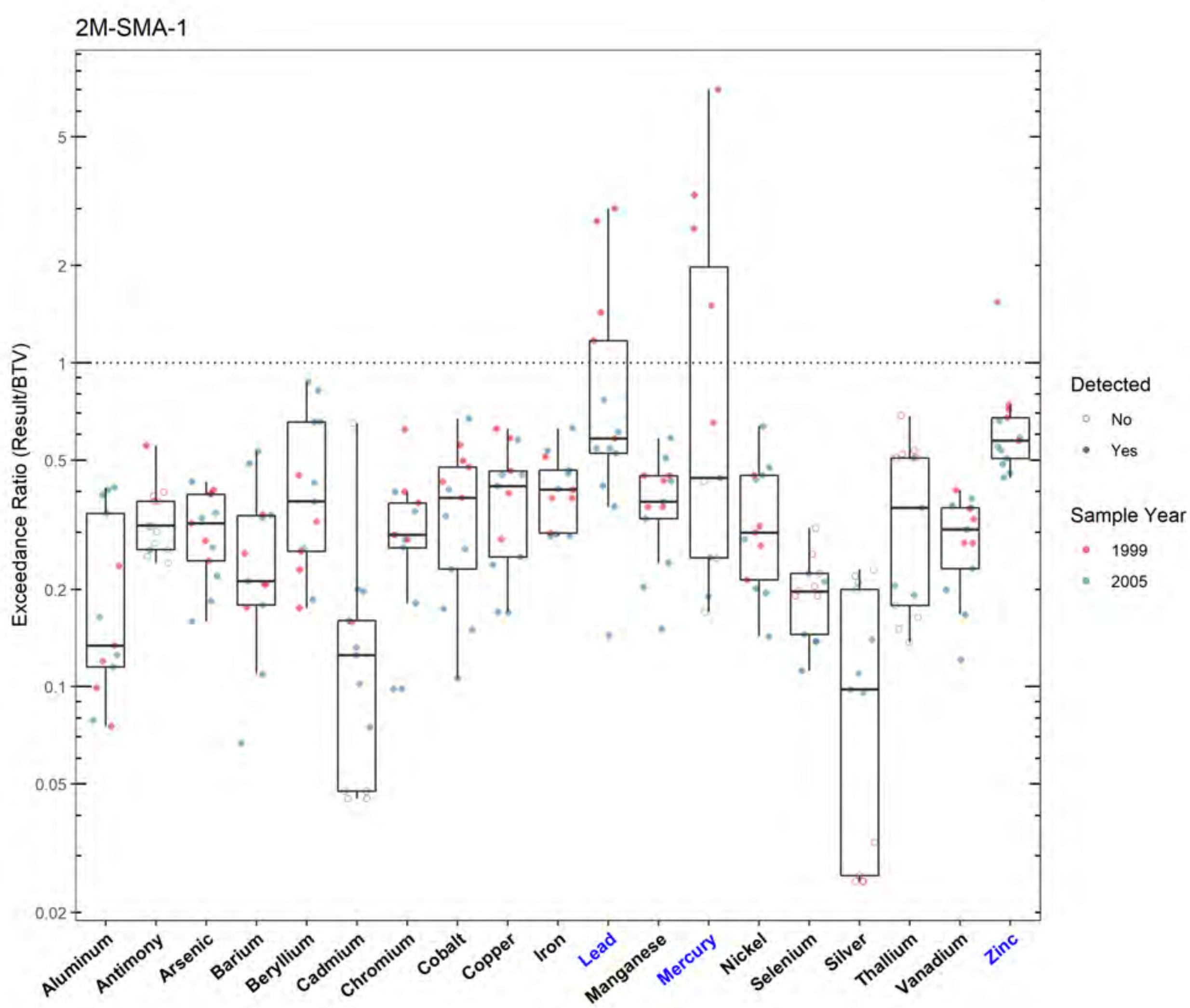


Figure 119.3-1 Inorganic Analytical Results from Soil Samples Associated with 2M-SMA-1

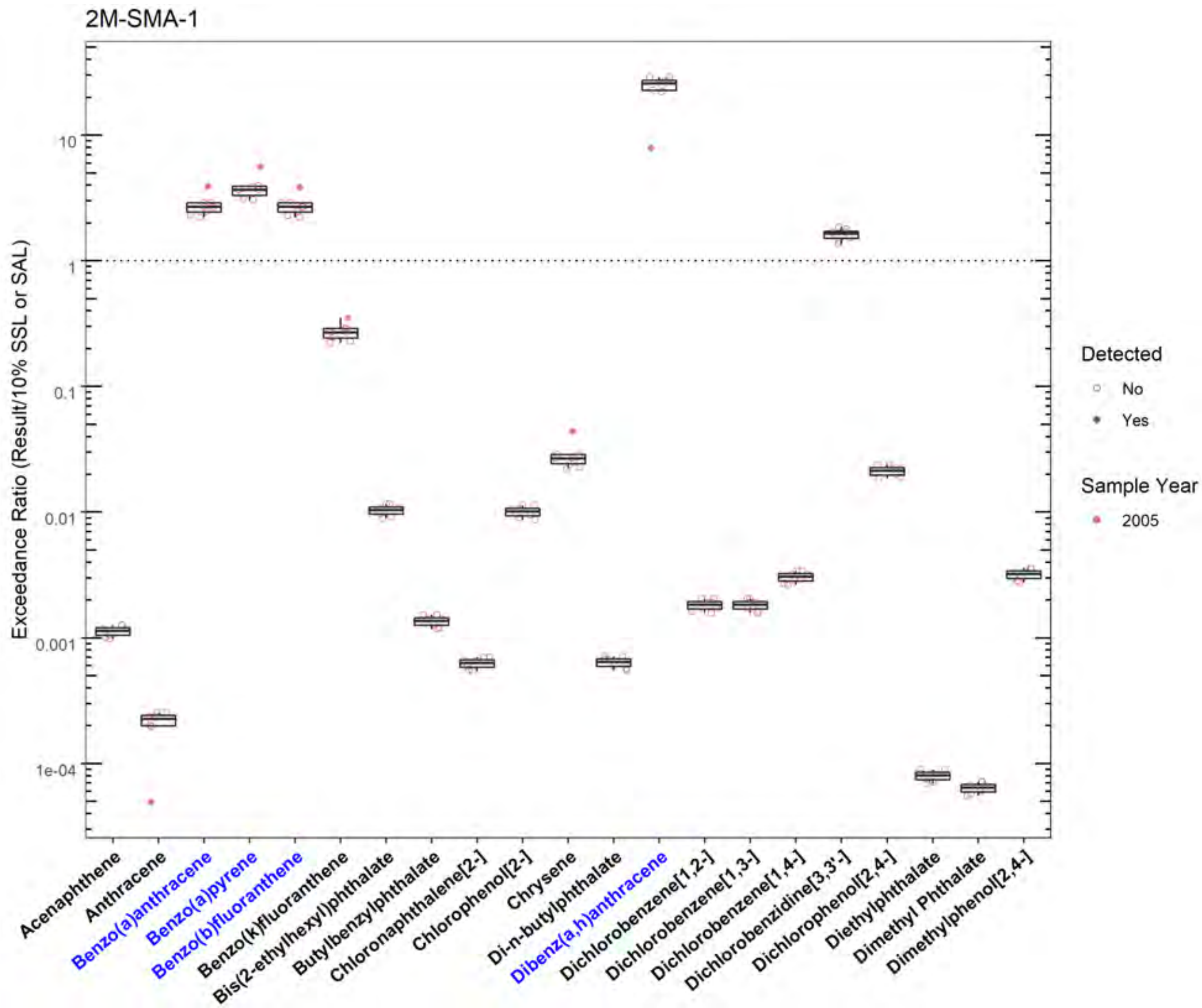


Figure 119.3-2 Organics Analytical Results from Soil Samples Assoicated with 2M-SMA-1 (Plot 1)

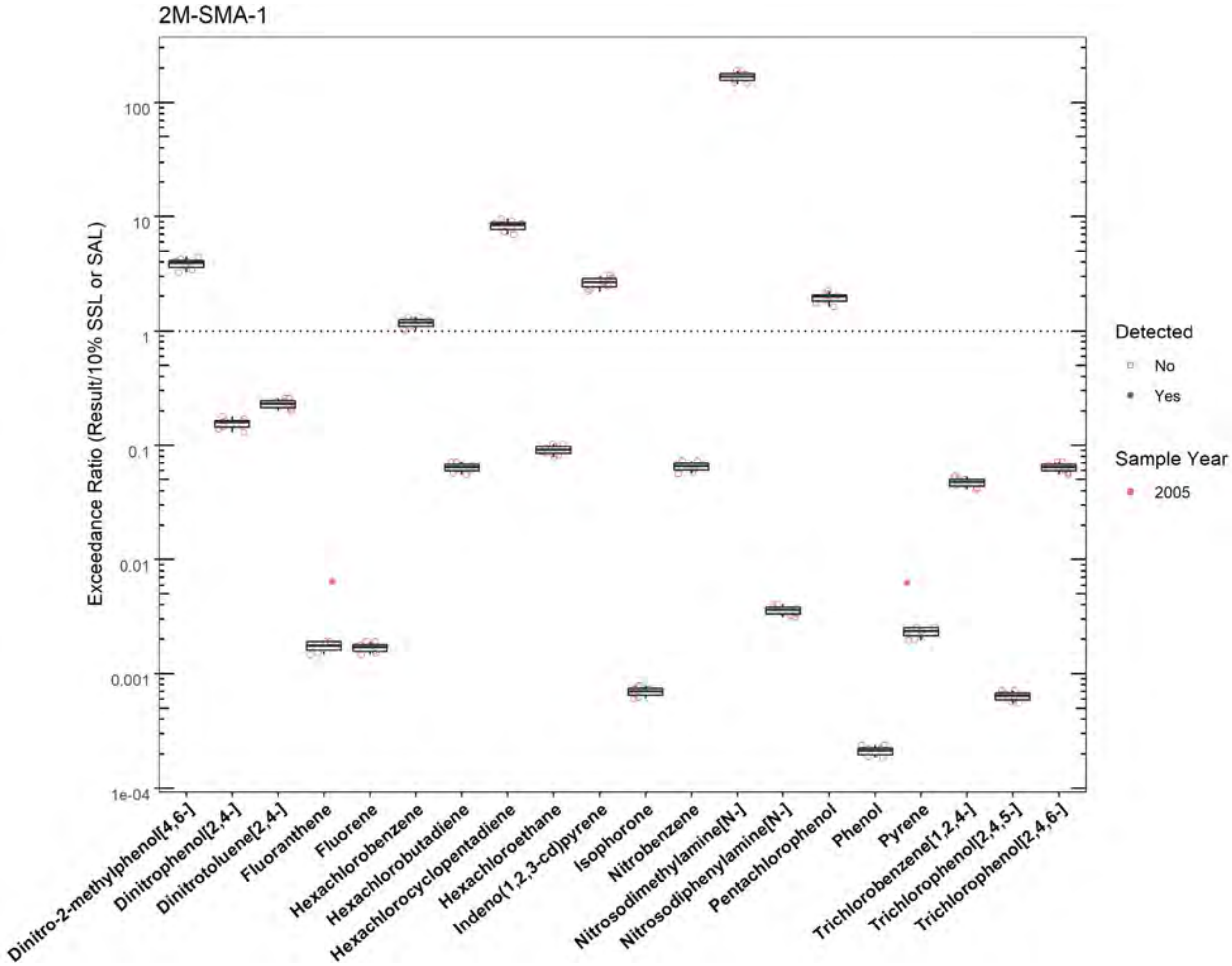


Figure 119.3-3 Organics Analytical Results from Soil Samples Associated with 2M-SMA-1 (Plot 2)

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.

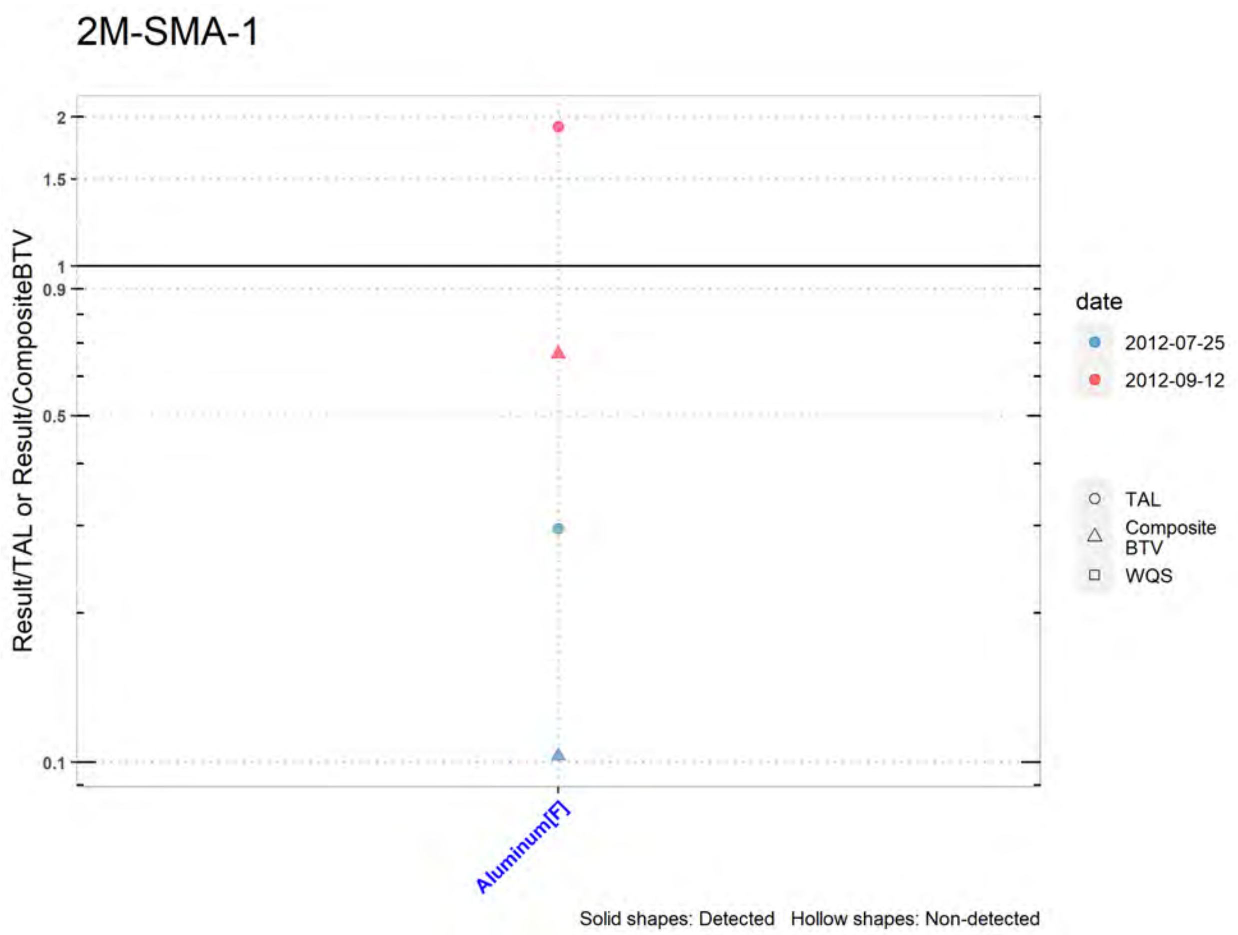


Figure 119.4-1 Analytical Results from Stormwater Samples, 2M-SMA-1 (Plot)

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.

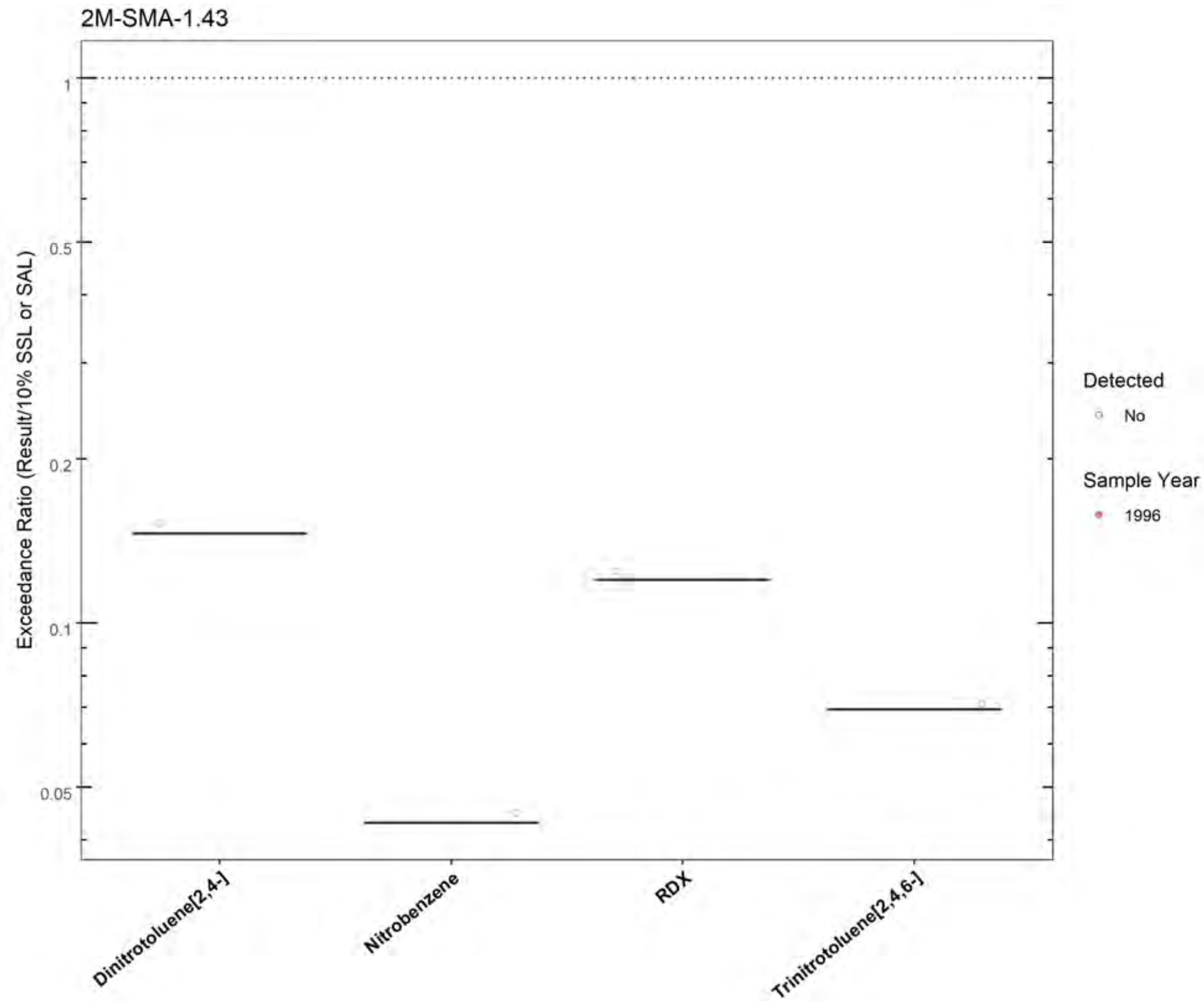


Figure 121.3-1 Organics Analytical Results from Soil Samples Associated with 2M-SMA-1.43

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.

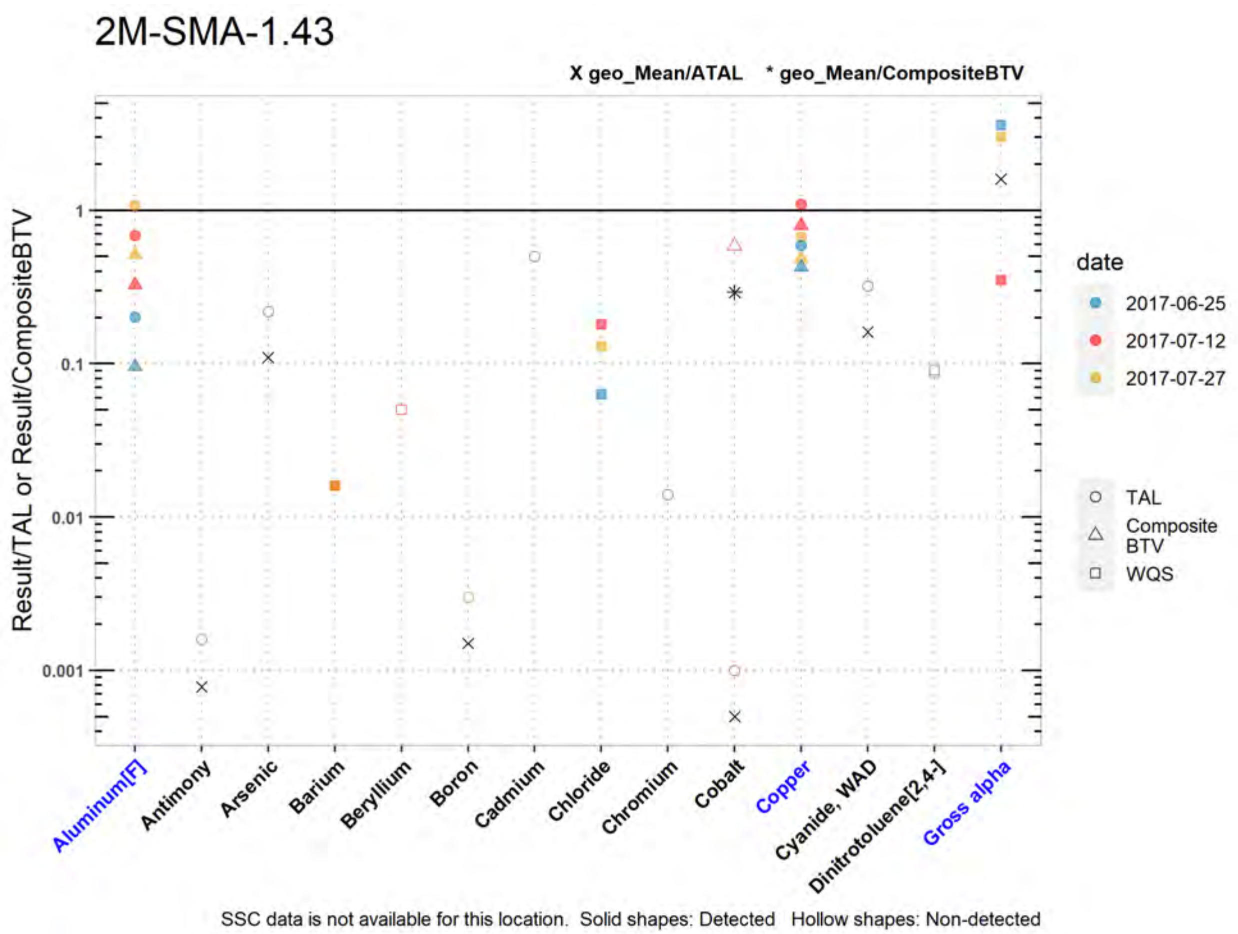


Figure 121.4-1 Analytical Results from Stormwater Samples, 2M-SMA-1.43 (Plot 1)

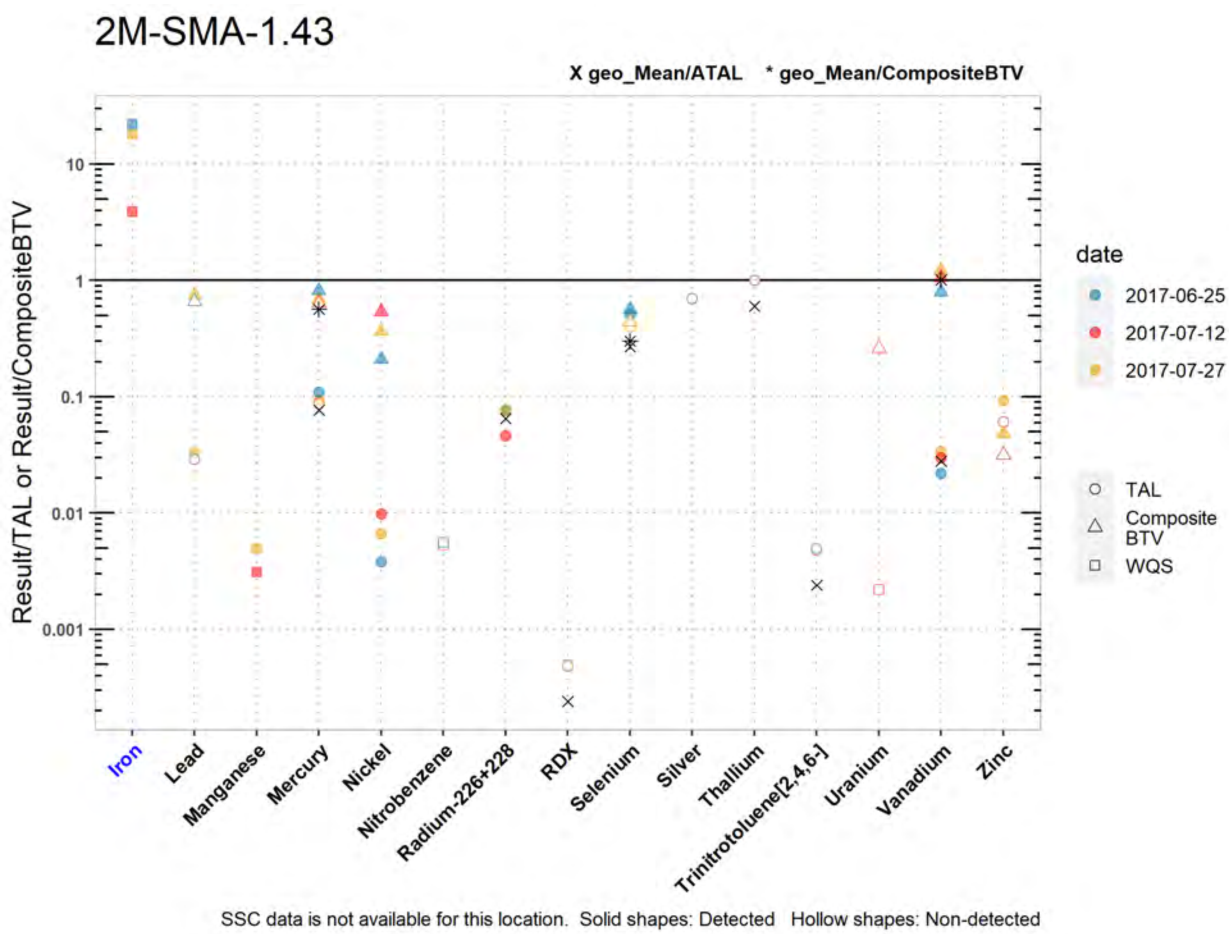


Figure 121.4-2 Analytical Results from Stormwater Samples, 2M-SMA-1.43 (Plot 2)

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 SAP. 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.

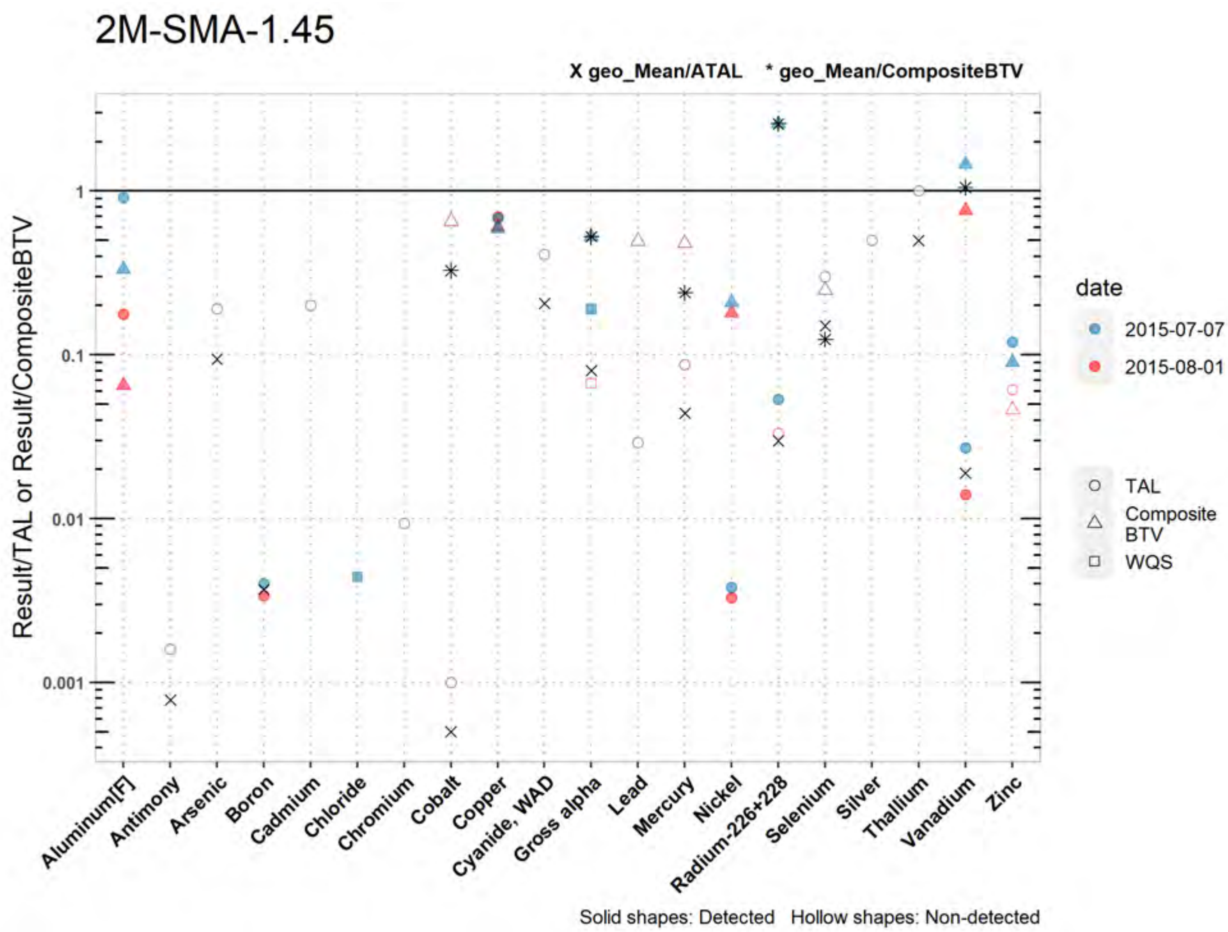


Figure 123.4-1 Analytical Results from Stormwater Samples, 2M-SMA-1.45 (Plot)

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.

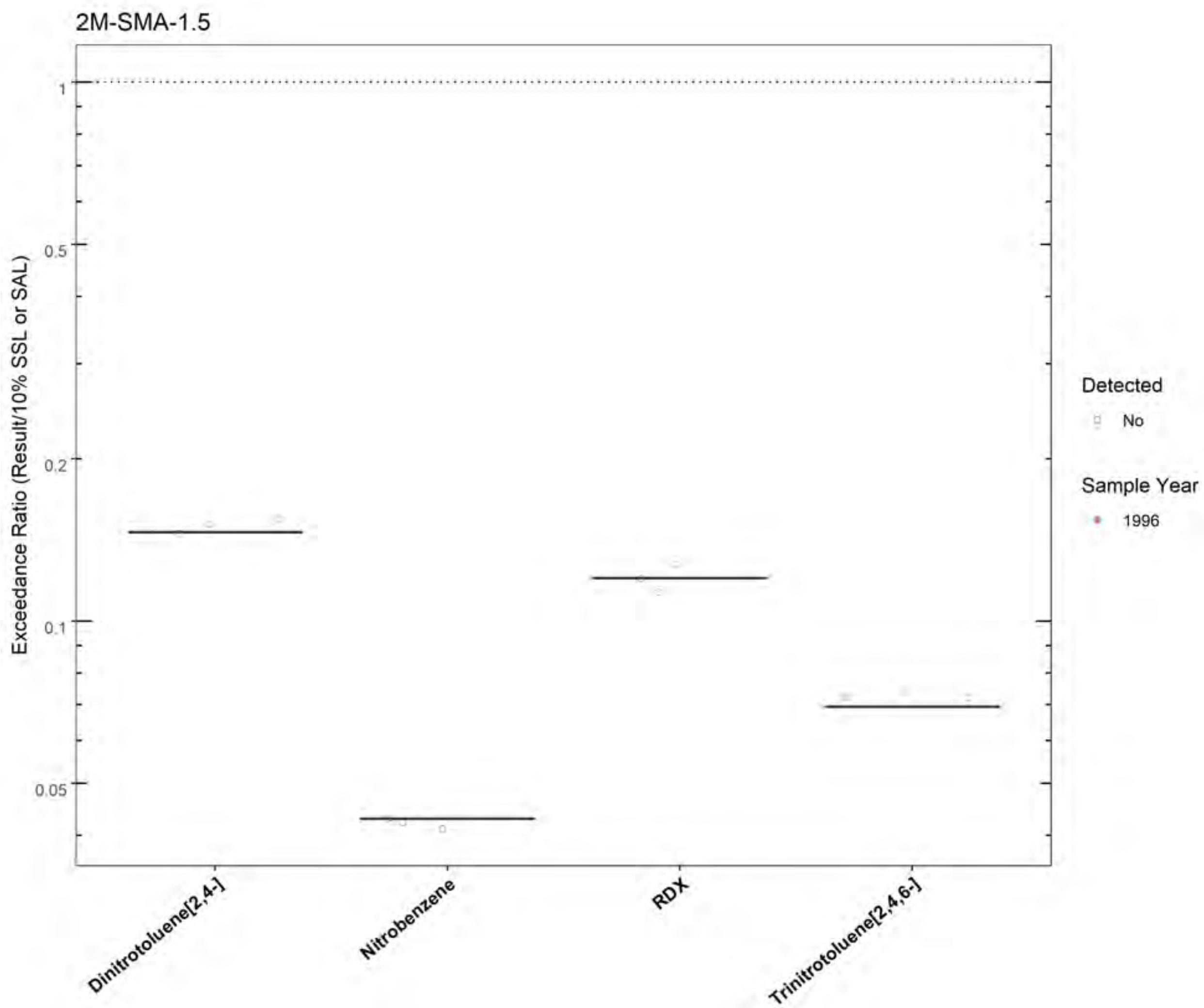


Figure 124.3-1 Organics Analytical Results from Soil Samples Associated with 2M-SMA-1.5

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.

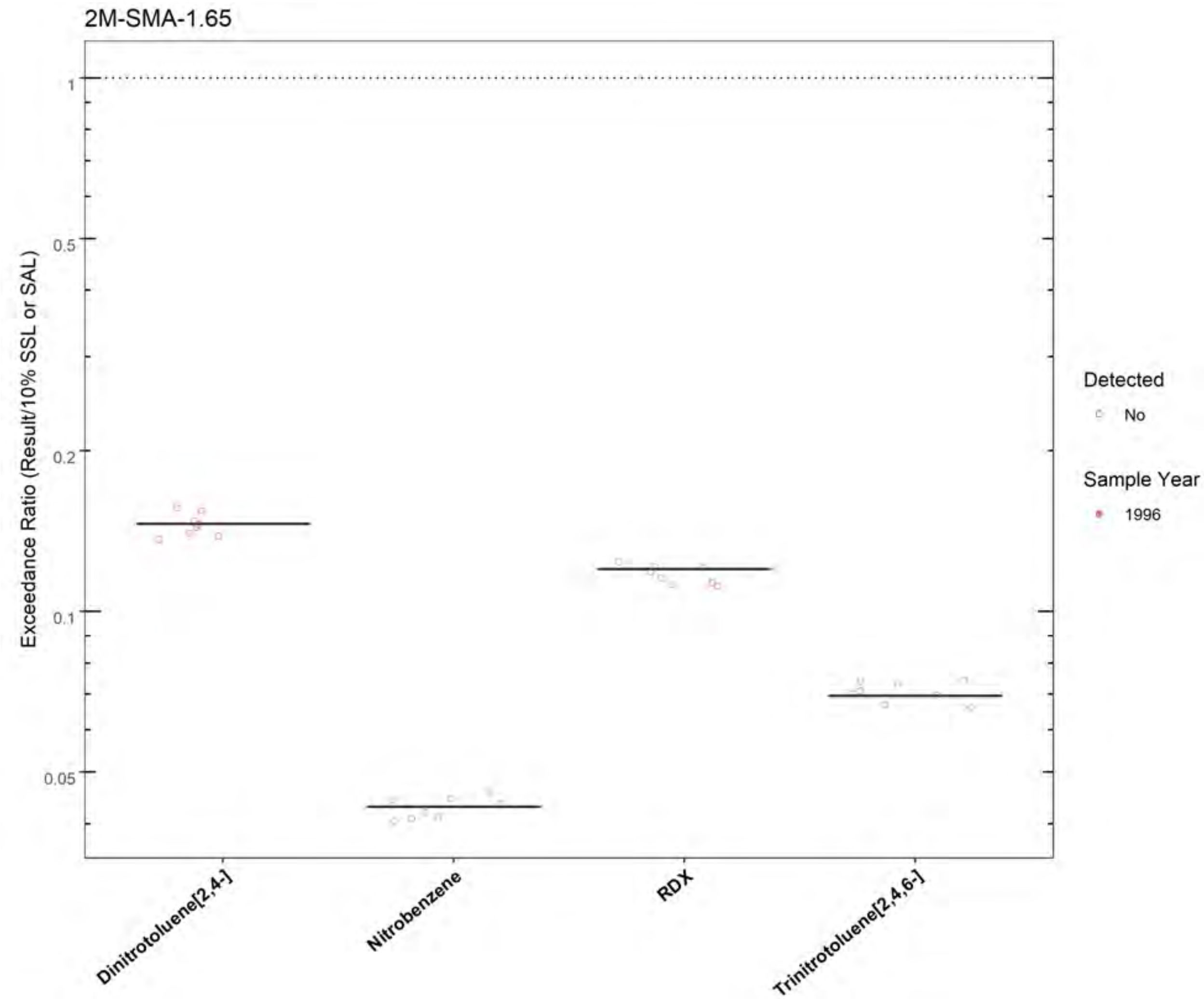


Figure 125.3-1 Organics Analytical Results from Soil Samples Associated with 2M-SMA-1.65

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.

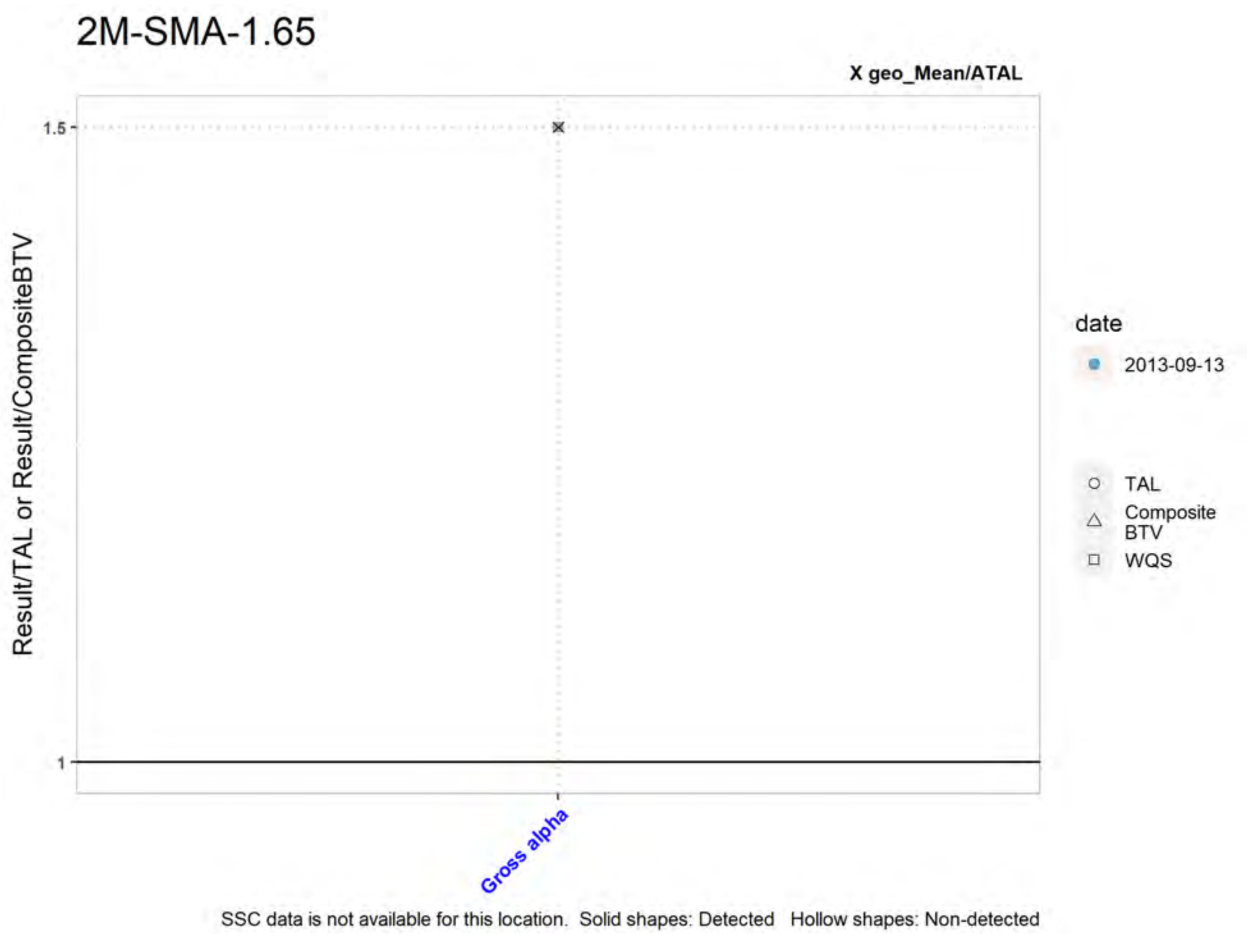


Figure 125.4-1 Analytical Results from Stormwater Sample, 2M-SMA-1.65 (Plot)

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.

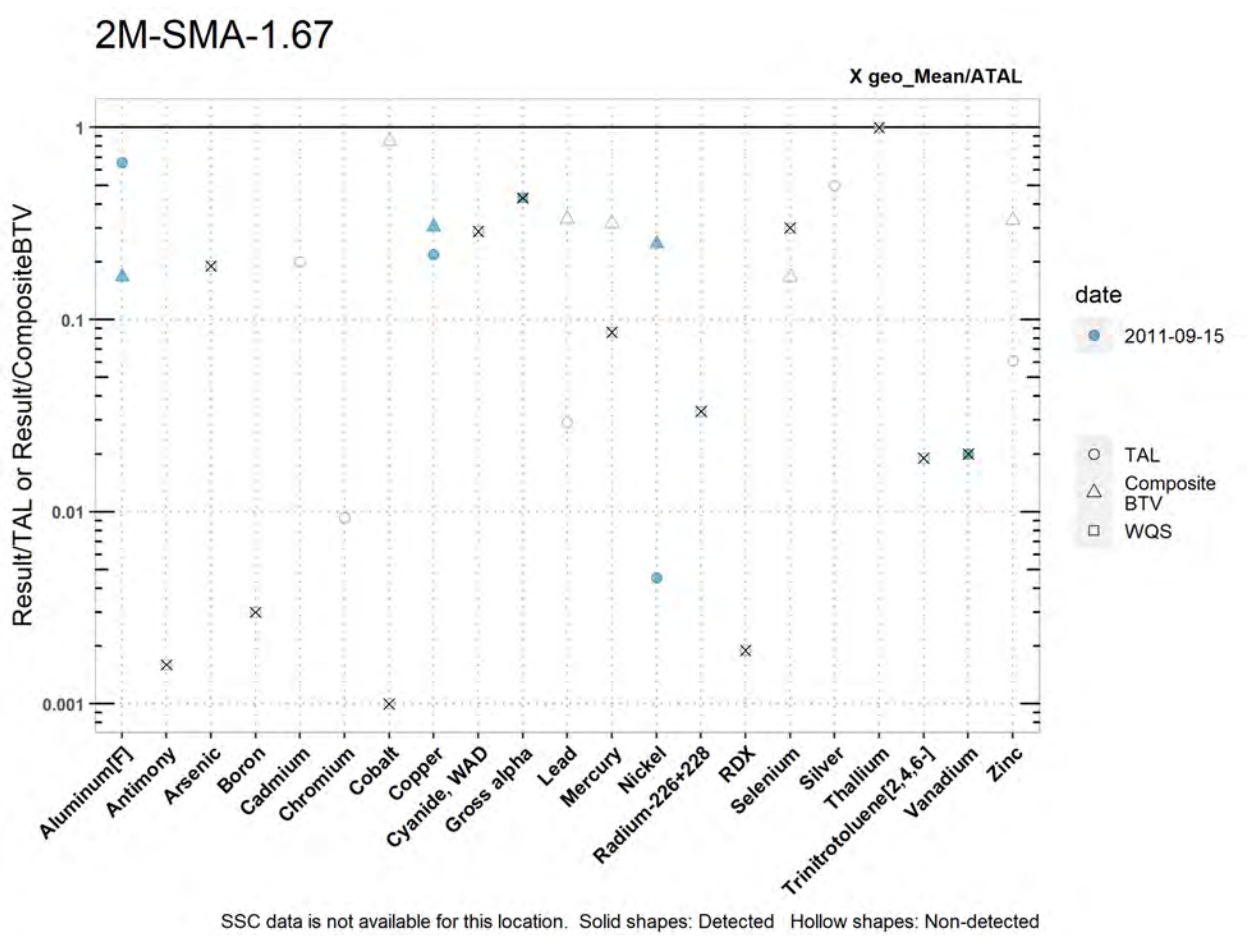


Figure 126.4-1 Analytical Results from Stormwater Sample, 2M-SMA-1.67 (Plot)

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/Corrective Action

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.

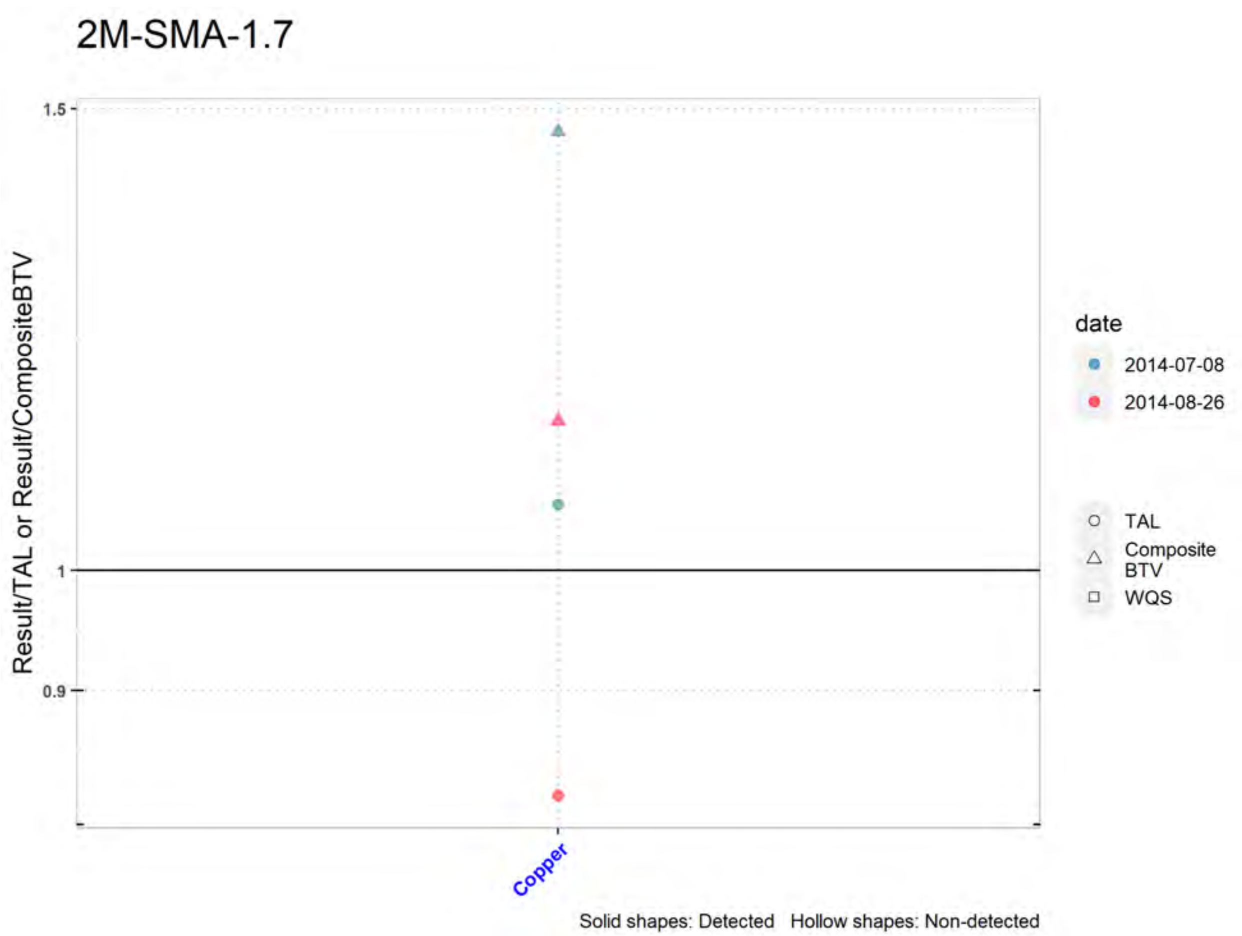


Figure 127.4-1 Analytical Results from Stormwater Samples, 2M-SMA-1.7 (Plot)

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

Due to the exceedance of a composite BTV and/or TAL, corrective action will be initiated at this SMA for copper (Part I.C.2.b.i). The SMA is also 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)
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/Corrective Action

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.

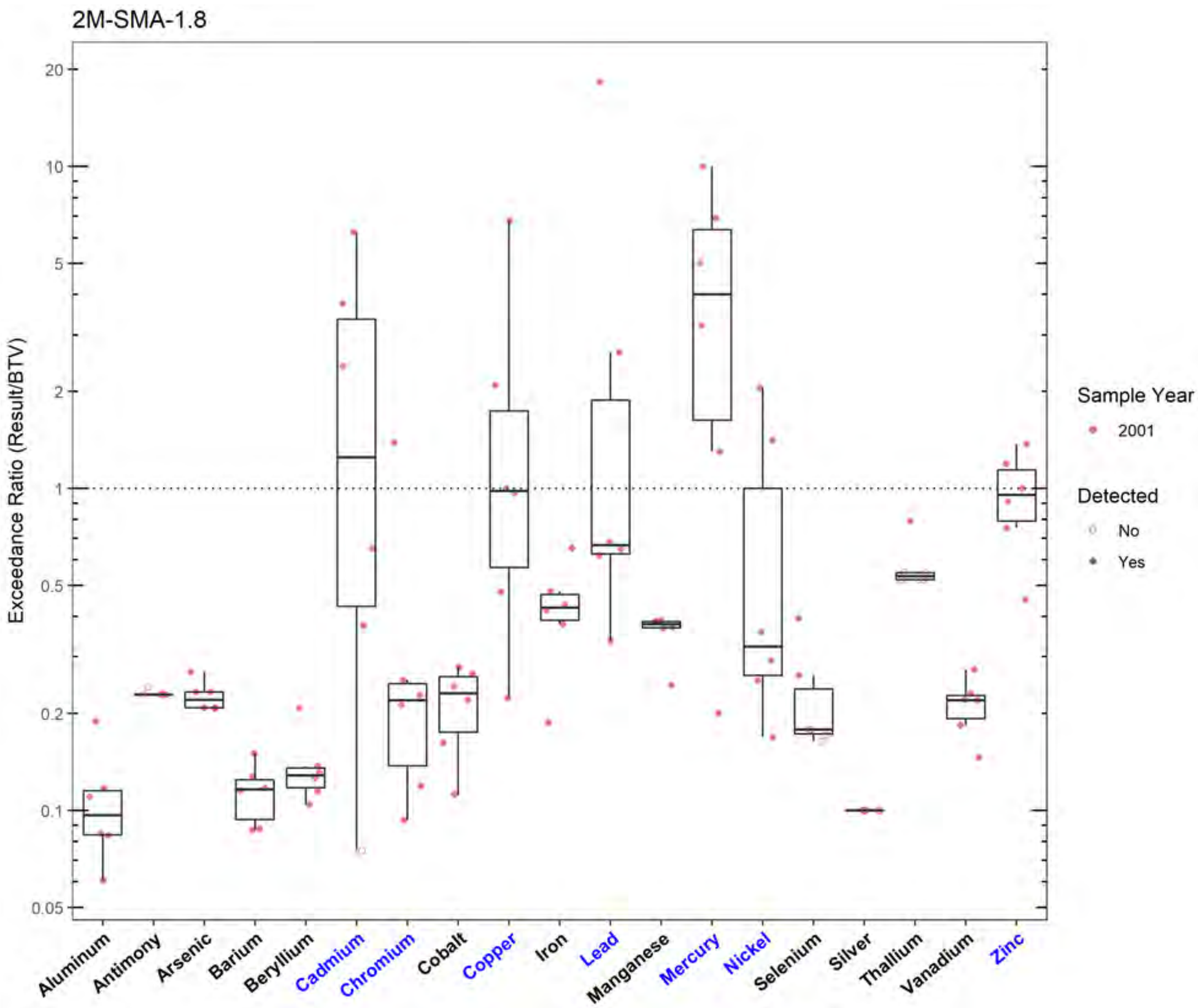


Figure 128.3-1 Inorganics Analytical Results from Soil Samples Associated with 2M-SMA-1.8

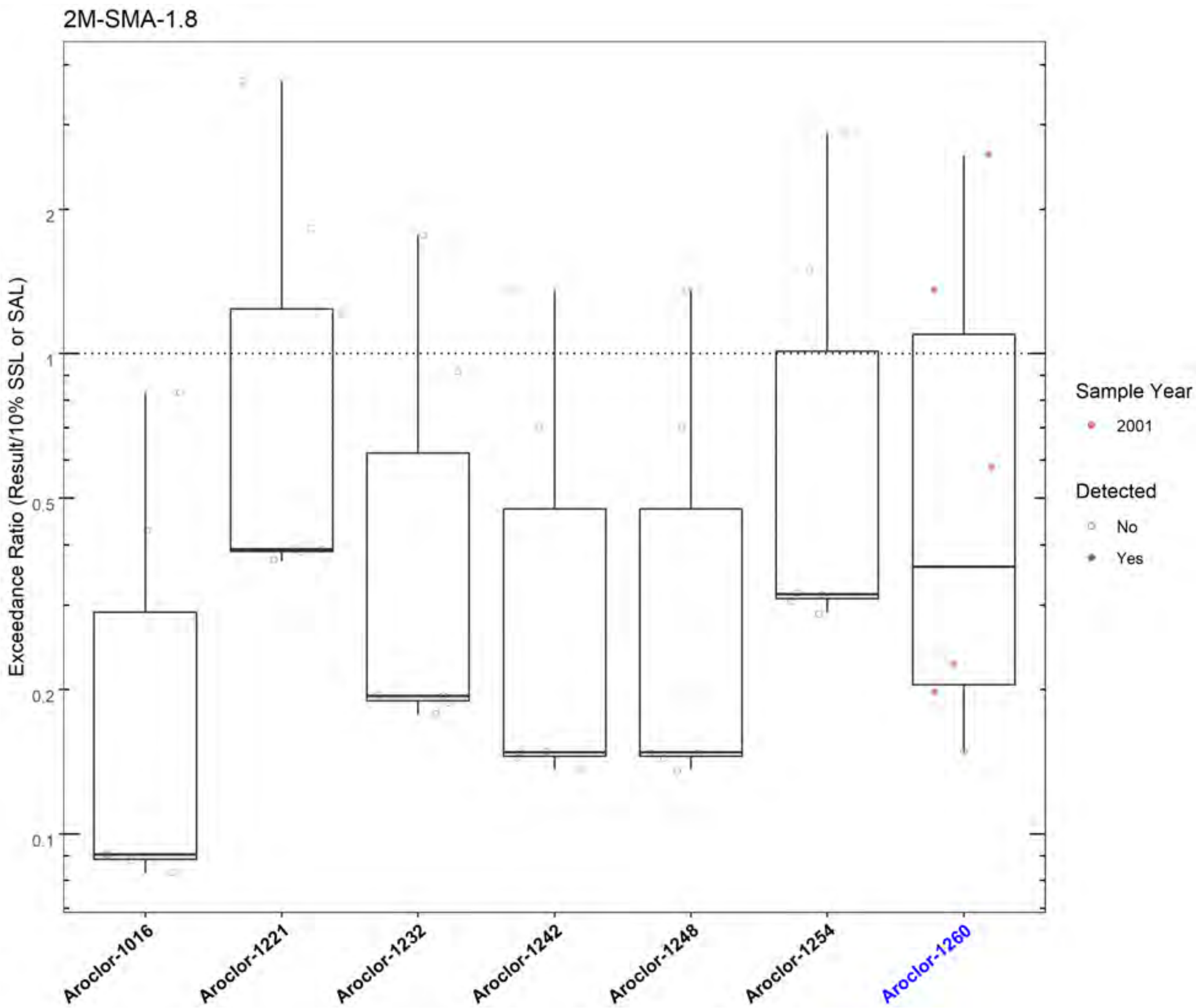


Figure 128.3-2 Organics Analytical Results from Soil Samples Associated with 2M-SMA-1.8

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.

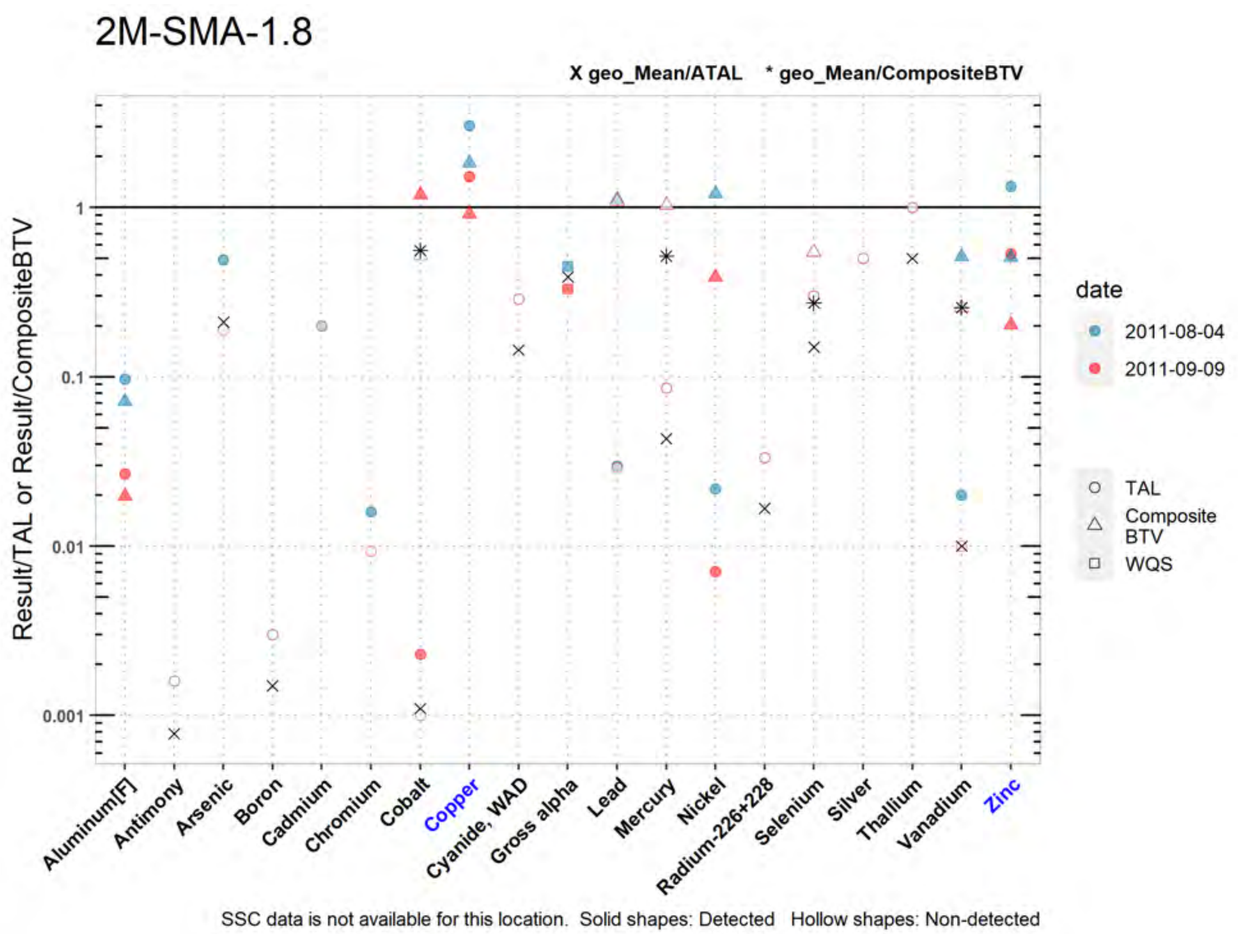


Figure 128.4-1 Analytical Results from Stormwater Samples, 2M-SMA-1.8 (Plot)

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.

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

128.5.3 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.2.b.i) for copper. The SMA is also 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
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/Corrective Action

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.

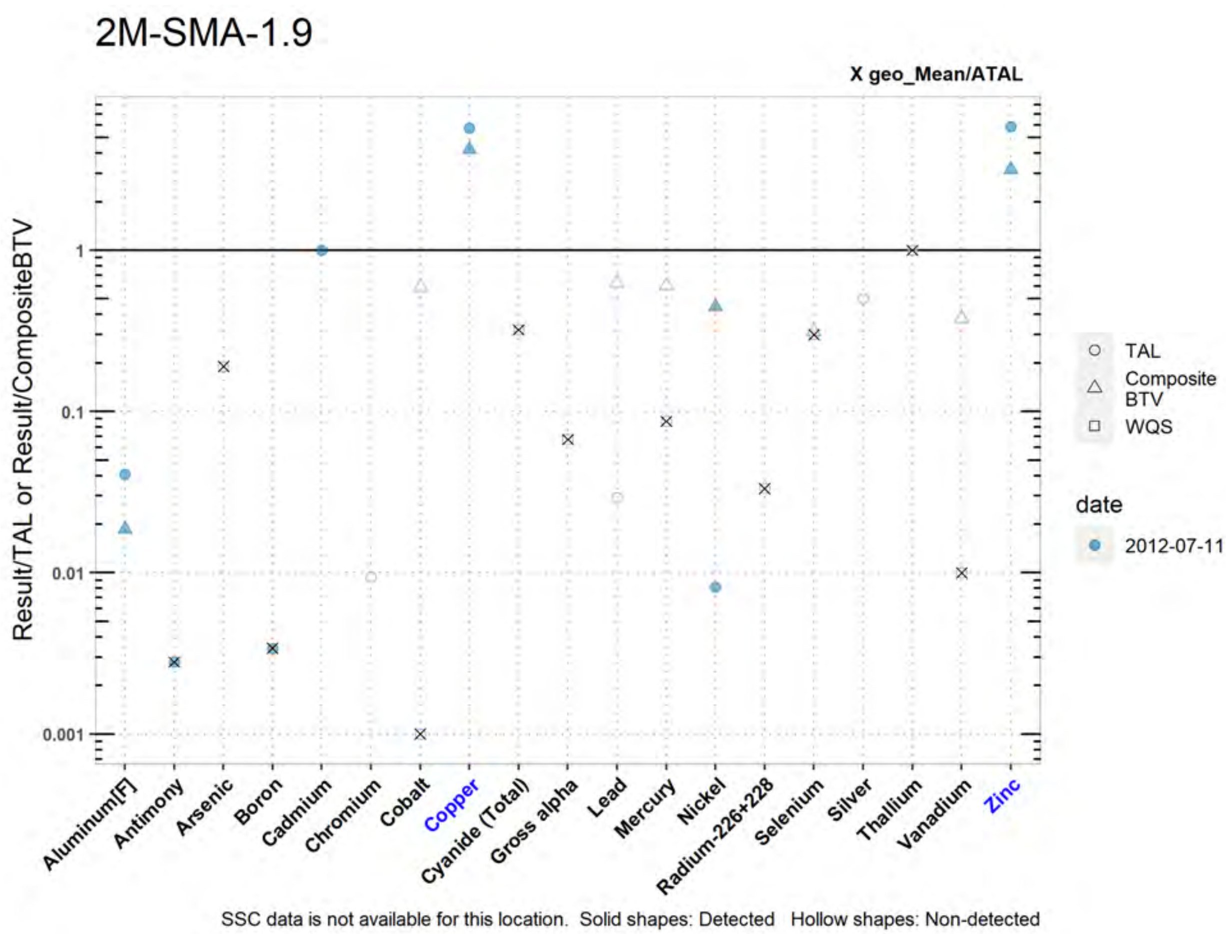


Figure 129.4-1 Analytical Results from Stormwater Sample, 2M-SMA-1.9 (Plot)

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

Due to the exceedance of a composite BTV and/or TAL, corrective action will be initiated at this SMA (Part I.C.2.b.i) for copper and zinc. The SMA is also 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
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.

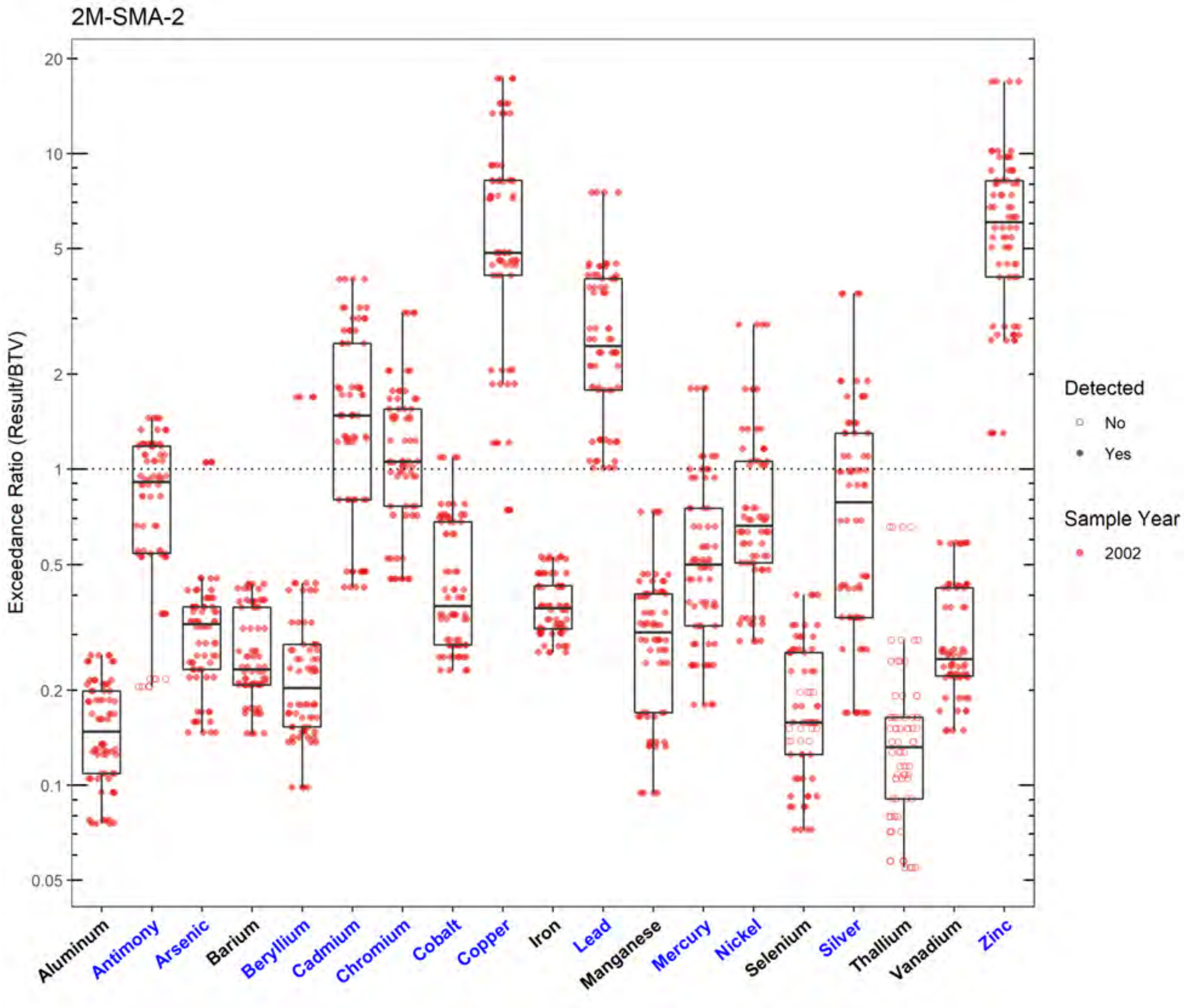


Figure 130.3-1 Inorganics Analytical Results from Soil Samples Associated with 2M-SMA-2

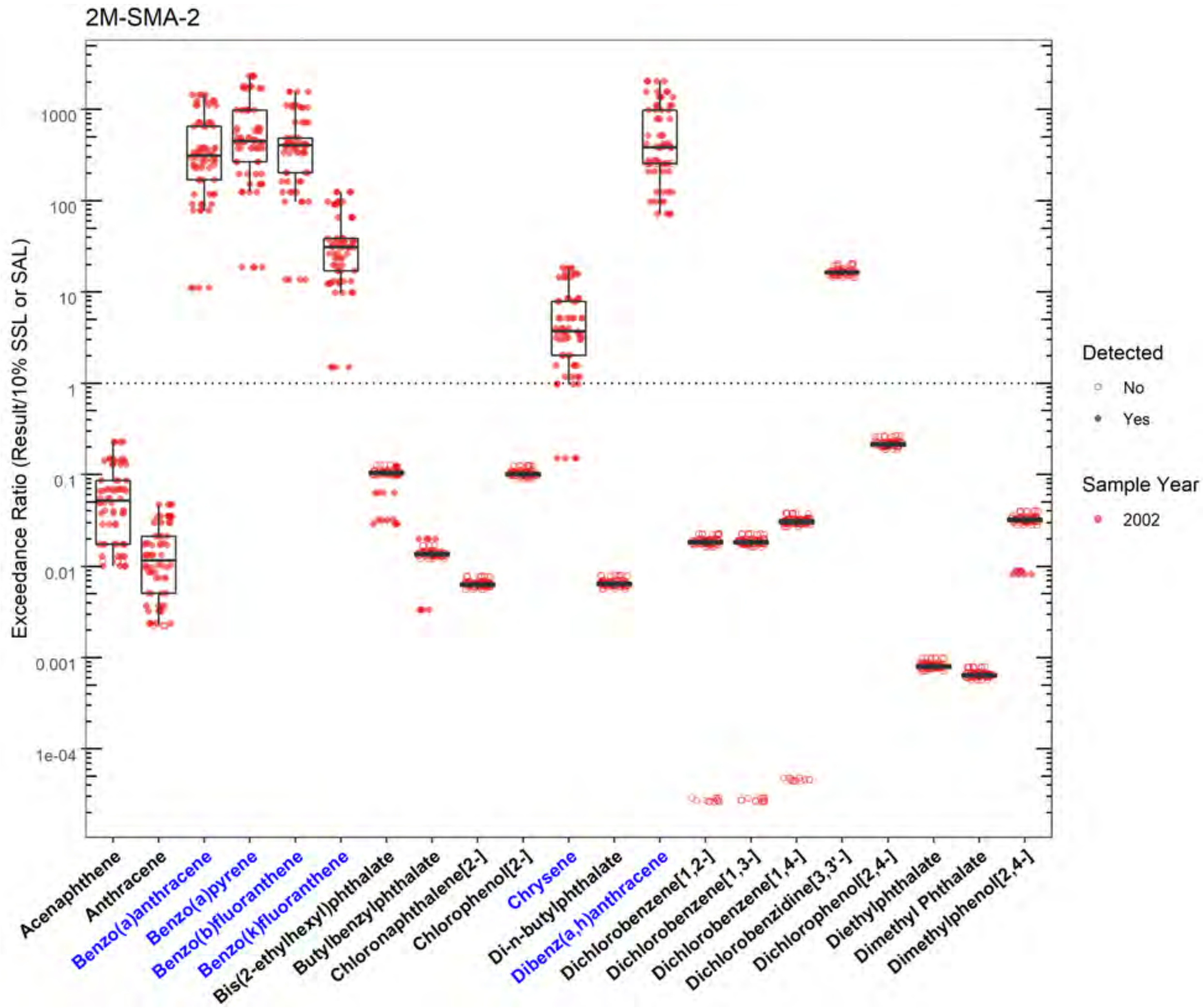


Figure 130.3-2 Organics Analytical Results from Soil Samples Associated with 2M-SMA-2 (Plot 1)

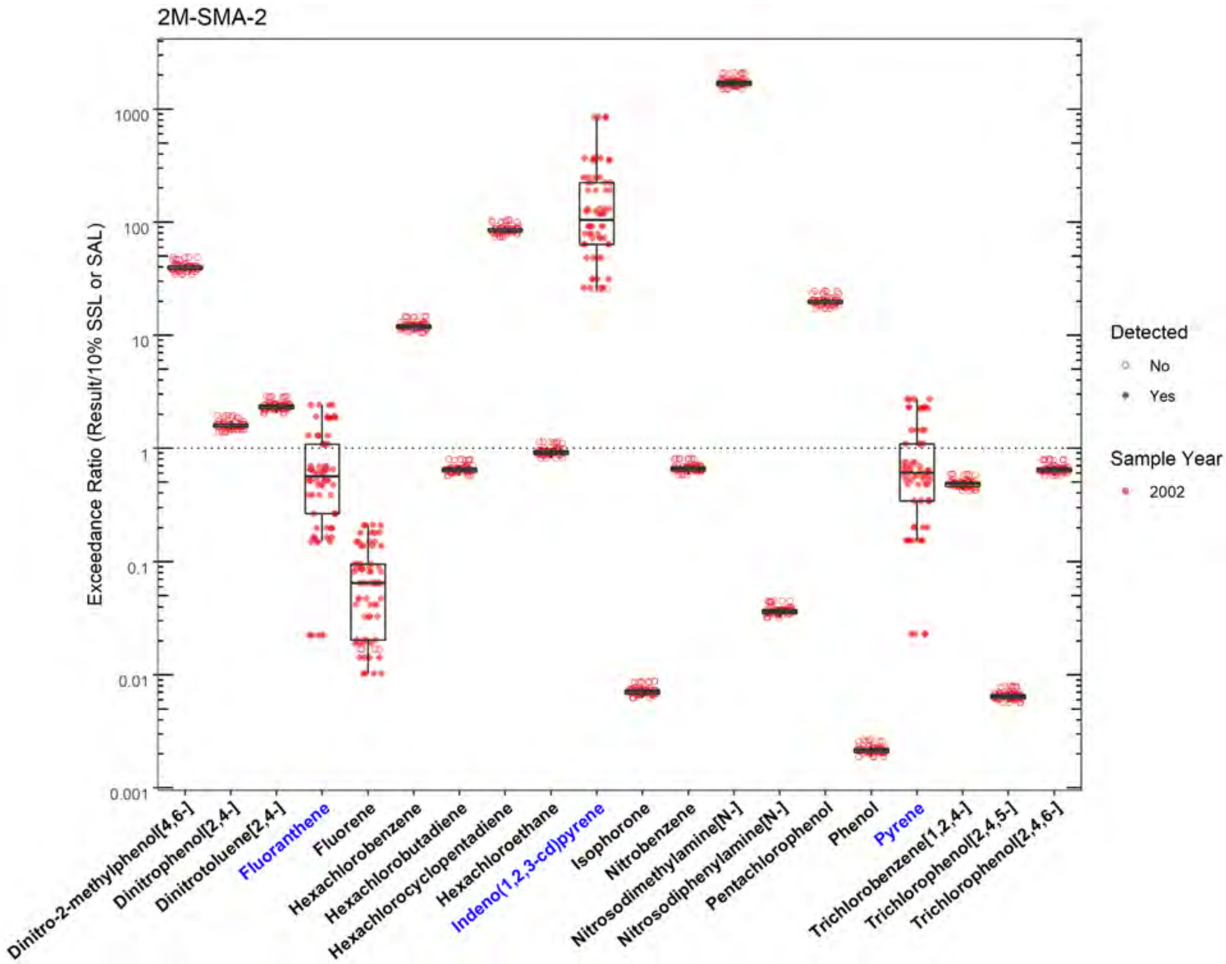


Figure 130.3-3 Organics Analytical Results from Soil Samples Associated with 2M-SMA-2 (Plot 2)

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.

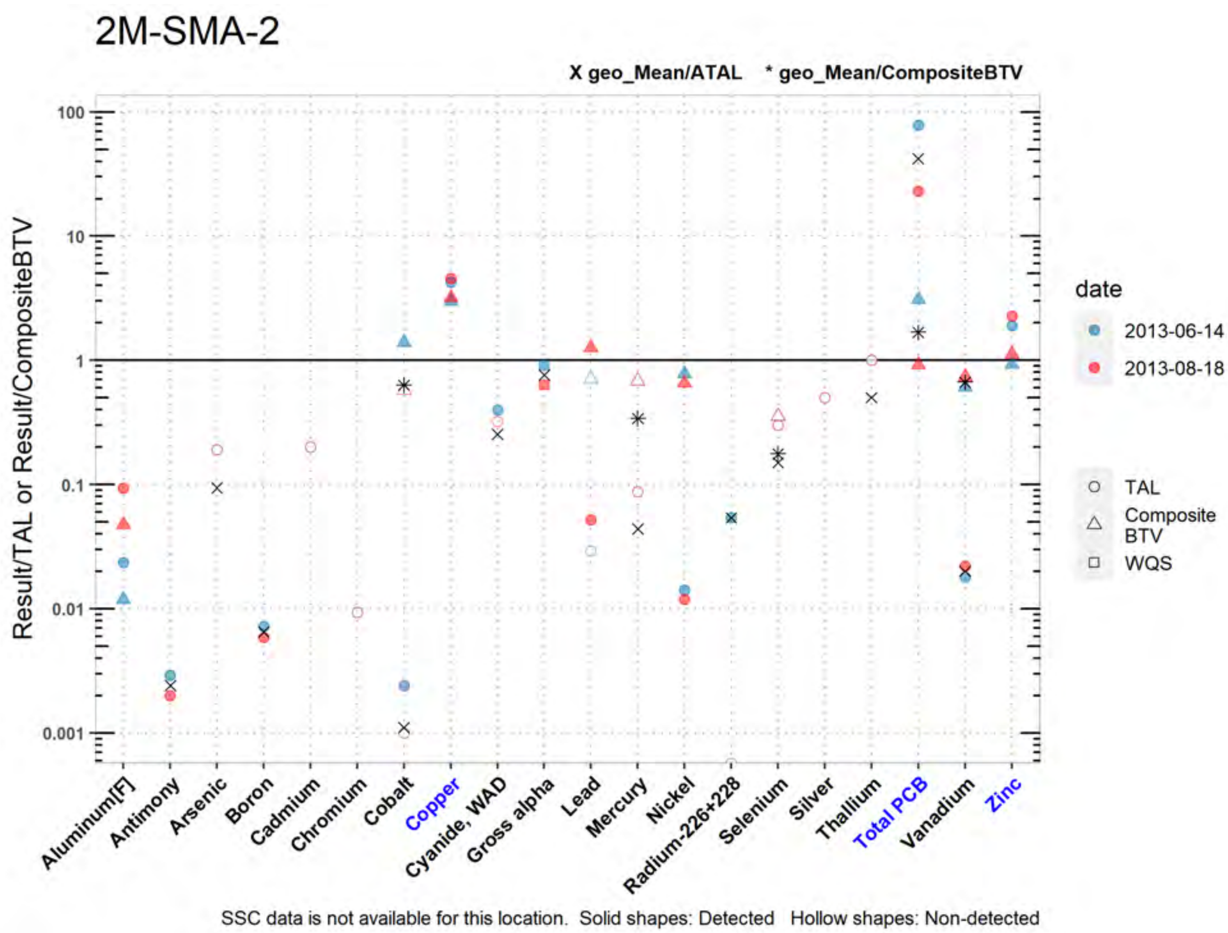


Figure 130.4-1 Analytical Results from Stormwater Samples, 2M-SMA-2 (Plot)

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 for copper, PCBs, and zinc (Part I.C.2.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.

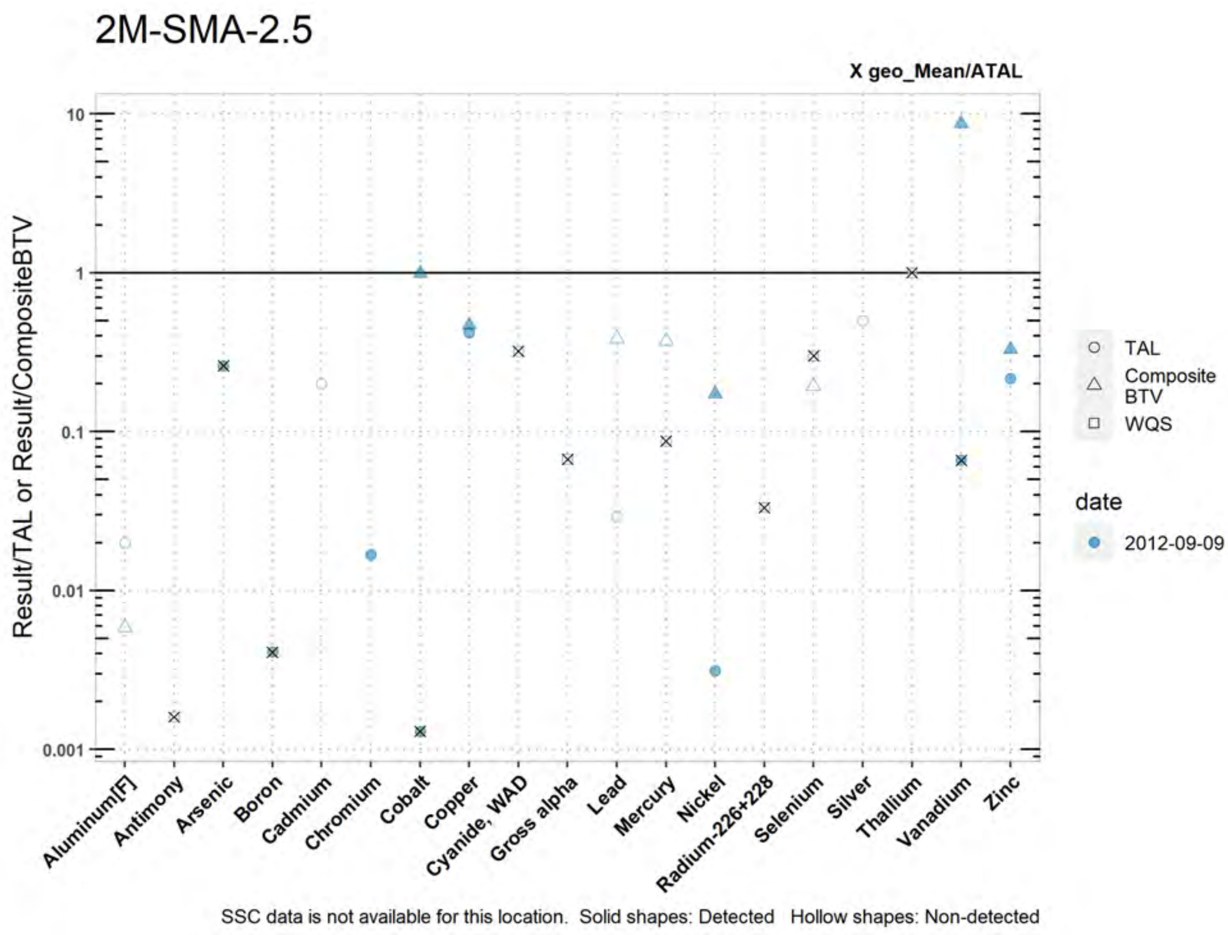


Figure 132.4-1 Analytical Results from Stormwater Sample, 2M-SMA-2.5 (Plot)

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).

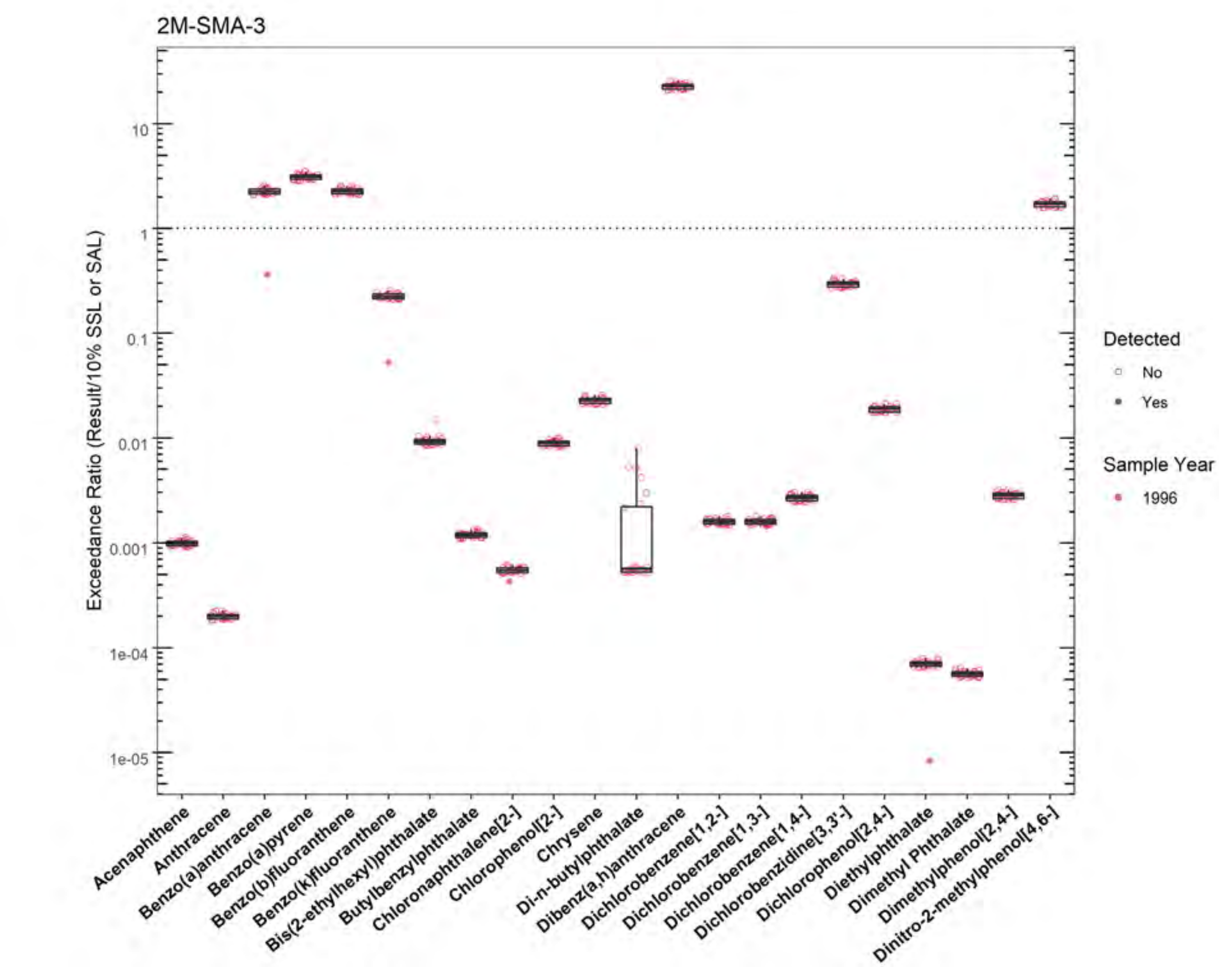


Figure 133.3-1 Organics Analytical Results from Soil Samples Associated with 2M-SMA-3 (Plot 1)

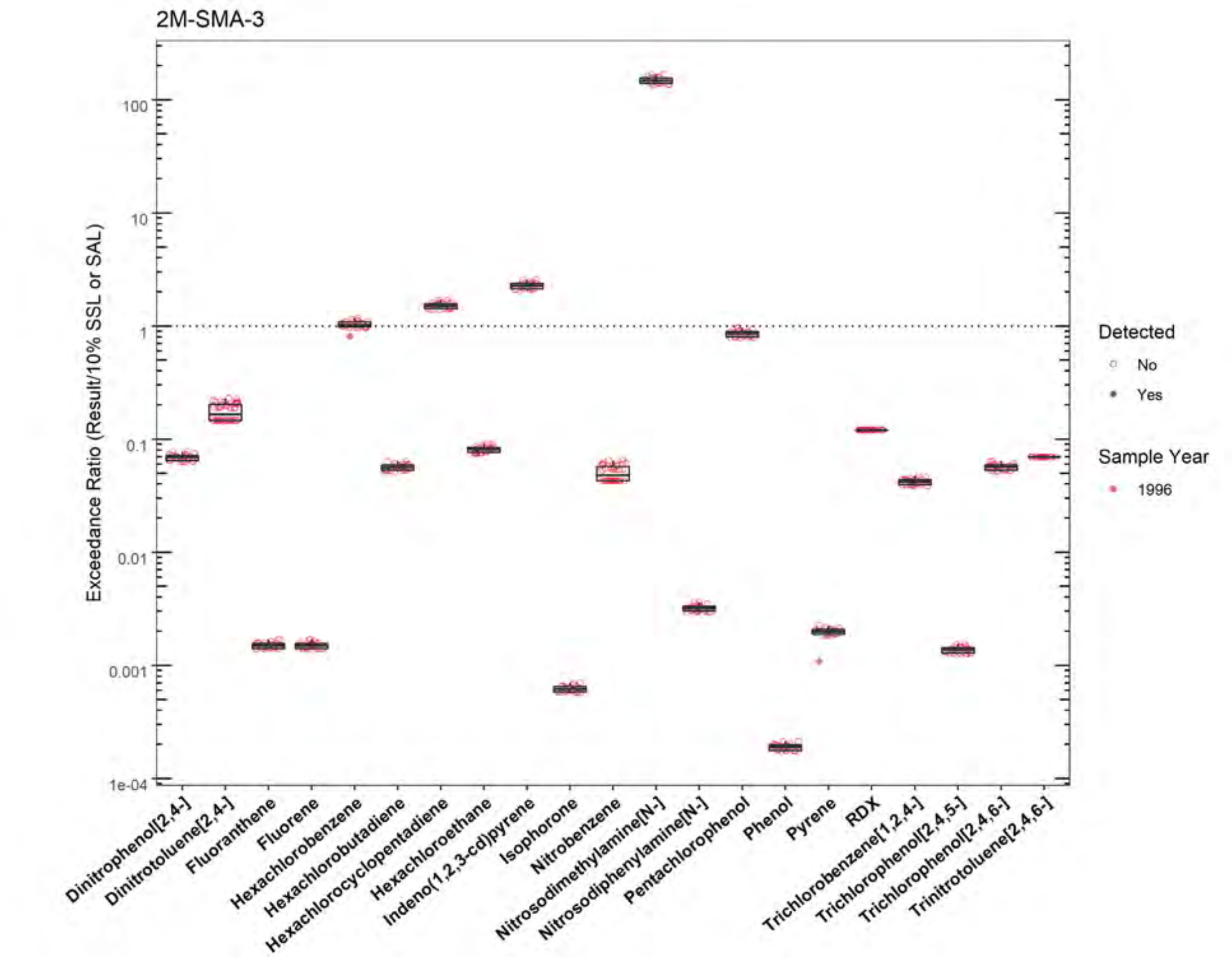


Figure 133.3-2 Organics Analytical Results from Soil Samples Associated with 2M-SMA-3 (Plot 2)

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.

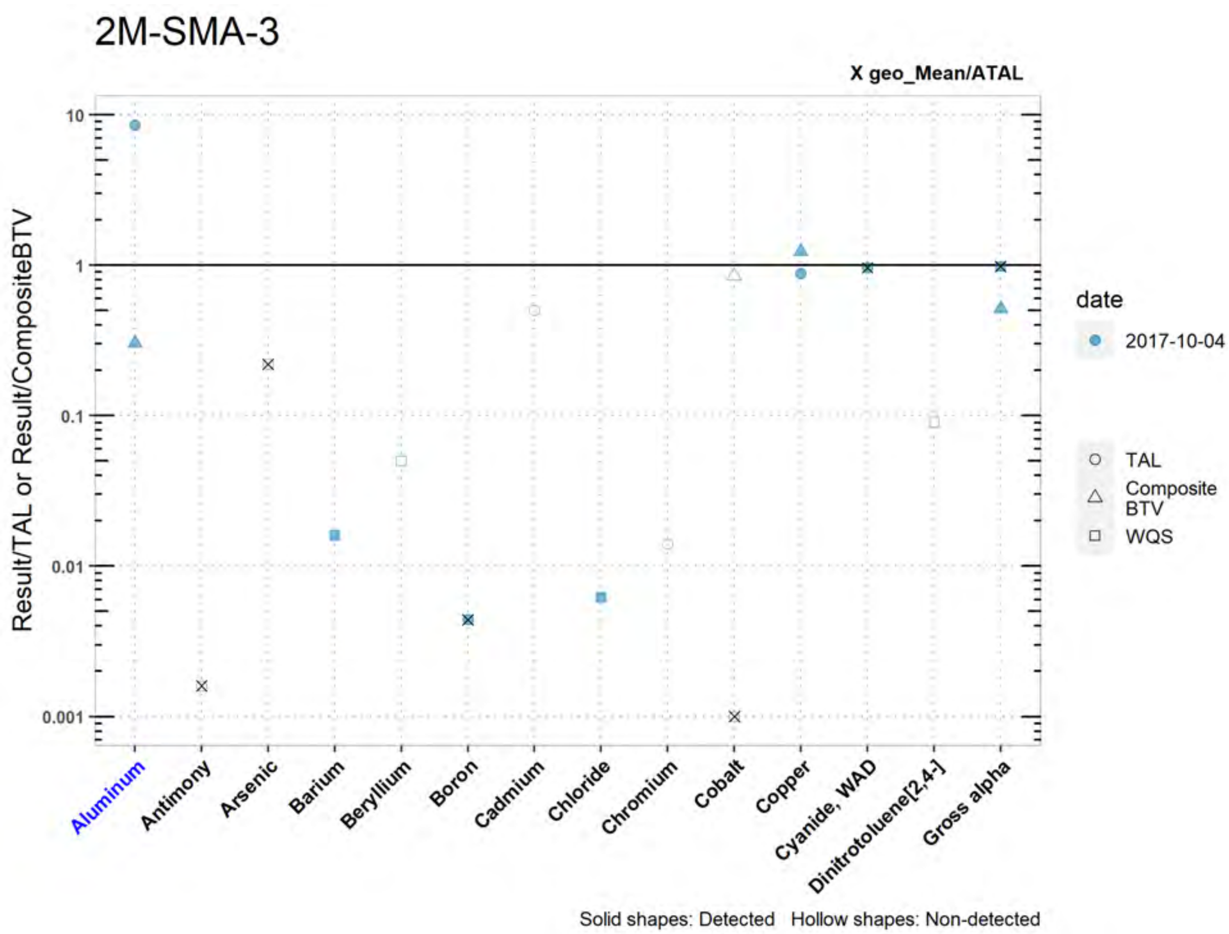


Figure 133.4-1 Analytical Results from Stormwater Sample, 2M-SMA-3 at SS193230 (Plot 1)

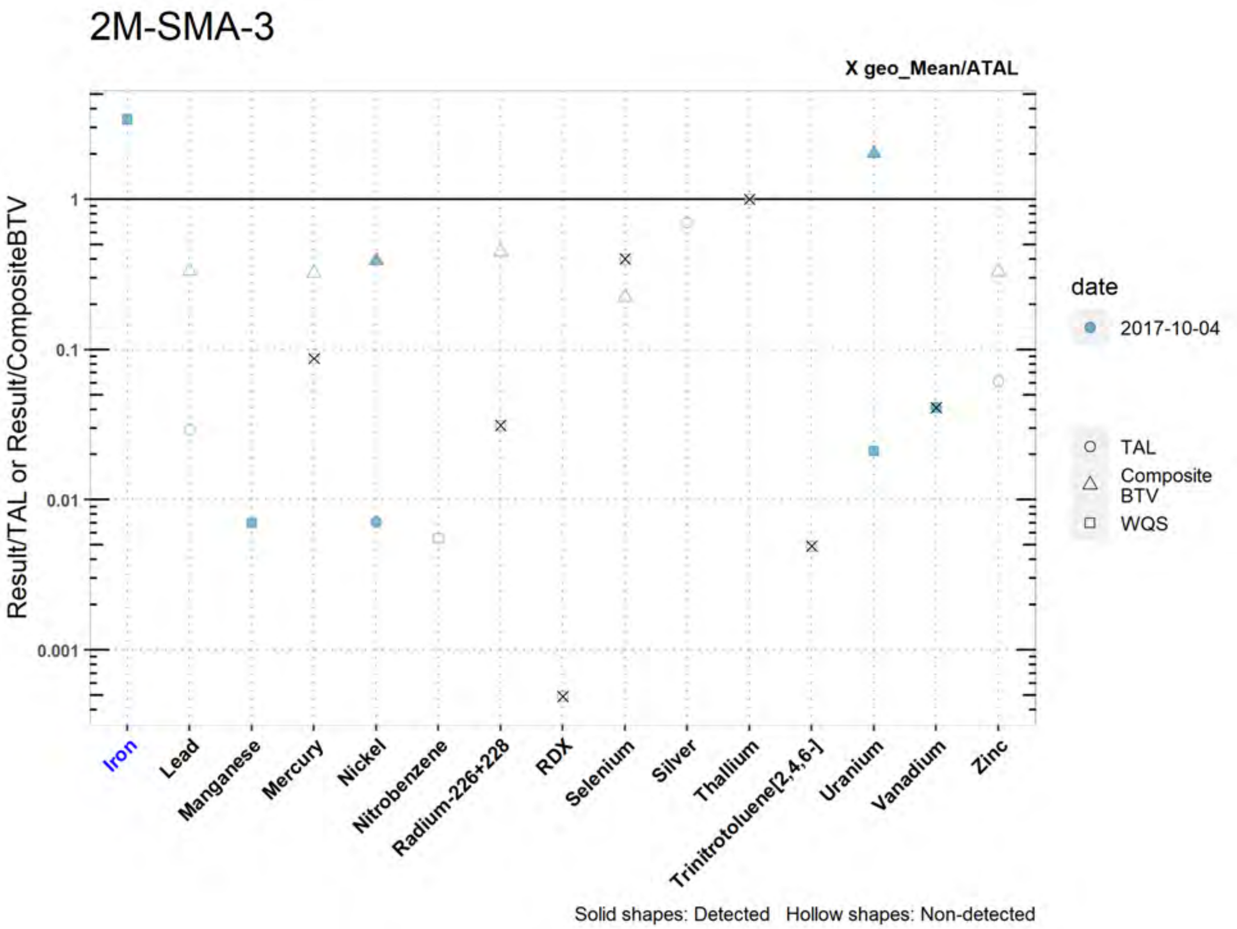


Figure 133.4-2 Analytical Results from Stormwater Sample, 2M-SMA-3 at SS193230 (Plot 2)

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)

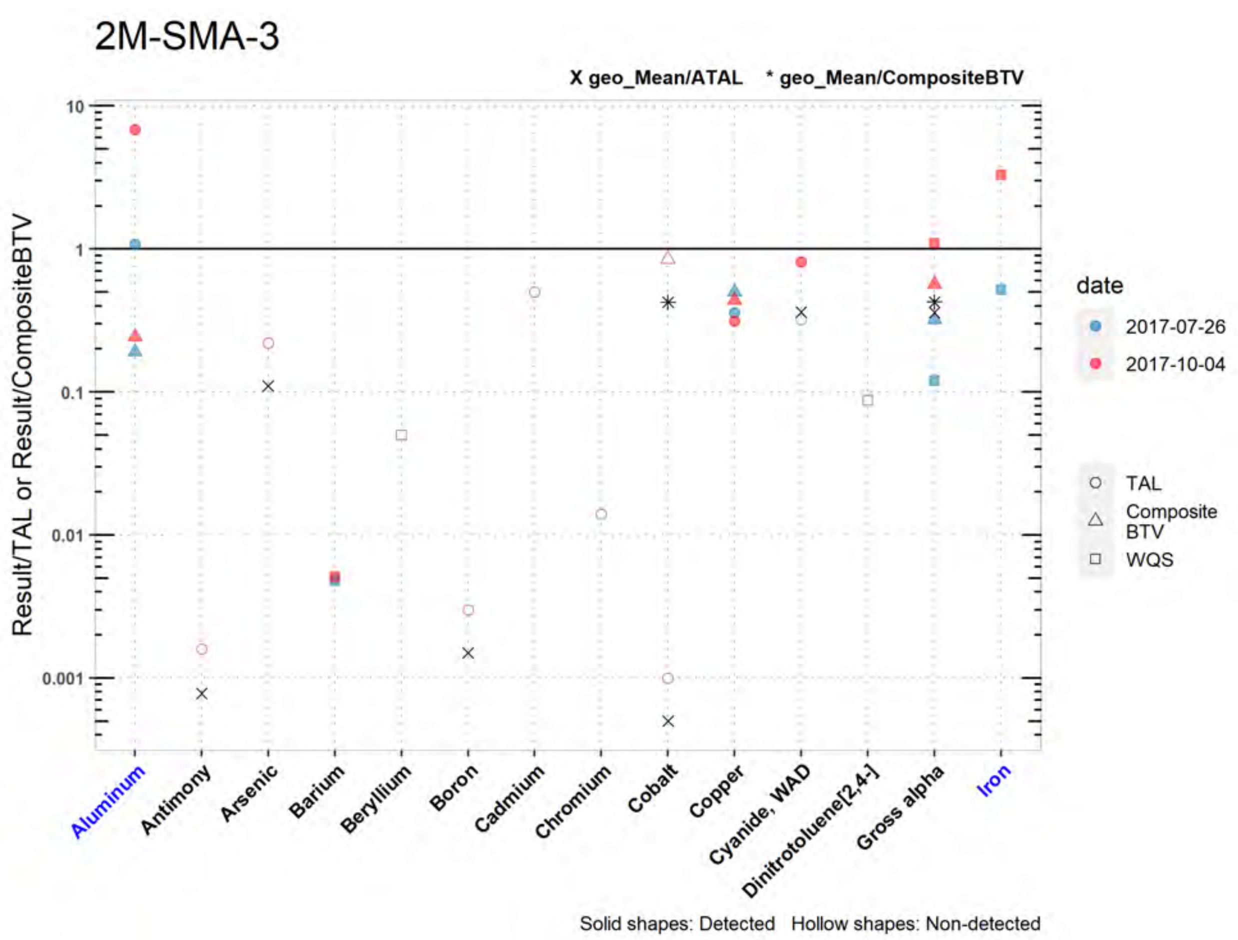


Figure 133.4-5 Analytical Results from Stormwater Samples, 2M-SMA-3 at SS2439 (Plot 1)

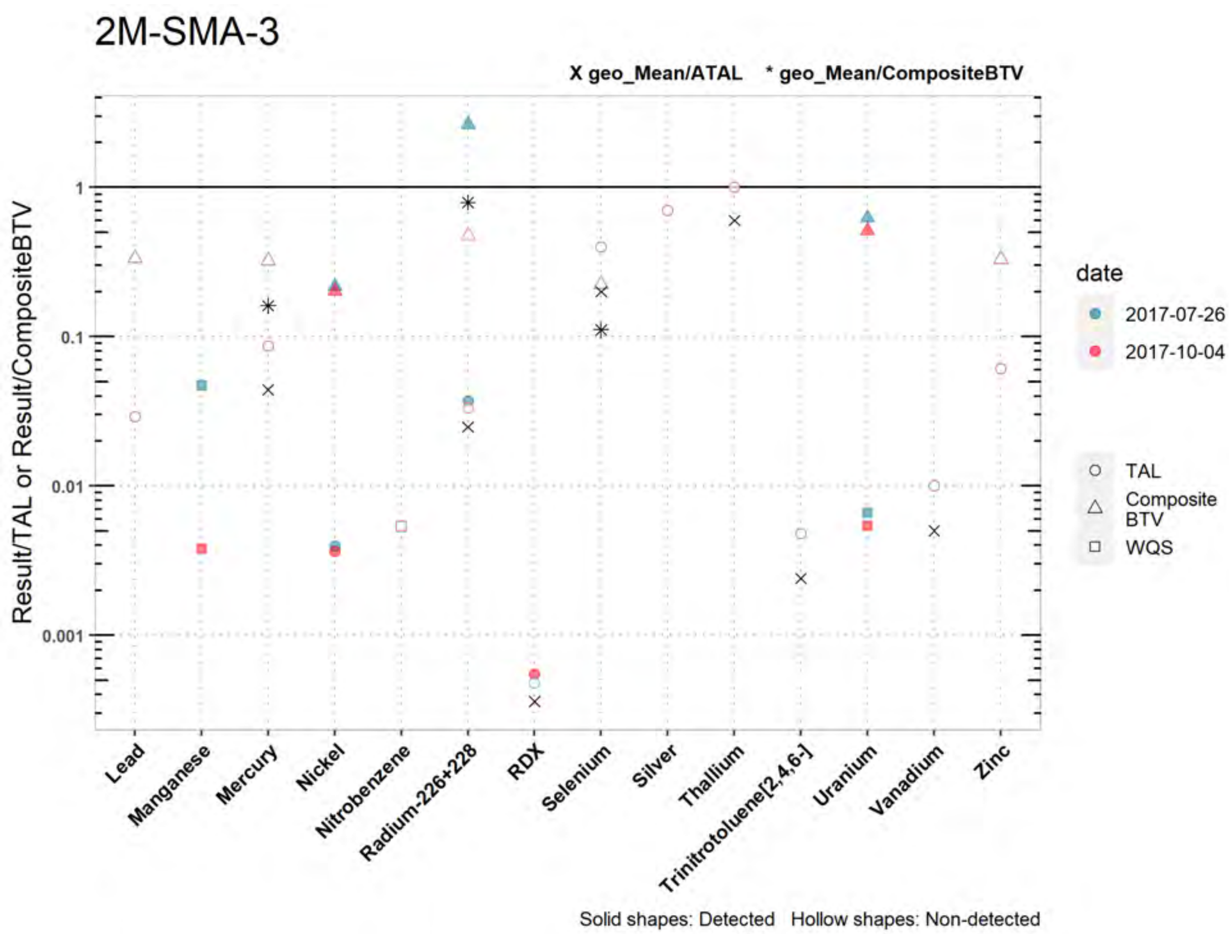


Figure 133.4-6 Analytical Results from Stormwater Samples, 2M-SMA-3 at SS2439 (Plot 2)

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).

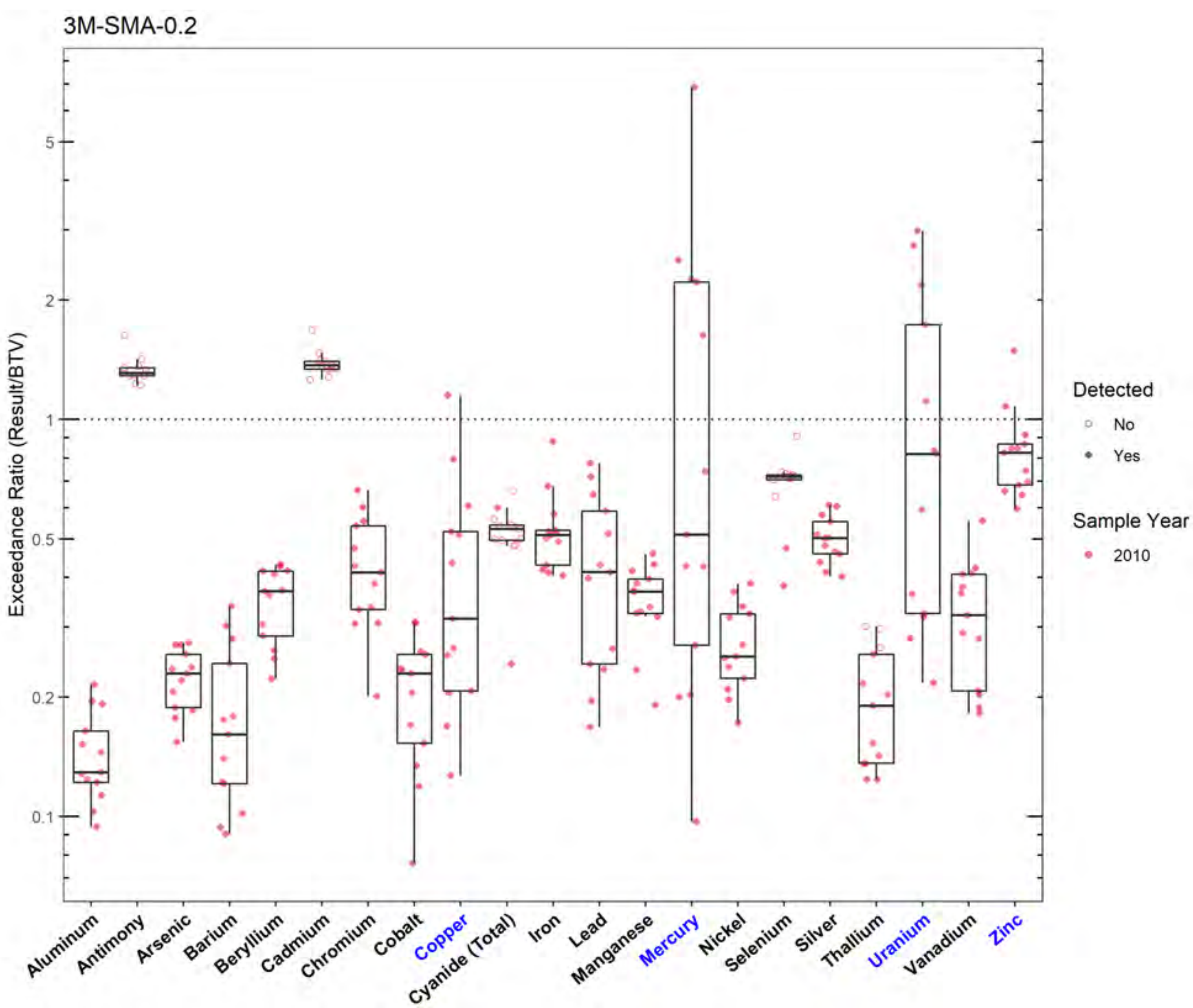


Figure 134.3-1 Inorganics Analytical Results from Soil Samples Associated with 3M-SMA-0.2

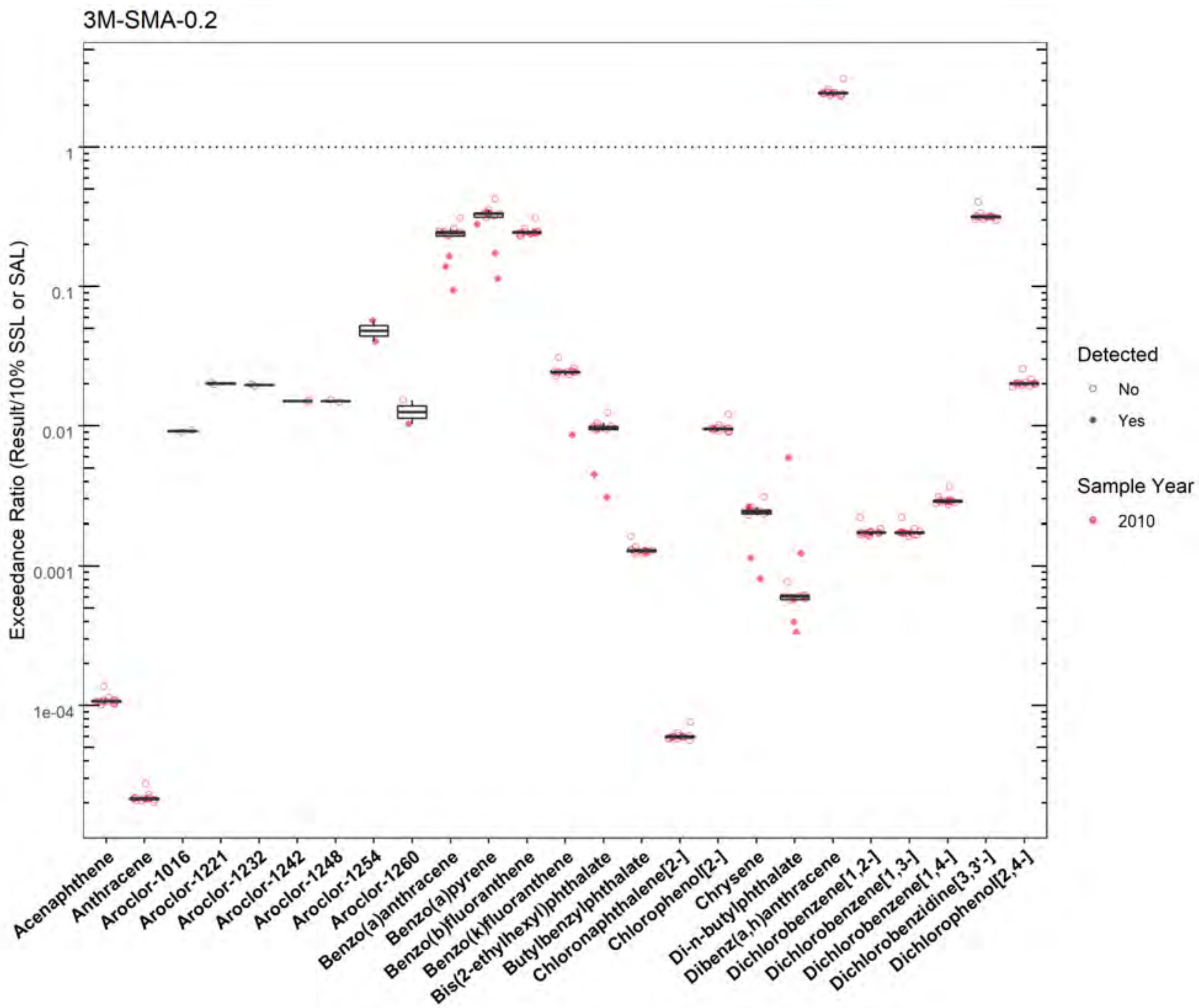


Figure 134.3-2 Organics Analytical Results from Soil Samples Associated with 3M-SMA-0.2 (Plot 1)

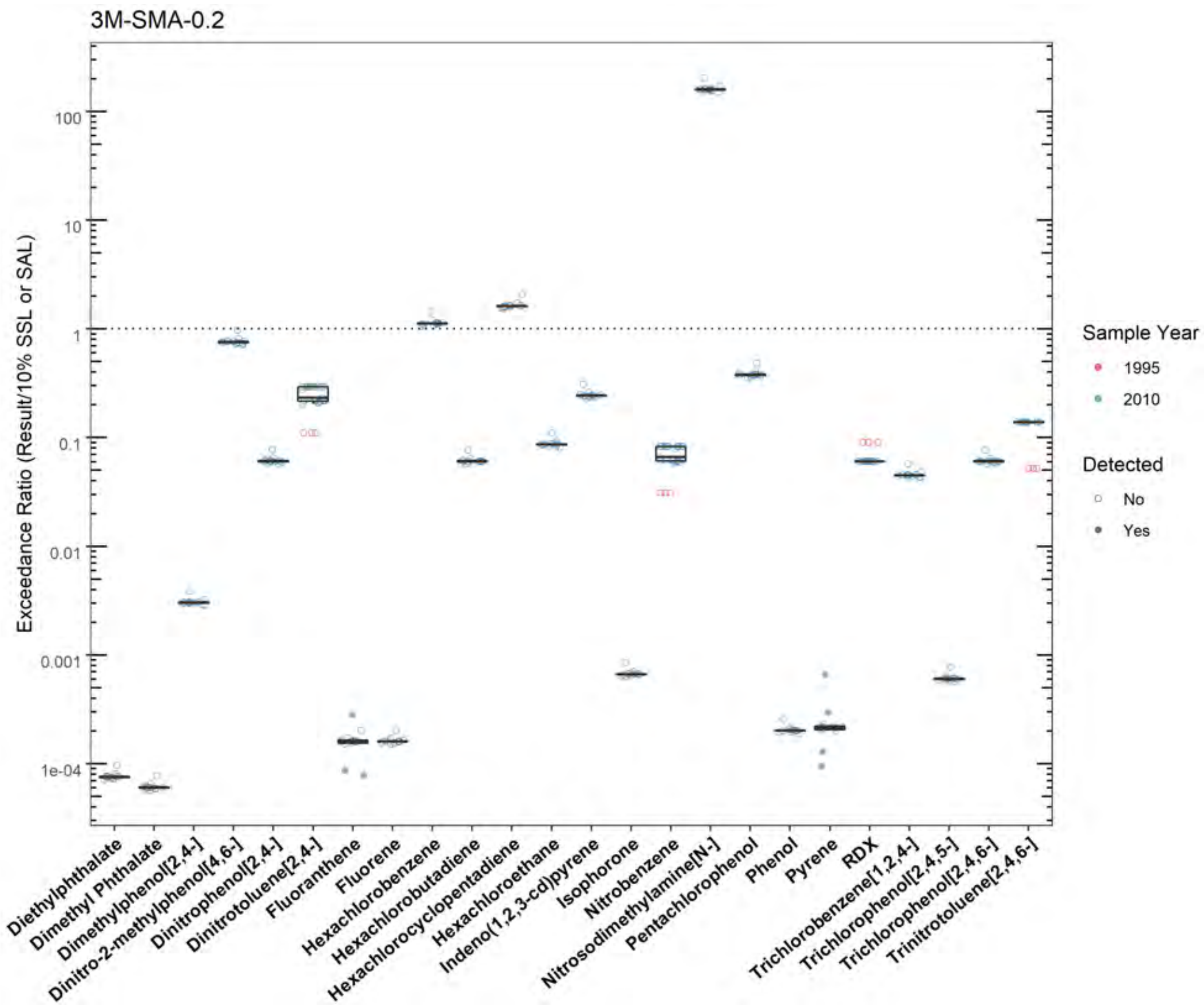


Figure 134.3-3 Organics Analytical Results from Soil Samples Associated with 3M-SMA-0.2 (Plot 2)

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.

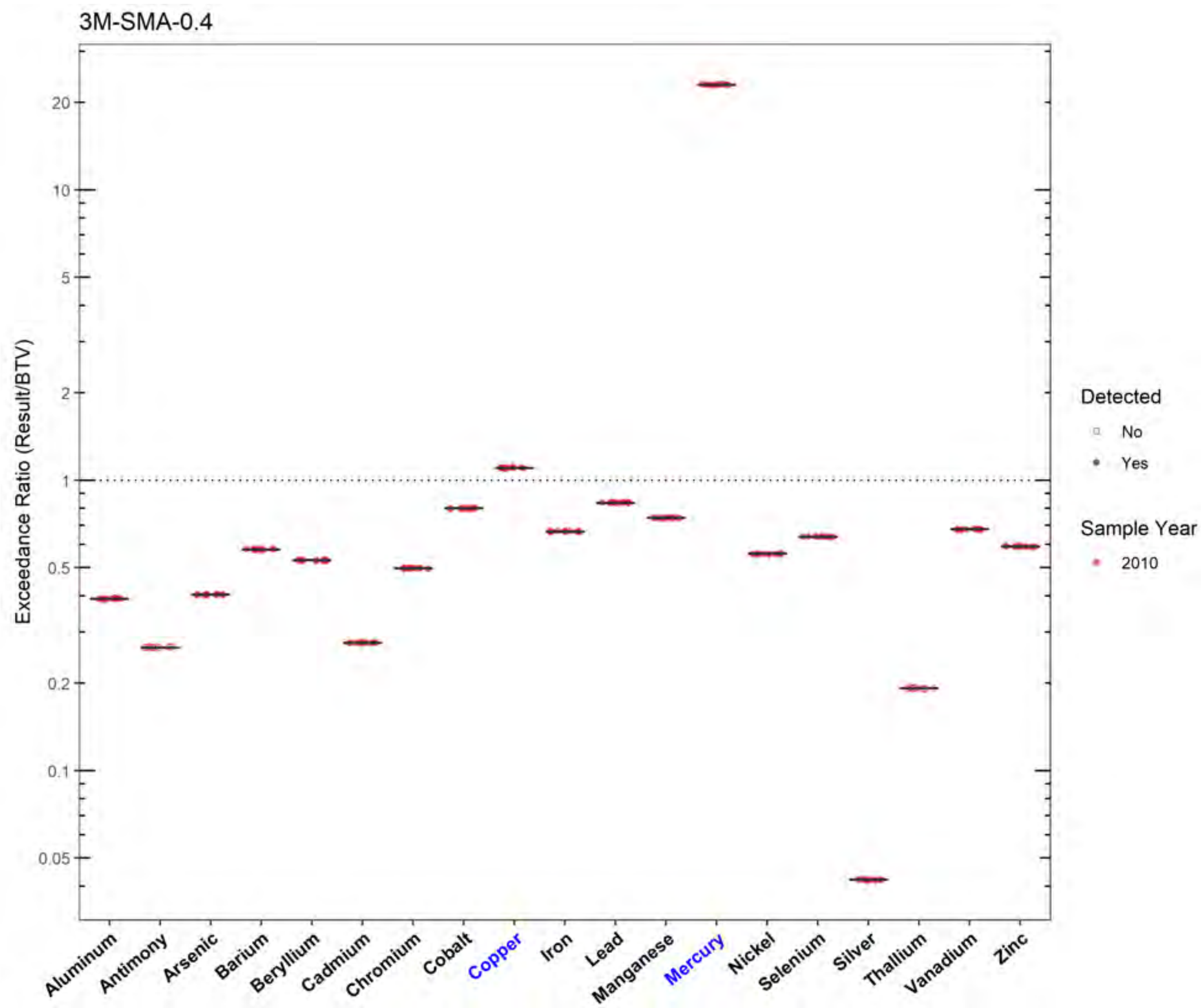


Figure 135.3-1 Inorganics Analytical Results from Soil Samples Associated with 3M-SMA-0.4

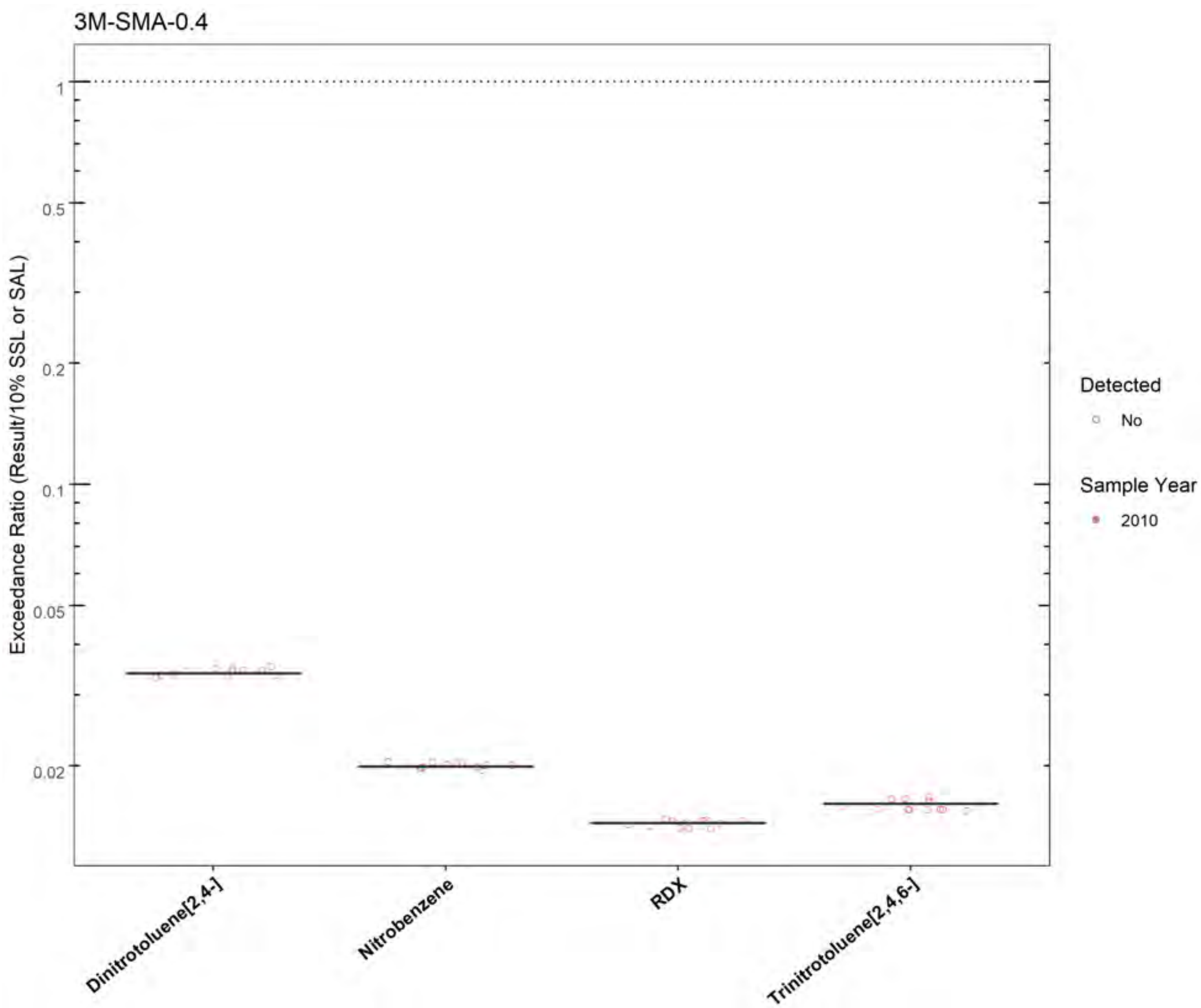


Figure 135.3-2 Organics Analytical Results from Soil Samples Associated with 3M-SMA-0.4

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.

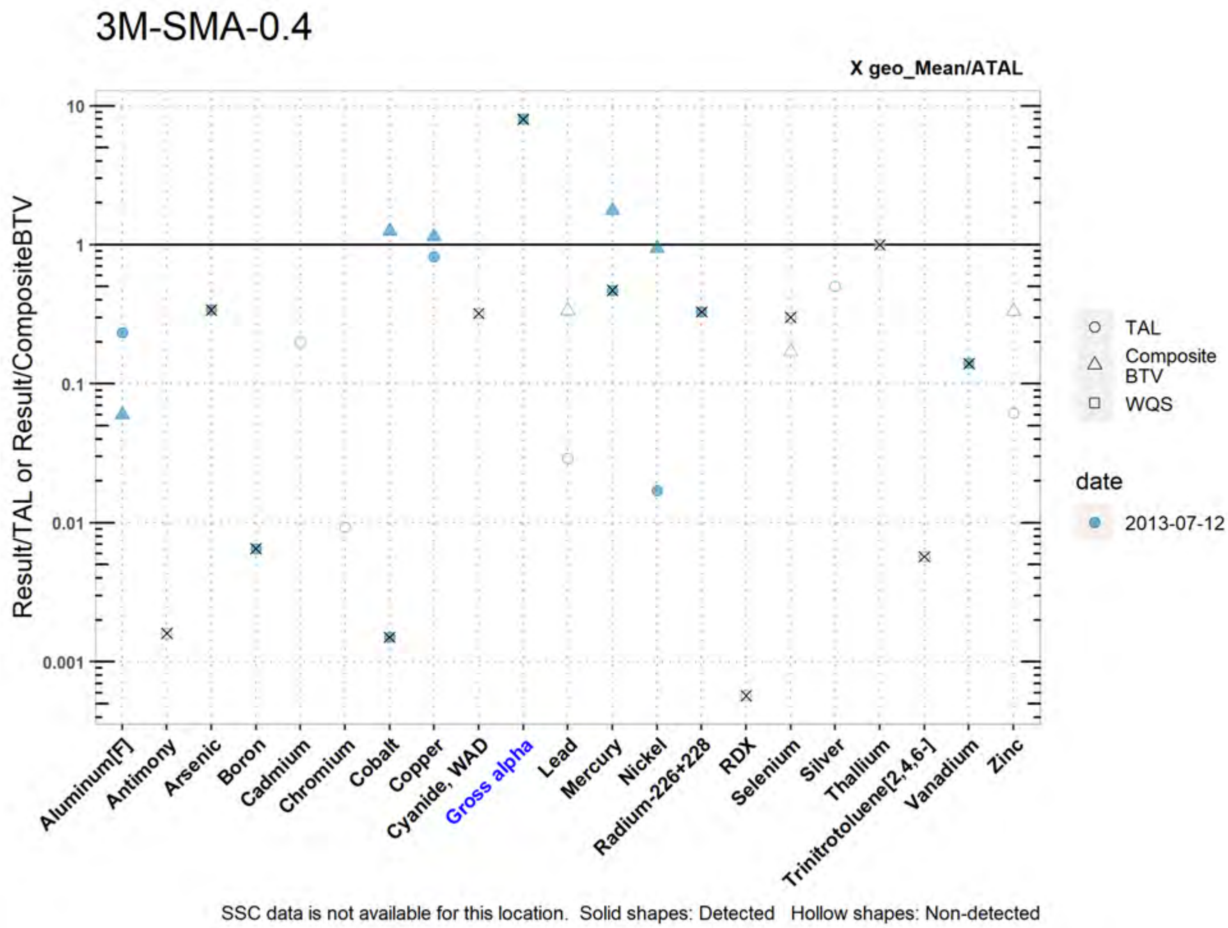


Figure 135.4-1 Analytical Results from Stormwater Sample, 3M-SMA-0.4 (Plot)

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.

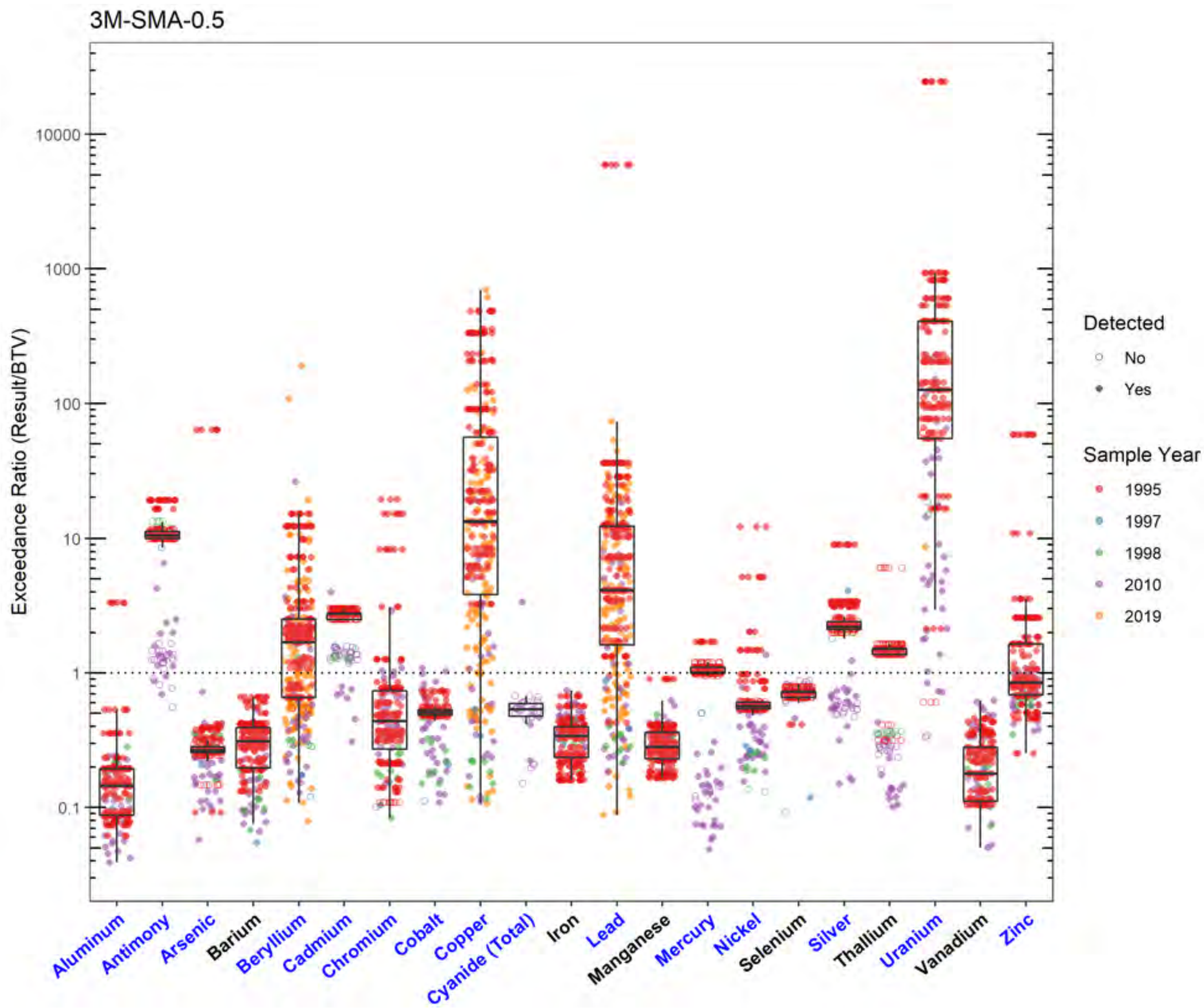


Figure 136.3-1 Inorganics Analytical Results from Soil Samples Associated with 3M-SMA-0.5

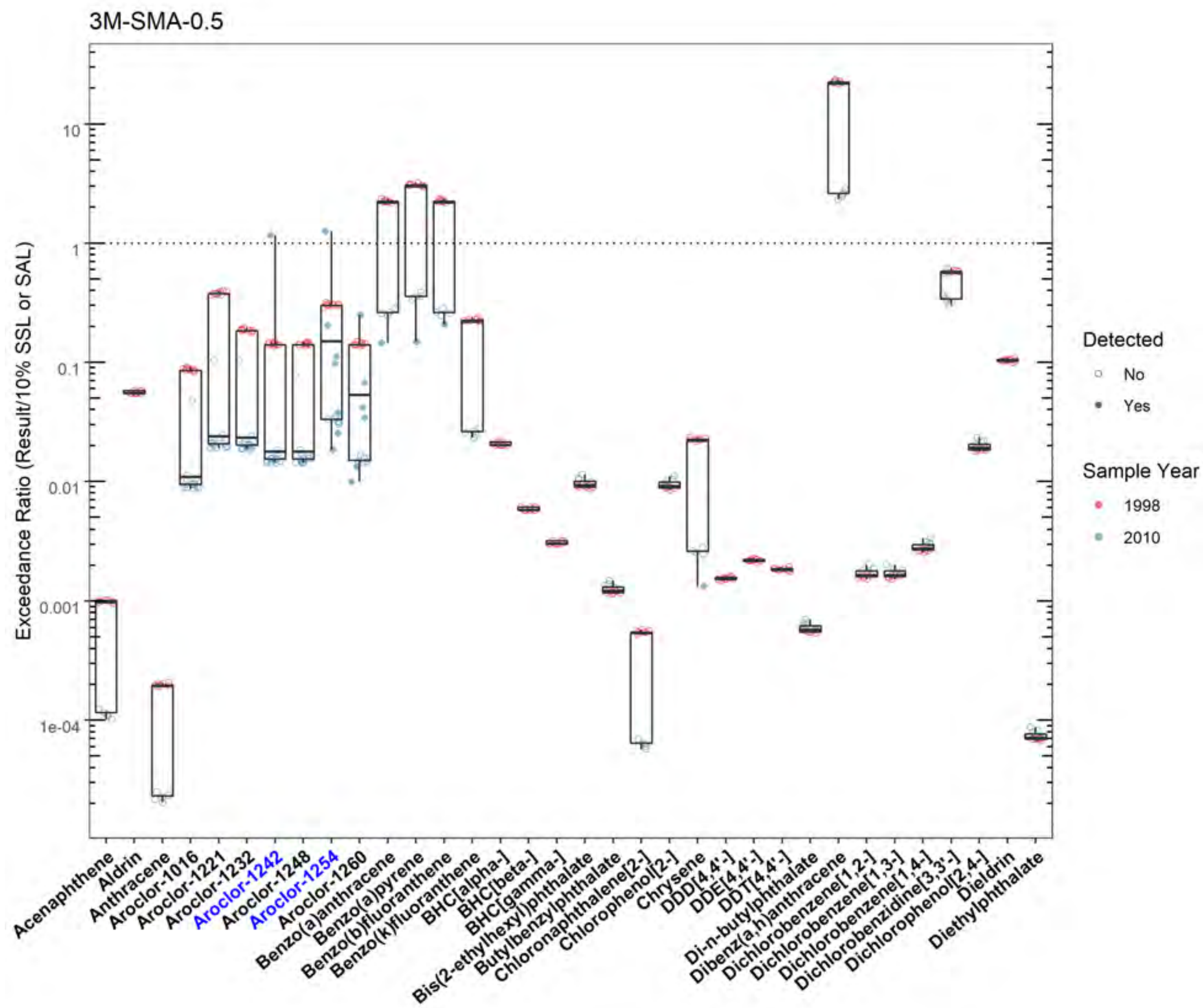


Figure 136.3-2 Organics Analytical Results from Soil Samples Associated with 3M-SMA-0.5 (Plot 1)

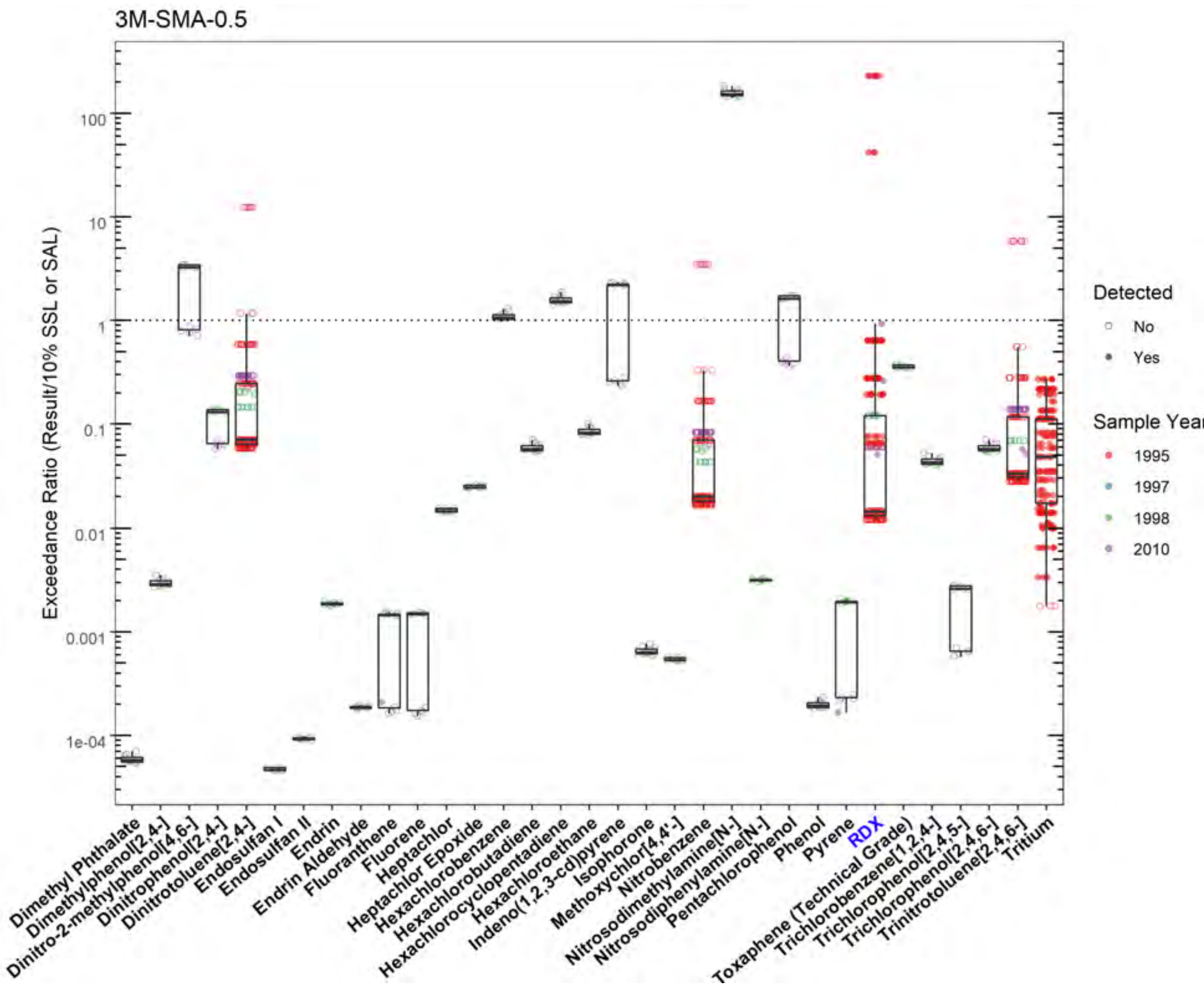


Figure 136.3-3 Organics Analytical Results from Soil Samples Associated with 3M-SMA-0.5 (Plot 2)

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.

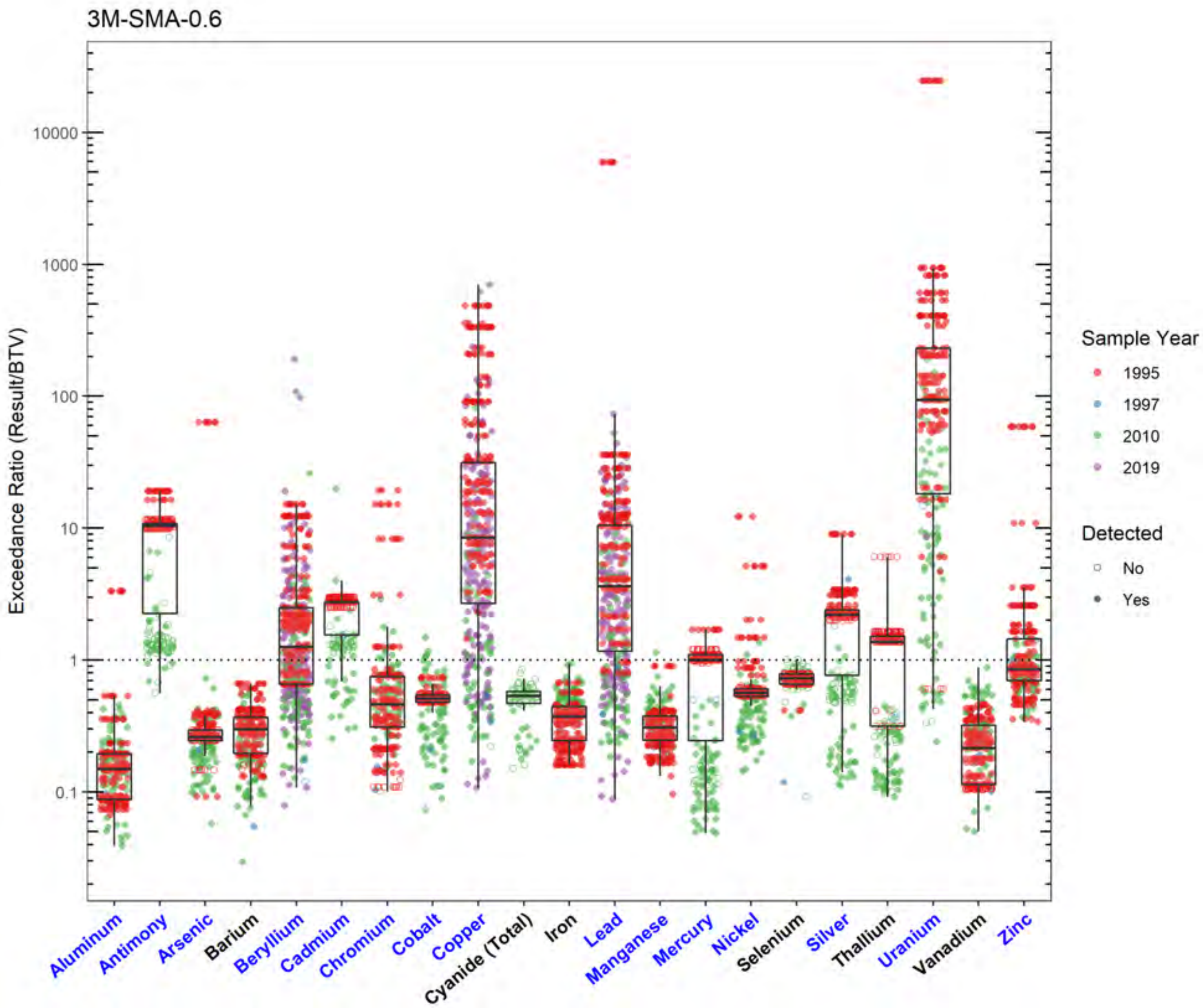


Figure 137.3-1 Inorganics Analytical Results from Soil Samples Associated with 3M-SMA-0.6

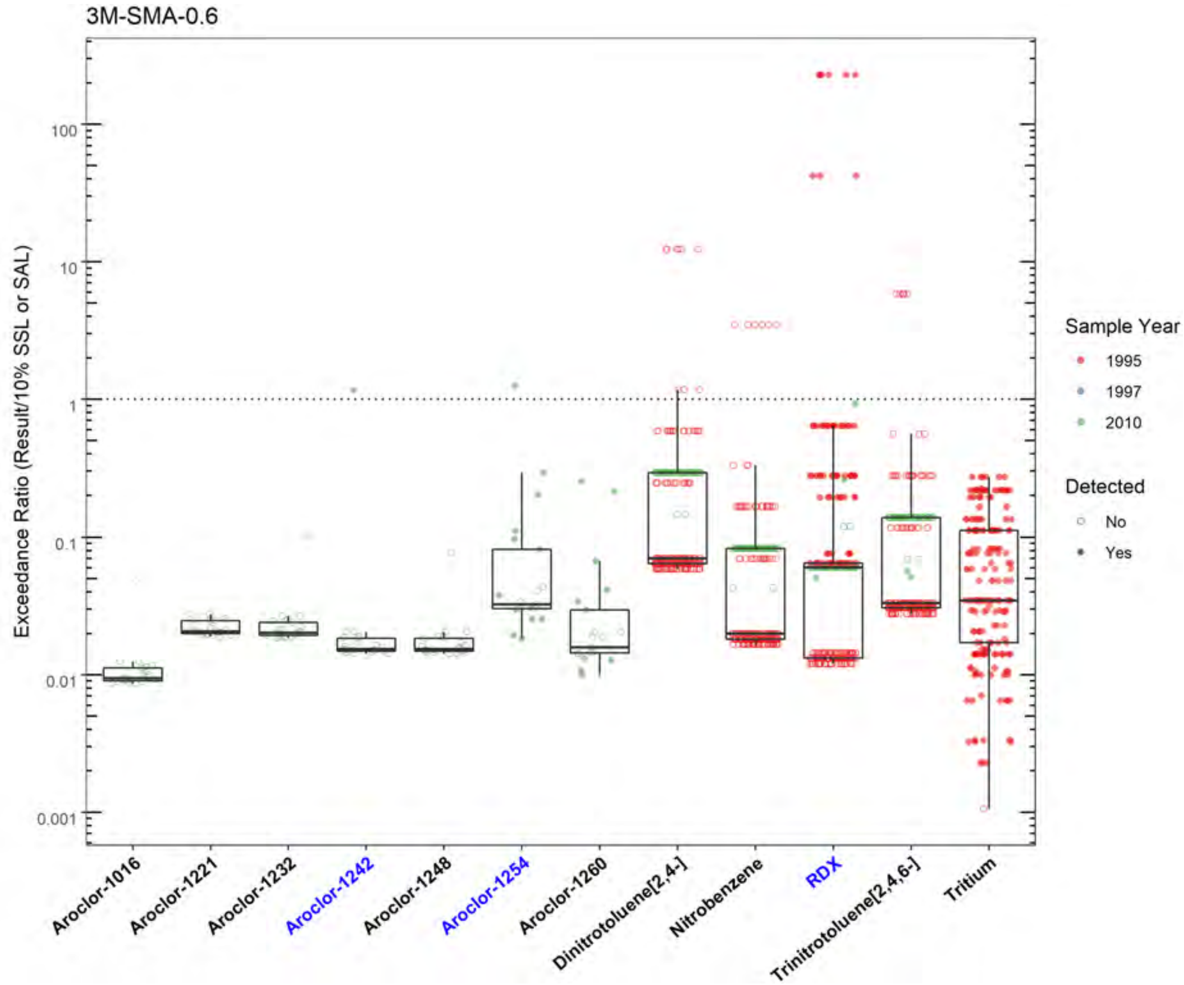


Figure 137.3-2 Organics Analytical Results from Soil Samples Associated with 3M-SMA-0.6

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.

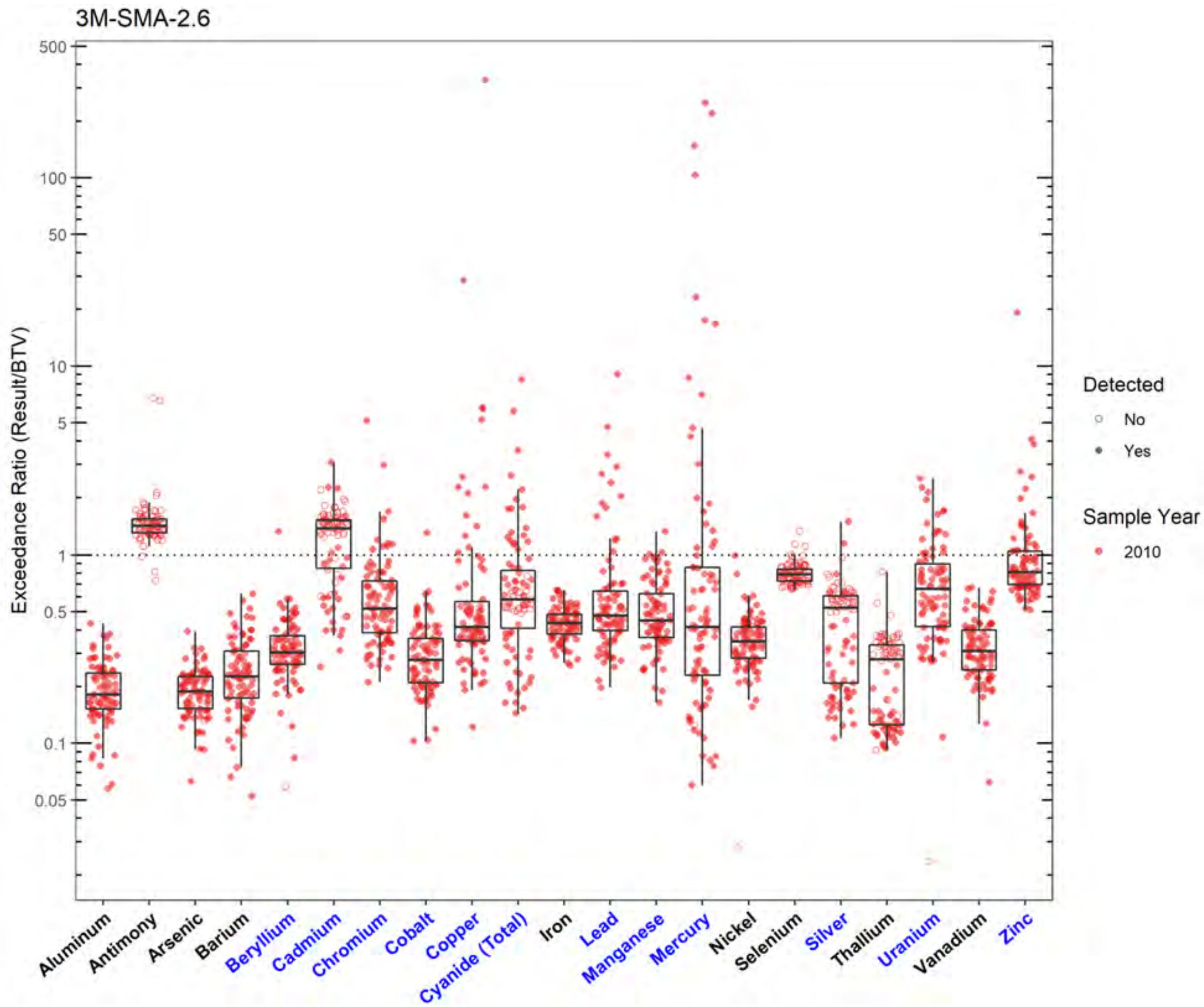


Figure 138.3-1 Inorganics Analytical Results from Soil Samples Associated with 3M-SMA-2.6

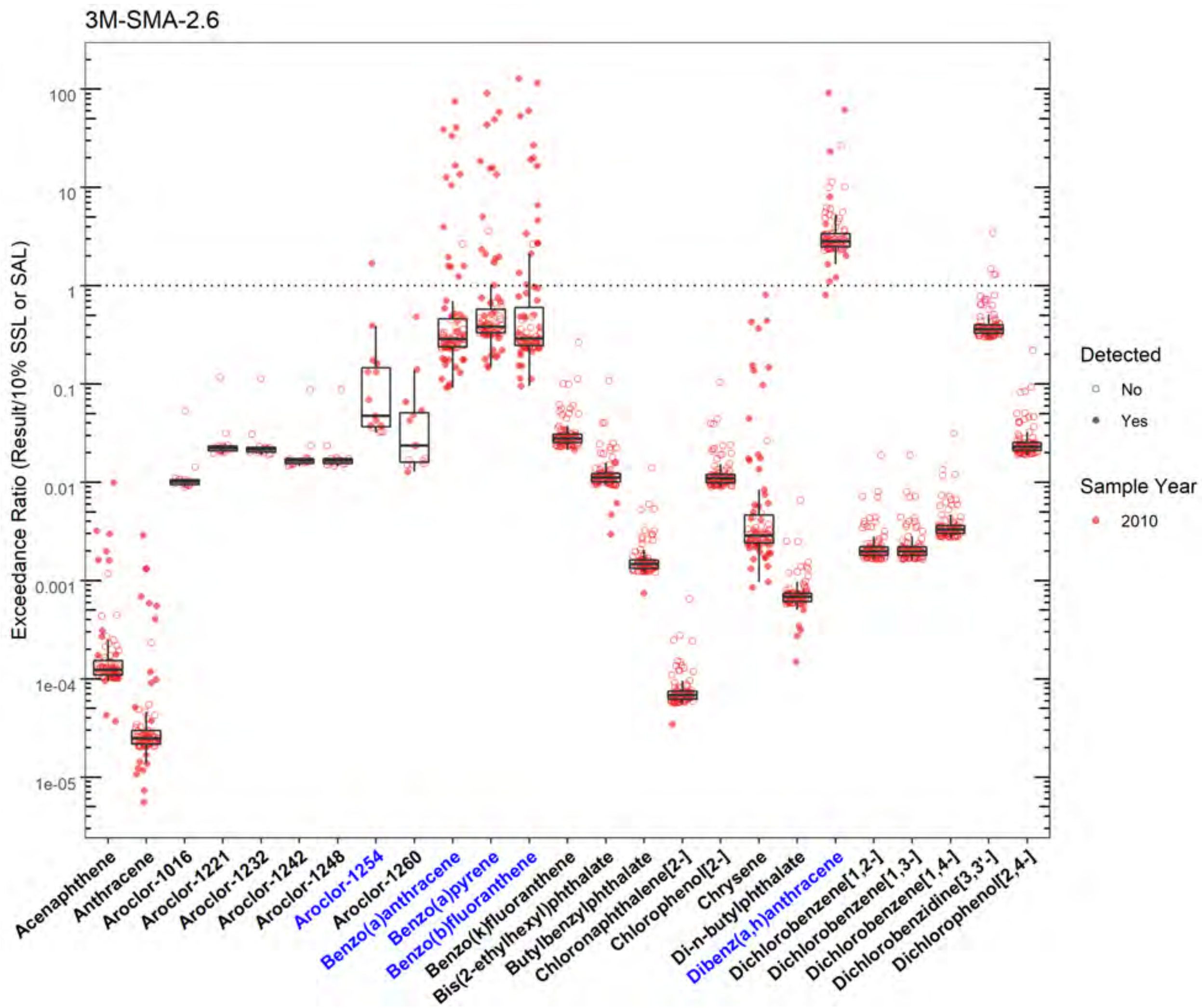


Figure 138.3-2 Organics Analytical Results from Soil Samples Associated with 3M-SMA-2.6 (Plot 1)

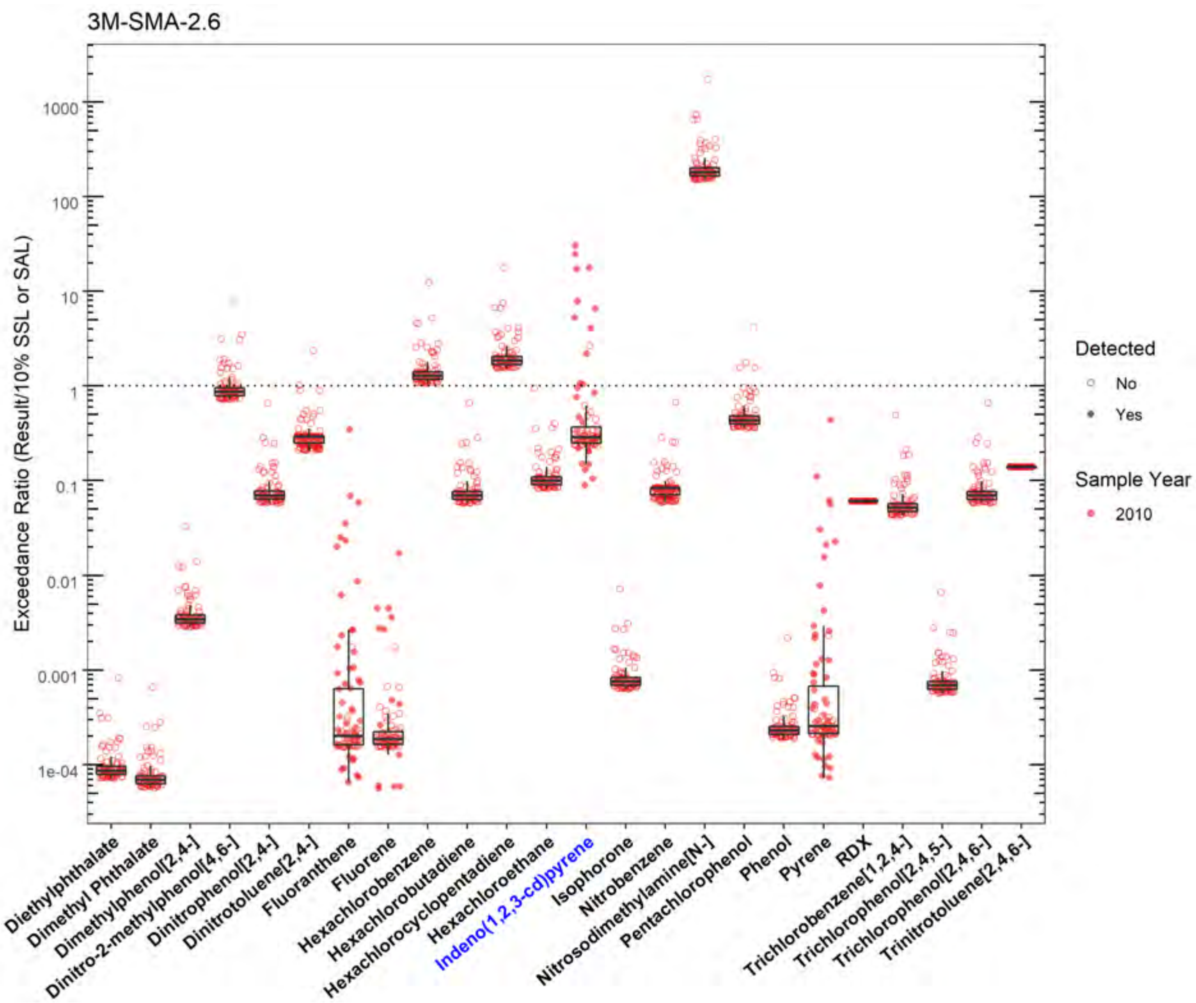


Figure 138.3-3 Organics Analytical Results from Soil Samples Associated with 3M-SMA-2.6 (Plot 2)

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/Corrective Action

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).

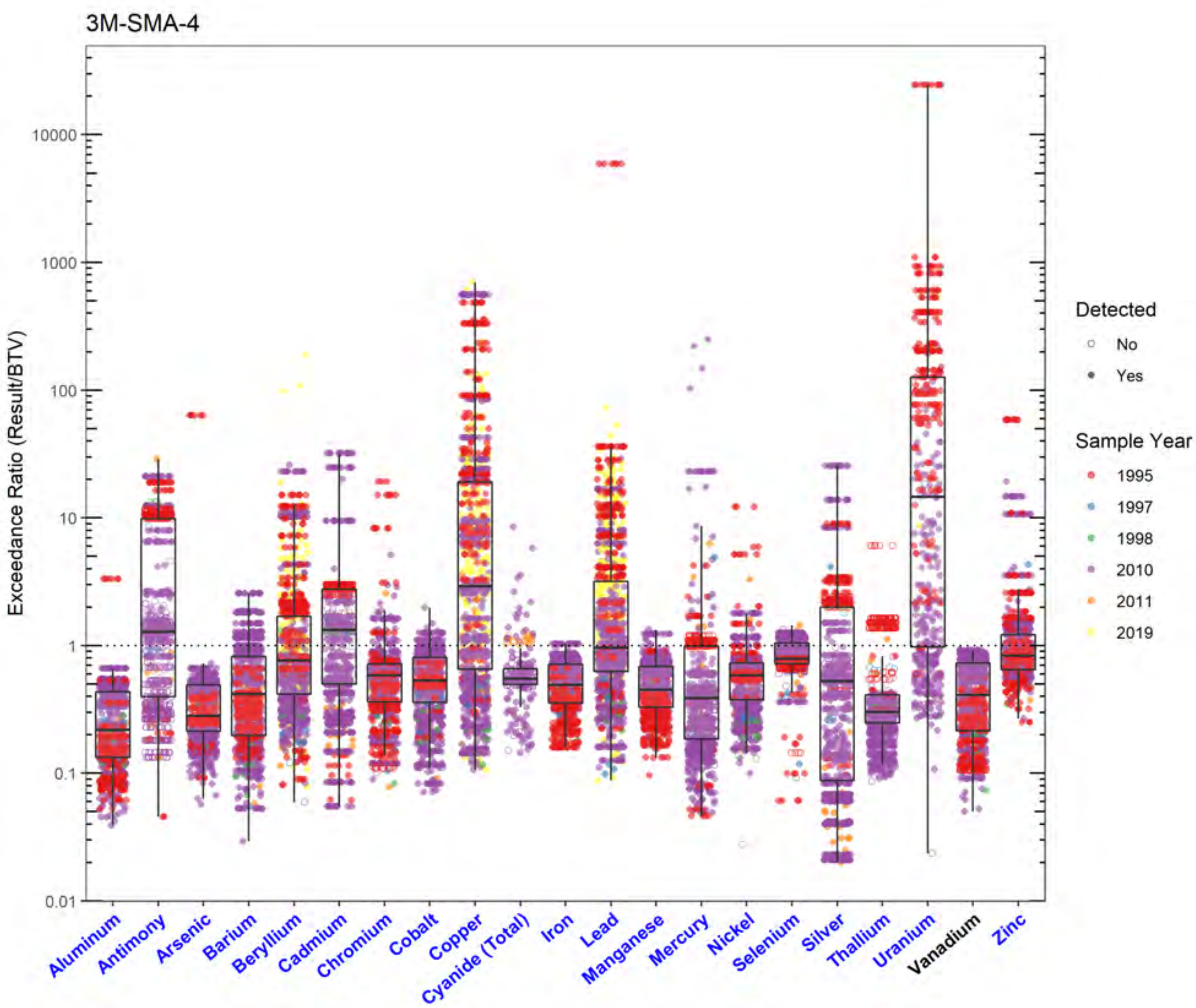


Figure 139.3-1 Inorganics Analytical Results from Soil Samples Associated with 3M-SMA-4

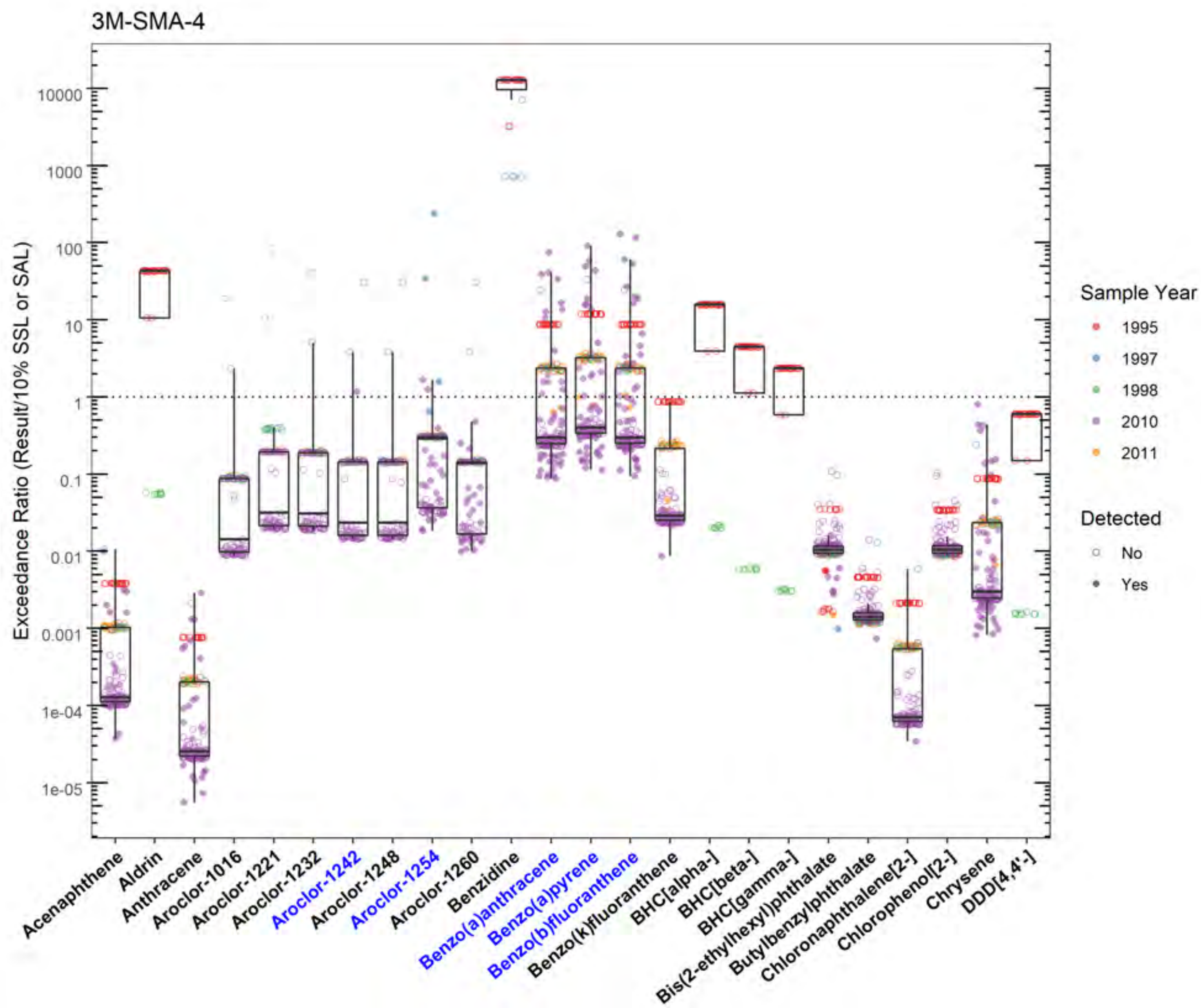


Figure 139.3-2 Organics Analytical Results from Soil Samples Associated with 3M-SMA-4 (Plot 1)

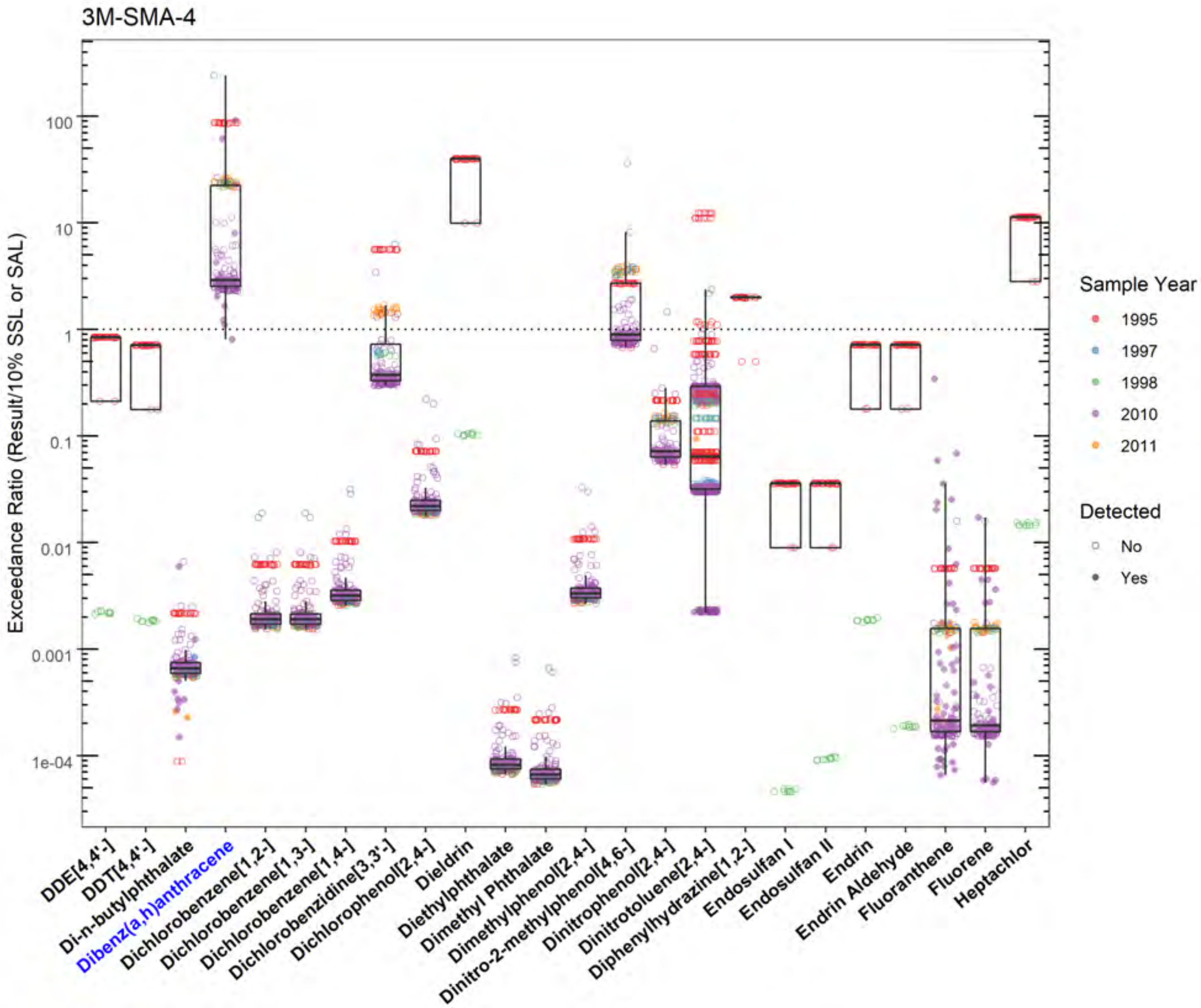


Figure 139.3-3 Organics Analytical Results from Soil Samples Associated with 3M-SMA-4 (Plot 2)

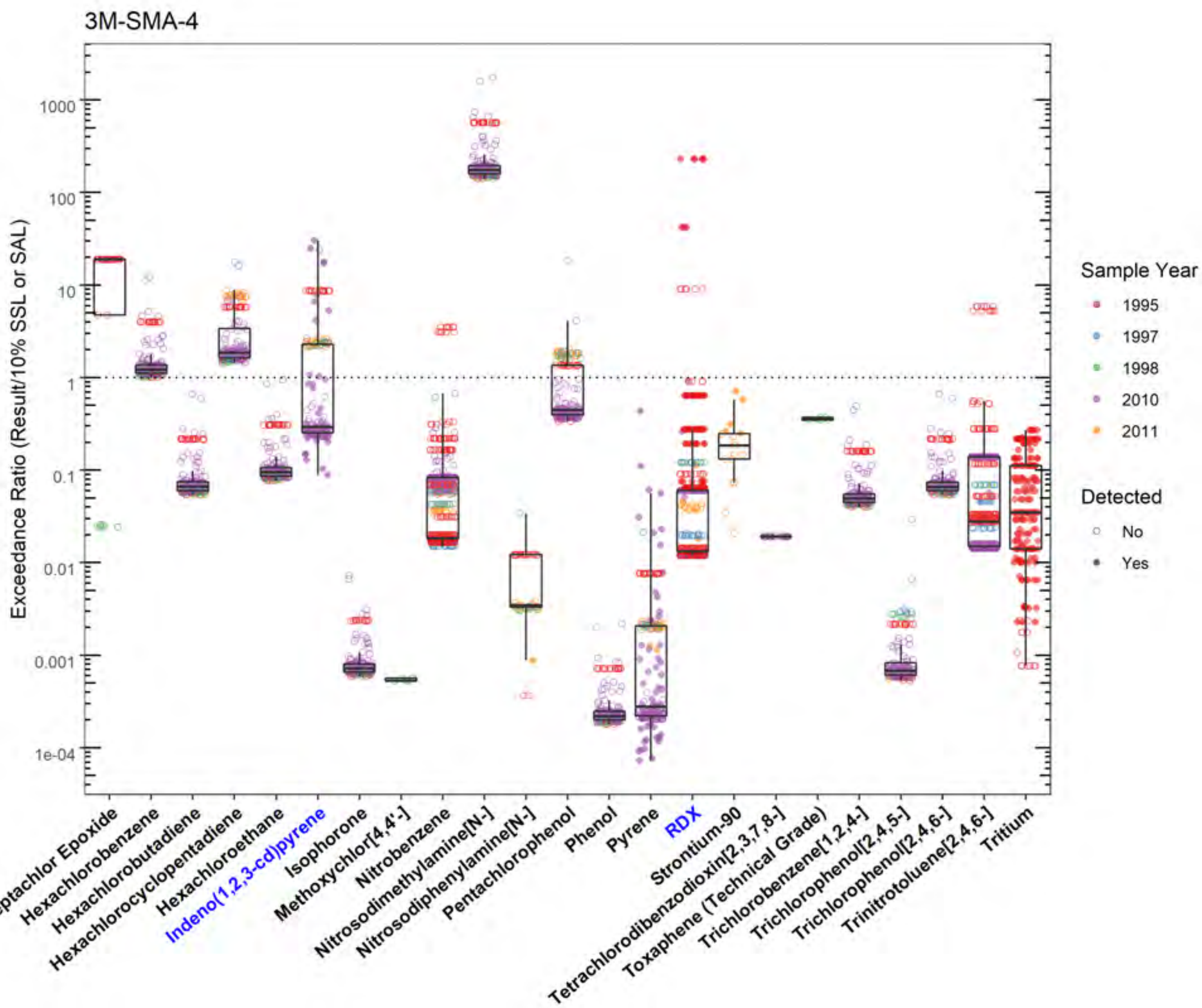


Figure 139.3-4 Organics Analytical Results from Soil Samples Associated with 3M-SMA-4 (Plot 3)

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.

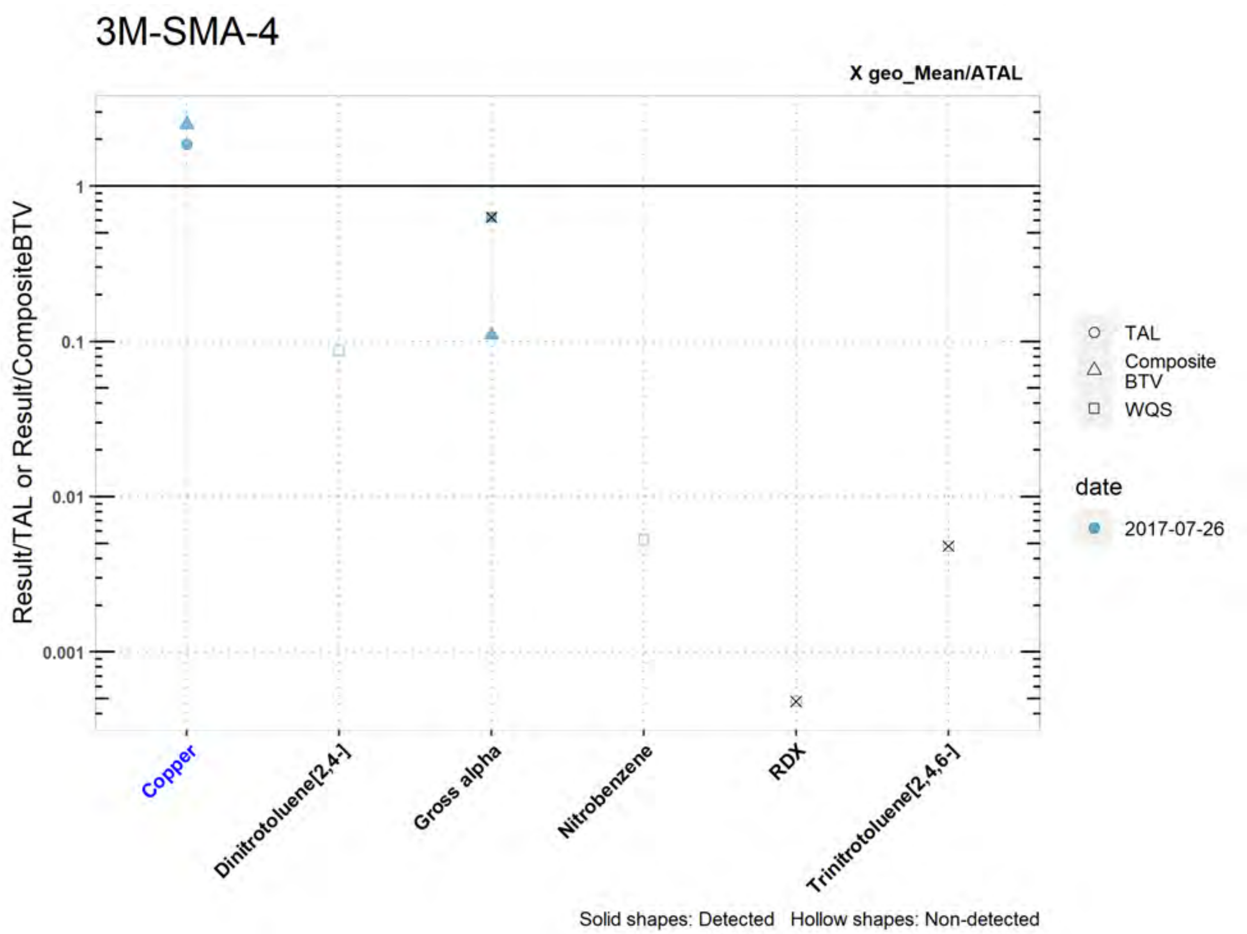


Figure 139.4-1 Analytical Results from Stormwater Sample, 3M-SMA-4 (Plot)

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.

139.5.3 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.2.b.i) for copper. The SMA is also 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, and uranium	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.

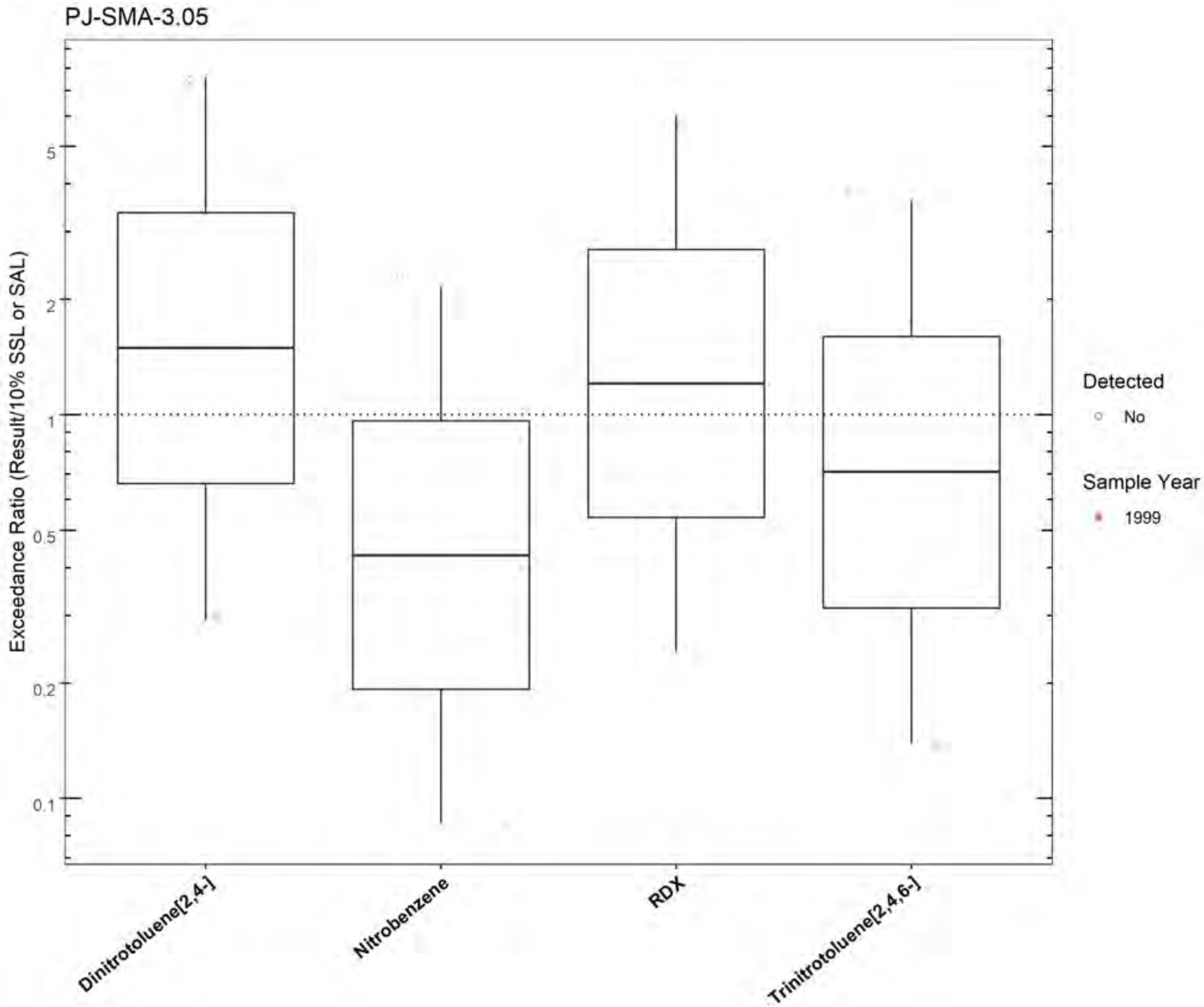


Figure 142.3-1 Analytical Results from Soil Samples Associated with PJ-SMA-3.05

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.

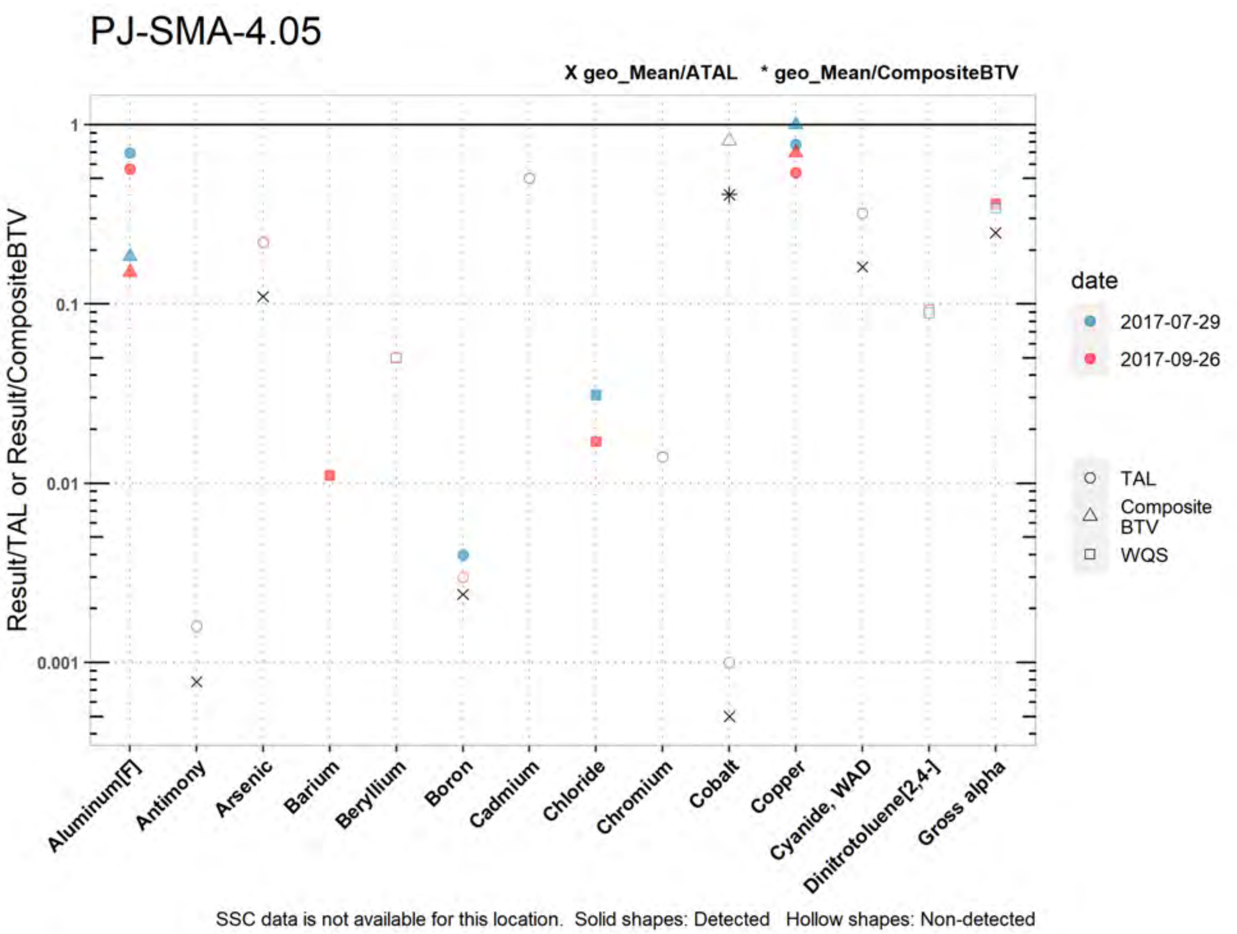


Figure 143.4-1 Analytical Results from Stormwater Samples, PJ-SMA-4.05 (Plot 1)

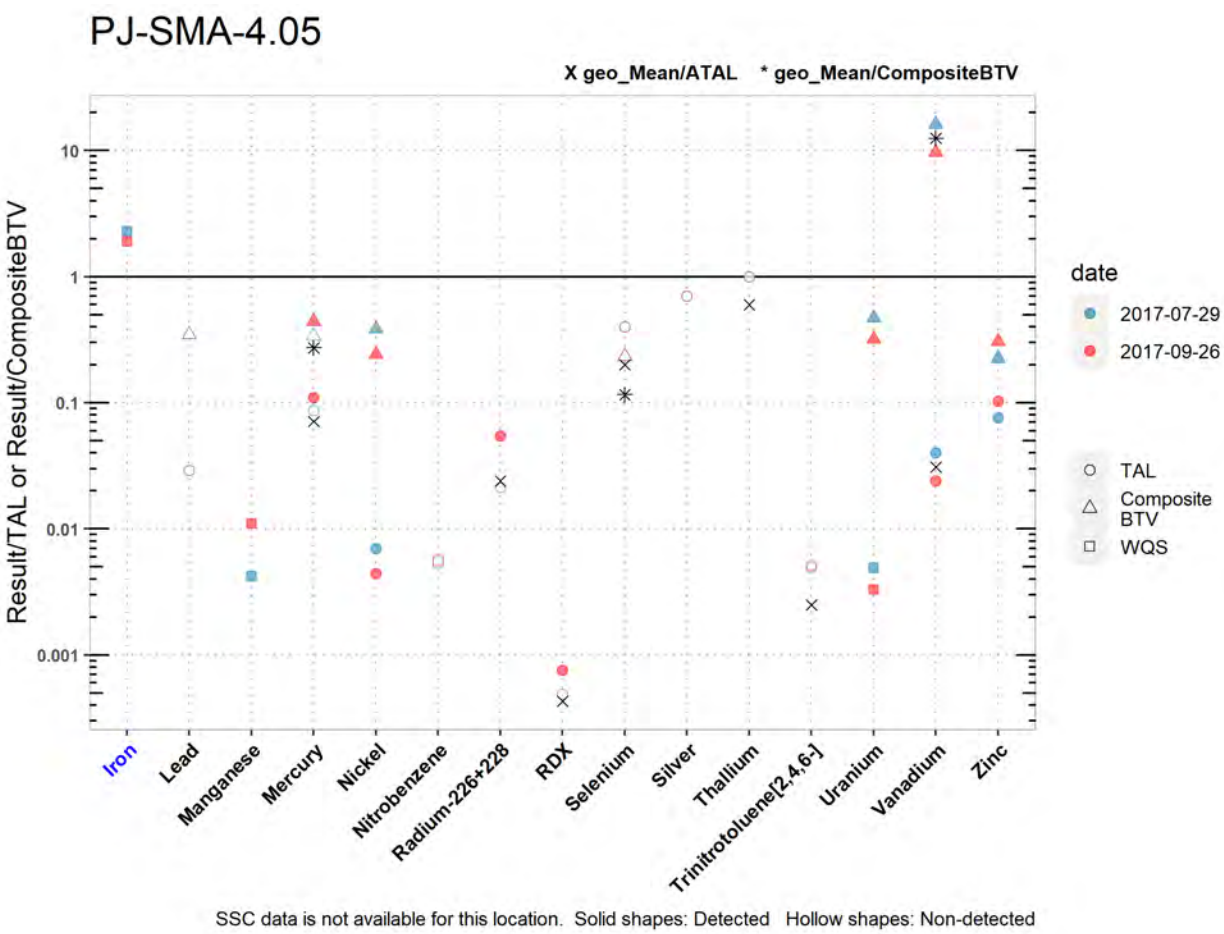


Figure 143.4-2 Analytical Results from Stormwater Samples, PJ-SMA-4.05 (Plot 2)

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.

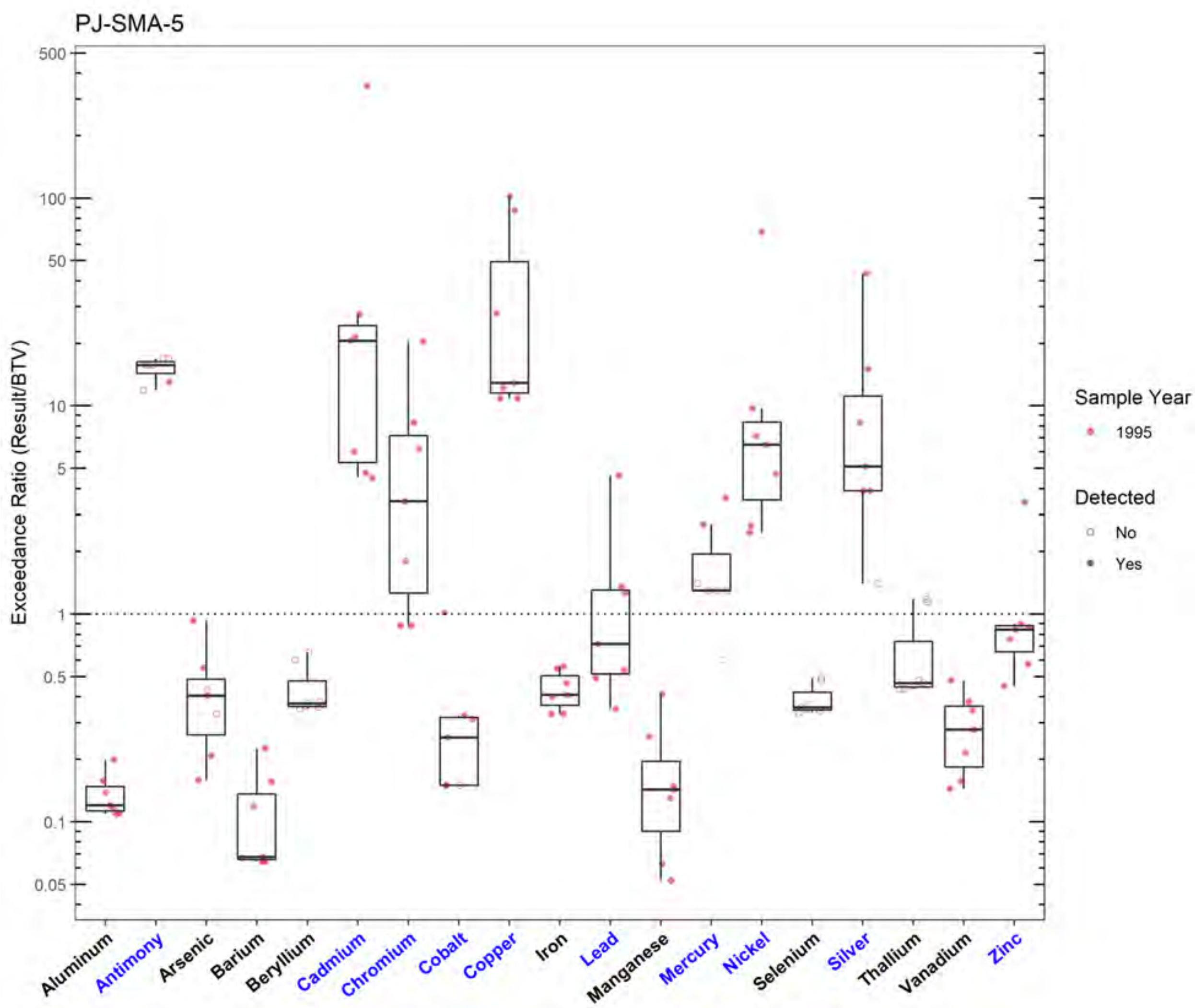


Figure 144.3-1 Inorganics Analytical Results from Soil Samples Associated with PJ-SMA-5

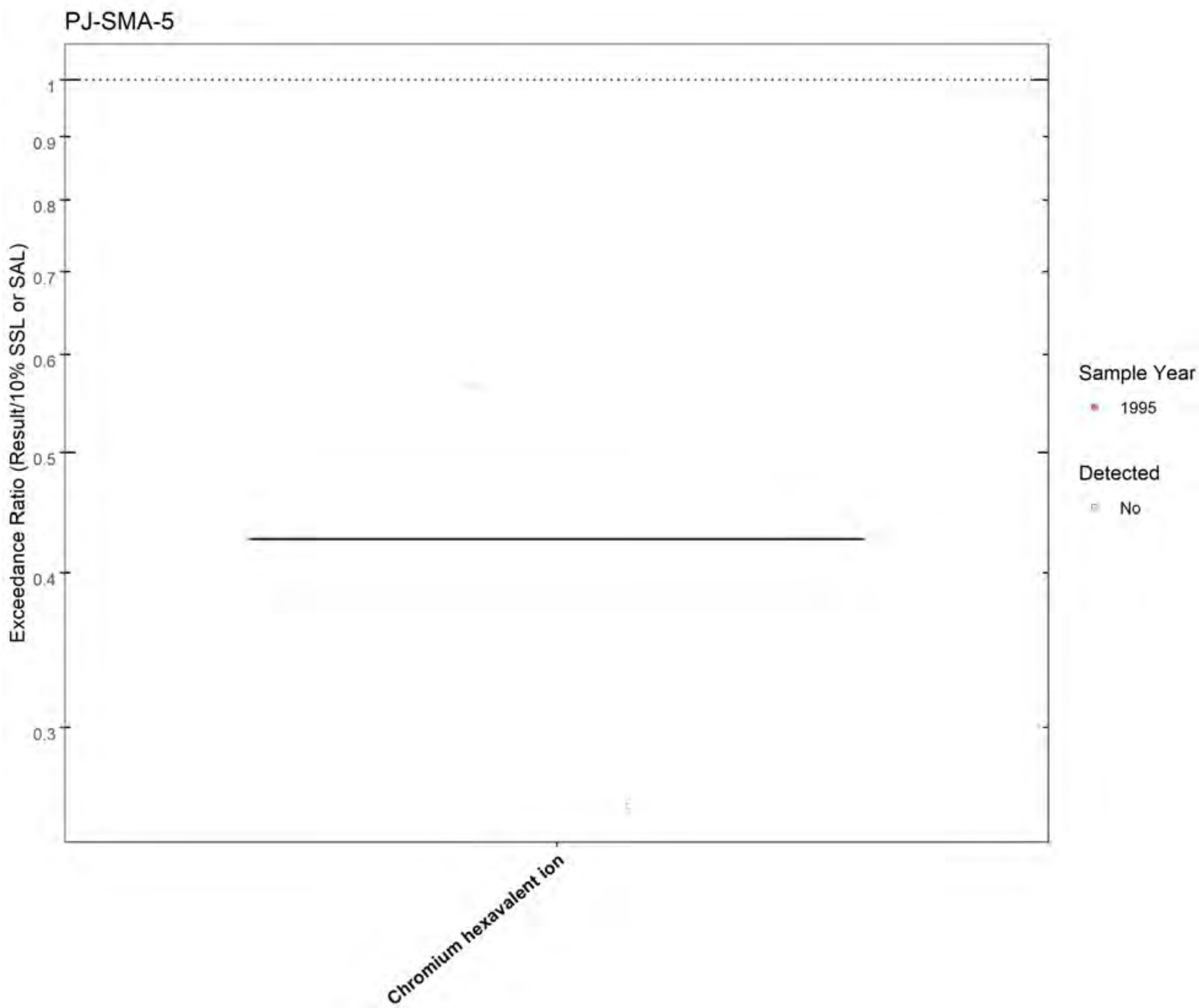


Figure 144.3-2 Inorganics (Hexavalent Chromium) Analytical Results from Soil Samples Associated with PJ-SMA-5

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.

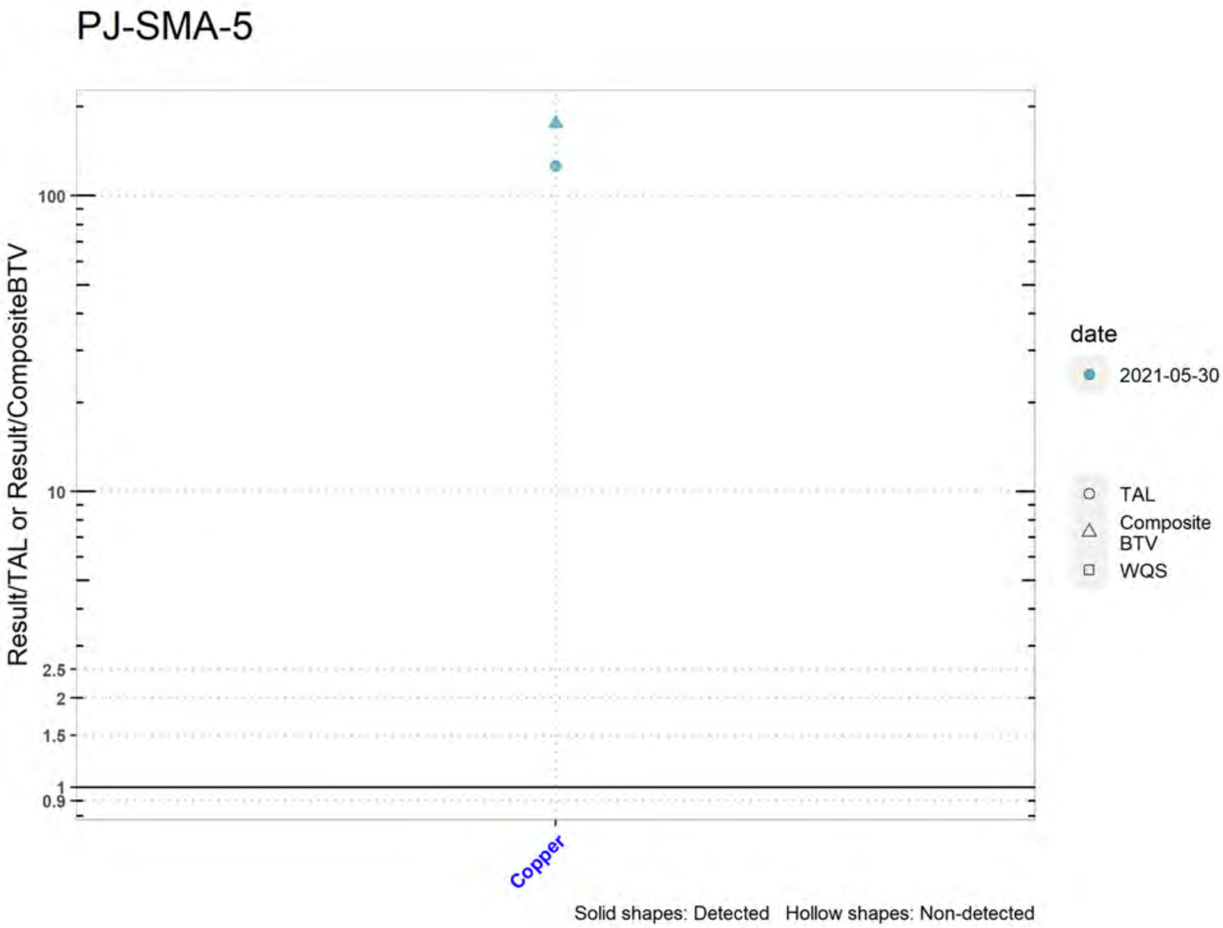


Figure 144.4-1 Analytical Results from Stormwater Sample, PJ-SMA-5 (Plot)

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.

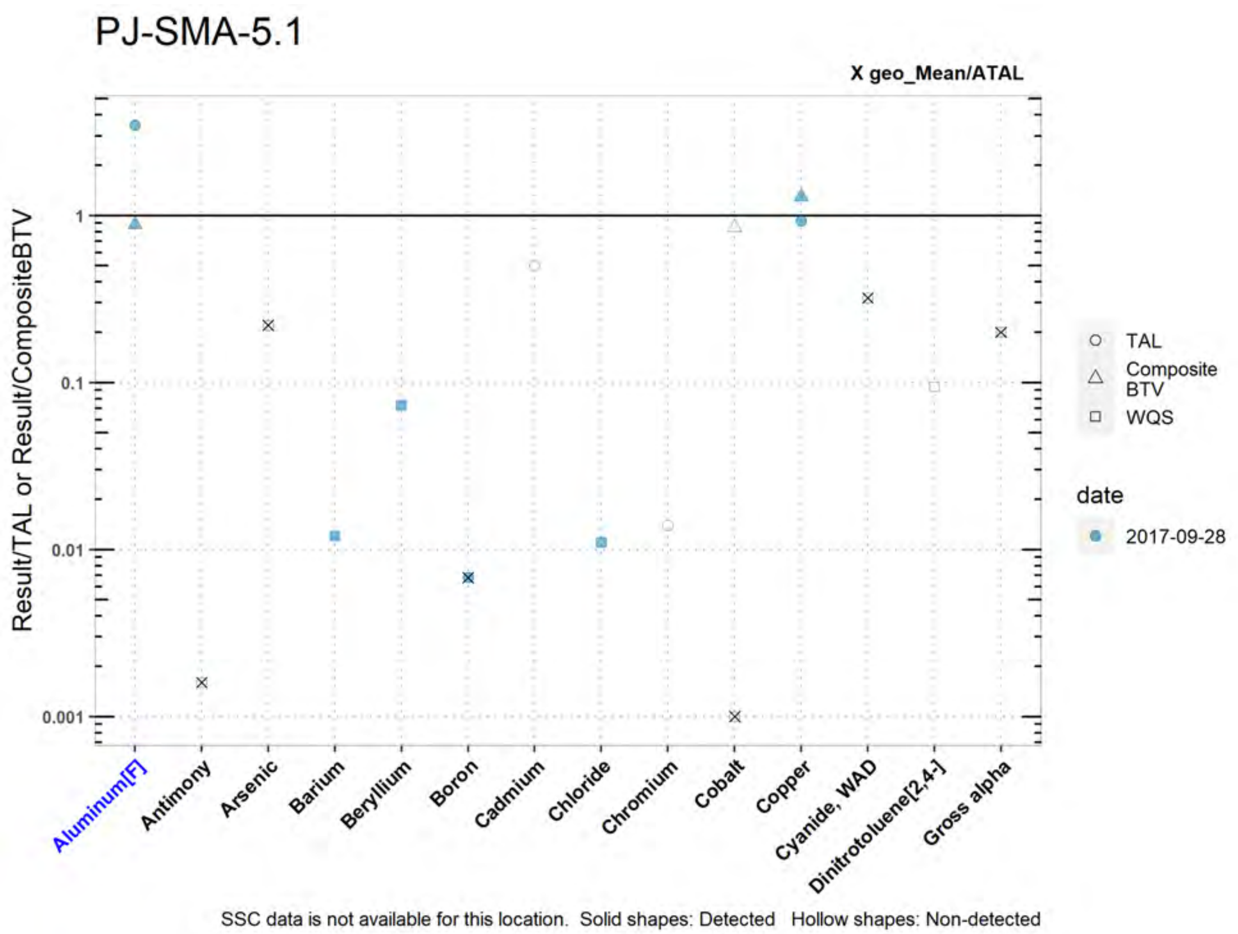


Figure 145.4-1 Analytical Results from Stormwater Sample, PJ-SMA-5.1 (Plot 1)

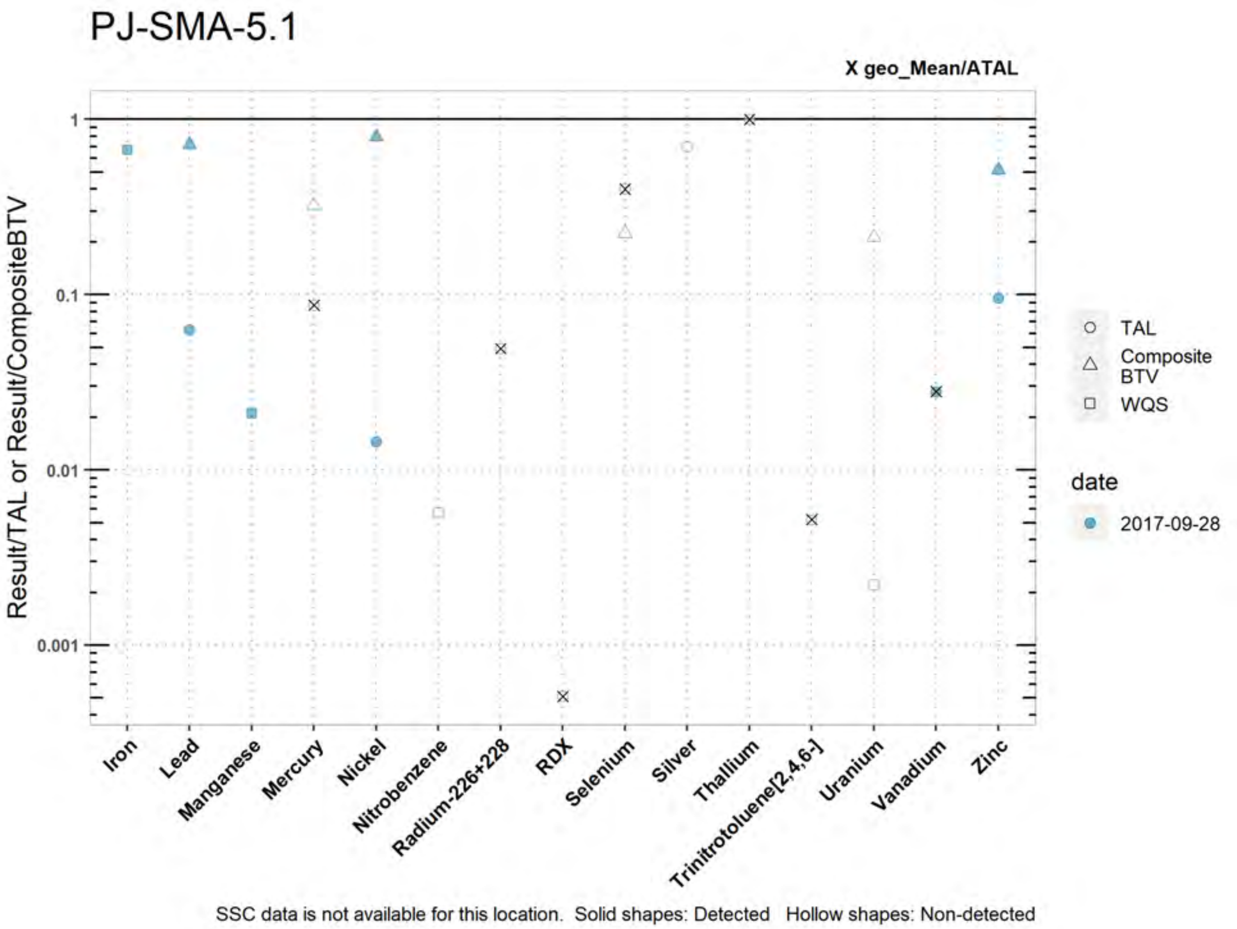


Figure 145.4-2 Analytical Results from Stormwater Sample, PJ-SMA-5.1 (Plot 2)

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.

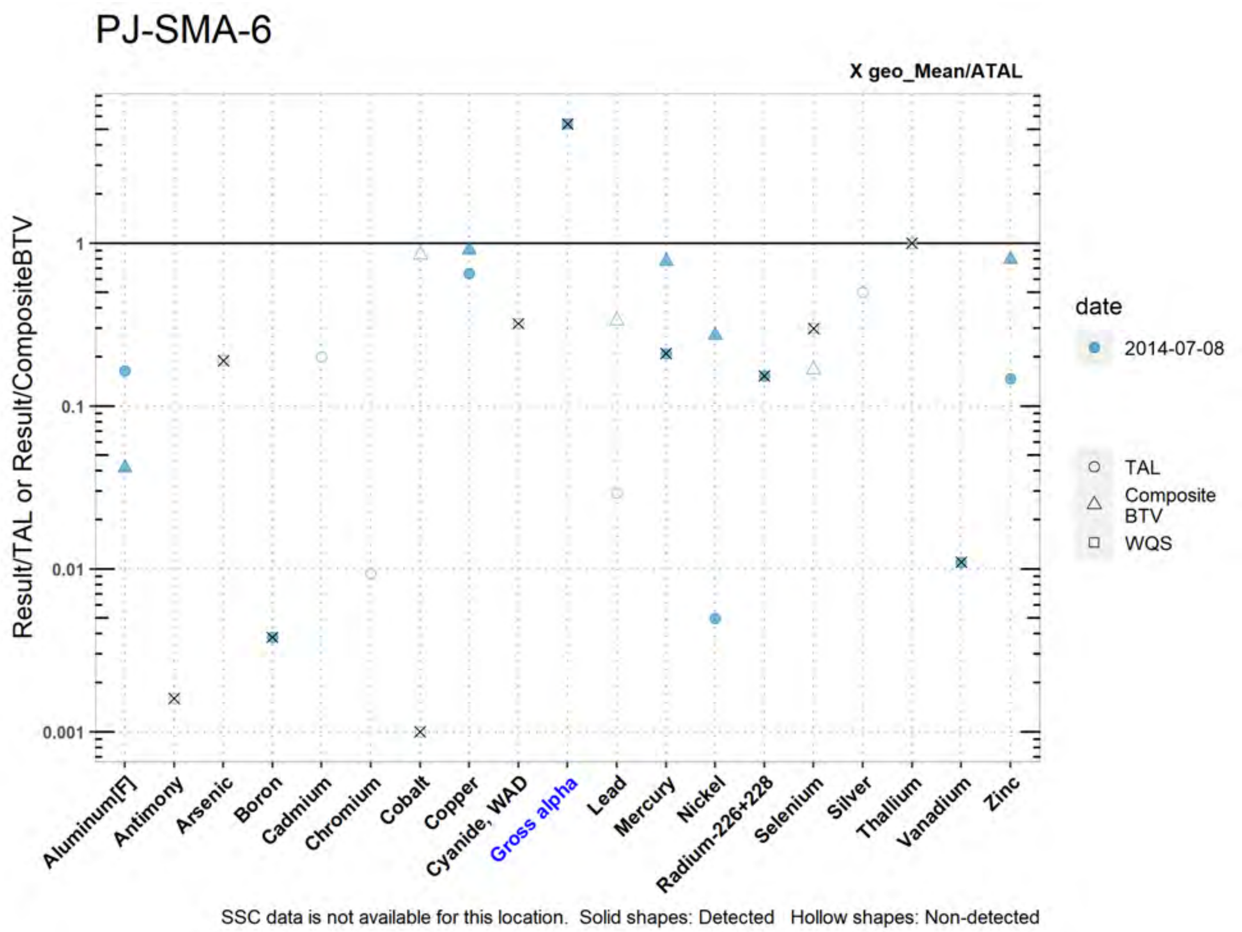


Figure 146.4-1 Analytical Results from Stormwater Sample, PJ-SMA-6 (Plot)

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 SAP.

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.

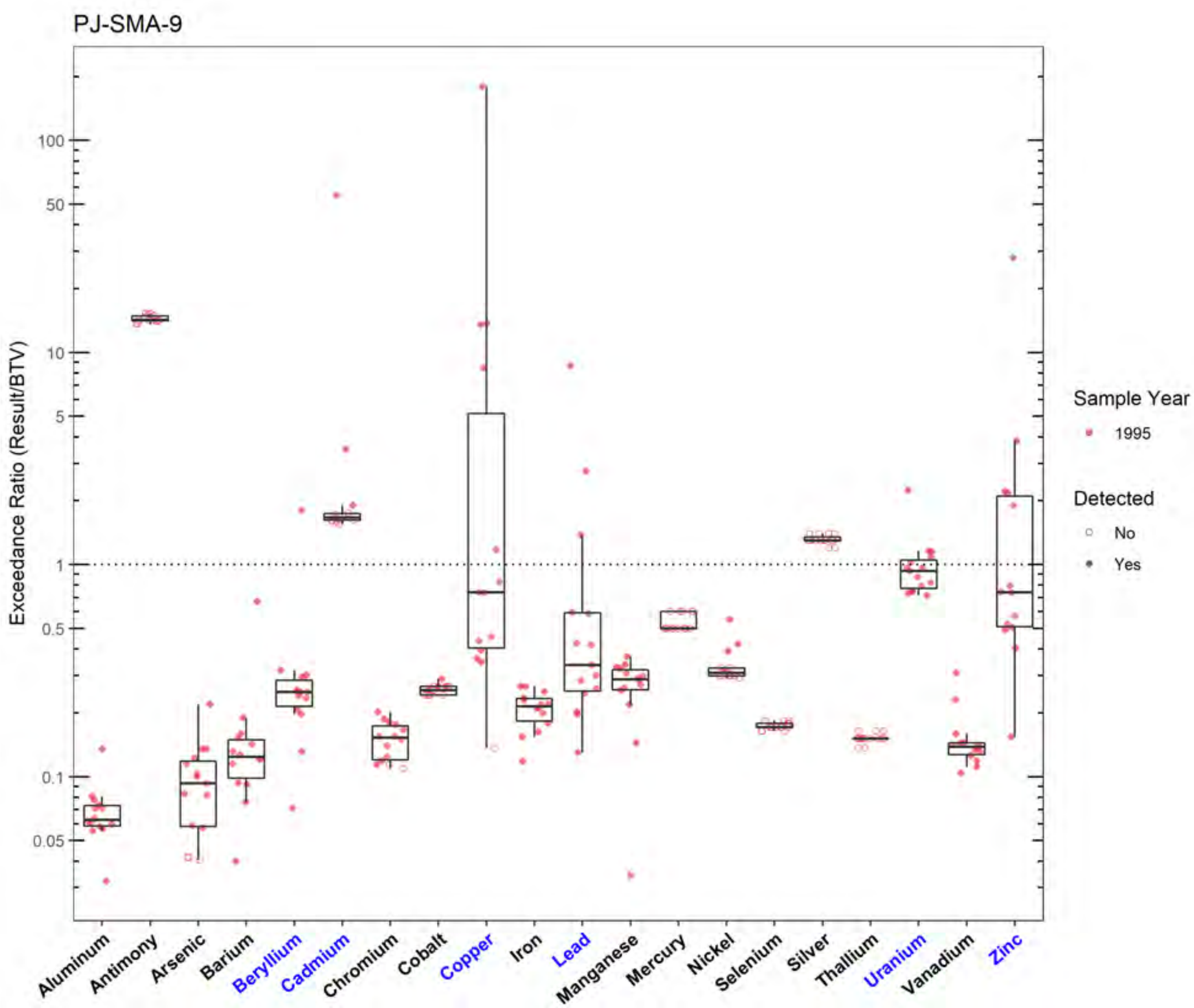


Figure 149.3-1 Inorganics Analytical Results from Soil Samples Associated with PJ-SMA-9

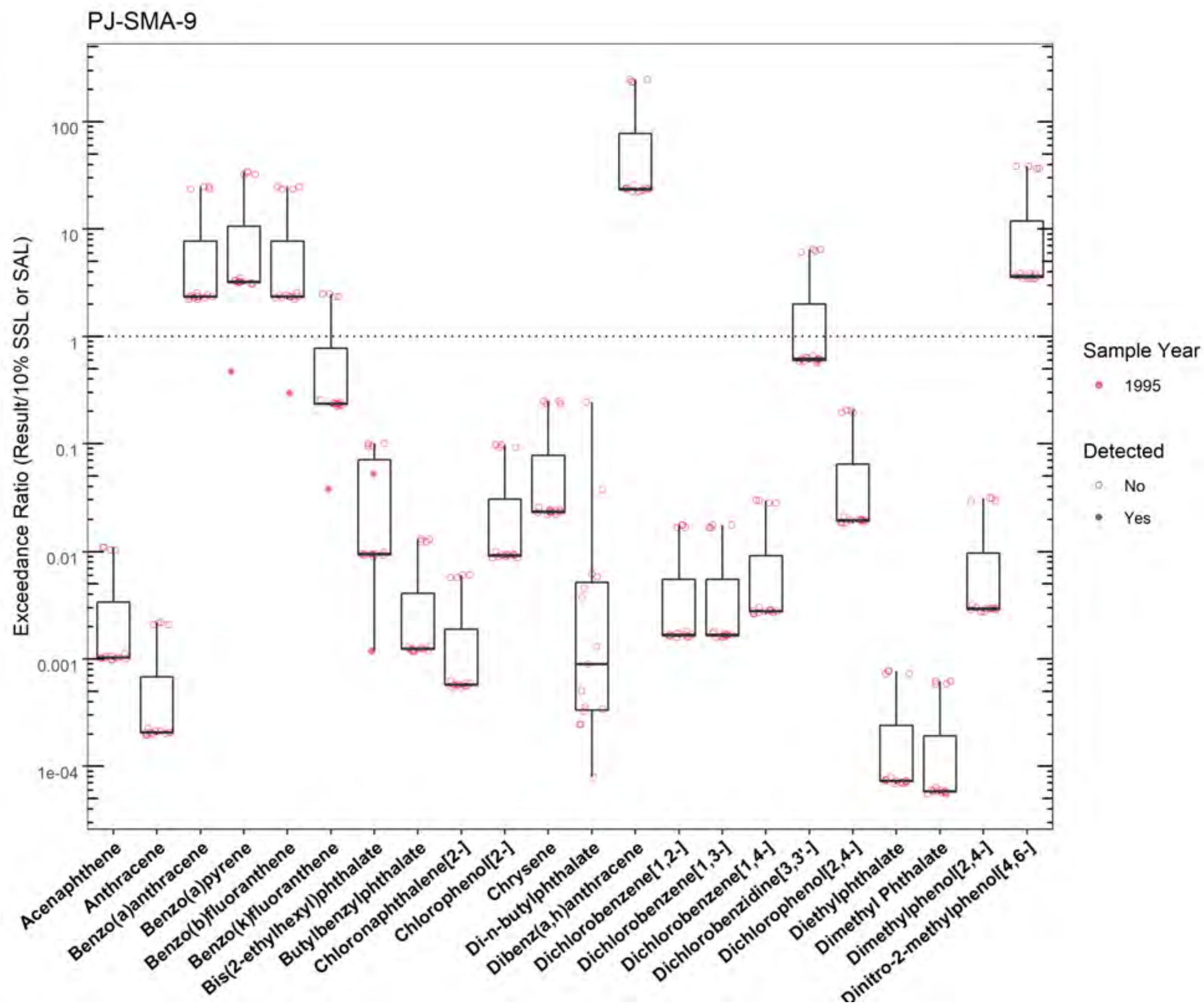


Figure 149.3-2 Organics Analytical Results from Soil Samples Associated with PJ-SMA-9 (Plot 1)

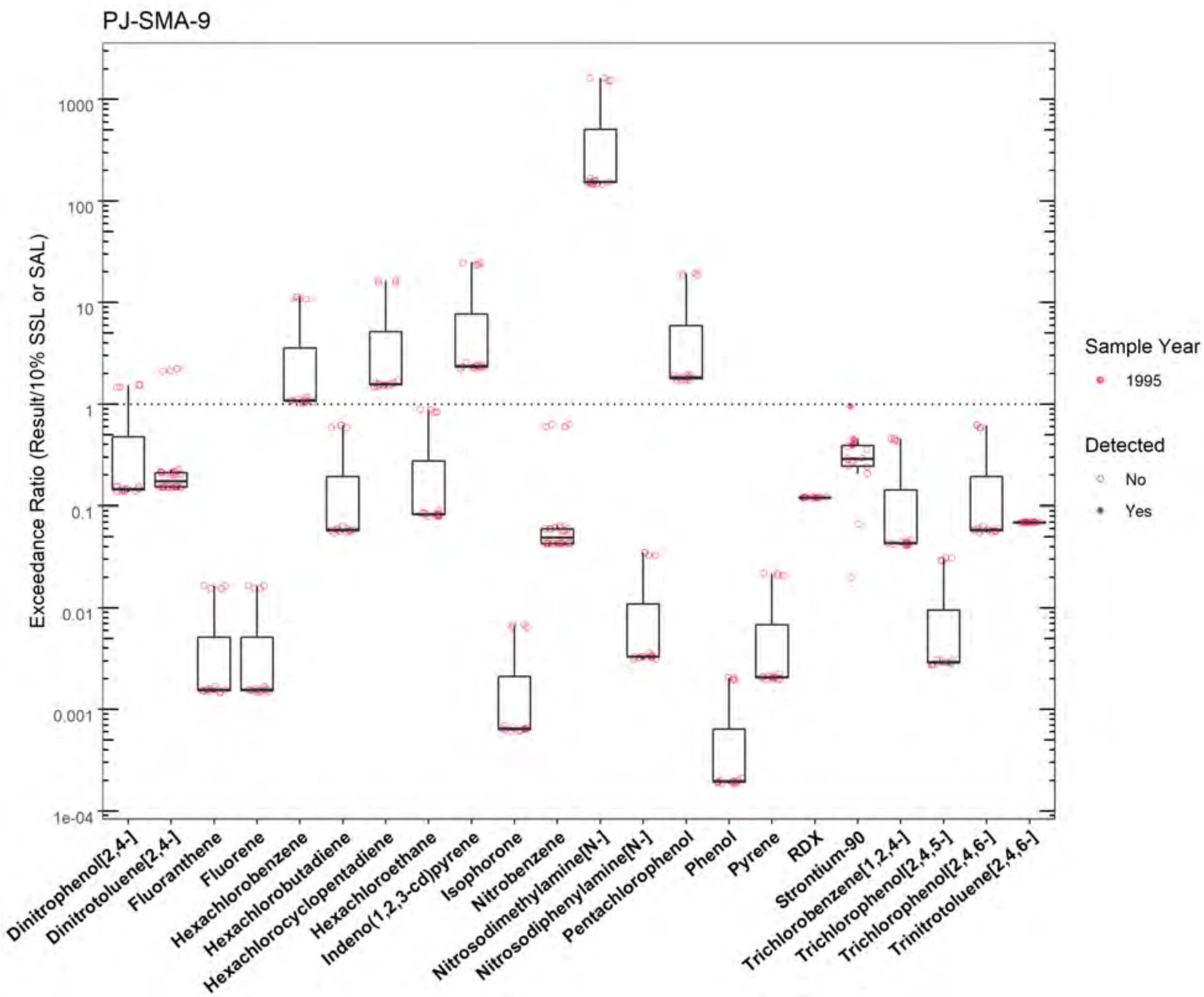


Figure 149.3-3 Organics Analytical Results from Soil Samples Associated with PJ-SMA-9 (Plot 2)

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.

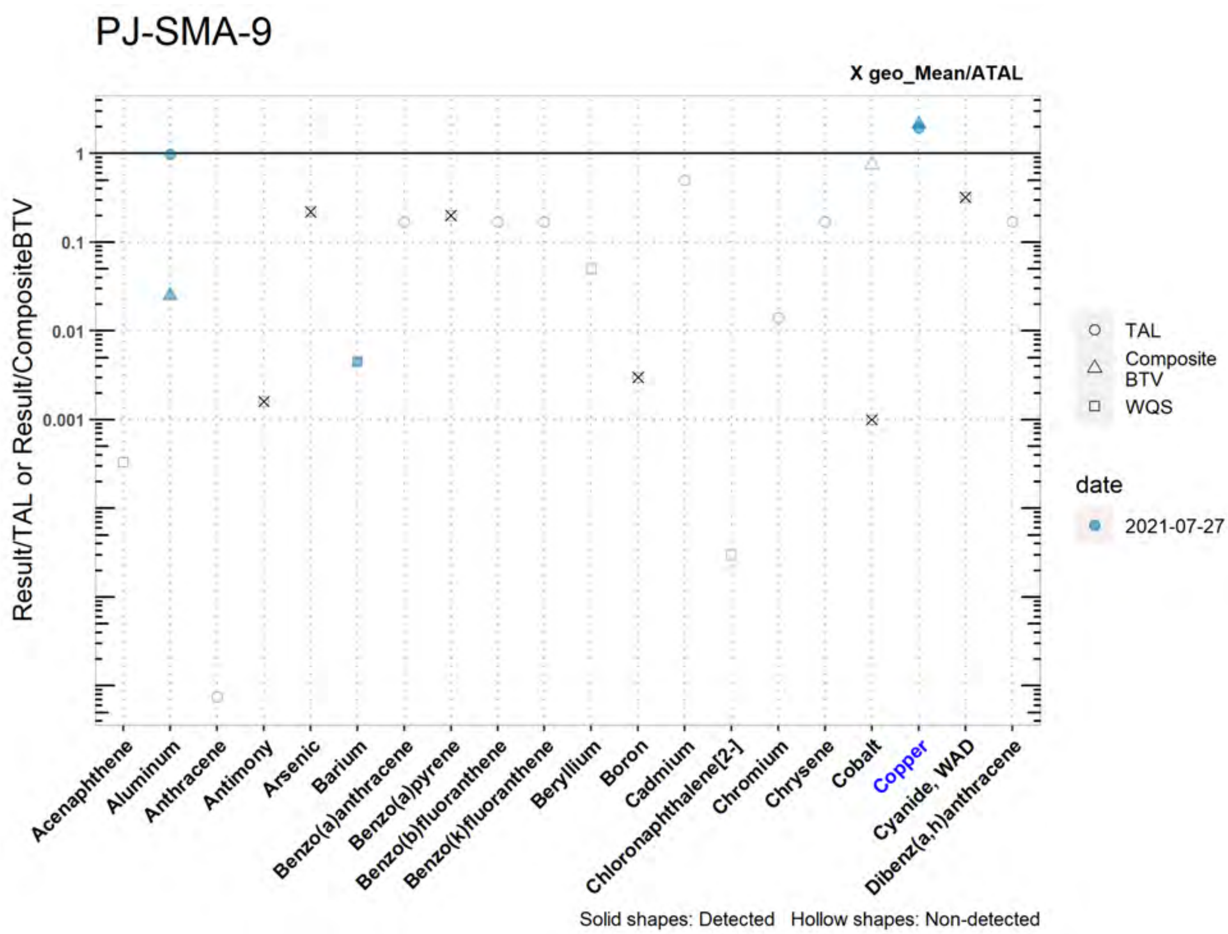


Figure 149.4-1 Analytical Results from Stormwater Sample, PJ-SMA-9 (Plot 1)

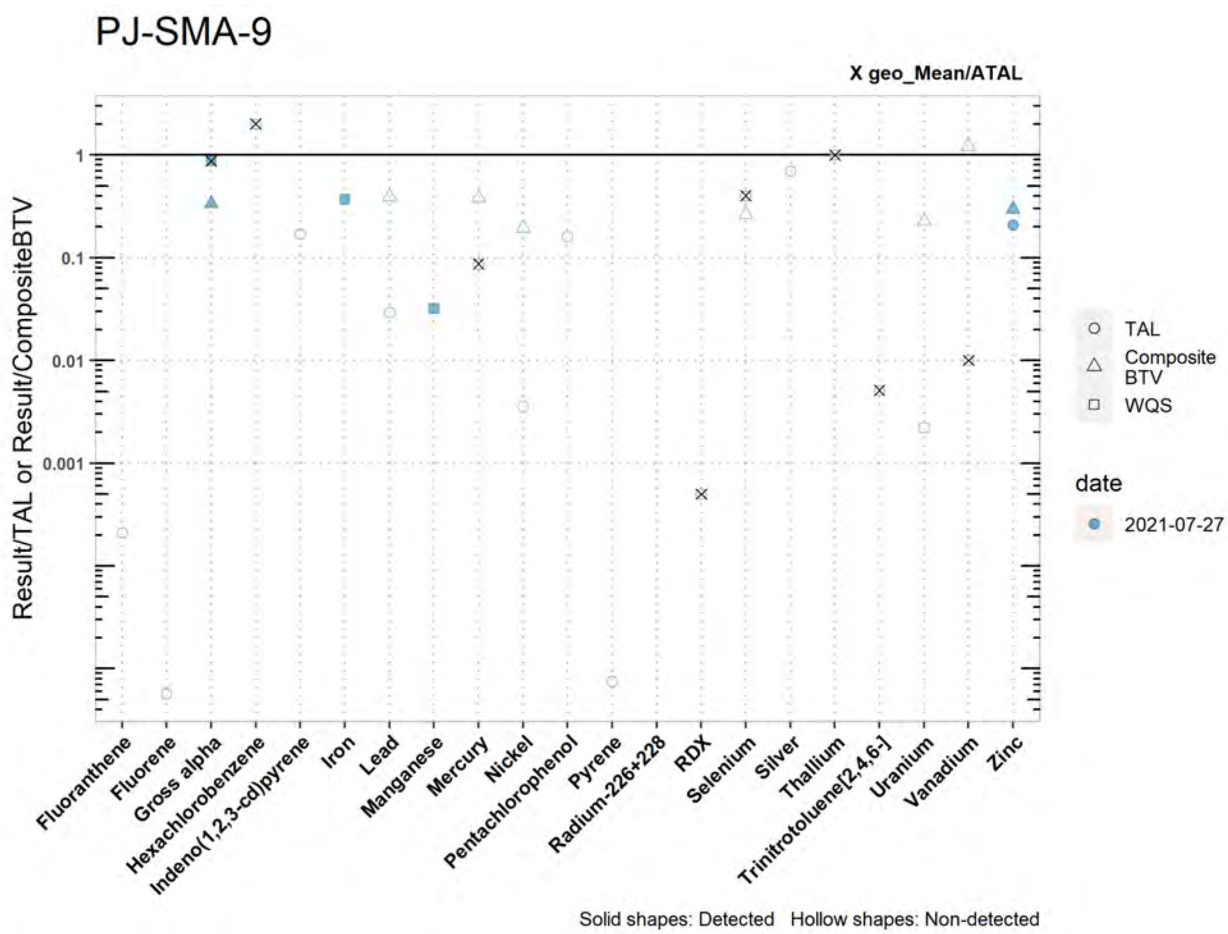


Figure 149.4-2 Analytical Results from Stormwater Sample, PJ-SMA-9 (Plot 2)

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
MQL	0.064	0.064	NA	5	0.064	NA	0.5	NA	0.005	0.5	5
ATAL	NA	NA	15	0.0029	NA	NA	NA	NA	0.77	NA	NA
MTAL	140	5300	NA	NA	0.18	NA	17.2	NA	NA	170	19
Composite_BTV	NA	NA	56.1	NA	NA	NA	1.28	NA	0.177	3.10	NA
unit	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*
2021-07-27 dT	NA	NA	0.87	NA	NA	0.37	NA	0.032	NA	NA	NA
2021-07-27 dB	NA	NA	0.334	NA	NA	NA	NA	NA	NA	NA	NA
geo_mean/ATAL	NA	NA	0.87	2	NA	NA	NA	NA	0.087	NA	NA

	Pyrene	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Uranium	Vanadium	Zinc
MQL	0.064	NA	NA	5	0.5	0.5	NA	NA	50	20
ATAL	NA	30	200	5	NA	0.47	20	NA	100	NA
MTAL	4000	NA	NA	20	0.41	NA	NA	NA	NA	53.9
Composite_BTV	NA	5.12	NA	7.66	NA	NA	NA	0.298	0.829	37.9
unit	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*	*NA*	*0.101*	*2.00*	*0.300*	*0.600*	*0.101*	*0.0670*	*1.00*	11.2
2021-07-27 dT	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.208
2021-07-27 dB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.296
geo_mean/ATAL	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.

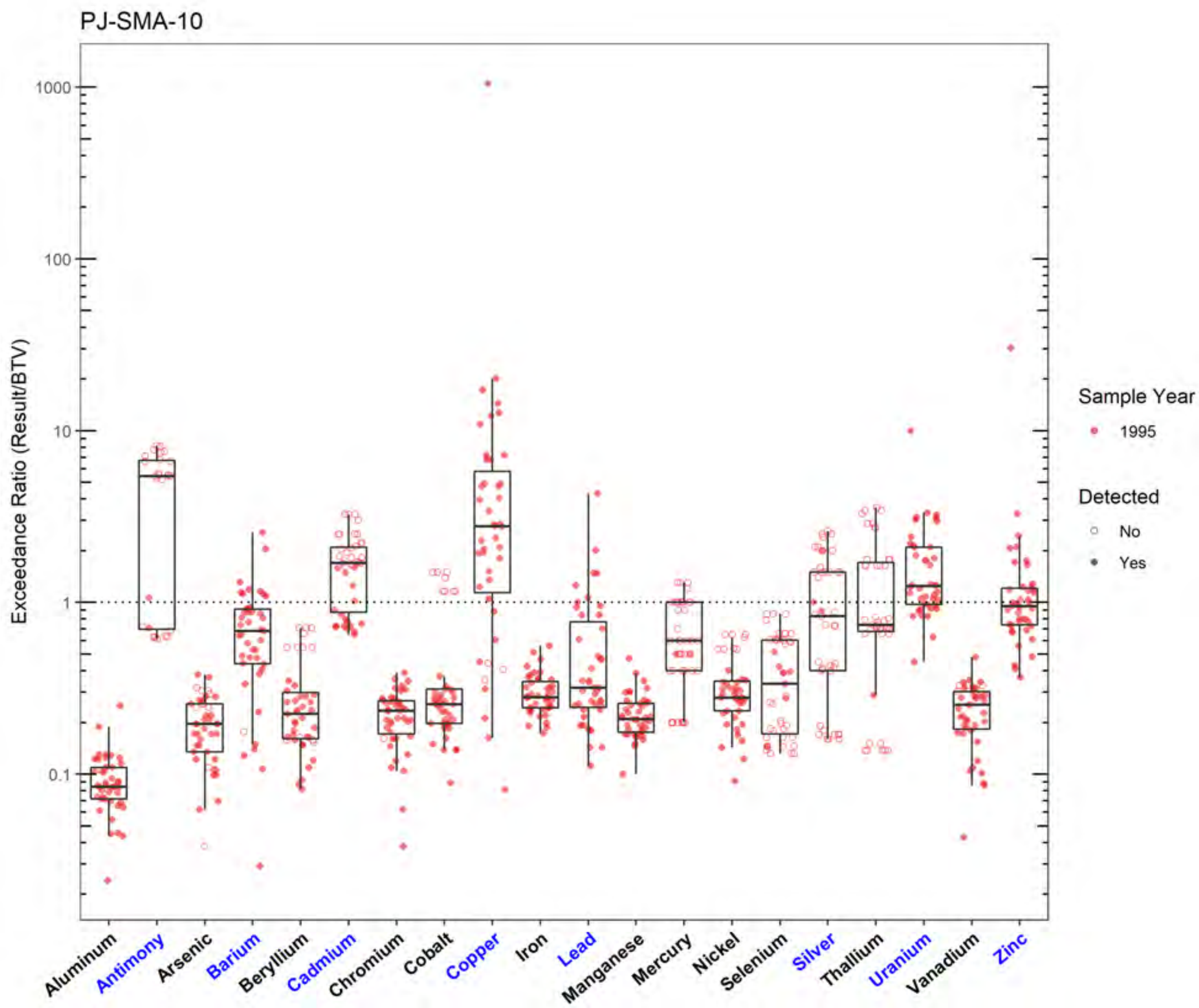


Figure 151.3-1 Inorganics Analytical Results from Soil Samples Associated with PJ-SMA-10

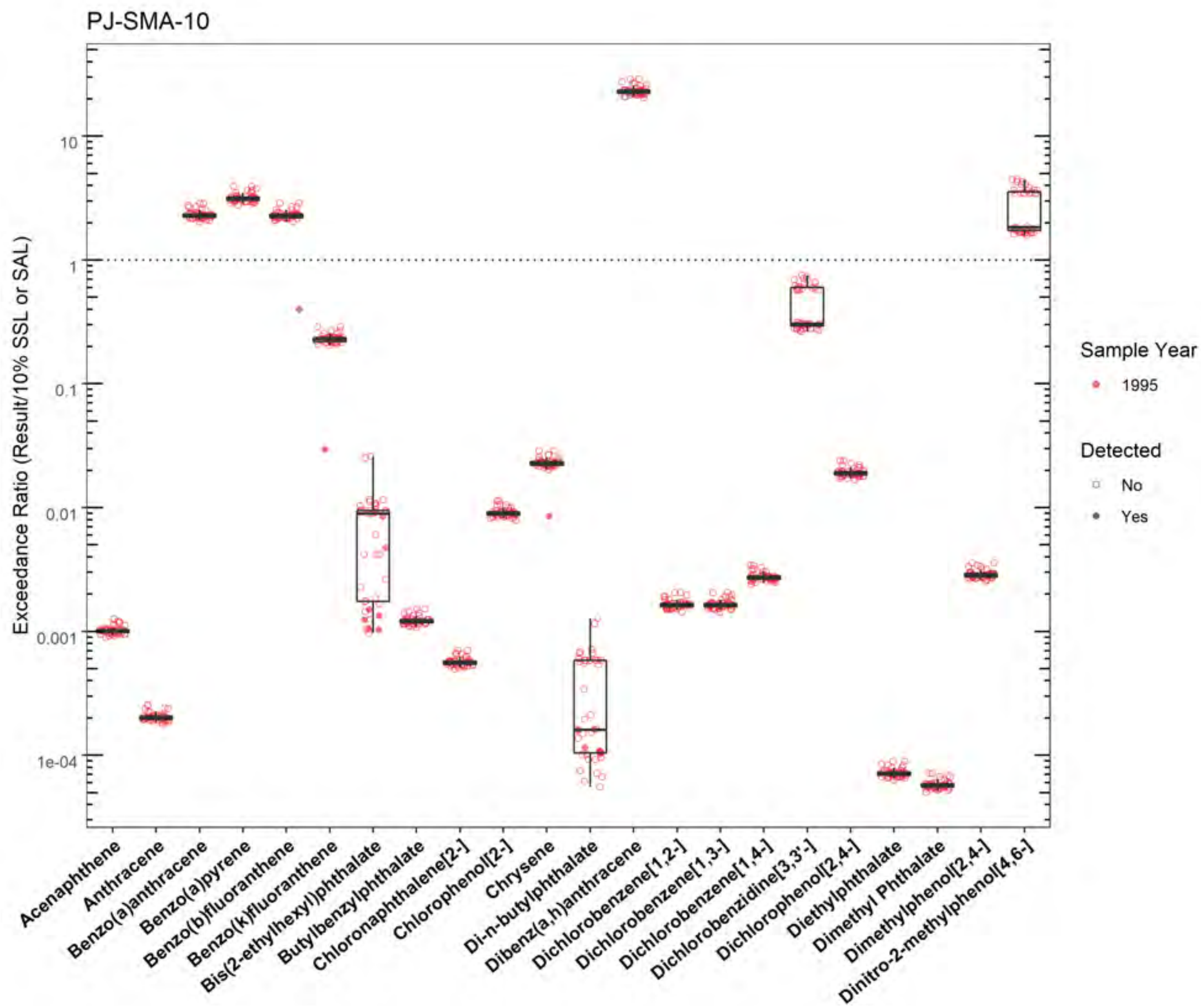


Figure 151.3-2 Organics Analytical Results from Soil Samples Associated with PJ-SMA-10 (Plot 1)

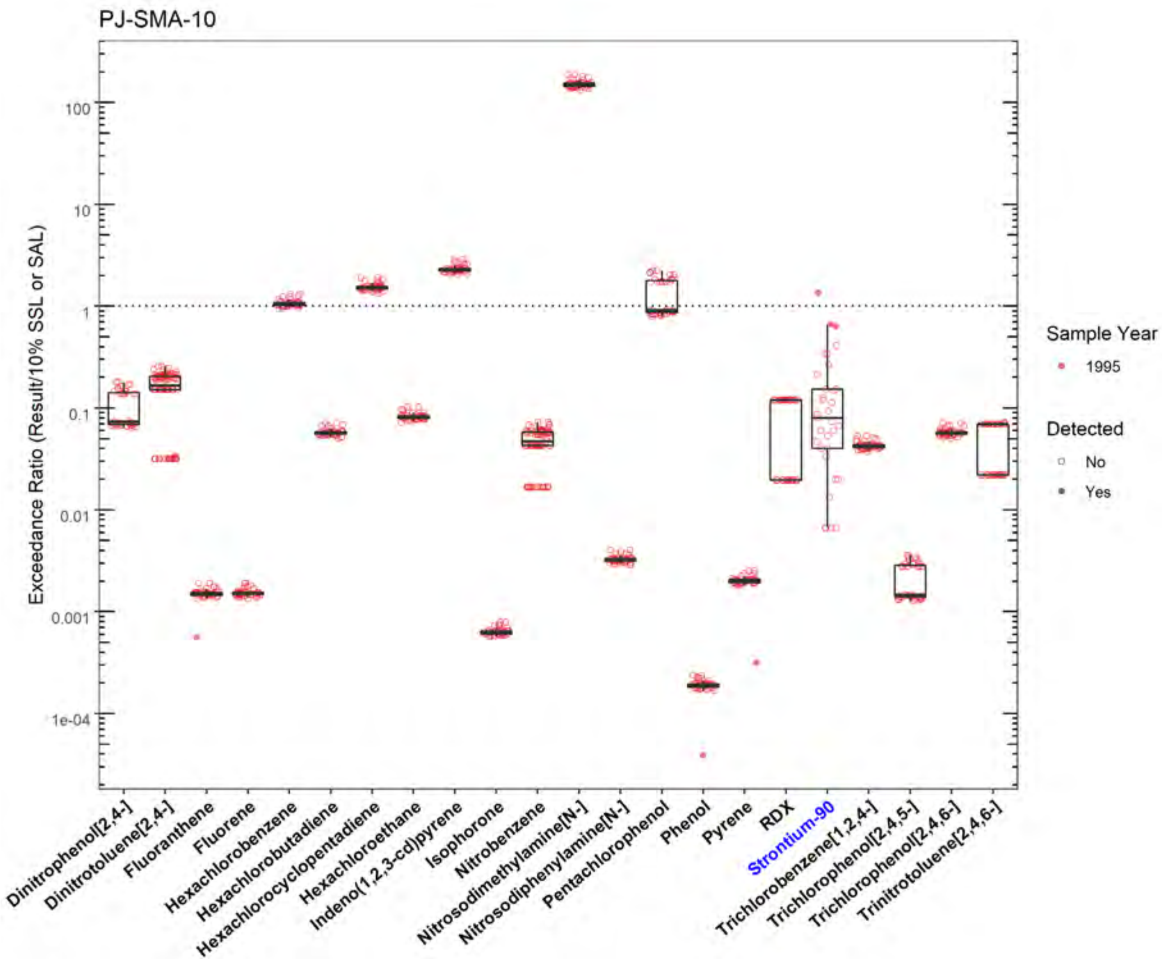


Figure 151.3-3 Organics Analytical Results from Soil Samples Associated with PJ-SMA-10 (Plot 2)

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.

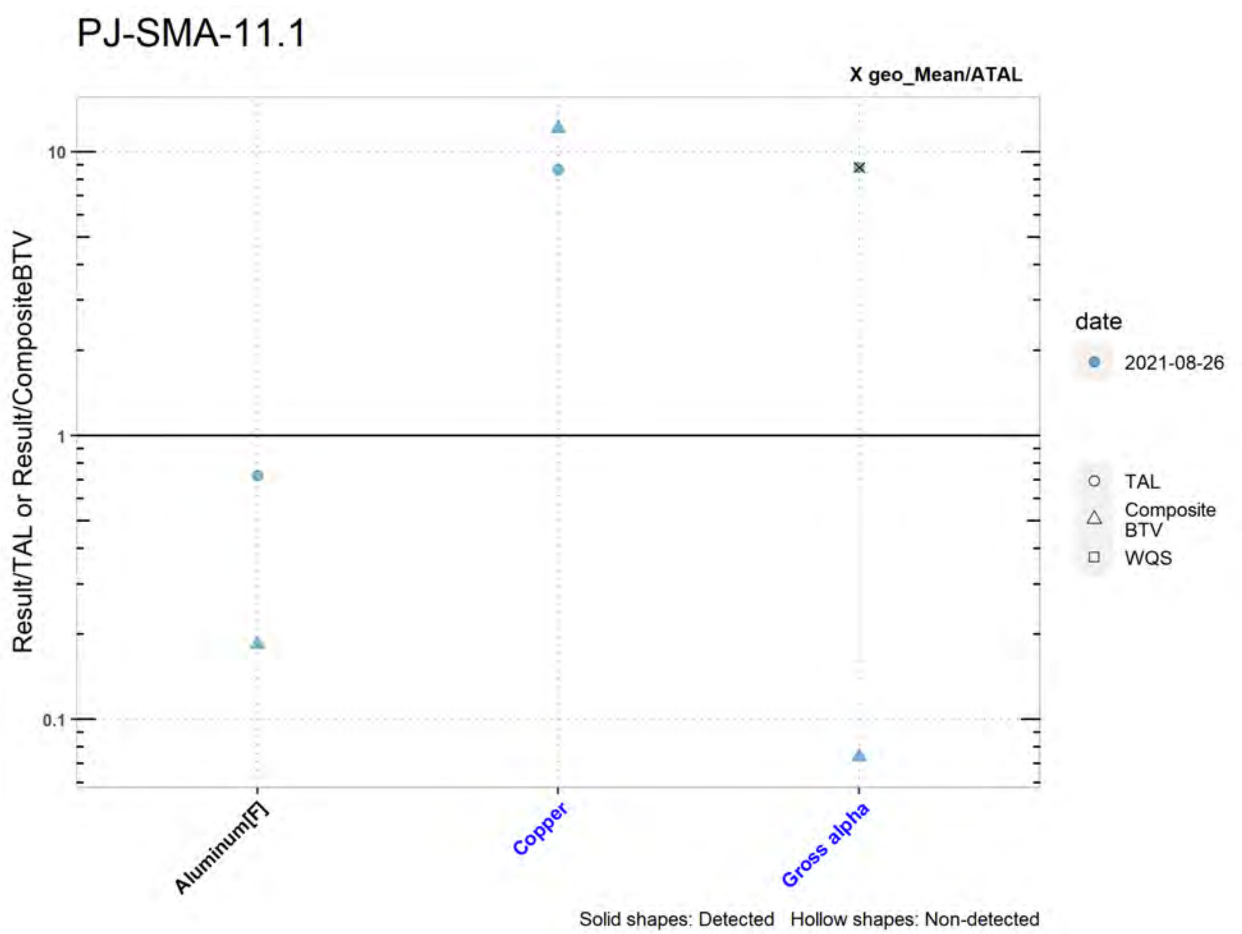


Figure 153.4-1 Analytical Results from Stormwater Sample, PJ-SMA-11.1 (Plot)

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.

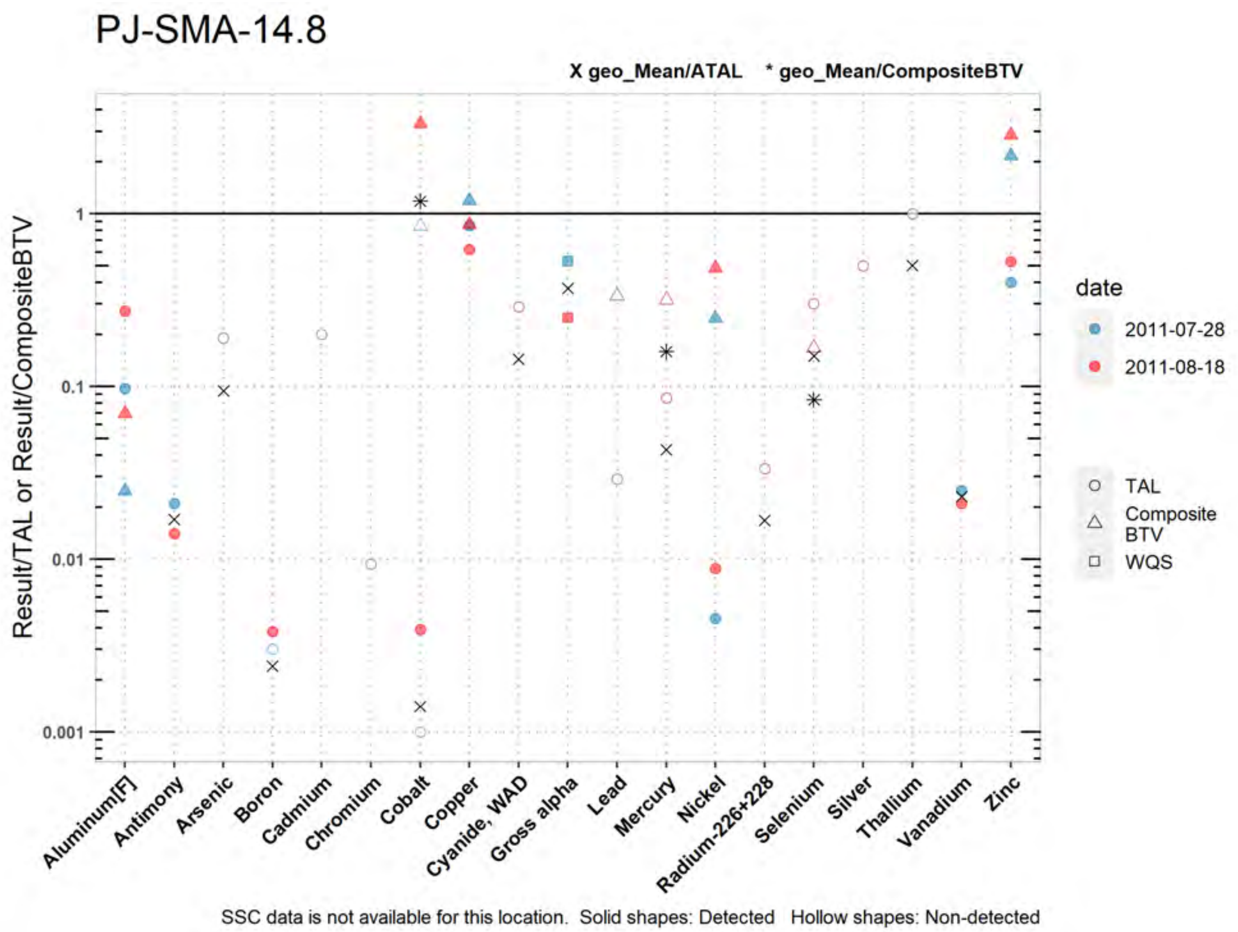


Figure 159.4-1 Analytical Results from Stormwater Samples, PJ-SMA-14.8 (Plot)

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.

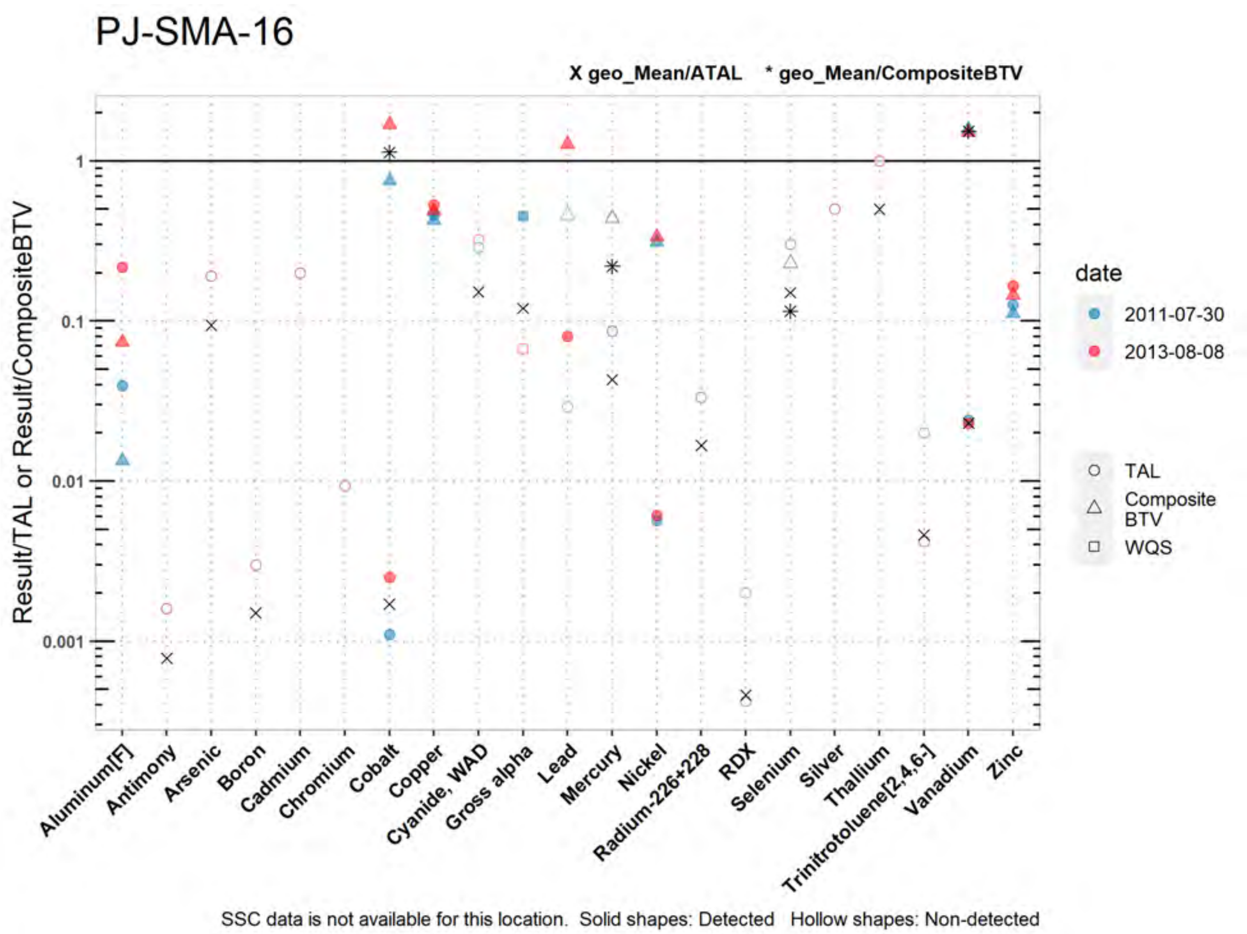


Figure 160.4-1 Analytical Results from Stormwater Samples, PJ-SMA-16 (Plot)

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.

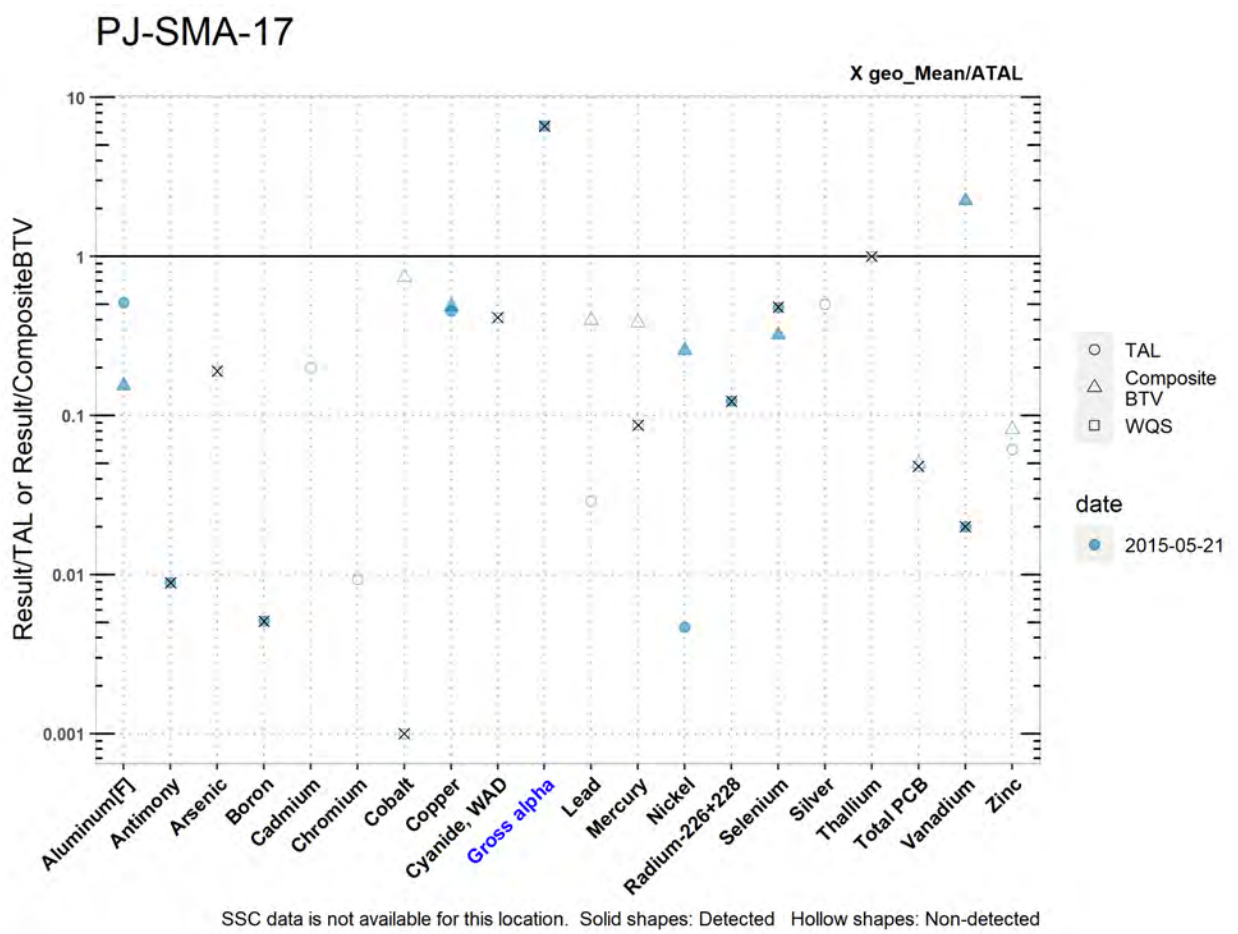


Figure 161.4-1 Analytical Results from Stormwater Sample, PJ-SMA-17 (Plot)

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 SAP.

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.

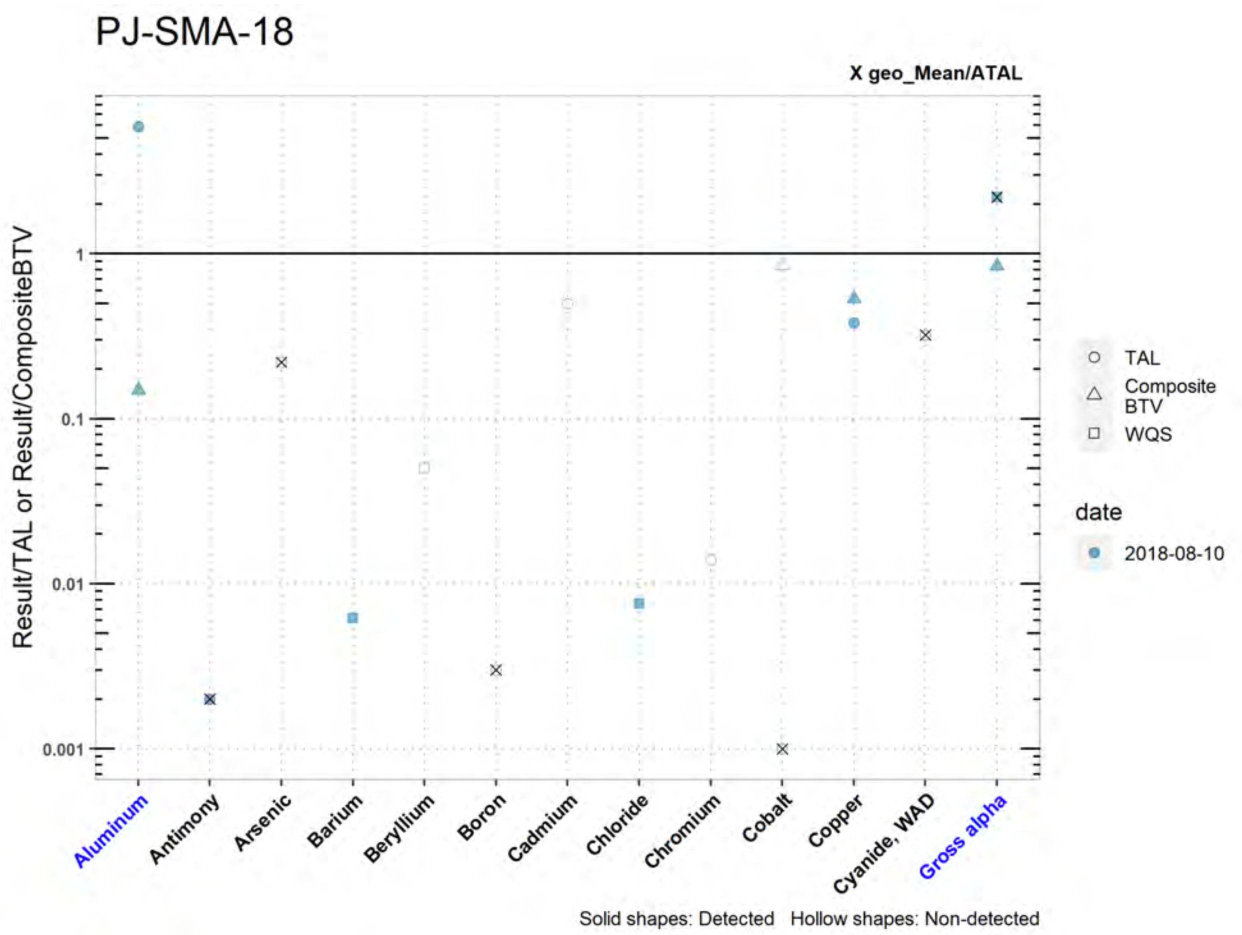


Figure 162.4-1 Analytical Results from Stormwater Sample, PJ-SMA-18 (Plot 1)

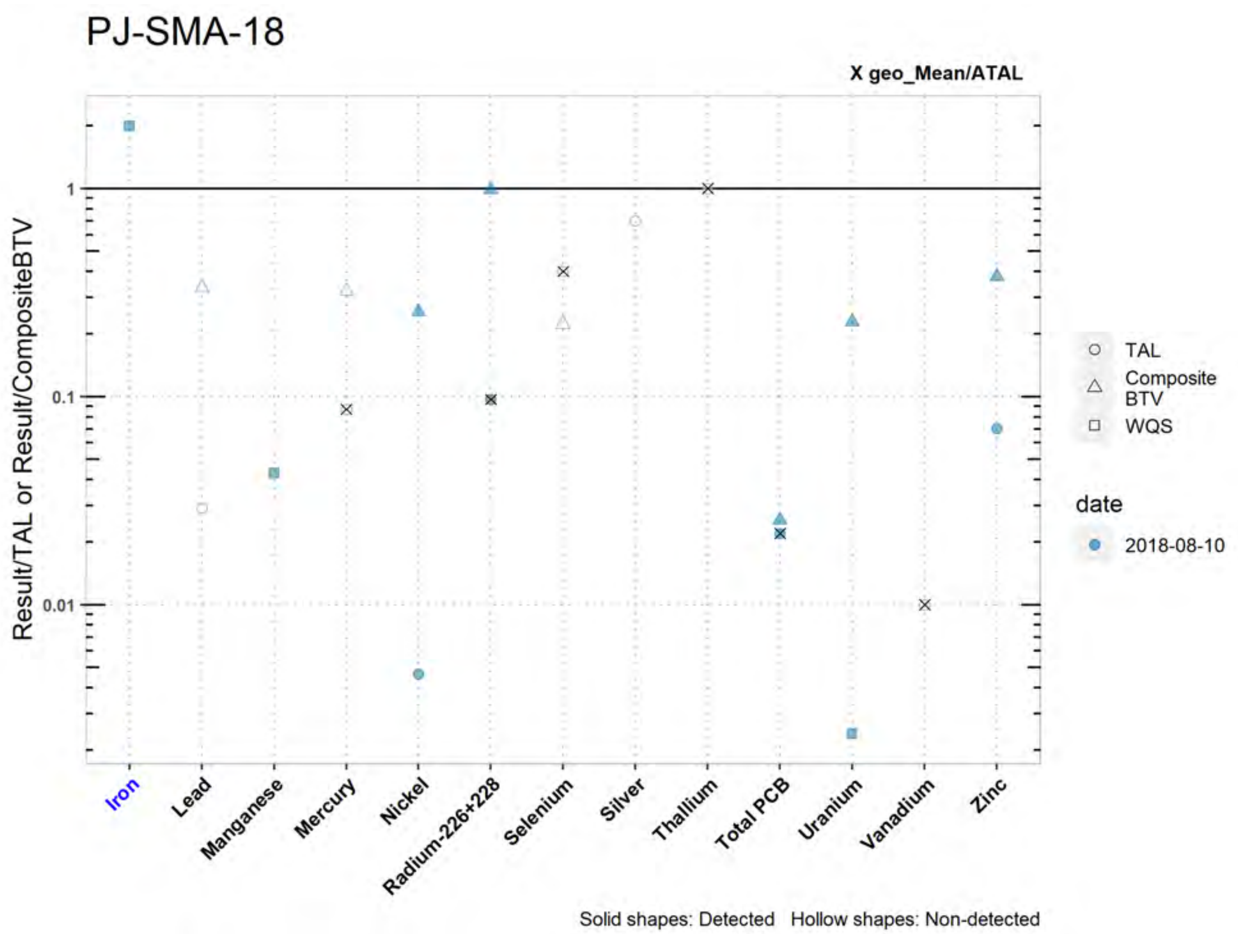


Figure 162.4-2 Analytical Results from Stormwater Sample, PJ-SMA-18 (Plot 2)

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.

Table 162.5-1 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.

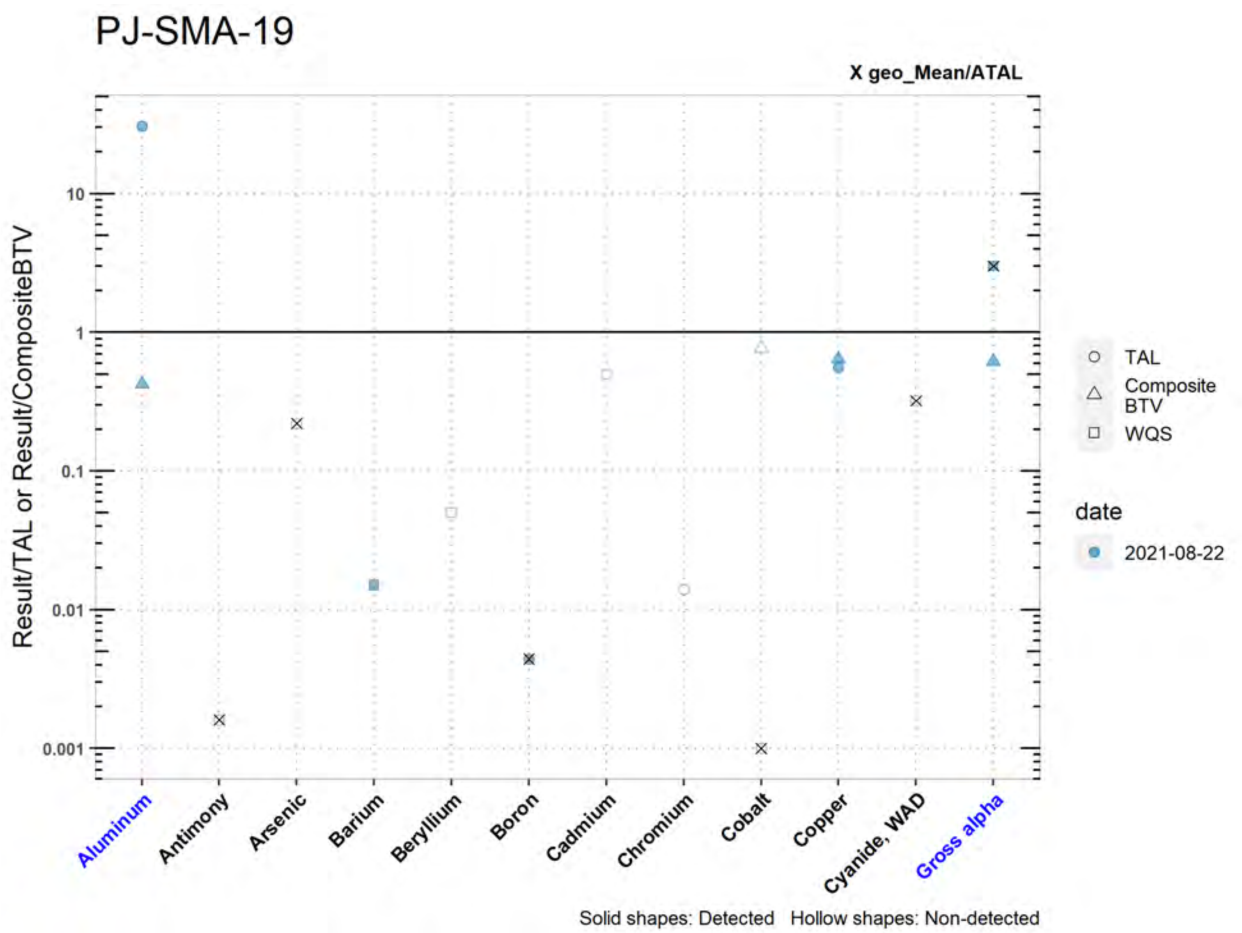


Figure 163.4-1 Analytical Results from Stormwater Sample, PJ-SMA-19 (Plot 1)

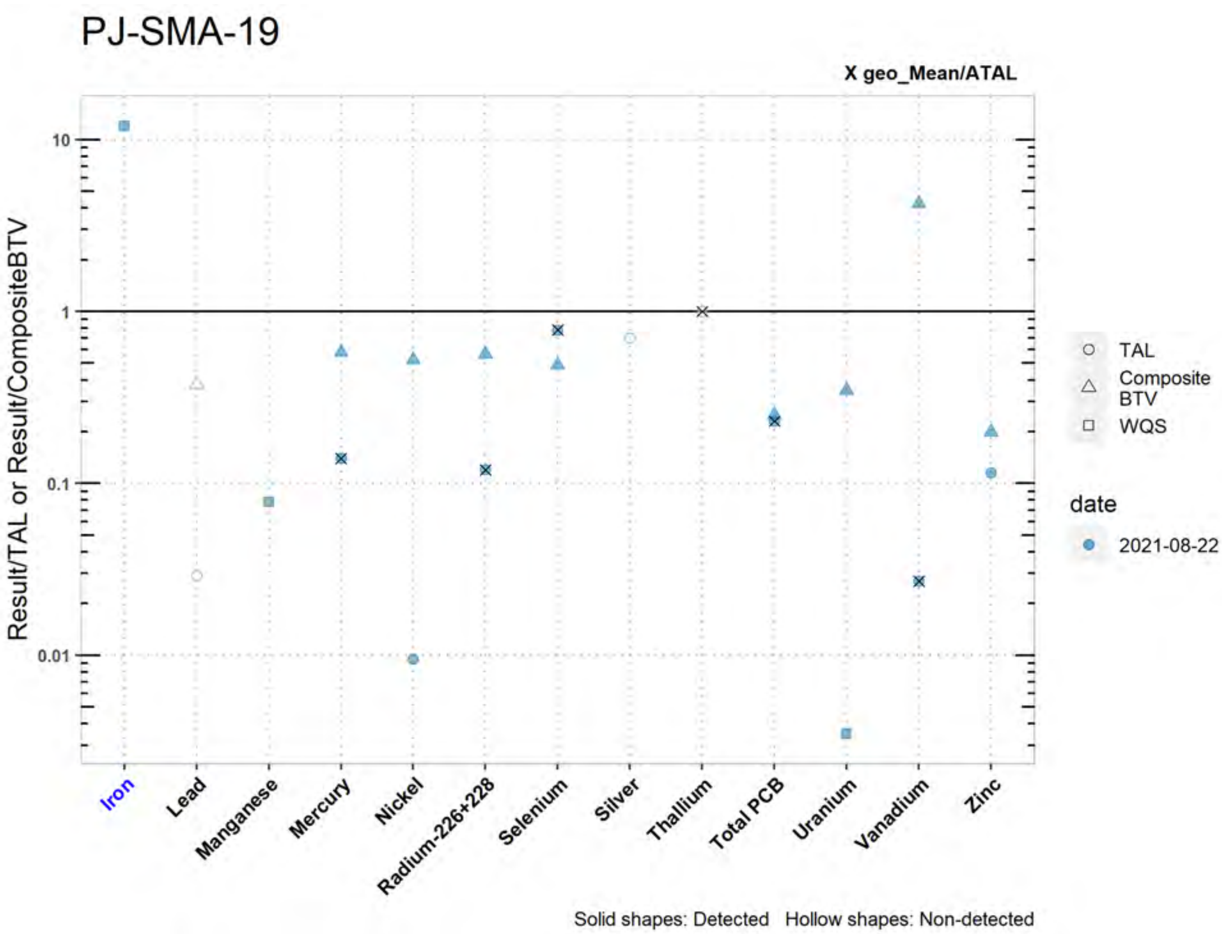


Figure 163.4-2 Analytical Results from Stormwater Sample, PJ-SMA-19 (Plot 2)

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 SAP. 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/Corrective Action

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.

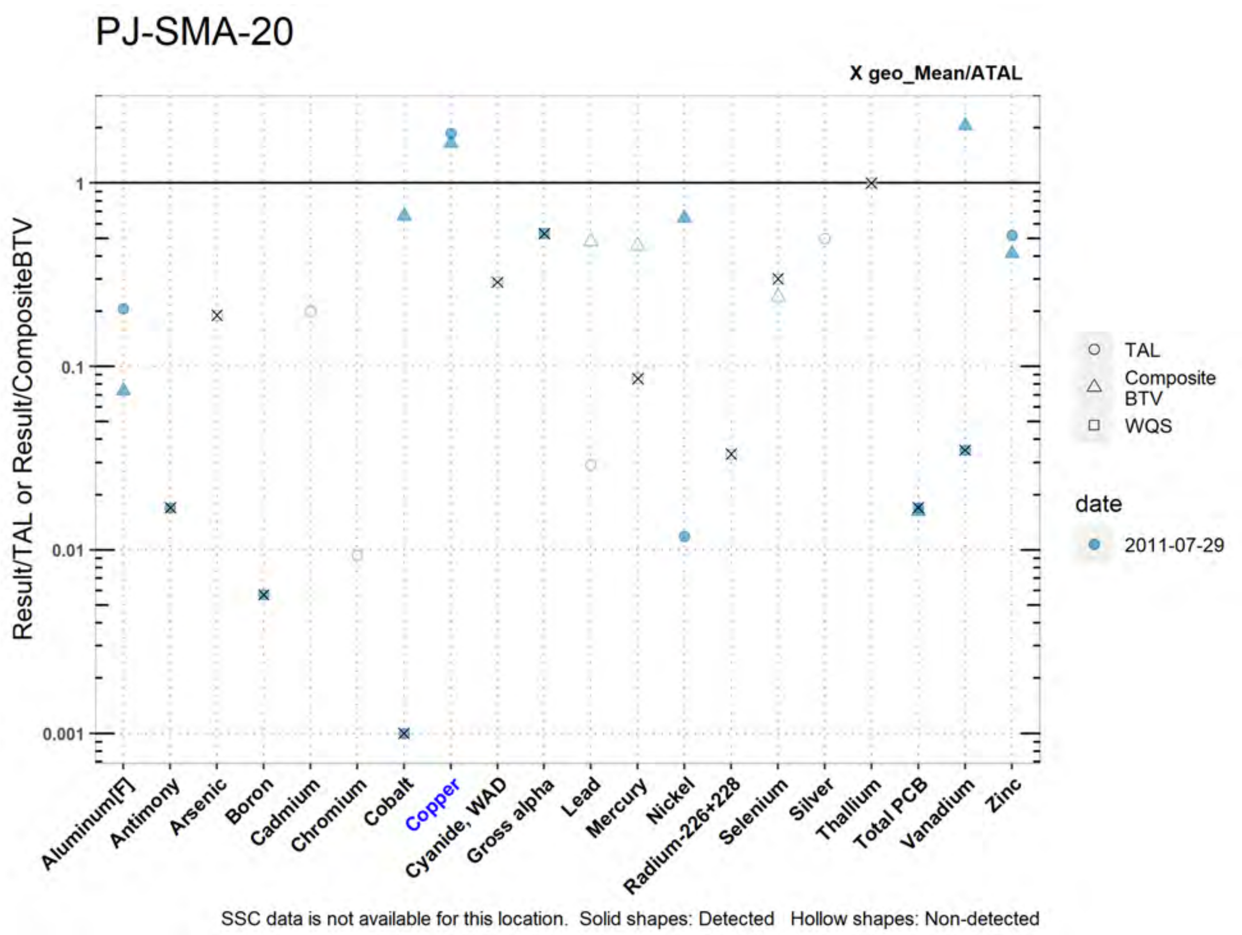


Figure 164.4-1 Analytical Results from Stormwater Sample, PJ-SMA-20 (Plot)

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

Due to the exceedance of a composite BTV and/or TAL, corrective action will be initiated at this SMA (Part I.C.2.b.i) for copper. The SMA is also in active monitoring; not all Site-related constituents of concern were analyzed for in past samples.

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 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/Corrective Action

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.

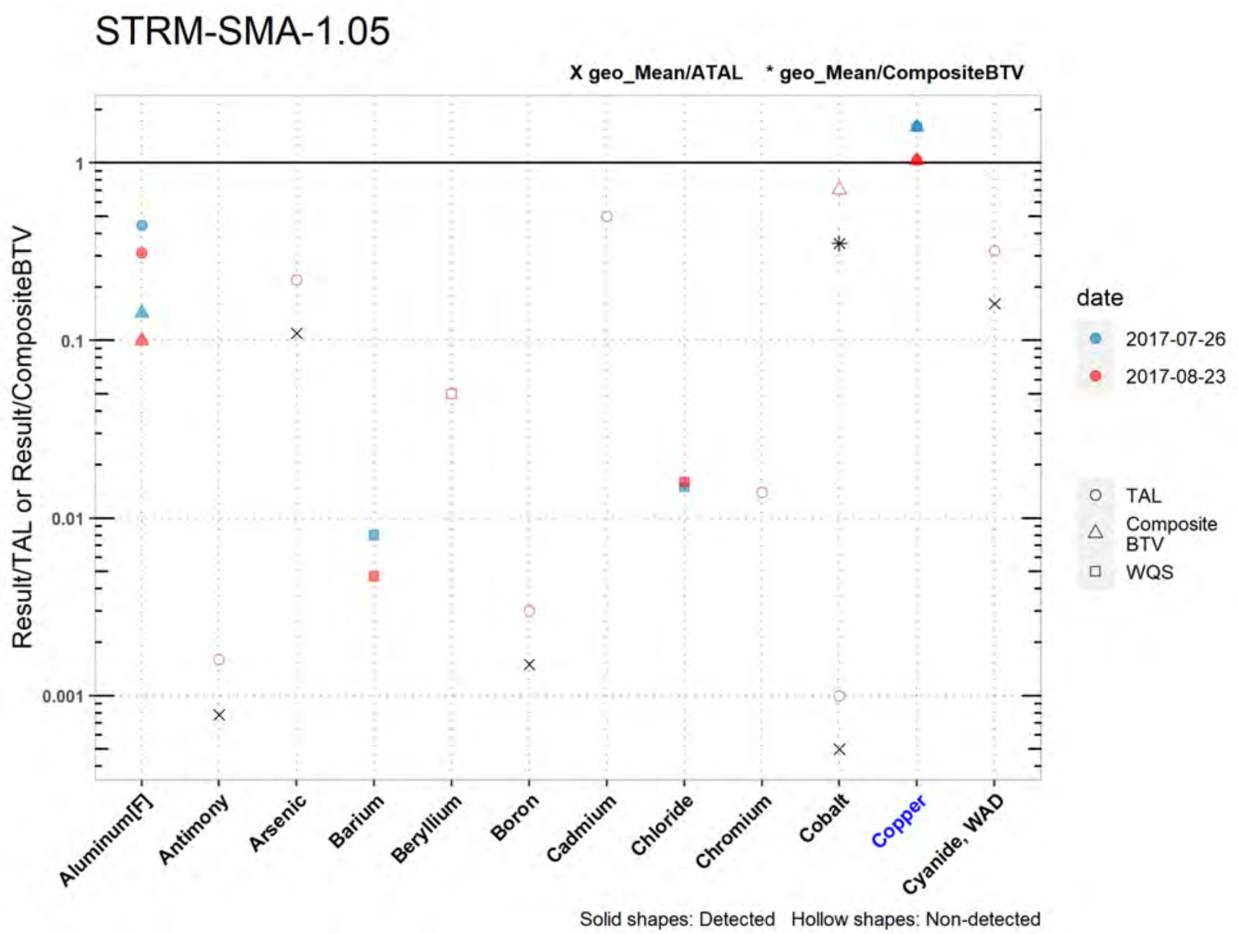


Figure 165.4-1 Analytical Results from Stormwater Samples, STRM-SMA-1.05 (Plot 1)

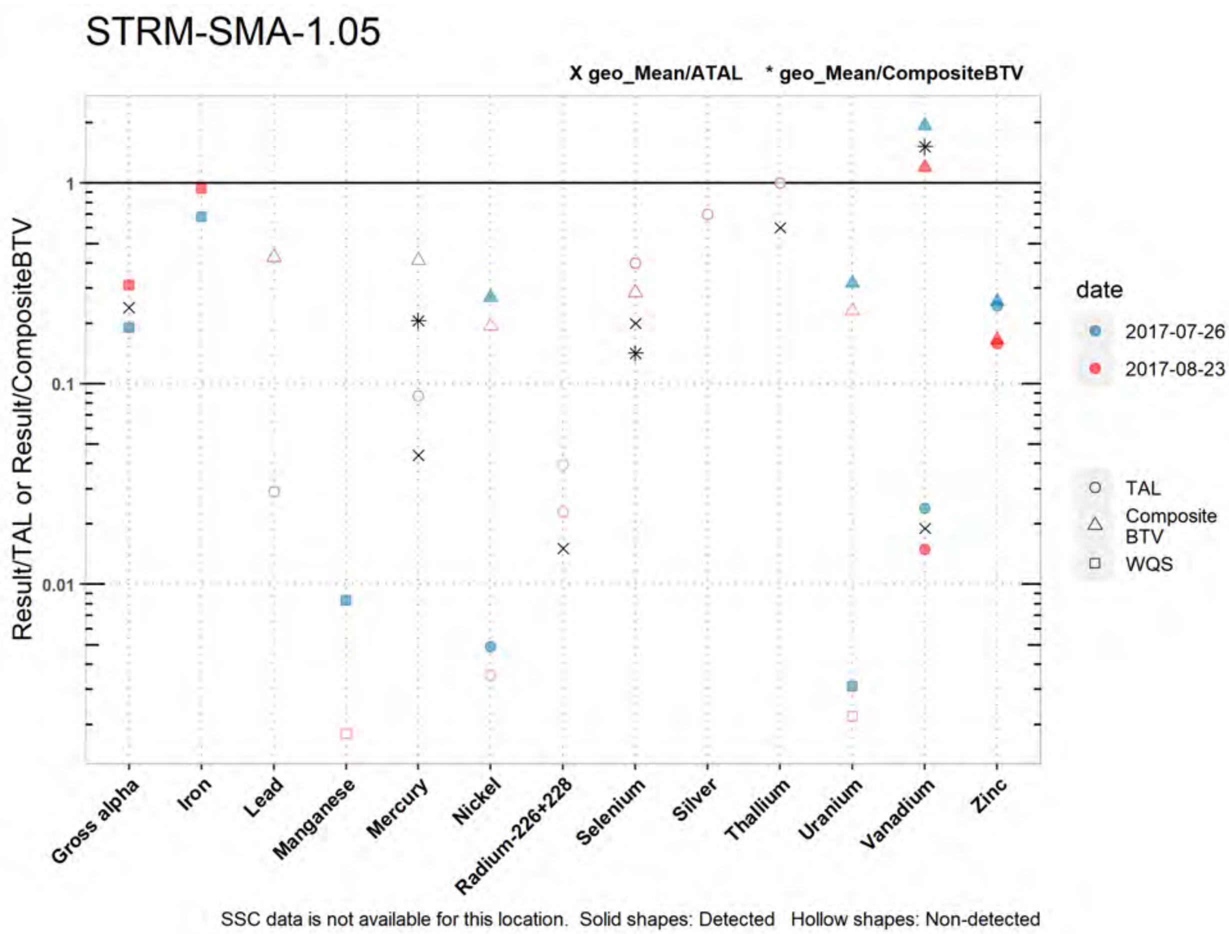


Figure 165.4-2 Analytical Results from Stormwater Samples, STRM-SMA-1.05 (Plot 2)

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.

165.5.3 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.2.b.i) for copper. The SMA is also 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
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.

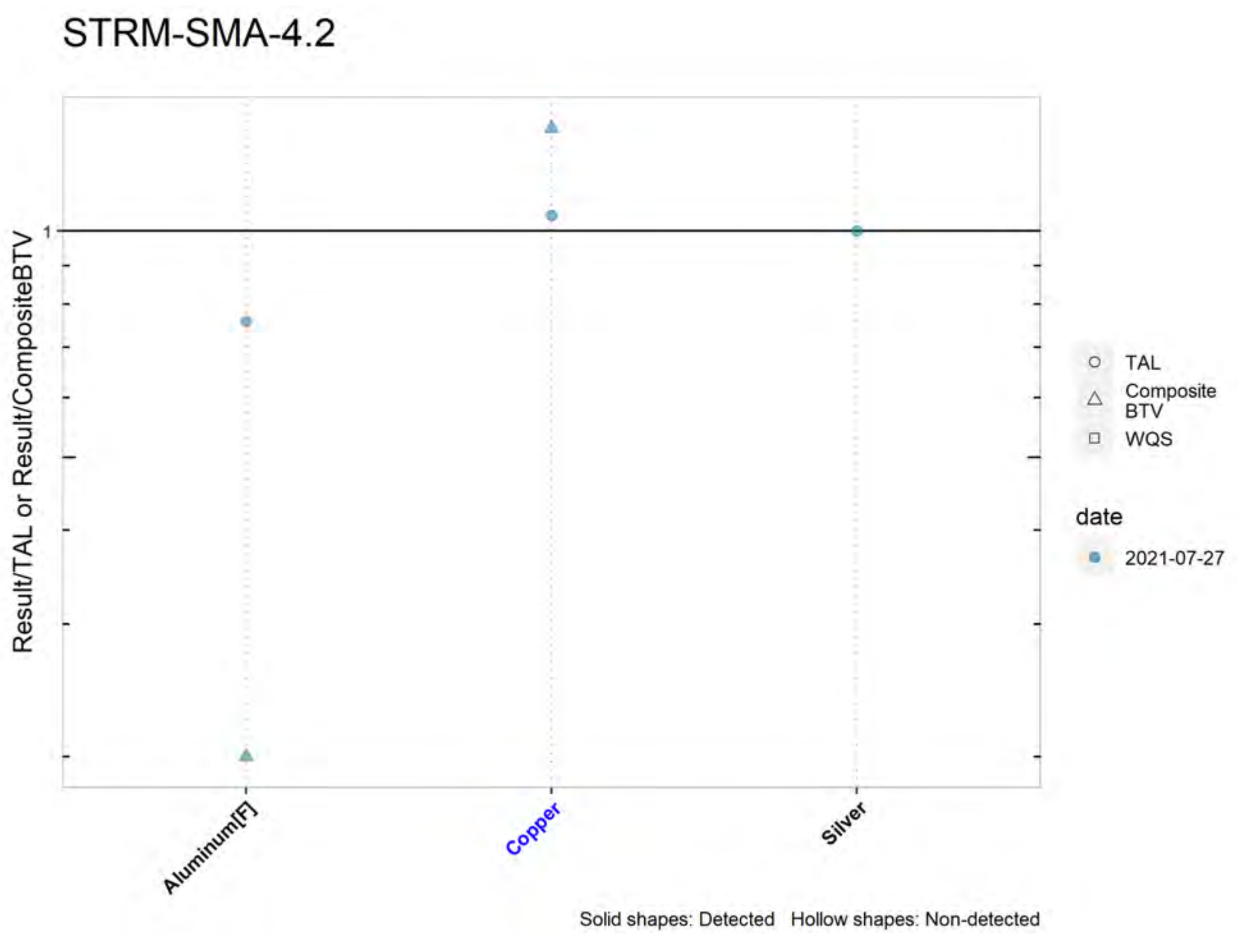


Figure 167.4-1 Analytical Results from Stormwater Sample, STRM-SMA-4.2 (Plot)

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.

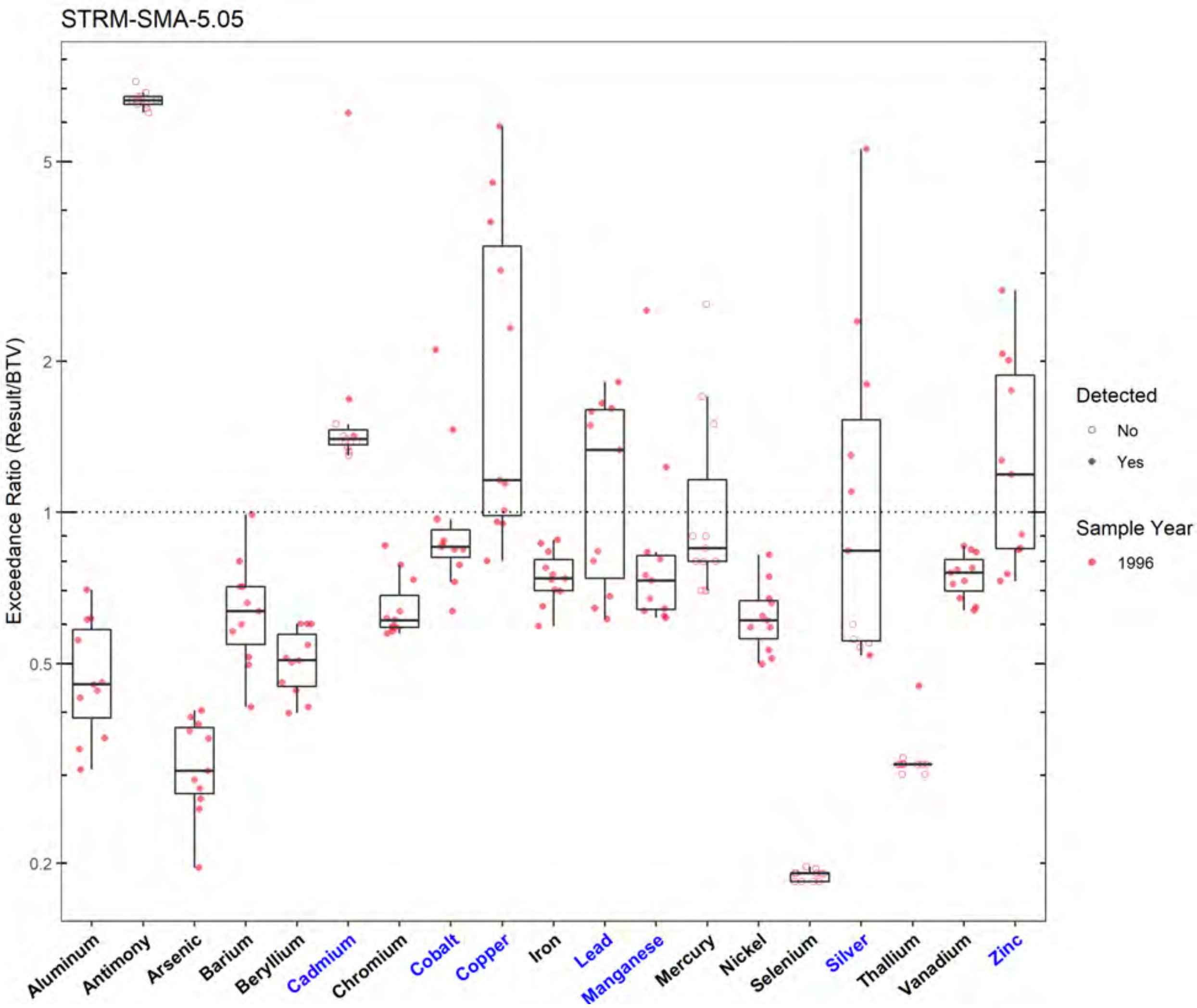


Figure 168.3-1 Inorganics Analytical Results from Soil Samples Associated with STRM-SMA-5.05

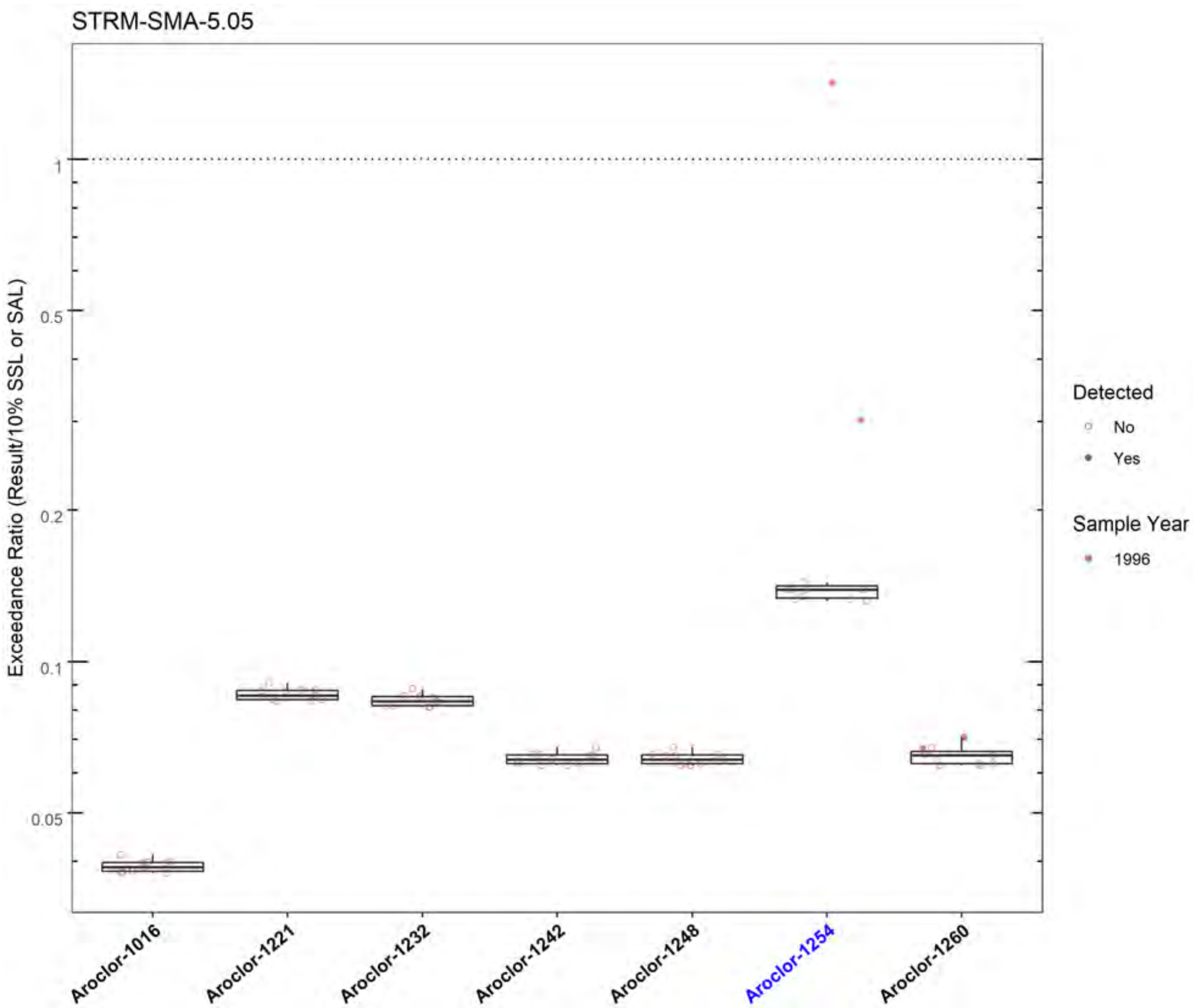


Figure 168.3-2 Organics Analytical Results from Soil Samples Associated with STRM-SMA-5.05

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.

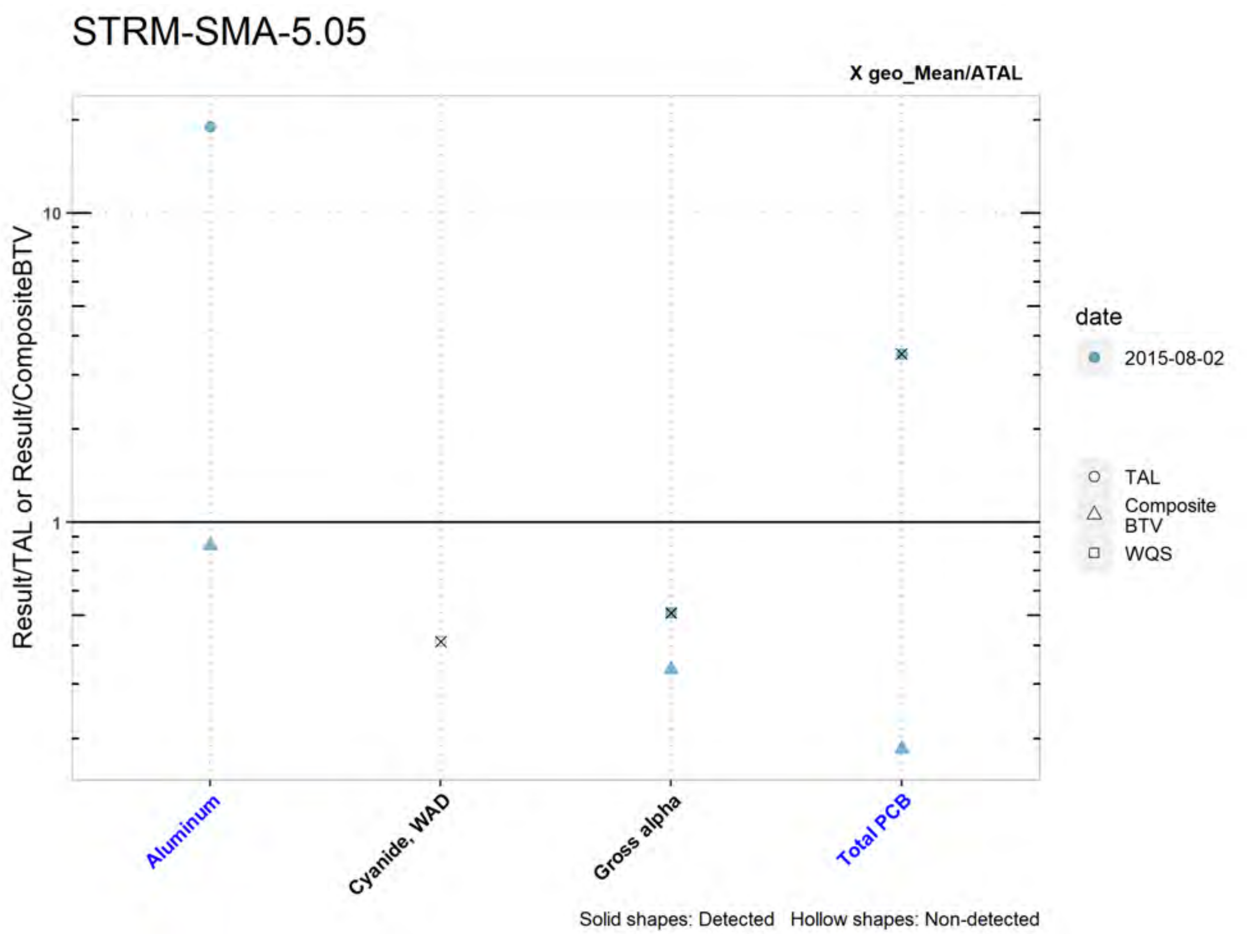


Figure 168.4-1 Analytical Results from Stormwater Sample, STRM-SMA-5.05 (Plot)

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

2022 Annual Sampling Implementation Plan

NPDES Permit No. NM0030759
June 2023

Water/Cañon de Valle Watershed

Receiving Waters:
Cañon de Valle, Potrillo Canyon, Water Canyon, and Fence Canyon

Volume 4

CONTENTS

169.0 CDV-SMA-1.2

Associated Sites	16-017(b)-99, 16-029(k)
Receiving Water	Cañon de Valle
Drainage Area	2.79 acres
Landscape Characteristics	10% impervious, 90% pervious
Consent Order Site Status	SWMU 16-017(b)-99: Pending Inclusion in Permit Modification Request Certificate of Completion Received Without Controls SWMU 16-029(k): 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 November 2016 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

* 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.

169.1 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. The HE analytical results from this sample were rejected because of hold times and monitoring continued. An additional baseline sample was collected in August 2015. This sample had no TAL exceedances and stormwater monitoring ceased until 2020. Baseline confirmation monitoring resumed in 2020; the objective is to collect a second sample with all results below the applicable MTAL or ATAL, potentially allowing the Permittees to make a Site deletion request per Permit part I.I.2.

169.2 Site History

16-017(b)-99 (6/19/2017)

SWMU 16-017(b)-99 consists of a former HE machining building (former structure 16-93) that was located at TA-16. Constructed on a concrete pad in 1950, the 1,627 ft^2 wooden building was surrounded by an earthen berm that was packed against steel pilings. The building was originally used for HE machining and was later converted to an electroplating facility. By 1970, the building was used entirely for storage. By 1991, it was abandoned and subsequently removed during D&D operations in 1996. Two former HE sumps [SWMU 16-029(k)], located adjacent to former building 16-93, discharged to two outfalls in a drainage north of the building that emptied into Cañon de Valle 600 ft north of the former 90s Line ponds [SWMU 16-008(a)]. The sumps and associated drainlines were also removed in 1996. This SWMU was originally a component of SWMU 16-017, which consisted of a group of 24 structures within TA-16 that were part of the World War II era HE operations. During the 1999 Annual Unit Audit, SWMU 16-017 was split into 24 separate SWMUs to facilitate investigation. Structure 16-93 was given the individual SWMU identification of SWMU 16-017(b)-99 at that time.

16-029(k) (6/19/2017)

SWMU 16-029(k) consists of two former HE sumps at TA-16. The sumps were located adjacent to former building 16-93 [SWMU 16-017(b)-99], and discharged to associated drainlines and outfalls in a drainage north of the building that emptied into Cañon de Valle 600 ft north of the former 90s Line ponds [SWMU 16-008(a)]. Constructed of wood on a concrete pad in 1950, former building 16-93 measured 1,627 ft^2 and was surrounded by an earthen berm that was packed against steel pilings. The building was originally used for HE machining and was later converted to an electroplating facility. By 1970, the building was used entirely for storage. The building was totally abandoned by 1991, and the building, sumps, drainlines, and berms were removed during D&D operations in 1996.

For investigation activities for the Sites refer to "Supplemental Investigation Report for Consolidated Units 16-007(a)-99 and 16-008(a)-99" (LANL 2010, 108279).

169.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 169.2-1.

Table 169.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-017(b)-99	Soil contamination from former HE Machining building 16-93	Metals, barium, chromium, copper, SVOCs, HE, uranium
16-029(k)	Sumps	Metals, barium, chromium, copper, SVOCs, HE, uranium

169.3 Consent Order Soil Data

Decision-level data for SWMUs 16-008(a), 16-017(a-e)-99, 16-026(m-p), 16-029 (k,l,s,t, and u), and AOC C-16-067, consist of results from samples collected in 1996, 2006, and 2007. Analytical results for these samples are presented in Figures 169.3-1 through 169.3-4. The January 2010 investigation report (LANL 2010, 108279) concluded that the nature and extent were defined for the SWMUs.

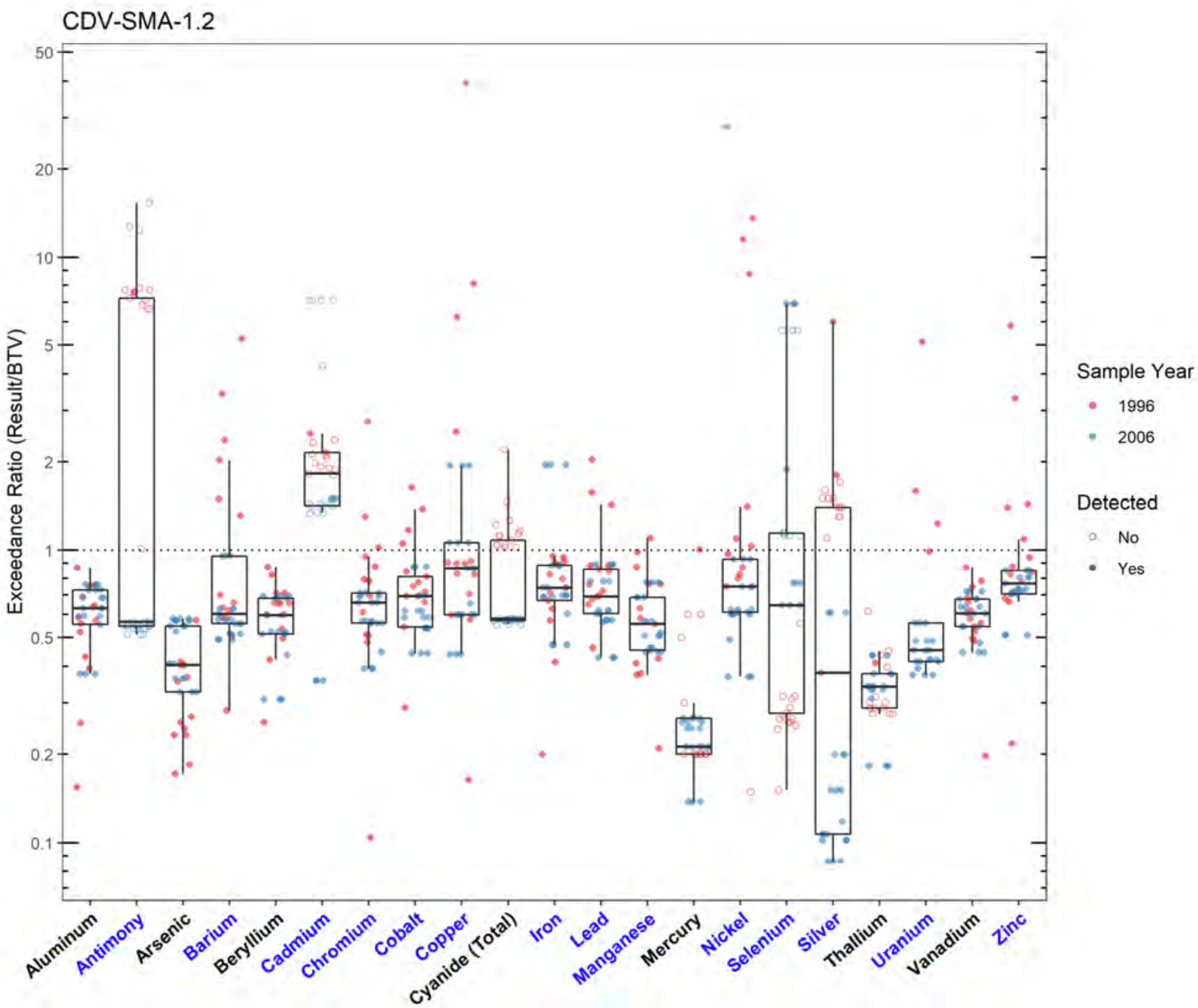


Figure 169.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-1.2

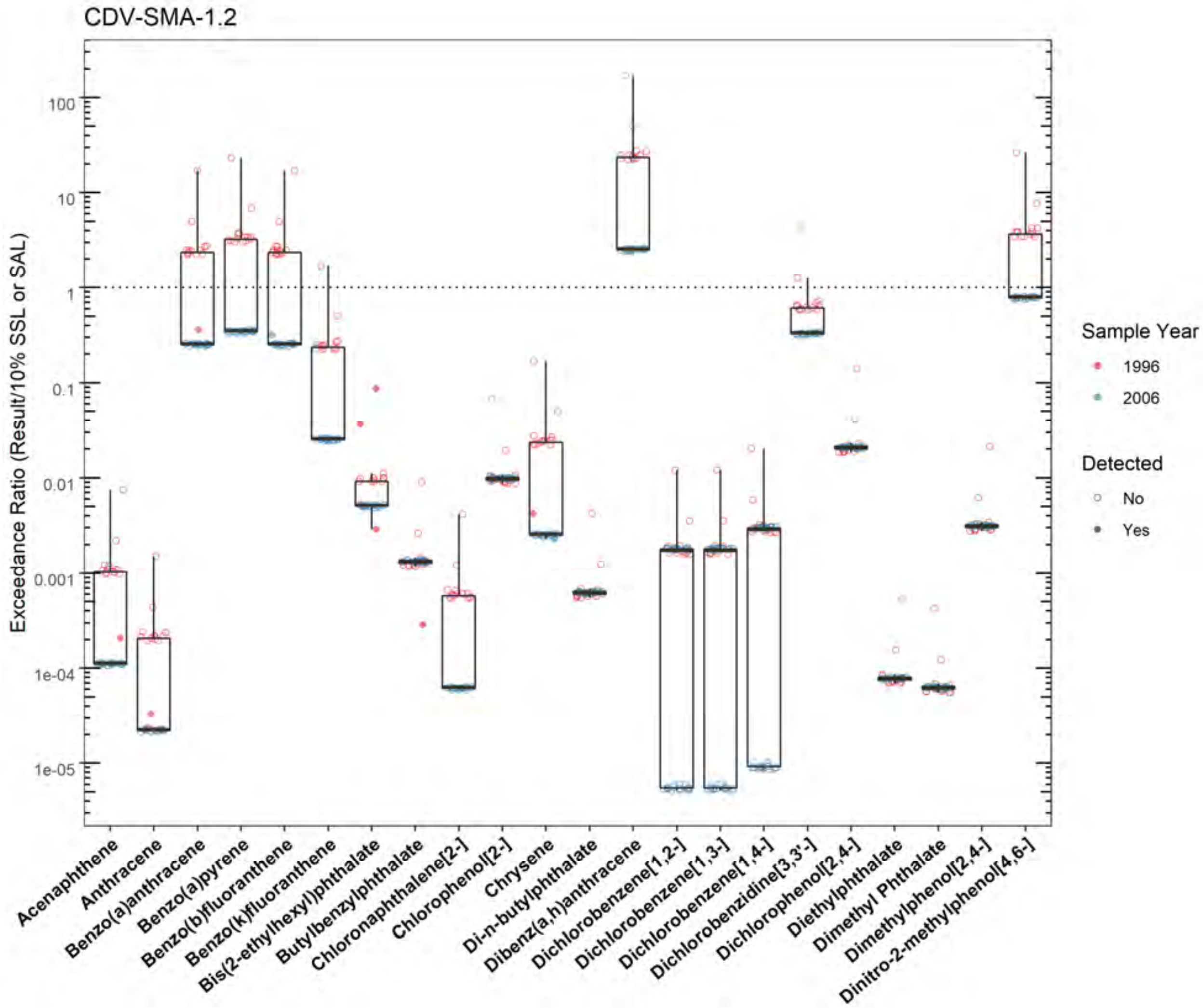


Figure 169.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-1.2 (Plot 1)

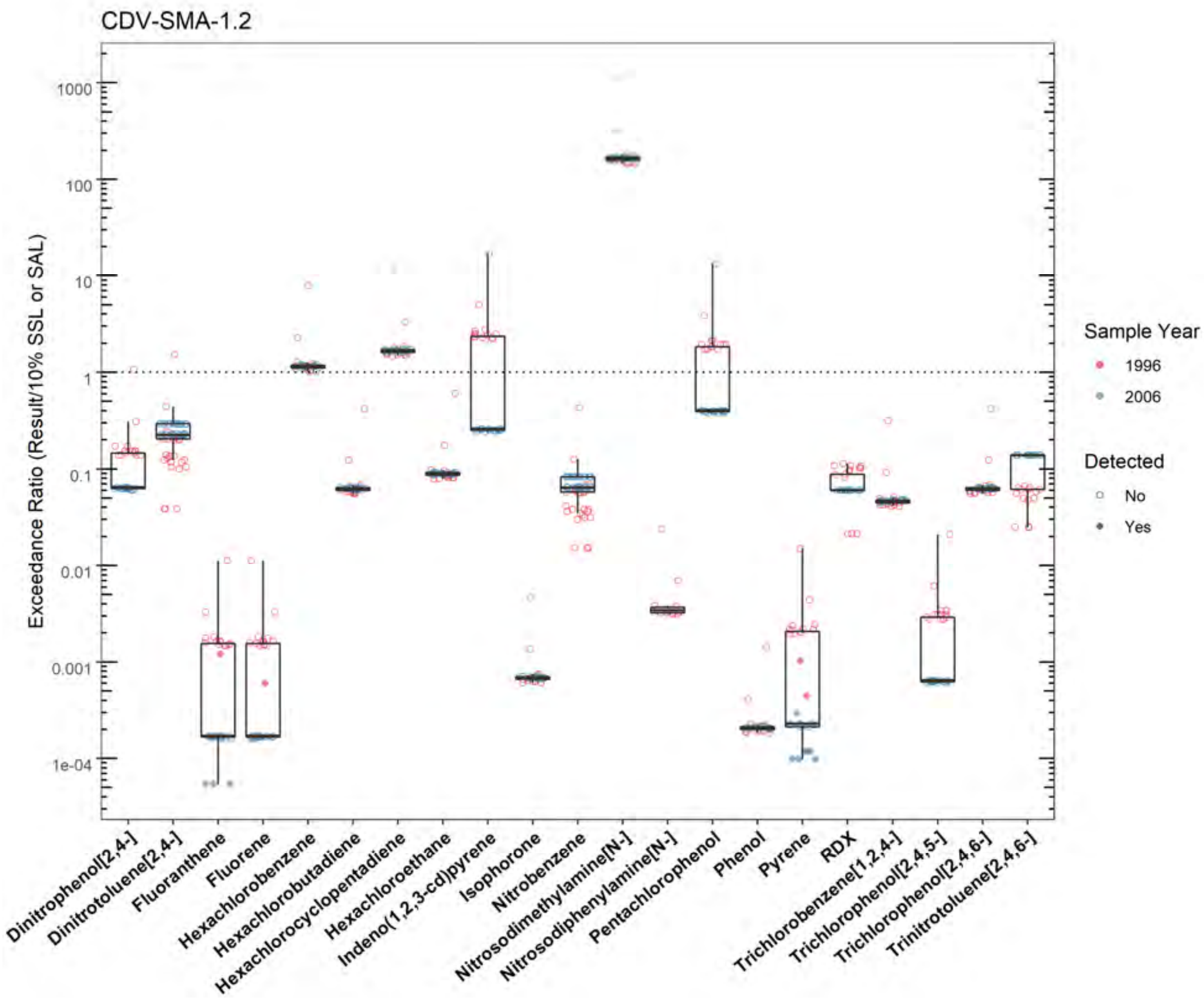


Figure 169.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-1.2 (Plot 2)

CDV-SMA-1.2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	CDV-SMA-1.2	Sb	Y	BTV	0.830	6.30	1996-06-03
Barium	CDV-SMA-1.2	Ba	Y	BTV	295	1550	1996-03-27
Cadmium	CDV-SMA-1.2	Cd	Y	BTV	0.400	1.00	1996-04-05
Chromium	CDV-SMA-1.2	Cr	Y	BTV	19.3	52.9	1996-03-27
Cobalt	CDV-SMA-1.2	Co	Y	BTV	8.64	14.1	1996-06-03
Copper	CDV-SMA-1.2	Cu	Y	BTV	14.7	579	1996-03-27
Iron	CDV-SMA-1.2	Fe	Y	BTV	21500	42000	2006-09-25
Lead	CDV-SMA-1.2	Pb	Y	BTV	22.3	45.2	1996-03-27
Manganese	CDV-SMA-1.2	Mn	Y	BTV	671	741	1996-06-03
Nickel	CDV-SMA-1.2	Ni	Y	BTV	15.4	429	1996-03-27
Selenium	CDV-SMA-1.2	Se	Y	BTV	1.52	10.5	2006-09-27
Silver	CDV-SMA-1.2	Ag	Y	BTV	1.00	6.00	1996-06-04
Uranium	CDV-SMA-1.2	U	Y	BTV	1.82	9.34	1996-04-05
Zinc	CDV-SMA-1.2	Zn	Y	BTV	48.8	284	1996-06-04

Figure 169.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-1.2

169.4 Stormwater Evaluation

169.4.1 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 September 2013 and August 2015. Analytical results from these samples are presented in Figures 169.4-1 through 169.4-4.

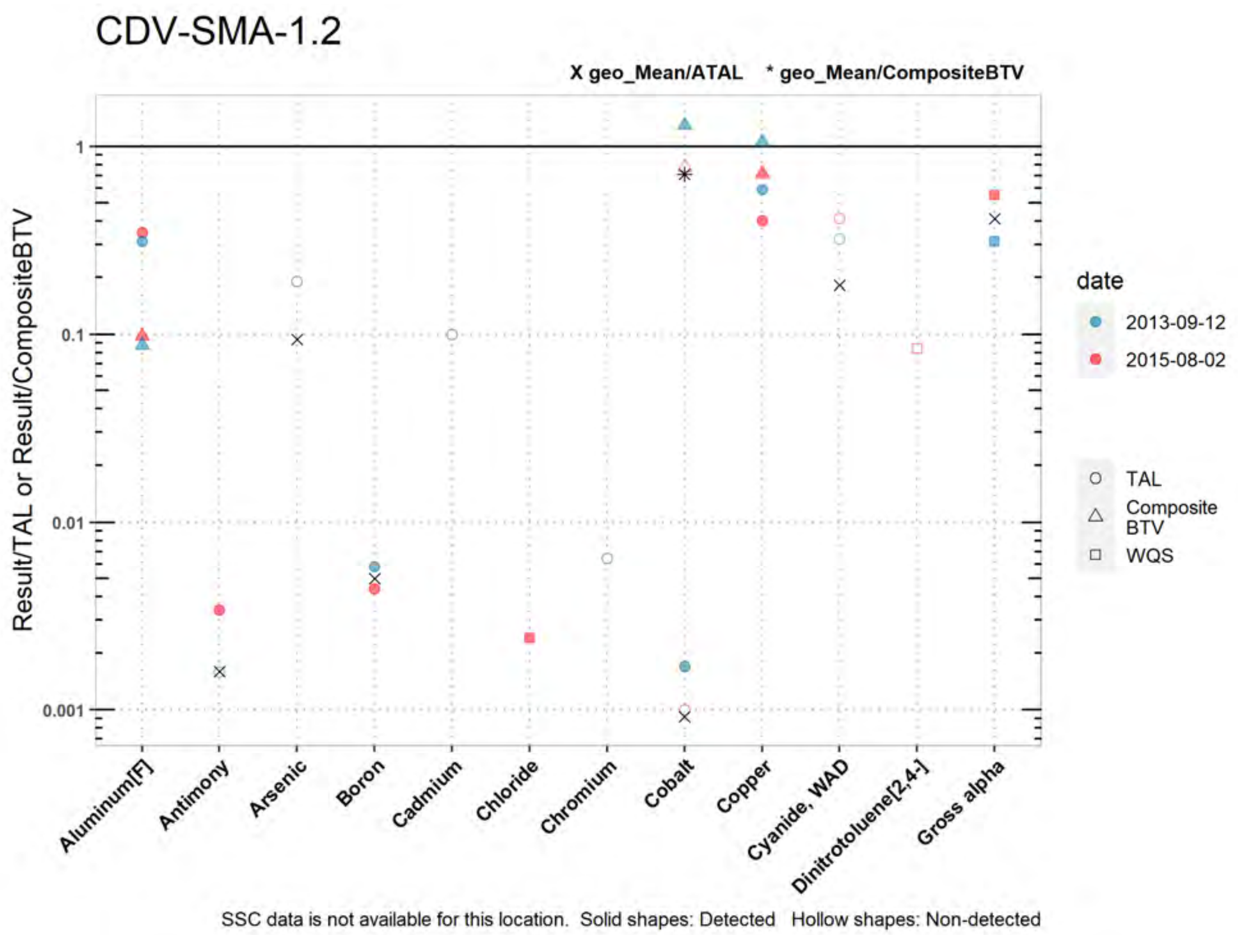


Figure 169.4-1 Analytical Results from Stormwater Samples, CDV-SMA-1.2 (Plot 1)

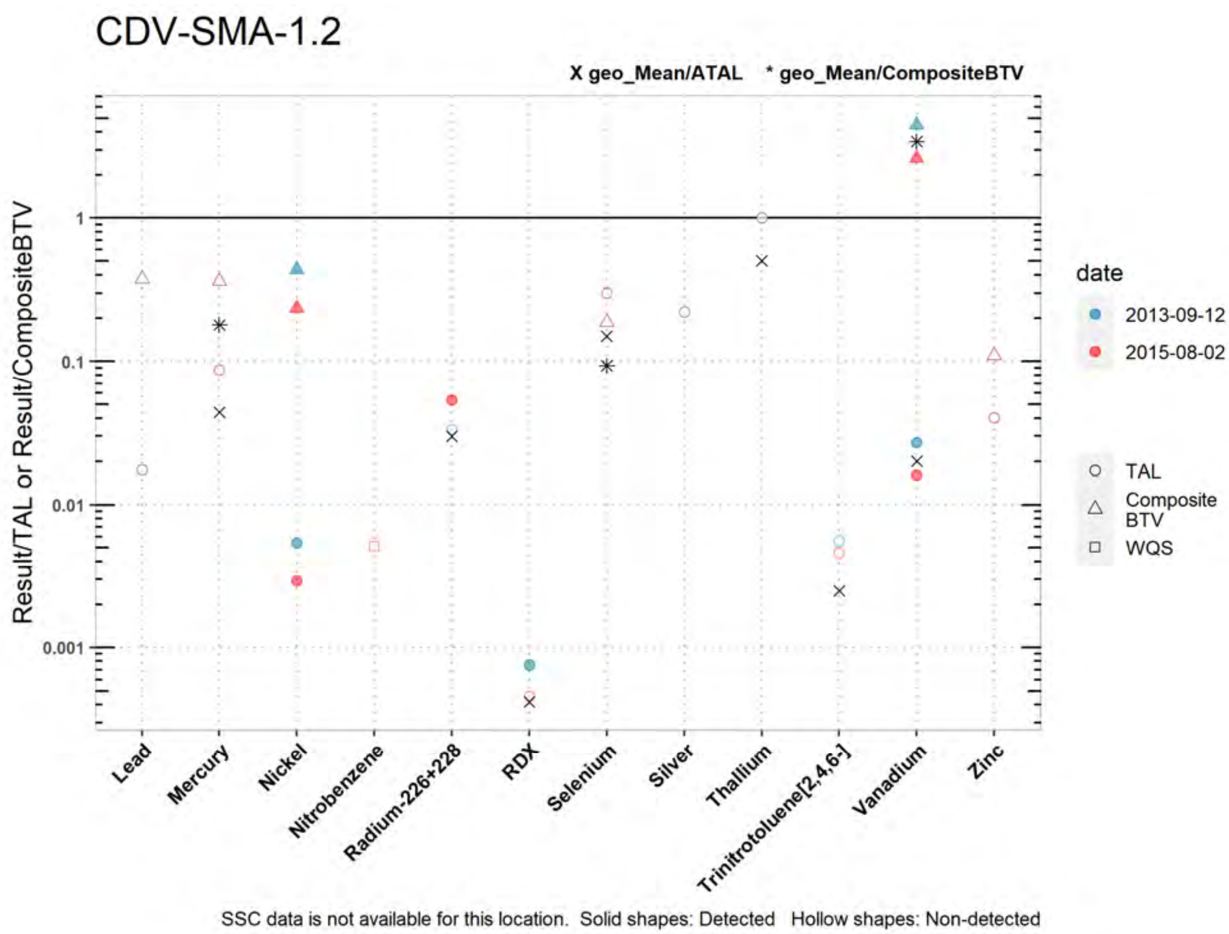


Figure 169.4-2 Analytical Results from Stormwater Samples, CDV-SMA-1.2 (Plot 2)

CDV-SMA-1.2

	Aluminum [F]	Antimony	Arsenic	Boron	Cadmium	Chloride	Chromium	Cobalt	Copper	Cyanide, WAD	Dinitrotoluene [2,4-]	Gross alpha
MQL	2.5	1	0.5	100	1	NA	10	50	0.5	10	NA	NA
ATAL	NA	640	9	5000	NA	NA	NA	1000	NA	5.2	NA	15
MTAL	750	NA	340	NA	0.879	NA	311	NA	6.69	22	NA	NA
Composite_BTV	2660	NA	NA	NA	NA	NA	NA	1.29	3.74	NA	NA	56.4
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
2013-09-12 result	233	*1.00*	*1.70*	29.2	*0.110*	NA	*2.00*	1.68	3.95	*1.67*	NA	4.70
2013-09-12 dT	0.311	NA	NA	0.0058	NA	NA	NA	0.0017	0.590	NA	NA	0.31
2013-09-12 dB	0.0876	NA	NA	NA	NA	NA	NA	1.30	1.06	NA	NA	NA
2015-08-02 result	260	2.18	*1.70*	21.8	*0.110*	546	*2.00*	*1.00*	2.69	*2.14*	*0.0920*	8.24
2015-08-02 dT	0.347	0.0034	NA	0.0044	NA	0.0024	NA	NA	0.402	NA	NA	0.55
2015-08-02 dB	0.0977	NA	NA	NA	NA	NA	NA	NA	0.719	NA	NA	NA
geo_mean/ATAL	NA	0.0016	0.094	0.0050	NA	NA	NA	0.00092	NA	0.182	NA	0.41
geo_mean/B	NA	NA	NA	NA	NA	NA	NA	0.710	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 169.4-3 Analytical Results from Stormwater Samples, CDV-SMA-1.2 (Table 1)

CDV-SMA-1.2

	Lead	Mercury	Nickel	Nitrobenzene	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
MQL	0.5	0.005	0.5	NA	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	0.77	NA	NA	30	200	5	NA	0.47	20	100	NA
MTAL	28.6	NA	250	NA	NA	NA	20	0.9	NA	NA	NA	81.6
Composite_BTV	1.34	0.186	3.10	NA	4.86	NA	8.04	NA	NA	NA	0.592	30.0
unit	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2013-09-12 result	*0.500*	*0.0670*	1.35	NA	*1.00*	0.153	*1.50*	*0.200*	*0.450*	*0.111*	2.66	*3.30*
2013-09-12 dT	NA	NA	0.00540	NA	NA	0.00076	NA	NA	NA	NA	0.027	NA
2013-09-12 dB	NA	NA	0.435	NA	NA	NA	NA	NA	NA	NA	4.49	NA
2015-08-02 result	*0.500*	*0.0670*	0.733	*0.0920*	1.61	*0.0920*	*1.50*	*0.200*	*0.450*	*0.0920*	1.55	*3.30*
2015-08-02 dT	NA	NA	0.00293	NA	0.0537	NA	NA	NA	NA	NA	0.016	NA
2015-08-02 dB	NA	NA	0.236	NA	NA	NA	NA	NA	NA	NA	2.62	NA
geo_mean/ATAL	NA	0.044	NA	NA	0.0299	0.00042	0.15	NA	0.5	0.0025	0.020	NA
geo_mean/B	NA	0.180	NA	NA	NA	NA	0.0933	NA	NA	NA	3.43	NA

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

Figure 169.4-4 Analytical Results from Stormwater Samples, CDV-SMA-1.2 (Table 2)

169.4.2 Assessment Unit and Stream Impairments

CDV-SMA-1.2 drains to Cañon de Valle (within LANL above Burning Ground Spring) which has not been assessed for impairments.

169.5 Site-Specific Demonstration

169.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable soil screening value and have not yet been measured in stormwater data: barium, iron, manganese, and uranium.

169.5.2 Stormwater Data Summary

No POCs exceeded TAL in the confirmation-monitoring samples collected.

169.5.3 2022 Permit Status

The SMA is in active monitoring; not all Site-related POCs have been monitored.

169.5.4 Sampling and Analysis Plan

Table 169.5-1 is the proposed SAP for CDV-SMA-1.2.

Table 169.5-1 Proposed SAP, CDV-SMA-1.2

Monitoring Constituent	Background for Monitoring
Dissolved barium, manganese, and uranium	Site history and soil data
Total iron	Site history and soil data
SVOCs	Site history
DOC	Permit requirement
SSC	Permit requirement

170.0 CDV-SMA-1.3

Associated Sites	16-017(a)-99, 16-026(m)
Receiving Water	Cañon de Valle
Drainage Area	0.05 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 16-017(a)-99: Pending Inclusion in Permit Modification Request Certificate of Completion Received Without Controls SWMU 16-026(m): Pending Inclusion in Permit Modification Request Certificate of Completion Received Without Controls
2010 Administratively Continued Permit Final Status	Corrective Action Complete
2016–2018 SIP Actions	Based on the November 2016 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

170.1 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.

SWMUs 16-017(a)-99 and 16-026(m) received CoCs under the Consent Order from NMED in August 2016. The Permittees submitted a certification of completion of corrective action for the Sites to EPA per Permit Part I.E.2(d) in September 2016 (LANL 2016, 601823). Stormwater monitoring has not occurred since 2013.

170.2 Site History

16-017(a)-99 (6/19/2017)

SWMU 16-017(a)-99 consists of a former HE machining building (former structure 16-92) that was located at TA-16. Constructed in 1950, the wooden building measured 20 ft wide × 60 ft long × 11 ft high and was surrounded by an earthen berm that was packed against steel pilings. The building was originally used for HE machining and was later used to clean and refurbish HE-contaminated equipment. Operations at building 16-92 may have resulted in uranium contamination because disassembled items may have contained uranium. By 1970, the building was used entirely for storage. By 1991, building 16-92 was abandoned and was subsequently removed during D&D operations in 1996. Two former sumps [SWMU 16-029(l)], located adjacent to former building 16-92, discharged to outfalls [SWMU 16-026(m)] in drainages east of the building that emptied into Cañon de Valle 600 ft north of the former 90s Line ponds [SWMU 16-008(a)]. The sumps and associated drainlines were also removed in 1996. This SWMU was originally a component of SWMU 16-017, which consisted of a group of 24 structures within TA-16 that were part of the World War II era HE operations. During the 1999 Annual Unit Audit, SWMU 16-017 was split into 24 separate SWMUs to facilitate investigation. Structure 16-92 was given the individual SWMU identification of SWMU 16-017(a)-99 at that time.

16-026(m) (6/19/2017)

SWMU 16-026(m) consists of two former outfalls and associated drainlines from two former sumps [SWMU 16-029(l)] that served former HE machining building 16-92, all of which were located near the 90s-Line Pond area at TA-16. The sumps measured approximately 15 ft × 5 ft × 5 ft and were located on the east and west sides of former building 16-92. The eastern sump discharged to a VCP drainline that extended north and west to its discharge point approximately 260 ft north of the building. The western sump discharged to a VCP that extended north and then west of the building where it discharged to an open drainage channel. The outfalls did not discharge to the 90s Line pond [SWMU 16-008(a)], but instead discharged to a northeast drainage that empties into Cañon de Valle 600 ft north of the 90s Line. Constructed in 1950, former building 16-92 consisted of a wooden structure on a concrete slab, measured 1332 ft^2, and was surrounded on three sides by an earthen berm that was packed against steel pilings. The building was originally used for HE machining and was later used to clean and refurbish HE-contaminated equipment. The sumps were filled with gravel during the mid-1960s and by 1970, the building was used entirely for storage. Operations at building 16-92 may have resulted in uranium contamination because disassembled items may have contained uranium. By 1991, building 16-92 was abandoned and was subsequently removed during D&D operations in 1996 along with the SWMU 16-026(m) outfalls and associated drainlines, and the SWMU 16-026(l) sumps.

For investigation activities for the Sites refer to “Supplemental Investigation Report for Consolidated Units 16-007(a)-99 and 16-008(a)-99” (LANL 2010, 108279).

170.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 170.2-1.

Table 170.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-017(a)-99	Soil contamination from former HE Machining building 16-92	Metals, barium, organic chemicals, HE, uranium
16-026(m)	Outfalls associated with former building 16-92	Metals, barium, organic chemicals, HE, uranium

170.3 Consent Order Soil Data

Decision-level data for SWMUs 16-008(a), 16-017(a-e)-99, 16-026(m-p), 16-029(k,l,s,t, and u), and AOC C-16-067, consist of results from 302 samples collected at 154 locations in 1996 and 2006. Analytical results for these samples are presented in Figures 170.3-1 through 170.3-4. The January 2010 investigation report (LANL 2010, 108279) concluded that the nature and extent were defined for the SWMUs.

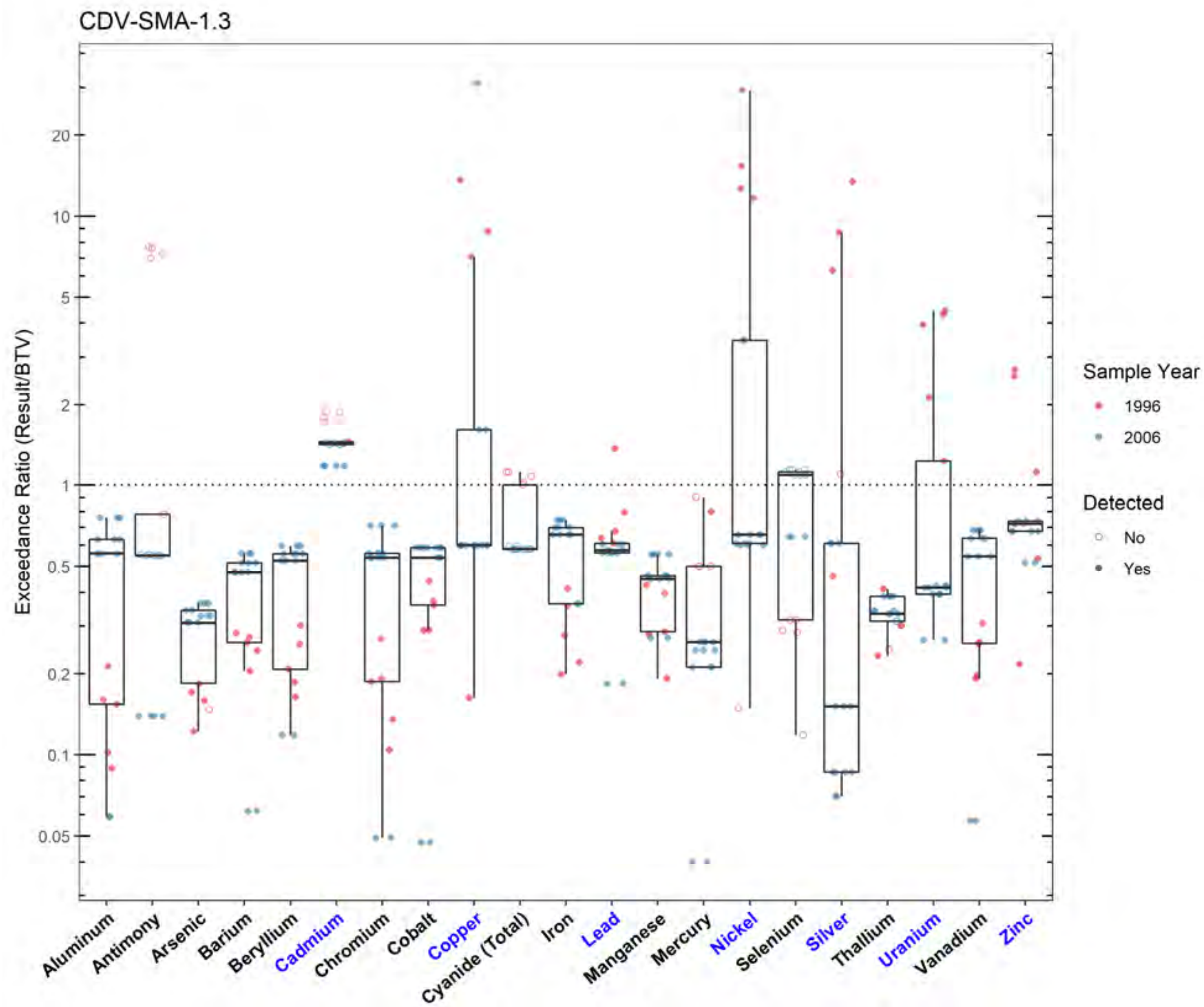


Figure 170.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-1.3

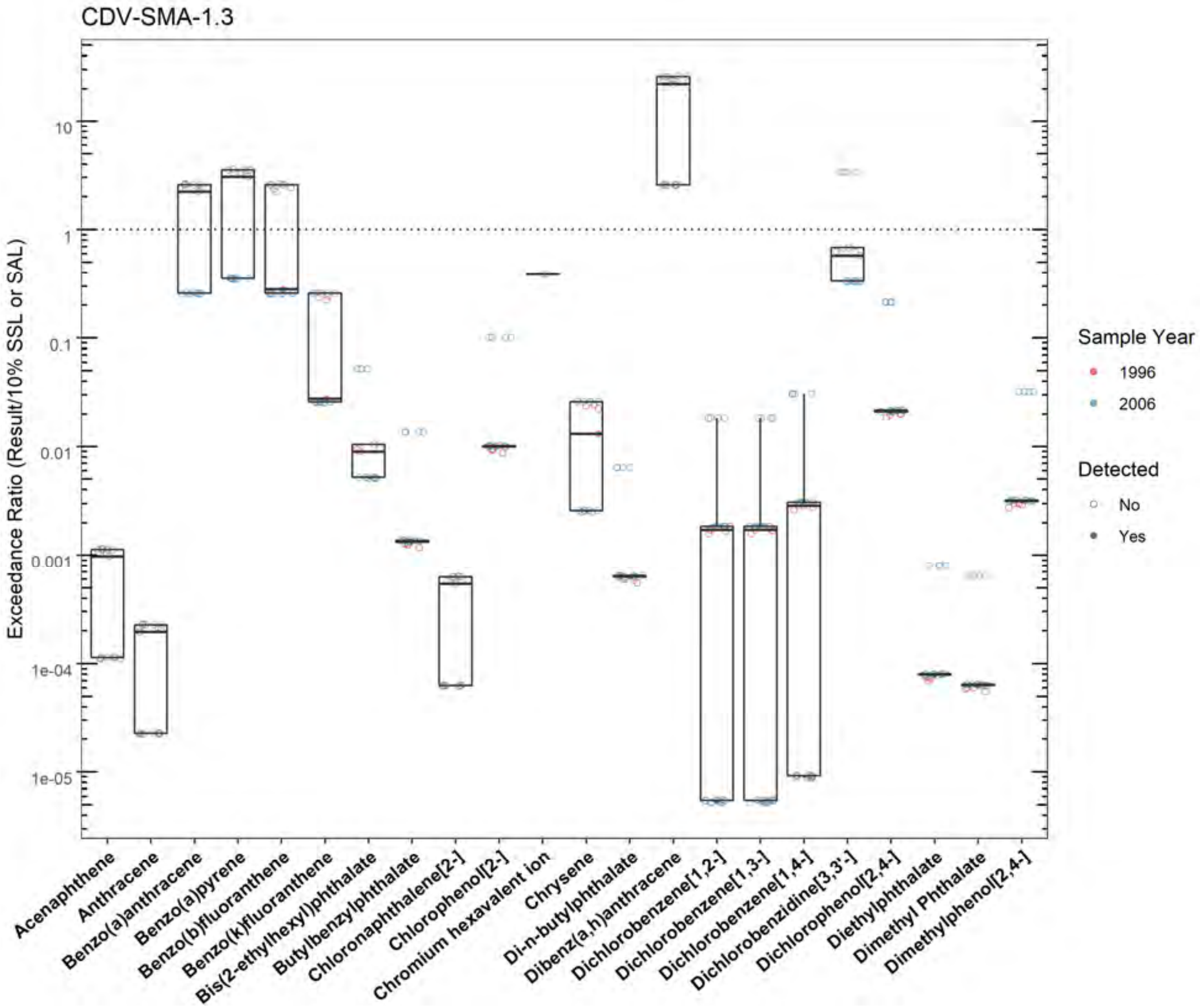


Figure 170.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-1.3 (Plot 1)

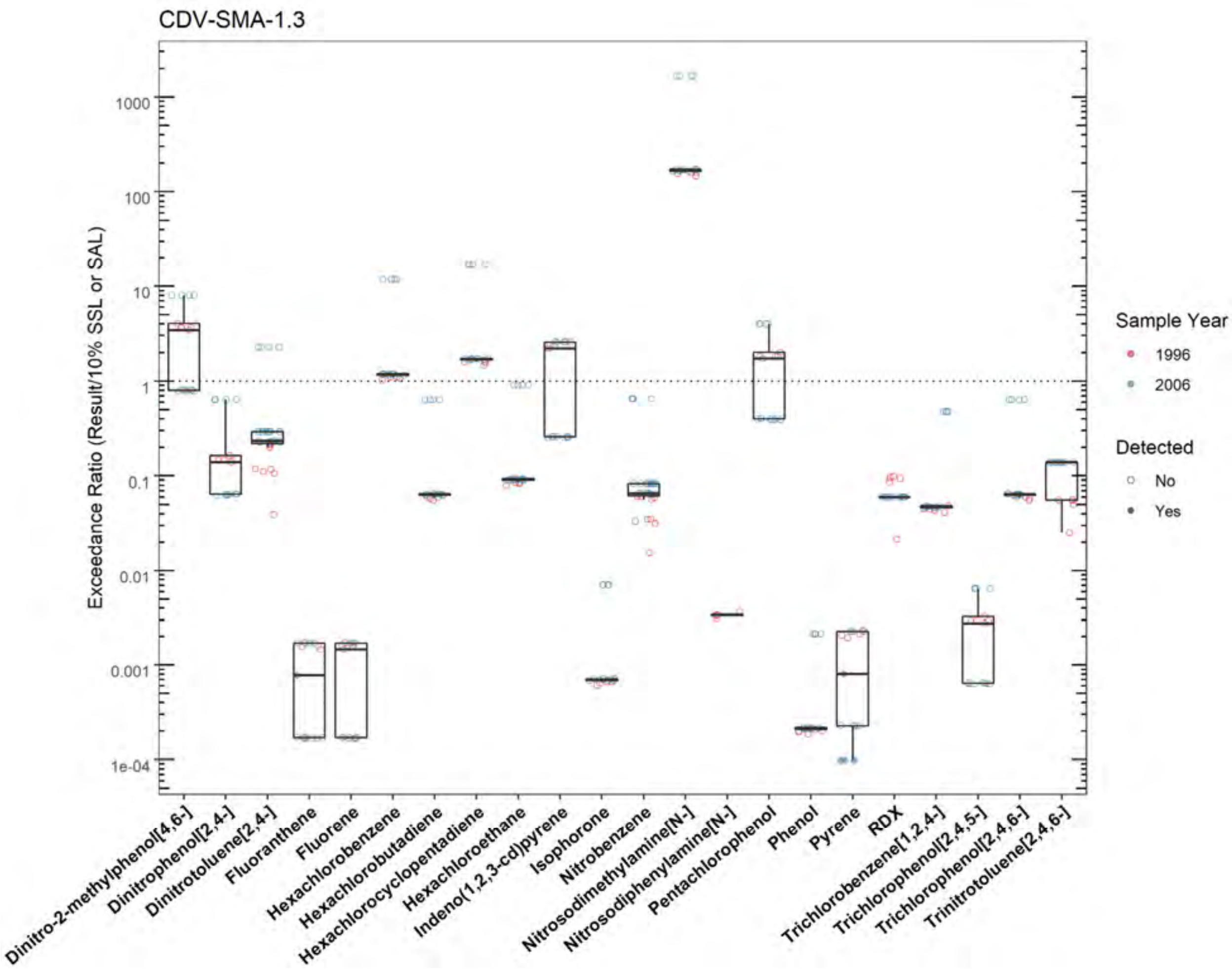


Figure 170.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-1.3 (Plot 2)

CDV-SMA-1.3

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Cadmium	CDV-SMA-1.3	Cd	Y	BTV	0.400	0.580	1996-04-05
Copper	CDV-SMA-1.3	Cu	Y	BTV	14.7	458	1996-06-06
Lead	CDV-SMA-1.3	Pb	Y	BTV	22.3	30.6	1996-06-06
Nickel	CDV-SMA-1.3	Ni	Y	BTV	15.4	451	1996-06-06
Silver	CDV-SMA-1.3	Ag	Y	BTV	1.00	13.4	1996-06-06
Uranium	CDV-SMA-1.3	U	Y	BTV	1.82	8.10	1996-06-06
Zinc	CDV-SMA-1.3	Zn	Y	BTV	48.8	132	1996-06-06

Figure 170.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-1.3

170.4 Stormwater Evaluation

170.4.1 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 170.4-1 and 170.4-2.

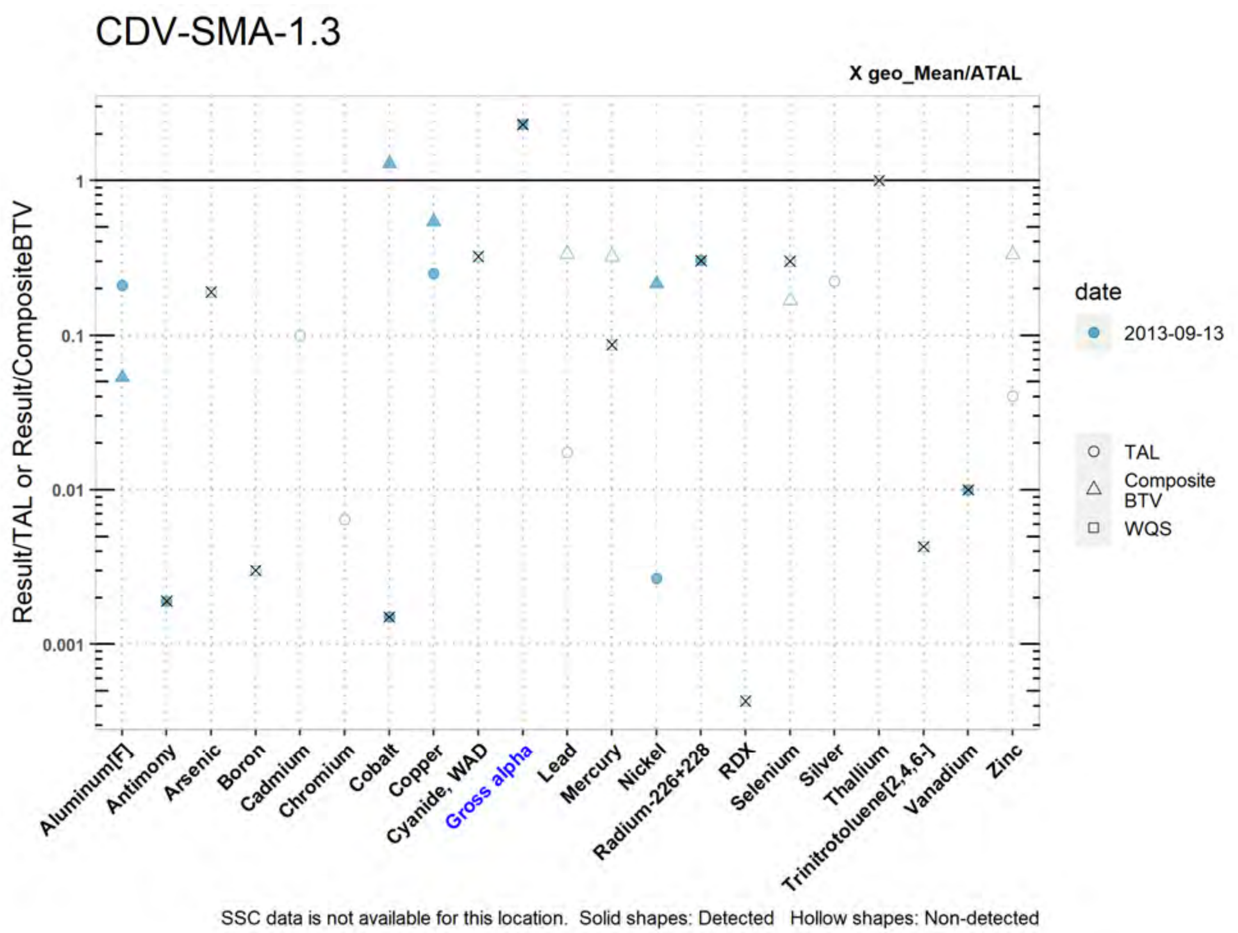


Figure 170.4-1 Analytical Results from Stormwater Samples, CDV-SMA-1.3 (Plot)

CDV-SMA-1.3

	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	0.879	311	NA	6.69	22	NA	28.6	NA	250	NA	NA	20	0.9	NA	NA	NA	81.6
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
2013-09-13 result	157	1.21	*1.70*	*15.0*	*0.110*	*2.00*	1.51	1.68	*1.67*	34.7	*0.500*	*0.0670*	0.665	9.10	*0.0860*	*1.50*	*0.200*	*0.450*	*0.0860*	1.03	*3.30*
2013-09-13 dT	0.209	0.0019	NA	NA	NA	NA	0.0015	0.251	NA	2.3	NA	NA	0.00266	0.303	NA	NA	NA	NA	NA	0.010	NA
2013-09-13 dB	0.0532	NA	NA	NA	NA	NA	1.28	0.538	NA	NA	NA	NA	0.215	NA	NA	NA	NA	NA	NA	NA	NA
geo_mean/ATAL	NA	0.0019	0.19	0.0030	NA	NA	0.0015	NA	0.321	2.3	NA	0.087	NA	0.303	0.00043	0.30	NA	1	0.0043	0.010	NA

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

Figure 170.4-2 Analytical Results from Stormwater Samples, CDV-SMA-1.3 (Table)

170.4.2 Assessment Unit and Stream Impairments

CDV-SMA-1.3 drains to Cañon de Valle (within LANL above Burning Ground Spring) which has not been assessed for impairments.

170.5 Site-Specific Demonstration

170.5.1 Soil Data Summary

Uranium is a Site-related POC; it exceeded the applicable screening value in soil data and has not yet been measured in stormwater data, therefore it will be added to the SAP. The other metals that exceeded the applicable screening values in soil data were previously monitored in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

170.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL and there was no paired SSC data to determine if it was below BTV, therefore it will be added to the SAP.

170.5.3 2022 Permit Status

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

170.5.4 Sampling and Analysis Plan

Table 170.5-1 is the proposed SAP for CDV-SMA-1.3.

Table 170.5-1 Proposed SAP, CDV-SMA-1.3

Monitoring Constituent	Background for Monitoring
SVOCs	Site history (organics)
Total PCBs	Site history (organics)
Gross alpha	Site history (uranium)
Dissolved uranium	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

171.0 CDV-SMA-1.4

Associated Sites	16-020, 16-026(l), 16-028(c)
Receiving Water	Cañon de Valle
Drainage Area	15.27 acres
Landscape Characteristics	11% impervious, 89% pervious
Consent Order Site Status	SWMU 16-020: In Progress SWMU 16-026(l): In Progress SWMU 16-028(c): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the November 2016 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

171.1 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. Analytical results from this sample initiated corrective action.

Following the May 2014 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2014, 256722), 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 at this new location, and monitoring is ongoing until at least one confirmation sample is collected.

171.2 Site History

16-020 (9/14/2020)

SWMU 16-020, known as the Silver Outfall and described as such in the 1990 SWMU Report, is a former operational release area where untreated spent photo-fixing bath solutions were discharged from former building 16-222 to an outfall for a period of 20 years at TA-16. Former building 16-222 was part of the 16-220 Complex, which was a complex of connected buildings used for radiography of HE parts for nuclear weapons for approximately 43 years. According to the 1990 SWMU Report, between 1959 and 1979, photo-processing liquids were discharged to an outfall on the south side of former building 16-222 directly to the environment without treatment. The outfall and drainage downgradient of the outfall received significant quantities of silver (>12 g/L) as silver thiosulfate complexes in untreated, spent x-ray fixing solutions. Soil and sediment downgradient of this outfall was contaminated with photo-processing chemicals, including silver and chromium, as well as PAHs from asphalt roofing materials. In 1979, a silver recovery unit was installed in former building 16-222 to remove silver from the photo-processing effluent prior to discharge. The outfall was added to the LANL NPDES permit as outfall 06A-073. Discharges to the outfall ceased when building 16-222 was decommissioned in 1995 and was demolished and removed in 2003 and the outfall was removed from the LANL NPDES permit in 1997.

16-026(l) (6/3/2021)

SWMU 16-026(l) is described in the 1990 SWMU Report as consisting of three inactive outfalls and associated outlet drainlines that served former building 16-220 at TA-16. The 1990 SWMU Report states the outfalls were located on the northeast, southeast, and south sides of former building 16-220, a former x-ray building. According to the 1998 replacement of Chapter 6 of OU 1082 RCRA RFI work plan, Addendum 2, SWMU 16-026(l) consists of three outlet drainlines from the east wall and the northeastern and southeastern corners of building 16-220. The 1992 Santa Fe Engineering Wastewater Stream Characterization report #7 for TA-16, as-built drawings ENG-C 15660 (pg. 57 of 121) and ENG-C 15605 (pg. 2 of 121), and engineering drawing ENG-R 855 (pg. 2 of 38) show two 4-in.-diameter cast iron (CI) roof drainlines, one coming off the northeast corner of former building 16-220, and one coming off the southeast wall of former building 16-220 and discharging to outfalls located approximately 20 ft east of the former building. The third outfall discharged via a 4-in.-diameter CI outlet drainline from a steam pit that exited the middle east wall of former building 16-220 to an outfall located approximately 120 ft east of drainline former building 16-220, as shown on as-built drawings ENG-C 15660 (pg. 57 of 121) and ENG-C 15605 (pg. 2 of 121), engineering drawing ENG-R 855 (pg. 2 of 38), and the 1992 Santa Fe Engineering Wastewater Stream Characterization report #7 for TA-16. The 2006 IWP (LANL 2006, 091698) incorrectly states that the drainage area from these three outfalls is commingled with the outfall drainage from SWMU 16-028(c); they have separate drainage areas. Building 16-220 was removed in 2003. The 1991 orthographic GIS layer and a 1988 site photograph confirm the correct locations of the three former outfalls and the three associated outlet drainlines.

16-028(c) (6/3/2021)

SWMU 16-028(c) is a former NPDES-permitted outfall (EPA 04A-070) and outlet drainline that received discharges from eight floor drains in former building 16-220 at TA-16. The 1992 Santa Fe Engineering Wastewater Stream Characterization report #7 for TA-16 and as-built drawing ENG-C 15660 (pg. 57 of 121) show the former outfall (EPA 04A070) received discharges from eight floor drains in former building 16-220. The effluent contained noncontact cooling water, chiller condensate, periodic discharge from a HE vacuum pump, and floor washings. The 4-in.-diameter cast iron outlet drainline tied into a 6-in.-diameter VCP outlet drainline before discharging to a rocky ditch on the east side of the building and effluent flowed to a relatively flat, grassy field southeast of the building as shown in engineering drawing ENG-C 29835 (pg. 11 of 17) and a 1988 site photograph. The 2006 IWP (LANL 2006, 091698) incorrectly stated that the drainage area was commingled with the outfalls from SWMU 16-026(l); they have separate drainage areas. The floor drains in former building 16-220 were plugged in 1991 and building 16-220 was removed in 2003. This outfall was removed from the LANL NPDES permit, effective September 19, 1997.

Former rest houses within S-Site stored finished packaged HE components before and after they were radiographed in the x-ray buildings. The HE components were transported between the rest houses and the x-ray buildings in enclosed walkways. When the components arrived at the x-ray buildings, they were removed from their packaging, x-rayed, repackaged and returned to the rest houses. Small HE chips were historically observed in the floor drains. Site workers stated that HE dust and small chips would break off during the x-ray process and could have entered the building 16-220 floor drains. Because SWMU 16-028(c) is associated with floor drains in the former x-ray building, HE contamination could be present at the outfall.

For investigation activities for the Sites, refer to “Investigation Work Plan for Cañon de Valle Aggregate Area” (LANL 2006, 091698).

171.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 171.2-1.

Table 171.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-020	Outfall from former building 16-222	Metals, chromium, silver
16-026(l)	Outfalls associated with former building 16-220	Metals, organic chemicals, HE
16-028(c)	Outfall from former building 16-220	Metals, organic chemicals, HE

171.3 Consent Order Soil Data

Decision-level data for SWMU 16-020 consist of results from samples collected in 2000. The 2006 IWP concluded that the nature and extent of contamination are not defined and additional sampling is recommended.

Decision-level data for SWMU 16-026(l) consist of results from samples collected in 2003. The 2006 IWP concluded that the nature and extent of contamination were not defined and additional sampling is recommended.

Decision-level data for SWMU 16-028(c) consist of four samples collected at four locations in 2003 within the footprint of former building 16-220; drains associated with SWMU 16-026(l) were also located within the building footprint. The 2006 IWP (LANL 2006, 091698) concluded that the nature and extent of contamination were not defined and additional sampling is recommended.

Analytical results for the decision-level soil samples for this SMA are presented in Figures 171.3-1 through 171.3-4.

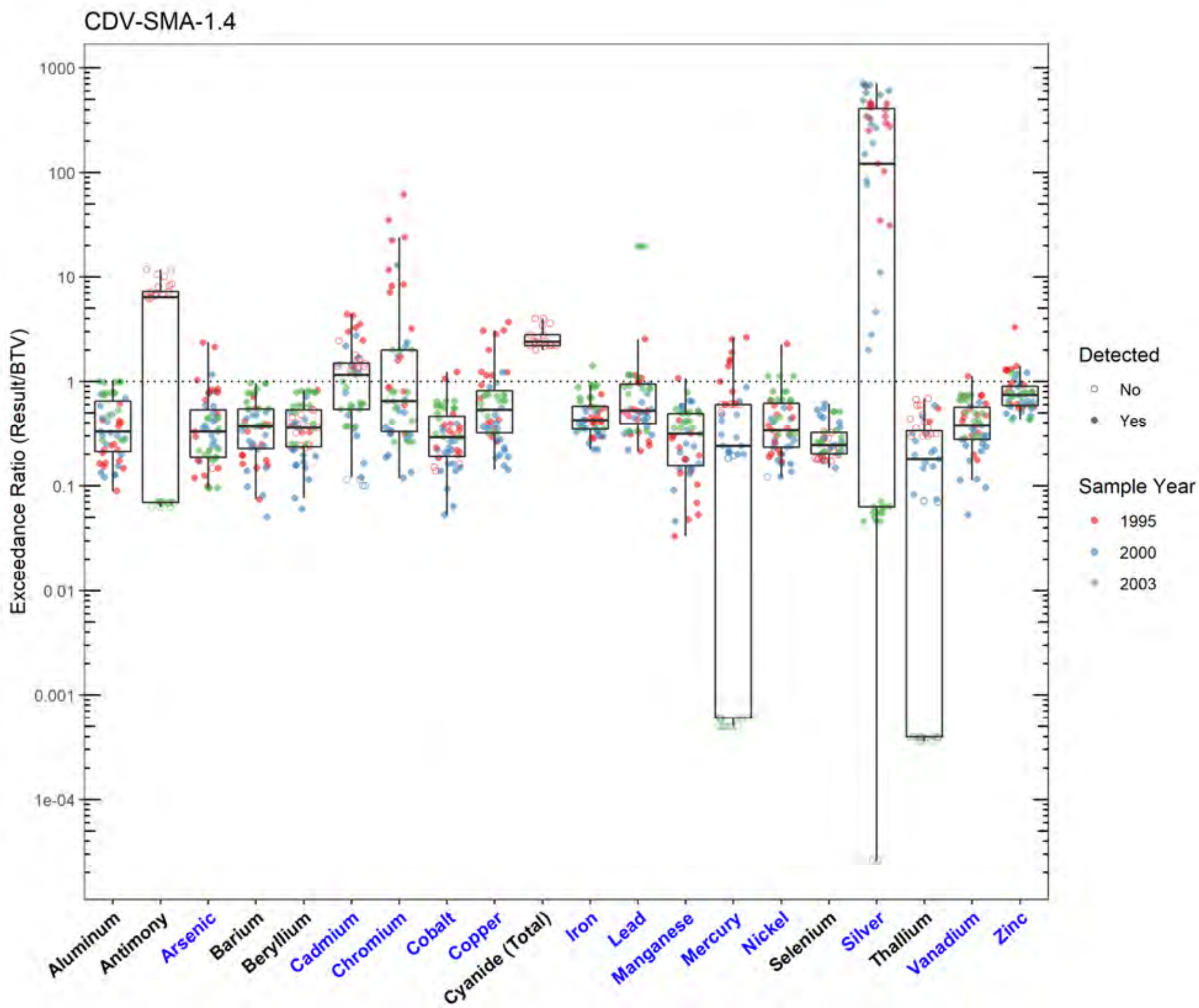


Figure 171.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-1.4

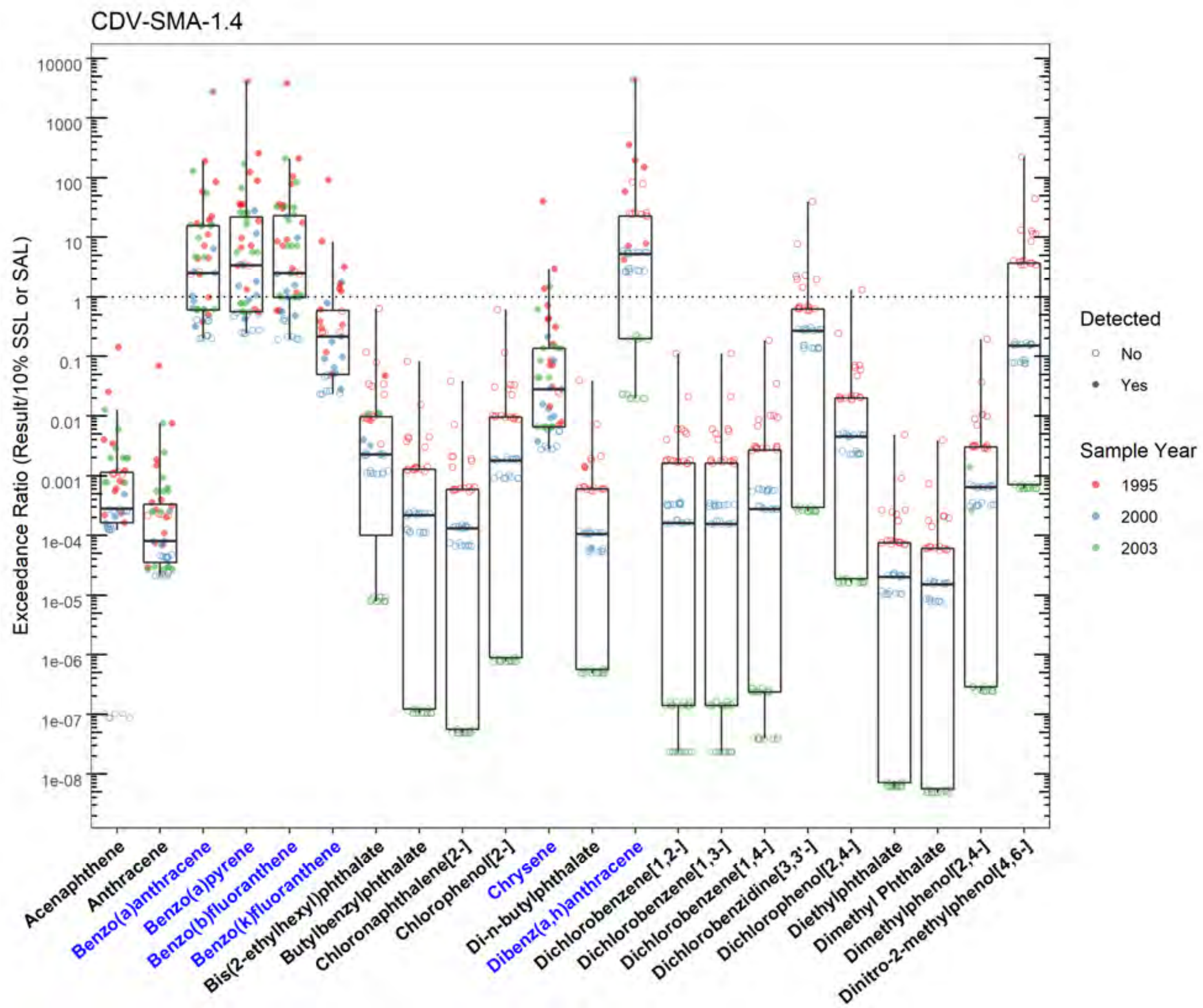


Figure 171.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-1.4 (Plot 1)

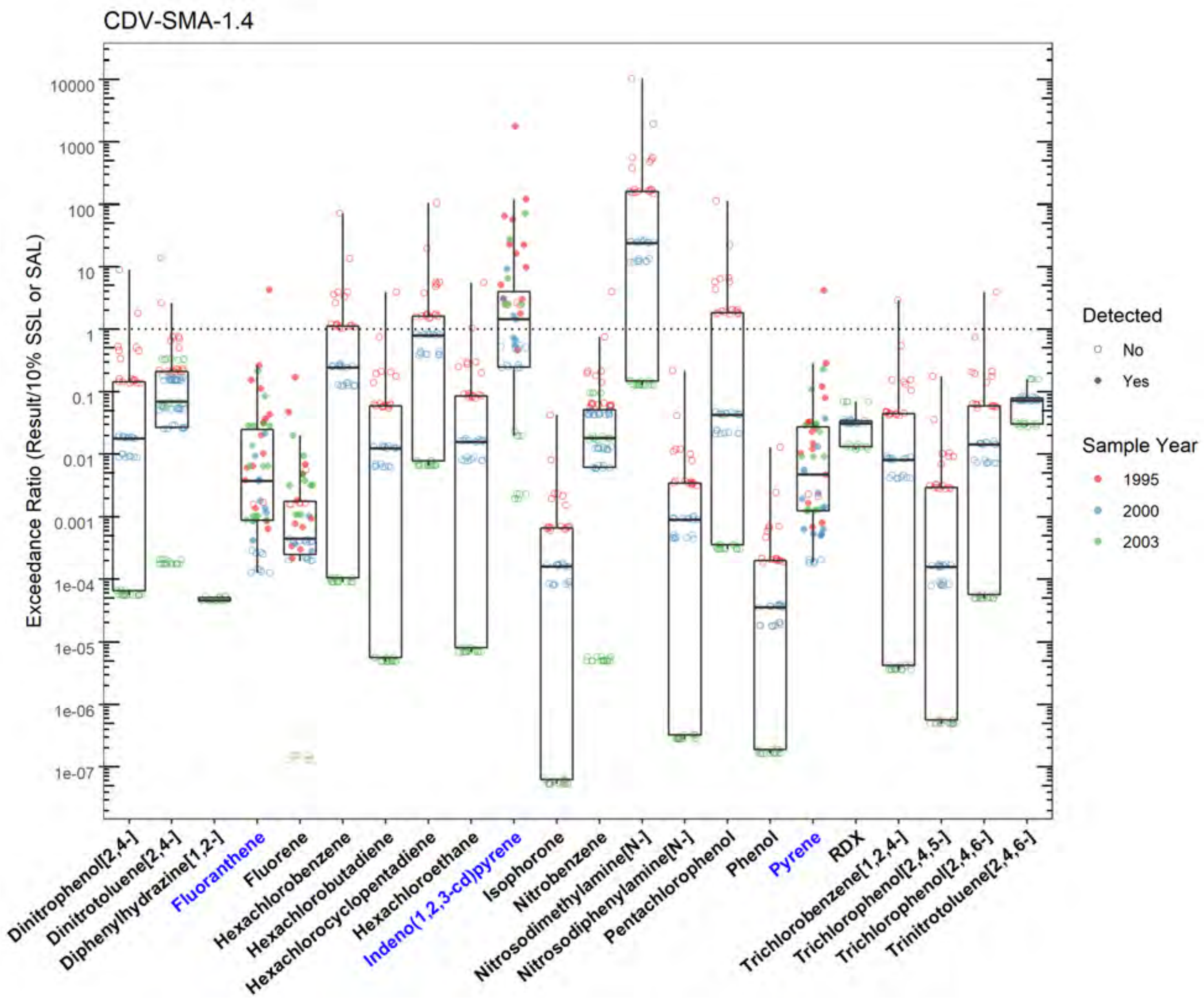


Figure 171.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-1.4 (Plot 2)

CDV-SMA-1.4

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Arsenic	CDV-SMA-1.4	As	Y	BTV	8.17	19.3	1995-05-18
Benzo(a)anthracene	CDV-SMA-1.4	56-55-3	Y	SSL_0.1	0.153	420	1995-05-18
Benzo(a)pyrene	CDV-SMA-1.4	50-32-8	Y	SSL_0.1	0.112	460	1995-05-18
Benzo(b)fluoranthene	CDV-SMA-1.4	205-99-2	Y	SSL_0.1	0.153	580	1995-05-18
Benzo(k)fluoranthene	CDV-SMA-1.4	207-08-9	Y	SSL_0.1	1.53	140	1995-05-18
Cadmium	CDV-SMA-1.4	Cd	Y	BTV	0.400	1.75	1995-10-12
Chromium	CDV-SMA-1.4	Cr	Y	BTV	19.3	1190	1995-05-18
Chrysene	CDV-SMA-1.4	218-01-9	Y	SSL_0.1	15.3	610	1995-05-18
Cobalt	CDV-SMA-1.4	Co	Y	BTV	8.64	10.6	1995-05-18
Copper	CDV-SMA-1.4	Cu	Y	BTV	14.7	54.2	1995-05-18
Dibenz(a,h)anthracene	CDV-SMA-1.4	53-70-3	Y	SSL_0.1	0.0153	68.0	1995-05-18
Fluoranthene	CDV-SMA-1.4	206-44-0	Y	SSL_0.1	232	980	1995-05-18
Indeno(1,2,3-cd)pyrene	CDV-SMA-1.4	193-39-5	Y	SSL_0.1	0.153	270	1995-05-18
Iron	CDV-SMA-1.4	Fe	Y	BTV	21500	30300	2003-01-30
Lead	CDV-SMA-1.4	Pb	Y	BTV	22.3	437	2003-01-30
Manganese	CDV-SMA-1.4	Mn	Y	BTV	671	719	1995-05-18
Mercury	CDV-SMA-1.4	Hg	Y	BTV	0.100	0.263	1995-05-18
Nickel	CDV-SMA-1.4	Ni	Y	BTV	15.4	35.0	1995-09-18
Pyrene	CDV-SMA-1.4	129-00-0	Y	SSL_0.1	174	720	1995-05-18
Silver	CDV-SMA-1.4	Ag	Y	BTV	1.00	720	2000-09-28
Vanadium	CDV-SMA-1.4	V	Y	BTV	39.6	44.4	1995-05-18
Zinc	CDV-SMA-1.4	Zn	Y	BTV	48.8	160	1995-05-18

Figure 171.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-1.4

171.4 Stormwater Evaluation

171.4.1 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.

171.4.2 Assessment Unit and Stream Impairments

CDV-SMA-1.4 drains to Cañon de Valle (within LANL above Burning Ground Spring) which has not been assessed for impairments.

171.5 Site-Specific Demonstration

171.5.1 Soil Data Summary

HE is a site-related POC and will be added to the SAP. Several metals and SVOCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater; therefore, they will be added to the SAP.

171.5.2 Stormwater Data Summary

No confirmation-monitoring data exist for the current stage and location.

171.5.3 2022 Permit Status

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

171.5.4 Sampling and Analysis Plan

Table 171.5-1 is the proposed SAP for CDV-SMA-1.4.

Table 171.5-1 Proposed SAP, CDV-SMA-1.4

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

172.0 CDV-SMA-1.45

Associated Sites	16-026(i)
Receiving Water	Cañon de Valle
Drainage Area	0.02 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 16-026(i): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the November 2016 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

172.1 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. 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.

172.2 Site History

16-026(i) (9/14/2020)

SWMU 16-026(i) consists of an inactive outfall and associated floor drains and drainlines from former building 16-224 within the northern portion of S-Site at TA-16. Floor drains in former building 16-224 were connected to two drainlines located at the northeast and northwest corners of the building. The drainline tied into a single 6-in. VCP outlet drainline, which discharged to the outfall approximately 40 ft northeast of the building. Building 16-224 was an x-ray building constructed in the early 1950s and measured 58 ft long × 44 ft wide × 10 ft high.

Former rest houses within S-Site stored finished packaged HE components before and after they were radiographed in the x-ray buildings. The HE components were transported between the rest houses and the x-ray buildings in enclosed walkways. When the components arrived at the x-ray buildings, they were removed from their packaging, x-rayed, repackaged and returned to the rest houses. Small HE chips were historically observed in the floor drains. Site workers stated that HE dust and small chips would break off during the x-ray process and could have entered the floor drains. Because SWMU 16-026(i) is associated with floor drains in the x-ray building, HE contamination could be present at the outfall. The floor drains were plugged in 1991 and building 16-224 was removed in 2003. The outfall was characterized by low flow onto a shallow, grassy slope northeast of the building.

For investigation activities for the Site, refer to "Investigation Work Plan for Cañon de Valle Aggregate Area" (LANL 2006, 091698).

172.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 172.2-1.

Table 172.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-026(i)	Outfall from former building 16-224	Metals, barium, SVOCs, HE

172.3 Consent Order Soil Data

Decision-level data for SWMU 16-026(i) consist of results from four samples collected at four locations in 2003. Analytical results for these samples are presented in Figures 172.3-1 through 172.3-4. The 2006 IWP concluded that the nature and extent of contamination were not defined and additional sampling is recommended. Human health and ecological risk assessments were not completed since the extent of contamination was not defined. Detected inorganic and organic chemical concentrations were all below residential SSLs.

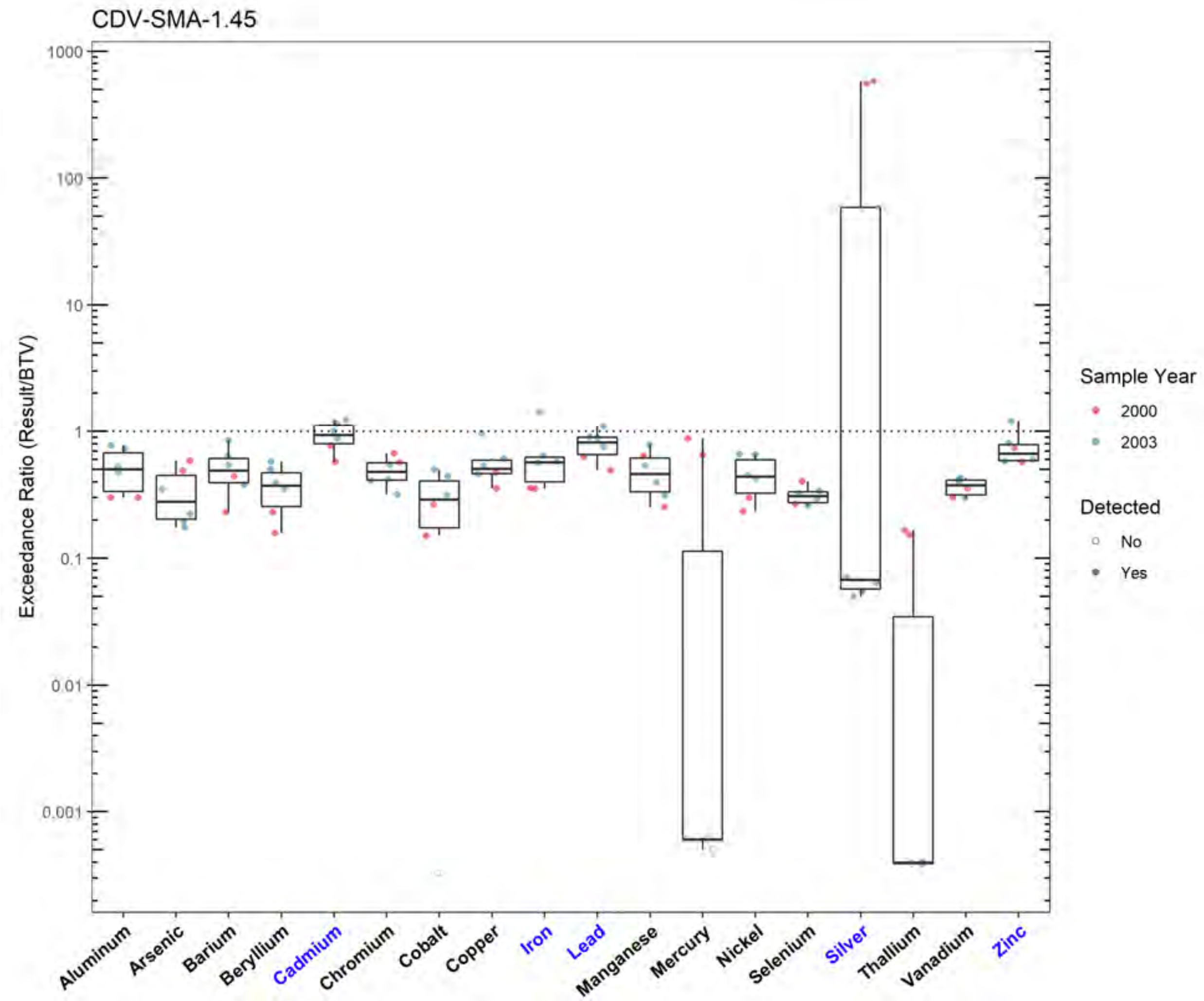


Figure 172.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-1.45

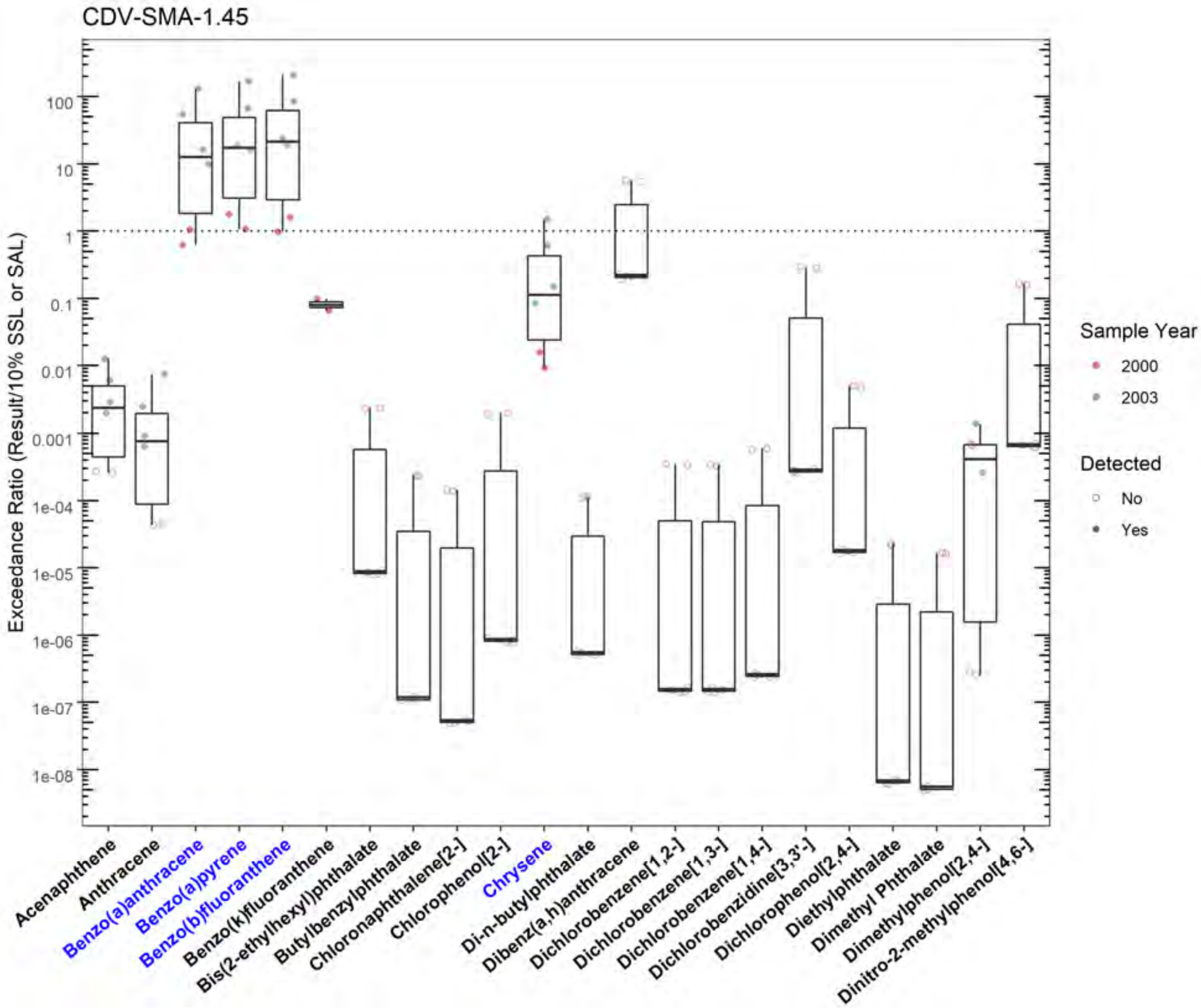


Figure 172.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-1.45 (Plot 1)

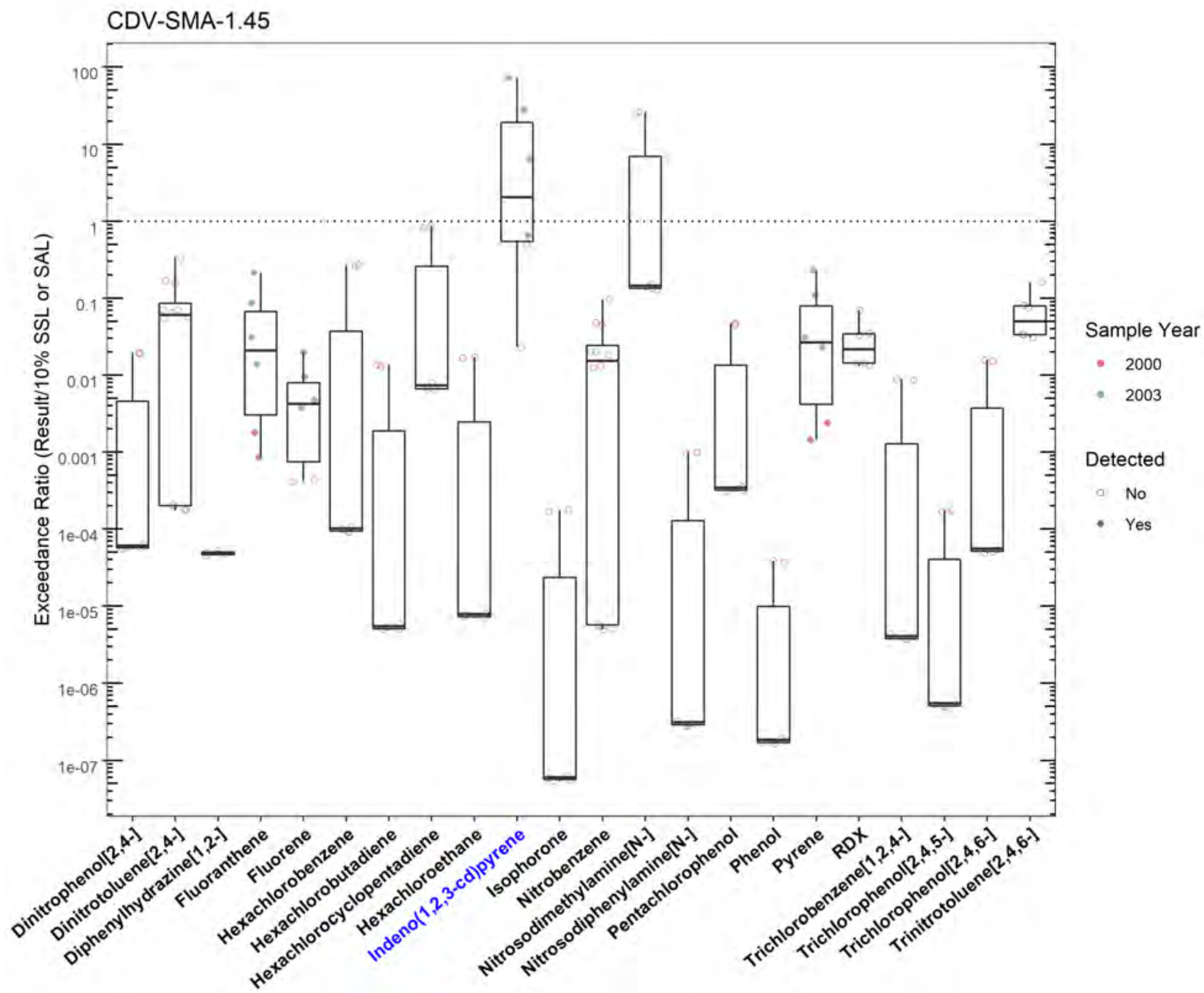


Figure 172.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-1.45 (Plot 2)

CDV-SMA-1.45

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	CDV-SMA-1.45	56-55-3	Y	SSL_0.1	0.153	20.0	2003-01-30
Benzo(a)pyrene	CDV-SMA-1.45	50-32-8	Y	SSL_0.1	0.112	19.0	2003-01-30
Benzo(b)fluoranthene	CDV-SMA-1.45	205-99-2	Y	SSL_0.1	0.153	32.0	2003-01-30
Cadmium	CDV-SMA-1.45	Cd	Y	BTV	0.400	0.493	2003-01-30
Chrysene	CDV-SMA-1.45	218-01-9	Y	SSL_0.1	15.3	23.0	2003-01-30
Indeno(1,2,3-cd)pyrene	CDV-SMA-1.45	193-39-5	Y	SSL_0.1	0.153	11.0	2003-01-30
Iron	CDV-SMA-1.45	Fe	Y	BTV	21500	30300	2003-01-30
Lead	CDV-SMA-1.45	Pb	Y	BTV	22.3	24.5	2003-01-30
Silver	CDV-SMA-1.45	Ag	Y	BTV	1.00	580	2000-09-29
Zinc	CDV-SMA-1.45	Zn	Y	BTV	48.8	58.8	2003-01-30

Figure 172.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-1.45

172.4 Stormwater Evaluation

172.4.1 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.

172.4.2 Assessment Unit and Stream Impairments

CDV-SMA-1.45 drains to Cañon de Valle (within LANL above Burning Ground Spring) which has not been assessed for impairments.

172.5 Site-Specific Demonstration

172.5.1 Soil Data Summary

Several SVOCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater, therefore, SVOCs will be added to the SAP.

Cadmium, lead, silver, and zinc that exceeded the applicable screening values in soil data were previously monitored in stormwater data and did not exceed TALs. Therefore, they will not be added to the SAP.

172.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL in the previous monitoring stage data. It is not a Site-related POC and is no longer a TAL on the current permit, therefore, it will not be added to the SAP.

172.5.3 2022 Permit Status

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

172.5.4 Sampling and Analysis Plan

Table 172.5-1 is the proposed SAP for CDV-SMA-1.45.

Table 172.5-1 Proposed SAP, CDV-SMA-1.45

Monitoring Constituent	Background for Monitoring
SVOCs	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

173.0 CDV-SMA-1.7

Associated Sites	16-019
Receiving Water	Cañon de Valle
Drainage Area	0.30 acres
Landscape Characteristics	6% impervious, 94% pervious
Consent Order Site Status	SWMU 16-019: In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the March 2018 field visit, it was determined to move the sampler downgradient to monitor stormwater runoff from a larger area of potential contamination.
2022 Permit Status	Active Monitoring

173.1 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 September 2015 submittal of certification of enhanced control installation to EPA as a corrective action (LANL 2015, 600911), corrective-action 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. 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.

173.2 Site History

16-019 (9/14/2020)

SWMU 16-019, known as MDA R, is located north of building 16-260 and south of Cañon de Valle at TA-16. MDA R lies within relatively flat terrain with a moderate slope to the north, dropping off approximately 80 ft into Cañon de Valle. MDA R consists of the original World War II (WWII) S-Site burning ground and an associated waste disposal area. MDA R was constructed in the mid-1940s and used as a burning ground for waste explosives until the early 1950s, probably 1951, when building 16-260 was constructed. Initially, HE were burned in the open; later, three bermed U-shaped pits, each measuring approximately 75 ft × 75 ft, were used for burning scrap HE. The three burn pits were placed roughly parallel to, and approximately 150 ft from the edge of the canyon and constructed side-by-side such that adjacent sides were common. Thus, the total footprint of the burn pits within MDA R was approximately 225 ft × 75 ft. A road encircled the burn pits and the area was fenced. The total area of MDA R is estimated as 2.25 acres. During the construction of building 16-260, the berms and surface soil were graded northward into Cañon de Valle. The area has not been used for any waste management activities since the early 1950s and is currently covered with grasses and small trees and shrubs, many planted following the May 2000 Cerro Grande fire.

For investigation activities for the Site, refer to “Investigation Work Plan for Cañon de Valle Aggregate Area” (LANL 2006, 091698).

173.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 173.2-1.

Table 173.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-019	MDA R	Metals, barium, lead, dioxins/furans, HE, uranium

173.3 Consent Order Soil Data

Decision-level data for SWMU 16-019 consist of results from samples collected in 1998, and 2000. Analytical results for these samples are presented in Figures 173.3-1 through 173.3-4. The 2006 IWP (LANL 2006, 091698) concluded that the nature and extent of contamination have not been defined and additional sampling is recommended.

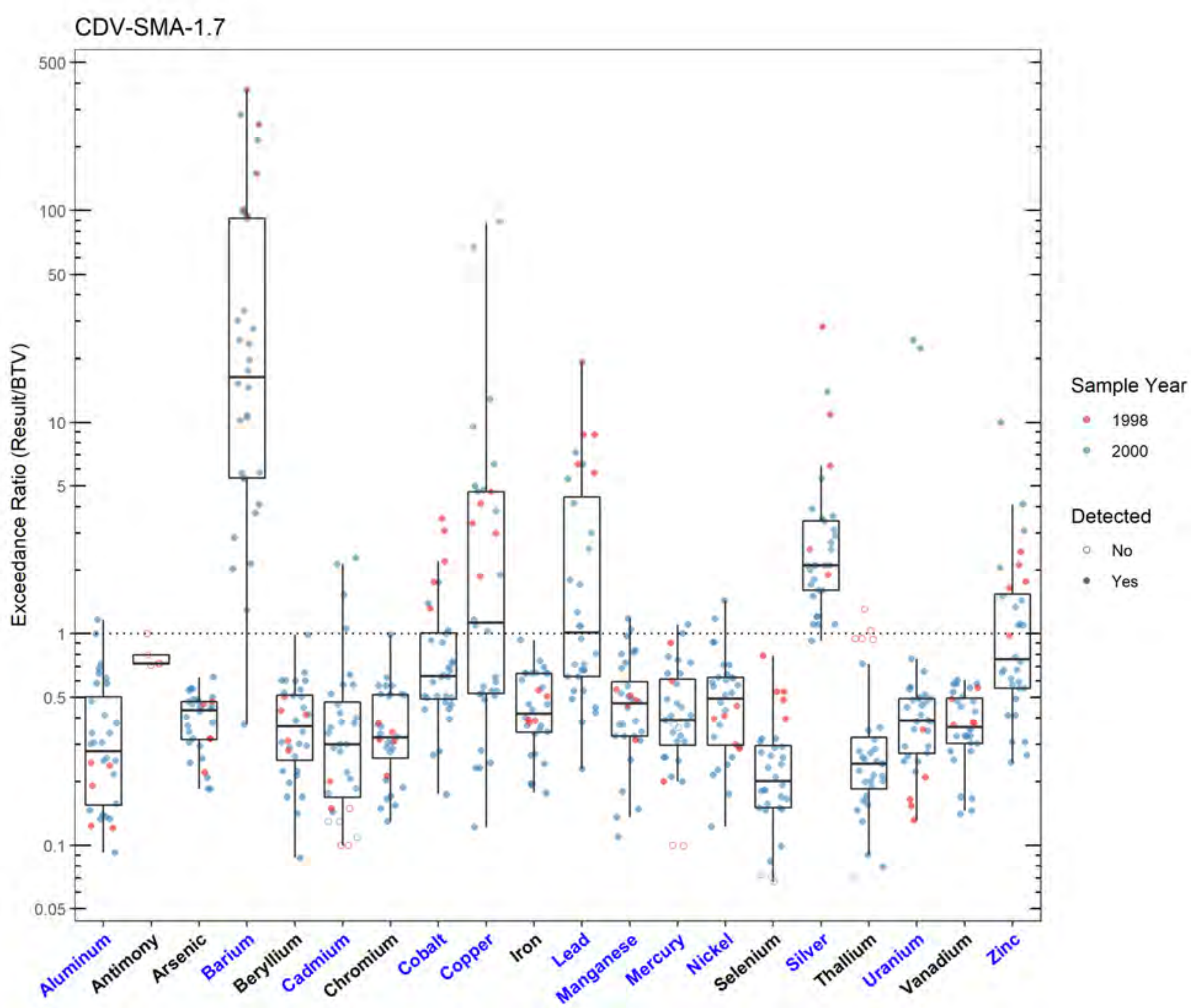


Figure 173.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-1.7

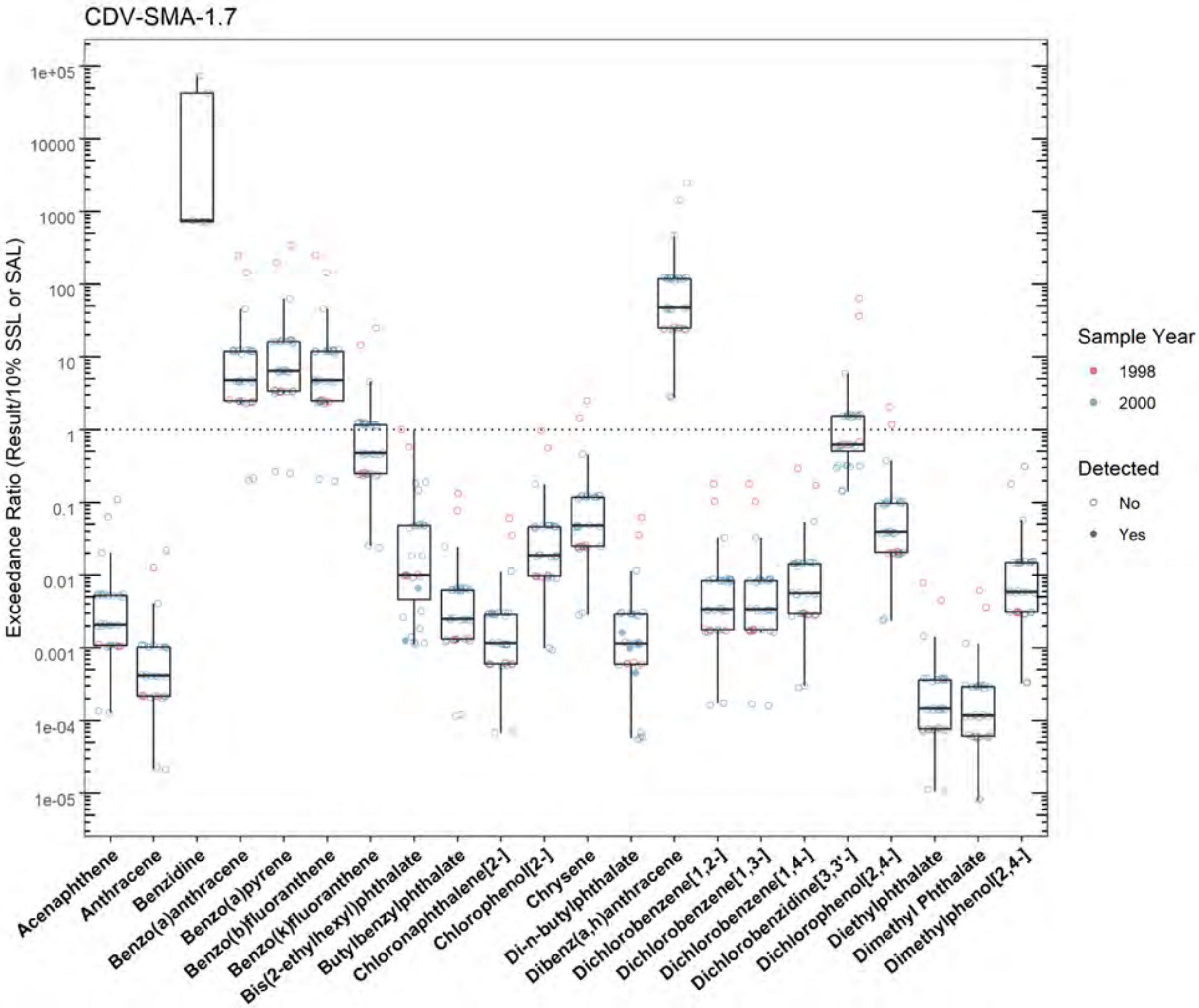


Figure 173.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-1.7 (Plot 1)

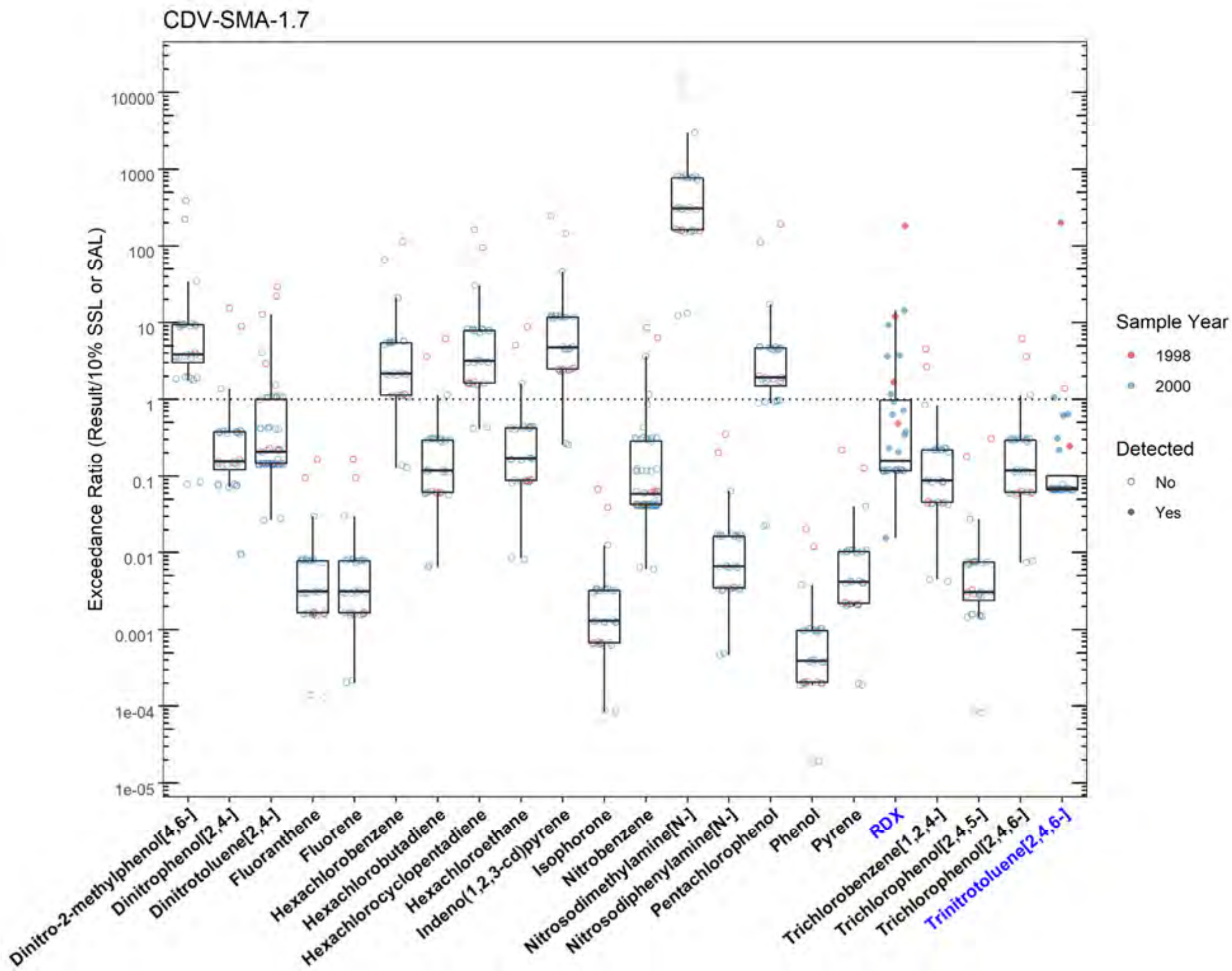


Figure 173.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-1.7 (Plot 2)

CDV-SMA-1.7

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aluminum	CDV-SMA-1.7	Al	Y	BTV	29200	34000	2000-09-30
Barium	CDV-SMA-1.7	Ba	Y	BTV	295	110000	1998-11-25
Cadmium	CDV-SMA-1.7	Cd	Y	BTV	0.400	0.913	2000-09-23
Cobalt	CDV-SMA-1.7	Co	Y	BTV	8.64	30.2	1998-11-25
Copper	CDV-SMA-1.7	Cu	Y	BTV	14.7	1300	2000-09-23
Lead	CDV-SMA-1.7	Pb	Y	BTV	22.3	431	1998-11-25
Manganese	CDV-SMA-1.7	Mn	Y	BTV	671	790	2000-09-23
Mercury	CDV-SMA-1.7	Hg	Y	BTV	0.100	0.110	2000-09-17
Nickel	CDV-SMA-1.7	Ni	Y	BTV	15.4	22.0	2000-09-24
RDX	CDV-SMA-1.7	121-82-4	Y	SSL_0.1	8.31	1500	1998-11-25
Silver	CDV-SMA-1.7	Ag	Y	BTV	1.00	28.2	1998-11-25
Trinitrotoluene[2,4,6-]	CDV-SMA-1.7	118-96-7	Y	SSL_0.1	3.60	720	1998-11-25
Uranium	CDV-SMA-1.7	U	Y	BTV	1.82	44.2	2000-09-23
Zinc	CDV-SMA-1.7	Zn	Y	BTV	48.8	490	2000-09-23

Figure 173.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-1.7

173.4 Stormwater Evaluation

173.4.1 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.

173.4.2 Assessment Unit and Stream Impairments

CDV-SMA-1.7 drains to Cañon de Valle (within LANL above Burning Ground Spring) which has not been assessed for impairments.

173.5 Site-Specific Demonstration

173.5.1 Soil Data Summary

Aluminum, barium, cadmium, cobalt, copper, lead, manganese, mercury, nickel, RDX, silver, Trinitrotoluene[2,4,6-], uranium and zinc exceeded the applicable screening values in soil data and have not yet been measured in stormwater at this location.

173.5.2 Stormwater Data Summary

No confirmation-monitoring data.

173.5.3 2022 Permit Status

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

173.5.4 Sampling and Analysis Plan

Table 173.5-1 is the proposed SAP for CDV-SMA-1.7.

Table 173.5-1 Proposed SAP, CDV-SMA-1.7

Monitoring Constituent	Background for Monitoring
Dissolved barium, cadmium, cobalt, copper, lead manganese, nickel, silver, uranium, and zinc	Site history (metals) and soil data
Total aluminum and mercury	Site history (metals) and soil data
HE	Site history and soil data
Tetrachlorodibenzodioxin[2,3,7,8-]	Site history (dioxins/furans)
DOC	Permit requirement
SSC	Permit requirement

174.0 CDV-SMA-2

Associated Sites	16-021(c)
Receiving Water	Cañon de Valle
Drainage Area	3.35 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 16-021(c): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the March 2018 field visit, the current monitoring location does not adequately monitor runoff from the affected area. Therefore, the sampler should be moved down the drainage channel past soil sampling location 16-06420 (high concentrations of barium and explosives). However, no appropriate location could be identified, so the sampler will be placed as low in the drainage as possible.
2022 Permit Status	Active Monitoring

174.1 2010 Administratively Continued Permit Summary

Following the May 2011 submittal of certification of baseline control installation to EPA, two baseline stormwater samples were collected in July 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, 600417). No response has been received from EPA, and stormwater monitoring has not occurred since 2013.

174.2 Site History

16-021(c) (6/5/2019)

SWMU 16-021(c) received discharges of HE-contaminated wastewater from the building 16-260 HE sumps [SWMU 16-003(k)] that were located along the northeast side of the building in the southwest corner of TA-16. SWMU 16-021(c) consists of three sections: the building 16-260 outfall (260 Outfall) and an upper drainage channel fed directly by the outfall, a former settling pond, and a lower drainage channel leading to Cañon de Valle. The former settling pond was approximately 50 ft long and 20 ft wide and was located in the upper drainage channel, approximately 45 ft below the 260 Outfall. The drainage channel runs approximately 600 ft northeast from the 260 Outfall to the bottom of Cañon de Valle. A 15-ft near-vertical cliff is located approximately 400 ft from the 260 Outfall and marks the break between the upper and lower drainage channels.

During the 2000–2001 IM, more than 1,300 yd^3 of contaminated soil was removed from the former settling pond and channel. Approximately 90% of the HE in the SWMUs 16-003(k) and 16-021(c) source area was removed. A low-permeability cap was installed on top of the former settling pond during the IM. The cap consisted of crushed tuff/bentonite mixture and was approximately 20-in. thick.

HE-contaminated water from the 260 Outfall entered the former settling pond and drained into the 260 Outfall drainage channel, which was a substantial pathway for contamination identified in downgradient components of the SWMUs 16-003(k) and 16-021(c) hydrogeologic system, including the

SWSC Cut. SWSC Cut is next to SWSC Spring and SWSC pipeline and derived its name because it is a roadcut for the SWSC pipeline.

Building 16-260 had been used since 1951 to process and machine HE. Water was used during the machining of HE (which is slightly water-soluble); wastewater from machining operations contained dissolved HE and potential entrained HE cuttings. Wastewater treatment consisted of routing the water to 13 settling sumps [SWMU 16-003(k)] to recover any entrained cuttings. From 1951 to 1996, the water from these sumps was discharged to the 260 Outfall. In 1994, outfall discharge volumes were measured at several million gallons per year. The discharge volumes were probably higher during the 1950s when HE-production output from building 16-260 was substantially greater than it was in the 1990s. In the past, barium had been a constituent of certain HE formulations, and thus barium was also present in the outfall wastewater from building 16-260.

From the late 1970s to 1996, the 260 Outfall was permitted by the EPA to operate as Outfall No. 05A056 under the LANLNPDES permit. The last NPDES permitting effort for the 260 Outfall occurred in 1994. The NPDES-permitted 260 Outfall was deactivated in November 1996 and removed from the permit in January 1998.

For investigation activities, refer to “2021 Annual Long-term Monitoring and Maintenance Report for the Corrective Measures Implementation at Former 260 Outfall Area, Revision 1,” and Comment Response (N3B 2022, 702086).

174.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 174.2-1.

Table 174.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-021(c)	Former outfall 16-260	Metals, barium, HE

174.3 Consent Order Soil Data

Decision-level data for SWMU 16-021(c) consist of results from samples collected during the IM in 2000–2001 and the CMI in 2009–2010. Analytical results for these samples are presented in Figures 174.3-1 through 174.3-4. The 2017 remedy completion report concluded that the surface CMI at the 260 Outfall is complete, and remedial actions for cleanup of HE and other contaminants in the 260 Outfall channel have been successfully implemented.

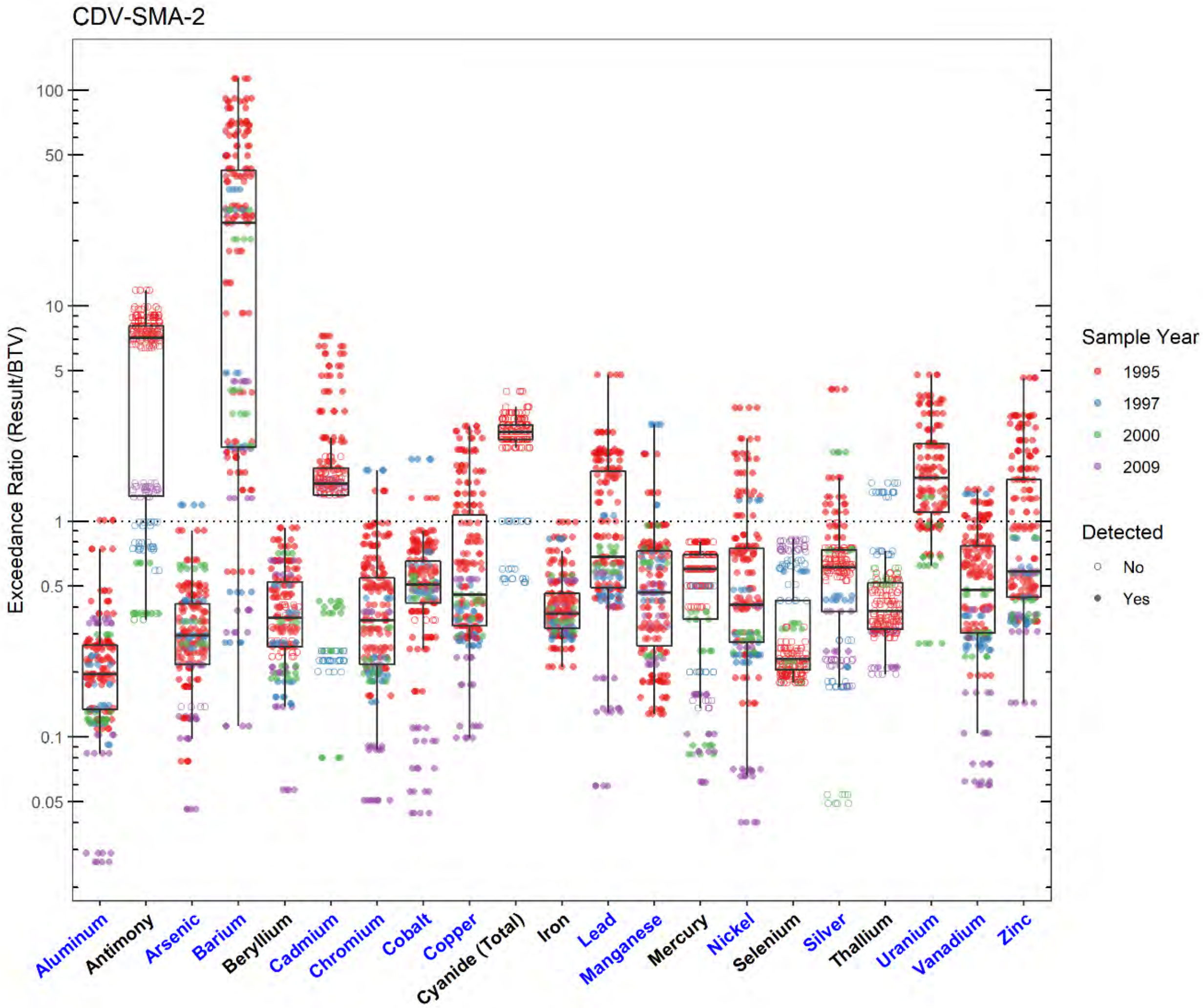


Figure 174.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-2

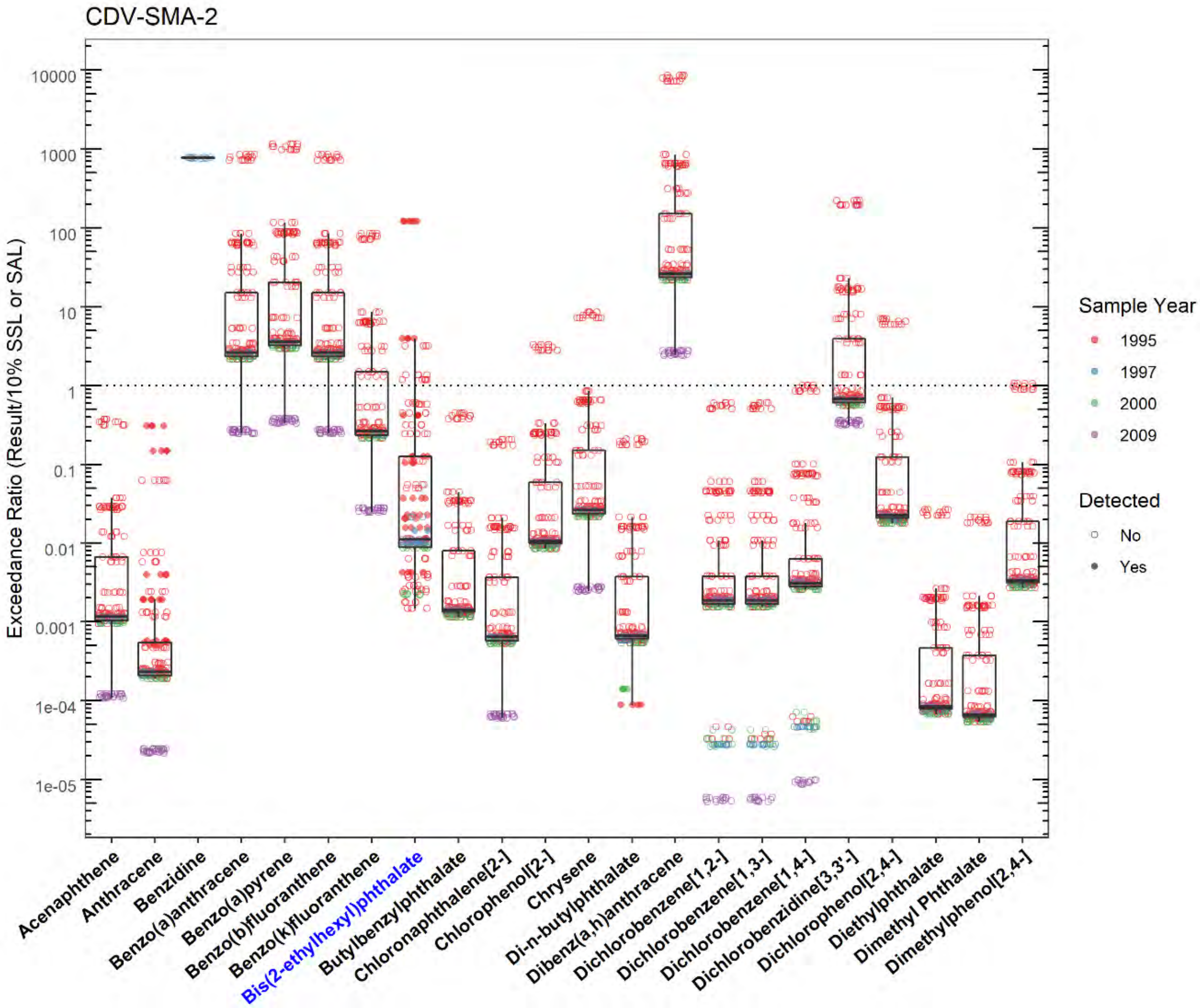


Figure 174.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2 (Plot 1)

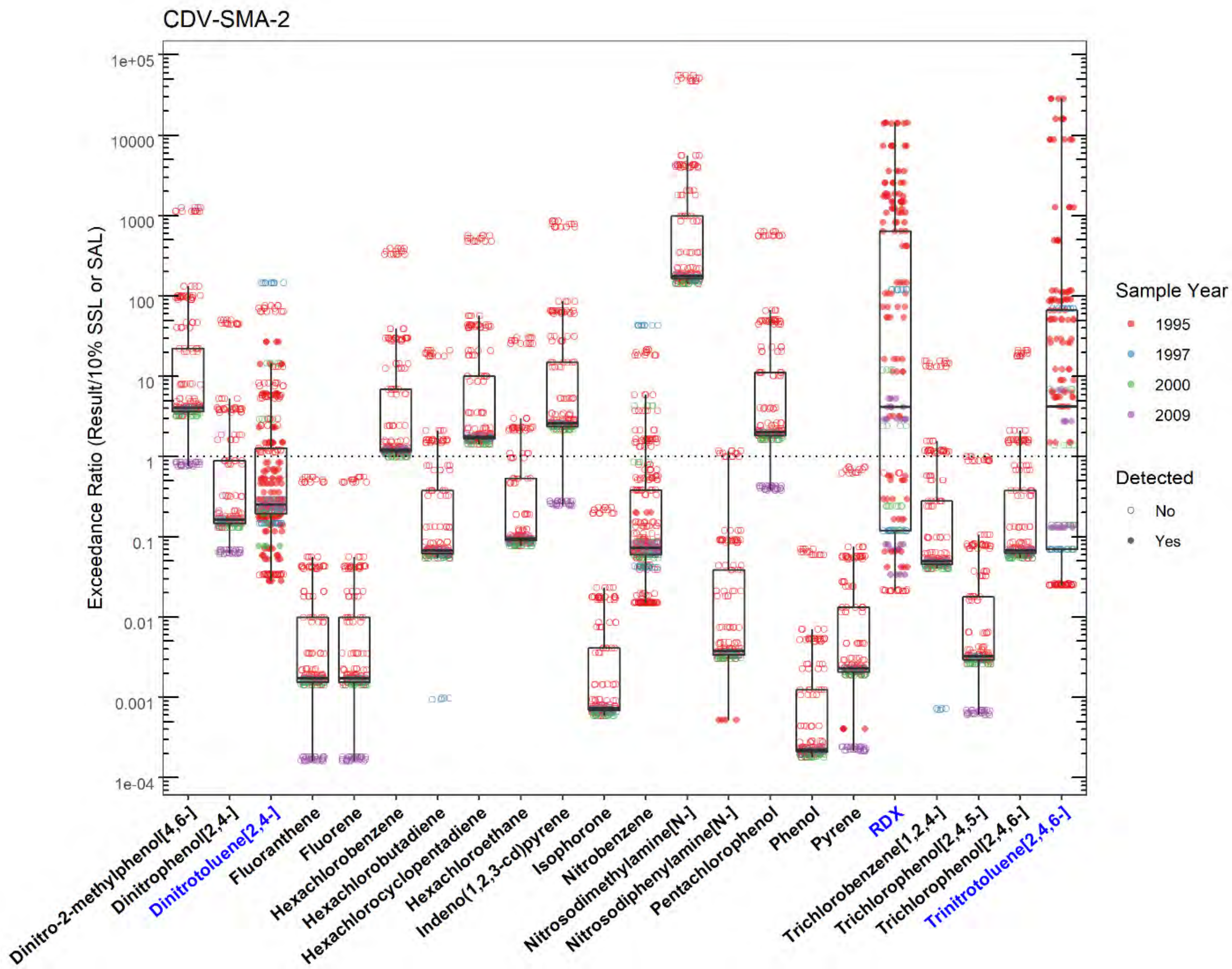


Figure 174.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2 (Plot 2)

CDV-SMA-2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aluminum	CDV-SMA-2	Al	Y	BTV	29200	29600	1995-09-22
Arsenic	CDV-SMA-2	As	Y	BTV	8.17	9.70	1997-08-24
Barium	CDV-SMA-2	Ba	Y	BTV	295	33300	1995-09-22
Bis(2-ethylhexyl)phthalate	CDV-SMA-2	117-81-7	Y	SSL_0.1	38.0	4600	1995-09-08
Cadmium	CDV-SMA-2	Cd	Y	BTV	0.400	2.90	1995-06-16
Chromium	CDV-SMA-2	Cr	Y	BTV	19.3	33.4	1997-10-19
Cobalt	CDV-SMA-2	Co	Y	BTV	8.64	16.8	1997-08-24
Copper	CDV-SMA-2	Cu	Y	BTV	14.7	40.5	1995-09-22
Dinitrotoluene[2,4-]	CDV-SMA-2	121-14-2	Y	SSL_0.1	1.71	46.1	1995-09-08
Lead	CDV-SMA-2	Pb	Y	BTV	22.3	107	1995-09-22
Manganese	CDV-SMA-2	Mn	Y	BTV	671	1890	1997-08-24
Nickel	CDV-SMA-2	Ni	Y	BTV	15.4	51.9	1995-06-16
RDX	CDV-SMA-2	121-82-4	Y	SSL_0.1	8.31	118000	1995-09-08
Silver	CDV-SMA-2	Ag	Y	BTV	1.00	4.10	1995-09-22
Trinitrotoluene[2,4,6-]	CDV-SMA-2	118-96-7	Y	SSL_0.1	3.60	102000	1995-09-08
Uranium	CDV-SMA-2	U	Y	BTV	1.82	8.71	1995-06-16
Vanadium	CDV-SMA-2	V	Y	BTV	39.6	55.7	1995-09-22
Zinc	CDV-SMA-2	Zn	Y	BTV	48.8	226	1995-09-22

Figure 174.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-2

174.4 Stormwater Evaluation

174.4.1 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 location.

174.4.2 Assessment Unit and Stream Impairments

CDV-SMA-2 drains to Cañon de Valle (within LANL above Burning Ground Spring) which has not been assessed for impairments.

174.5 Site-Specific Demonstration

174.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: aluminum, arsenic, barium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, RDX, silver, trinitrotoluene[2,4,6-], uranium, vanadium, and zinc.

The remaining exceedances of the applicable screening values in soil data are not for Site-related POCs. Therefore, they will not be added to the SAP.

174.5.2 Stormwater Data Summary

No confirmation-monitoring data.

174.5.3 2022 Permit Status

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

174.5.4 Sampling and Analysis Plan

Table 174.5-1 is the proposed SAP for CDV-SMA-2.

Table 174.5-1 Proposed SAP, CDV-SMA-2

Monitoring Constituent	Background for Monitoring
Dissolved arsenic, barium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, silver, vanadium, uranium, and zinc	Site history and soil data
Total aluminum	Site history and soil data
HE	Site history and soil data
Gross alpha	Site history (uranium)
DOC	Permit requirement
SSC	Permit requirement

175.0 CDV-SMA-2.3

Associated Sites	13-001, 13-002, 16-003(n), 16-003(o), 16-029(h), 16-031(h)
Receiving Water	Cañon de Valle
Drainage Area	101.03 acres
Landscape Characteristics	9% impervious, 91% pervious
Consent Order Site Status	SWMU 13-001: Pending Receipt of Certificate of Completion SWMU 13-002: Pending Receipt of Certificate of Completion SWMU 16-003(n): Pending Receipt of Certificate of Completion SWMU 16-003(o): Pending Receipt of Certificate of Completion SWMU 16-029(h): In Progress SWMU 16-031(h): Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

175.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline 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 Sites 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.

175.2 Site History

13-001 (11/26/2019)

SWMU 13-001 is an inactive firing site located east of former building 16-340, between battleship bunker buildings 16-477 and 16-478 at eastern end of TA-16. The firing site was associated with firing activities conducted at P-Site (former TA-13) and operated from 1944 to 1949. The battleship bunker buildings 16-477 and 16-478 housed x-ray and magnetic equipment and were capped with steel nose cones to protect this equipment from explosive detonations that occurred at the firing site between the two bunkers. Debris from firing site experiments includes shrapnel and debris, including firing cables, lead balls, and chunks of steel and copper.

13-002 (11/26/2019)

SWMU 13-002 is an inactive surface disposal area located east of former building 16-340, and south and east of the SWMU 13-001 firing point at eastern end of TA-16. The disposal area contains debris and shrapnel associated with firing activities conducted at P-Site (former TA-13) and based on a 1948 aerial photograph, the site includes the two battleship bunkers (buildings 16-477 and 16-478) and extends approximately 500 ft south of the SWMU 13-001 firing point. A portion of the former TA-16 WWTP [SWMUs 16-004(b, c, and d)] is located on top of the southern end of the surface disposal area. The

SWMU 13-001 firing site was decommissioned in 1949. It is not known if contaminated materials were removed from SWMU 13-002 at the time of the firing site decommissioning.

16-003(n) (6/13/2017)

SWMU 16-003(n) consists of a former HE sump that was located on the exterior northeast wall of former building 16-342 at TA-16. Installed in the early 1950s, the sump was constructed of reinforced concrete and measured approximately 3.5 ft wide × 6.5 ft long × 3 ft deep. The sump walls and bottom were constructed of 6-in.-thick, steel-reinforced concrete and lined with 0.25-in.-thick aluminum. The sump also had a removable 0.25-in.-thick aluminum lid. The sump received process and wash-down water from cleaning activities in former building 16-342, an HE-processing building in which the constituents of plastic-bonded explosive formulations were mixed and blended. Waste in the effluent consisted primarily of HE and organic solvents. The sump was connected to a 6-in. VCP that discharged to a former NPDES-permitted outfall (EPA 05A062) located in Fishladder Canyon, a tributary of Cañon de Valle. The sump removed suspended solids from process water before it was discharged to the outfall. HE fines were collected in a cloth filter bag and secured inside a metal filter basket. The baskets and filter bags were periodically removed and taken to the TA-16 basket-washing facility for cleaning. HE fines too small to collect in the filter bags settled to the bottom of the sump. To help separate the suspended solids, the water flowed under an aluminum baffle and over a concrete weir before it discharged to the outfall. HE fines in the bottom of the sump were periodically removed and burned. During the 1970s, the EPA issued a NPDES permit for the associated with discharges from the building 16-342 HE sump (EPA Outfall 05A062). During the mid-1990s, the discharge to the building 16-342 outfall measured 4600 gal./yr. The outfall was removed from the LANL NPDES permit effective July 31, 1996. Building 16-342, the sump, and drainlines were decommissioned in 1999 and underwent D&D in 2004 and 2005.

16-003(o) (6/13/2017)

SWMU 16-003(o) consists of six former HE sumps (former structures 16-105, -106, -107, -106, -107, -108, and -109) that were located along the exterior northeast wall of former building 16-340 at TA-16. Installed in the early 1950s, the sumps were constructed of reinforced concrete; three of the sumps measured approximately 3.5 ft wide × 7.3 ft long × 3 ft deep and three of the sumps measured approximately 3.5 ft wide × 10.3 ft long × 3 ft deep. The walls and bottoms of each sump were constructed of 6-in.-thick, steel-reinforced concrete and lined with 0.25-in.-thick aluminum. Each sump had a removable 0.25-in.-thick aluminum lid. Sump operations were similar to those described for former SWMU 16-003(n). The sumps received process and wash-down water from cleaning activities discharged from sinks, floor drains and equipment in former building 16-340, an HE-processing building in which the constituents of plastic-bonded explosive formulations were mixed and blended. Stormwater from roof drains on the building also discharged to the sumps. Waste in the effluent consisted primarily of HE and organic solvents. The sumps were connected to a 10-in. VCP that historically discharged to an outfall in what later became known as Fishladder Canyon, a tributary of Cañon de Valle. The sumps removed suspended solids from process water before it was discharged to the outfall. HE fines were collected in a cloth filter bag and secured inside a metal filter basket in each sump. The baskets and filter bags were periodically removed and taken to the TA-16 basket-washing facility for cleaning. HE fines too small to collect in the filter bags settled to the bottom of each sump. To help separate the suspended solids, the water flowed under an aluminum baffle and over a concrete weir before it discharged to the outfall. HE fines in the bottom of each sump were periodically removed and burned.

During the 1970s, the EPA issued a NPDES permit for the operation of the building 16-340 outfall (EPA Outfall 05A062). In the late 1980s, the outfall was plumbed to an air stripper designed to eliminate volatile organic compounds (VOCs) from the outfall. The air stripper resembled a Fishladder and discharged approximately 250 ft east of the sumps into Fishladder Canyon. Splashing caused by the air stripper may have resulted in the dispersal of effluent over a larger area.

Three evaluations of chemical use in building 16-340 were completed during the early 1970s. The HE use in building 16-340 was historically classified as moderate, and therefore the probability of HE found in the sump is low. Chemical inventories stated that the use of solvents at TA-16 was greatest in building 16-340. During a 6-mo period that began in 1970 and ended in 1971, 700 gal. of acetone, 500 Ib of ammonium sulfate, 330 gal. of n-butyl-acetate, 3 gal. of chloroform, 55 gal. of 1,2-dichloroethane, 11 gal. of ethyl acetate, 72 gal. of isopropyl alcohol, 110 gal. of methanol, 72 gal. of methylene chloride, 750 gal. of butanone[2-], and 110 gal. of toluene had all been used in building 16-340. It was confirmed that large quantities of HE, organic solvents, gases, and other materials had been released from the building 16-340 sumps. Natural uranium may have also been used in the building. By the 1990s, organic solvents used at TA-16 HE facilities were containerized for disposal, but historically the solvents were discharged to the sumps.

The final NPDES permitting for the building 16-340 outfall occurred in 1994, and the outfall was deactivated on July 20, 1998. During the mid-1990s, the discharge to the building 16-340 outfall amounted to more than 3.5 million gal./yr. The TA-16 340 Complex, including the sumps and drainlines, were decommissioned in 1999 and underwent D&D in 2004 and 2005.

16-029(h) (11/26/2019)

SWMU 16-029(h) consists of a former NPDES-permitted outfall and two inactive drainlines (one known and one alleged) from an inactive HE sump [AOC 16-003(p)] located on the south side of former Structure 16-478 at TA-16. The known drainline exits the southeast corner of the sump and extends 80 ft east of the sump to the rim of Cañon de Valle. This 6-in. VCP drainline discharged directly into Cañon de Valle before it was plugged in 1987. A second drainline possibly existed until the late 1960s and reportedly was a French drain that extended approximately 125 ft south of the sump. It was believed to be an 8-in. cast-iron pipe connected to an 8-in. VCP that intersected a drainage channel. Former structure 16-478 was used as a bunker, utility room, control room, and high-speed machining room for tests on experimental HE. When Structure 16-478 was removed in 2005, the sump was left in place. During Phase I Consent Order investigation activities conducted in 2010, no evidence of the French drain was found.

SWMU 16-029(h) was identified as an HE sump (Structure 16-487) in the 1990 SWMU Report. The SWMU Report identified this sump twice: once as an inactive HE sump designated as SWMU 16-029(h) and also as an active HE sump designated as AOC 16-003(p). Addendum 2 to the OU 1082 Work Plan redefined SWMU 16-029(h) to be the drainlines and outfall associated with the sump adjacent to former Structure 16-478. Currently, the boundary of SWMU 16-029(h) is adjacent to, and receives runoff from, an old paved roadway and parking area associated with former Structure 16-478 and includes areas impacted by the 2000 Cerro Grande wildfire.

16-031(h) (2/5/2020)

SWMU 16-031(h) is a former NPDES-permitted outfall (EPA 04A134) and associated outlet drainline that served a utility room in former building 16-478 at TA-16. The outfall received discharges from the sink, vacuum pump, and floor drain in the utility room and was located 30 ft northwest of former building 16-478. Former building 16-478 was initially used as a bunker for photographing explosives testing. The utility room was added to the northwest corner of the building in 1950 when it was modified to test the effects of machining on HE products. The floor drain and sink in the utility room in building 16-478 discharged to the outfall via a 4-in. VCP. A water-sealed/water-cooled vacuum pump was located in the utility room and served a vacuum system in another area of the building. The vacuum system in the other part of the building held HE pieces in place for machining. The vacuum line contained a water filter to prevent HE from reaching the vacuum pump lines. Building 16-478 was decommissioned in 1995 and underwent decontamination and demolition in 2005.

For investigation activities for SWMS 13-001, 13-002, 16-029(h) and 16-031(h), refer to “Supplemental Investigation Report for S-Site Aggregate Area, Revision 1” (N3B 2019, 700414). For investigation activities for SWMUs 16-003(n) and 16-003(o), refer to “Phase II Investigation Report for the TA-16-340 Complex [Consolidated Units 13-003(a)-99 and 16-003(n)-99 and Solid Waste Management Units 16-003(o), 16-026(j2) and 16-029(f)], Revision 1” (LANL 2009, 105061.17).

175.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 175.2-1.

Table 175.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
13-001	Firing site	Metals, beryllium, HE, uranium
13-002	Surface disposal area	Metals, beryllium, HE, uranium
16-003(n)	Sumps	HE, uranium
16-003(o)	Sumps	Organic chemicals, HE, uranium
16-029(h)	Drainlines and outfall	HE, uranium
16-031(h)	Outfall	Organic chemicals, HE

175.3 Consent Order Soil Data

Decision-level data for SWMU 13-001 consist of results from samples collected in 2010. These data are also used to characterize SWMUs 13-004, 16-035, and 16-036. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination have been defined and further sampling for extent is not warranted.

Decision-level data for SWMU 13-002 and SWMU 16-031(h) consist of results from samples collected in 2010. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination have been defined and further sampling for extent is not warranted.

Decision-level data for SWMU 16-003(n) and SWMU 16-003(o) consist of results from samples collected in 1995, 2005 and 2008. The 2009 Phase II IR (LANL 2009, 105061.17) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for SWMU 16-029(h) consist of results from samples collected in 2010. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent have been defined except the vertical extent of arsenic.

Analytical results for all decision-level soil samples for this SMA are presented in Figures 175.3-1 through 175.3-4.

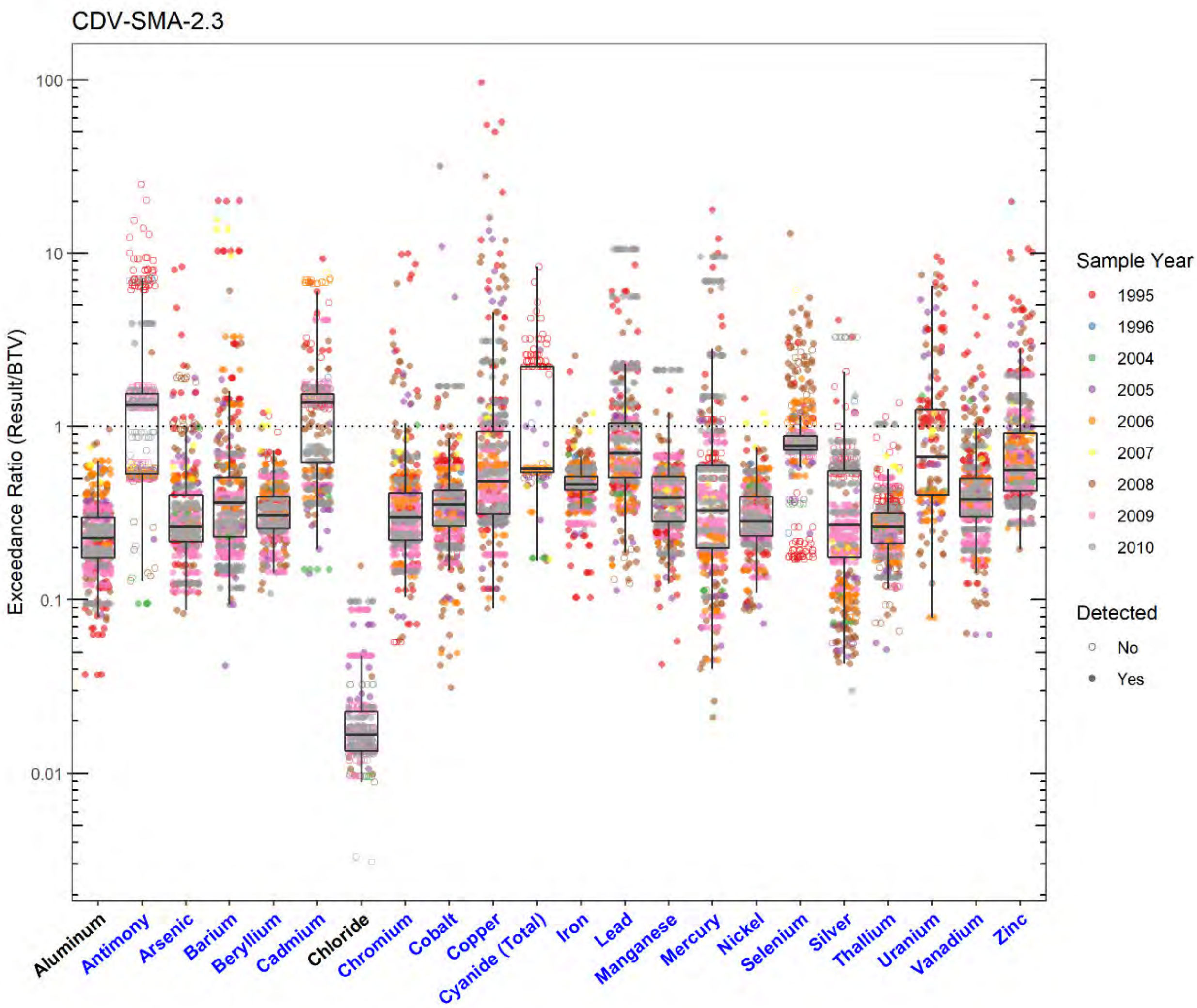


Figure 175.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-2.3

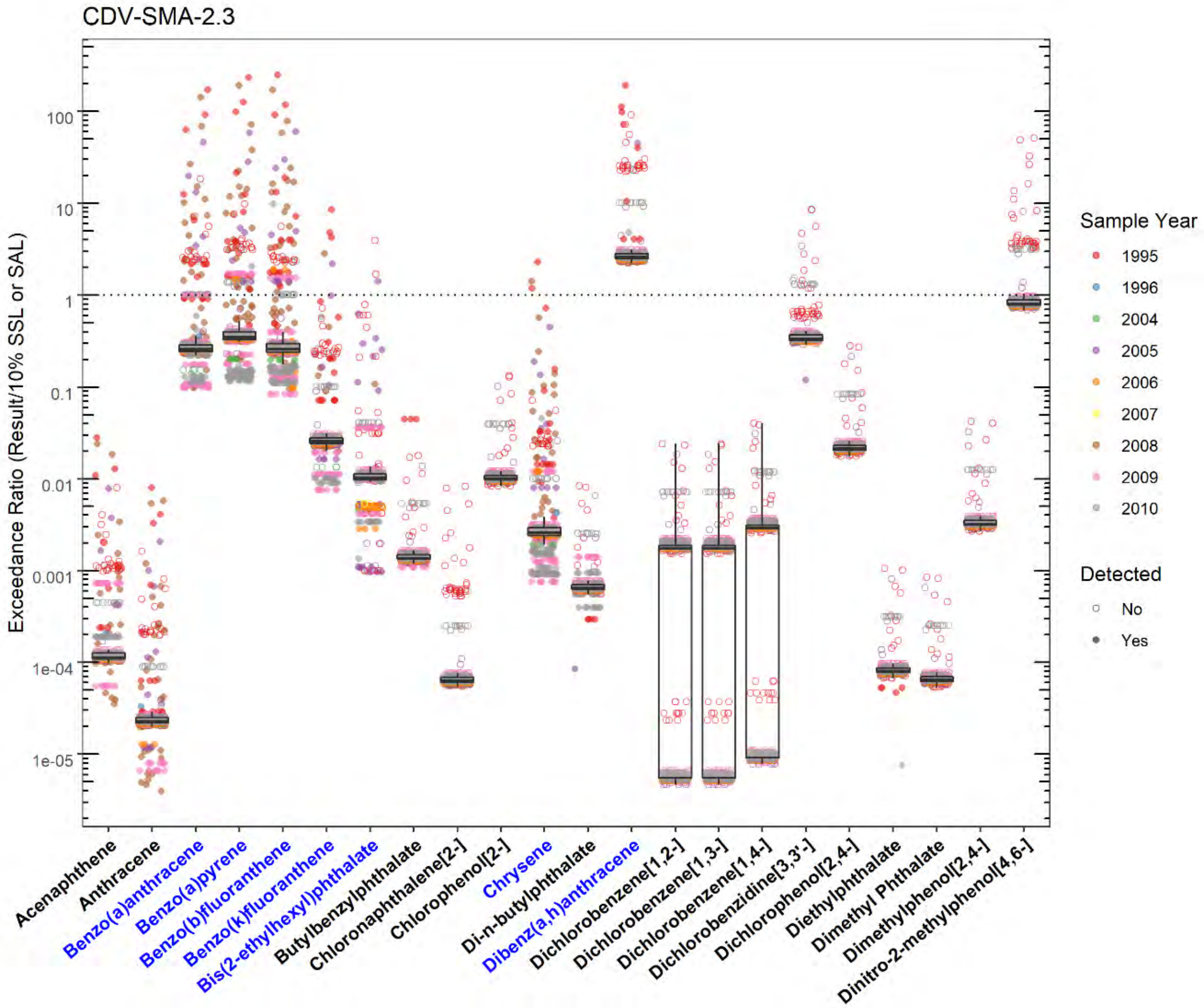


Figure 175.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2.3 (Plot 1)

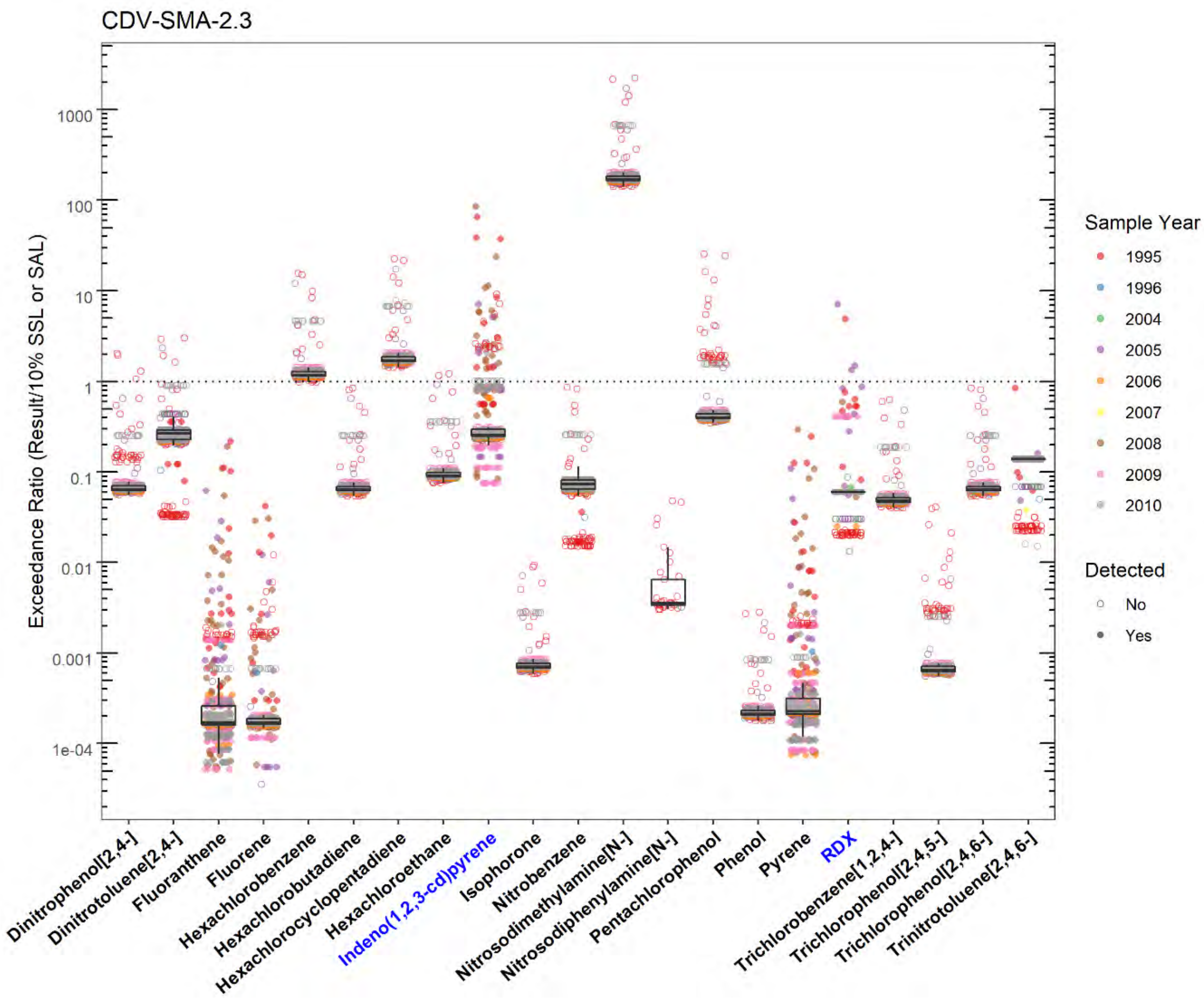


Figure 175.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2.3 (Plot 2)

CDV-SMA-2.3

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	CDV-SMA-2.3	Sb	Y	BTV	0.830	3.26	2010-01-07
Arsenic	CDV-SMA-2.3	As	Y	BTV	8.17	68.3	1995-05-23
Barium	CDV-SMA-2.3	Ba	Y	BTV	295	5910	1995-08-16
Benzo(a)anthracene	CDV-SMA-2.3	56-55-3	Y	SSL_0.1	0.153	26.0	1995-08-16
Benzo(a)pyrene	CDV-SMA-2.3	50-32-8	Y	SSL_0.1	0.112	26.0	1995-08-16
Benzo(b)fluoranthene	CDV-SMA-2.3	205-99-2	Y	SSL_0.1	0.153	38.0	1995-08-16
Benzo(k)fluoranthene	CDV-SMA-2.3	207-08-9	Y	SSL_0.1	1.53	13.0	1995-08-16
Beryllium	CDV-SMA-2.3	Be	Y	BTV	1.83	2.25	2007-07-25
Bis(2-ethylhexyl)phthalate	CDV-SMA-2.3	117-81-7	Y	SSL_0.1	38.0	53.9	2005-08-05
Cadmium	CDV-SMA-2.3	Cd	Y	BTV	0.400	3.70	1995-08-16
Chromium	CDV-SMA-2.3	Cr	Y	BTV	19.3	192	1995-08-16
Chrysene	CDV-SMA-2.3	218-01-9	Y	SSL_0.1	15.3	35.0	1995-08-16
Cobalt	CDV-SMA-2.3	Co	Y	BTV	8.64	275	2005-01-11
Copper	CDV-SMA-2.3	Cu	Y	BTV	14.7	1420	1995-08-16
Cyanide (Total)	CDV-SMA-2.3	CN(TOTAL)	Y	BTV	0.500	1.38	2005-01-07
Dibenz(a,h)anthracene	CDV-SMA-2.3	53-70-3	Y	SSL_0.1	0.0153	2.90	1995-08-16
Indeno(1,2,3-cd)pyrene	CDV-SMA-2.3	193-39-5	Y	SSL_0.1	0.153	13.1	2008-07-07
Iron	CDV-SMA-2.3	Fe	Y	BTV	21500	54800	2008-07-07
Lead	CDV-SMA-2.3	Pb	Y	BTV	22.3	234	2010-01-11
Manganese	CDV-SMA-2.3	Mn	Y	BTV	671	1420	2010-01-07
Mercury	CDV-SMA-2.3	Hg	Y	BTV	0.100	1.78	1995-08-16
Nickel	CDV-SMA-2.3	Ni	Y	BTV	15.4	41.2	2008-07-07
RDX	CDV-SMA-2.3	121-82-4	Y	SSL_0.1	8.31	59.3	2005-08-05
Selenium	CDV-SMA-2.3	Se	Y	BTV	1.52	19.8	2008-07-07
Silver	CDV-SMA-2.3	Ag	Y	BTV	1.00	4.10	1995-08-16
Thallium	CDV-SMA-2.3	Tl	Y	BTV	0.730	0.753	2010-01-07
Uranium	CDV-SMA-2.3	U	Y	BTV	1.82	17.3	1995-05-23
Vanadium	CDV-SMA-2.3	V	Y	BTV	39.6	265	1995-05-23
Zinc	CDV-SMA-2.3	Zn	Y	BTV	48.8	967	1995-08-16

Figure 175.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-2.3

175.4 Stormwater Evaluation

175.4.1 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 2015. Analytical results from that sample are presented in Figures 175.4-1 and 175.4-2.

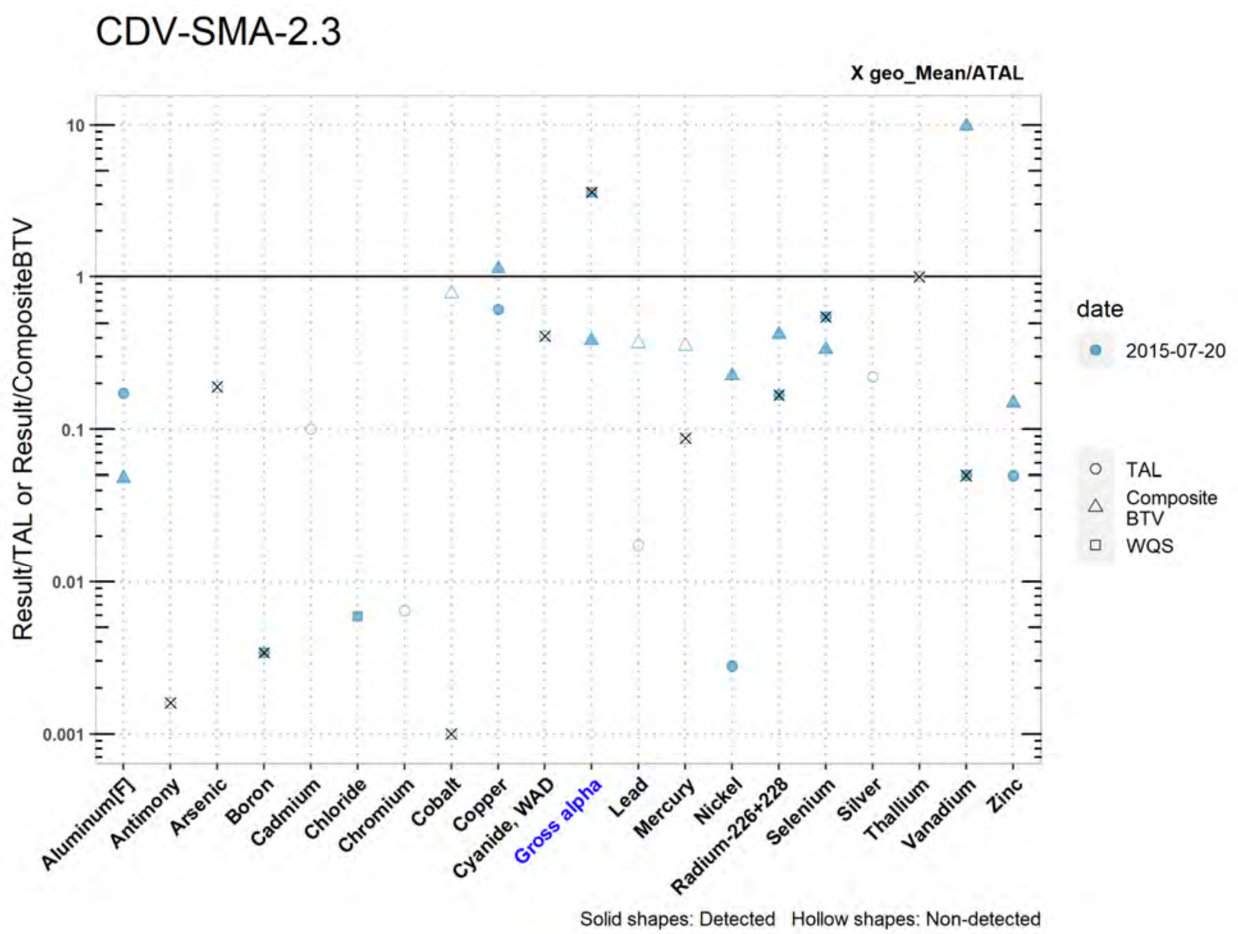


Figure 175.4-1 Analytical Results from Stormwater Sample, CDV-SMA-2.3 (Plot)

CDV-SMA-2.3

	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	0.879	NA	311	NA	6.69	22	NA	28.6	NA	250	NA	20	0.9	NA	NA	81.6
Composite_BTV	2700	NA	NA	NA	NA	NA	NA	1.28	3.66	NA	56.5	1.36	0.189	3.10	4.77	8.16	NA	NA	0.514	27.3
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
2015-07-20 result	129	*1.00*	*1.70*	16.8	*0.110*	1350	*2.00*	*1.00*	4.13	*2.14*	54.4	*0.500*	*0.0670*	0.698	5.04	2.74	*0.200*	*0.450*	5.03	4.06
2015-07-20 dT	0.172	NA	NA	0.0034	NA	0.0059	NA	NA	0.617	NA	3.6	NA	NA	0.00279	0.168	0.55	NA	NA	0.050	0.0498
2015-07-20 dB	0.0478	NA	NA	NA	NA	NA	NA	NA	1.13	NA	0.385	NA	NA	0.225	0.423	0.336	NA	NA	9.79	0.149
geo_mean/ATAL	NA	0.0016	0.19	0.0034	NA	NA	NA	0.0010	NA	0.412	3.6	NA	0.087	NA	0.168	0.55	NA	1	0.050	NA

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 175.4-2 Analytical Results from Stormwater Sample, CDV-SMA-2.3 (Table)

175.4.2 Assessment Unit and Stream Impairments

CDV-SMA-2.3 drains to Fishladder Canyon (Cañon del Valle to headwaters) which has not been assessed for impairments.

175.5 Site-Specific Demonstration

175.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: SVOCs, HE, barium, beryllium, iron, manganese, and uranium.

The other metals and cyanide that exceeded the applicable screening values in soil data were previously monitored in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

175.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL but did not exceed the BTV.

175.5.3 2022 Permit Status

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

175.5.4 Sampling and Analysis Plan

Table 175.5-1 is the proposed SAP for CDV-SMA-2.3.

Table 175.5-1 Proposed SAP, CDV-SMA-2.3

Monitoring Constituent	Background for Monitoring
HE	Site history and soil data
Total PCBs	Site history (organic chemicals)
SVOCs	Site history (organic chemicals) and soil data
Dissolved barium, beryllium, manganese, uranium	Site history (metals) and soil data
Total iron	Site history (metals) and soil data
DOC	Permit requirement
SSC	Permit requirement

176.0 CDV-SMA-2.41

Associated Sites	16-018
Receiving Water	Cañon de Valle
Drainage Area	2.08 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 16-018: No Further Action Approved
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Site was not reviewed in the 2016–2018 SIP process. It has been removed from the LANL Hazardous Waste Facility Permit and is therefore no longer subject to the Consent Order.
2022 Permit Status	Active Monitoring/Corrective Action

176.1 2010 Administratively Continued Permit Summary

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

Following the July 2014 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2014, 257905), corrective-action monitoring was initiated and a stormwater sample was collected in July 2014. Confirmation monitoring is ongoing to collect a second sample.

176.2 Site History

SWMU 16-018 is the former location of MDA P, north of the TA-16 burning ground near the south rim of Cañon de Valle. MDA P operated from 1950 to 1984 as a disposal site for debris remaining from burning HE and HE-contaminated material at TA-16. Concrete and construction debris was deposited directly on the slopes leading down into the canyon. Other materials were burned at one of the nearby open-burn units, and the resulting debris or residue was pushed over the mesa rim into the canyon. The western area of MDA P primarily received construction debris from the demolition of World War II buildings; the eastern area received debris and residue from the open-burn units. MDA P underwent RCRA closure between 1999 and 2005. During closure, approximately 55,000 yd^3 of soil, rock, metal, and concrete debris was excavated from MDA P. Of this quantity, 21,506 yd^3 of soil was disposed as hazardous waste. The remainder of this quantity consisted of industrial waste soils, concrete and metal debris that was recycled or managed as industrial waste, and rock that was decontaminated and then used as riprap within TA-16. Other excavated waste included 3947 lb of asbestos-containing material; 888 containers of unknown content; 95 miscellaneous metal objects; 3240 lb of LLW; 5389 lb of mixed waste; and various smaller quantities of HE, HE-contaminated debris, and residuals from treating HE. Scrap metal and concrete were shipped to recycling facilities. Contaminated soils and industrial wastes were shipped to off-site solid waste landfills. Solid, nonhazardous wastes were disposed of at MDA J.

For investigation activities, refer to "Material Disposal Area P Site Closure Certification Report, Revision 1" (LANL 2005, 092251).

176.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 176.2-1.

Table 176.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-018	MDA P	Metals, lead, thallium, asbestos, PCBs, SVOCs, HE

176.3 Consent Order Soil Data

Decision-level data for SWMU 16-018 consist of results from samples collected from the excavated area. Analytical results for these samples are presented in Figures 176.3-1 through 176.3-4. The approved 2005 MDA P Site closure certification report (LANL 2005, 092251; NMED 2005, 093247) concluded that the nature and extent had been defined for chemicals and radionuclides detected at SWMU 16-018.

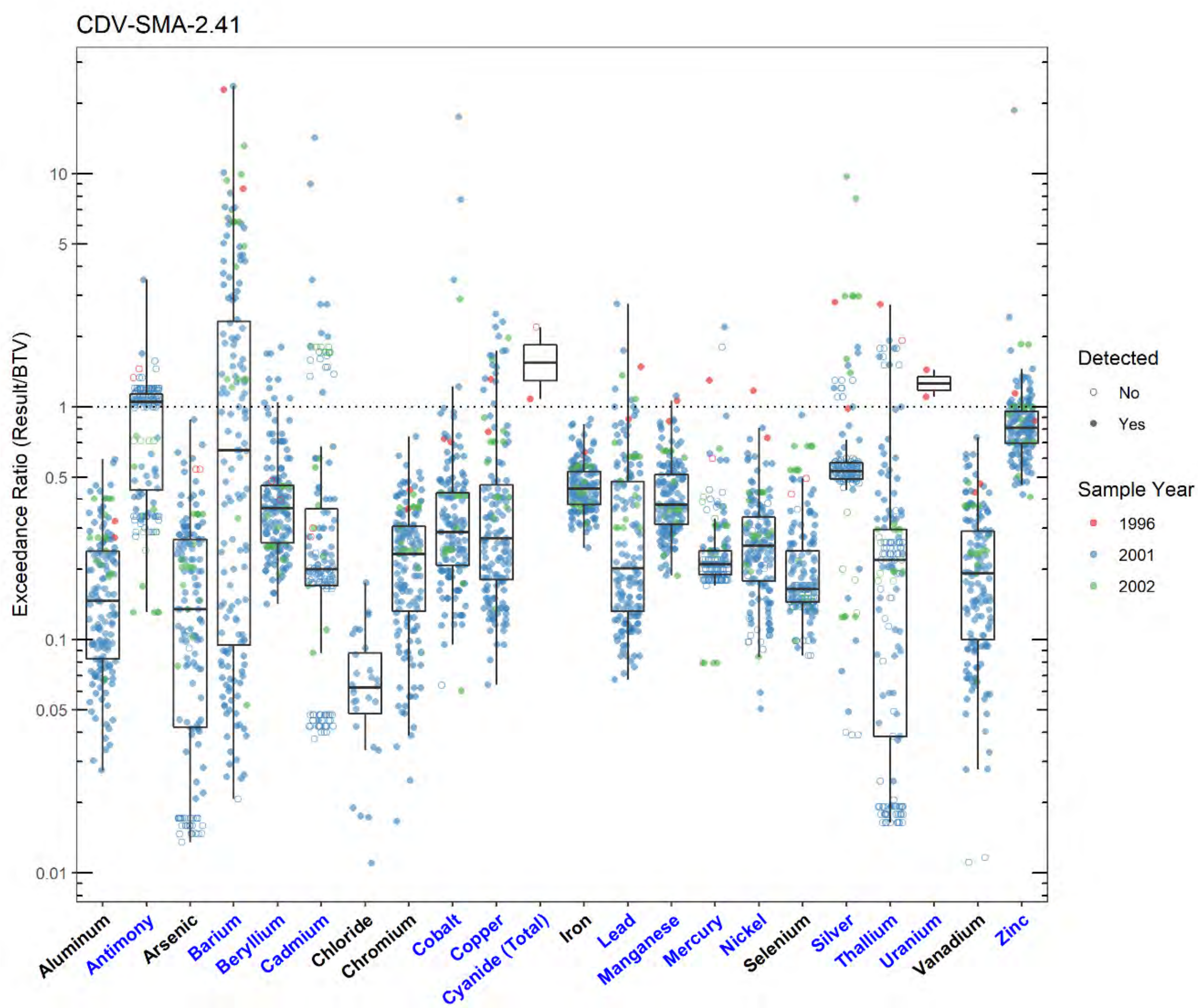


Figure 176.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-2.41

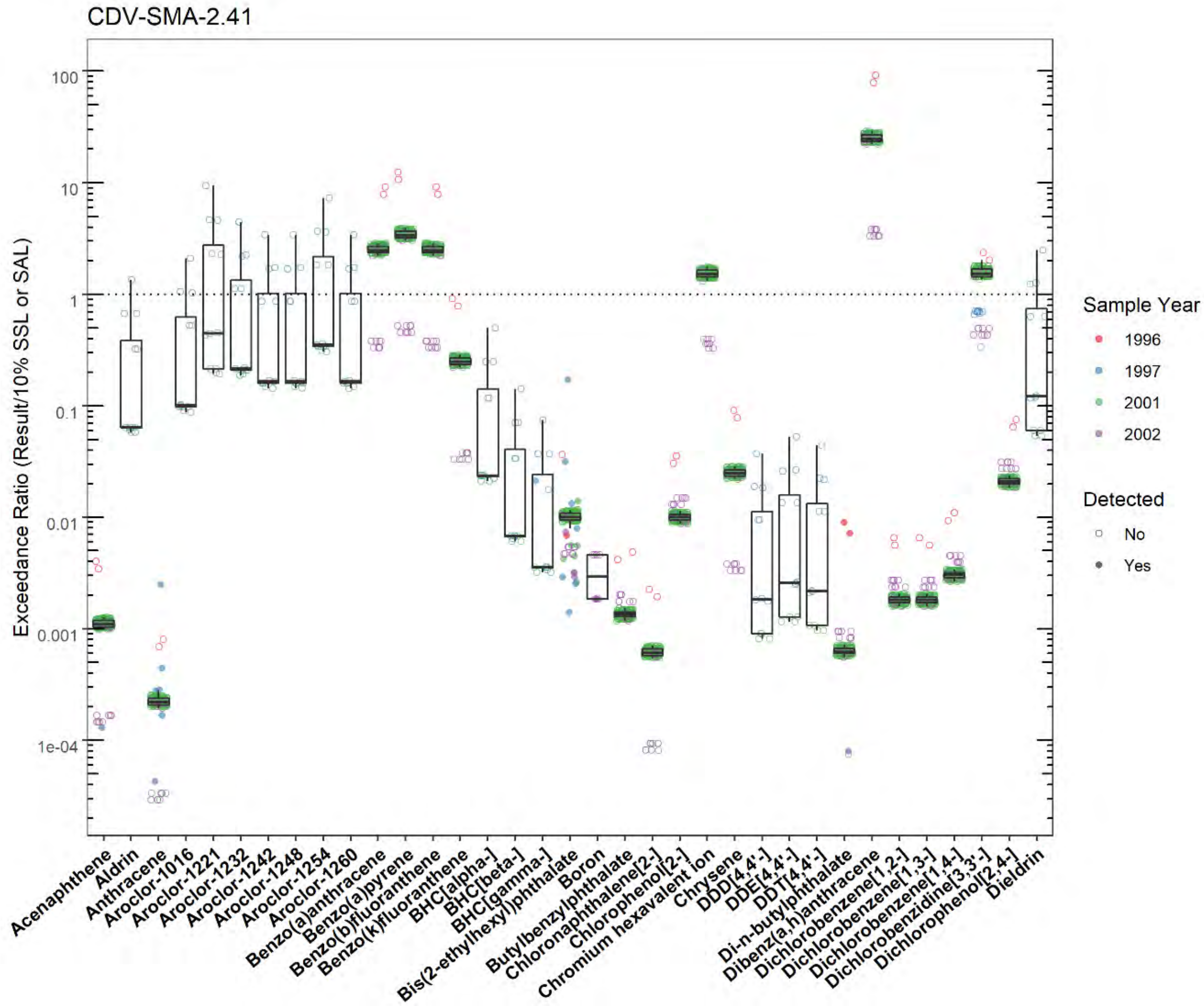


Figure 176.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2.41 (Plot 1)

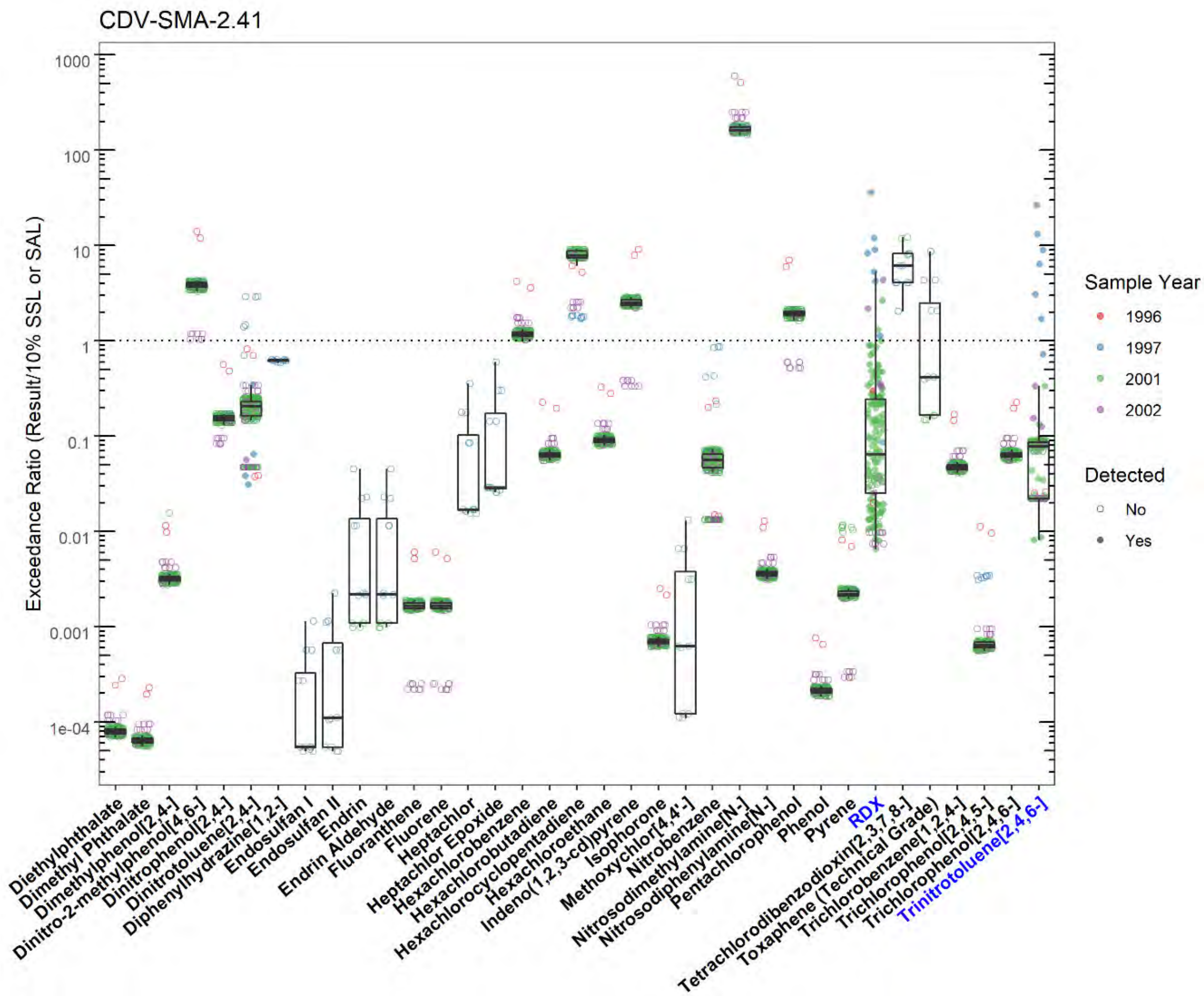


Figure 176.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2.41 (Plot 2)

CDV-SMA-2.41

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	CDV-SMA-2.41	Sb	Y	BTV	0.830	2.90	2001-07-24
Barium	CDV-SMA-2.41	Ba	Y	BTV	295	6980	2001-07-26
Beryllium	CDV-SMA-2.41	Be	Y	BTV	1.83	3.30	2001-07-26
Cadmium	CDV-SMA-2.41	Cd	Y	BTV	0.400	5.70	2001-07-30
Cobalt	CDV-SMA-2.41	Co	Y	BTV	8.64	151	2001-07-26
Copper	CDV-SMA-2.41	Cu	Y	BTV	14.7	36.8	2001-06-20
Cyanide (Total)	CDV-SMA-2.41	CN(TOTAL)	Y	BTV	0.500	0.540	1996-09-06
Lead	CDV-SMA-2.41	Pb	Y	BTV	22.3	61.5	2001-07-24
Manganese	CDV-SMA-2.41	Mn	Y	BTV	671	743	2001-07-12
Mercury	CDV-SMA-2.41	Hg	Y	BTV	0.100	0.220	2001-08-01
Nickel	CDV-SMA-2.41	Ni	Y	BTV	15.4	18.0	1996-09-06
RDX	CDV-SMA-2.41	121-82-4	Y	SSL_0.1	8.31	300	1997-12-08
Silver	CDV-SMA-2.41	Ag	Y	BTV	1.00	9.70	2002-03-20
Thallium	CDV-SMA-2.41	Tl	Y	BTV	0.730	2.00	1996-09-06
Trinitrotoluene[2,4,6-]	CDV-SMA-2.41	118-96-7	Y	SSL_0.1	3.60	95.0	1997-12-08
Uranium	CDV-SMA-2.41	U	Y	BTV	1.82	2.62	1996-09-06
Zinc	CDV-SMA-2.41	Zn	Y	BTV	48.8	912	2001-07-24

Figure 176.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-2.41

176.4 Stormwater Evaluation

176.4.1 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 Figures 176.4-1 and 176.4-2.

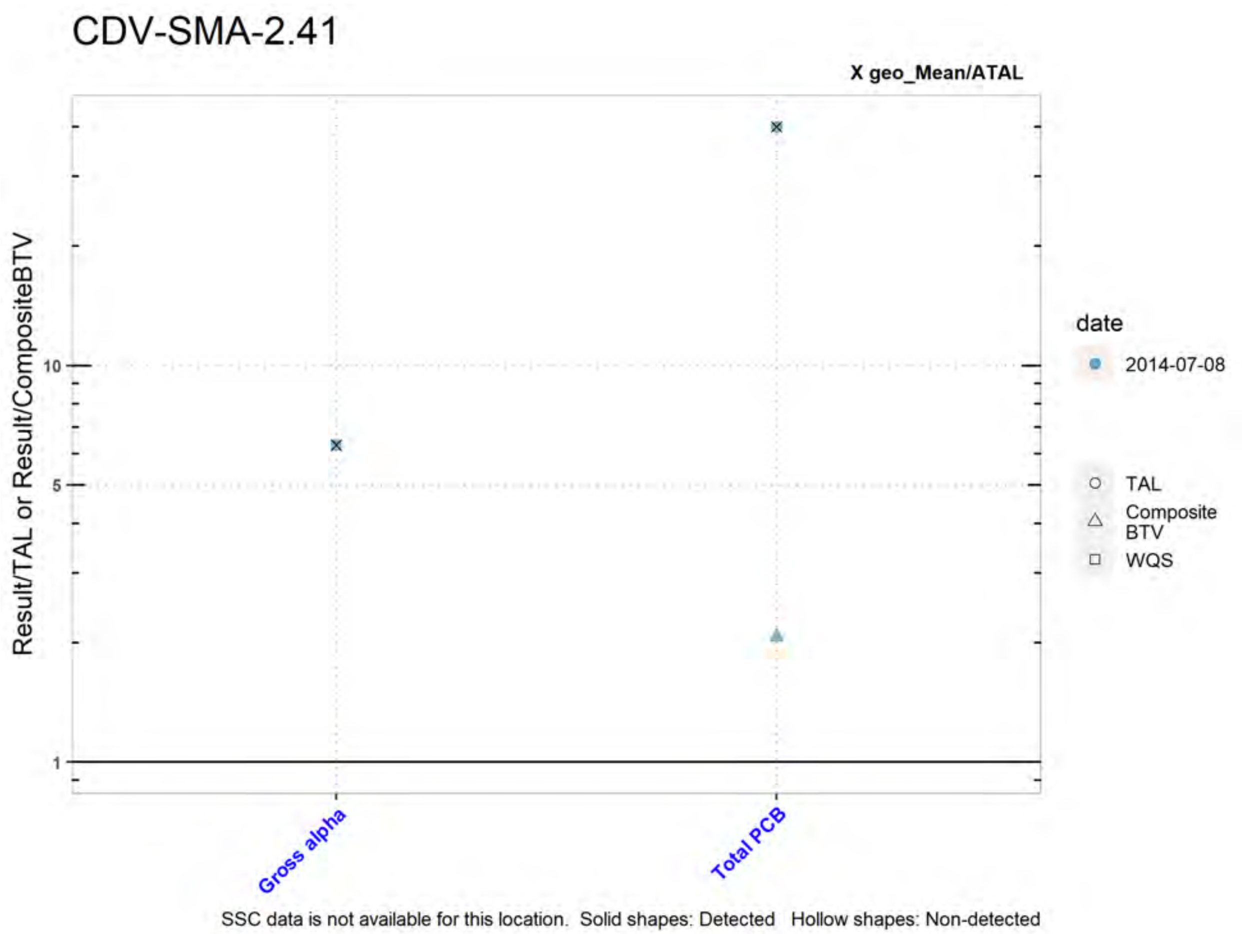


Figure 176.4-1 Analytical Results from Stormwater Sample, CDV-SMA-2.41 (Plot)

CDV-SMA-2.41

	Gross alpha	Total PCB
MQL	NA	0.2
ATAL	15	0.00064
MTAL	NA	NA
Composite_BTV	57.2	0.0122
unit	pCi/L	ug/L
2014-07-08 result	94.2	0.0253
2014-07-08 dT	6.3	40
2014-07-08 dB	NA	2.07
geo_mean/ATAL	6.3	40

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

Figure 176.4-2 Analytical Results from Stormwater Sample, CDV-SMA-2.41 (Table)

176.4.2 Assessment Unit and Stream Impairments

CDV-SMA-2.41 drains to Cañon de Valle (LANL gage E256 to Burning Ground Spring) which has impairments for PCBs. The PCB impairment may be Site-related, based on Site history.

176.5 Site-Specific Demonstration

176.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: trinitrotoluene[2,4,6-] and RDX.

The other metals and cyanide that exceeded the applicable screening values in soil data were previously monitored in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

176.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL but it will not be added to the SAP because the assessment unit that CDV-SMA-2.41 drains to is not impaired for gross alpha. PCBs exceeded the TAL and BTV. Metals were measured below TALs in the previous stage.

176.5.3 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.2.b.i) for PCBs. The SMA is also in active monitoring; not all Site-related POCs were monitored for in previous samples.

176.5.4 Sampling and Analysis Plan

Table 176.5-1 is the proposed SAP for CDV-SMA-2.41.

Table 176.5-1 Proposed SAP, CDV-SMA-2.41

Monitoring Constituent	Background for Monitoring
HE	Site history and soil data
SVOCs	Site history
DOC	Permit requirement
SSC	Permit requirement

177.0 CDV-SMA-2.42

Associated Sites	16-010(b)
Receiving Water	Cañon de Valle
Drainage Area	0.81 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 16-010(b): No Further Action Approved
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Site was not reviewed in the 2016–2018 SIP process as it has been removed from the LANL Hazardous Waste Facility Permit and is therefore no longer subject to the Consent Order.
2022 Permit Status	Active Monitoring

177.1 2010 Administratively Continued Permit Summary

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

Following the September 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600931), the sampler was relocated to a more representative location and corrective-action monitoring was initiated. Stormwater samples were collected in June and October 2017. Analytical results from these samples initiated corrective action.

Following the July 2021 submittal to EPA of certification of enhanced control installation as a corrective action (N3B 2021, 701533), 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 at least one confirmation sample is collected from this SMA.

177.2 Site History

16-010(b) (no date)

SWMU 16-010(b) consists of a former flash pad (Structure 16-387) that was located at the TA-16 Burning Ground. The flash pad was enclosed within a 100-ft × 100-ft fenced area and consisted of a layer of sand several in. thick over a soil base. The pad was built in 1951 and was used to flash-burn solid and scrap HE, HE-contaminated equipment and debris, and HE-contaminated combustible material. Sands and residues from flash pad operations were disposed of at MDA P (SWMU 16-019). The flash pad operated as a hazardous waste treatment unit under RCRA interim status and underwent RCRA closure between 1999 and 2005. Closure activities included removal of the flash pad and associated debris and removal of soil and bedrock below and adjacent to the former pad. The former flash pad and MDA P were closed and remediated together along with adjacent SWMUs known as Consolidated Unit 16-016(c)-99; for cleanup and closure purposes, the sites were referred to as MDA P Site. Confirmation samples were collected as part of the closure of MDA P Site and included SWMU 16-010(b). The Site Closure Certification Report was approved by NMED on November 10, 2005. SWMU 16-010(b) is a formerly dual-regulated corrective-action unit and has been removed from the list of corrective-action units in LANL's Hazardous Waste Facility Permit; therefore, this unit is no longer subject to the Consent Order.

For investigation activities, refer to “Material Disposal Area P Site Closure Certification Report, Revision 1” (LANL 2005, 092251).

177.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 177.2-1.

Table 177.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-010(b)	Flash pad	Metals, dioxins/furans, HE

177.3 Consent Order Soil Data

SWMU 16-010(b) flash pad, and soil and tuff below and adjacent to the former flash pad were removed during the RCRA closure performed in 2000. Analytical results for these samples are presented in Figures 177.3-1 through 177.3-4. The approved closure certification report (LANL 2005, 092251) concluded that the nature and extent had been defined for all chemicals detected at SWMU 16-010(b).

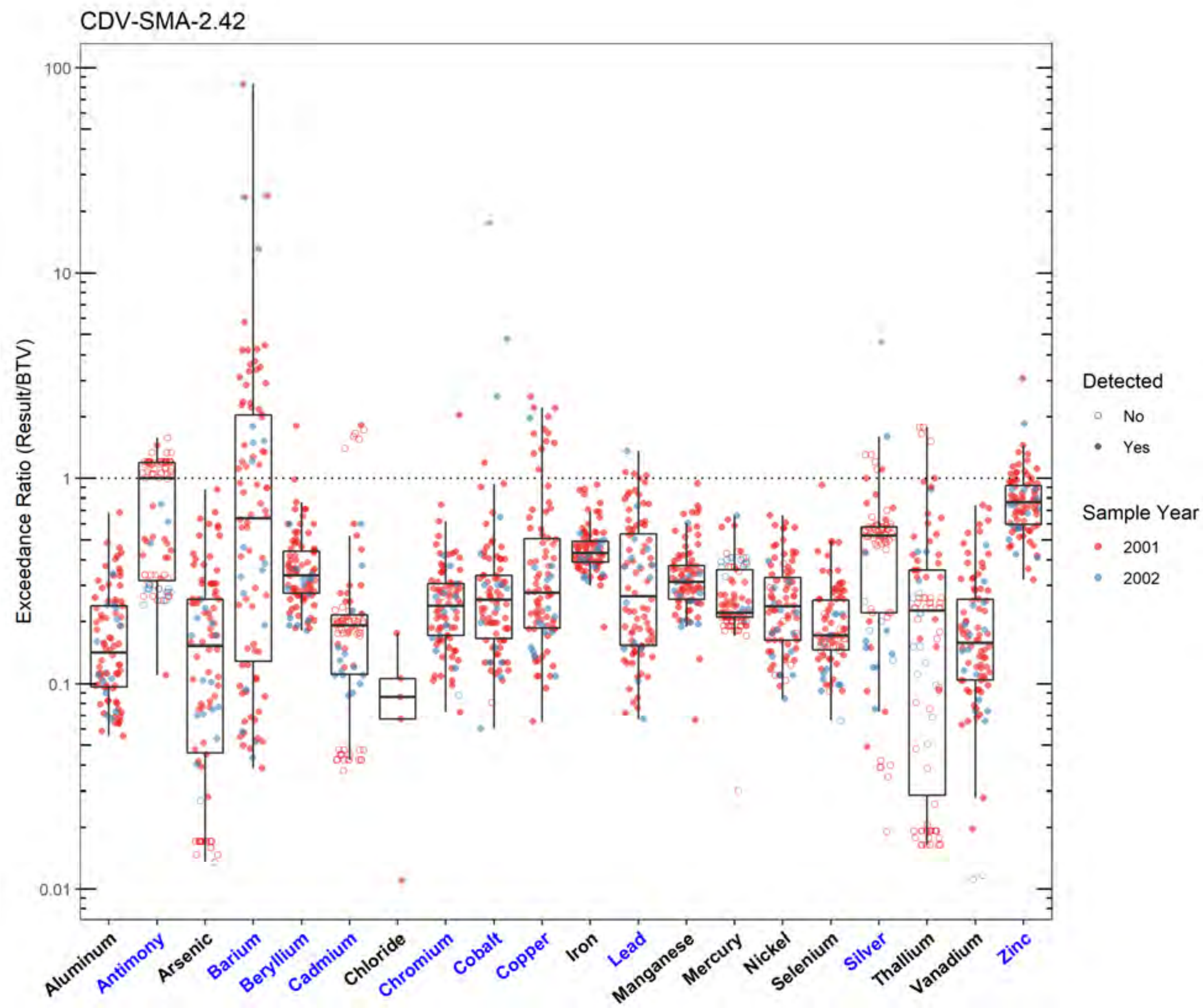


Figure 177.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-2.42

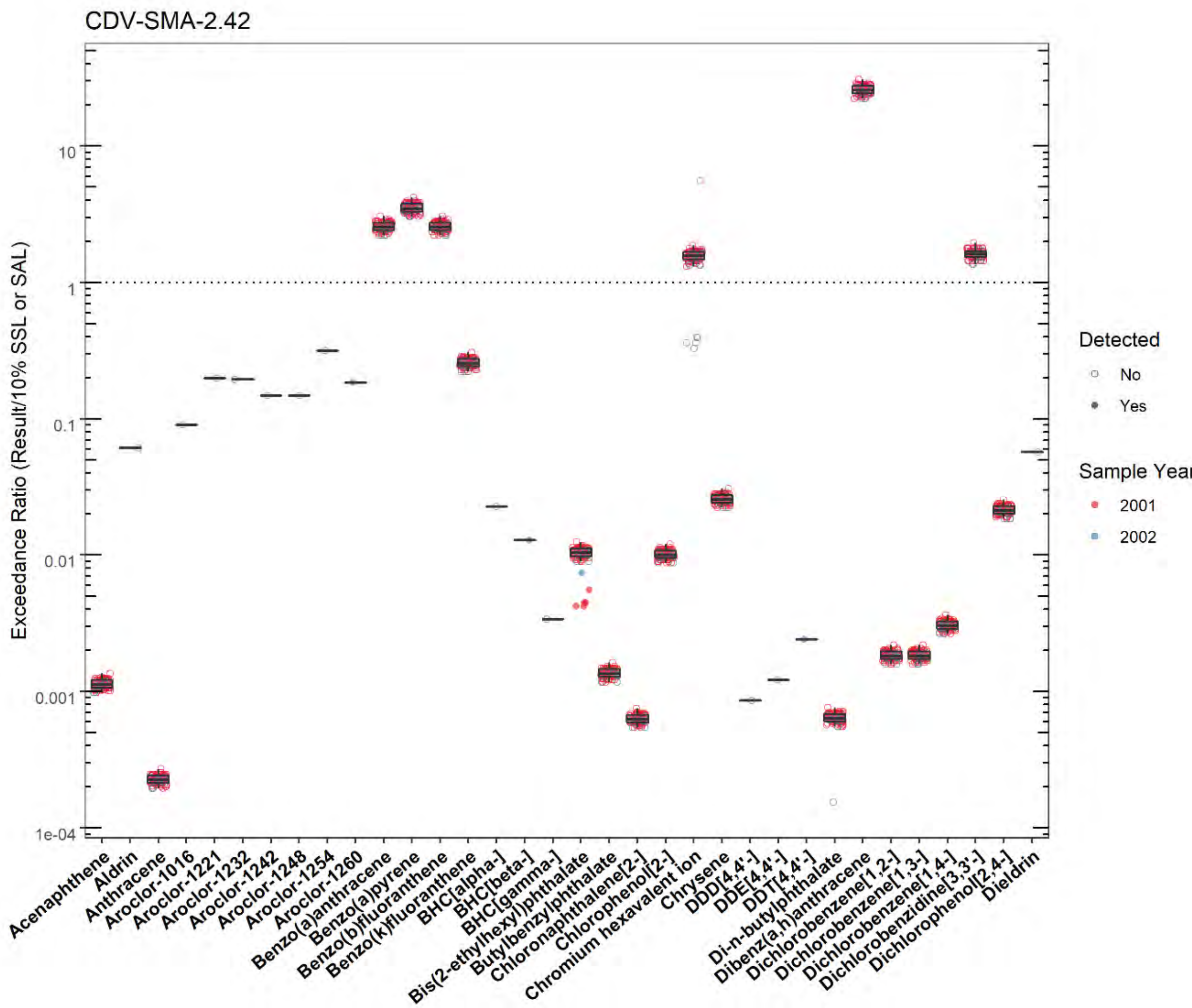


Figure 177.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2.42 (Plot 1)

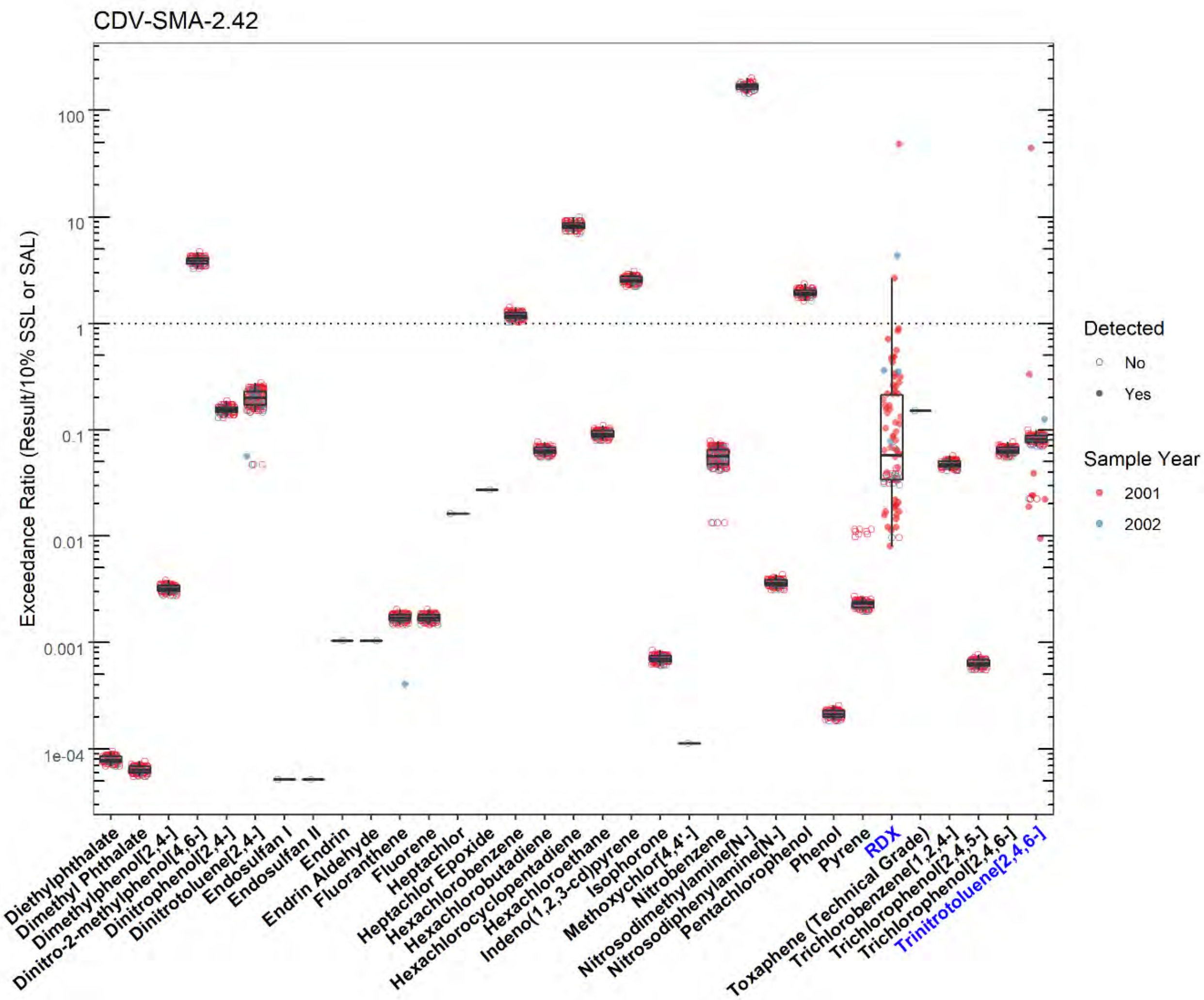


Figure 177.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2.42 (Plot 2)

CDV-SMA-2.42

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	CDV-SMA-2.42	Sb	Y	BTV	0.830	1.20	2001-07-12
Barium	CDV-SMA-2.42	Ba	Y	BTV	295	24600	2001-11-13
Beryllium	CDV-SMA-2.42	Be	Y	BTV	1.83	3.30	2001-07-26
Cadmium	CDV-SMA-2.42	Cd	Y	BTV	0.400	0.730	2001-07-26
Chromium	CDV-SMA-2.42	Cr	Y	BTV	19.3	39.4	2001-06-25
Cobalt	CDV-SMA-2.42	Co	Y	BTV	8.64	151	2001-07-26
Copper	CDV-SMA-2.42	Cu	Y	BTV	14.7	36.8	2001-06-20
Lead	CDV-SMA-2.42	Pb	Y	BTV	22.3	30.3	2002-03-20
RDX	CDV-SMA-2.42	121-82-4	Y	SSL_0.1	8.31	400	2001-11-13
Silver	CDV-SMA-2.42	Ag	Y	BTV	1.00	4.60	2002-03-05
Trinitrotoluene[2,4,6-]	CDV-SMA-2.42	118-96-7	Y	SSL_0.1	3.60	160	2001-11-13
Zinc	CDV-SMA-2.42	Zn	Y	BTV	48.8	150	2001-06-20

Figure 177.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-2.42

177.4 Stormwater Evaluation

177.4.1 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.

177.4.2 Assessment Unit and Stream Impairments

CDV-SMA-2.42 drains to Cañon de Valle (LANL gage E256 to Burning Ground Spring), which has impairments for PCBs. The PCB impairment is not likely to be Site-related, based on Site history.

177.5 Site-Specific Demonstration

177.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: trinitrotoluene[2,4,6-] and RDX.

The metals that exceeded the applicable screening values in soil data were previously monitored in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

177.5.2 Stormwater Data Summary

No data for the current monitoring stage have been collected. Aluminum, copper, gross alpha, and PCBs exceeded TALs in the previous monitoring stage; aluminum and gross alpha were below BTVs.

177.5.3 2022 Permit Status

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

177.5.4 Sampling and Analysis Plan

Table 177.5-1 is the proposed SAP for CDV-SMA-2.42.

Table 177.5-1 Proposed SAP, CDV-SMA-2.42

Monitoring Constituent	Background for Monitoring
Total PCBs	Stormwater data
Dissolved copper	Site history (metals) and stormwater data
HE	Site history (unspecified explosive compounds) and soil data
Tetrachlorodibenzodioxin[2,3,7,8-]	Site history (dioxins/furans)
DOC	Permit requirement
SSC	Permit requirement

178.0 CDV-SMA-2.5

Associated Sites	16-010(c), 16-010(d), 16-028(a)
Receiving Water	Cañon de Valle
Drainage Area	23.50 acres
Landscape Characteristics	10% impervious, 90% pervious
Consent Order Site Status	SWMU 16-010(c): No Further Action Approved SWMU 16-010(d): No Further Action Approved SWMU 16-028(a): In Progress
2010 Administratively Continued Permit Final Status	Baseline Confirmation Complete/Site Deletion Request
2016–2018 SIP Actions	Based on the November 2016 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from 16-028(a). SWMUs 16-010(c) and 16-010(d) were not reviewed in the 2016–2018 SIP process as they have been removed from the LANL Hazardous Waste Facility Permit and are therefore no longer subject to the Consent Order.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3.a criterion

178.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, baseline stormwater samples were collected in September 2011, October 2012, and July 2013. Analytical results from these samples yielded no TAL exceedances and corrective action was not initiated. Stormwater monitoring has not occurred since 2013.

178.2 Site History

16-010(c) (no date)

SWMU 16-010(c) is a former burn table that was converted to a flash pad/burn tray (Structure 16-388) located at the TA-16 Burning Ground. The burn table was used to treat HE scrap. The 100-ft × 100-ft enclosed area consisted of a concrete pad that was used to unload explosives and a 16-ft × 4-ft metal tray that was approximately 2 ft above the ground surface. Scrap HE was placed on the tray and burned. The current flash pad consists of a 22-ft × 22-ft concrete pad set on a secondary containment area and surrounded on three sides by a concrete wall. Before treatment, the HE-contaminated wastes are placed on steel pallets or steel trays. Propane burners are used as heat sources to treat the wastes at the flash pad, which can be covered with a movable steel roof when the pad is not in use. The current burn tray consists of a stainless-steel kettle that is 30 in. in diameter and 24 in. high. Propane burners are used to treat HE contaminated liquid wastes at the burn tray. The entire assembly, which can be covered with a retractable cover, is provided with secondary containment.

16-010(d) (no date)

SWMU 16-010(d) is a former burn table that was converted to a burn tray (Structure 16-399) located at the TA-16 Burning Ground. The 100-ft^2 enclosed area consists of a concrete pad, a burn table that is approximately 2 ft above the ground surface, and a 16-ft × 4-ft metal tray situated on the table. Scrap HE is placed on the tray and burned. A metal-covered rain guard can be rolled back to expose the tray.

16-028(a) (2/18/2021)

SWMU 16-028(a) is the south drainage channel that drained the southern half of the Burning Ground at TA-16 Burning Ground. The drainage is associated with SWMUs 16-005(g) and 16-010(h-n), the former filter basket wash facility, and discharges from a carbon filter/treatment unit renumbered from Structure 16-228 to 16-363 [SWMU 16-010(g)]. The site provides the only surface water drainage for approximately half the TA-16 Burning Ground, and it marks the southern edge of historical Burning Ground activities.

Corrective-action investigations have not been conducted at 16-010(c) or 16-010(d). For investigation activities for the Sites, refer to “Investigation Work Plan for Cañon de Valle Aggregate Area” (LANL 2006, 091698).

178.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 178.2-1.

Table 178.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-010(c)	Flash pad/burn tray	Metals, dioxins/furans, HE
16-010(d)	Burn tray	Metals, HE
16-028(a)	Drainage channel	Metals, barium, HE

178.3 Consent Order Soil Data

No data is available for 16-010(c) or 16-010(d). SWMUs 16-010(c) and 16-010(d) are RCRA interim status treatment units and were removed from Appendix A of the Consent Order.

Decision-level data for SWMU 16-028(a) consist of results from samples collected in 1995 and 1997. Analytical results for these samples are presented in Figures 178.3-1 through 178.3-4. The 2006 IWP (LANL 2006, 091698) concluded that the nature and extent of contamination were not defined and additional sampling is recommended.

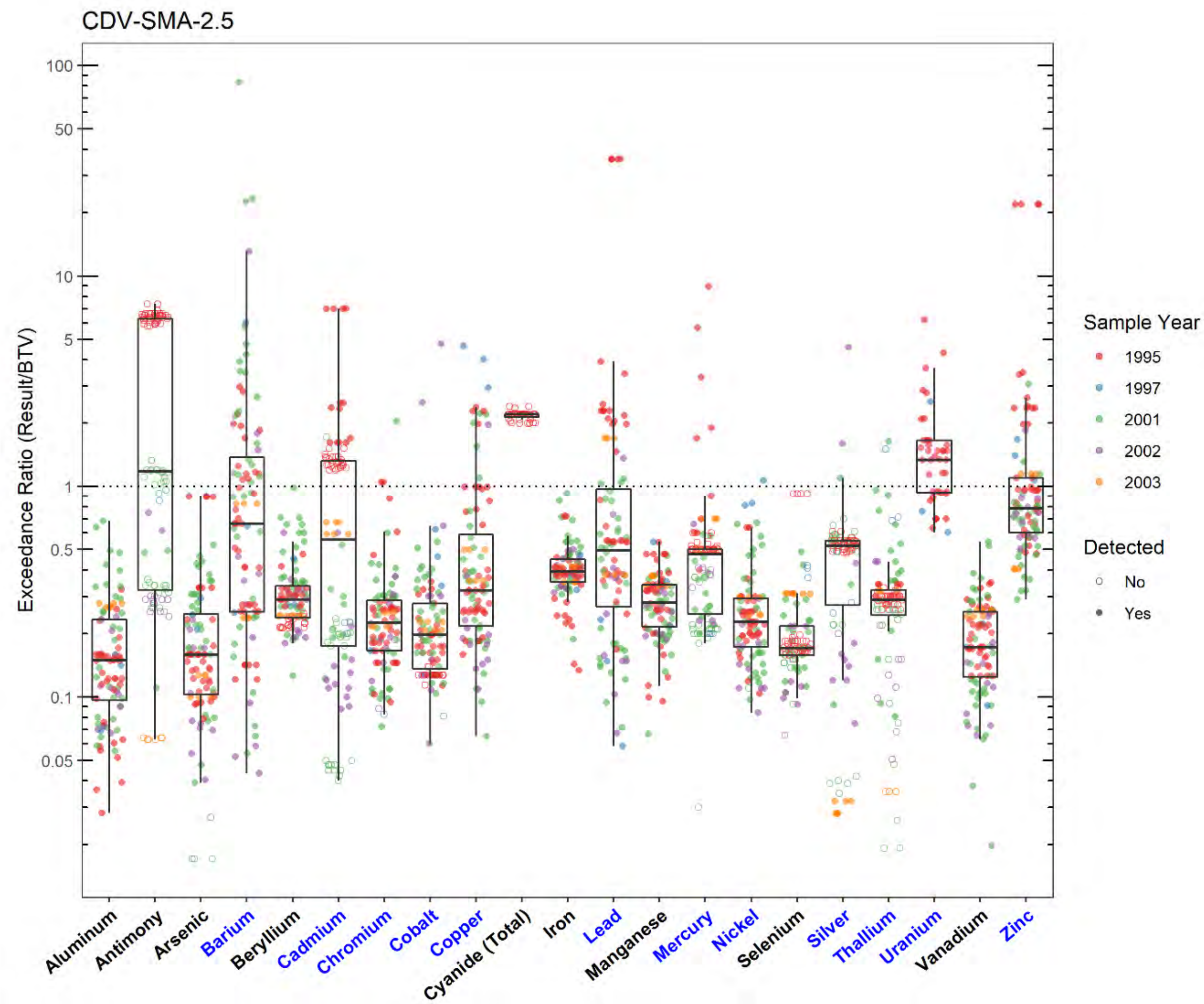


Figure 178.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-2.5

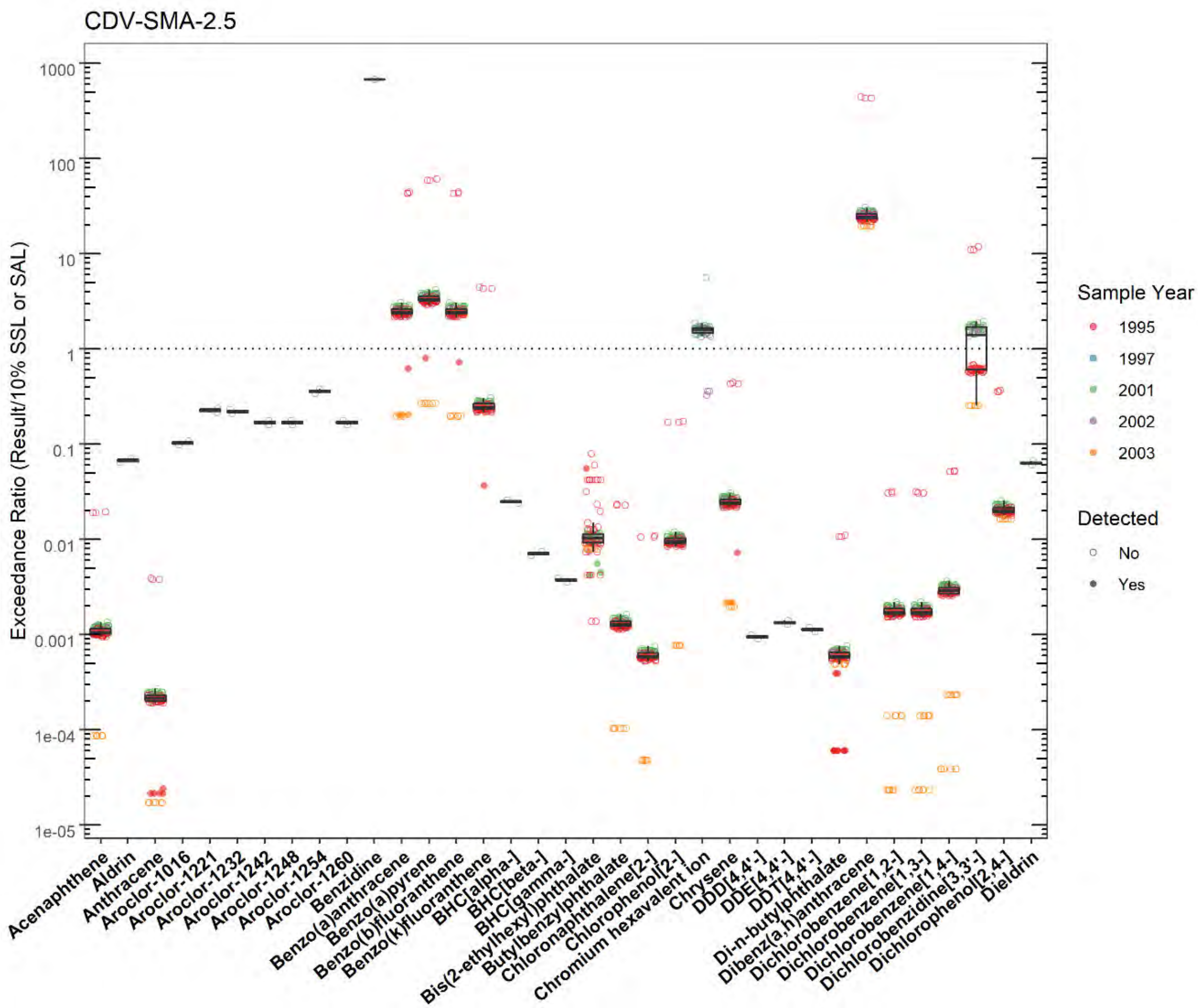


Figure 178.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2.5 (Plot 1)

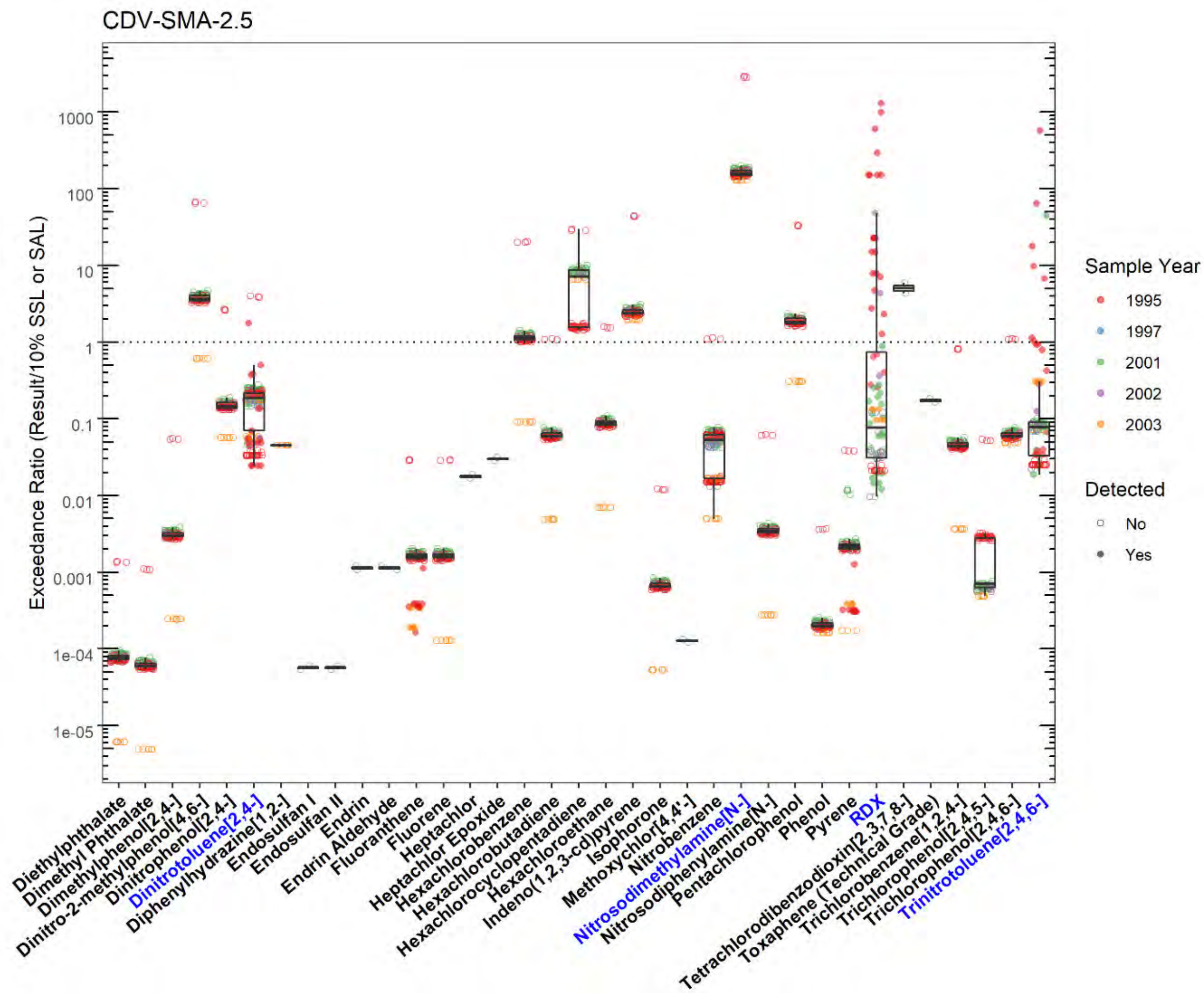


Figure 178.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2.5 (Plot 2)

CDV-SMA-2.5

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Barium	CDV-SMA-2.5	Ba	Y	BTV	295	24600	2001-11-13
Cadmium	CDV-SMA-2.5	Cd	Y	BTV	0.400	2.80	1995-10-20
Chromium	CDV-SMA-2.5	Cr	Y	BTV	19.3	39.4	2001-06-25
Cobalt	CDV-SMA-2.5	Co	Y	BTV	8.64	41.3	2002-03-05
Copper	CDV-SMA-2.5	Cu	Y	BTV	14.7	68.5	1997-08-22
Dinitrotoluene[2,4-]	CDV-SMA-2.5	121-14-2	Y	SSL_0.1	1.71	3.02	1995-10-04
Lead	CDV-SMA-2.5	Pb	Y	BTV	22.3	800	1995-10-10
Mercury	CDV-SMA-2.5	Hg	Y	BTV	0.100	0.890	1995-11-10
Nickel	CDV-SMA-2.5	Ni	Y	BTV	15.4	16.5	1997-08-22
Nitrosodimethylamine[N-]	CDV-SMA-2.5	62-75-9	Y	SSL_0.1	0.00234	0.330	1995-10-04
RDX	CDV-SMA-2.5	121-82-4	Y	SSL_0.1	8.31	10700	1995-10-04
Silver	CDV-SMA-2.5	Ag	Y	BTV	1.00	4.60	2002-03-05
Thallium	CDV-SMA-2.5	Tl	Y	BTV	0.730	1.20	2001-06-19
Trinitrotoluene[2,4,6-]	CDV-SMA-2.5	118-96-7	Y	SSL_0.1	3.60	2060	1995-10-04
Uranium	CDV-SMA-2.5	U	Y	BTV	1.82	11.3	1995-10-02
Zinc	CDV-SMA-2.5	Zn	Y	BTV	48.8	1070	1995-10-10

Figure 178.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-2.5

178.4 Stormwater Evaluation

178.4.1 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 September 2011, October 2012, and July 2013. Analytical results from these samples are presented in Figures 178.4-1 through 178.4-4.

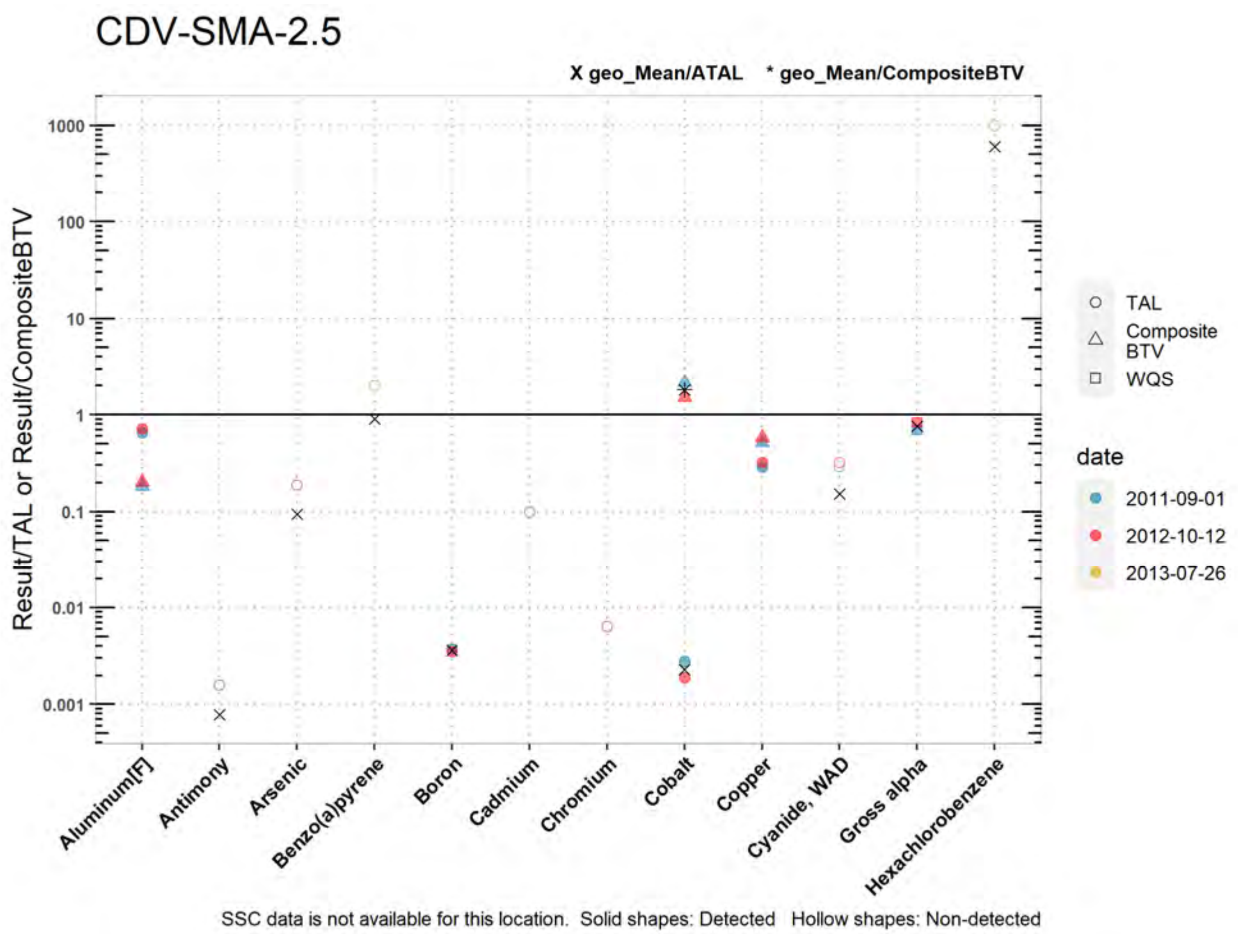


Figure 178.4-1 Analytical Results from Stormwater Samples, CDV-SMA-2.5 (Plot 1)

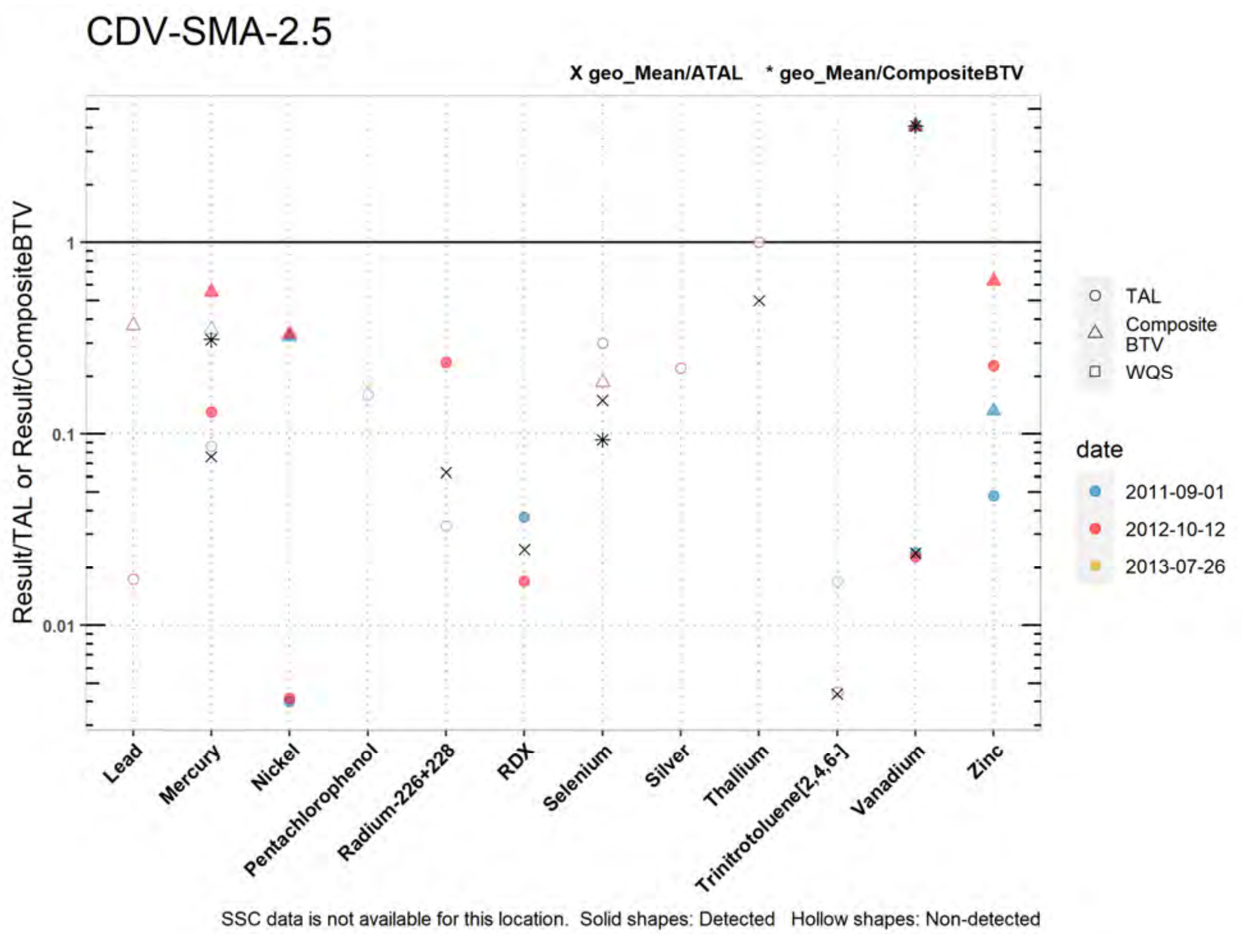


Figure 178.4-2 Analytical Results from Stormwater Samples, CDV-SMA-2.5 (Plot 2)

CDV-SMA-2.5

	Aluminum [F]	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Hexachlorobenzene
MQL	2.5	1	0.5	0.064	100	1	10	50	0.5	10	NA	5
ATAL	NA	640	9	0.18	5000	NA	NA	1000	NA	5.2	15	0.0029
MTAL	750	NA	340	NA	NA	0.879	311	NA	6.69	22	NA	NA
Composite_BTV	2660	NA	NA	NA	NA	NA	NA	1.29	3.73	NA	56.4	NA
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
2011-09-01 result	483	*1.00*	*1.70*	*0.300*	18.4	*0.110*	*2.00*	2.80	1.90	*1.50*	10.3	*3.00*
2011-09-01 dT	0.644	NA	NA	NA	0.0037	NA	NA	0.0028	0.284	NA	0.69	NA
2011-09-01 dB	0.182	NA	NA	NA	NA	NA	NA	2.17	0.509	NA	NA	NA
2012-10-12 result	534	*1.00*	*1.70*	NA	17.4	*0.110*	*2.00*	1.94	2.15	*1.67*	12.5	NA
2012-10-12 dT	0.712	NA	NA	NA	0.0035	NA	NA	0.0019	0.321	NA	0.83	NA
2012-10-12 dB	0.201	NA	NA	NA	NA	NA	NA	1.50	0.576	NA	NA	NA
2013-07-26 result	NA	NA	NA	*0.357*	NA	NA	NA	NA	NA	NA	NA	*3.57*
2013-07-26 dT	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2013-07-26 dB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
geo_mean/ATAL	NA	0.00078	0.094	0.9	0.0036	NA	NA	0.0023	NA	0.152	0.76	600
geo_mean/B	NA	NA	NA	NA	NA	NA	NA	1.81	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 178.4-3 Analytical Results from Stormwater Samples, CDV-SMA-2.5 (Table 1)

CDV-SMA-2.5

	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
MQL	0.5	0.005	0.5	5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	0.77	NA	NA	30	200	5	NA	0.47	20	100	NA
MTAL	28.6	NA	250	19	NA	NA	20	0.9	NA	NA	NA	81.6
Composite_BTV	1.35	0.187	3.10	NA	4.85	NA	8.06	NA	NA	NA	0.581	29.6
unit	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2011-09-01 result	*0.500*	*0.0660*	1.00	*3.00*	*1.00*	7.31	*1.50*	*0.200*	*0.450*	*0.340*	2.40	3.90
2011-09-01 dT	NA	NA	0.00400	NA	NA	0.037	NA	NA	NA	NA	0.024	0.0478
2011-09-01 dB	NA	NA	0.323	NA	NA	NA	NA	NA	NA	NA	4.13	0.132
2012-10-12 result	*0.500*	0.103	1.04	NA	7.14	3.40	*1.50*	*0.200*	*0.450*	*0.0899*	2.33	18.6
2012-10-12 dT	NA	0.13	0.00416	NA	0.238	0.017	NA	NA	NA	NA	0.023	0.228
2012-10-12 dB	NA	0.551	0.335	NA	NA	NA	NA	NA	NA	NA	4.01	0.628
2013-07-26 result	NA	NA	NA	*3.57*	NA	NA	NA	NA	NA	NA	NA	NA
2013-07-26 dT	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2013-07-26 dB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
geo_mean/ATAL	NA	0.076	NA	NA	0.0630	0.025	0.15	NA	0.5	0.0044	0.024	NA
geo_mean/B	NA	0.312	NA	NA	NA	NA	0.0931	NA	NA	NA	4.07	NA

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

Figure 178.4-4 Analytical Results from Stormwater Samples, CDV-SMA-2.5 (Table 2)

178.4.2 Assessment Unit and Stream Impairments

CDV-SMA-2.5 drains to Fishladder Canyon (Cañon del Valle to headwaters) which has not been assessed for impairments.

178.5 Site-Specific Demonstration

178.5.1 Soil Data Summary

All Site-related POCs that exceeded the applicable screening values in soil data were previously monitored in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

178.5.2 Stormwater Data Summary

No TAL exceedances in confirmation-monitoring data.

178.5.3 2022 Permit Status

The SMA is eligible for long-term stewardship. All Site-related POCs with TALs were below their respective composite BTVs (Part I.C.3.a).

179.0 CDV-SMA-2.51

Associated Sites	16-010(i)
Receiving Water	Cañon de Valle
Drainage Area	2.35 acres
Landscape Characteristics	5% impervious, 95% pervious
Consent Order Site Status	SWMU 16-010(i): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the November 2016 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

179.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, 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 2013.

179.2 Site History

16-010(i) (9/14/2020)

SWMU 16-010(i) consists of a former filter bed and former burn pad (former Structure 16-392) located at northeast corner of the burning ground within the northeast portion of TA-16. Filter bed 16-392 was constructed in 1951 approximately 250 ft east of the former basket-wash house (former Structure 16-390) [SWMU 16-010(h)], and measured 12 ft by 12 ft by 1 ft deep. Filter bed 16-392 received suspected uranium-contaminated HE wash-down water from the basket-wash house through an elevated, open steel V-shaped trough (former Structure 16-1136) [SWMUs 16-010(n)]. Solid HE accumulated on and around the filter bed was burned on the bed. After burning, the filter-bed sand was removed for disposal at MDA P from the early 1950s to 1984, and then to MDA G at TA-54 thereafter. Filtered wash water from the basket-wash house collected within perforated piping along the bottom of the SWMU 16-010(i) filter bed and drained via gravity through a drainline to an outfall south-southeast of the filter bed. In 1988, filter bed 16-392 was modified to a burn pad to burn HE-contaminated uranium objects and Structure 16-1136 was decommissioned; the burn pad is still in place. It is not known if the drainline from the filter bed was removed. The basket-wash house and troughs underwent D&D in 2003.

For investigation activities for the Site, refer to “Investigation Work Plan for Cañon de Valle Aggregate Area” (LANL 2006, 091698).

179.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 179.2-1.

Table 179.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-010(i)	Burn pad	Metals, HE, uranium

179.3 Consent Order Soil Data

Decision-level data for SWMU 16-010(i) consist of results from samples collected in 1995. Analytical results for these samples are presented in Figures 179.3-1 through 179.3-4. The 2006 IWP (LANL 2006, 091698) concluded that the nature and extent of contamination were not defined and additional sampling is recommended.

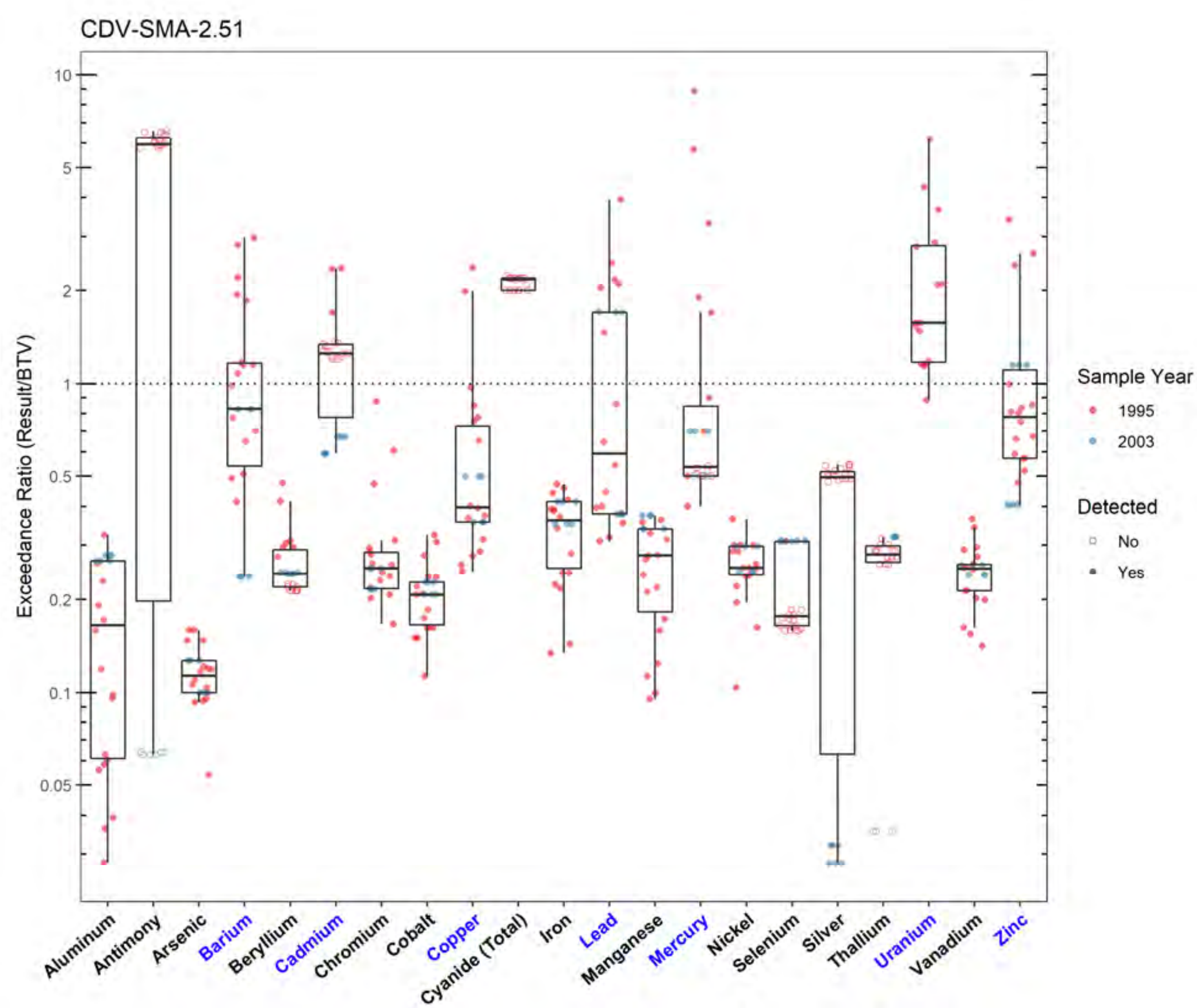


Figure 179.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-2.51

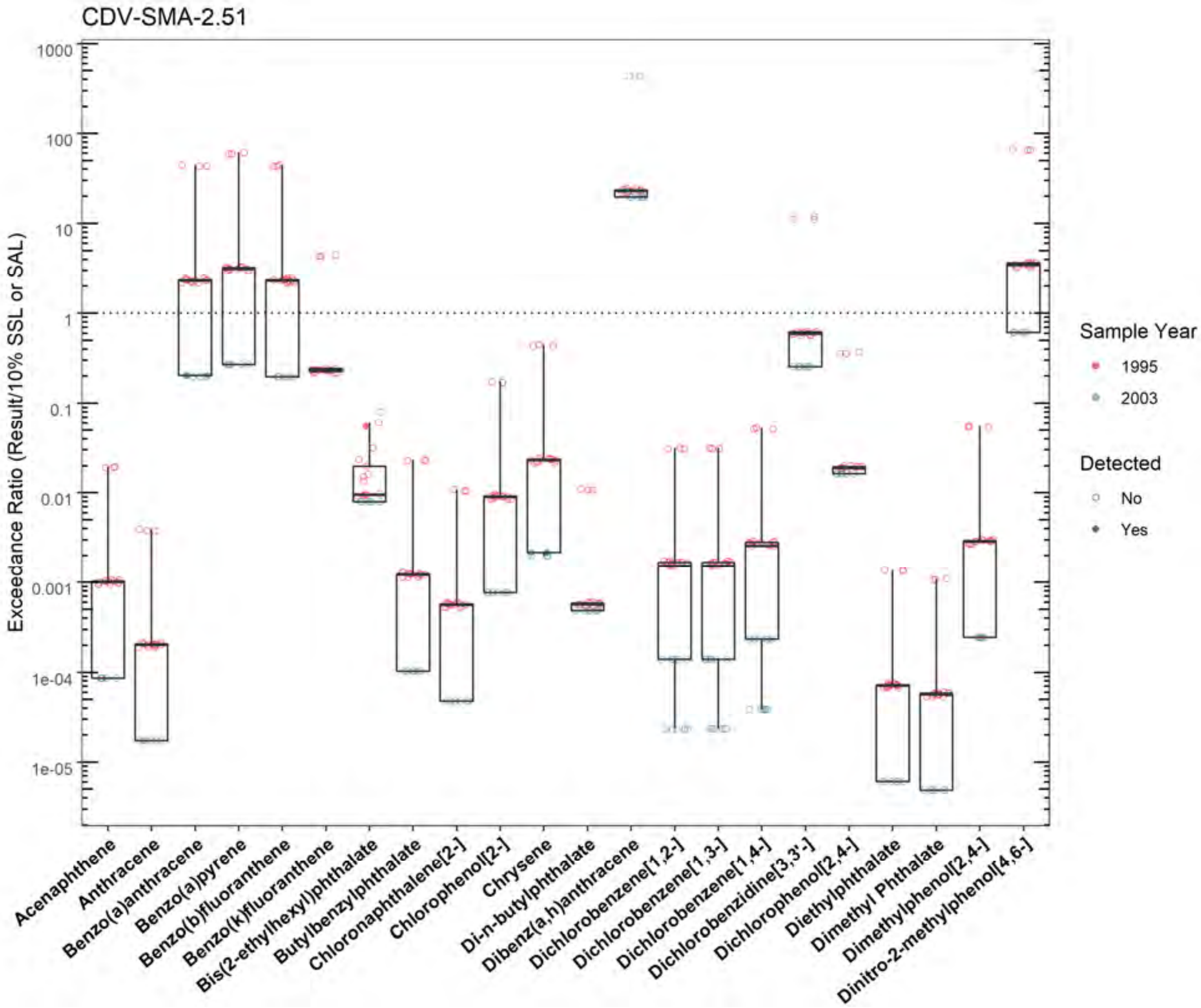


Figure 179.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2.51 (Plot 1)

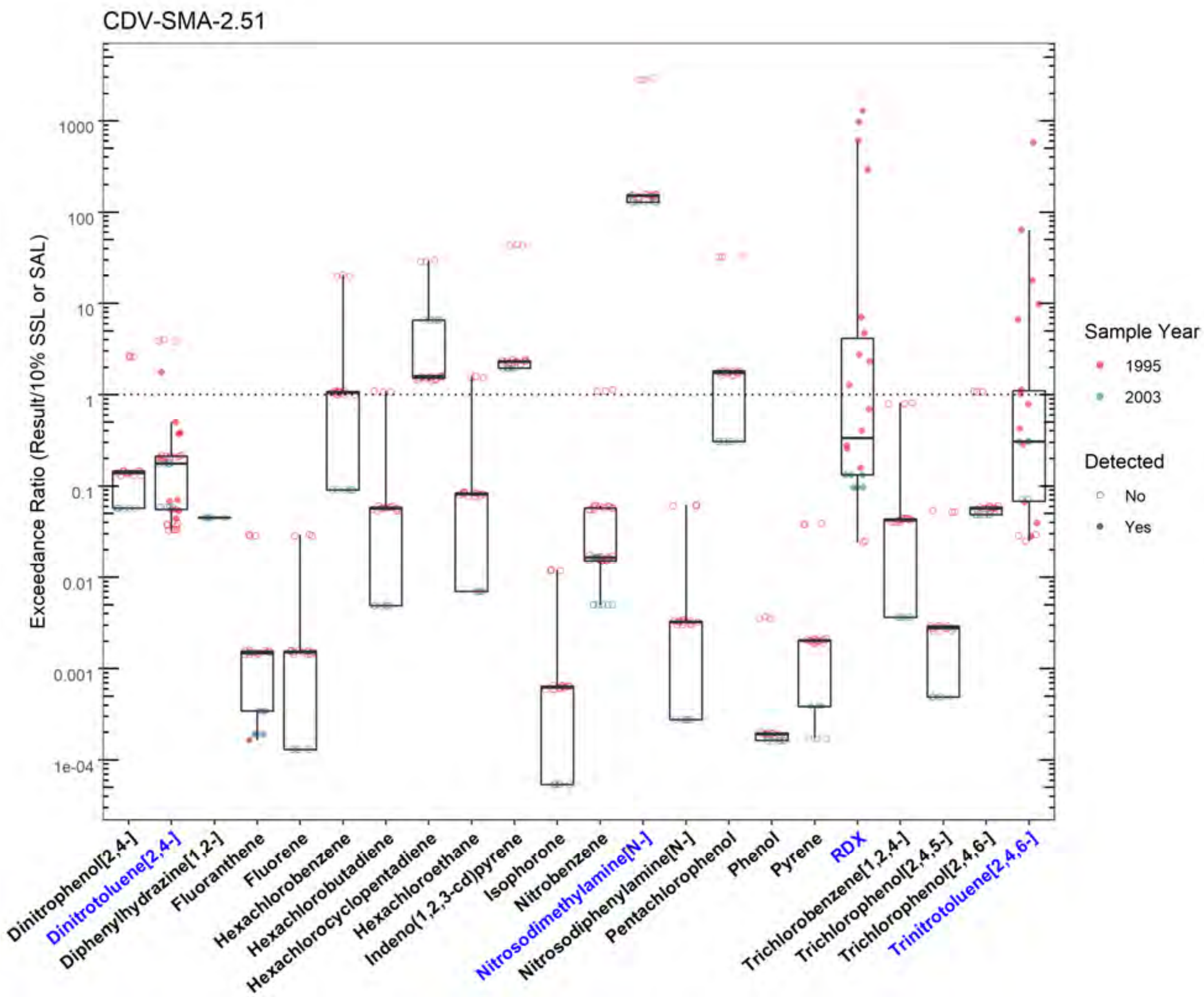


Figure 179.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-2.51 (Plot 2)

CDV-SMA-2.51

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Barium	CDV-SMA-2.51	Ba	Y	BTV	295	880	1995-10-04
Cadmium	CDV-SMA-2.51	Cd	Y	BTV	0.400	0.950	1995-11-10
Copper	CDV-SMA-2.51	Cu	Y	BTV	14.7	35.0	1995-10-02
Dinitrotoluene[2,4-]	CDV-SMA-2.51	121-14-2	Y	SSL_0.1	1.71	3.02	1995-10-04
Lead	CDV-SMA-2.51	Pb	Y	BTV	22.3	87.6	1995-10-02
Mercury	CDV-SMA-2.51	Hg	Y	BTV	0.100	0.890	1995-11-10
Nitrosodimethylamine[N-]	CDV-SMA-2.51	62-75-9	Y	SSL_0.1	0.00234	0.330	1995-10-04
RDX	CDV-SMA-2.51	121-82-4	Y	SSL_0.1	8.31	10700	1995-10-04
Trinitrotoluene[2,4,6-]	CDV-SMA-2.51	118-96-7	Y	SSL_0.1	3.60	2060	1995-10-04
Uranium	CDV-SMA-2.51	U	Y	BTV	1.82	11.3	1995-10-02
Zinc	CDV-SMA-2.51	Zn	Y	BTV	48.8	166	1995-10-02

Figure 179.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-2.51

179.4 Stormwater Evaluation

179.4.1 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 179.4-1 through 179.4-4.

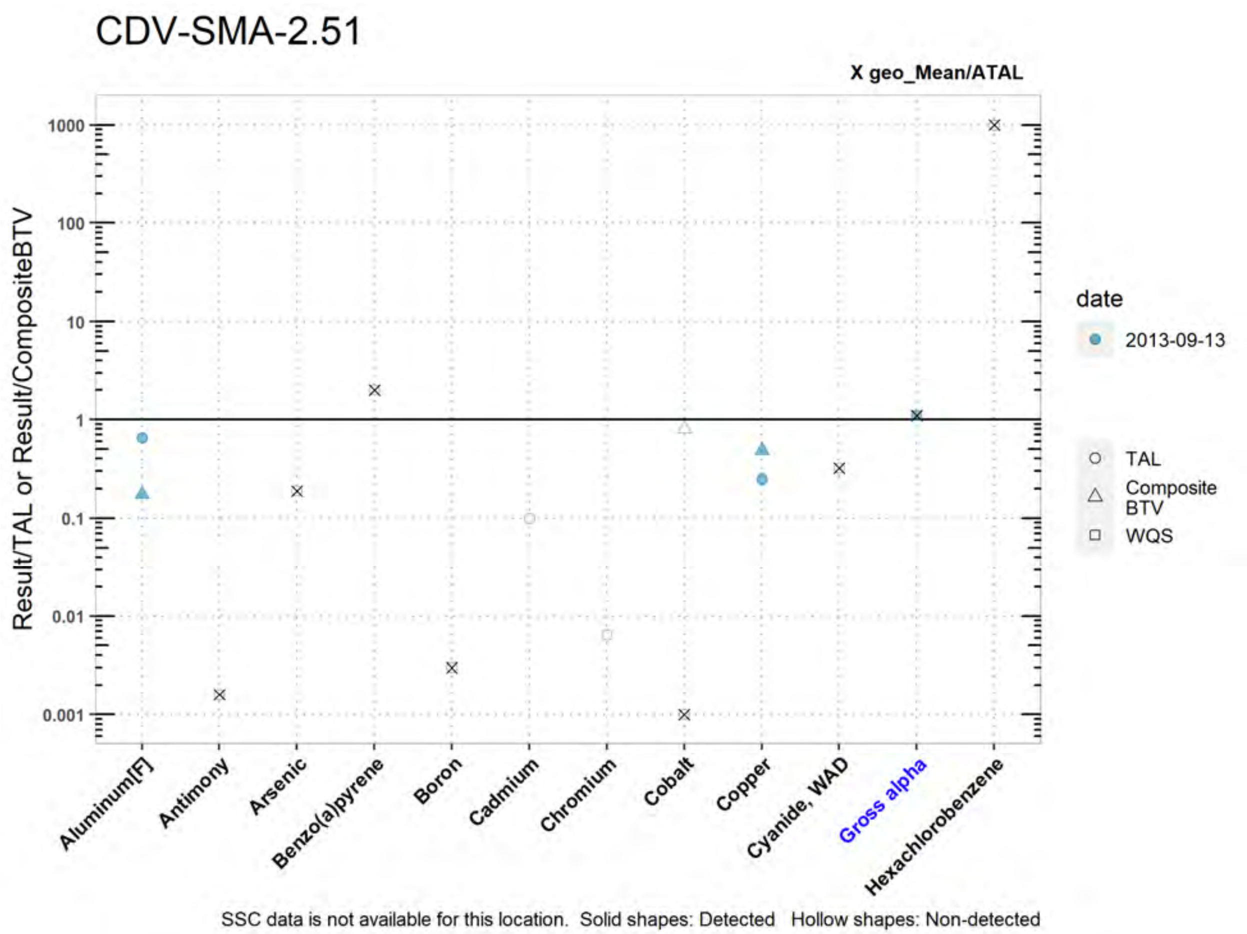


Figure 179.4-1 Analytical Results from Stormwater Sample, CDV-SMA-2.51 (Plot 1)

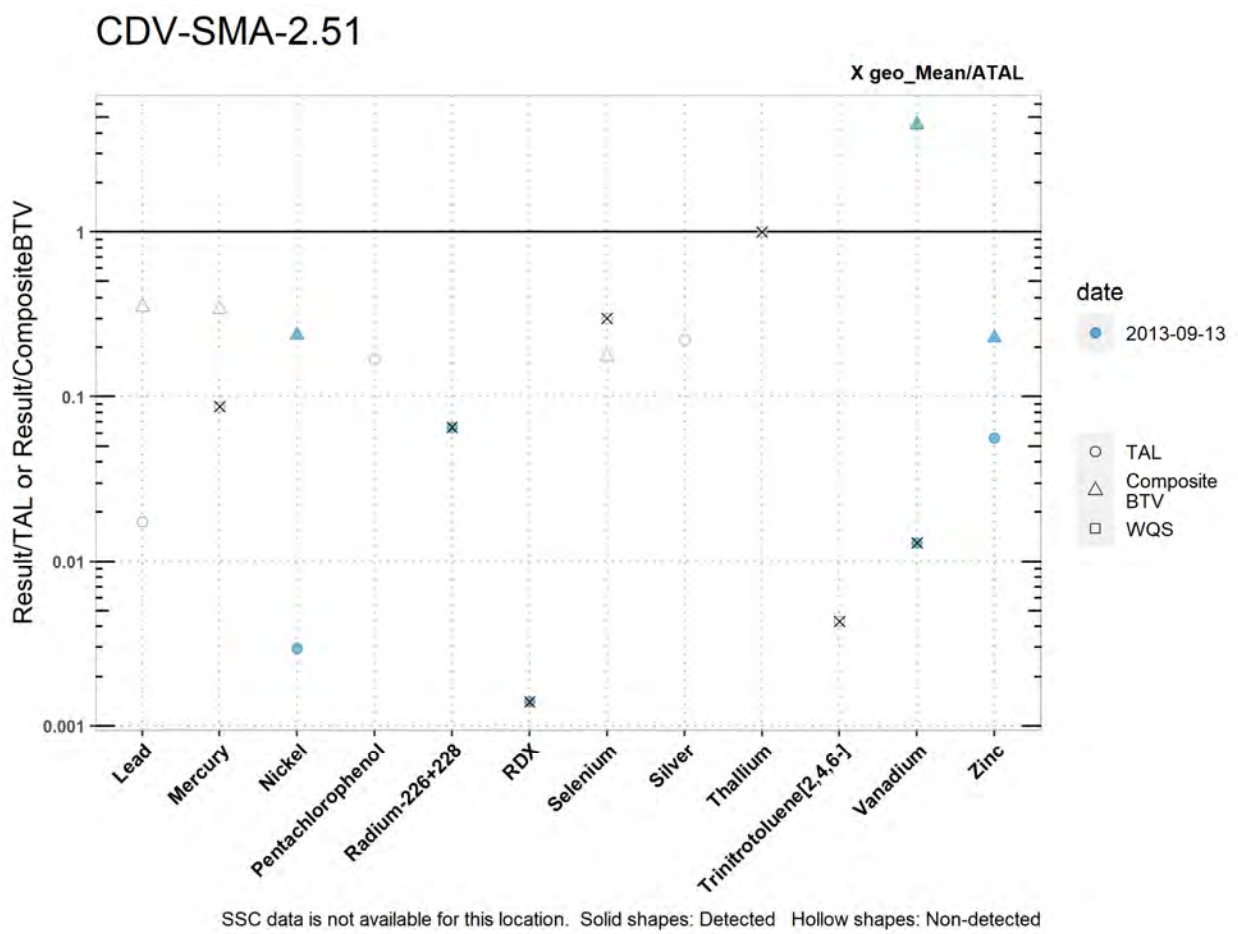


Figure 179.4-2 Analytical Results from Stormwater Sample, CDV-SMA-2.51 (Plot 2)

CDV-SMA-2.51

	Aluminum [F]	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Hexachlorobenzene
MQL	2.5	1	0.5	0.064	100	1	10	50	0.5	10	NA	5
ATAL	NA	640	9	0.18	5000	NA	NA	1000	NA	5.2	15	0.0029
MTAL	750	NA	340	NA	NA	0.879	311	NA	6.69	22	NA	NA
Composite_BTV	2800	NA	NA	NA	NA	NA	NA	1.24	3.43	NA	56.8	NA
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
2013-09-13 result	491	*1.00*	*1.70*	*0.316*	*15.0*	*0.110*	*2.00*	*1.00*	1.66	*1.67*	16.4	*3.16*
2013-09-13 dT	0.655	NA	NA	NA	NA	NA	NA	NA	0.248	NA	1.1	NA
2013-09-13 dB	0.175	NA	NA	NA	NA	NA	NA	NA	0.484	NA	NA	NA
geo_mean/ATAL	NA	0.0016	0.19	2	0.0030	NA	NA	0.0010	NA	0.321	1.1	1000

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

Figure 179.4-3 Analytical Results from Stormwater Samples, CDV-SMA-2.51 (Table 1)

CDV-SMA-2.51

	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
MQL	0.5	0.005	0.5	5	NA	NA	5	0.5	0.5	NA	50	20
ATAL	NA	0.77	NA	NA	30	200	5	NA	0.47	20	100	NA
MTAL	28.6	NA	250	19	NA	NA	20	0.9	NA	NA	NA	81.6
Composite_BTV	1.42	0.197	3.10	NA	4.53	NA	8.50	NA	NA	NA	0.297	20.0
unit	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2013-09-13 result	*0.500*	*0.0670*	0.736	*3.16*	1.95	0.277	*1.50*	*0.200*	*0.450*	*0.0865*	1.34	4.56
2013-09-13 dT	NA	NA	0.00294	NA	0.0650	0.0014	NA	NA	NA	NA	0.013	0.0559
2013-09-13 dB	NA	NA	0.237	NA	NA	NA	NA	NA	NA	NA	4.51	0.228
geo_mean/ATAL	NA	0.087	NA	NA	0.0650	0.0014	0.30	NA	1	0.0043	0.013	NA

Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 179.4-4 Analytical Results from Stormwater Samples, CDV-SMA-2.51 (Table 2)

179.4.2 Assessment Unit and Stream Impairments

CDV-SMA-2.51 drains to Fishladder Canyon (Cañon del Valle to headwaters) which has not been assessed for impairments.

179.5 Site-Specific Demonstration

179.5.1 Soil Data Summary

All Site-related POCs that exceeded the applicable screening values in soil data were previously monitored in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

179.5.2 Stormwater Data Summary

Gross alpha exceeded the applicable screening values in 2013 storm water data. There was no paired SSC result to confirm whether it was below BTVs, therefore it will be added to the SAP.

179.5.3 2022 Permit Status

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

179.5.4 Sampling and Analysis Plan

Table 179.5-1 is the proposed SAP for CDV-SMA-2.51.

Table 179.5-1 Proposed SAP, CDV-SMA-2.51

Monitoring Constituent	Background for Monitoring
Dissolved uranium	Site history and soil data
Gross alpha	Site history (uranium)
DOC	Permit requirement
SSC	Permit requirement

180.0 CDV-SMA-3

Associated Sites	14-009
Receiving Water	Cañon de Valle
Drainage Area	0.45 acres
Landscape Characteristics	2% impervious, 98% pervious
Consent Order Site Status	SWMU 14-009: Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the November 2017 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

180.1 2010 Administratively Continued Permit Summary

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

Following the July 2012 submittal to EPA of certification of enhanced control installation 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 monitoring is ongoing until at least one confirmation sample is collected from this SMA.

180.2 Site History

14-009 (2/18/2021)

SWMU 14-009 is an inactive surface disposal area located south and west of building 14-43 at TA-14. The disposal area measures approximately 30 ft × 140 ft and consists of sand and ruptured sandbags used during explosives tests performed at nearby firing sites [SWMUs 14-002(a) and 14-002(b)]. During explosives tests, sandbags were placed around firing sites to contain detonations. When the sandbags ruptured, the sand was used for erosion control around the firing sites. The sand from ruptured bags at SWMU 14-009 was placed over the hillside south of building 14-43 and is approximately one foot deep.

For investigation activities, refer to “Supplemental Investigation Report for Cañon de Valle Aggregate Area, Technical Area 14, Revision 1” (N3B 2020, 700746).

180.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 180.2-1.

Table 180.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
14-009	Surface disposal site	Beryllium, lead, HE, uranium

180.3 Consent Order Soil Data

Decision-level data for SWMU 14-009 consist of results from samples collected in 2011. Analytical results for these samples are presented in Figures 180.3-1 through 180.3-4. Revision 1 of the 2020 supplemental IR (N3B 2020, 700746) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

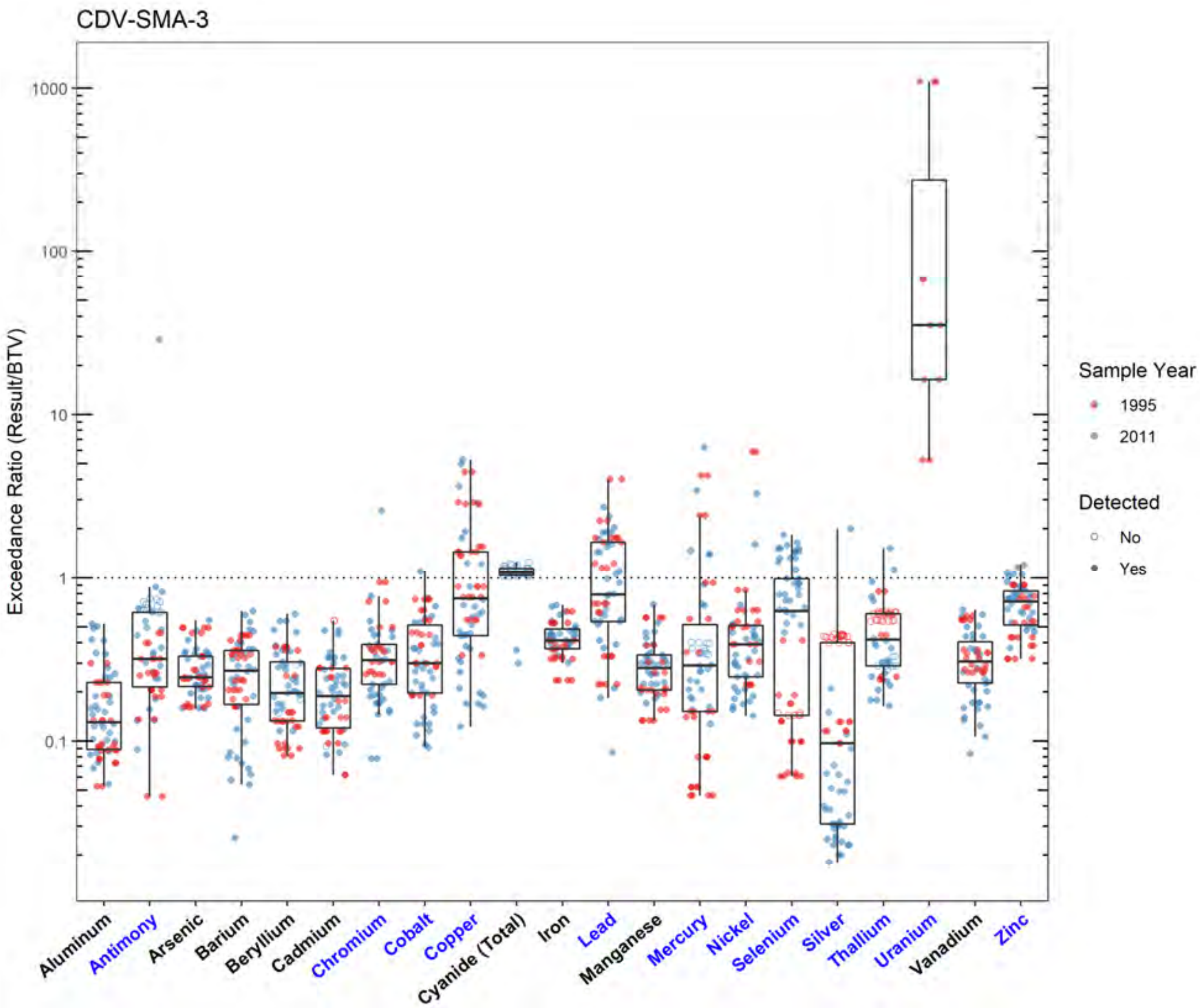


Figure 180.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-3

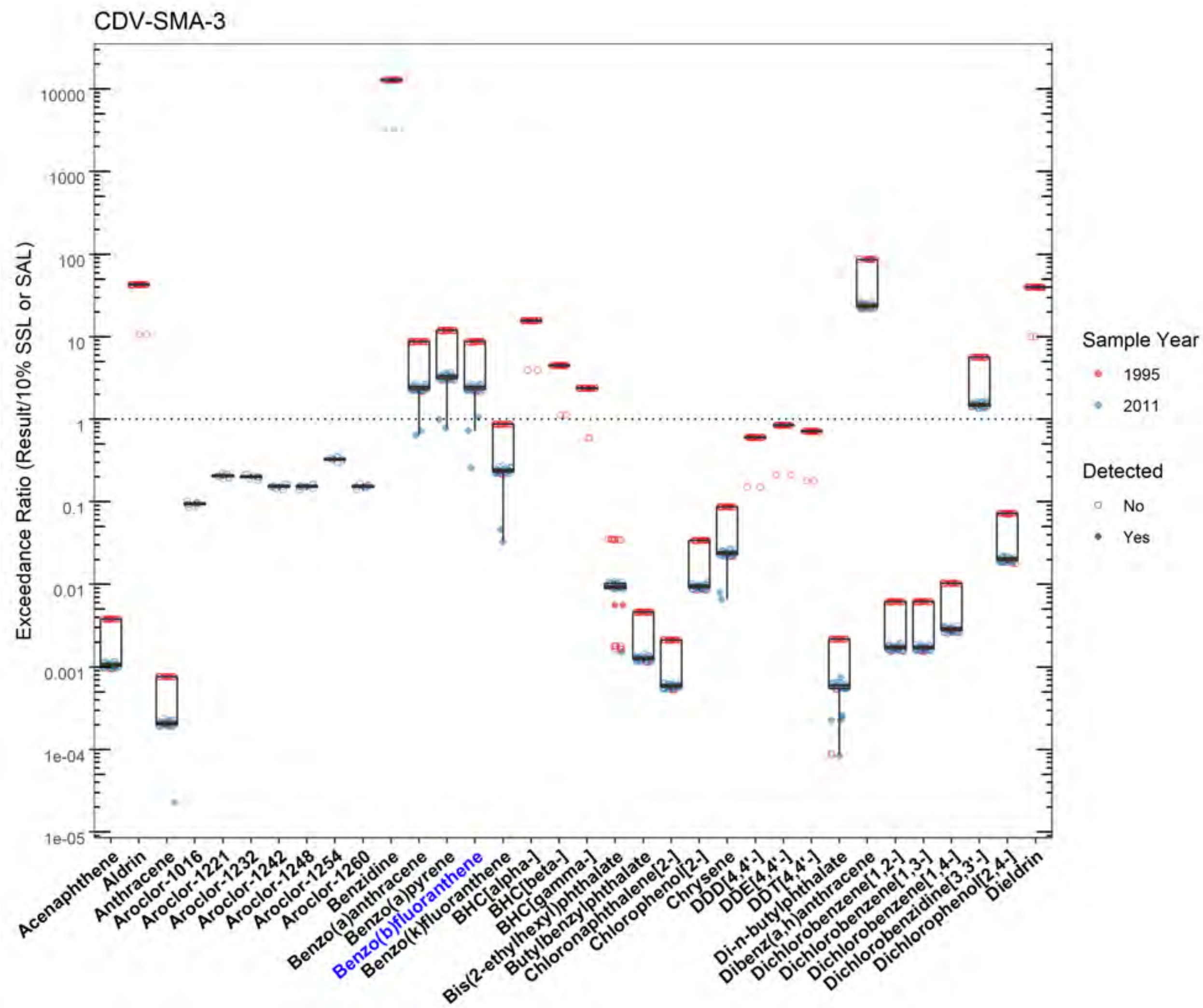


Figure 180.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-3 (Plot 1)

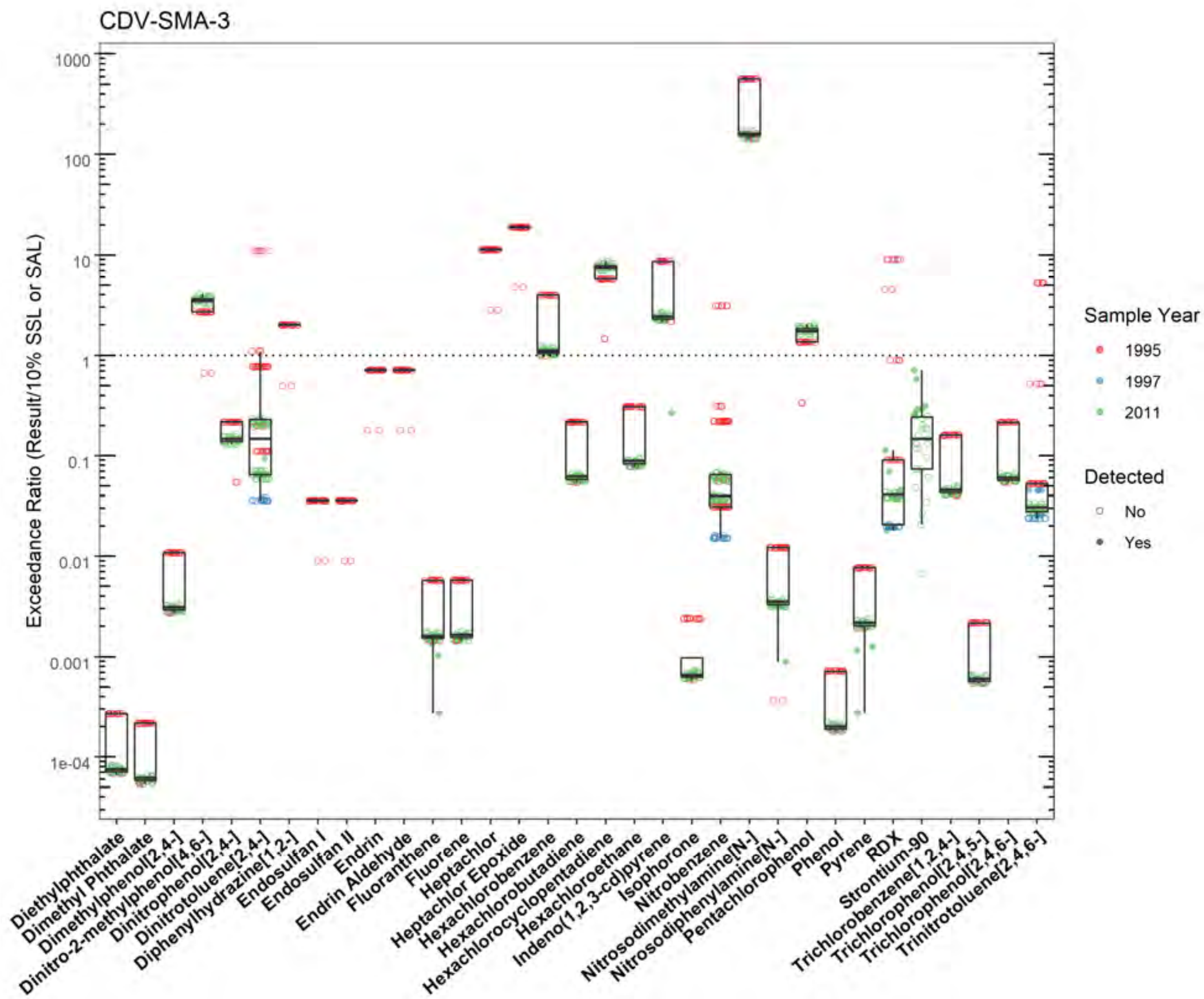


Figure 180.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-3 (Plot 2)

CDV-SMA-3

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	CDV-SMA-3	Sb	Y	BTV	0.830	23.8	2011-09-22
Benzo(b)fluoranthene	CDV-SMA-3	205-99-2	Y	SSL_0.1	0.153	0.160	2011-09-08
Chromium	CDV-SMA-3	Cr	Y	BTV	19.3	49.6	2011-09-08
Cobalt	CDV-SMA-3	Co	Y	BTV	8.64	9.50	2011-09-08
Copper	CDV-SMA-3	Cu	Y	BTV	14.7	77.8	2011-09-08
Lead	CDV-SMA-3	Pb	Y	BTV	22.3	89.3	1995-07-06
Mercury	CDV-SMA-3	Hg	Y	BTV	0.100	0.629	2011-09-08
Nickel	CDV-SMA-3	Ni	Y	BTV	15.4	90.9	1995-07-06
Selenium	CDV-SMA-3	Se	Y	BTV	1.52	2.80	2011-09-09
Silver	CDV-SMA-3	Ag	Y	BTV	1.00	2.00	2011-08-26
Thallium	CDV-SMA-3	Tl	Y	BTV	0.730	1.10	2011-09-09
Uranium	CDV-SMA-3	U	Y	BTV	1.82	2010	1995-07-07
Zinc	CDV-SMA-3	Zn	Y	BTV	48.8	58.4	2011-09-08

Figure 180.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-3

180.4 Stormwater Evaluation

180.4.1 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.

180.4.2 Assessment Unit and Stream Impairments

CDV-SMA-3 drains to Cañon de Valle (below LANL gage E256) which has an impairment for total adjusted gross alpha. The adjusted gross alpha impairment may be Site-related, based on Site history.

180.5 Site-Specific Demonstration

180.5.1 Soil Data Summary

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

Lead exceeded the applicable screening values in soil data, but was measured below TAL in stormwater data. Beryllium and HE did not exceed the applicable screening values in soil data.

180.5.2 Stormwater Data Summary

Gross alpha exceeded the applicable screening values in 2011 stormwater data. There was no paired SSC result to confirm whether it was below BTVs, therefore, it will be added to the SAP.

180.5.3 2022 Permit Status

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

180.5.4 Sampling and Analysis Plan

Table 180.5-1 is the proposed SAP for CDV-SMA-3.

Table 180.5-1 Proposed SAP, CDV-SMA-3

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history (uranium)
Dissolved uranium	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

181.0 CDV-SMA-4

Associated Sites	14-010
Receiving Water	Cañon de Valle
Drainage Area	0.18 acres
Landscape Characteristics	3% impervious, 97% pervious
Consent Order Site Status	SWMU 14-010: Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the November 2017 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

181.1 2010 Administratively Continued Permit Summary

Following the February 2011 submittal to EPA of certification of baseline control installation, baseline monitoring was initiated. The sampler location was moved in 2013 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.

181.2 Site History

14-010 (2/18/2021)

SWMU 14-010 is a former HE sump located on the exterior south wall of a former firing chamber [structure 14-2, SWMU 14-002(a)]. The sump received waste from an associated floor drain in the closed firing chamber 14-2 and discharged through an associated drainline to an outfall located approximately 24 ft southeast of the sump. In 1973, the HE and radioactive-contaminated portions of structure 14-2 were removed and dispose of at TA-54; Also in 1973, the contents of the SWMU 14-010 sump were removed and disposed of and the sump, floor drain and drainline from the floor drainline to the sump were excavated by hand and removed. The remainder of the structure was then burned in place. The bullet test facility was constructed over a portion of the area and the remainder was paved. The outlet drainline from the sump remains in place.

For investigation activities, refer to “Supplemental Investigation Report for Cañon de Valle Aggregate Area, Technical Area 14, Revision 1” (N3B 2020, 700746).

181.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 181.2-1.

Table 181.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
14-010	Soil contamination from former sump and drainlines	Inorganic and organic chemicals, HE, radionuclides

181.3 Consent Order Soil Data

Decision-level data for SWMU 14-010 consist of results from samples collected in 1997 and 2011. Analytical results for these samples are presented in Figures 181.3-1 through 181.3-4. Revision 1 of the 2020 supplemental IR (N3B 2020, 700746) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

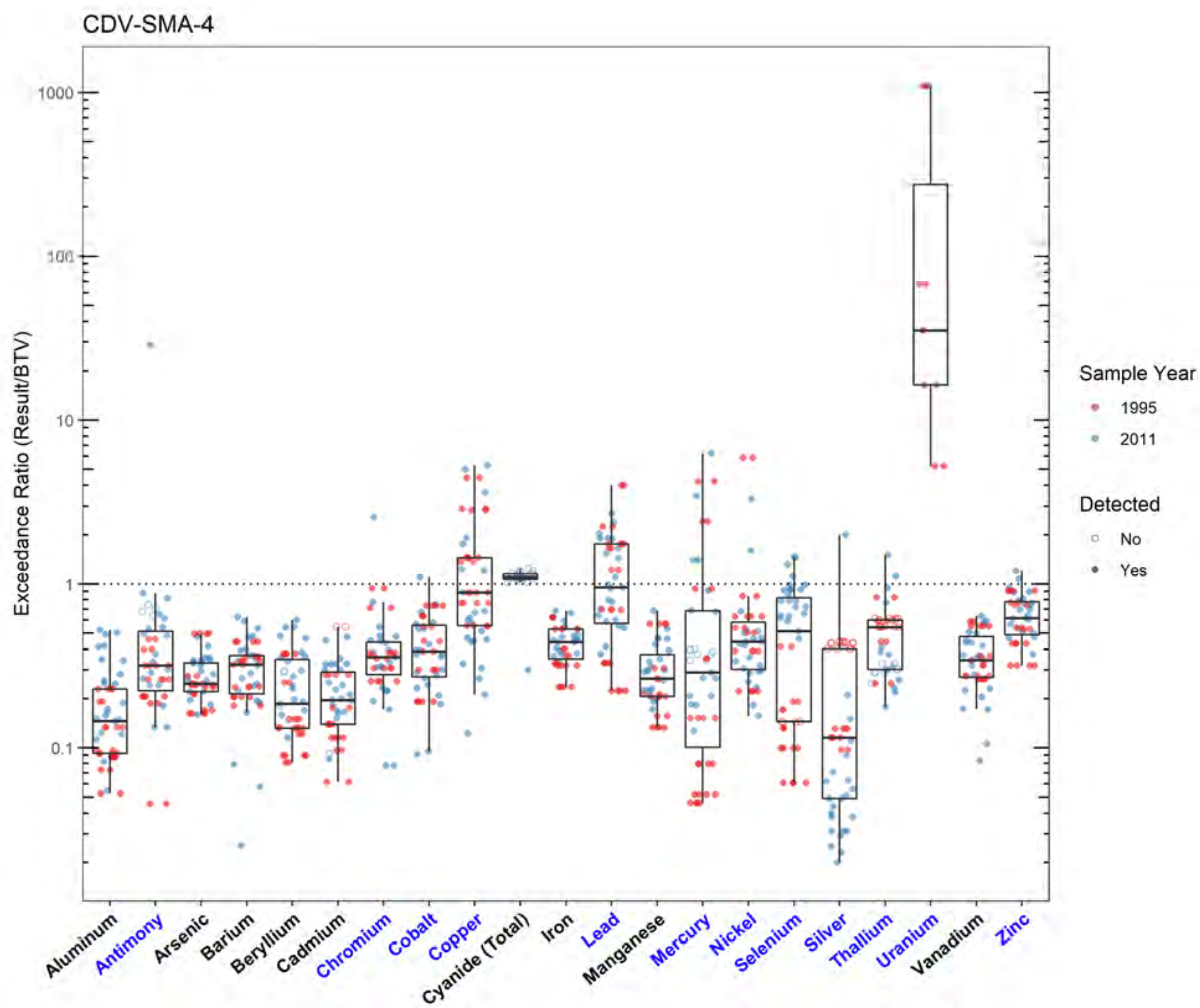


Figure 181.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-4

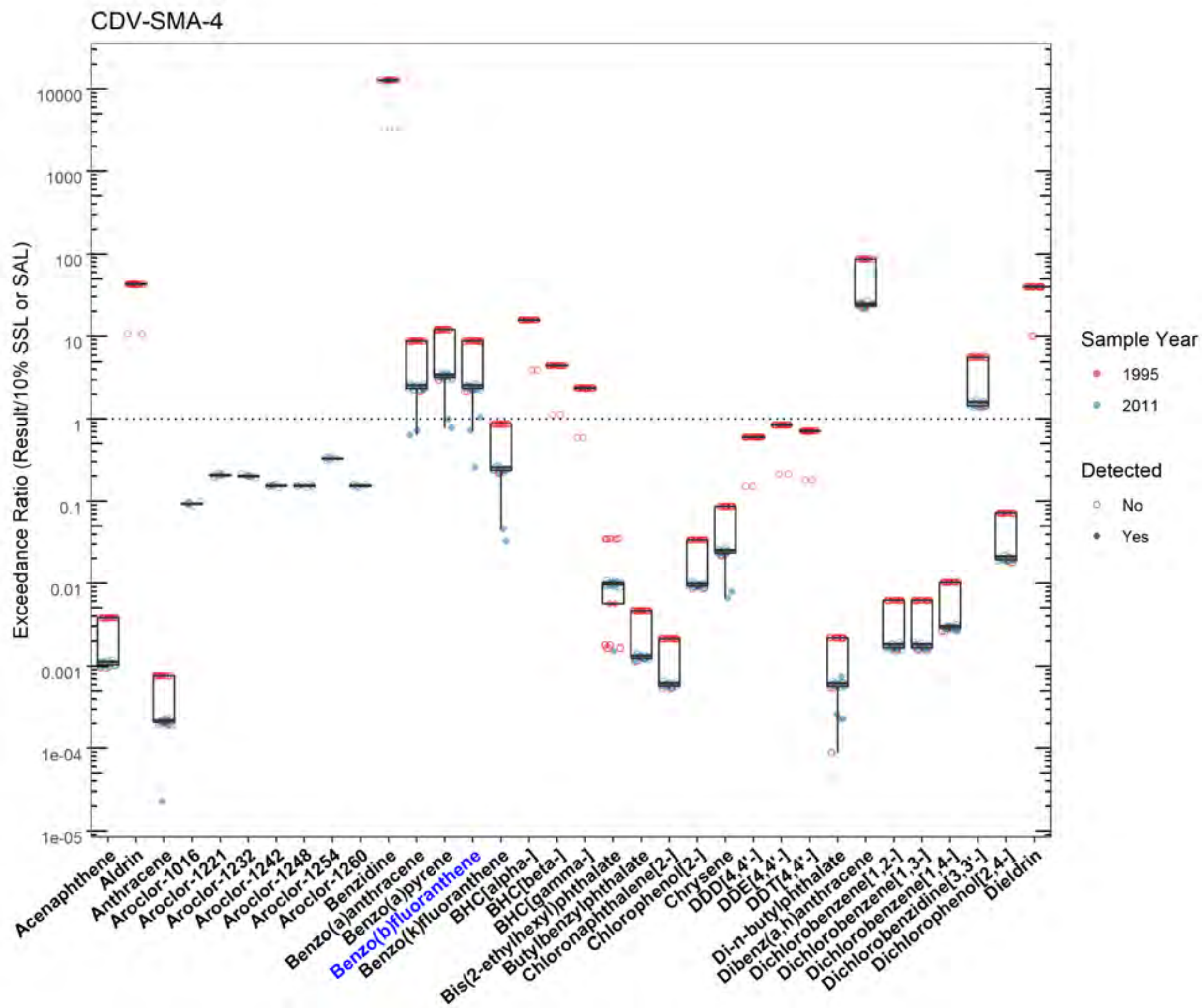


Figure 181.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-4 (Plot 1)

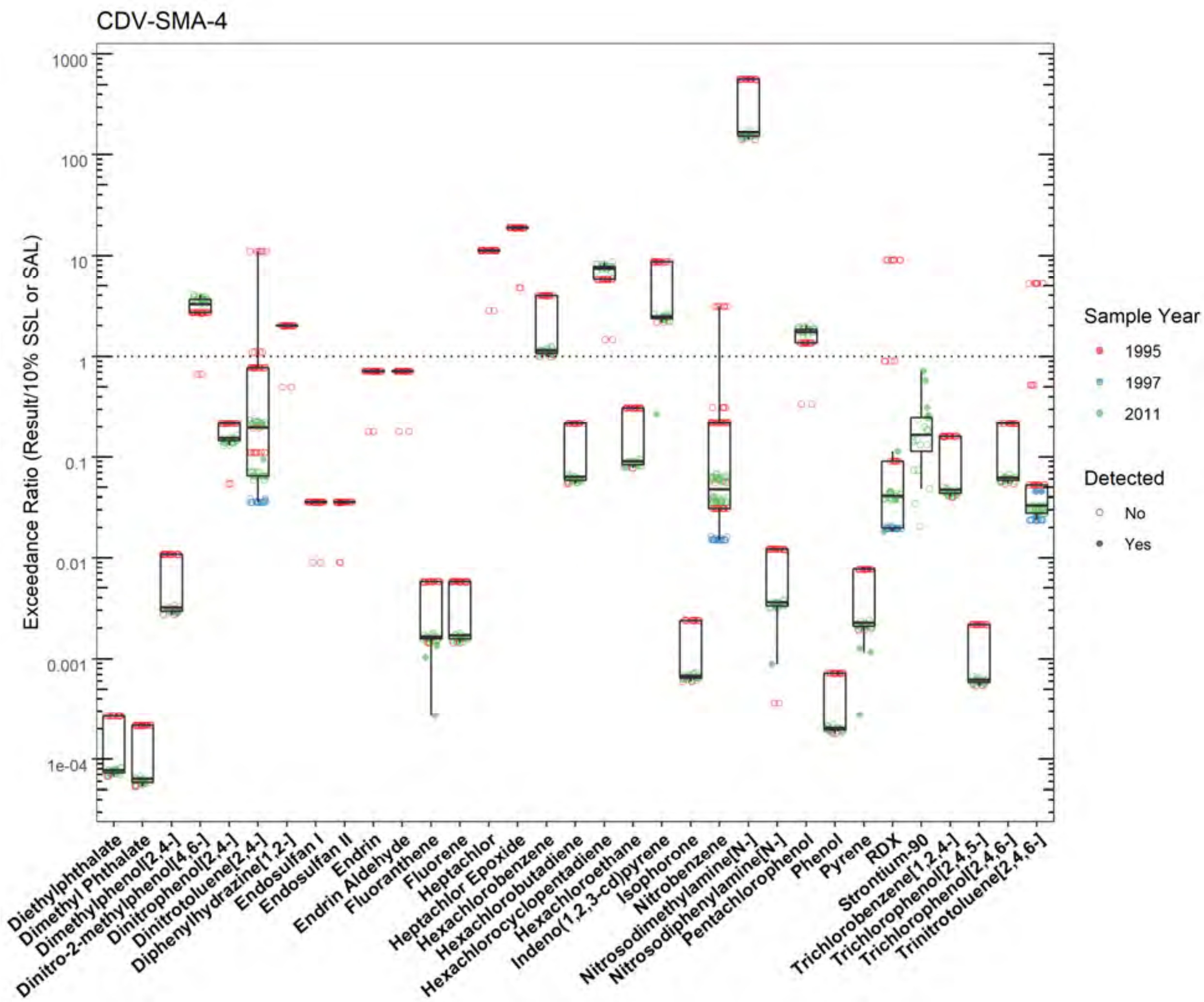


Figure 181.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-4 (Plot 2)

CDV-SMA-4

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	CDV-SMA-4	Sb	Y	BTV	0.830	23.8	2011-09-22
Benzo(b)fluoranthene	CDV-SMA-4	205-99-2	Y	SSL_0.1	0.153	0.160	2011-09-08
Chromium	CDV-SMA-4	Cr	Y	BTV	19.3	49.6	2011-09-08
Cobalt	CDV-SMA-4	Co	Y	BTV	8.64	9.50	2011-09-08
Copper	CDV-SMA-4	Cu	Y	BTV	14.7	77.8	2011-09-08
Lead	CDV-SMA-4	Pb	Y	BTV	22.3	89.3	1995-07-06
Mercury	CDV-SMA-4	Hg	Y	BTV	0.100	0.629	2011-09-08
Nickel	CDV-SMA-4	Ni	Y	BTV	15.4	90.9	1995-07-06
Selenium	CDV-SMA-4	Se	Y	BTV	1.52	2.20	2011-09-09
Silver	CDV-SMA-4	Ag	Y	BTV	1.00	2.00	2011-08-26
Thallium	CDV-SMA-4	Tl	Y	BTV	0.730	1.10	2011-09-09
Uranium	CDV-SMA-4	U	Y	BTV	1.82	2010	1995-07-07
Zinc	CDV-SMA-4	Zn	Y	BTV	48.8	58.4	2011-09-08

Figure 181.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-4

181.4 Stormwater Evaluation

181.4.1 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.

181.4.2 Assessment Unit and Stream Impairments

CDV-SMA-4 drains to Cañon de Valle (below LANL gage E256) which has an impairment for total adjusted gross alpha. The adjusted gross alpha impairment may be Site-related, based on Site history.

181.5 Site-Specific Demonstration

181.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: antimony, benzo(b)fluoranthene, chromium, cobalt, copper, lead, mercury, nickel, selenium, silver, thallium, uranium, and zinc.

181.5.2 Stormwater Data Summary

No confirmation-monitoring data.

181.5.3 2022 Permit Status

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

181.5.4 Sampling and Analysis Plan

Table 181.5-1 is the proposed SAP for CDV-SMA-4.

Table 181.5-1 Proposed SAP, CDV-SMA-4

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history (radionuclides)
Radium-226 and radium-228	Site history (radionuclides)
Tritium	Site history (radionuclides)
SVOCs	Site history (organic chemicals) and soil data
Total PCBs	Site history (organic chemicals)
Dissolved antimony, chromium, cobalt, copper, lead, nickel, silver, thallium, uranium, and zinc	Site history (metals) and soil data
Total mercury and selenium	Site history (metals) and soil data
DOC	Permit requirement
SSC	Permit requirement

182.0 CDV-SMA-6.01

Associated Sites	14-001(g), 14-006
Receiving Water	Cañon de Valle
Drainage Area	1.39 acres
Landscape Characteristics	14% impervious, 86% pervious
Consent Order Site Status	AOC 14-001(g): In Progress Deferred per Consent Order SWMU 14-006: Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the November 2017 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

182.1 2010 Administratively Continued Permit Summary

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

Following the October 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600948), 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.

182.2 Site History

14-001(g) (2/18/2021)

AOC 14-001(g) is an active firing pad (structure 14-35) located south of control building 14-23 at TA-14. Installed in 1964, the reinforced concrete pad measures 5-ft square × 2-ft thick and is surrounded on three sides with a blast shield. At the base, the blast shield is a 6-ft square × 2-ft thick concrete pad overlain by a neoprene shock pad, a 4.5-in.-thick steel plate, and several in. of sand. The shield directs the force of detonations away from nearby control building 14-23. The AOC 14-001(g) firing pad is used to conduct test-shot experiments and to dispose of scrap HE.

AOC 14-001(g) was referred to as SWMU 14-001(g) in historical documents.

14-006 (2/18/2021)

SWMU 14-006 is a decommissioned HE sump (structure 14-31), associated drainline, and outfall located at TA-14 approximately 45 ft east of control building 14-23. Installed in 1952, the steel-lined sump is constructed of reinforced concrete and measures approximately 4.5 ft wide × 8 ft long × 5 ft deep. The sump received discharges from sink and floor drains in control building 14-23 and discharged to an outfall approximately 55 ft southeast of the sump. Sludge was routinely removed from the sump for burning. The sump has been filled with concrete and the outlet from the sump is plugged (date not known). Currently the outfall receives only stormwater.

For investigation activities at the Sites, refer to “Supplemental Investigation Report for Cañon de Valle Aggregate Area, Technical Area 14, Revision 1” (N3B 2020, 700746).

182.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 182.2-1.

Table 182.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
14-001(g)	Firing site	HE
14-006	Sump and/or associated equipment	HE

182.3 Consent Order Soil Data

Decision-level data for AOC 14-001(g) consist of results from 30 samples collected at 15 locations in 2011. The 2020 Revision 1 of the supplemental IR (N3B 2020, 700746) concluded that the nature and extent of contamination in the drainages downgradient of the Site have been defined and no further sampling for extent is warranted.

Decision-level data for SWMU 14-006 consist of results from 22 samples collected at 11 locations in 2011. Revision 1 of the 2020 supplemental IR (N3B 2020, 700746) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results for all decision-level soil samples for this SMA are presented in Figures 182.3-1 through 182.3-4.

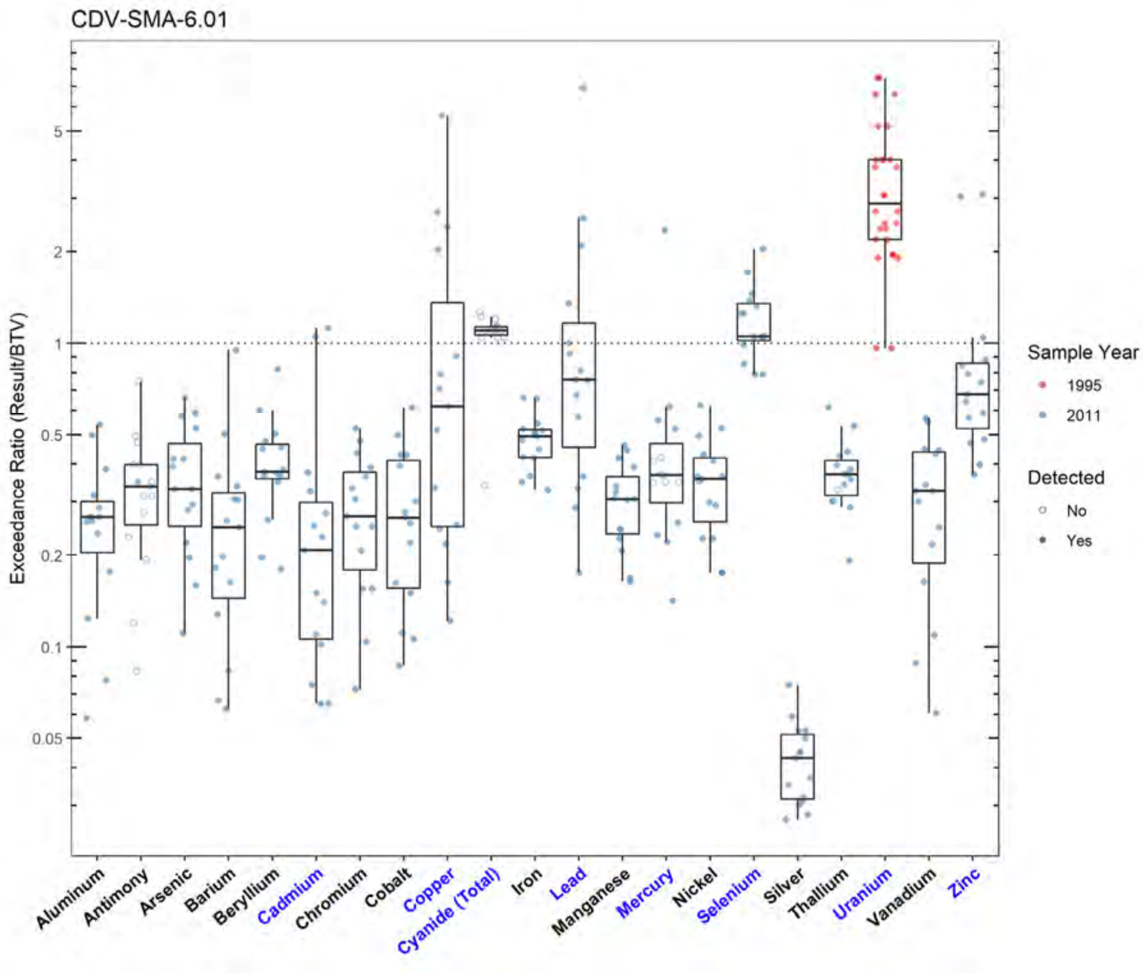


Figure 182.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-6.01

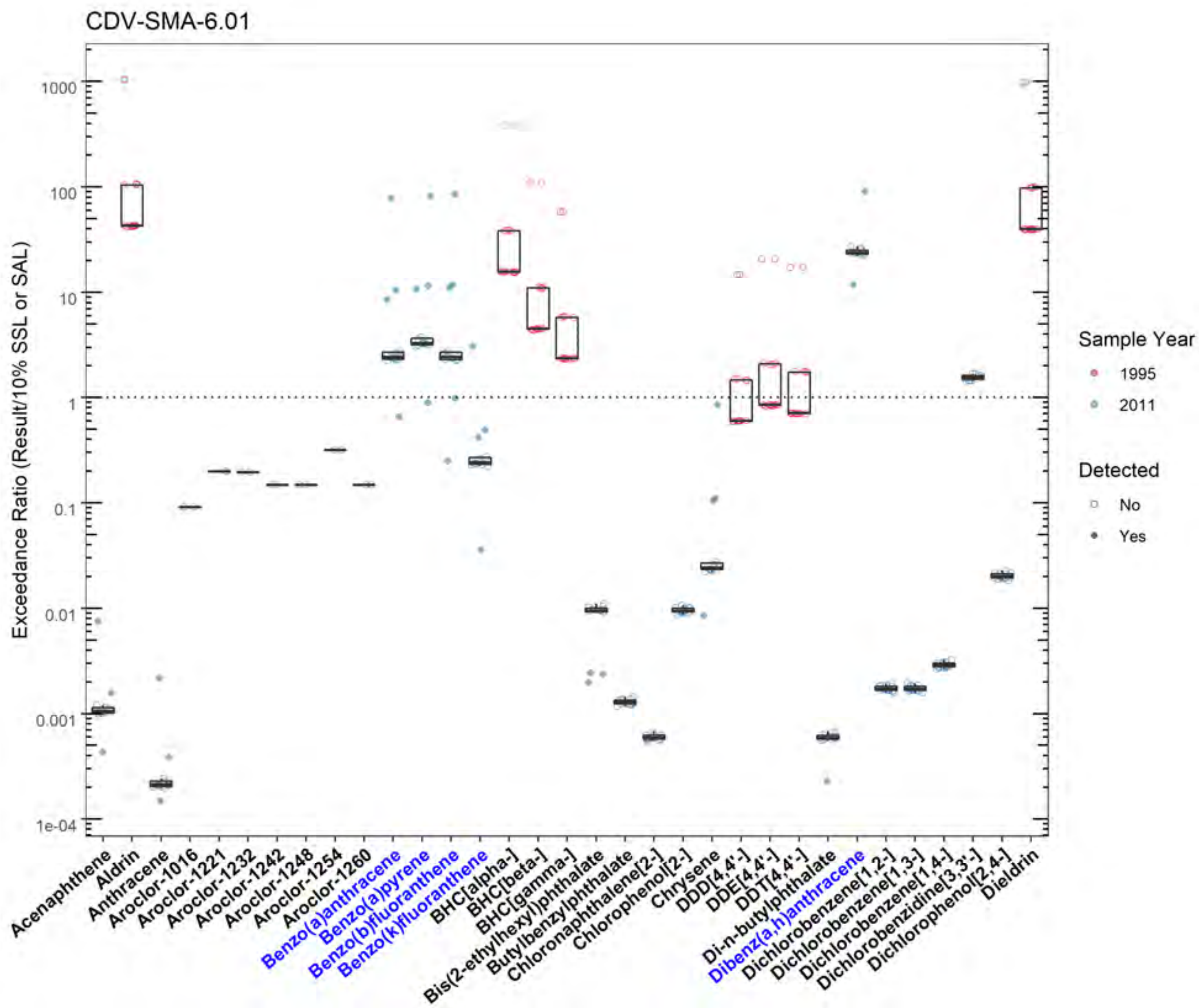


Figure 182.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-6.01 (Plot 1)

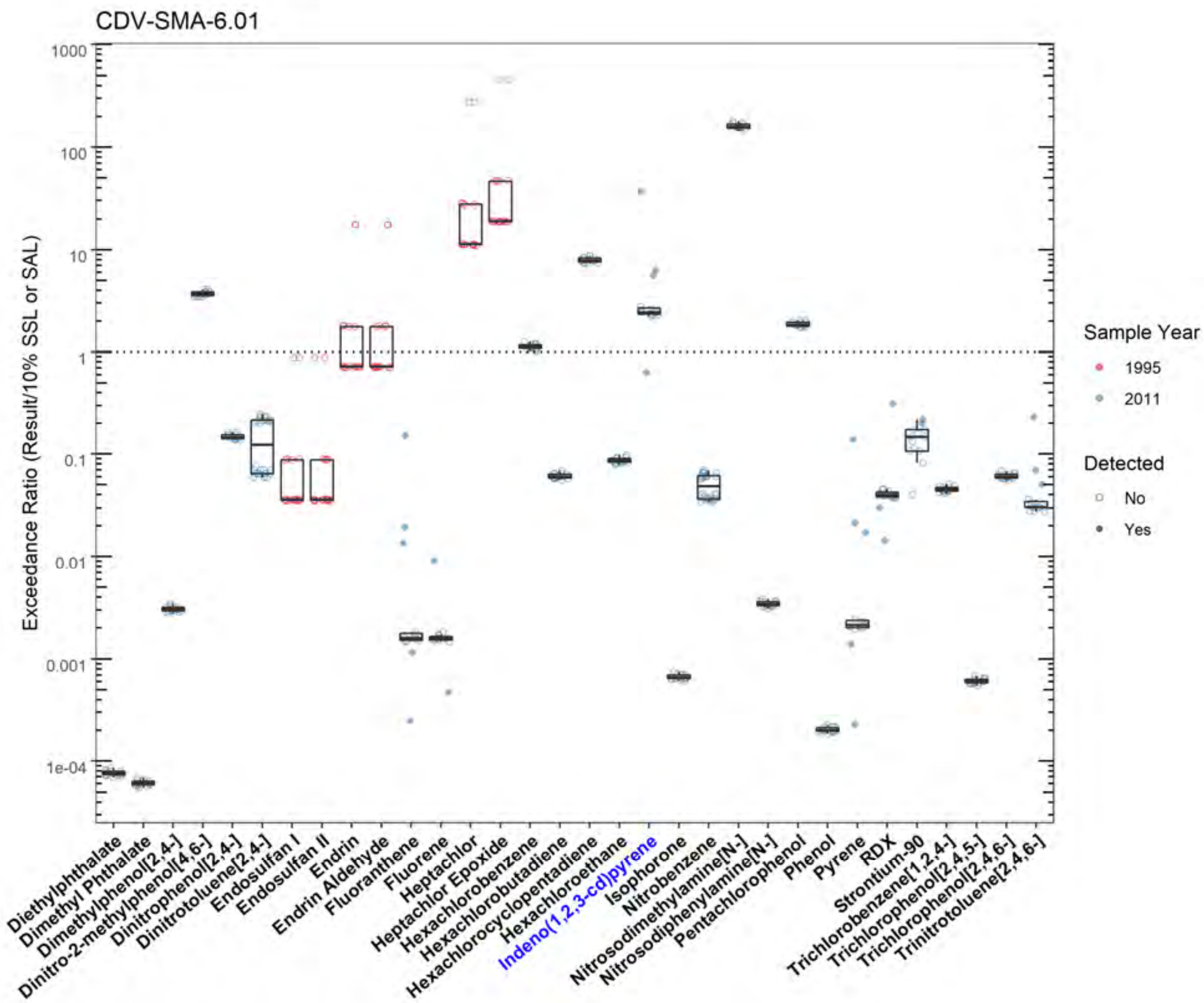


Figure 182.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-6.01 (Plot 2)

CDV-SMA-6.01

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	CDV-SMA-6.01	56-55-3	Y	SSL_0.1	0.153	12.0	2011-08-19
Benzo(a)pyrene	CDV-SMA-6.01	50-32-8	Y	SSL_0.1	0.112	9.20	2011-08-19
Benzo(b)fluoranthene	CDV-SMA-6.01	205-99-2	Y	SSL_0.1	0.153	13.0	2011-08-19
Benzo(k)fluoranthene	CDV-SMA-6.01	207-08-9	Y	SSL_0.1	1.53	4.70	2011-08-19
Cadmium	CDV-SMA-6.01	Cd	Y	BTV	0.400	0.450	2011-08-19
Copper	CDV-SMA-6.01	Cu	Y	BTV	14.7	82.5	2011-09-01
Cyanide (Total)	CDV-SMA-6.01	CN(TOTAL)	Y	BTV	0.500	0.570	2011-08-19
Dibenz(a,h)anthracene	CDV-SMA-6.01	53-70-3	Y	SSL_0.1	0.0153	1.40	2011-08-19
Indeno(1,2,3-cd)pyrene	CDV-SMA-6.01	193-39-5	Y	SSL_0.1	0.153	5.60	2011-08-19
Lead	CDV-SMA-6.01	Pb	Y	BTV	22.3	154	2011-09-01
Mercury	CDV-SMA-6.01	Hg	Y	BTV	0.100	0.234	2011-08-19
Selenium	CDV-SMA-6.01	Se	Y	BTV	1.52	3.10	2011-08-19
Uranium	CDV-SMA-6.01	U	Y	BTV	1.82	13.6	1995-06-20
Zinc	CDV-SMA-6.01	Zn	Y	BTV	48.8	151	2011-08-19

Figure 182.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-6.01

182.4 Stormwater Evaluation

182.4.1 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.

182.4.2 Assessment Unit and Stream Impairments

CDV-SMA-6.01 drains to Cañon de Valle (below LANL gage E256) which has an impairment for total adjusted gross alpha. The adjusted gross alpha impairment is not likely to be Site-related, based on Site history.

182.5 Site-Specific Demonstration

182.5.1 Soil Data Summary

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

182.5.2 Stormwater Data Summary

No data for the current monitoring stage have been collected. Copper, gross alpha, and radium-226 and radium-228 exceeded TALs in the previous monitoring stage at the former monitoring location. Copper also exceeded the BTV and there was no paired SSC data to determine if gross alpha and radium-226 and radium-228 were below BTVs. Therefore, they will be added to the SAP.

182.5.3 2022 Permit Status

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

182.5.4 Sampling and Analysis Plan

Table 182.5-1 is the proposed SAP for CDV-SMA-6.01.

Table 182.5-1 Proposed SAP, CDV-SMA-6.01

Monitoring Constituent	Background for Monitoring
Gross alpha	Stormwater data
HE	Site history
Radium-226 and radium-228	Stormwater data
Dissolved copper	Soil data and stormwater data
DOC	Permit requirement
SSC	Permit requirement

183.0 CDV-SMA-6.02

Associated Sites	14-002(c)
Receiving Water	Cañon de Valle
Drainage Area	0.08 acres
Landscape Characteristics	8% impervious, 92% pervious
Consent Order Site Status	SWMU 14-002(c): Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the November 2017 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	SMA deletion, as long as no sample is collected between October 15, 2022 and the end of the monitoring season.

183.1 2010 Administratively Continued Permit Summary

SWMU 14-002(c) is not listed on the Administratively Continued Permit. During preparation for Consent Order investigations at TA-14, additional historical information was reviewed that indicated SWMU 14-002(c) was a candidate for inclusion in the Permit. The Permittees added the Site to the SMA in May 2013 as an "additional" IP Site. This administrative change has been included in the Annual Report and the SDPPP since that time.

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

Following the July 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 221595), corrective-action monitoring was initiated. In July 2013, the monitoring location was relocated to be more representative after a change in condition observed at the annual erosion inspection required per Permit Part I.G.1. A stormwater sample was collected in September 2013 with no TAL exceedances. Confirmation monitoring is ongoing to collect a second sample.

183.2 Site History

14-002(c) (2/18/2021)

SWMU 14-002(c) is a decommissioned firing site (structure 14-5) located in the southeastern portion of TA-14. Structure 14-5 consisted of a control building and firing pad. Constructed in 1944, the wood-framed control building measured 11 ft wide × 18 ft long × 10 ft high and was surrounded on three sides by an earthen berm. A 10-ft-square × 8-ft-high concrete firing pad faced with a 0.5-in. steel plate was attached to the exterior south wall of the control building. The firing site was used to conduct small-scale explosive tests until the mid-1950s. Structure 14-5 was converted to a storage area in 1961 where cyanogen gas cylinders were stored from 1965 to the 1970s. In 1980, a 5-ft-diameter metal sphere was installed on the firing pad at the south side of structure 14-5. The sphere was used to conduct slow-combustion experiments, which continued until 1985, when operations ceased. The firing pad was removed at an unknown date. The structure 14-5 was partially destroyed by the Cerro Grande fire in 2000; only the concrete portions of the roof and walls remain.

For investigation activities, refer to "Supplemental Investigation Report for Cañon de Valle Aggregate Area, Technical Area 14, Revision 1" (N3B 2020, 700746).

183.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 183.2-1.

Table 183.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
14-002(c)	Control building 14-5	HE

183.3 Consent Order Soil Data

Decision-level data for SWMU 14-002(c) consist of results from samples collected in 2011. Analytical results for these samples are presented in Figures 183.3-1 through 183.3-4. Revision 1 of the 2020 supplemental IR (N3B 2020, 700746) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

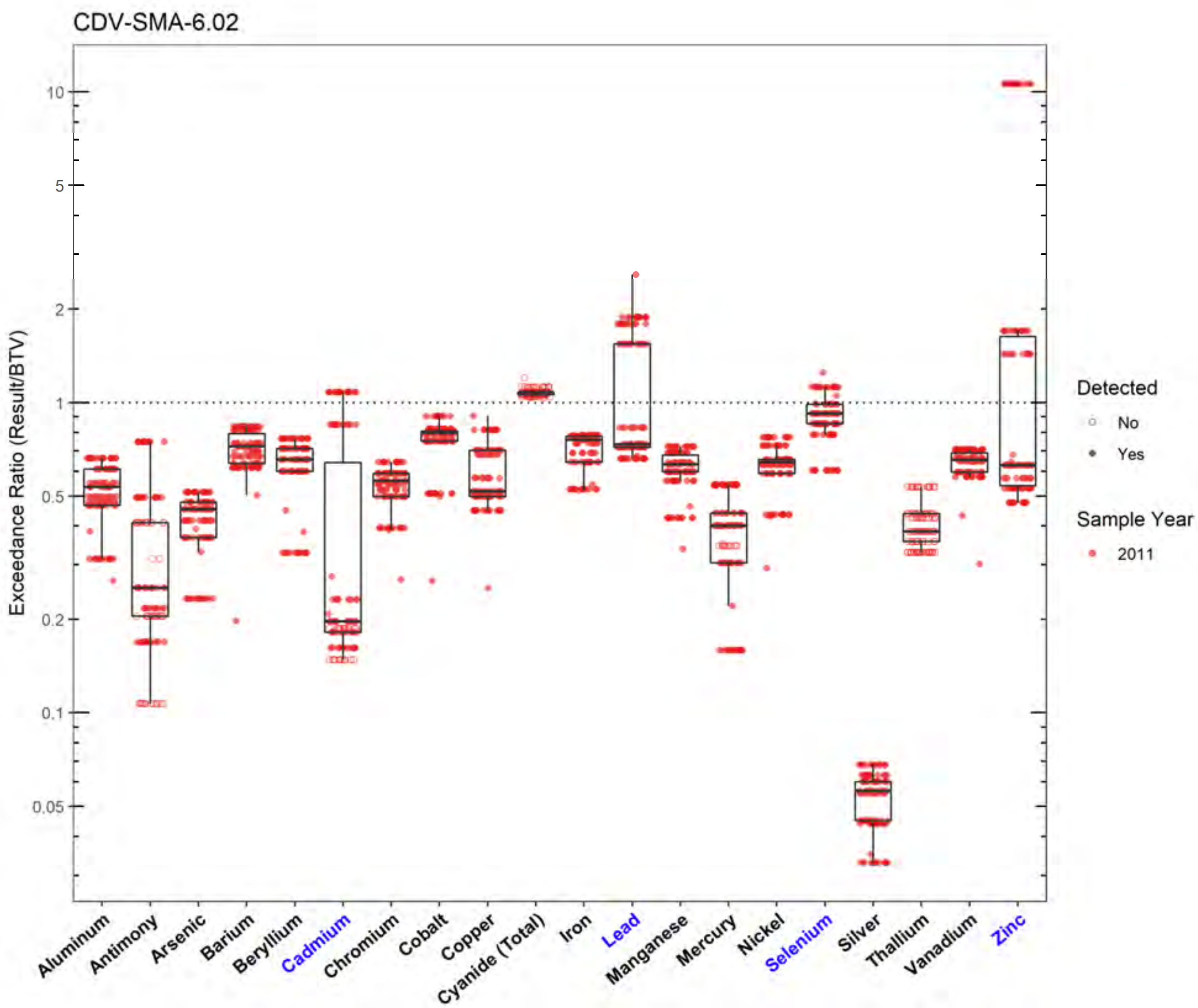


Figure 183.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-6.02

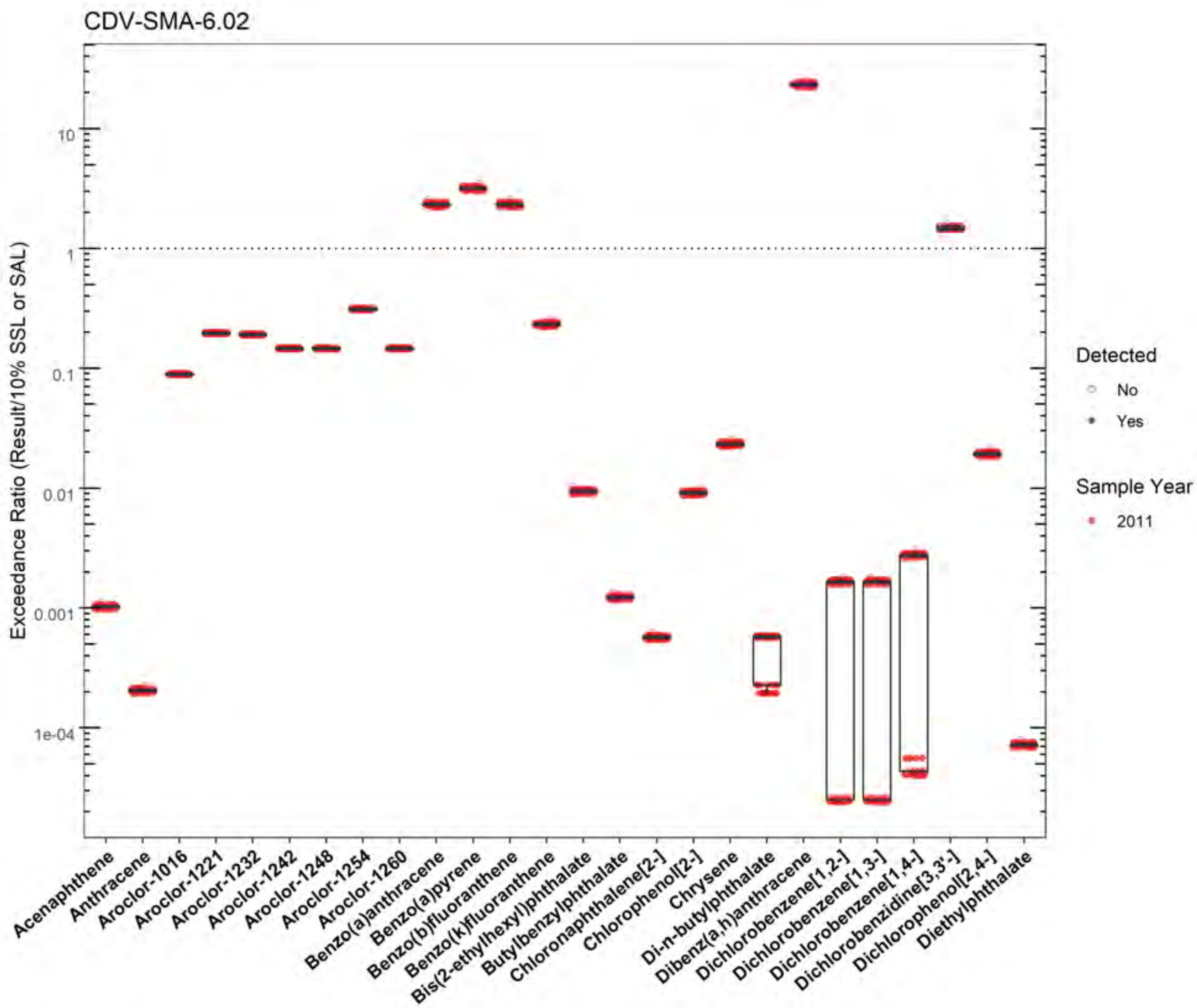


Figure 183.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-6.02 (Plot 1)

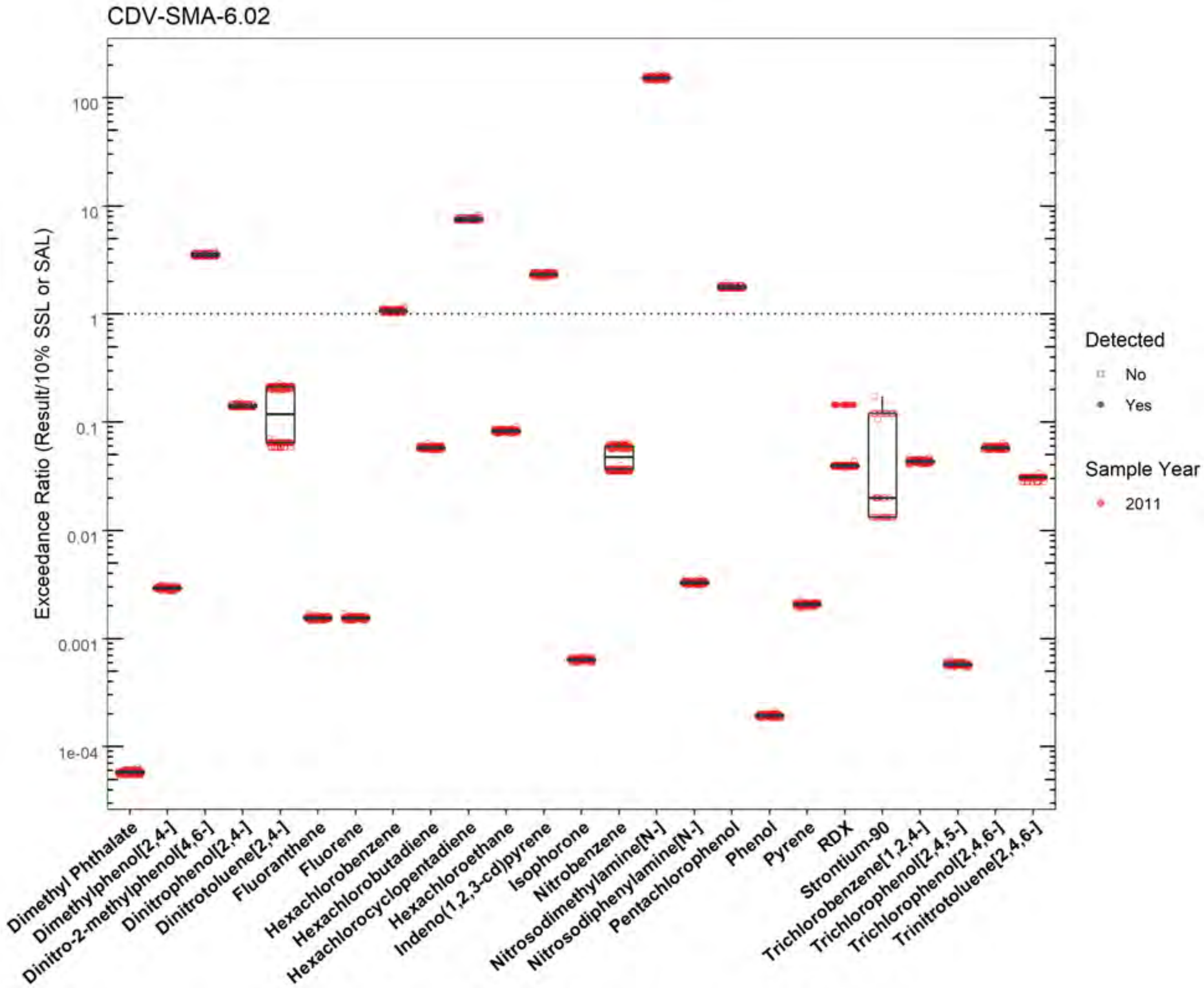


Figure 183.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-6.02 (Plot 2)

CDV-SMA-6.02

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Cadmium	CDV-SMA-6.02	Cd	Y	BTV	0.400	0.430	2011-08-05
Lead	CDV-SMA-6.02	Pb	Y	BTV	22.3	57.6	2011-08-21
Selenium	CDV-SMA-6.02	Se	Y	BTV	1.52	1.90	2011-08-21
Zinc	CDV-SMA-6.02	Zn	Y	BTV	48.8	516	2011-08-05

Figure 183.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-6.02

183.4 Stormwater Evaluation

183.4.1 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 183.4-1 and 183.4-2.

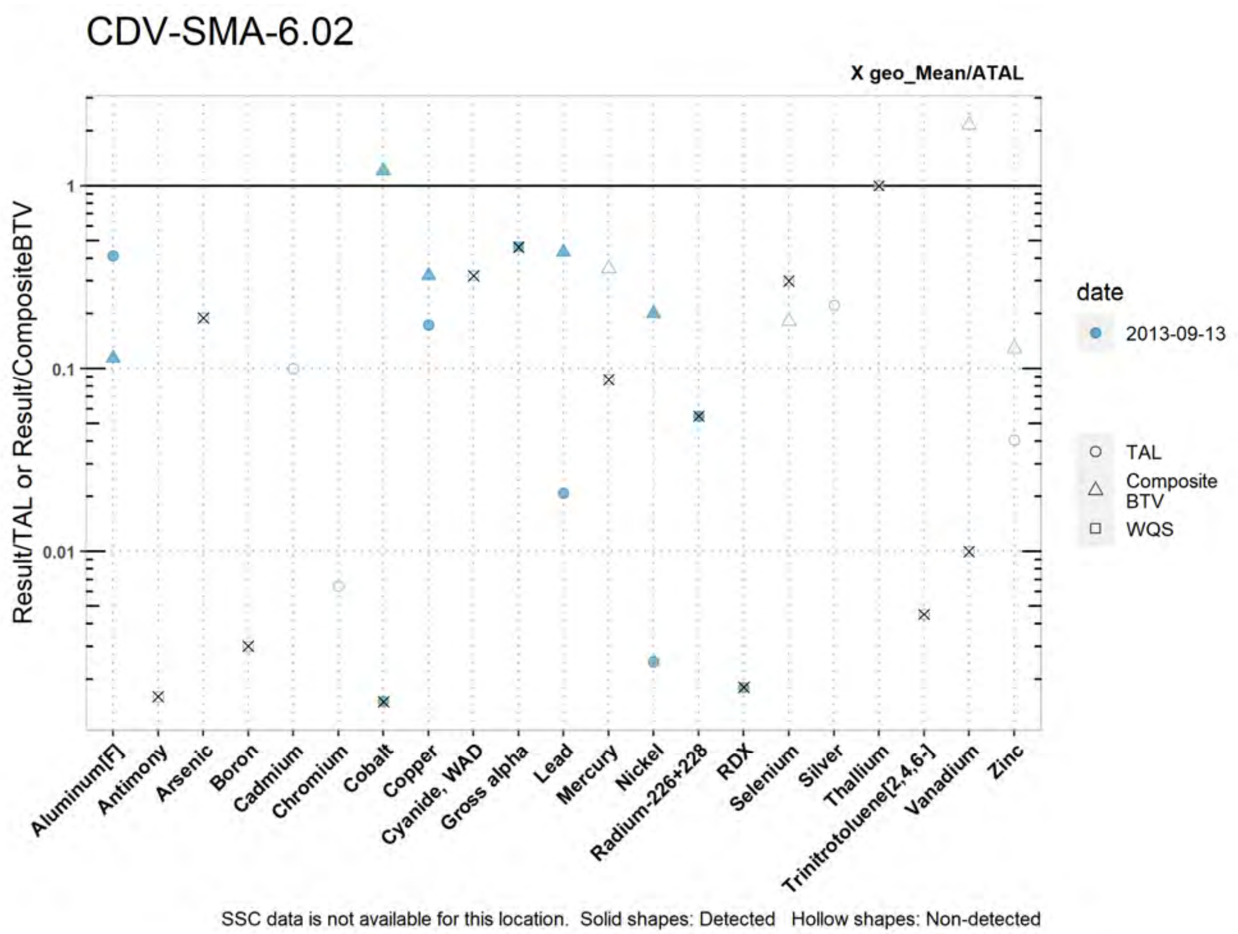


Figure 183.4-1 Analytical Results from Stormwater Sample, CDV-SMA-6.02 (Plot)

CDV-SMA-6.02

	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	0.879	311	NA	6.69	22	NA	28.6	NA	250	NA	NA	20	0.9	NA	NA	NA	81.6
Composite_BTV	2720	NA	NA	NA	NA	NA	1.27	3.61	NA	56.6	1.38	0.191	3.10	4.72	NA	8.24	NA	NA	NA	0.464	25.6
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	ug/L	ug/L
2013-09-13 result	309	*1.00*	*1.70*	*15.0*	*0.110*	*2.00*	1.54	1.16	*1.67*	6.97	0.596	*0.0670*	0.621	1.64	0.368	*1.50*	*0.200*	*0.450*	*0.0904*	*1.00*	*3.30*
2013-09-13 dT	0.412	NA	NA	NA	NA	NA	0.0015	0.173	NA	0.46	0.0208	NA	0.00248	0.0547	0.0018	NA	NA	NA	NA	NA	NA
2013-09-13 dB	0.114	NA	NA	NA	NA	NA	1.21	0.321	NA	NA	0.432	NA	0.200	NA	NA	NA	NA	NA	NA	NA	NA
geo_mean/ATAL	NA	0.0016	0.19	0.0030	NA	NA	0.0015	NA	0.321	0.46	NA	0.087	NA	0.0547	0.0018	0.30	NA	1	0.0045	0.010	NA

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

Figure 183.4-2 Analytical Results from Stormwater Sample, CDV-SMA-6.02 (Table)

183.4.2 Assessment Unit and Stream Impairments

CDV-SMA-6.02 drains to Cañon de Valle (below LANL gage E256) which has an impairment for total adjusted gross alpha. The adjusted gross alpha impairment is not likely to be Site-related, based on Site history.

183.5 Site-Specific Demonstration

183.5.1 Soil Data Summary

All Site-related POCs that exceeded the applicable screening values in soil data were previously monitored in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

183.5.2 Stormwater Data Summary

No TAL exceedances.

183.5.3 2022 Permit Status

The SMA and associated Sites are eligible for deletion because stormwater discharges associated with industrial activity no longer occur at the Site (Part I.C.4.e)

184.0 CDV-SMA-7

Associated Sites	15-008(d)
Receiving Water	Cañon de Valle
Drainage Area	0.39 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 15-008(d): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the November 2017 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

184.1 2010 Administratively Continued Permit Summary

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

Following the September 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600909), corrective-action monitoring was initiated and stormwater samples were collected in July and August 2018. Analytical results from these samples initiated corrective action.

Following the December 2020 submittal to EPA of certification of enhanced control installation as a corrective action (N3B 2020, 701161), corrective-action monitoring was initiated and a stormwater sample was collected in August 2021. Confirmation monitoring is ongoing to collect a second sample.

184.2 Site History

15-008(d) (3/13/2018)

SWMU 15-008(d) consists of a building debris pile located south of former building 15-22 in the northwest portion of TA-15 in an area known as “The Hollow.” The source of the debris is unknown. Building 15-22 was originally constructed in the 1970s as a control center for an experimental accelerator in nearby building 15-203. This control center was not needed to operate the accelerator, and the building was never used for this purpose. Building 15-22 was reportedly used for storage and was demolished and removed in October 2004.

The Hollow was a series of buildings (former buildings 15-20, 15-194, and 15-203) connected by a common roof structure that had been assembled over the years beginning in 1949. These buildings had various uses, including assembly buildings, laboratories, and shops. Although documentation of what was assembled is not available, it was likely explosive devices tested elsewhere at TA-15. In the 1960s, building 15-194 had a vapor degreaser (the solvents used were not specified but likely included halogenated hydrocarbons such as trichloroethene, tetrachloroethene, or 1,1,1-trichlorethane). The vapor degreaser was removed in 1987. Building 15-194 also contained stripping tanks that employed sulfuric, chromic, and/or hydrochloric acids. Structures associated with The Hollow were demolished and removed in 2004.

The northwest portion of TA-15 including The Hollow was moderately to severely damaged in the 2000 Cerro Grande fire, and several structures were destroyed. The ground cover and the canopy surrounding the Site were damaged extensively.

For investigation activities for the Site, refer to "Investigation Work Plan for Cañon de Valle Aggregate Area" (LANL 2006, 091698).

184.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 184.2-1.

Table 184.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
15-008(d)	Surface disposal area	Metals

184.3 Consent Order Soil Data

Decision-level data are not available for SWMU 15-008(d).

184.4 Stormwater Evaluation

184.4.1 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 184.4-1 and 184.4-2.

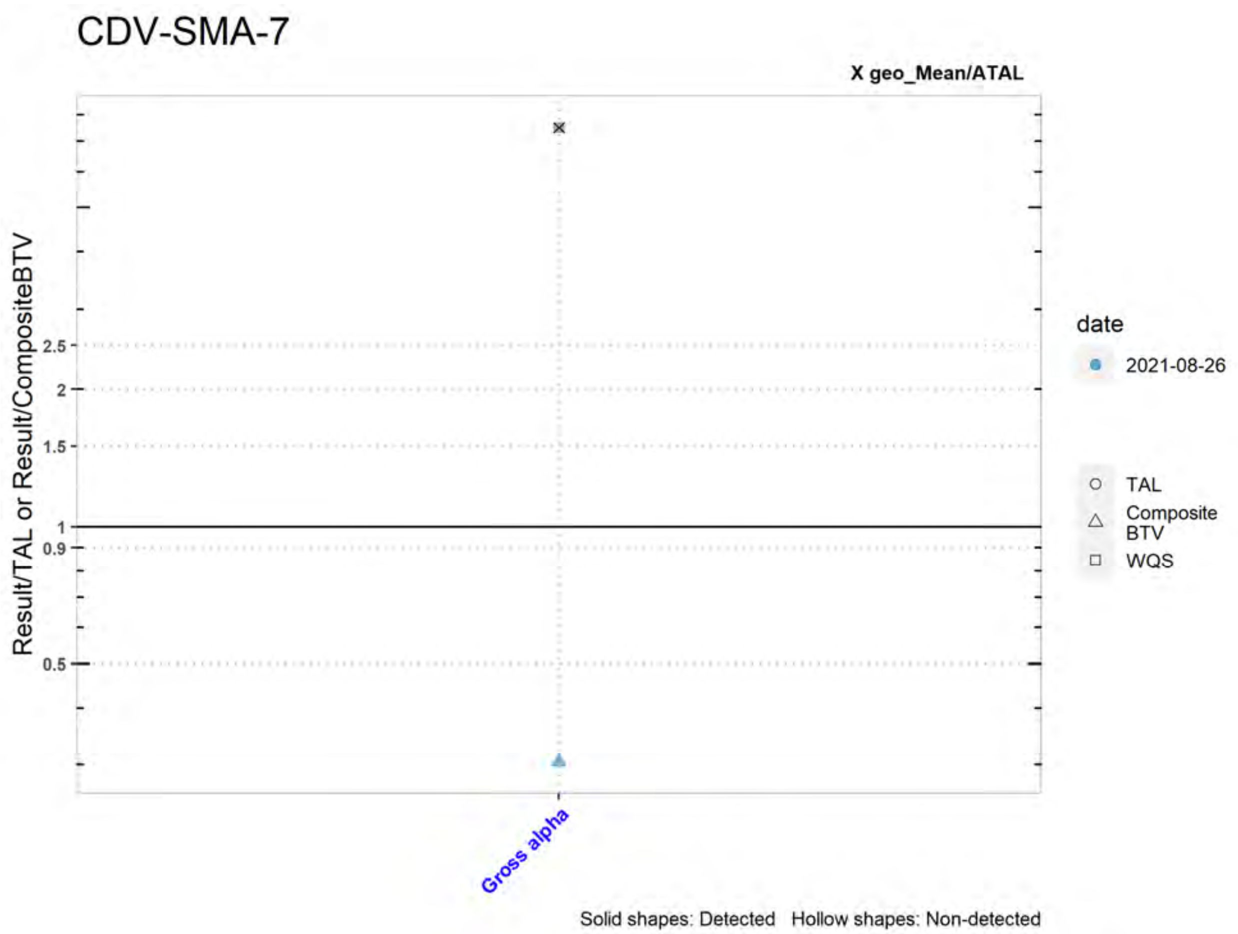


Figure 184.4-1 Analytical Results from Stormwater Sample, CDV-SMA-7 (Plot)

CDV-SMA-7

	Gross alpha
MQL	NA
ATAL	15
MTAL	NA
Composite_BTV	57.2
unit	pCi/L*
2021-08-26 result	113
2021-08-26 dT	7.5
2021-08-26 dB	0.304
geo_mean/ATAL	7.5

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

Figure 184.4-2 Analytical Results from Stormwater Sample, CDV-SMA-7 (Table)

184.4.2 Assessment Unit and Stream Impairments

CDV-SMA-7 drains to Cañon de Valle (below LANL gage E256) which has an impairment for total adjusted gross alpha. The adjusted gross alpha impairment is not likely to be Site-related, based on Site history.

184.5 Site-Specific Demonstration

184.5.1 Soil Data Summary

Decision-level data are not available for SWMU 15-008(d).

184.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL but not the BTV.

184.5.3 2022 Permit Status

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

184.5.4 Sampling and Analysis Plan

Table 184.5-1 is the proposed SAP for CDV-SMA-7.

Table 184.5-1 Proposed SAP, CDV-SMA-7

Monitoring Constituent	Background for Monitoring
Gross alpha (1)	Stormwater data
DOC (1)	Permit requirement
SSC (1)	Permit requirement

185.0 CDV-SMA-8

Associated Sites	15-011(c)
Receiving Water	Cañon de Valle
Drainage Area	27.88 acres
Landscape Characteristics	5% pervious, 95% impervious
Consent Order Site Status	SWMU 15-011(c): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the November 2017 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3.c criterion

185.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, 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, 600418). No response has been received from EPA and stormwater monitoring has not occurred since 2014.

185.2 Site History

15-011(c) (3/15/2018)

SWMU 15-011(c) is a dry well and associated drainline located west of electron gun/pulse power laboratory (former building 15-194) in the northwest portion of TA-15 in an area known as the Hollow. The dry well, reportedly constructed in 1960, consists of eight feet of concrete pipe placed vertically within a shaft and covered with a metal lid. The bottom of the shaft was lined with gravel. The dry well reportedly received discharges from two acid cleaning sinks/tanks located within former building 15-50. The sinks/tanks were removed prior to 1986. Both the 1986 Comprehensive Environmental Assessment and Response Program (CEARP) Report and the 1990 SWMU Report state that effluent may have been discharged directly to Cañon de Valle rather than into a dry well. Engineering drawing C-19082 depicts the dry well design and location, however the drawing is not an as-built drawing; therefore, it is possible that the dry well was never constructed. The 1990 SWMU Report and the 1993 RFI work plan both identify SWMU 15-011(c) as a sump, as do engineering drawings. However, this structure as depicted in the drawings has a gravel bottom with no outfall pipe and is therefore better described as a drywell. The RFI work plan states that no evidence of the sump (dry well) was found during the work plan development, and concluded that effluent from the building was discharged to the canyon. The 1996 RFI report incorrectly describes SWMU 15-011(c) as the drainage located west of the buildings located at the Hollow. The dry well was also not located during site visits conducted prior to the preparation of the 2011 Field Implementation Plan for Cañon de Valle Aggregate Area, TA-15. It is unknown whether the dry well was ever constructed, or if it was, whether it is still in place. The Hollow was a series of buildings (former buildings 15-20, 15-194, and 15-203) connected by a common roof structure that had been assembled over the years beginning in 1949. These buildings had various uses, including explosive assembly buildings, laboratories, and shops. Although documentation of what was assembled is not available, it was likely explosive devices tested elsewhere at TA-15. In the 1960s, building 15-194 had a vapor degreaser (the solvents used were not specified but likely included halogenated hydrocarbons such as trichloroethene; tetrachloroethene; or 1,1,1-trichlorethane). The vapor degreaser was removed in 1987. Building 15-194 also contained stripping tanks that employed sulfuric, chromic, and/or hydrochloric acids. Structures associated with The Hollow were demolished and removed in 2004. The northwest portion of TA-15 including the Hollow was moderately to severely damaged in the 2000 Cerro Grande fire, and several structures were destroyed. The ground cover and the canopy surrounding the site were damaged extensively.

For investigation activities for the Site, refer to “Investigation Work Plan for Cañon de Valle Aggregate Area” (LANL 2006, 091698).

185.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 185.2-1.

Table 185.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
15-011(c)	Dry well	Inorganic chemicals

185.3 Consent Order Soil Data

Decision-level data are not available for SWMU 15-011(c).

185.4 Stormwater Evaluation

185.4.1 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 Figures 185.4-1 through 185.4-4.

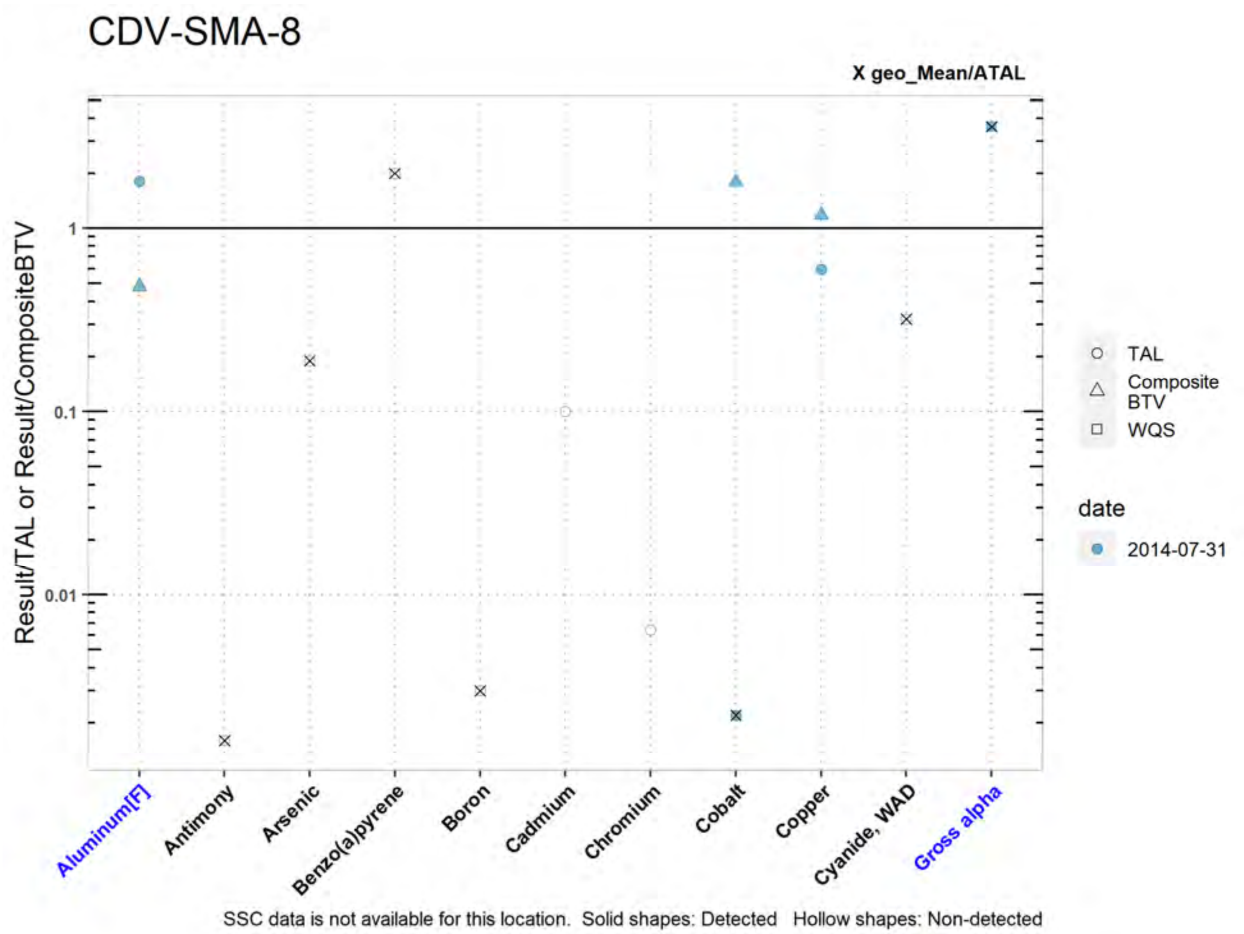


Figure 185.4-1 Analytical Results from Stormwater Sample, CDV-SMA-8 (Plot 1)

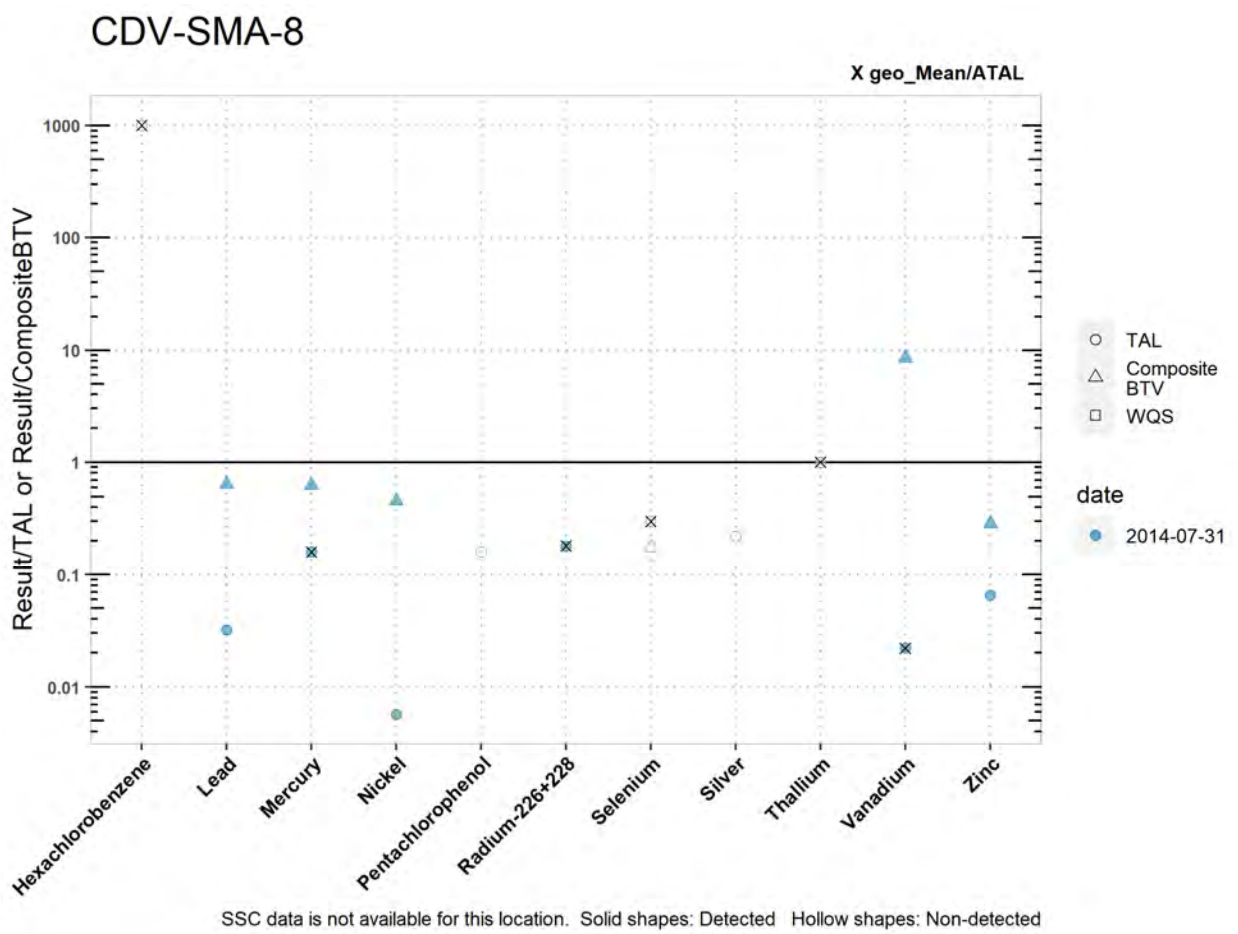


Figure 185.4-2 Analytical Results from Stormwater Sample, CDV-SMA-8 (Plot 2)

CDV-SMA-8

	Aluminum [F]	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha
MQL	2.5	1	0.5	0.064	100	1	10	50	0.5	10	NA
ATAL	NA	640	9	0.18	5000	NA	NA	1000	NA	5.2	15
MTAL	750	NA	340	NA	NA	0.879	311	NA	6.69	22	NA
Composite_BTV	2820	NA	NA	NA	NA	NA	NA	1.23	3.39	NA	56.9
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L
2014-07-31 result	1360	*1.00*	*1.70*	*0.300*	*15.0*	*0.110*	*2.00*	2.22	4.00	*1.67*	53.4
2014-07-31 dT	1.81	NA	NA	NA	NA	NA	NA	0.0022	0.598	NA	3.6
2014-07-31 dB	0.482	NA	NA	NA	NA	NA	NA	1.80	1.18	NA	NA
geo_mean/ATAL	NA	0.0016	0.19	2	0.0030	NA	NA	0.0022	NA	0.321	3.6

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

Figure 185.4-3 Analytical Results from Stormwater Sample, CDV-SMA-8 (Table 1)

CDV-SMA-8

	Hexachlorobenzene	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226+228	Selenium	Silver	Thallium	Vanadium	Zinc
MQL	5	0.5	0.005	0.5	5	NA	5	0.5	0.5	50	20
ATAL	0.0029	NA	0.77	NA	NA	30	5	NA	0.47	100	NA
MTAL	NA	28.6	NA	250	19	NA	20	0.9	NA	NA	81.6
Composite_BTV	NA	1.43	0.198	3.10	NA	4.49	8.57	NA	NA	0.259	18.7
unit	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
2014-07-31 result	*3.00*	0.917	0.124	1.42	*3.00*	5.44	*1.50*	*0.200*	*0.450*	2.21	5.37
2014-07-31 dT	NA	0.0321	0.16	0.00568	NA	0.181	NA	NA	NA	0.022	0.0658
2014-07-31 dB	NA	0.641	0.626	0.458	NA	NA	NA	NA	NA	8.53	0.287
geo_mean/ATAL	1000	NA	0.16	NA	NA	0.181	0.30	NA	1	0.022	NA

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

Figure 185.4-4 Analytical Results from Stormwater Sample, CDV-SMA-8 (Table 2)

185.4.2 Assessment Unit and Stream Impairments

CDV-SMA-8 drains to Cañon de Valle (below LANL gage E256), which has an impairment for adjusted gross alpha. The adjusted gross alpha impairment is not likely to be Site-related, based on Site history.

185.5 Site-Specific Demonstration

185.5.1 Soil Data Summary

Decision-level data are not available for SWMU 15-011(c).

185.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL and there was no paired SSC data to determine if it was below BTV. Filtered aluminum exceeded the TAL but was below BTV.

185.5.3 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.

186.0 CDV-SMA-8.5

Associated Sites	15-014(a)
Receiving Water	Cañon de Valle
Drainage Area	0.17 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 15-014(a): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	The November 2017 field visit determined that more of the impacted area should be included in the SMA. Therefore, the sampler was moved downgradient to address silver in soil at location 15-02532.
2022 Permit Status	Active Monitoring

186.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, baseline monitoring was initiated. While developing the 2018 SAP, a decision was made to implement the monitoring location move recommended during the 2017 SIP review and monitoring was reinitiated. 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.

186.2 Site History

15-014(a) (/15/2018)

SWMU 15-014(a) consists of a former NPDES-permitted outfall [EPA 06A123] and associated drainlines west of building 15-183, within an area known as R-183 in the western portion of TA-15. Building 15-183 was constructed in 1961 and housed offices and laboratories including photo-processing operations. Beginning in 1961, effluent from floor drains and photo-processing operations in building 15-183 was discharged to the SWMU 15-014(a) outfall. This outfall is located approximately 130 ft from the edge of Cañon de Valle. The drainline associated with this outfall was reportedly replaced with a new drainline along the same path as the original drainline in 1987. The outfall location did not change and the outfall was added to the LANL NPDES Permit as outfall EPA 06A123 for discharges of photo waste. Routine monitoring of effluent was required by the former NPDES permit including sampling and analysis for pH and silver and, before August 1994, for cyanide. Effluent from the outfall followed a surface drainage into the canyon; the location of the drainage is marked by increased vegetation. The drains in building 15-183 and the outfall discharge point were plugged in 1997. The SWMU 15-014(a) outfall was removed from the NPDES permit as of January 14, 1998. Building 15-183 remains active.

For investigation activities for the Site, refer to “Investigation Work Plan for Cañon de Valle Aggregate Area” (LANL 2006, 091698).

186.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 186.2-1.

Table 186.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
15-014(a)	Drainline and outfall from building 15-183	Silver, cyanide, organic chemicals, SVOCs

186.3 Consent Order Soil Data

Decision-level data are not available for SWMU 15-014(a). Some decision-level data exist within CDV-SMA-8.5 and have been used for SSD purposes.

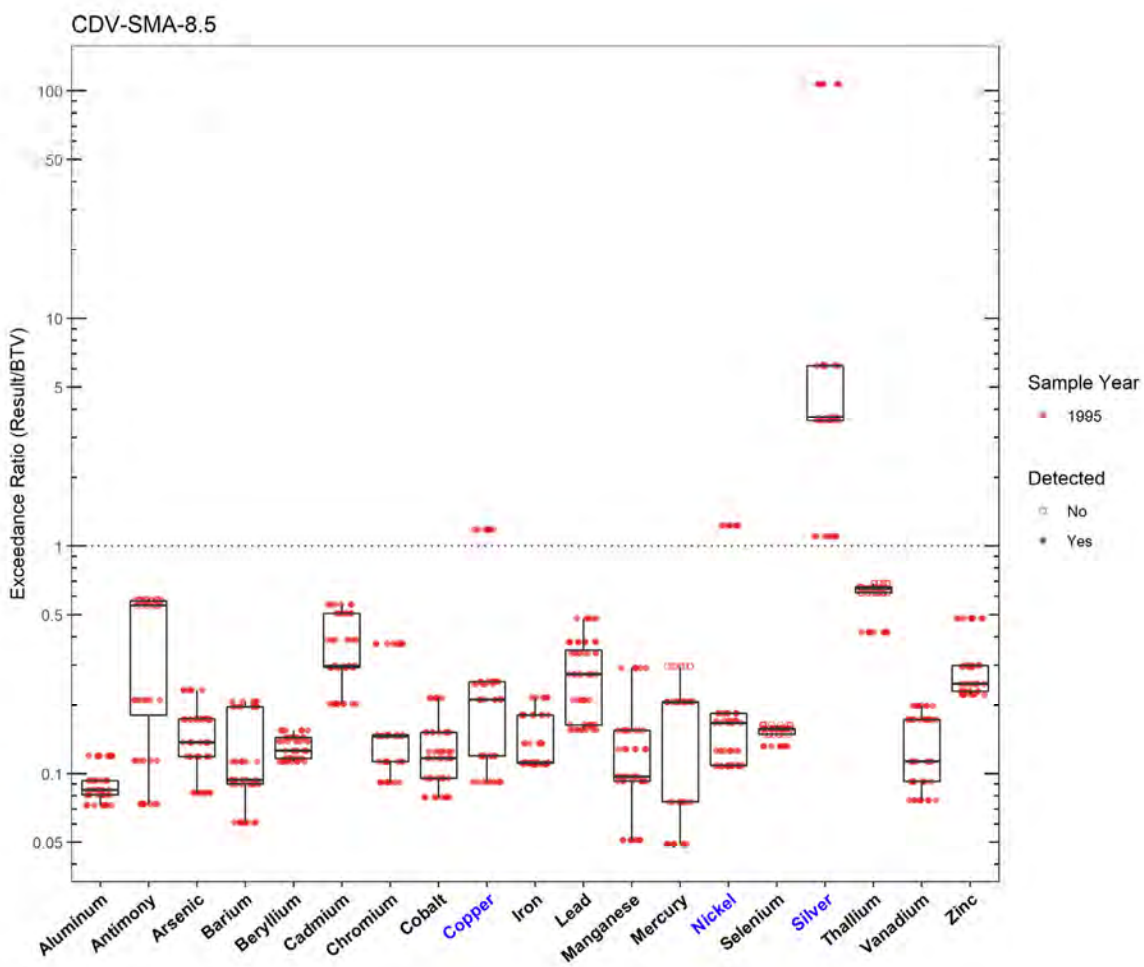


Figure 186.3-1 Inorganics Analytical Results from Soil Samples Associated with CDV-SMA-8.5

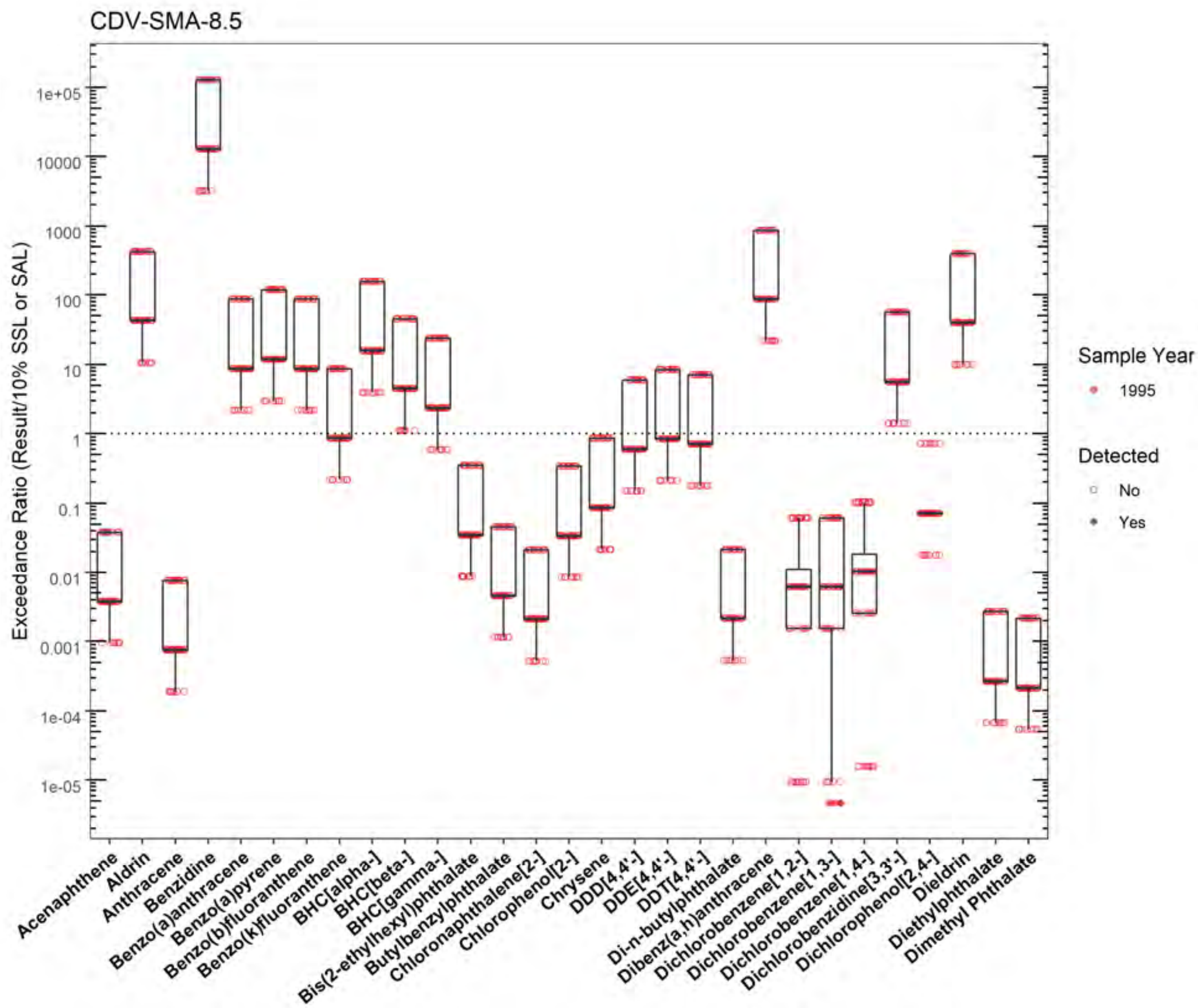


Figure 186.3-2 Organics Analytical Results from Soil Samples Associated with CDV-SMA-8.5 (Plot 1)

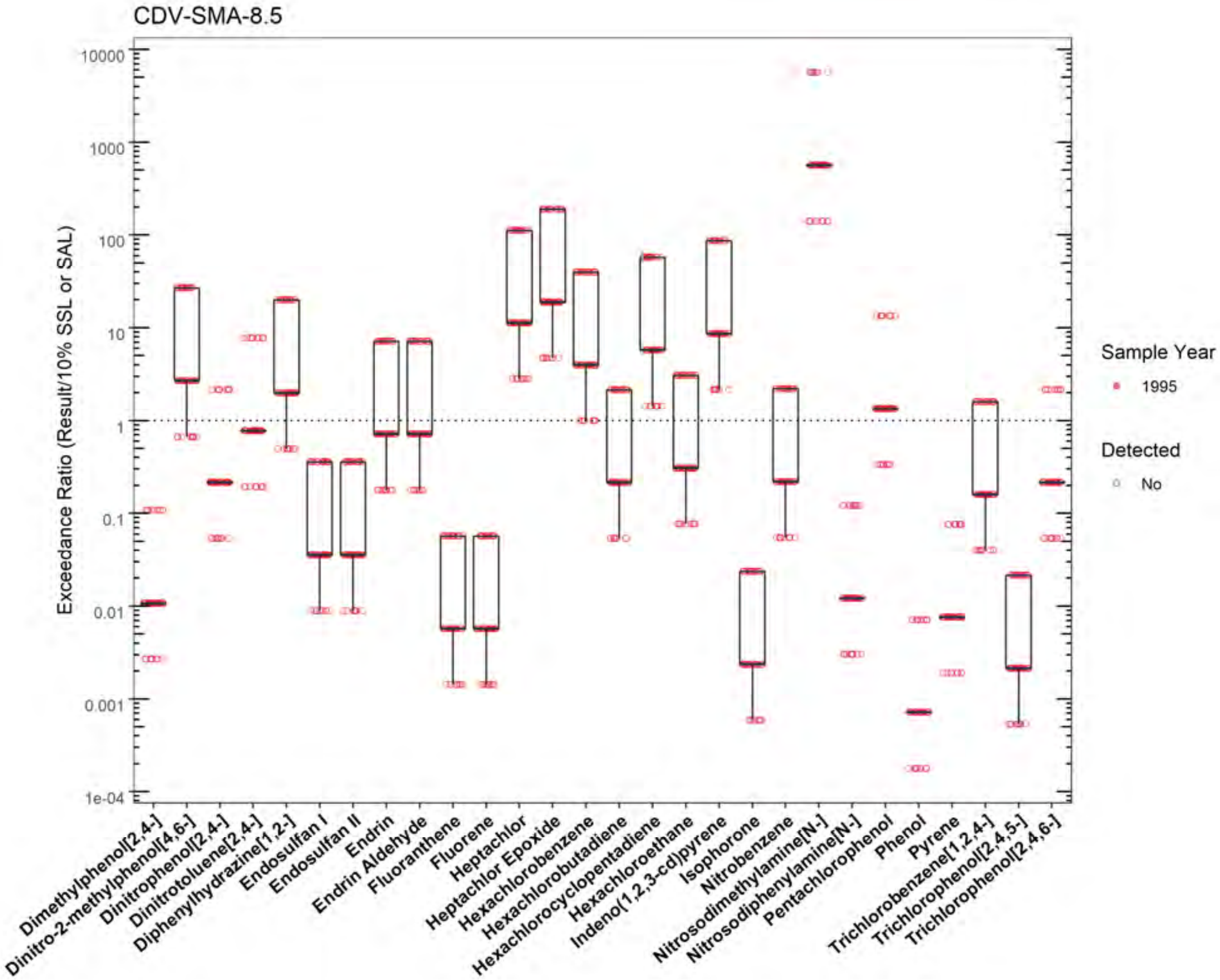


Figure 186.3-3 Organics Analytical Results from Soil Samples Associated with CDV-SMA-8.5 (Plot 2)

CDV-SMA-8.5

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Copper	CDV-SMA-8.5	Cu	Y	BTV	14.7	17.4	1995-07-27
Nickel	CDV-SMA-8.5	Ni	Y	BTV	15.4	18.9	1995-07-27
Silver	CDV-SMA-8.5	Ag	Y	BTV	1.00	107	1995-07-27

Figure 186.3-4 Screening-Level Exceedances from Soil Samples Associated with CDV-SMA-8.5

186.4 Stormwater Evaluation

186.4.1 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.

186.4.2 Assessment Unit and Stream Impairments

CDV-SMA-8.5 drains to Cañon de Valle (below LANL gage E256) which has an impairment for total adjusted gross alpha. The adjusted gross alpha impairment is not likely to be Site-related, based on Site history.

186.5 Site-Specific Demonstration

186.5.1 Soil Data Summary

Silver exceeded the applicable screening value in soil data and has not yet been measured in stormwater. The remaining metals that exceeded the applicable screening values in soil are not Site-related POCs and will not be added to the SAP.

186.5.2 Stormwater Data Summary

No confirmation-monitoring data.

186.5.3 2022 Permit Status

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

186.5.4 Sampling and Analysis Plan

Table 186.5-1 is the proposed SAP for CDV-SMA-8.5.

Table 186.5-1 Proposed SAP, CDV-SMA-8.5

Monitoring Constituent	Background for Monitoring
Dissolved silver	Site history and soil data
Cyanide	Site history
SVOCs	Site history
Total PCBs	Site history (organics)
DOC	Permit requirement
SSC	Permit requirement

187.0 CDV-SMA-9.05

Associated Sites	15-007(b)
Receiving Water	Cañon de Valle
Drainage Area	2.46 acres
Landscape Characteristics	4% impervious, 96% pervious
Consent Order Site Status	SWMU 15-007(b): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Corrective Action Monitoring
2016–2018 SIP Actions	Based on the November 2017 field visit, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

187.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in August 2018. Analytical results from this sample initiated corrective action.

Following the December 2020 submittal to EPA of certification of enhanced control installation as a corrective action (N3B 2020, 701161), corrective-action monitoring was initiated and a stormwater sample was collected in August 2021. Confirmation monitoring is ongoing to collect a second sample.

187.2 Site History

15-007(b) (3/13/2018)

SWMU 15-007(b) is an inactive disposal area known as MDA Z, located south of the side road leading to building 15-233 and northwest of inactive Firing Site G [SWMU 15-004(g)] in the south central portion of TA-15. MDA Z is roughly triangular, is approximately 200 × 50 ft, and appears to have been constructed in a natural depression. Thus, one face grades to native soil and one face is approximately 15 ft high and easily visible.

MDA Z operated from 1965 to 1981 and received construction debris, consisting of used sandbags filled with concrete and steel blast matting, from the PHERMEX [SWMU 15-006(a)]. The PHERMEX facility is used to x-ray photograph test explosions. The landfill also contains firing site debris contaminated with HE, uranium, lead, beryllium, and potentially mercury and barium. Partially burned wood was visible at the site during the 1995 RCRA RFI activities. When the site was surveyed after the 2000 Cerro Grande fire, only minor burning of ground cover was noted.

During the 1995 RFI activities, a geophysical survey was conducted to estimate the volume of the disposal area. The survey results indicated a roughly triangular surface area, with a wedge shape grading from about 10 ft deep at the face to the surface level landward edge. The triangle is roughly 225 ft long × 50 ft wide with a surface area of approximately 11,250 ft^2 (the area of a triangle is one-half the base times the height). If the depth were a uniform 10 ft, then the volume would be about 4,000 yd^3. However, because the shape tapers from the face to the opposite boundary, the MDA likely measures no more than half this size or approximately 2,000 yd^3.

For investigation activities for the Site, refer to "Investigation Work Plan for Cañon de Valle Aggregate Area" (LANL 2006, 091698).

187.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 187.2-1.

Table 187.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
15-007(b)	MDA Z	Metals, dioxins/furans, PAHs, SVOCs, radionuclides

187.3 Consent Order Soil Data

Decision-level data are not available for SWMU 15-007(b).

187.4 Stormwater Evaluation

187.4.1 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 187.4-1 and 187.4-2.

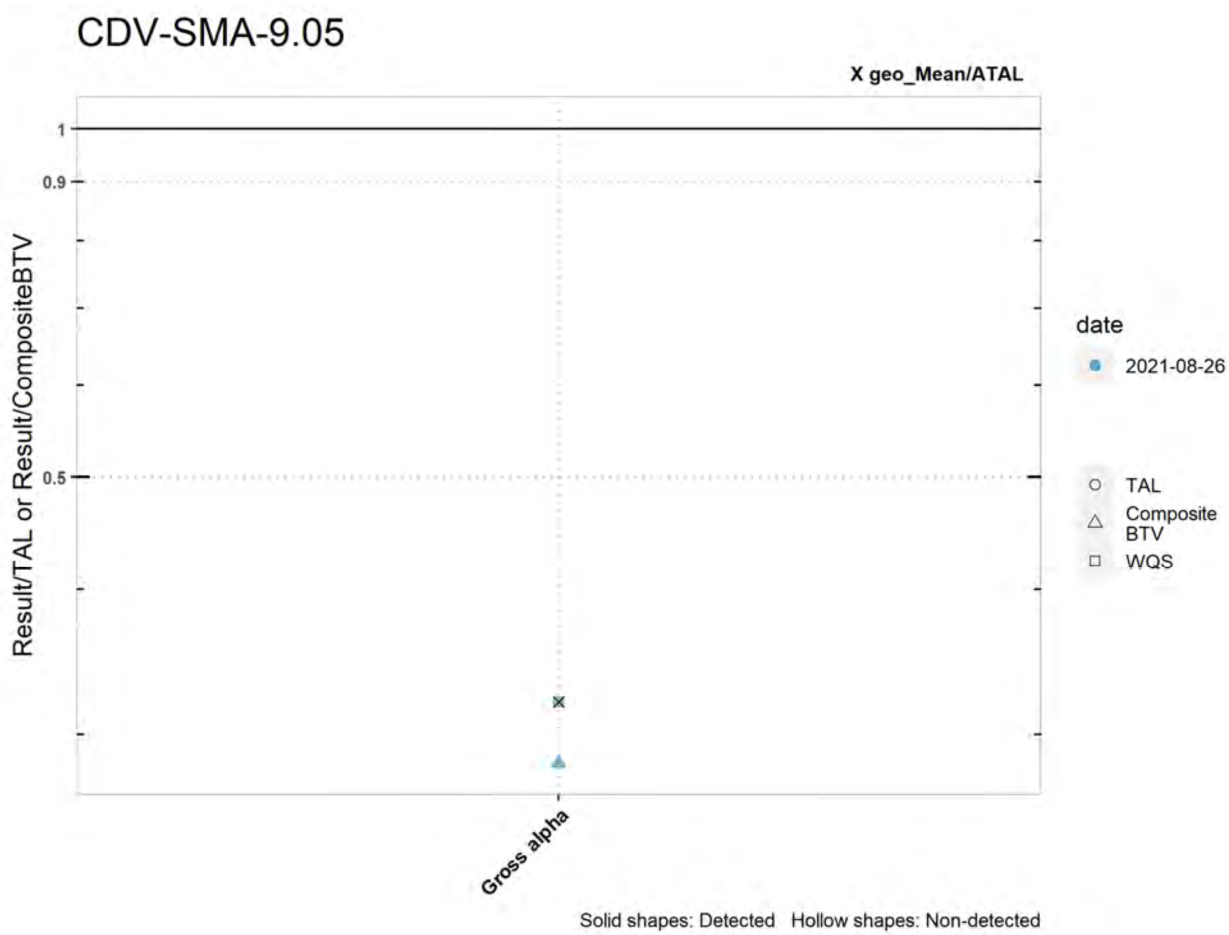


Figure 187.4-1 Analytical Results from Stormwater Sample, CDV-SMA-9.05 (Plot)

CDV-SMA-9.05

	Gross alpha
MQL	NA
ATAL	15
MTAL	NA
Composite_BTV	56.9
unit	pCi/L*
2021-08-26 result	4.83
2021-08-26 dT	0.32
2021-08-26 dB	0.283
geo_mean/ATAL	0.32

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

Figure 187.4-2 Analytical Results from Stormwater Sample, CDV-SMA-9.05 (Table)

187.4.2 Assessment Unit and Stream Impairments

CDV-SMA-9.05 drains to Cañon de Valle (below LANL gage E256) which has an impairment for total adjusted gross alpha. The adjusted gross alpha impairment may be Site-related, based on Site history.

187.5 Site-Specific Demonstration

187.5.1 Soil Data Summary

Decision-level data are not available for SWMU 15-007(b).

187.5.2 Stormwater Data Summary

No TAL exceedances occurred in the first confirmation sample in this stage.

187.5.3 2022 Permit Status

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

187.5.4 Sampling and Analysis Plan

Table 187.5-1 is the proposed SAP for CDV-SMA-9.05.

Table 187.5-1 Proposed SAP, CDV-SMA-9.05

Monitoring Constituent	Background for Monitoring
Gross alpha (1)	Impairment, Site history, and stormwater data
SVOCs	Site history
Strontium-90	Site history (Radionuclides)
Tetrachlorodibenzodioxin[2,3,7,8-]	Site history (dioxins/furans)
Tritium	Site history (radionuclides)
DOC	Permit requirement
SSC	Permit requirement

188.0 F-SMA-2

Associated Sites	36-004(c)
Receiving Water	Fence Canyon
Drainage Area	40.13 acres
Landscape Characteristics	1% impervious, 99% pervious
Consent Order Site Status	SWMU 36-004(c): In Progress Deferred per Consent Order
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the March 2018 field visit, it was determined that although the SMA is 40 acres in size, all parties agreed that the current sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3 criterion

188.1 2010 Administratively Continued Permit Summary

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

Following the June 2014 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2014, 257905), corrective-action monitoring was initiated and two stormwater samples were collected in July 2014. Analytical results from these samples initiated corrective action.

Following the September 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600931), corrective-action monitoring was initiated and a stormwater sample was collected in August 2021. Monitoring is ongoing to collect a second sample.

188.2 Site History

36-004(c) (4/18/2022)

AOC 36-004(c) is the active Minie Firing Site at TA-36 near the head of Fence Canyon, approximately 800 ft southeast of the active Meenie Firing Site [AOC 36-004(b)]. AOC 36-004(c) is an active RCRA-regulated OD Site and is also used to conduct experiments involving explosives. This firing site consists of the firing point, a control bunker (building 36-8), a make-up building (36-7) [AOC 36-007(c)], a firing platform (no structure number), and an x-ray house (no structure number). Construction of the Minie Firing Site began in 1949 and was completed in 1950. The site has been extensively used to conduct armor-piercing experiments involving various metal penetrators. In these experiments, penetrator jets are directed at targets on the canyon wall to the west of the site. Metal plates are placed behind the targets to stop the penetrators. AOC 36-004(c) has also been used for OD of scrap HE. Emergency detonation of leaking gas cylinders has been performed, but very infrequently. The hazard radius for Minie Site is approximately 3,000 ft.

For investigation activities, refer to “Investigation Report for Potrillo and Fence Canyons Aggregate Area, Revision 1” (LANL 2011, 208336).

188.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 188.2-1.

Table 188.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
36-004(c)	Active firing site	Aluminum, barium, beryllium, copper, iron, lead, HE, DU

188.3 Consent Order Soil Data

Decision-level data for AOC 36-004(c) consist of results from samples collected in 2010 from sediment catchment areas in the drainage downgradient of the Site. Analytical results for these samples are presented in Figures 188.3-1 through 188.3-4. Revision 1 of the 2011 IR (LANL 2011, 208336) concluded that because the investigation of AOC 36-004(c) is deferred per the Consent Order, the extent of contamination was not evaluated and human health and ecological risk assessments were not performed.

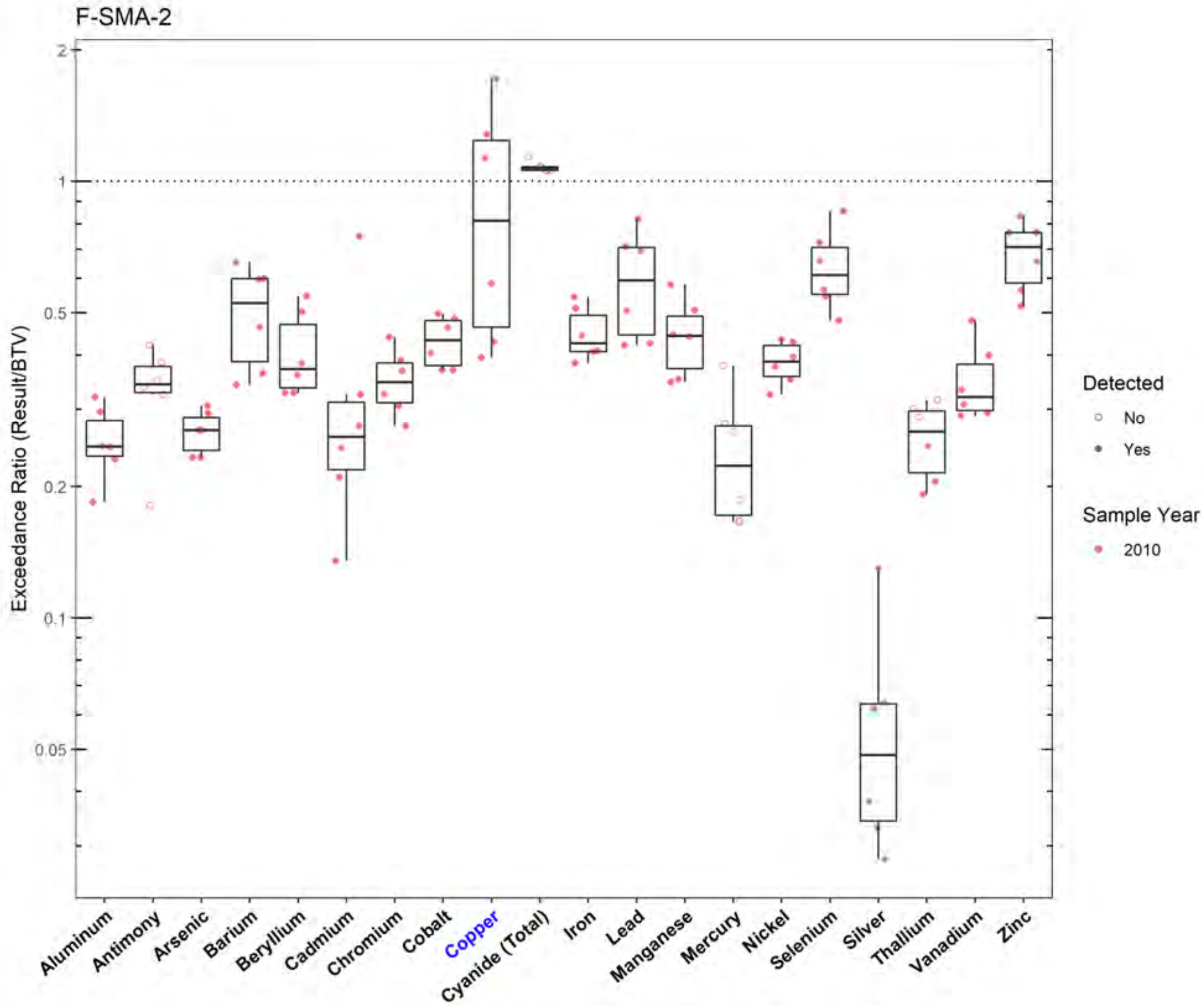


Figure 188.3-1 Inorganics Analytical Results from Soil Samples Associated with F-SMA-2

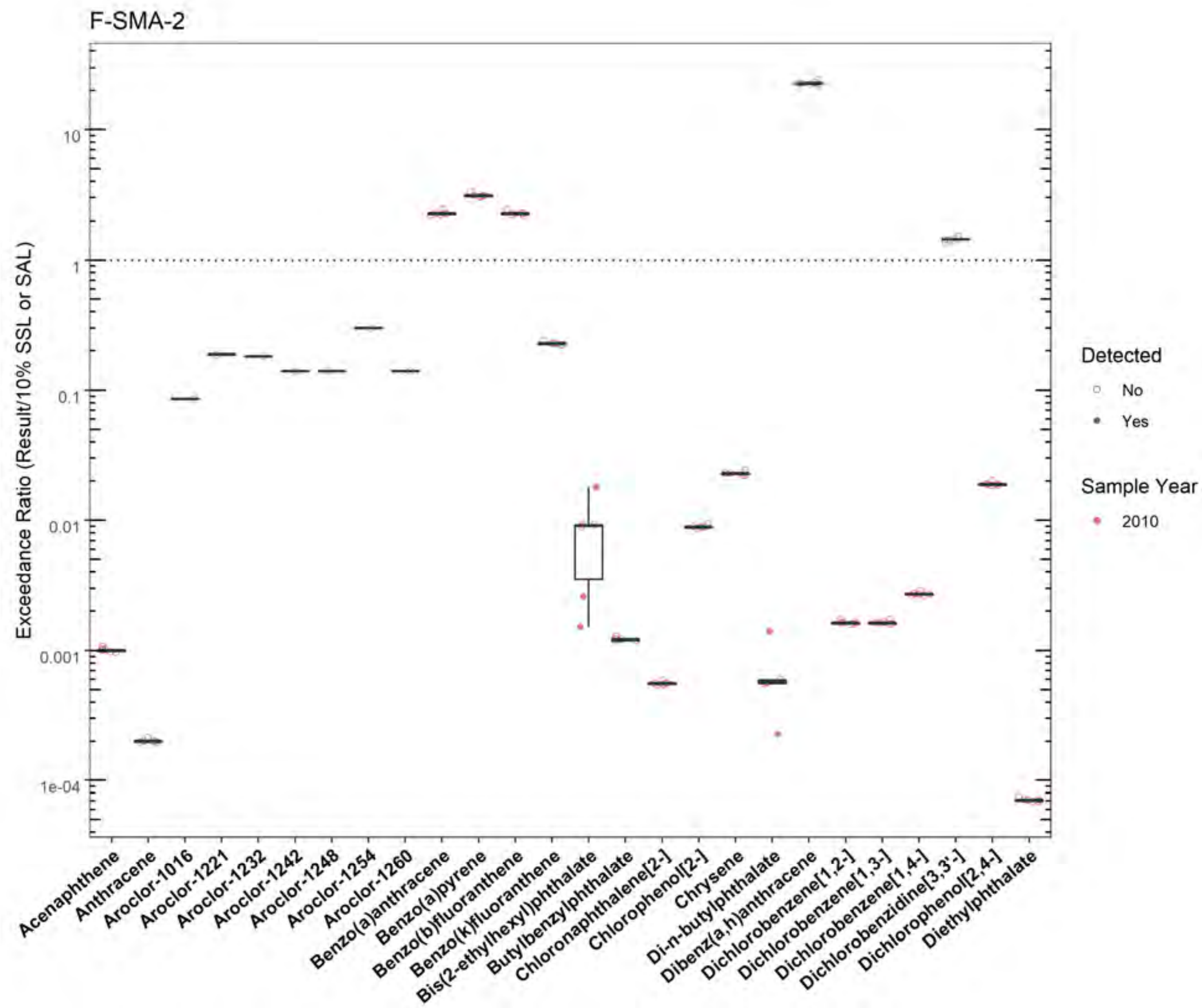


Figure 188.3-2 Organics Analytical Results from Soil Samples Associated with F-SMA-2 (Plot 1)

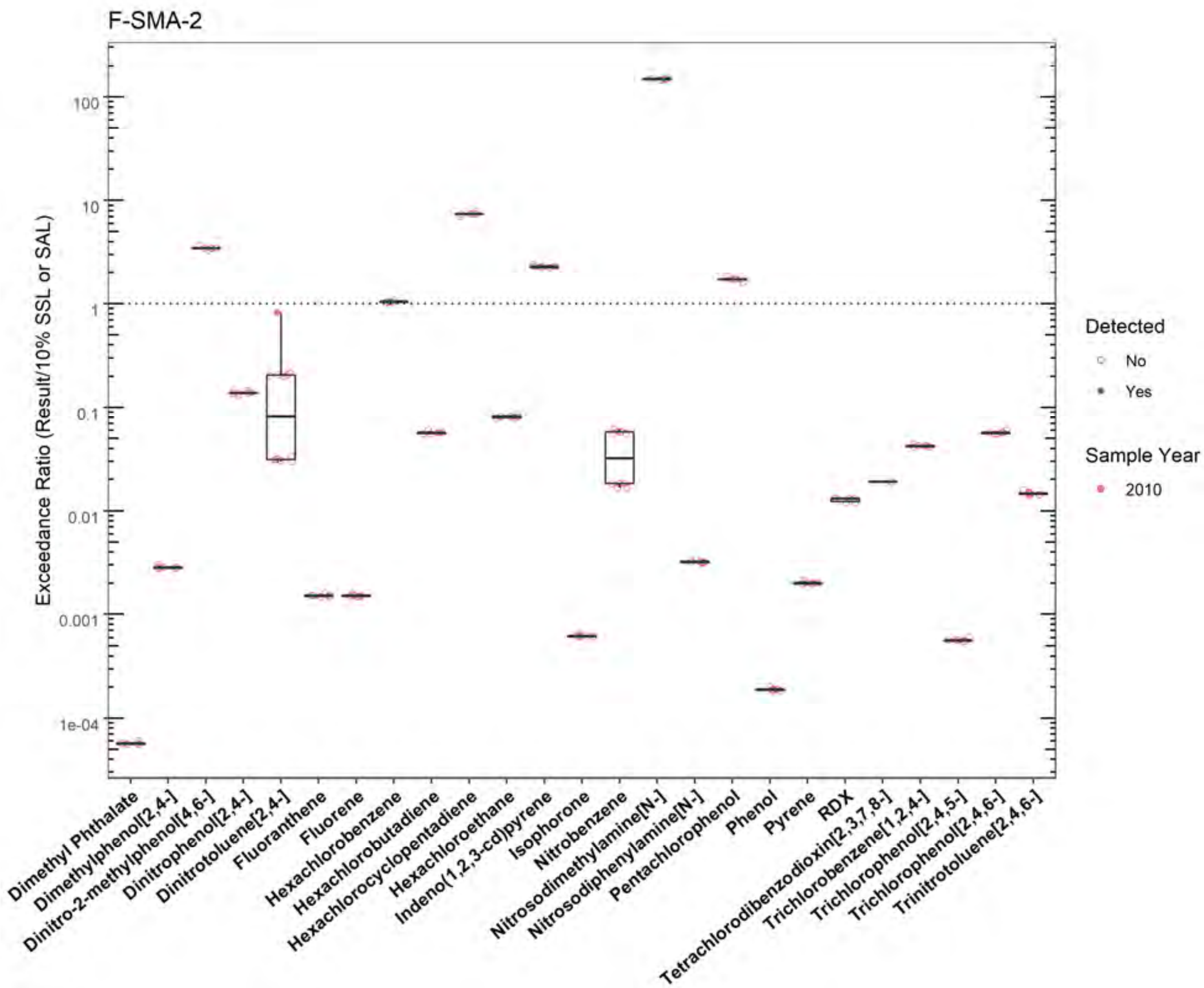


Figure 188.3-3 Organics Analytical Results from Soil Samples Associated with F-SMA-2 (Plot 2)

F-SMA-2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Copper	F-SMA-2	Cu	Y	BTV	14.7	25.3	2010-12-02

Figure 188.3-4 Screening-Level Exceedances from Soil Samples Associated with F-SMA-2

188.4 Stormwater Evaluation

188.4.1 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 188.4-1 through 188.4-4.

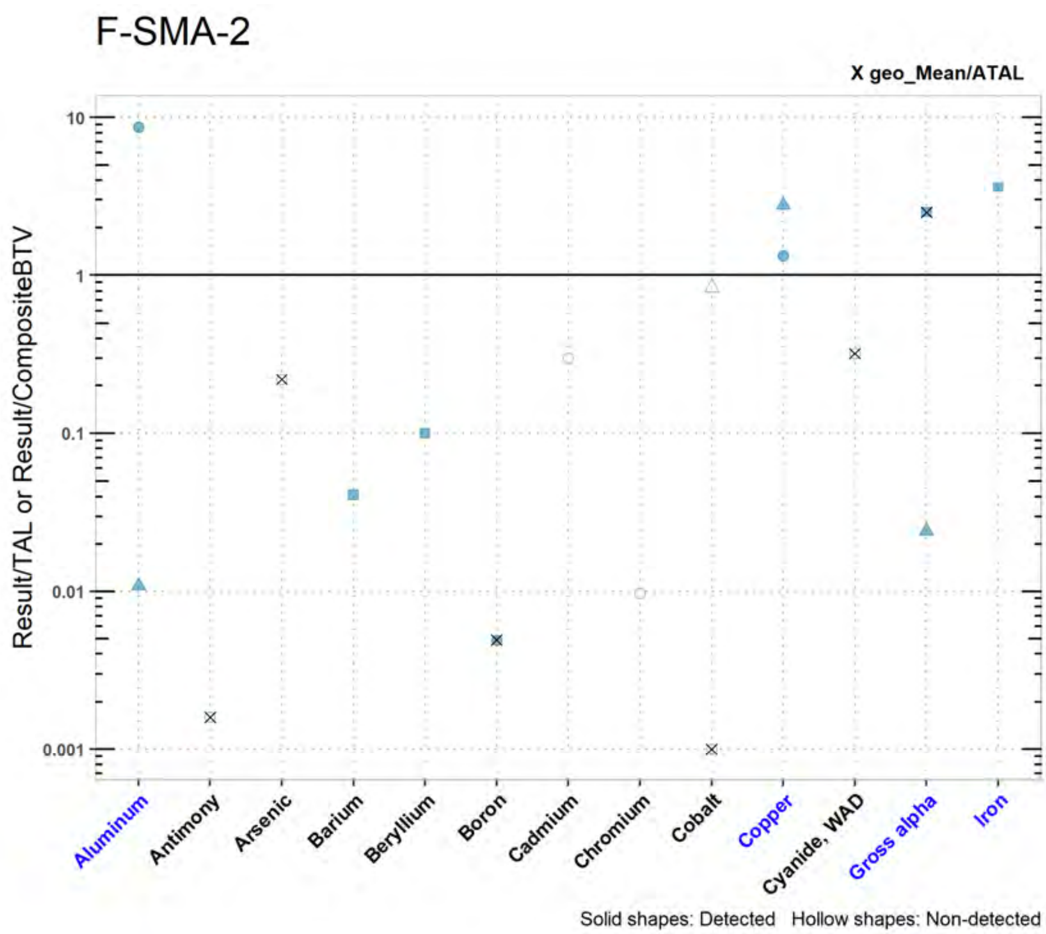


Figure 188.4-1 Analytical Results from Stormwater Sample, F-SMA-2 (Plot 1)

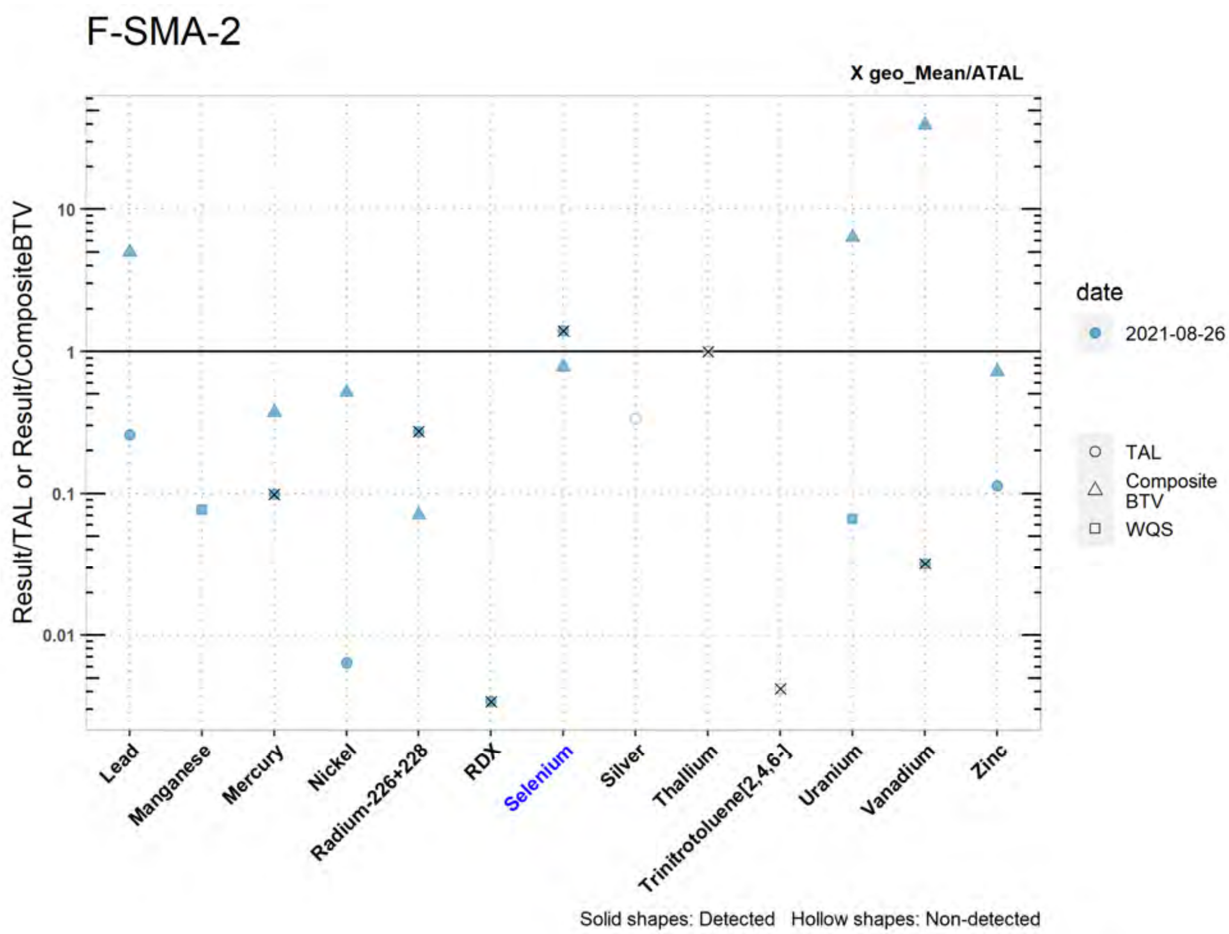


Figure 188.4-2 Analytical Results from Stormwater Sample, F-SMA-2 (Plot 2)

F-SMA-2

	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Iron
MQL	2.5	1	0.5	NA	NA	100	1	10	50	0.5	10	NA	NA
ATAL	NA	640	9	NA	NA	5000	NA	NA	1000	NA	5.2	15	NA
MTAL	1241	NA	340	NA	NA	NA	0.879	311	NA	6.69	22	NA	NA
Composite_BTV	37300	NA	NA	NA	NA	NA	NA	NA	1.20	3.20	NA	57.1	NA
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*	ug/L
2021-08-26 result	10800	*1.00*	*2.00*	81.3	0.409	24.7	*0.300*	*3.00*	*1.00*	8.87	*1.67*	37.2	3630
2021-08-26 dT	8.70	NA	NA	0.041	0.10	0.0049	NA	NA	NA	1.33	NA	2.5	3.6
2021-08-26 dB	0.0108	NA	NA	NA	NA	NA	NA	NA	NA	2.77	NA	0.0243	NA
geo_mean/ATAL	NA	0.0016	0.22	NA	NA	0.0049	NA	NA	0.0010	NA	0.321	2.5	NA

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 188.4-3 Analytical Results from Stormwater Sample, F-SMA-2 (Table 1)

F-SMA-2

	Lead	Manganese	Mercury	Nickel	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Uranium	Vanadium	Zinc
MQL	0.5	NA	0.005	0.5	NA	NA	5	0.5	0.5	NA	NA	50	20
ATAL	NA	NA	0.77	NA	30	200	5	NA	0.47	20	NA	100	NA
MTAL	28.6	NA	NA	250	NA	NA	20	0.9	NA	NA	NA	NA	81.6
Composite_BTV	1.48	NA	0.205	3.10	4.30	NA	8.85	NA	NA	NA	0.313	0.0818	12.8
unit	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
2021-08-26 result	7.35	99.9	0.0760	1.59	8.13	0.674	6.91	*0.300*	*0.600*	*0.0847*	1.98	3.24	9.26
2021-08-26 dT	0.257	0.077	0.099	0.00636	0.271	0.0034	1.4	NA	NA	NA	0.066	0.032	0.113
2021-08-26 dB	4.97	NA	0.371	0.513	0.0705	NA	0.781	NA	NA	NA	6.33	39.6	0.723
geo_mean/ATAL	NA	NA	0.099	NA	0.271	0.0034	1.4	NA	1	0.0042	NA	0.032	NA

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

Figure 188.4-4 Analytical Results from Stormwater Sample, F-SMA-2 (Table 2)

188.4.2 Assessment Unit and Stream Impairments

F-SMA-2 drains to Fence Canyon (above Potrillo Canyon) which has not been assessed for impairments.

188.5 Site-Specific Demonstration

188.5.1 Soil Data Summary

Copper exceeded the applicable screening value in soil data; it was previously monitored in stormwater data and exceeded TALs. When the Site is removed from deferred status, this Site-related POC will be monitored.

188.5.2 Stormwater Data Summary

Copper exceeded the TAL and BTV. Aluminum, gross alpha, and selenium exceeded the TAL but not the BTV.

188.5.3 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.

189.0 PT-SMA-0.5

Associated Sites	15-009(e), C-15-004
Receiving Water	Potrillo Canyon
Drainage Area	6.80 acres
Landscape Characteristics	1% impervious, 99% pervious
Consent Order Site Status	SWMU 15-009(e): In Progress AOC C-15-004: Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the September 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

189.1 2010 Administratively Continued Permit Summary

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

Following the December 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 232349), 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.

189.2 Site History

15-009(e) (8/17/2021)

SWMU 15-009(e) is a decommissioned septic system that served building 15-27 at E-F Firing Site [SWMU 15-004(f)] at TA-15. The 1990 SWMU Report describes SWMU 15-009(e) as a semi-active septic system consisting of a septic tank (structure 15-72) reportedly measuring 4 ft long × 3 ft wide × 5 ft deep, with a 1200-gal. capacity that discharged to an outfall in Potrillo Canyon and served building 15-27. During the 1997 VCA conducted at SWMU 15-009(e), the decommissioned septic tank (structure 15-72) was uncovered and determined to have been constructed of reinforced concrete with a 1500-gal. capacity, and dimensions of 9 ft long × 7 ft wide × 5 ft deep. The septic system was constructed in 1947 and received sanitary waste from the E-F Firing Site control building 15-27 located approximately 175 ft northeast of septic tank 15-72. Engineering drawings show a 4-in.-diameter VCP inlet drainline exited the west side of building 15-27 and connected to the decommissioned septic tank (structure 15-72) southwest of the building. A 4-in.-diameter VCP outlet drainline discharged from the septic tank (structure 15-72) to an outfall in Potrillo Canyon approximately 40 ft southwest of the decommissioned septic tank. The septic tank was used until 1981 when E-F Firing Site last operated.

C-15-004 (2/21/2020)

AOC C-15-004 is a former transformer station (former structure 15-56) located approximately 30 ft southwest of the former E-F Firing Site [SWMU 15-004(f)] control room (building 15-27) at TA-15. Two transformers (18-gal. and 30-gal. mineral oil capacity) were located on a 5-ft-long wooden platform

10 ft above the ground. Each transformer contained mineral oil with PCBs of unknown concentrations. The date of installation is not known, but the transformers were removed from the site in 1989. No evidence was found of a release on the wooden platform or on the soil beneath the platform.

For investigation activities for SWMU 15-009(e), refer to "Phase II Investigation Work Plan for Potrillo and Fence Canyons Aggregate Area" (N3B 2021, 701660). For investigation activities for AOC C-15-004 refer to "Supplemental Investigation Report for Potrillo and Fence Canyons Aggregate Area, Revision 1" (N3B 2019, 700523).

189.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 189.2-1.

Table 189.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
15-009(e)	Septic system	Metals, lead, mercury, nitrate, uranium
C-15-004	Former transformer station	PAHs, PCBs

189.3 Consent Order Soil Data

Decision-level data for SWMU 15-009(e) consist of results from samples collected in 1997 and in 2010–2011. The 2015 IR (LANL 2015, 600935) recommended additional sampling to define the vertical extent of contamination below site structures.

Decision-level data for AOC C-15-004 consist of results from samples collected in 2011. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700523) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results for all decision-level soil samples for this SMA are presented in Figures 189.3-1 through 189.3-4.

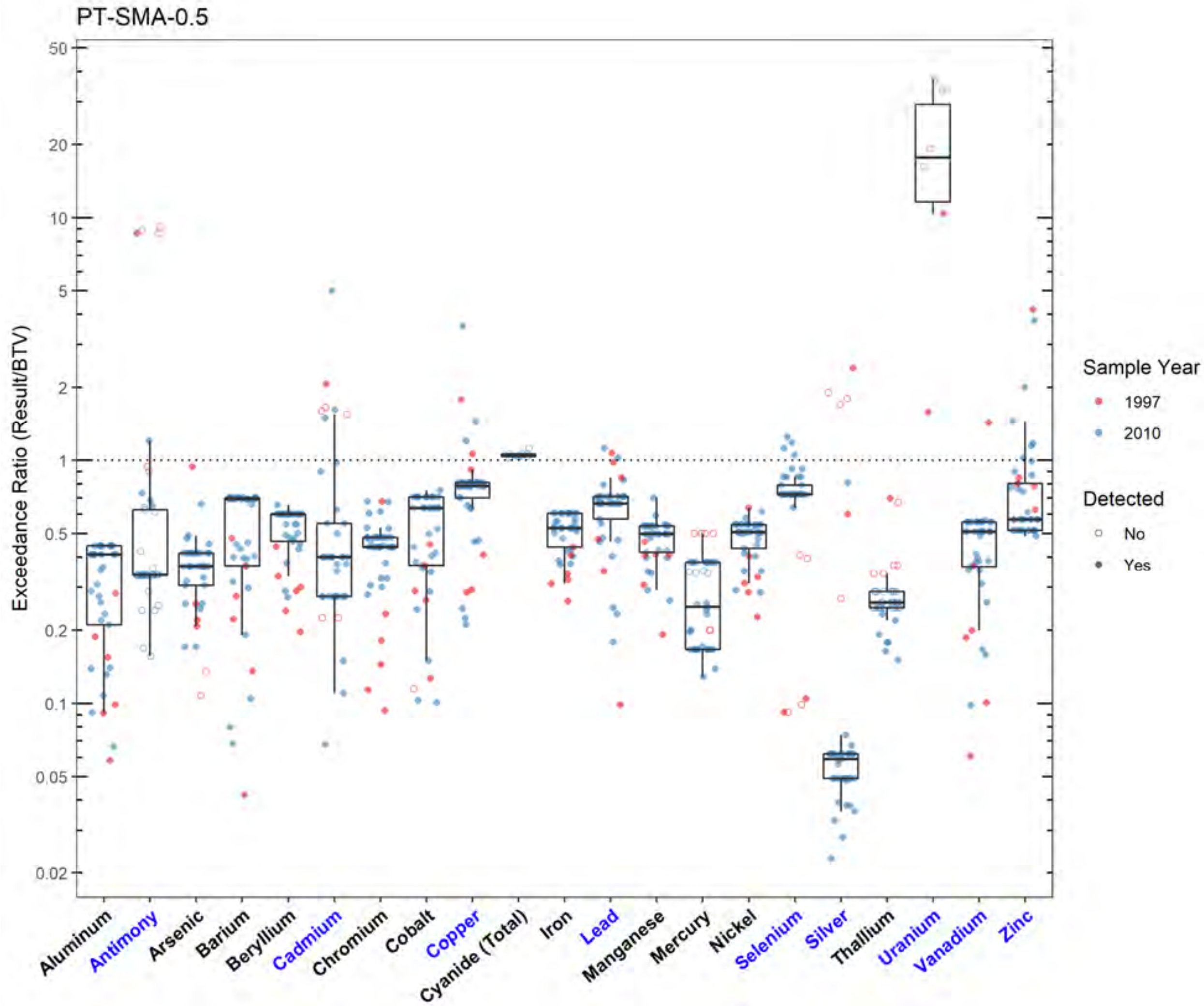


Figure 189.3-1 Inorganics Analytical Results from Soil Samples Associated with PT-SMA-0.5

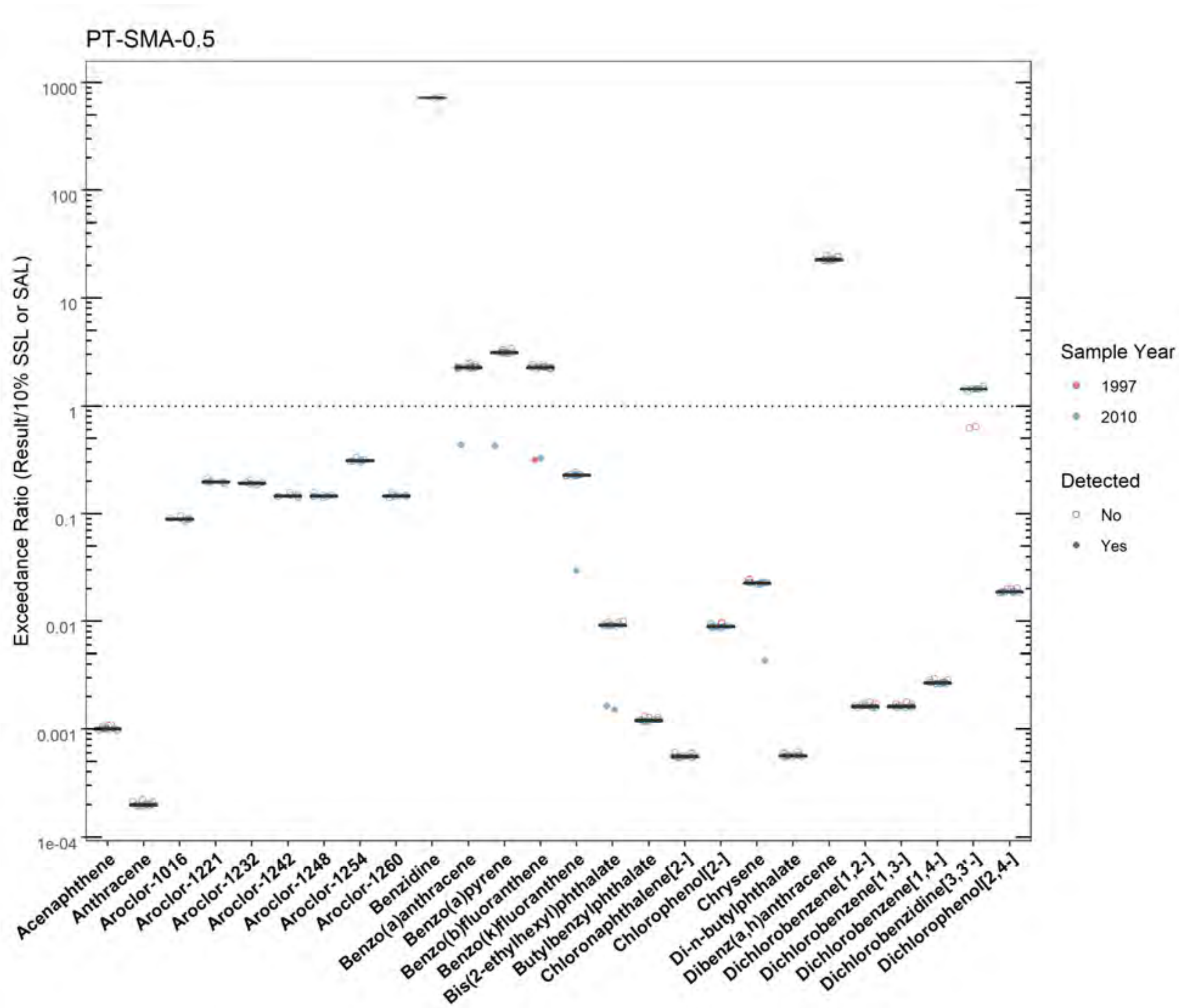


Figure 189.3-2 Organics Analytical Results from Soil Samples Associated with PT-SMA-0.5 (Plot 1)

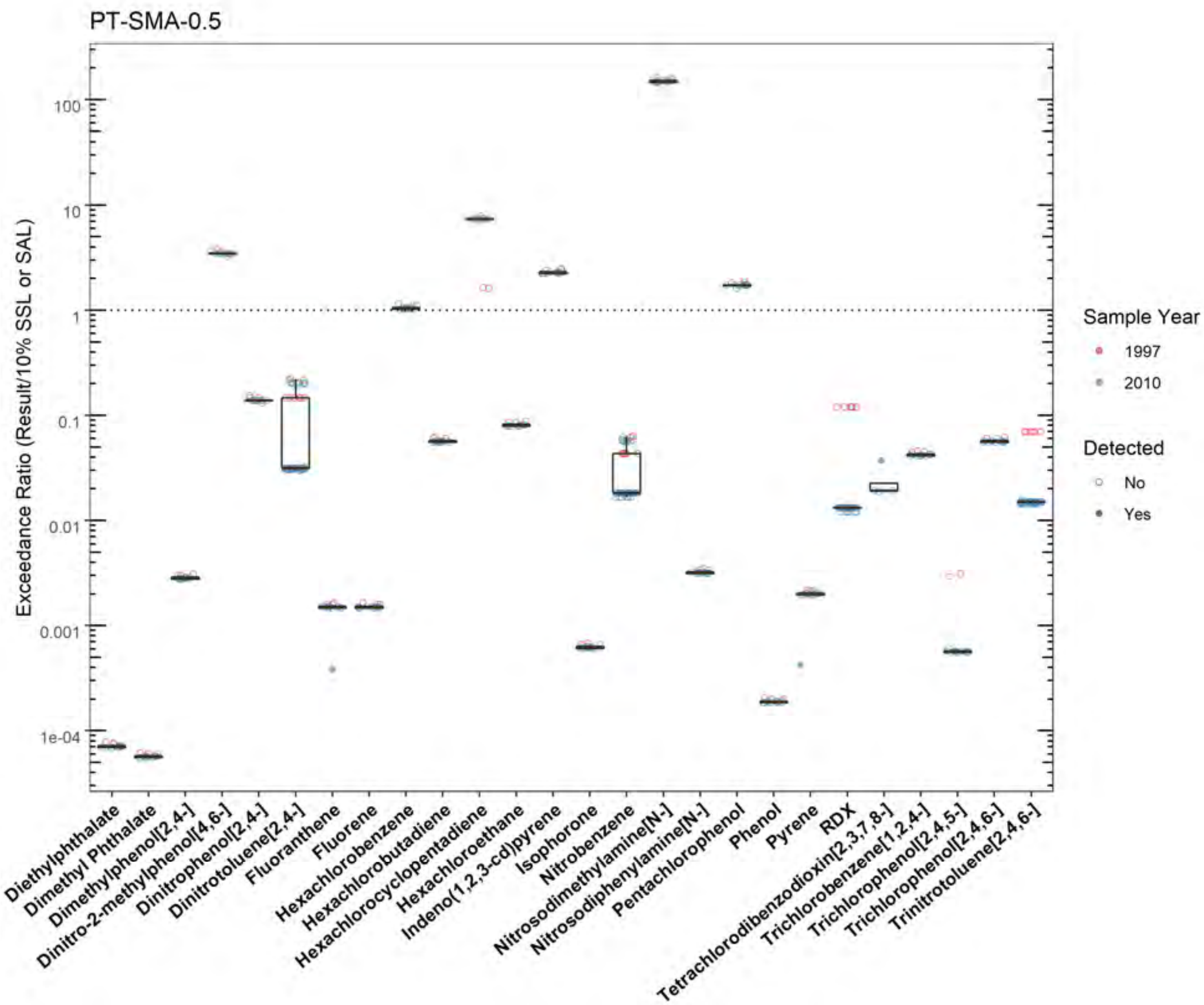


Figure 189.3-3 Organics Analytical Results from Soil Samples Associated with PT-SMA-0.5 (Plot 2)

PT-SMA-0.5

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	PT-SMA-0.5	Sb	Y	BTV	0.830	7.20	1997-07-14
Cadmium	PT-SMA-0.5	Cd	Y	BTV	0.400	2.00	2010-11-23
Copper	PT-SMA-0.5	Cu	Y	BTV	14.7	52.6	2010-11-23
Lead	PT-SMA-0.5	Pb	Y	BTV	22.3	25.0	2010-11-22
Selenium	PT-SMA-0.5	Se	Y	BTV	1.52	1.90	2010-11-22
Silver	PT-SMA-0.5	Ag	Y	BTV	1.00	2.40	1997-07-14
Uranium	PT-SMA-0.5	U	Y	BTV	1.82	18.9	1997-08-20
Vanadium	PT-SMA-0.5	V	Y	BTV	39.6	56.8	1997-09-02
Zinc	PT-SMA-0.5	Zn	Y	BTV	48.8	204	1997-09-02

Figure 189.3-4 Screening-Level Exceedances from Soil Samples Associated with PT-SMA-0.5

189.4 Stormwater Evaluation

189.4.1 Summary of Stormwater Results Compared with TALs and BTVs

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

189.4.2 Assessment Unit and Stream Impairments

PT-SMA-0.5 drains to Potrillo Canyon (above Water Canyon) which has an impairment for adjusted gross alpha. The impairment may be Site-related, based on Site history.

189.5 Site-Specific Demonstration

189.5.1 Soil Data Summary

Uranium exceeded the applicable screening values in soil data and has not yet been measured in stormwater.

The remaining metals that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs, with the exception of copper.

189.5.2 Stormwater Data Summary

No data for the current monitoring stage have been collected. Dissolved aluminum, gross alpha, and copper exceeded TALs in the previous monitoring stage. Dissolved aluminum was below BTV, so it will not be added to the SAP. There was no paired SSC result to confirm whether the gross alpha result was below BTVs. Because gross alpha may be Site-related, it will be added to the SAP. Copper also exceeded BTV, therefore it will be added to the SAP.

189.5.3 2022 Permit Status

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

189.5.4 Sampling and Analysis Plan

Table 189.5-1 is the proposed SAP for PT-SMA-0.5.

Table 189.5-1 Proposed SAP, PT-SMA-0.5

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment, Site history, and stormwater data
Dissolved uranium	Site history and soil data
SVOCs	Site history
Dissolved copper	Stormwater data and soil data
DOC	Permit requirement
SSC	Permit requirement

190.0 PT-SMA-1

Associated Sites	15-004(f), 15-008(a)
Receiving Water	Potrillo Canyon
Drainage Area	15.19 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 15-004(f): In Progress SWMU 15-008(a): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	The September 2016 field visit determined that the current sampler location does not capture surface water from the firing points west of the main firing mounds, nor from the 15-008(a) location that is south on top of the mesa. Therefore, the sampler was moved down the drainage area.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3.c criterion

190.1 2010 Administratively Continued Permit Summary

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

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

Following the October 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600948), the sampler was relocated to a more representative location and 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. A stormwater sample was collected in September 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.

190.2 Site History

15-004(f) (8/17/2021)

SWMU 15-004(f) is inactive E-F Firing Site consisting of three inactive firing points (D, E, and F) covering a total area of approximately 60 acres at TA-15. E-F Firing Site began operations in 1946 and was last used in 1981. The Firing Site was operated extensively from 1947 to 1973 and was the largest firing site at the Laboratory.

The 1990 SWMU Report describes SWMU 15-004(f) as E-F Firing Site, a decommissioned firing site, consisting of a control chamber (structure 15-27) and an x-unit chamber (former structure 15-26) at TA-15. The 1990 SWMU Report incorrectly associated decommissioned Firing Site D with

SWMU 15-004(e); Firing Point D is part of SWMU 15-004(f). Originally, E-F Firing Site consisted of a single firing point (D), which operated from 1946 to 1949. The structures associated with Firing Point D were a control chamber (former structure 15-34) and an x-unit chamber (former structure 15-36) as shown on engineering drawing ENG-R 130. In 1946, the firing area was expanded to include Firing Point E, which was used for large-scale shots containing up to 2,500 lb of HE, and Firing Point F, which was used for smaller-scale shots. Firing Points E and F were approximately 650 ft apart and were wired to an underground control bunker (structure 15-27). Firing Points E and F were subsequently combined into E-F Firing Site. Tests at the two new firing points were conducted on the ground and created depressions in the ground. After test shots, the firing points were either regraded or backfilled with gravel to fill in depressions caused by the test shots. Eventually, nearby soil was mounded on the north and south sides of Firing Point E to protect structures at TA-15 from shrapnel. The x-unit chamber (former structure 15-26) associated with Firing Site E was damaged and removed in April 1952 and subsequently replaced with a new x-unit chamber (structure 15-134) according to the TA-15 Structure History Book and engineering drawing ENG-R 5110. As-built drawing ENG-C 12820 (pg. 1 of 7), engineering drawing A5-C37, and a 1958 aerial photograph indicate the approximate locations and dimensions of Firing Points D, E, and F. Firing Point D measures approximately 110 ft long by 85 ft wide, Firing Point E measures approximately 60 ft in diameter, and Firing Point F measures approximately 60 ft in diameter. Tests at E-F Firing Site involved HE, uranium, beryllium, lead, and mercury.

15-008(a) (2/21/2020)

SWMU 15-008(a) consists of two small surface disposal areas located on the edge of Potrillo Canyon, one south and one east of E-F Firing Site [SWMU 15-004(f)], at TA-15. The disposal areas are located within approximately 350 ft of each other, with each disposal area having dimensions of approximately 8 ft in diameter × 2 ft high. Both areas were used to dispose of debris from tests conducted at the E-F Firing Site, including soil, rock, pebbles, metal fragments, plastic, electrical cable, and electrical accessories. The exact period of operation of the surface disposal areas is not known but probably falls within the period of operation for E-F Firing Site (1946 to 1981). All debris was removed from both surface disposal areas during the 2010–2011 Phase I Consent Order investigation. Excavated environmental media and manmade debris from SWMU 15-008(a) was characterized as low-level waste (LLW) and disposed of at TA-54.

For investigation activities for the Sites, refer to "Phase II Investigation Work Plan for Potrillo and Fence Canyons Aggregate Area" (N3B 2021, 701660).

190.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 190.2-1.

Table 190.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
15-004(f)	EF firing site	Barium, beryllium, copper, lead, mercury, HE, uranium, DU
15-008(a)	Two surface disposal areas	Barium, beryllium, copper, lead, mercury, HE, uranium, DU

190.3 Consent Order Soil Data

Decision-level data for SWMU 15-004(f) consist of results from 159 samples collected at 83 locations in 1994 and 2011. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700523) shows that inorganic chemicals and radionuclides are present above background in surface and near-surface soil and tuff at grid sampling locations throughout SWMU 15-004(f) and within the earthen mounds associated with Firing Point E.

Decision-level data for SWMU 15-008(a) consist of results from samples collected in 1994 and 2011. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700523) concluded that the nature and extent of contamination have been defined; however, additional remediation is recommended to remove environmental media where total uranium concentrations exceed the construction worker SSL and uranium-238 activities exceed the construction worker SAL.

Analytical results for all decision-level soil samples for this SMA are presented in Figures 190.3-1 through 190.3-4.

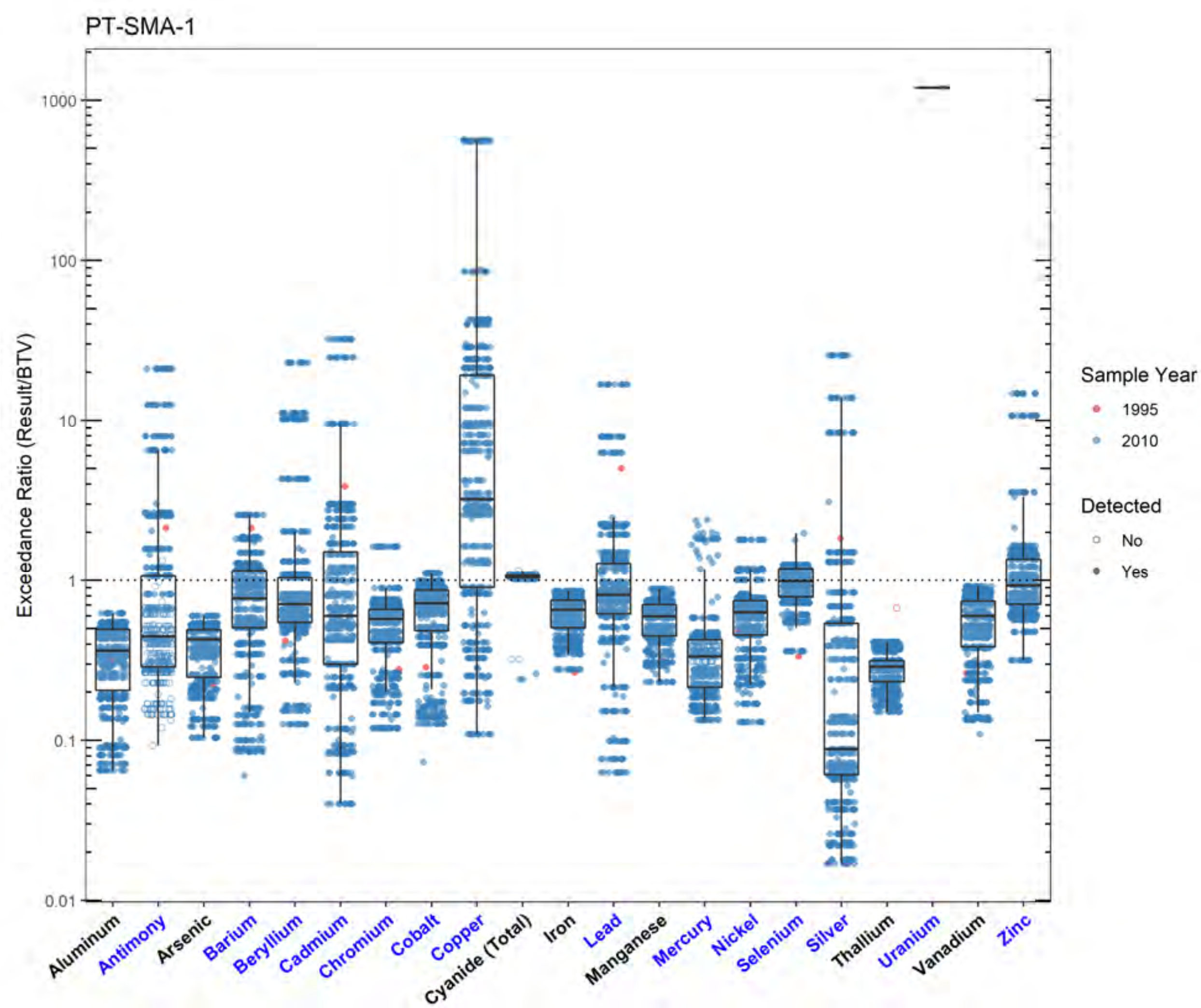


Figure 190.3-1 Inorganics Analytical Results from Soil Samples Associated with PT-SMA-1

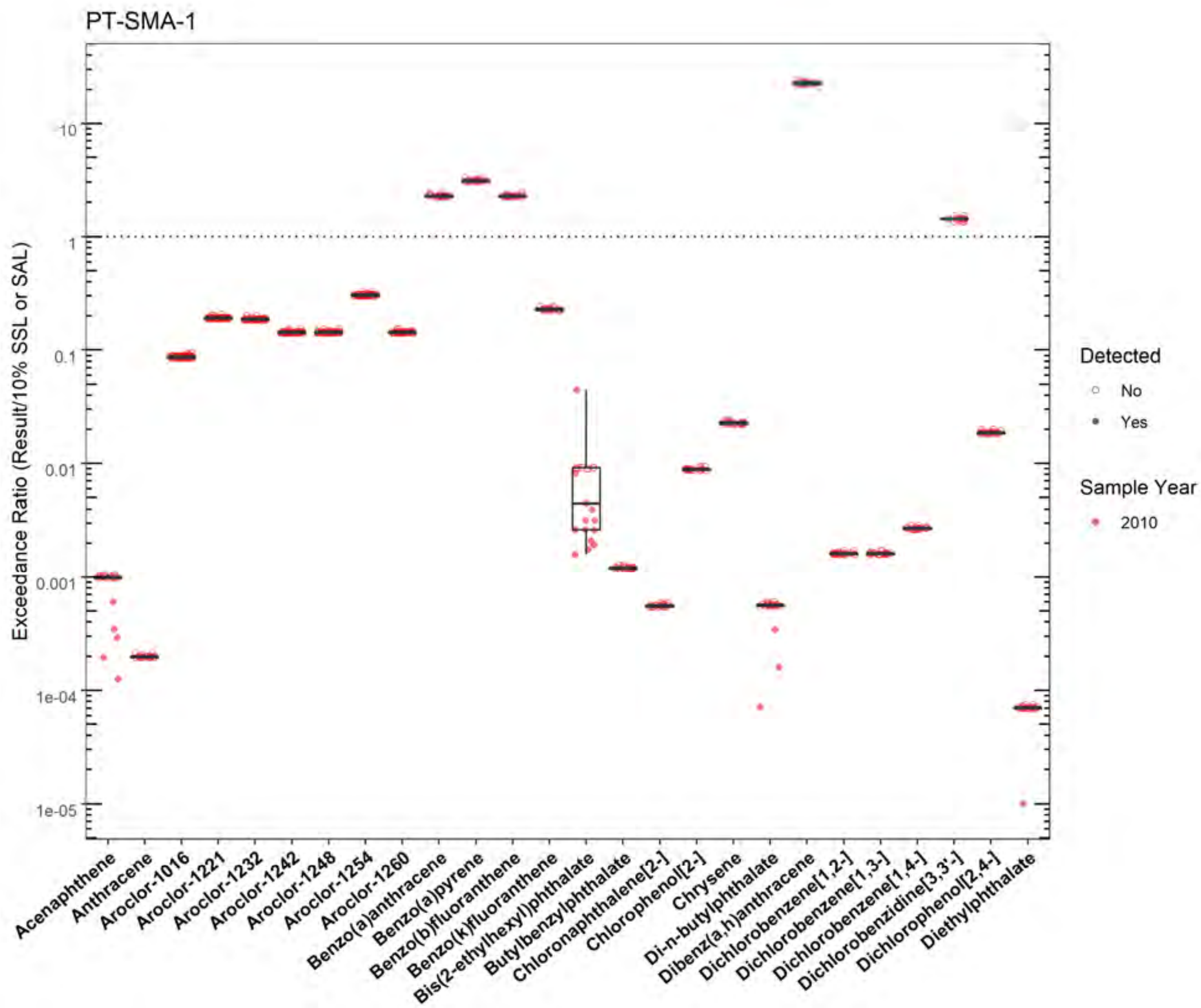


Figure 190.3-2 Organics Analytical Results from Soil Samples Associated with PT-SMA-1 (Plot 1)

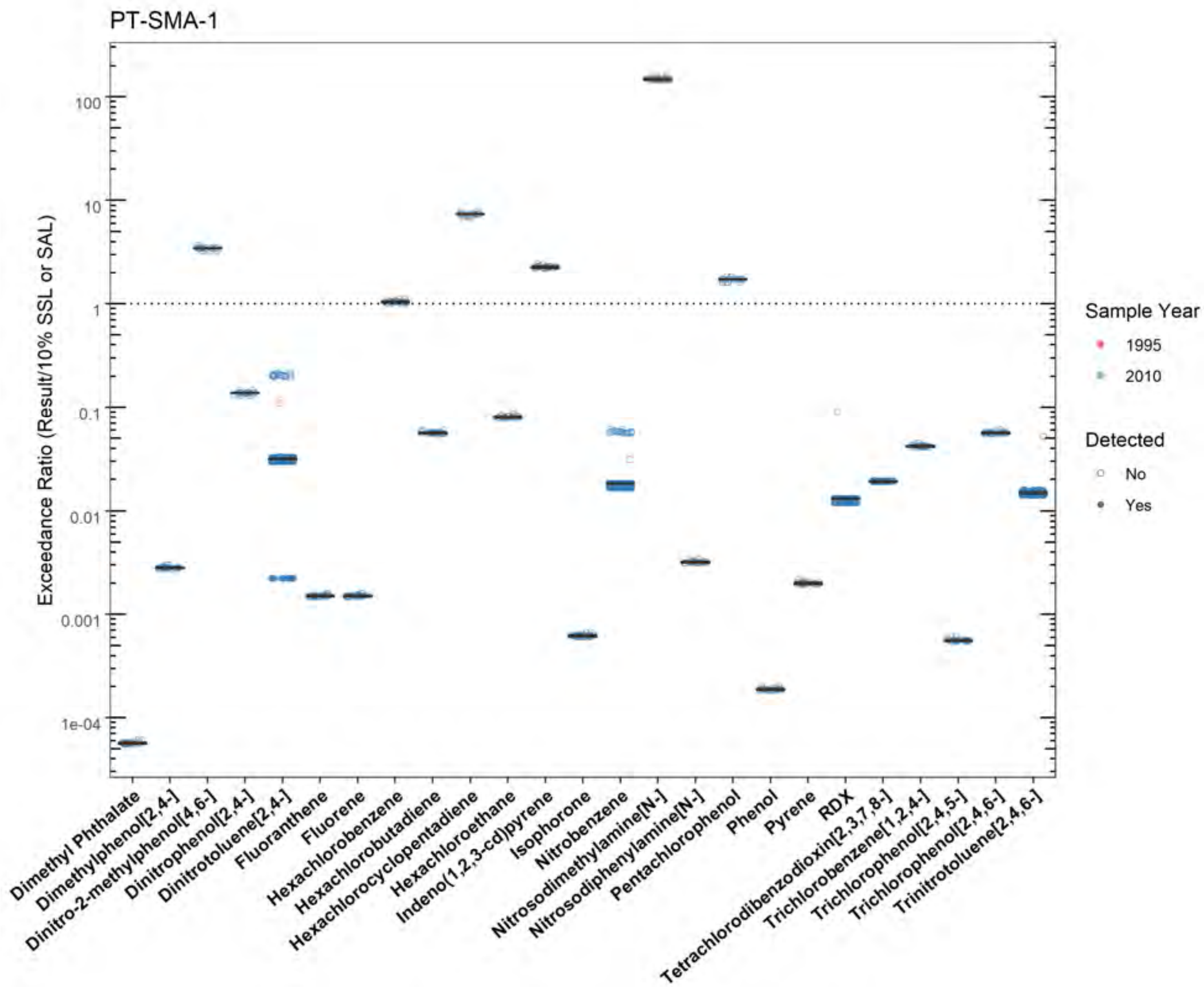


Figure 190.3-3 Organics Analytical Results from Soil Samples Associated with PT-SMA-1 (Plot 2)

PT-SMA-1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	PT-SMA-1	Sb	Y	BTV	0.830	17.5	2010-11-10
Barium	PT-SMA-1	Ba	Y	BTV	295	755	2010-11-10
Beryllium	PT-SMA-1	Be	Y	BTV	1.83	42.1	2010-11-19
Cadmium	PT-SMA-1	Cd	Y	BTV	0.400	12.9	2010-11-19
Chromium	PT-SMA-1	Cr	Y	BTV	19.3	31.2	2010-11-10
Cobalt	PT-SMA-1	Co	Y	BTV	8.64	9.60	2010-11-08
Copper	PT-SMA-1	Cu	Y	BTV	14.7	8250	2010-11-10
Lead	PT-SMA-1	Pb	Y	BTV	22.3	375	2010-11-19
Mercury	PT-SMA-1	Hg	Y	BTV	0.100	0.240	2010-12-09
Nickel	PT-SMA-1	Ni	Y	BTV	15.4	27.5	2010-11-10
Selenium	PT-SMA-1	Se	Y	BTV	1.52	3.00	2010-12-09
Silver	PT-SMA-1	Ag	Y	BTV	1.00	25.5	2010-11-19
Uranium	PT-SMA-1	U	Y	BTV	1.82	2180	1995-08-21
Zinc	PT-SMA-1	Zn	Y	BTV	48.8	716	2010-11-19

Figure 190.3-4 Screening-Level Exceedances from Soil Samples Associated with PT-SMA-1

190.4 Stormwater Evaluation

190.4.1 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 2017. Analytical results from that sample are presented in Figures 190.4-1 through 190.4-4.

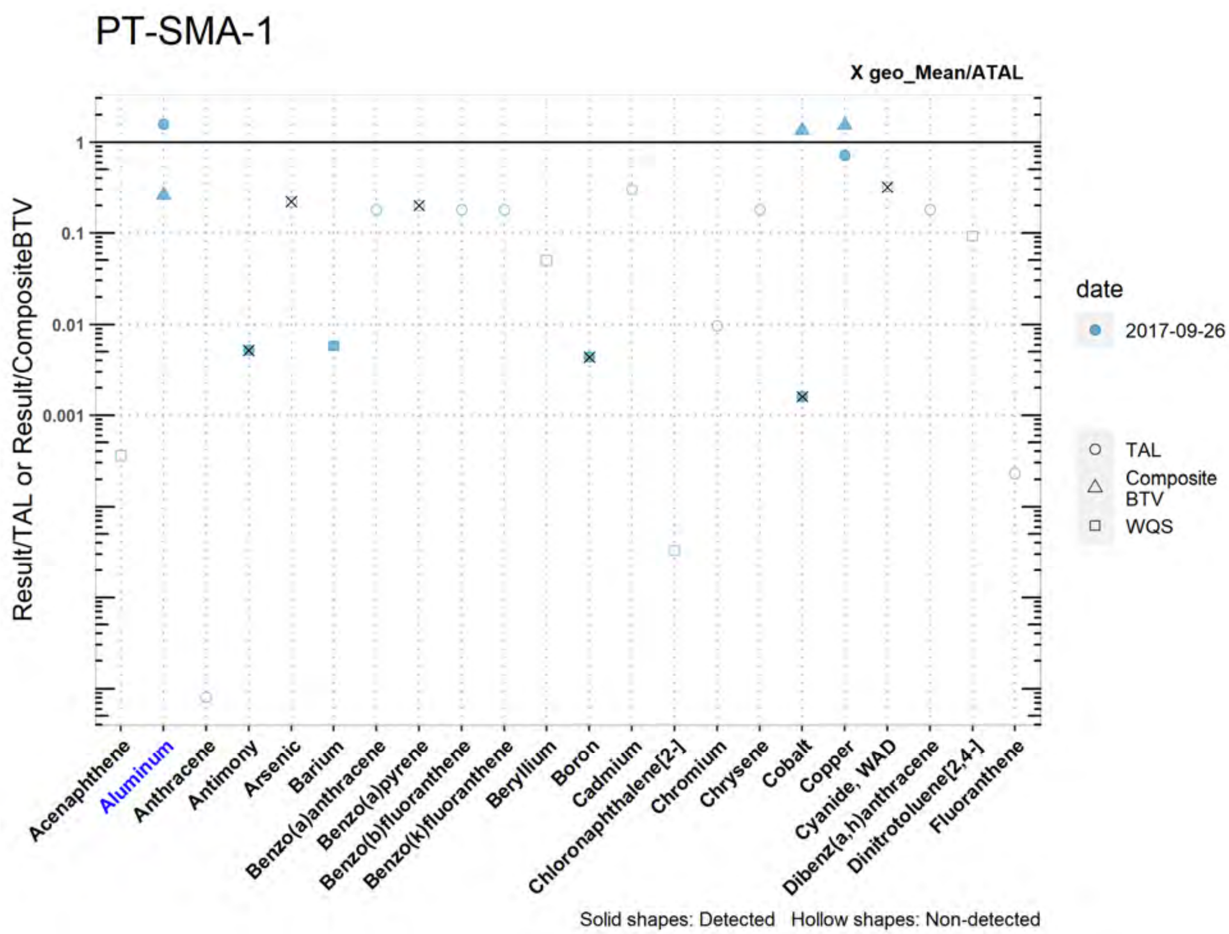


Figure 190.4-1 Analytical Results from Stormwater Sample, PT-SMA-1 (Plot 1)

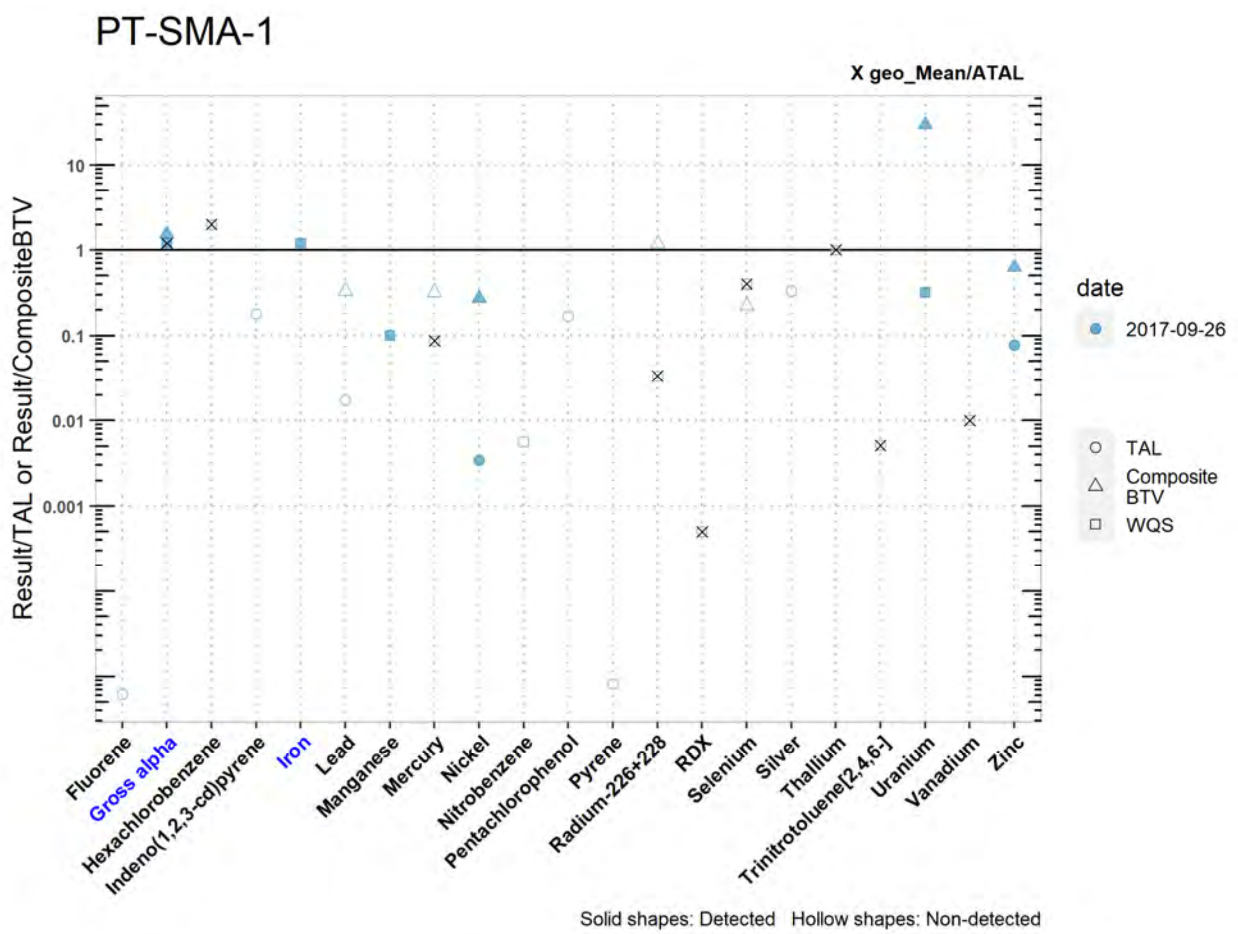


Figure 190.4-2 Analytical Results from Stormwater Sample, PT-SMA-1 (Plot 2)

PT-SMA-1

	Acenaphthene	Aluminum	Anthracene	Antimony	Arsenic	Barium	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Beryllium
MQL	NA	2.5	0.064	1	0.5	NA	0.064	0.064	0.064	0.064	NA
ATAL	NA	NA	NA	640	9	NA	NA	0.18	NA	NA	NA
MTAL	NA	1241	NA	NA	340	NA	0.18	NA	0.18	0.18	NA
Composite_BTV	NA	37400	NA	NA	NA	NA	NA	NA	NA	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
2017-09-26 result	*0.0326*	1960	*0.0326*	3.31	*2.00*	11.6	*0.0326*	*0.0326*	*0.0326*	*0.0326*	*0.200*
2017-09-26 dT	NA	1.58	NA	0.0052	NA	0.0058	NA	NA	NA	NA	NA
2017-09-26 dB	NA	0.262	NA	NA	NA	NA	NA	NA	NA	NA	NA
geo_mean/ATAL	NA	NA	NA	0.0052	0.22	NA	NA	0.2	NA	NA	NA

	Boron	Cadmium	Chloronaphthalene [2-]	Chromium	Chrysene	Cobalt	Copper	Cyanide, WAD	Dibenz(a,h)anthracene	Dinitrotoluene [2,4-]	Fluoranthene
MQL	100	1	NA	10	0.064	50	0.5	10	0.064	NA	0.064
ATAL	5000	NA	NA	NA	NA	1000	NA	5.2	NA	NA	NA
MTAL	NA	0.879	NA	311	0.18	NA	6.69	22	0.18	NA	140
Composite_BTV	NA	NA	NA	NA	NA	1.18	3.12	NA	NA	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
2017-09-26 result	22.1	*0.300*	*0.0326*	*3.00*	*0.0326*	1.59	4.80	*1.67*	*0.0326*	*0.101*	*0.0326*
2017-09-26 dT	0.0044	NA	NA	NA	NA	0.0016	0.717	NA	NA	NA	NA
2017-09-26 dB	NA	NA	NA	NA	NA	1.35	1.54	NA	NA	NA	NA
geo_mean/ATAL	0.0044	NA	NA	NA	NA	0.0016	NA	0.321	NA	NA	NA

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

Figure 190.4-3 Analytical Results from Stormwater Sample, PT-SMA-1 (Table 1)

PT-SMA-1

	Fluorene	Gross alpha	Hexachlorobenzene	Indeno(1,2,3-cd)pyrene	Iron	Lead	Manganese	Mercury	Nickel	Nitrobenzene	Pentachlorophenol
MQL	0.064	NA	5	0.064	NA	0.5	NA	0.005	0.5	NA	5
ATAL	NA	15	0.0029	NA	NA	NA	NA	0.77	NA	NA	NA
MTAL	5300	NA	NA	0.18	NA	28.6	NA	NA	250	NA	19
Composite_BTV	NA	57.2	NA	NA	NA	1.50	NA	0.208	3.10	NA	NA
unit	ug/L	pCi/L*	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2017-09-26 result	*0.0326*	17.6	*0.00694*	*0.0326*	1220	*0.500*	134	*0.0670*	0.850	*0.101*	*3.23*
2017-09-26 dT	NA	1.2	NA	NA	1.2	NA	0.10	NA	0.00340	NA	NA
2017-09-26 dB	NA	1.54	NA	NA	NA	NA	NA	NA	0.274	NA	NA
geo_mean/ATAL	NA	1.2	2	NA	NA	NA	NA	0.087	NA	NA	NA

	Pyrene	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Uranium	Vanadium	Zinc
MQL	0.064	NA	NA	5	0.5	0.5	NA	NA	50	20
ATAL	NA	30	200	5	NA	0.47	20	NA	100	NA
MTAL	4000	NA	NA	20	0.9	NA	NA	NA	NA	81.6
Composite_BTV	NA	4.21	NA	8.98	NA	NA	NA	0.315	NA	10.0
unit	ug/L	pCi/L*	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2017-09-26 result	*0.0326*	*1.00*	*0.101*	*2.00*	*0.300*	*0.600*	*0.101*	9.48	*1.00*	6.26
2017-09-26 dT	NA	NA	NA	NA	NA	NA	NA	0.32	NA	0.0767
2017-09-26 dB	NA	NA	NA	NA	NA	NA	NA	30.1	NA	0.626
geo_mean/ATAL	NA	0.0333	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 190.4-4 Analytical Results from Stormwater Sample, PT-SMA-1 (Table 2)

190.4.2 Assessment Unit and Stream Impairments

PT-SMA-1 drains to Potrillo Canyon (above Water Canyon) which has an impairment for adjusted gross alpha. The impairment may be Site-related, based on Site history.

190.5 Site-Specific Demonstration

190.5.1 Soil Data Summary

The metals that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

190.5.2 Stormwater Data Summary

Total aluminum exceeded the TAL but not the BTV. Gross alpha exceeded both the TAL and BTV. Iron exceeded the WQS; however, there is no TAL in the Permit for iron. Only POCs with TALs are used in the SSD.

190.5.3 2022 Permit Status

The SMA is eligible for long-term stewardship. Aluminum exceeded the TAL but not the BTV. Gross alpha exceeded the TAL and BTV, and, pursuant to Part I.C.3.c of the permit, this SMA has been screened into long-term stewardship.

191.0 PT-SMA-1.7

Associated Sites	15-003
Receiving Water	Potrillo Canyon
Drainage Area	1.9 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	15-003: In Progress Deferred per Consent Order
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the March 2018 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3 criterion

191.1 2010 Administratively Continued Permit Summary

SWMU 15-003 is not listed on the Administratively Continued Permit. During preparation for Consent Order investigations at TA-15, additional historical information was reviewed that indicated SWMU 15-003 was a candidate for inclusion in the Permit. The Permittees added the Site to the SMA in February 2019 as an "additional" IP Site. This administrative change has been included in the Annual Report and the SDPPP since that time.

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

Following the July 2014 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2014, 257905), 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 at least one confirmation sample is collected from this SMA.

191.2 Site History

15-003 (4/14/2022)

SWMU 15-003 consists of a steel firing pad located within the PHERMEX firing site [SWMU 15-006(a)]. The 1990 SWMU Report describes SWMU 15-003 as an active open detonation pad at the PHERMEX facility associated with the chamber building (structure 15-184) at TA-15. SWMU 15-003 consists of a 6-in.-thick steel pad approximately 12 ft wide × 24 ft long. Although the SWMU 15-003 steel firing pad was originally intended for the treatment of hazardous explosive waste by OD and had been granted a RCRA interim status designation under hazardous waste regulations, the steel pad was never actually used to treat hazardous explosives waste. Additionally, the Laboratory operating division responsible for this site determined that this unit was not needed for future HE waste-treatment activities. Therefore, in 1998, the Laboratory requested that this unit be withdrawn from the LANL Part B application as an OD Site, and the NMED concurred. The steel pad was used for nontreatment-related experimental test shots [SWMU 15-006(a)]. The exact dates of use of the steel pad are not known; however, operations at the PHERMEX facility began in approximately 1961.

The PHERMEX Firing Site and associated facilities were built in the early 1960s. The PHERMEX chamber building (structure 15-184) housed a radiographic machine used for radiographic studies of explosives and explosive-driven metal systems. The PHERMEX chamber is equipped with a bullnose, an exposed exterior piece of the radiographic machine on the east side of chamber 15-184, as shown in a 1991 photograph (pg. 19 of 137) in the 2004 The Hollow and GMX Manor at TA-15 (R-Site): Historic Context and Property Documentation report. As-constructed drawings ENG-C 30691 (pg. 77 of 186) and ENG-C 30518 (pg. 4 of 186) show the PHERMEX Firing Point is located directly east of the bullnose at the east end of the PHERMEX chamber building (structure 15-184), on its midline. The PHERMEX facility is currently inactive.

For investigation activities, refer to “Investigation Report for Potrillo and Fence Canyons Aggregate Area, Revision 1” (LANL 2011, 208336).

191.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 191.2-1.

Table 191.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
15-003	Phermex firing site	Beryllium, lead, mercury, HE, thorium, DU

191.3 Consent Order Soil Data

Decision level data for SWMU 15-003 consist of results from samples collected in 2010 from sediment catchment areas in the drainage downgradient of the Site in conjunction with the investigation of SWMU 15-006(a). Analytical results for these samples are presented in Figures 191.3-1 through 191.3-4. Revision 1 of the 2011 IR (LANL 2011, 208336) for the Potrillo and Fence Canyons Aggregate Area stated that because the investigation of SWMU 15-003 is deferred per the Consent Order, the extent of contamination was not evaluated and human health and ecological risk assessments were not performed.

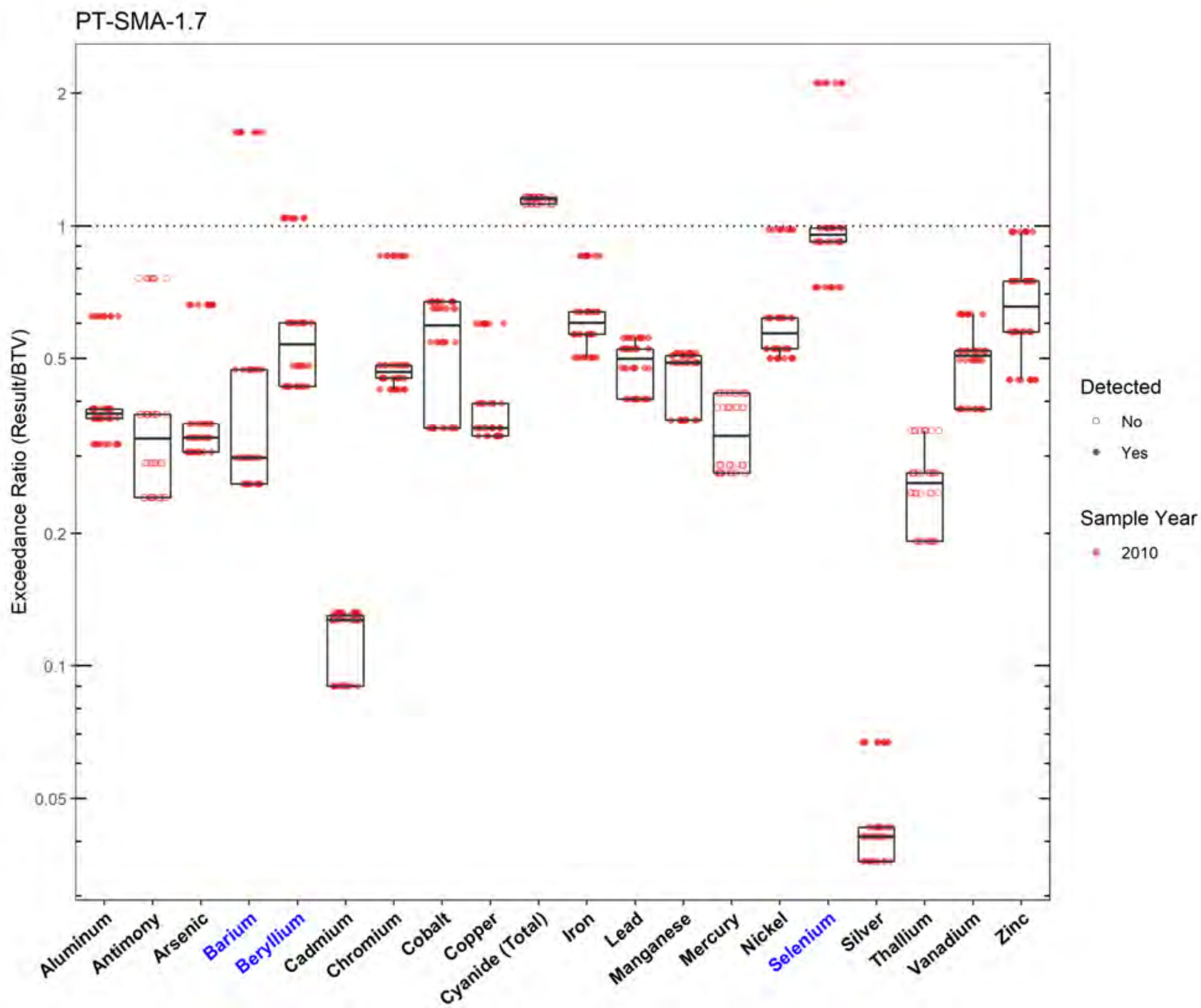


Figure 191.3-1 Inorganics Analytical Results from Soil Samples Associated with PT-SMA-1.7

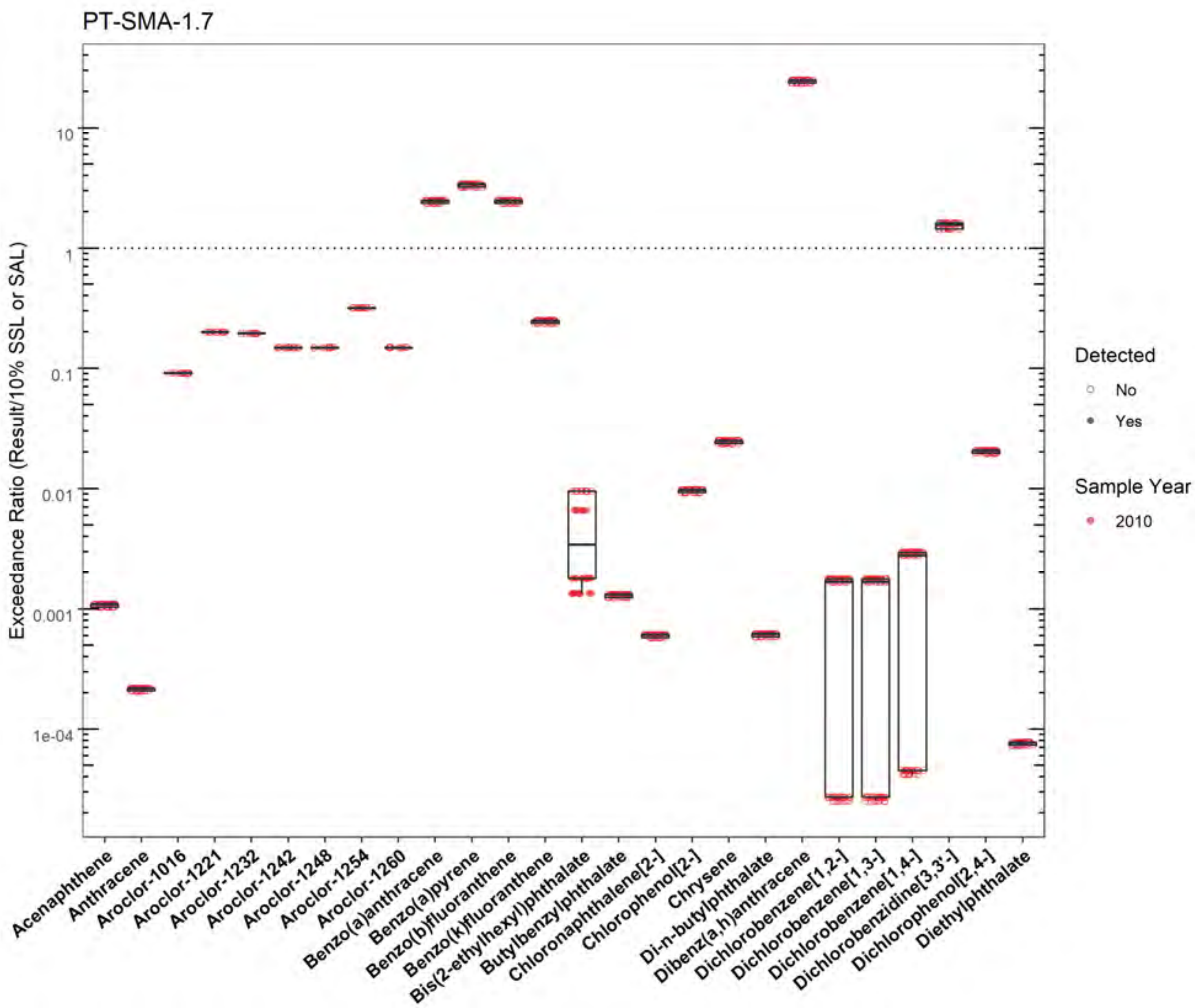


Figure 191.3-2 Organics Analytical Results from Soil Samples Associated with PT-SMA-1.7 (Plot 1)

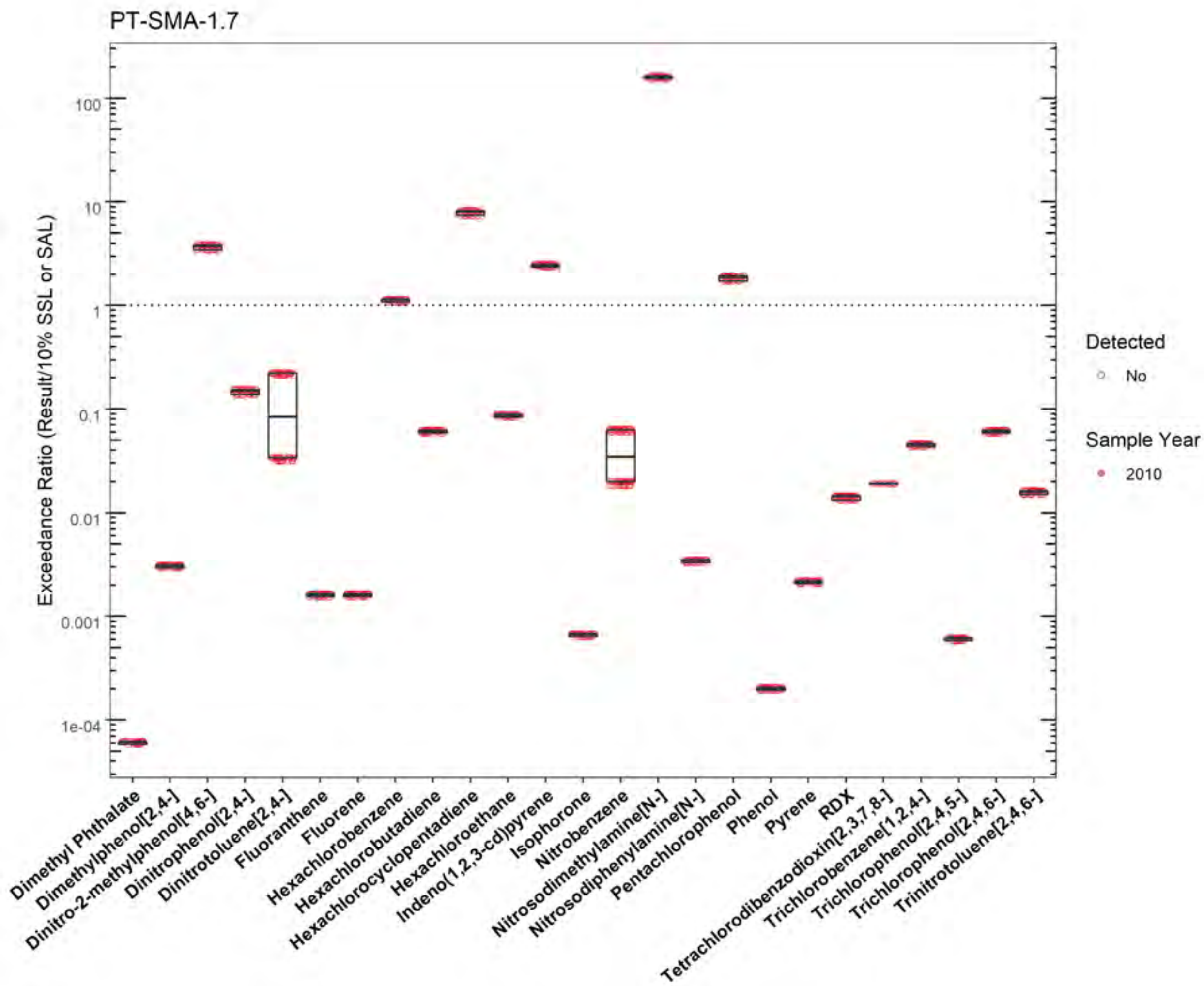


Figure 191.3-3 Organics Analytical Results from Soil Samples Associated with PT-SMA-1.7 (Plot 2)

PT-SMA-1.7

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Barium	PT-SMA-1.7	Ba	Y	BTV	295	480	2010-12-06
Beryllium	PT-SMA-1.7	Be	Y	BTV	1.83	1.90	2010-12-06
Selenium	PT-SMA-1.7	Se	Y	BTV	1.52	3.20	2010-12-06

Figure 191.3-4 Screening-Level Exceedances from Soil Samples Associated with PT-SMA-1.7

191.4 Stormwater Evaluation

191.4.1 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.

191.4.2 Assessment Unit and Stream Impairments

PT-SMA-1.7 drains to Potrillo Canyon (above Water Canyon) which has an impairment for adjusted gross alpha. The impairment may be Site-related, based on Site history.

191.5 Site-Specific Demonstration

191.5.1 Soil Data Summary

Beryllium is the only Site-related POC to exceed the applicable screening values in soil data, and has not yet been measured in stormwater at the current location. Barium and selenium exceeded the applicable screening value in soil data but are not Site-related POCs, and will not be added to the SAP.

191.5.2 Stormwater Data Summary

No samples have been collected in the current monitoring stage or location at the SMA.

191.5.3 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.

192.0 PT-SMA-2

Associated Sites	15-008(f), 36-003(b), 36-004(e)
Receiving Water	Potrillo Canyon
Drainage Area	2.95 acres
Landscape Characteristics	17% impervious, 83% pervious
Consent Order Site Status	AOC 15-008(f): In Progress Deferred per Consent Order SWMU 36-003(b): In Progress AOC 36-004(e): In Progress Deferred per Consent Order
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

192.1 2010 Administratively Continued Permit Summary

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

Following the September 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600931), corrective-action monitoring was initiated and stormwater samples were collected in July and October 2019. Analytical results from these samples initiated corrective action.

Following the July 2021 submittal to EPA of certification of enhanced control installation as a corrective action (N3B 2021, 701533), corrective-action monitoring was initiated and a stormwater sample was collected in August 2021. Confirmation monitoring is ongoing to collect a second sample.

192.2 Site History

15-008(f) (4/18/2022)

AOC 15-008(f) consist of two small inactive surface disposal areas located on the northern edge of Potrillo Canyon; one south and one east of inactive E-F Firing Site [SWMU 15-004(f)] at TA-15. The disposal areas are located within approximately 350 ft of each other, with each disposal area measuring approximately 8 ft in diameter × 2 ft high. Both areas were used to dispose of debris from tests conducted at E-F Firing Site, including soil, rock, pebbles, metal fragments, plastic, electrical cable, and electrical accessories. The exact period of operation of the surface disposal areas is not known but likely falls within the period of operation for E-F Firing Site (1946 to 1981). All debris was removed from both surface disposal areas during the 2010–2011 investigation.

36-003(b) (2/21/2020)

SWMU 36-003(b) is a decommissioned sanitary septic system located at the west end of TA-36. The septic system served building 36-55, the control bunker for the I-J Firing Site, and consist of a septic tank (structure 36-61), inlet and outlet drainlines, and an outfall near the edge of Potrillo Canyon. The septic tank sits near the edge of Mesita del Potrillo, approximately 100 ft southeast of building 36-55. The control bunker housed the electronics and instrumentation used in the operation of the I-J Firing Site [AOC 36-004(e)], and housed a toilet, sink, and water fountain, all of which were connected to the septic tank via a 4-in.-diameter clay-tile inlet drainline. The septic tank is constructed of reinforced concrete and measures 7 ft long × 3.5 ft wide × 5.73 ft deep with a capacity of 420 gal. The tank has a buried overflow drainline that previously discharged to an outfall near the north rim of Potrillo Canyon. The overflow outlet from the septic tank was capped in 1989. After the overflow outlet was capped, the septic tank continued to be used as a holding tank and its contents were periodically removed and taken to a sanitary wastewater treatment plant for treatment and disposal. The SWMU 36-003(b) septic system was taken out of service in the early 1990s.

36-004(e) (4/14/20222)

AOC 36-004(e) is inactive I-J Firing Site located at the west end of TA-36 on Mesita del Potrillo along the north rim of Potrillo Canyon. I-J Firing Site consist of two firing points (I and J), two control buildings (one designated as structure 36-55), a dirt bunker, a covered work area, and an old chamber for enclosed firing. Construction of I-J Firing Site began in 1948 and the firing sites were ready for use by 1950. Firing Point J is located near control building 36-55 and Firing Point I, which is a firing pad with a radius of 15 ft, is located approximately 75 ft northeast of the former control building. The hazard radius for the I and J Firing Sites is 5,000 ft. I-J Firing Site was constructed in 1948 and was located within TA-15 until 1981 when the boundary of TA-36 was expanded to encompass the portion of TA-15 where the I-J Firing Site is located. Shots at I-J Firing Site used up to 500 lb of HE where tests involved a variety of solid and liquid explosives and inorganic chemicals. According to former employees, significant amounts of DU were used at I-J Firing Site in addition to small quantities of mercury and cadmium. Some shots were fired into iron, copper, or lead targets. Other metals used in shots included aluminum, antimony, various steels, lithium-magnesium alloys, and lithium hydride. In addition, hydrocarbons, argon, benzene, small amounts of mercury, cadmium, and beryllium were used in shots.

All shots involving radioactive materials at the I-J Firing Site were conducted in fully enclosed containment vessels. These vessels were removed from the I-J Firing Site for use at TA-15, although one was later returned to the I-J Firing Site. The returned vessel was identified in the 1990 SWMU Report as AOC C-36-001 and was subsequently removed from the site in 1994 and disposed of at MDA G at TA-54. Other firing-site activities conducted at I-J Firing Site included tests in which DU projectiles were fired into an embankment. This projectile test area is designated as AOC C-36-006(e).

For investigation activities for 15-008(f) and 36-004(e) refer to “Investigation Report for Potrillo and Fence Canyons Aggregate Area, Revision 1” (LANL 2011, 208336). For investigation activities for 36-003(b), refer to “Phase II Investigation Work Plan for Potrillo and Fence Canyons Aggregate Area” (N3B 2021, 701660).

192.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 192.2-1.

Table 192.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
15-008(f)	IJ Firing Site	Aluminum, beryllium, cadmium, copper, iron, lead, mercury, PAHs, HE, DU, antimony
36-003(b)	Septic tank	Lead, inorganic and organic chemicals, HE, DU
36-004(e)	Active firing site- IJ	Inorganic chemicals, HE, DU

192.3 Consent Order Soil Data

Decision-level data for AOC 15-008(f) consist of results from samples collected in sediment catchment areas in the drainages downgradient of the site in conjunction with the investigation of AOCs 36-004(e) and C-36-006(e) in 2010. Revision 1 of the 2011 IR (LANL 2011, 208336) concluded that because the investigation of AOC 15-008(f) is deferred per the Consent Order, therefore, the extent of contamination was not evaluated and human health and ecological risk assessments were not performed.

Decision-level data for SWMU 36-003(b) consist of results from samples collected at and downgradient of the outfall in 2011. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700523) concluded that the vertical extent of contamination has not been defined below the septic system structures.

Decision-level data for AOC 36-004(e) consist of results from samples collected in 2010 from sediment catchment areas in the drainages downgradient of the sites in conjunction with the investigation of AOCs 15-008(f) and C-36-006(e). Revision 1 of the 2011 IR (LANL 2011, 208336) concluded that because the investigation of AOC 36-004(e) is deferred per the Consent Order, the extent of contamination was not evaluated and human health and ecological risk assessments were not performed.

Analytical results for all decision-level soil samples for this SMA are presented in Figures 192.3-1 through 192.3-4.

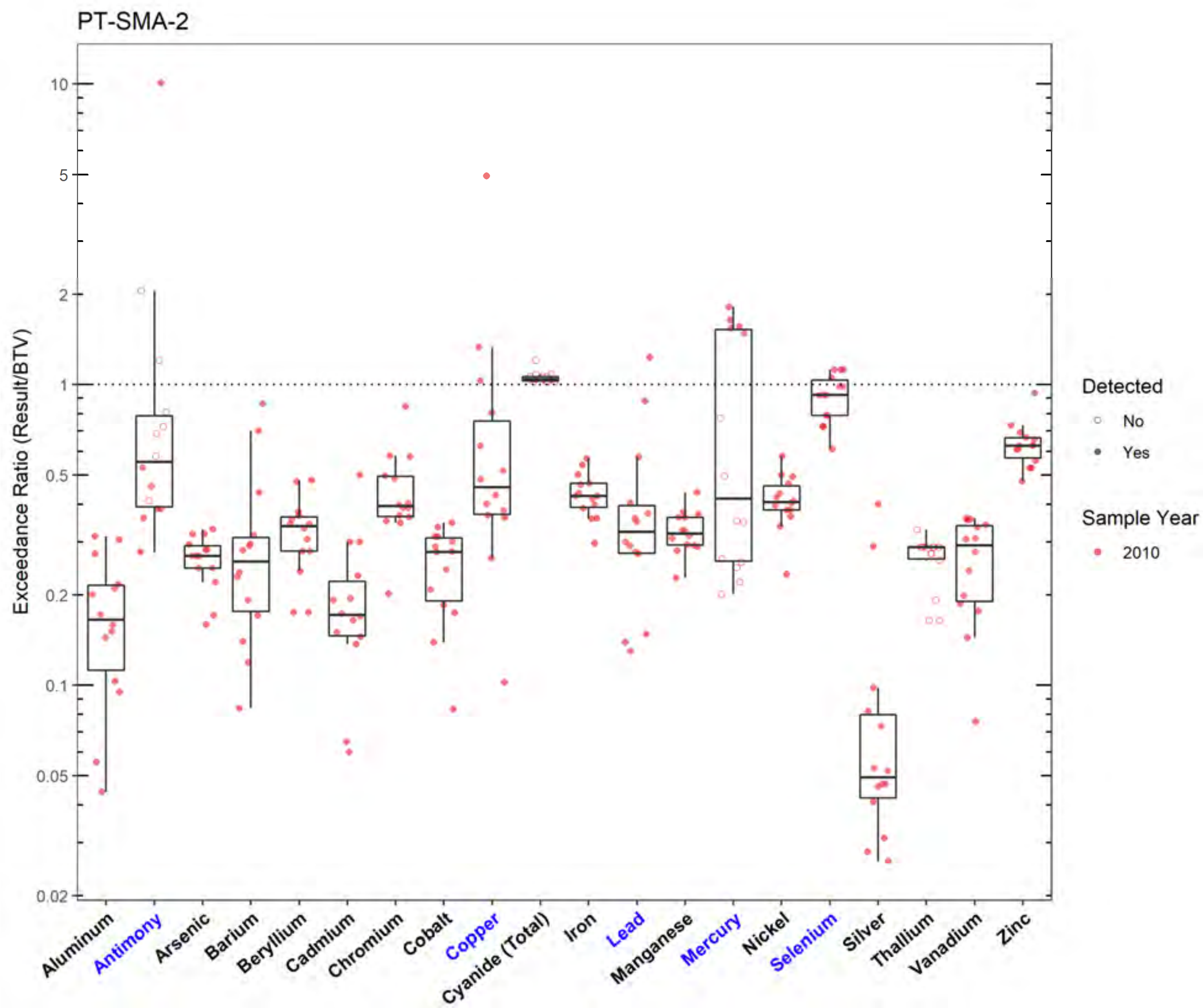


Figure 192.3-1 Inorganics Analytical Results from Soil Samples Associated with PT-SMA-2

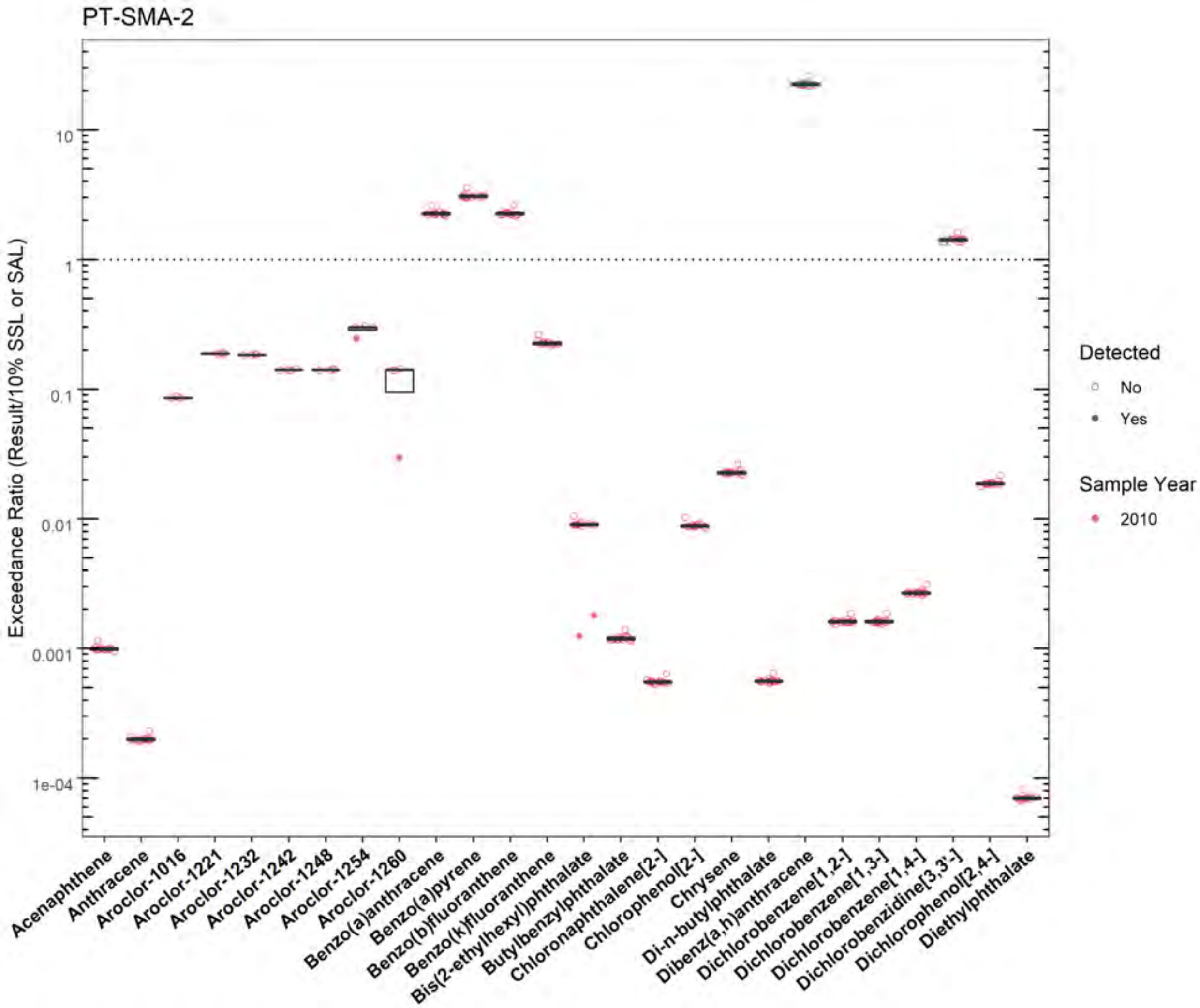


Figure 192.3-2 Organics Analytical Results from Soil Samples Associated with PT-SMA-2 (Plot 1)

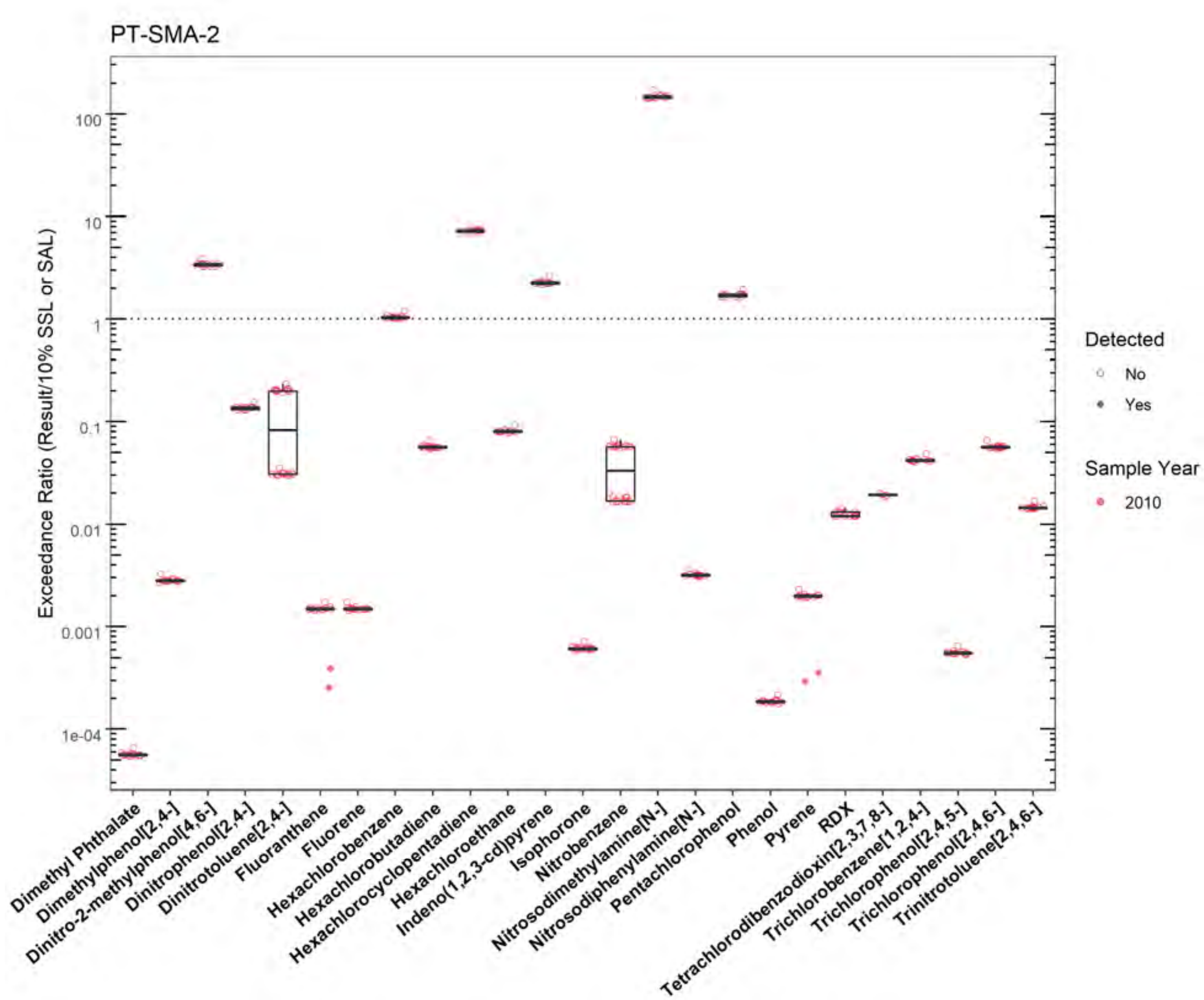


Figure 192.3-3 Organics Analytical Results from Soil Samples Associated with PT-SMA-2 (Plot 2)

PT-SMA-2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	PT-SMA-2	Sb	Y	BTV	0.830	8.40	2010-11-30
Copper	PT-SMA-2	Cu	Y	BTV	14.7	72.6	2010-11-30
Lead	PT-SMA-2	Pb	Y	BTV	22.3	27.4	2010-11-30
Mercury	PT-SMA-2	Hg	Y	BTV	0.100	0.181	2010-12-01
Selenium	PT-SMA-2	Se	Y	BTV	1.52	1.70	2010-12-01; 2010-11-30

Figure 192.3-4 Screening-Level Exceedances from Soil Samples Associated with PT-SMA-2

192.4 Stormwater Evaluation

192.4.1 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 192.4-1 and 192.4-2.

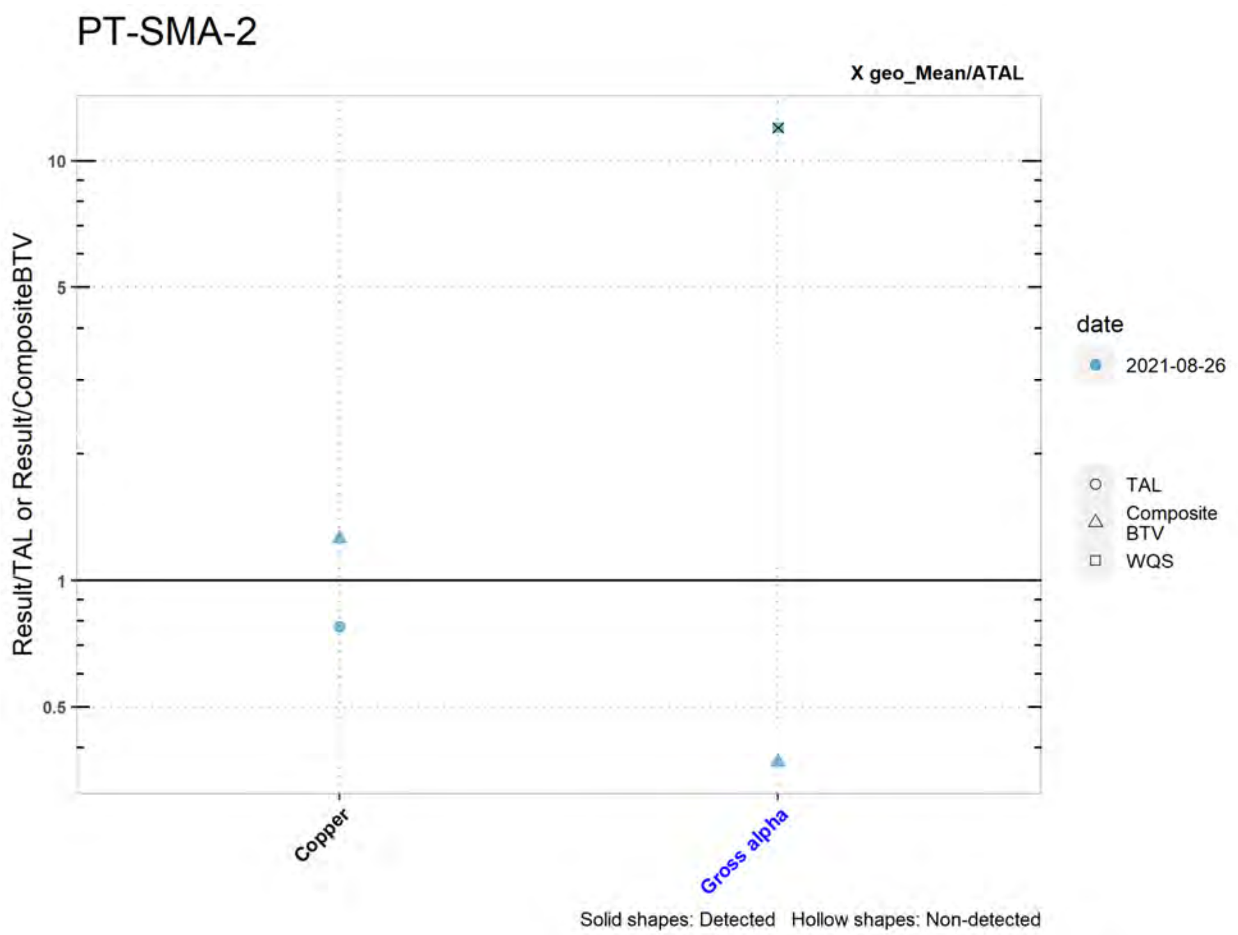


Figure 192.4-1 Analytical Results from Stormwater Sample, PT-SMA-2 (Plot)

PT-SMA-2

	Copper	Gross alpha
MQL	0.5	NA
ATAL	NA	15
MTAL	6.69	NA
Composite_BTV	4.11	55.9
unit	ug/L	pCi/L*
2021-08-26 result	5.19	175
2021-08-26 dT	0.776	12
2021-08-26 dB	1.26	0.368
geo_mean/ATAL	NA	12

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

Figure 192.4-2 Analytical Results from Stormwater Sample, PT-SMA-2 (Table)

192.4.2 Assessment Unit and Stream Impairments

PT-SMA-2 drains to Potrillo Canyon (above Water Canyon) which has an impairment for adjusted gross alpha. The impairment may be Site-related, based on Site history.

192.5 Site-Specific Demonstration

192.5.1 Soil Data Summary

The metals that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs, with the exception of copper.

192.5.2 Stormwater Data Summary

Copper and gross alpha were monitored in the first sample from this monitoring stage.

192.5.3 2022 Permit Status

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

192.5.4 Sampling and Analysis Plan

Table 192.5-1 is the proposed SAP for PT-SMA-2.

Table 192.5-1 Proposed SAP, PT-SMA-2

Monitoring Constituent	Background for Monitoring
Gross alpha (1)	Impairment, Site history, and stormwater data
Dissolved copper (1)	Stormwater data, soil data, and Site history
SVOCs (2)	Site history (organics)
DOC (1)	Permit requirement
SSC (1)	Permit requirement

193.0 PT-SMA-2.01

Associated Sites	C-36-001, C-36-006(e)
Receiving Water	Potrillo Canyon
Drainage Area	0.23 acres
Landscape Characteristics	3% impervious, 97% pervious
Consent Order Site Status	AOC C-36-001: In Progress Deferred per Consent Order AOC C-36-006(e): In Progress Deferred per Consent Order
2010 Administratively Continued Permit Final Status	Corrective Action Complete/Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Long-term Stewardship per Permit Part 1.C.3 criterion

193.1 2010 Administratively Continued Permit Summary

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

Following the August 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 225367), the sampler was relocated to a more representative location and corrective-action monitoring was initiated. Following the 2017 submittal to EPA of certification of a no exposure condition at AOC C-36-001 per Permit Part I.E.2(c) (LANL 2017, 602575), corrective-action monitoring for AOC C-36-001 was stopped and monitoring was initiated for the required investigation sample for the Site.

Since 2012, 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 for AOC C-36-006(e) and the no exposure investigation sample is collected for AOC C-36-001.

193.2 Site History

C-36-001 (4/14/2022)

AOC C-36-001 is a former containment vessel that provided secondary containment for explosives tests at TA-36. The containment vessel was manufactured in 1970 and located at the PHERMEX test facility at TA-15. The containment vessel was later relocated to the I-J Firing Site [SWMU 36-004(e)] and placed south of building 36-55 where it remained until 1983 when it was removed. The containment vessel consisted of a 19.5-ton steel sphere that was 12 ft in diameter. An explosive device was placed and detonated in a primary containment vessel, which, in turn, was placed inside the AOC C-36-001 containment vessel. The explosion gases were vented through a filtration system that captured particulates and did not allow release of the test material. The interior of the containment vessel was contaminated from the tests, but the exterior remained uncontaminated. Plutonium remained in the filtration system and was disposed of at MDA G at TA-54 as low-level radioactive waste.

C-36-006(e) (4/6/2022)

AOC C-36-006(e) is a former projectile test area located within the southern portion of the I-J Firing Site [AOC 36-004(e)] along the north rim of Potrillo Canyon at TA-36. AOC C-36-006(e) was formerly used for testing DU projectiles as part of I-J Firing Site activities. Projectiles were fired from a 120-mm gun into a nearby embankment. Although some projectiles were recovered after an experiment was completed, much of the projectile material remains on site. Originally, the I-J Firing Site was located within the boundary of TA-15. In 1981, the boundary of TA-36 was expanded to include portions of TA-15. As part of this expansion, the area where I-J Firing Site is located was transferred to TA-36. Although the 1990 SWMU Report addresses the I-J Firing Site as AOC 36-004(e), it identifies the nearby projectile test area (which was also part of the 1981 transfer to TA-36) as AOC 15-006(e). AOC 15-006(e) was renamed AOC C-36-006(e) in the OU 1086 work plan because the projectile test area was within the boundaries of TA-36 when the work plan was written.

For investigation activities at the Sites, refer to "Investigation Report for Potrillo and Fence Canyons Aggregate Area, Revision 1" (LANL 2011, 208336).

193.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 193.2-1.

Table 193.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
C-36-001	Containment Vessel	Metals, HE, plutonium
C-36-006(e)	Projectile test area	Copper, iron, lead, DU

193.3 Consent Order Soil Data

Decision-level data for AOC C-36-001 and AOC C-36-006(e) consist of results for samples collected in 2010 from sediment catchment areas in the drainages downgradient of the Sites. Analytical results for these samples are presented in Figures 193.3-1 through 193.3-4. The 2011 IR (LANL 2011, 208336) for Potrillo and Fence Canyons Aggregate Area concluded that because the investigation of C-36-001 and C-36-006(e) is deferred per the Consent Order, the extent of contamination was not evaluated and human health and ecological risk assessments were not performed.

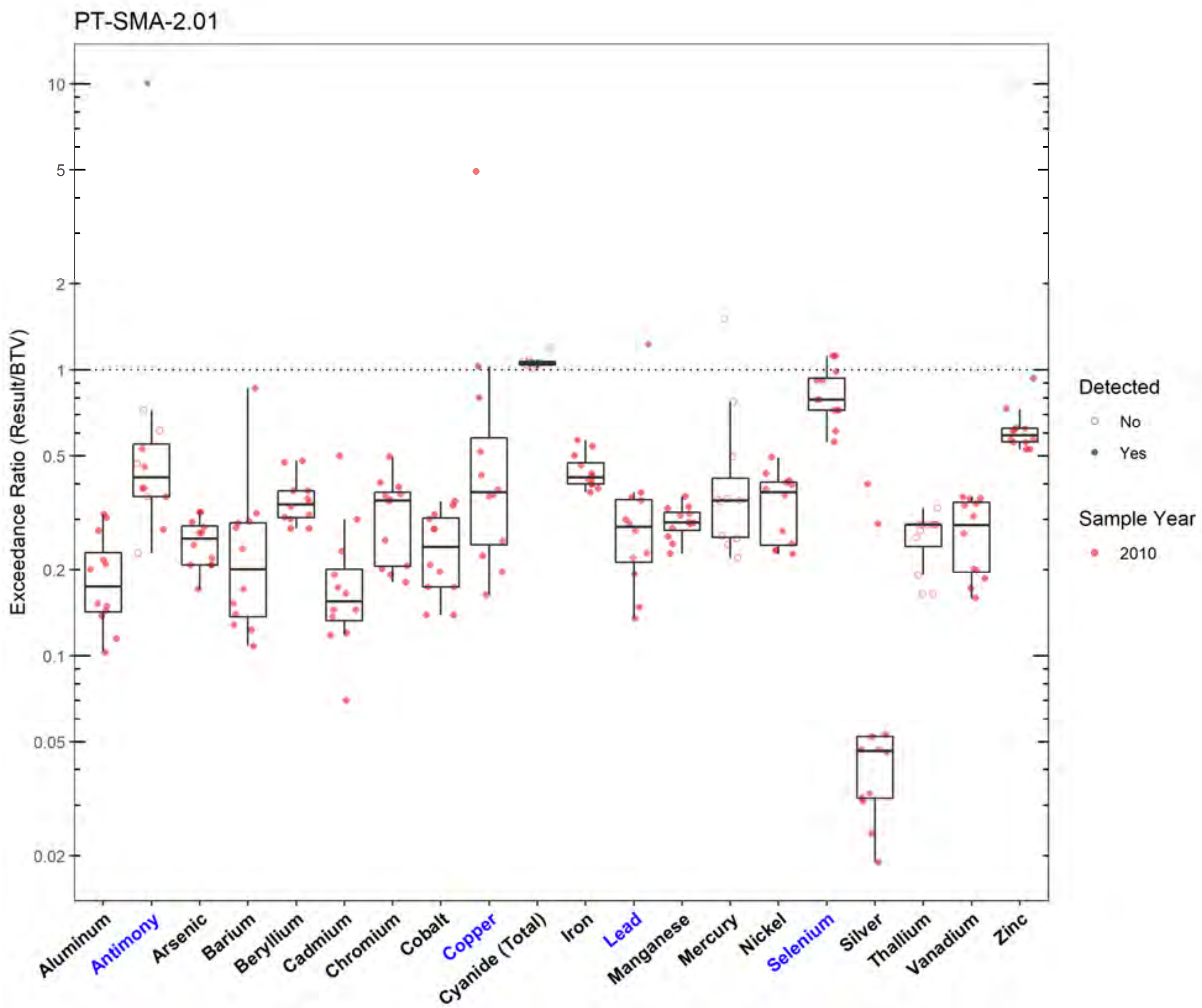


Figure 193.3-1 Inorganics Analytical Results from Soil Samples Associated with PT-SMA-2.01

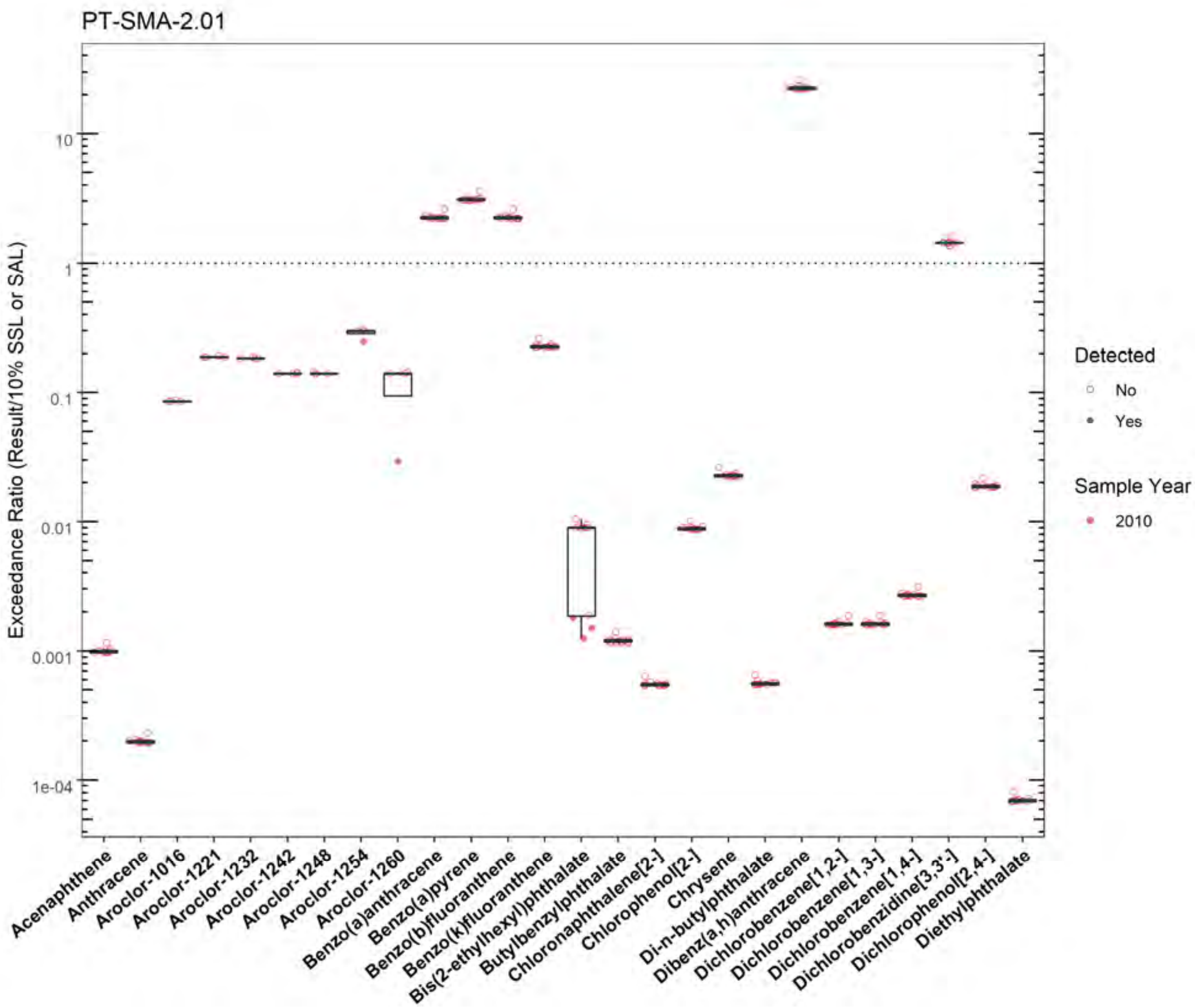


Figure 193.3-2 Organics Analytical Results from Soil Samples Associated with PT-SMA-2.01 (Plot 1)

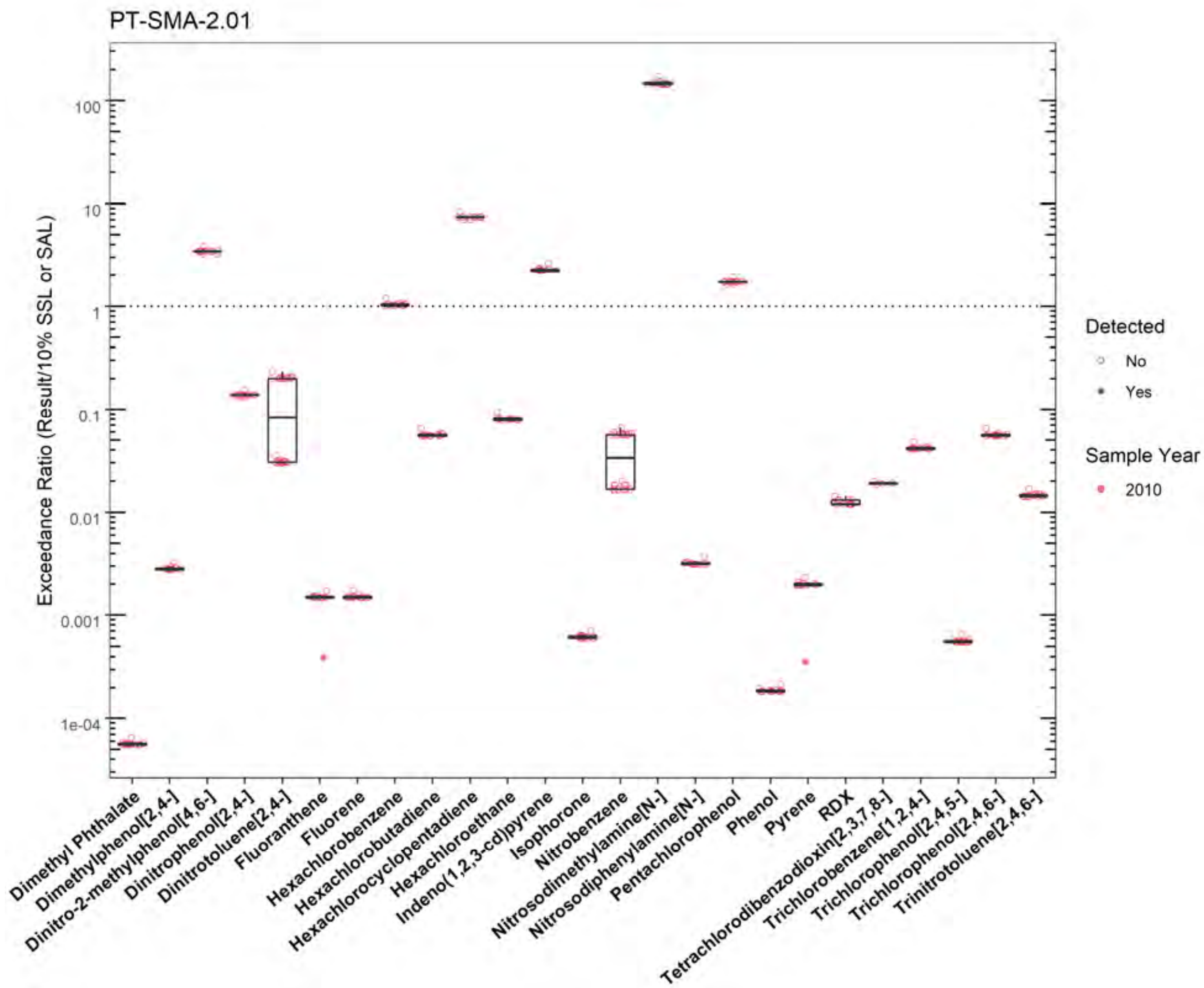


Figure 193.3-3 Organics Analytical Results from Soil Samples Associated with PT-SMA-2.01 (Plot 2)

PT-SMA-2.01

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	PT-SMA-2.01	Sb	Y	BTV	0.830	8.40	2010-11-30
Copper	PT-SMA-2.01	Cu	Y	BTV	14.7	72.6	2010-11-30
Lead	PT-SMA-2.01	Pb	Y	BTV	22.3	27.4	2010-11-30
Selenium	PT-SMA-2.01	Se	Y	BTV	1.52	1.70	2010-11-30

Figure 193.3-4 Screening-Level Exceedances from Soil Samples Associated with PT-SMA-2.01

193.4 Stormwater Evaluation

193.4.1 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.

193.4.2 Assessment Unit and Stream Impairments

PT-SMA-2.01 drains to Potrillo Canyon (above Water Canyon) which has an impairment for adjusted gross alpha. The impairment may be Site-related, based on Site history.

193.5 Site-Specific Demonstration

193.5.1 Soil Data Summary

Antimony, copper, lead, and selenium exceeded the applicable screening values.

193.5.2 Stormwater Data Summary

No confirmation-monitoring data in current stage.

193.5.3 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.

194.0 PT-SMA-3

Associated Sites	36-004(a), 36-006
Receiving Water	Potrillo Canyon
Drainage Area	446.95 acres
Landscape Characteristics	3% impervious, 97% pervious
Consent Order Site Status	AOC 36-004(a): In Progress Deferred per Consent Order SWMU 36-006: Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	The current SMA is over 700 acres in size. Based on the March 2018 field visit, the sampler was moved further north in the Potrillo Canyon drainage in order to capture the runoff from Sites 36-004(a) and 36-006.
2022 Permit Status	Active Monitoring

194.1 2010 Administratively Continued Permit Summary

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

Following the August 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600776), corrective-action monitoring was initiated. While developing the 2018 SAP, a decision was made to implement the monitoring location move recommended during the 2018 SIP review and monitoring was reinitiated. 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.

194.2 Site History

36-004(a) (4/18/2022)

AOC 36-004(a) is the active Eenie Firing Site at TA-36 on Mesita del Potrillo on the rim of Potrillo Canyon. AOC 36-004(a) consist of the firing pad, a control bunker (building 36-3), and a make-up building (36-4) that houses a SAA [SWMU 36-007(a)]. Construction of the Eenie Firing Site began in 1949 and was completed in 1951. The established hazard radius for Eenie Firing Site is 3,000 ft. Materials used in experimental shots at this firing site have included lead oxide, mercury, copper, nickel, brass, DU, and nitroglycerine. Other activities conducted at the Eenie Firing Site include shoulder-mounted projectiles fired into targets south of the firing site.

36-006 (2/21/2020)

SWMU 36-006 consist of an inactive surface disposal area located on the southern slope of Potrillo Canyon, approximately 600 ft north of the Eenie Firing Site [AOC 36-004(a)] at TA-36. Cables, metal, concrete, and other similar debris from the TA-36 firing sites was disposed of at SWMU 36-006 from 1955 to 1970. This debris was dumped into the canyon from trucks on the canyon rim. The majority of the debris covered an area approximately 75 ft wide that extended approximately 100 ft down the south canyon slope. The remainder of the debris was scattered laterally 300 ft along the south canyon slope. Although the TA-36 firing sites are still active, SWMU 36-006 was not used as a surface disposal area after 1996. Firing site personnel removed most of the debris between 1999 and 2006. All remaining debris was removed from the SWMU 36-006 surface disposal area during the 2010–2011 Consent Order investigation.

For investigation activities for 36-004(a), refer to "Investigation Report for Potrillo and Fence Canyons Aggregate Area, Revision 1" (LANL 2011, 208336). For investigation activities for 36-006, refer to "Supplemental Investigation Report for Potrillo and Fence Canyons Aggregate Area, Revision 1" (N3B 2019, 700523).

194.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 194.2-1.

Table 194.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
36-004(a)	Active firing site – Eenie	Aluminum, barium, beryllium, copper, iron, lead mercury, nickel, HE, DU
36-006	Surface disposal area	Aluminum, barium, beryllium, copper, iron, lead mercury, nickel, HE, DU

194.3 Consent Order Soil Data

Decision-level data for AOC 36-004(a) consist of results from two samples collected at one location in the drainage northwest and downgradient of the Site in 2010. Revision 1 of the 2011 IR (LANL 2011, 208336) concluded that because the investigation of AOC 36-004(a) is deferred per the Consent Order, the extent of contamination was not evaluated and human health and ecological risk assessments were not performed.

Decision-level data for SWMU 36-006 consist of results from samples collected in 1995 and 2011. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700523) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Analytical results for all decision-level soil samples for this SMA are presented in Figures 194.3-1 through 194.3-4.

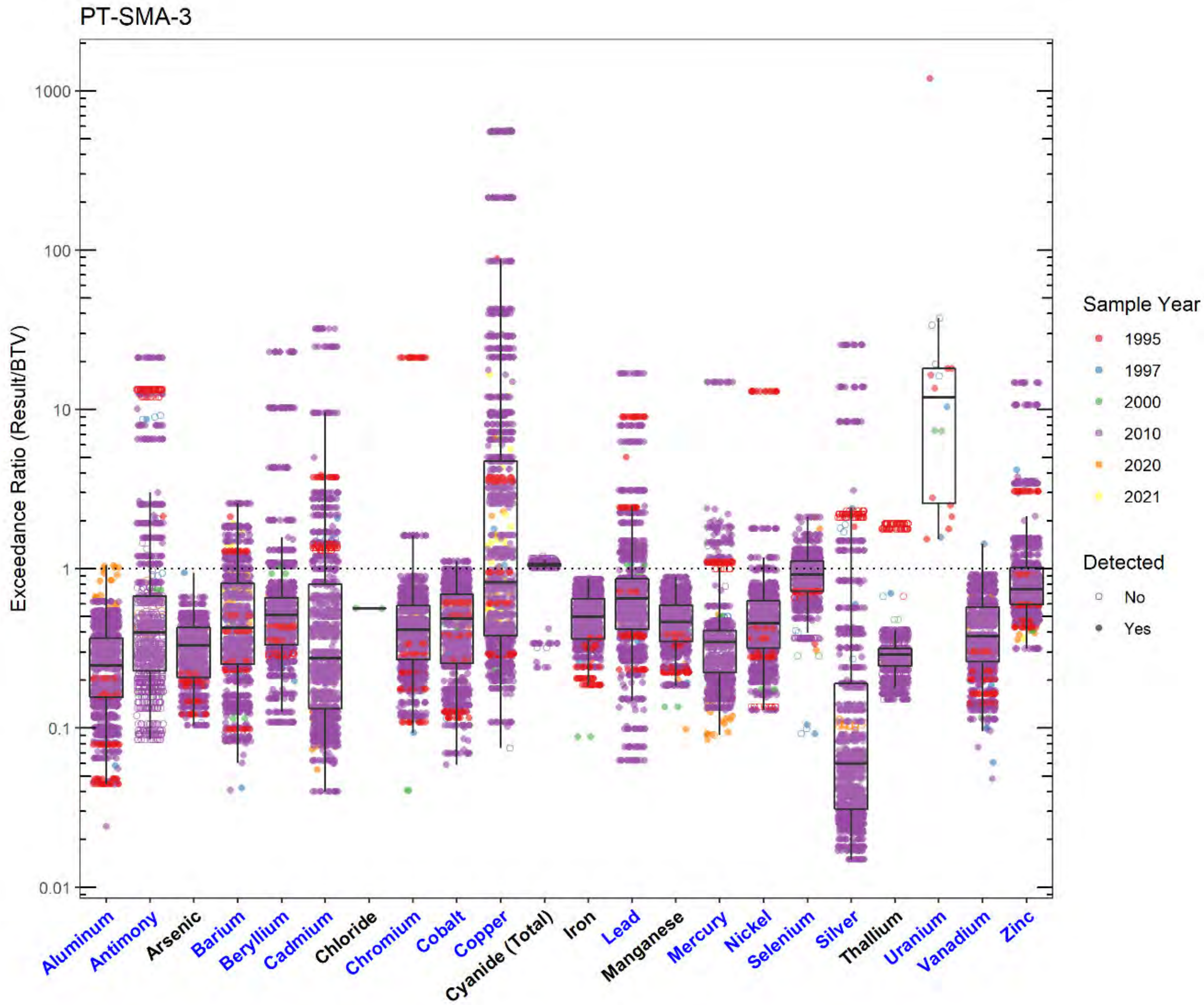


Figure 194.3-1 Inorganics Analytical Results from Soil Samples Associated with PT-SMA-3

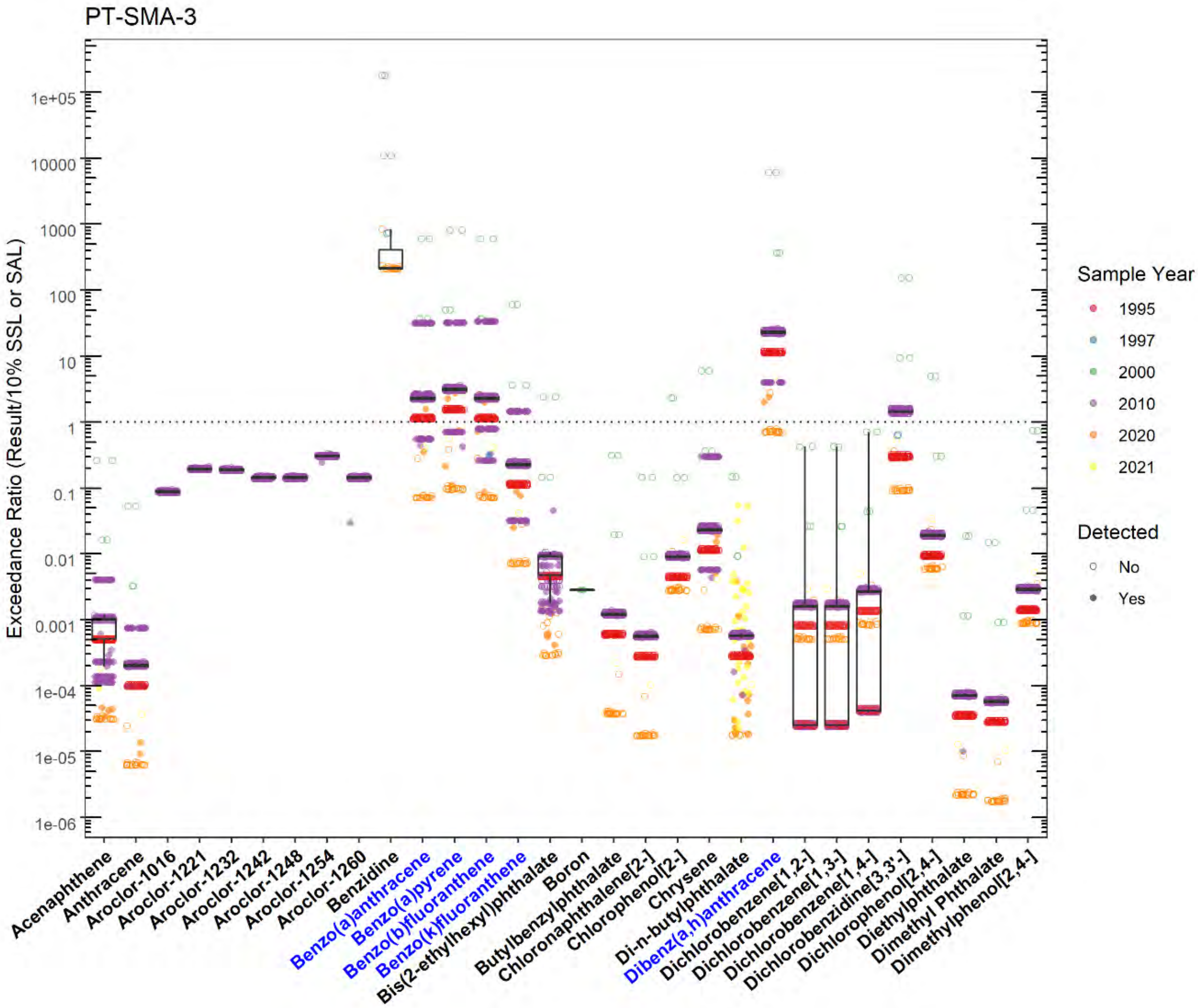


Figure 194.3-2 Organics Analytical Results from Soil Samples Associated with PT-SMA-3 (Plot 1)

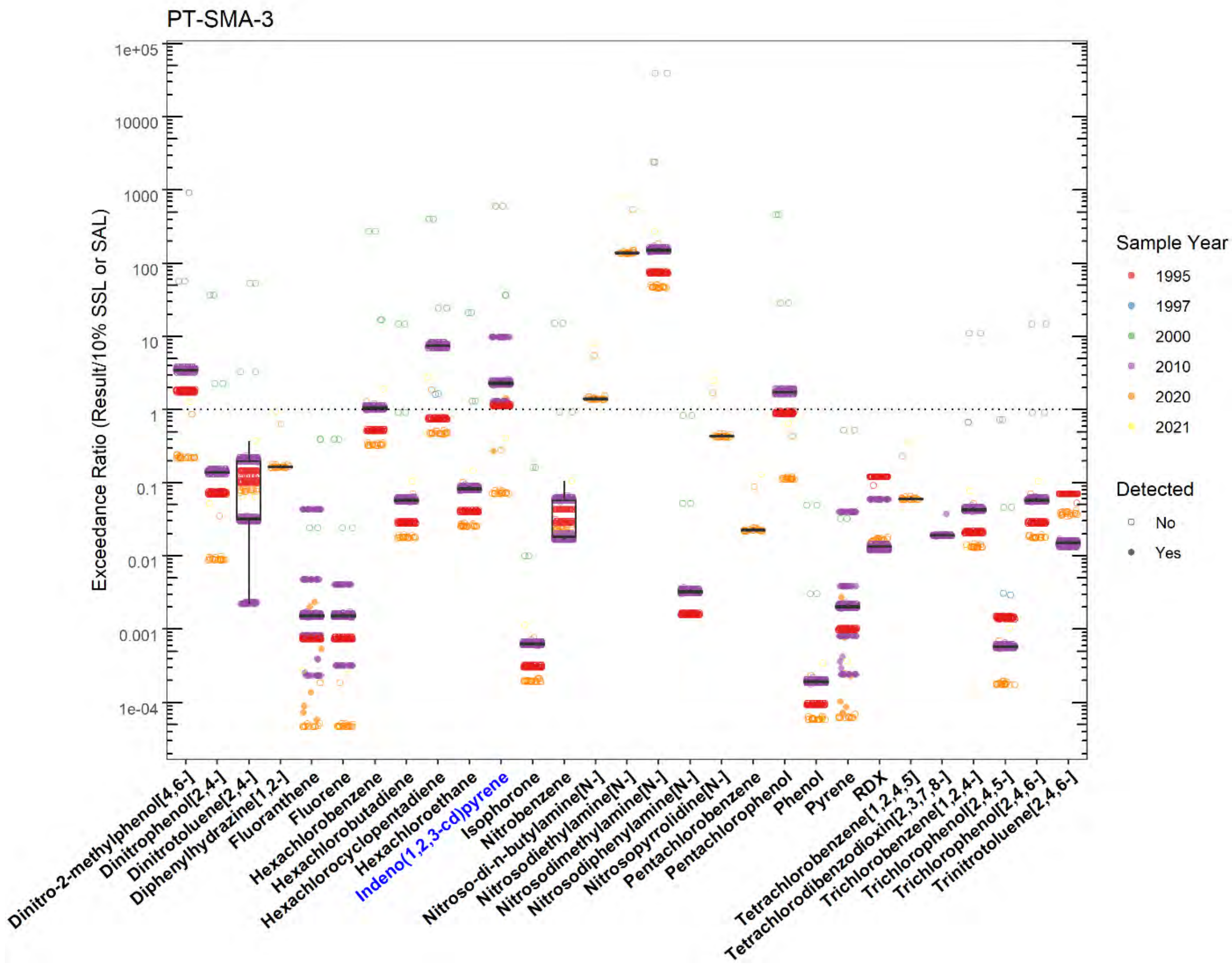


Figure 194.3-3 Organics Analytical Results from Soil Samples Associated with PT-SMA-3 (Plot 2)

PT-SMA-3

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aluminum	PT-SMA-3	Al	Y	BTV	29200	30600	2020-09-01
Antimony	PT-SMA-3	Sb	Y	BTV	0.830	17.5	2010-11-10
Barium	PT-SMA-3	Ba	Y	BTV	295	755	2010-11-10
Benzo(a)anthracene	PT-SMA-3	56-55-3	Y	SSL_0.1	0.153	4.80	2010-11-21
Benzo(a)pyrene	PT-SMA-3	50-32-8	Y	SSL_0.1	0.112	3.60	2010-11-21
Benzo(b)fluoranthene	PT-SMA-3	205-99-2	Y	SSL_0.1	0.153	5.10	2010-11-21
Benzo(k)fluoranthene	PT-SMA-3	207-08-9	Y	SSL_0.1	1.53	2.20	2010-11-21
Beryllium	PT-SMA-3	Be	Y	BTV	1.83	42.1	2010-11-19
Cadmium	PT-SMA-3	Cd	Y	BTV	0.400	12.9	2010-11-19
Chromium	PT-SMA-3	Cr	Y	BTV	19.3	410	1995-12-20
Cobalt	PT-SMA-3	Co	Y	BTV	8.64	9.60	2010-11-08
Copper	PT-SMA-3	Cu	Y	BTV	14.7	8250	2010-11-10
Dibenz(a,h)anthracene	PT-SMA-3	53-70-3	Y	SSL_0.1	0.0153	0.0610	2010-11-21
Indeno(1,2,3-cd)pyrene	PT-SMA-3	193-39-5	Y	SSL_0.1	0.153	1.50	2010-11-21
Lead	PT-SMA-3	Pb	Y	BTV	22.3	375	2010-11-19
Mercury	PT-SMA-3	Hg	Y	BTV	0.100	1.48	2010-11-21
Nickel	PT-SMA-3	Ni	Y	BTV	15.4	200	1995-12-20
Selenium	PT-SMA-3	Se	Y	BTV	1.52	3.20	2010-12-06
Silver	PT-SMA-3	Ag	Y	BTV	1.00	25.5	2010-11-19
Uranium	PT-SMA-3	U	Y	BTV	1.82	2180	1995-08-21
Vanadium	PT-SMA-3	V	Y	BTV	39.6	56.8	1997-09-02
Zinc	PT-SMA-3	Zn	Y	BTV	48.8	716	2010-11-19

Figure 194.3-4 Screening-Level Exceedances from Soil Samples Associated with PT-SMA-3

194.4 Stormwater Evaluation

194.4.1 Summary of Stormwater Results Compared with TALs and BTVs

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

194.4.2 Assessment Unit and Stream Impairments

PT-SMA-3 drains to Potrillo Canyon (above Water Canyon) which has an impairment for adjusted gross alpha. The impairment may be Site-related, based on Site history.

194.5 Site-Specific Demonstration

194.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: aluminum, barium, beryllium, copper, lead, mercury, nickel, and uranium.

194.5.2 Stormwater Data Summary

No confirmation-monitoring data.

194.5.3 2022 Permit Status

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

194.5.4 Sampling and Analysis Plan

Table 194.5-1 is the proposed SAP for PT-SMA-3.

Table 194.5-1 Proposed SAP, PT-SMA-3

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment, Site history, and stormwater data
Dissolved barium, beryllium, copper, lead, nickel, uranium	Site history and soil data
Total aluminum and mercury	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

195.0 PT-SMA-4.2

Associated Sites	36-004(d)
Receiving Water	Potrillo Canyon
Drainage Area	1067.02 acres
Landscape Characteristics	2% impervious, 98% pervious
Consent Order Site Status	SWMU 36-004(d): In Progress Deferred per Consent Order
2010 Administratively Continued Permit Final Status	Corrective Action Evaluation
2016–2018 SIP Actions	Based on the March 2018 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Long-term Stewardship per Permit Part 1.C.3 criterion

195.1 2010 Administratively Continued Permit Summary

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

Following the October 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600980), corrective-action monitoring was initiated and stormwater samples were collected in August 2018 and August 2021. Analytical results from these samples initiated corrective action and evaluations for corrective action are currently being conducted.

195.2 Site History

36-004(d) (4/18/2022)

SWMU 36-004(d) consists of the active Lower Slobbovia Firing Site and the inactive Skunk Works Firing Site in Potrillo Canyon, and three former burn pits located on the mesa top above Potrillo Canyon at TA-36. The Lower Slobbovia Firing Site consists of two active firing points and a control building (36-12). One of the firing points (structure 36-13) was constructed in 1950 and is located on top of an approximately 200-ft-diameter sand and dirt pad. The control building (structure 36-12) was constructed into the side of the pad. The second firing point consisted of a wooden tower (structure 36-120) constructed in 1986 at the northwest end of a 1,000-ft-long sled track for conducting drop tests. Shots fired at the Lower Slobbovia Firing Site primarily involved HE. Less than 2% of the shots involved significant amounts of metal [e.g., DU, lead, copper, aluminum, and steel]. The largest shot fired at Lower Slobbovia used 5,000 to 6,000 lb of HE. In addition, underground tests, buried to approximately 100 ft, were conducted at this site.

The Skunk Works Firing Site, located approximately 0.5 mi northwest of the Lower Slobbovia Firing Site, was used to conduct small-explosives experiments during the early to mid-1950s. These experiments involved gas (acetylene and oxygen), liquid (tetranitromethane), and solid explosives. Beryllium and radioactive materials were not used at the site. Structures at the Skunk Works Firing Site included a 5-ft × 5.5-ft × 5-ft belowgrade structure that previously served as a battery storage room and two buildings (structures 36-44 and 36-45) that were moved to the site from TA-15. All of the structures have since been removed. The Skunk Works firing pad was located next to building 36-45. A shallow depression, located approximately 100 ft further north in the canyon, was also used as a firing pad.

The burn pits were used for burning and disposal of test debris before MDA AA (SWMU 36-001) was established in the mid-1960s. These pits are located on Mesita del Potrillo approximately 4,000 ft west of the Lower Slobbovia control building (structure 36-12). The largest pit is bermed and located north of Potrillo Road and is approximately 40 ft in diameter. Two smaller areas are located south of Potrillo Road. Contaminated firing site debris was transported by truck from the TA-36 firing sites to the burn pits, placed in the pits, and burned. The debris consisted of wood, nails, other metal fragments, plastics, and sand contaminated with barium, uranium, and HE.

For investigation activities, refer to "Investigation Report for Potrillo and Fence Canyons Aggregate Area, Revision 1" (LANL 2011, 208336).

195.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 195.2-1.

Table 195.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
36-004(d)	Active firing site – Lower Slobbovia	Barium, steel, inorganic chemicals, dioxins/furans, HE, unspecified explosive compounds, uranium, DU

195.3 Consent Order Soil Data

Decision-level data for SWMU 36-004(d) consist of results from samples collected in 1996 and 2010 from sediment catchment areas in the drainages downgradient of the Site and within the burn pits. Analytical results for these samples are presented in Figures 195.3-1 through 195.3-5. Revision 1 of the 2011 IR (LANL 2011, 208336) concluded that because the investigation of AOC 36-004(d) is deferred per the Consent Order, the extent of contamination was not evaluated and human health and ecological risk assessments were not performed.

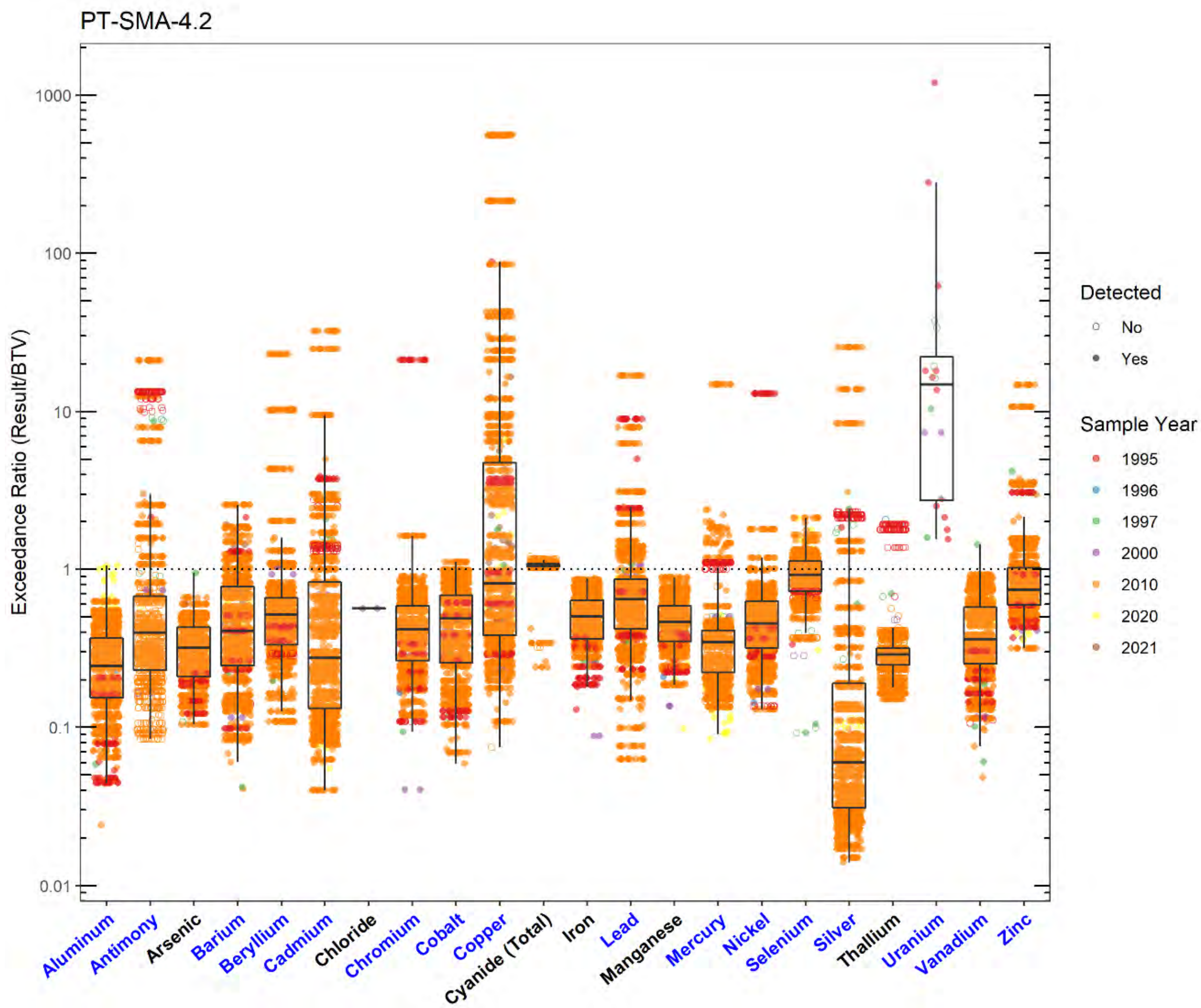


Figure 195.3-1 Inorganics Analytical Results from Soil Samples Associated with PT-SMA-4.2

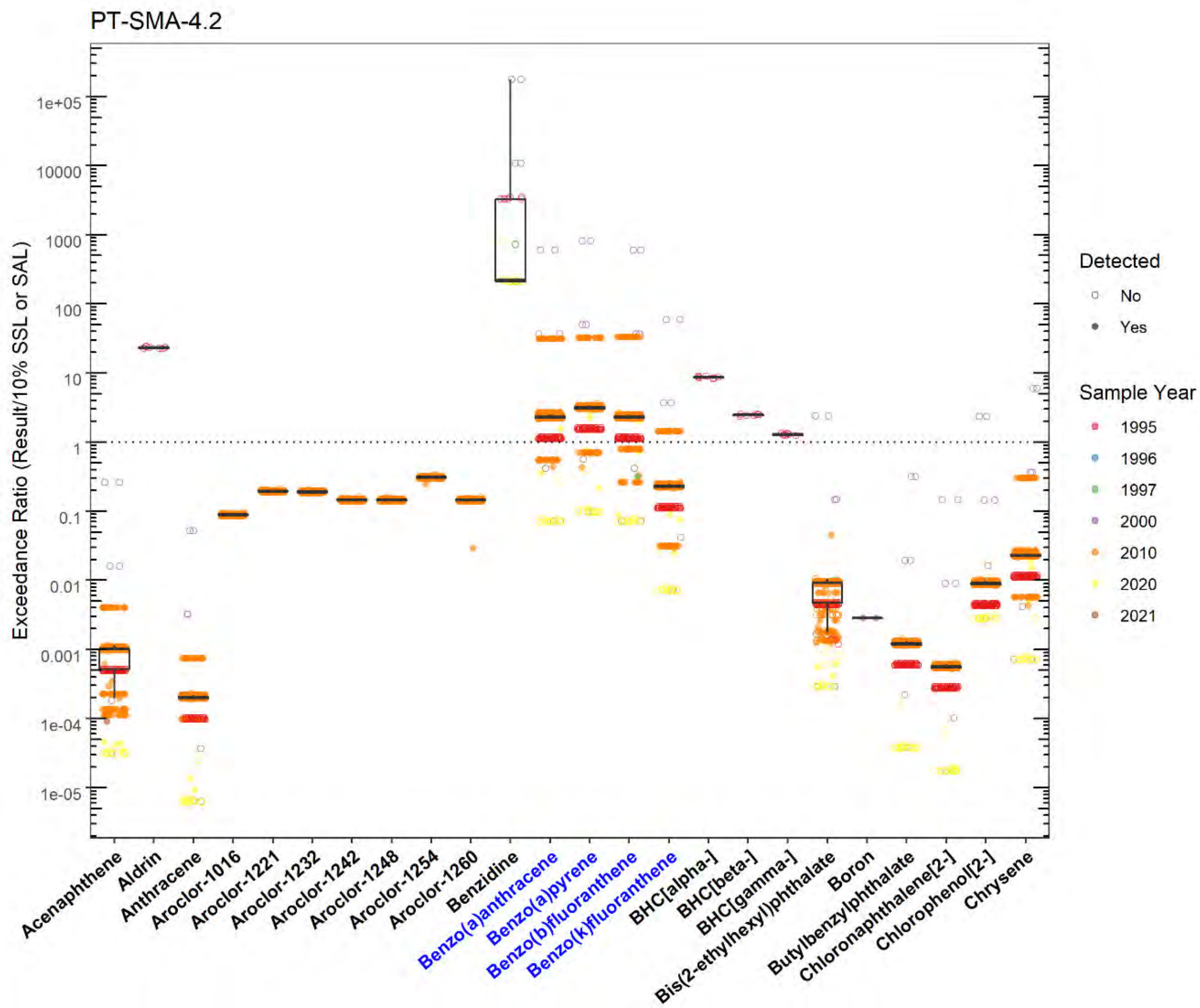


Figure 195.3-2 Organics Analytical Results from Soil Samples Associated with PT-SMA-4.2 (Plot 1)

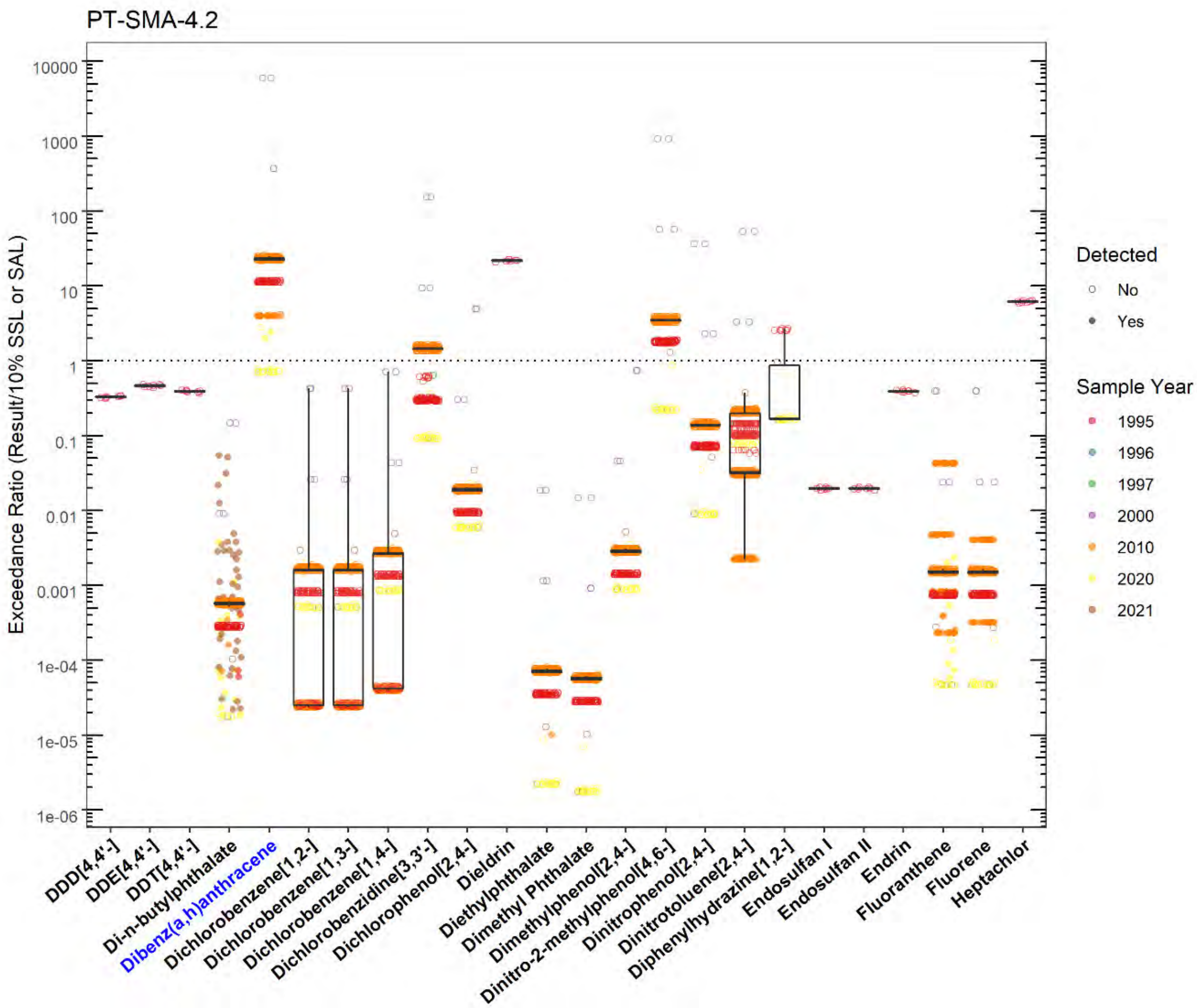


Figure 195.3-3 Organics Analytical Results from Soil Samples Associated with PT-SMA-4.2 (Plot 2)

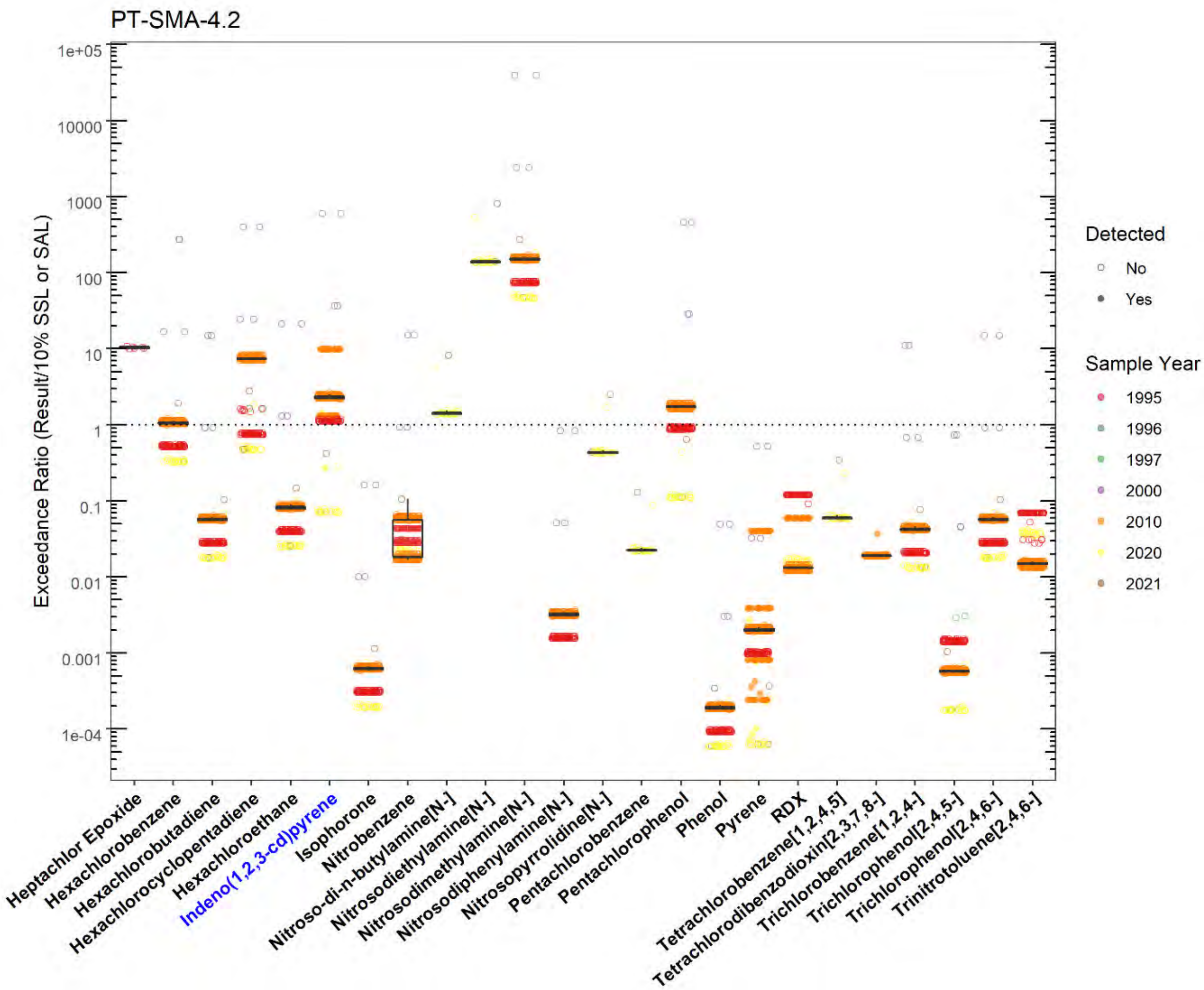


Figure 195.3-4 Organics Analytical Results from Soil Samples Associated with PT-SMA-4.2 (Plot 3)

PT-SMA-4.2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aluminum	PT-SMA-4.2	Al	Y	BTV	29200	30600	2020-09-01
Antimony	PT-SMA-4.2	Sb	Y	BTV	0.830	17.5	2010-11-10
Barium	PT-SMA-4.2	Ba	Y	BTV	295	755	2010-11-10
Benzo(a)anthracene	PT-SMA-4.2	56-55-3	Y	SSL_0.1	0.153	4.80	2010-11-21
Benzo(a)pyrene	PT-SMA-4.2	50-32-8	Y	SSL_0.1	0.112	3.60	2010-11-21
Benzo(b)fluoranthene	PT-SMA-4.2	205-99-2	Y	SSL_0.1	0.153	5.10	2010-11-21
Benzo(k)fluoranthene	PT-SMA-4.2	207-08-9	Y	SSL_0.1	1.53	2.20	2010-11-21
Beryllium	PT-SMA-4.2	Be	Y	BTV	1.83	42.1	2010-11-19
Cadmium	PT-SMA-4.2	Cd	Y	BTV	0.400	12.9	2010-11-19
Chromium	PT-SMA-4.2	Cr	Y	BTV	19.3	410	1995-12-20
Cobalt	PT-SMA-4.2	Co	Y	BTV	8.64	9.60	2010-11-08
Copper	PT-SMA-4.2	Cu	Y	BTV	14.7	8250	2010-11-10
Dibenz(a,h)anthracene	PT-SMA-4.2	53-70-3	Y	SSL_0.1	0.0153	0.0610	2010-11-21
Indeno(1,2,3-cd)pyrene	PT-SMA-4.2	193-39-5	Y	SSL_0.1	0.153	1.50	2010-11-21
Lead	PT-SMA-4.2	Pb	Y	BTV	22.3	375	2010-11-19
Mercury	PT-SMA-4.2	Hg	Y	BTV	0.100	1.48	2010-11-21
Nickel	PT-SMA-4.2	Ni	Y	BTV	15.4	200	1995-12-20
Selenium	PT-SMA-4.2	Se	Y	BTV	1.52	3.20	2010-12-06
Silver	PT-SMA-4.2	Ag	Y	BTV	1.00	25.5	2010-11-19
Uranium	PT-SMA-4.2	U	Y	BTV	1.82	2180	1995-08-21
Vanadium	PT-SMA-4.2	V	Y	BTV	39.6	56.8	1997-09-02
Zinc	PT-SMA-4.2	Zn	Y	BTV	48.8	716	2010-11-19

Figure 195.3-5 Screening-Level Exceedances from Soil Samples Associated with PT-SMA-4.2

195.4 Stormwater Evaluation

195.4.1 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 2018 and August 2021. Analytical results from these samples are presented in Figures 195.4-1 and 195.4-2.

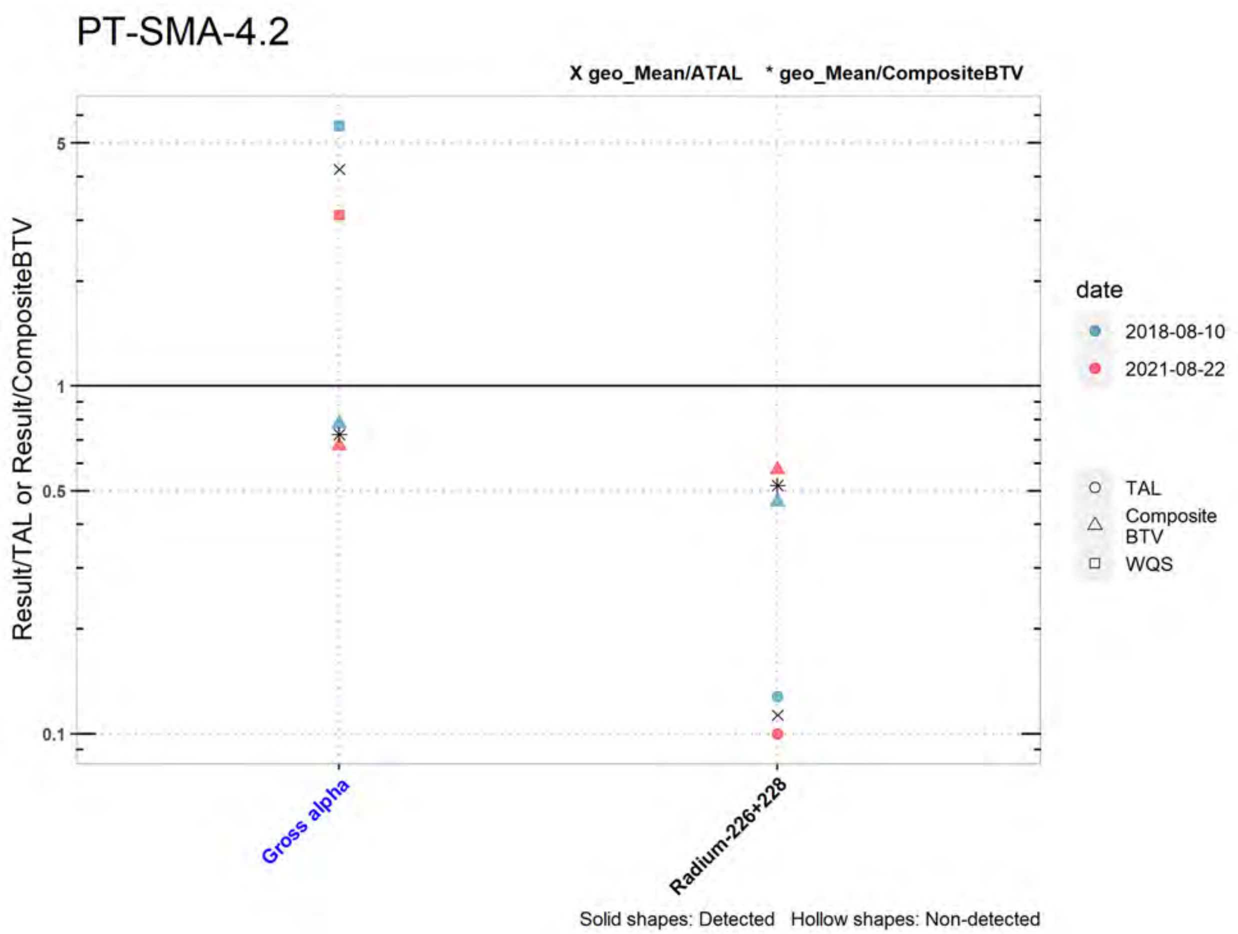


Figure 195.4-1 Analytical Results from Stormwater Samples, PT-SMA-4.2 (Plot)

PT-SMA-4.2

	Gross alpha	Radium-226+228
MQL	NA	NA
ATAL	15	30
MTAL	NA	NA
Composite_BTV	57.0	4.35
unit	pCi/L*	pCi/L*
2018-08-10 result	84.5	3.84
2018-08-10 dT	5.6	0.128
2018-08-10 dB	0.780	0.465
2021-08-22 result	46.1	3.00
2021-08-22 dT	3.1	0.100
2021-08-22 dB	0.674	0.575
geo_mean/ATAL	4.2	0.113
geo_mean/B	0.725	0.517

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 195.4-2 Analytical Results from Stormwater Samples, PT-SMA-4.2 (Table)

195.4.2 Assessment Unit and Stream Impairments

PT-SMA-4.2 drains to Potrillo Canyon (above Water Canyon) which has an impairment for adjusted gross alpha. The impairment may be Site-related, based on Site history.

195.5 Site-Specific Demonstration

195.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: barium and uranium.

195.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL but not the BTV.

195.5.3 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.

196.0 W-SMA-1

Associated Sites	16-017(j)-99, 16-026(c2), 16-026(v)
Receiving Water	Water Canyon
Drainage Area	5.91 acres
Landscape Characteristics	12% impervious, 88% pervious
Consent Order Site Status	SWMU 16-017(j)-99: In Progress SWMU 16-026(c2): In Progress SWMU 16-026(v): In Progress
2010 Administratively Continued Permit Final Status	Corrective Action Complete for No Exposure/ Alternative Compliance Requested
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3.a criterion

196.1 2010 Administratively Continued Permit Summary

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

Following the June 2013 submittal to EPA of certification of enhanced control installation 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 September 2013 and July 2014. Analytical results from these samples initiated corrective action.

The Permittees submitted a request for alternative compliance for SWMUs 16-026(c2) and 16-026(v) per permit Part I.E.3 in May 2015 (LANL 2015, 600418). No response has been received from EPA and stormwater monitoring for these sites has not occurred since 2015.

Following the September 2015 submittal to EPA of certification of a no exposure condition for SWMU 16-017(j)-99 (LANL 2015, 600932), stormwater monitoring was initiated and an investigation sample was collected in October 2018. The Permittees submitted a completion of corrective action per Permit part I.E.1(b) for the site in January 2020 (N3B 2020, 700731). Stormwater monitoring has not occurred since 2018.

196.2 Site History

16-017(j)-99 (2/27/2019)

SWMU 16-017(j)-99 is a former HE magazine (former structure 16-63) at TA-16. The magazine was a 24 ft × 26 ft × 9 ft wood-framed structure surrounded by an earthen berm on three sides and the top. The magazine was built in 1945 and removed in 1998. The storage magazine was built at grade, and there is no longer any evidence of the berm that once surrounded the magazine. Any remaining berm material is indistinguishable from the surrounding soil.

This SWMU was originally designated as part of SWMU 16-017, a group of 24 structures in central TA-16. During the 1999 AUA, SWMU 16-017 was separated into 24 SWMUs, each consisting of a single structure.

16-026(c2) (5/17/2019)

SWMU 16-026(c2) consists of two former outfalls and associated drainlines that served former chemical storage building 16-462 at TA-16. The outfalls were located approximately 30 ft southeast of the former building 16-462. Each of the two rooms in building 16-462 had a floor trough that drained to 6-in.-diameter VCP drainline that exited the south and southeast side of the former building. Effluent flowed from the drainline outfalls southeast to a drainage ditch. Building 16-462 was built in 1952 to store chemicals for use in the analytical chemistry laboratory (building 16-460). All drains at building 16-462 were plugged in 1991. One of the storage rooms contained solvents and oils and the other contained inorganic and organic chemicals including acetone, benzene, mineral oil, nitric acid, propanol, and trichloroethene, no HE were stored in the building. Building 16-462 was removed post 2010.

16-026(v) (3/21/2019)

SWMU 16-026(v) is an inactive former NPDES-permitted outfall (05A072) that served a decommissioned analytical chemistry laboratory building in 16-460 at TA-16. The outfall is located approximately 60 ft southeast of the building. The outfall received effluent from a sump [SWMU 16-003(c)], which served building floor drains, steam-cup drains, sink drains, and a drinking fountain. Waste containing fine grains of HE from analytical chemistry experiments in addition to small quantities of a wide range of solvents and other chemicals were discharged to the sump from the 1950s to the 1990s. The outfall was plugged by 1995 and was removed from the LANL NPDES permit effective September 19, 1997.

No investigation activities have been conducted for SWMUs 16-017(j)-99 or 16-026(c2). For more information on these sites, refer to "Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1" (LANL 2010, 110409; LANL 2011, 111602.33).

196.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 196.2-1.

Table 196.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-017(j)-99	Former storage building 16-63	No known POCs
16-026(c2)	Outfall from building 16-432	No applicable POCs
16-026(v)	Outfall from building 16-460	Metals, HE

196.3 Consent Order Soil Data

Decision-level data are not available for SWMU 16-017(j)-99 or SWMU 16-026(c2).

Decision-level data for SWMU 16-026(v) consist of results from samples collected in 1995. Analytical results for these samples are presented in Figures 196.3-1 through 196.3-4. The 2011 IWP (LANL 2011, 111602.33) concluded that the nature and extent of contamination have not been defined and additional sampling is recommended.

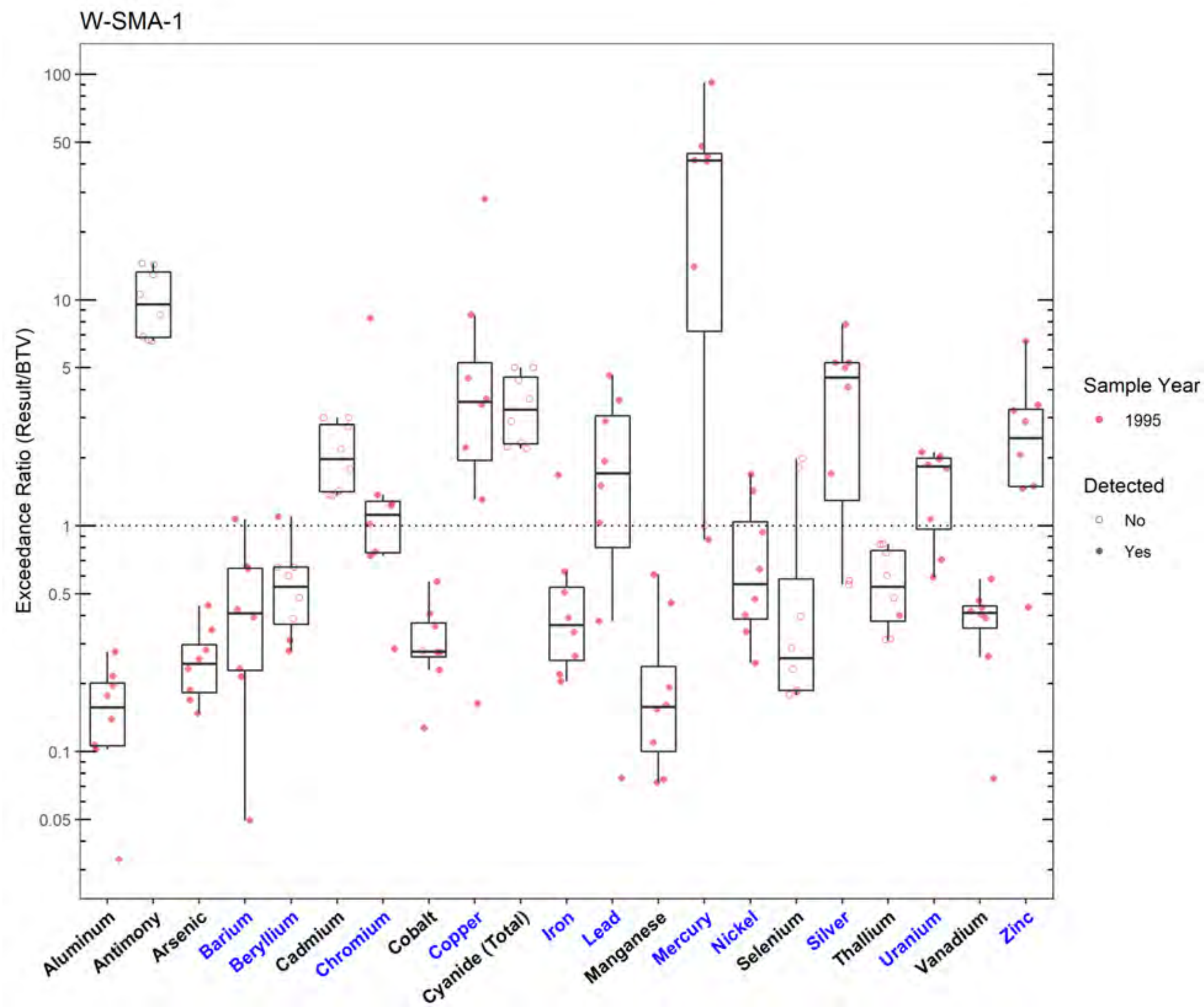


Figure 196.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-1

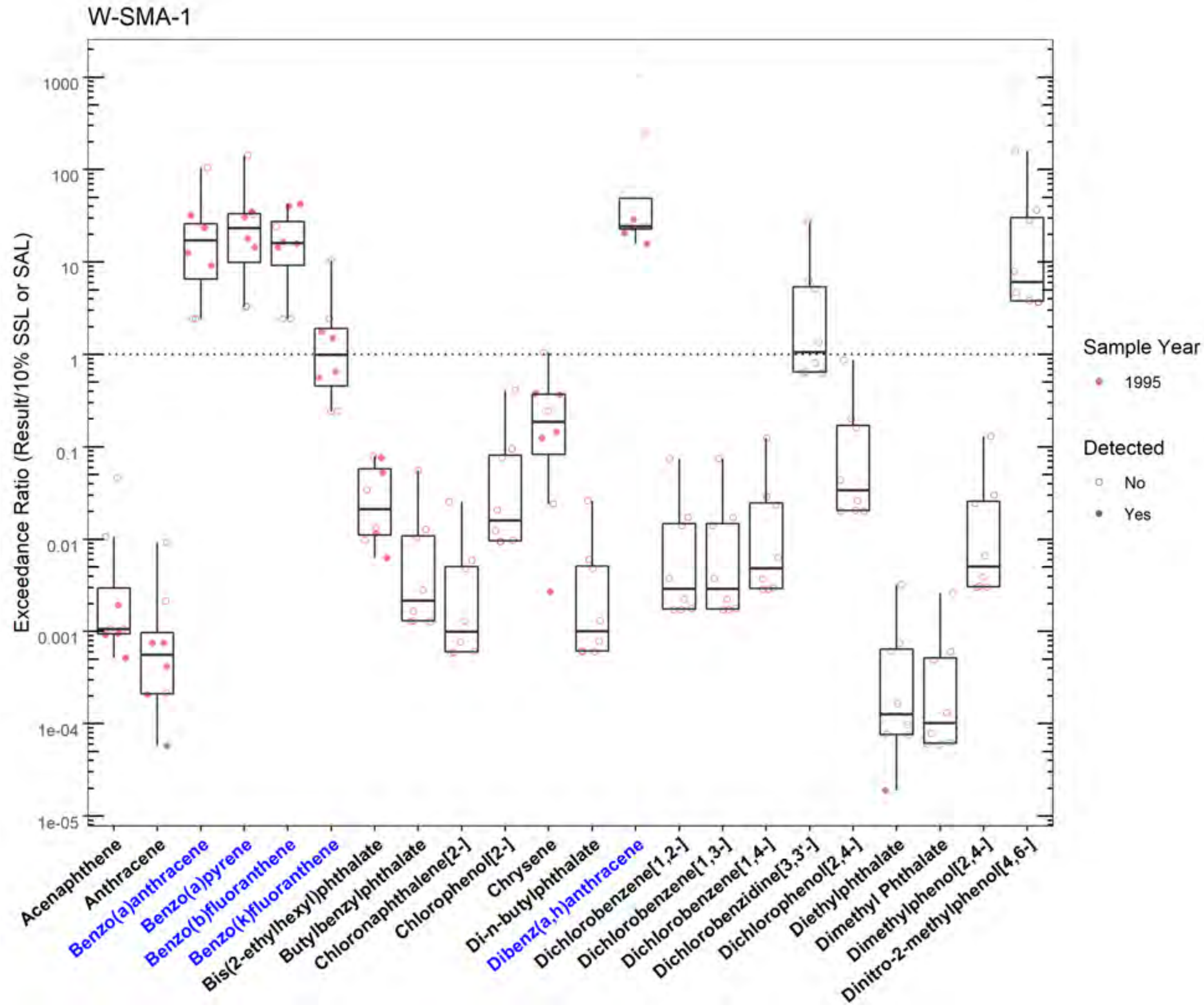


Figure 196.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-1 (Plot 1)

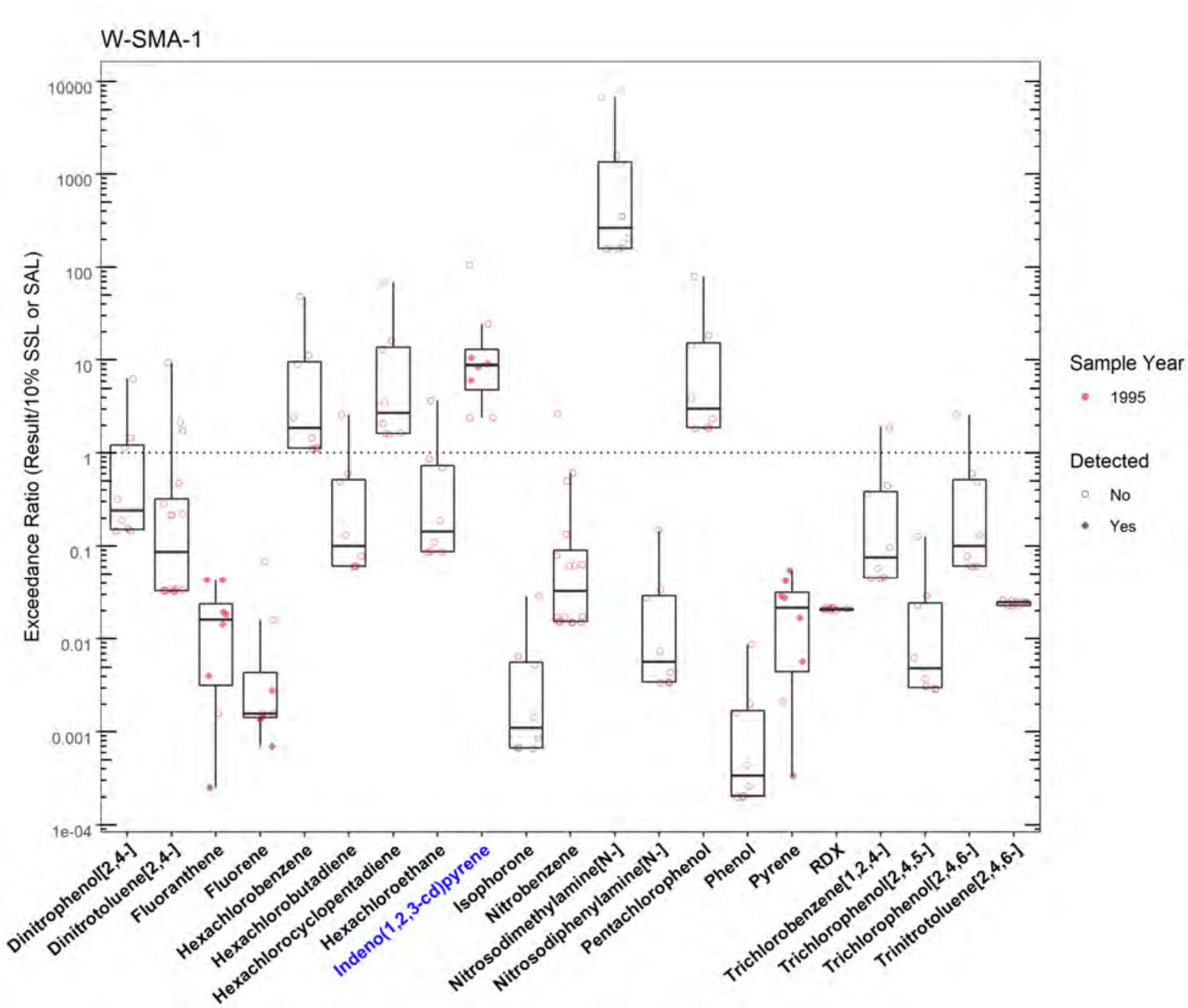


Figure 196.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-1 (Plot 2)

W-SMA-1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Barium	W-SMA-1	Ba	Y	BTV	295	317	1995-10-10
Benzo(a)anthracene	W-SMA-1	56-55-3	Y	SSL_0.1	0.153	4.90	1995-08-15
Benzo(a)pyrene	W-SMA-1	50-32-8	Y	SSL_0.1	0.112	3.90	1995-08-15
Benzo(b)fluoranthene	W-SMA-1	205-99-2	Y	SSL_0.1	0.153	6.50	1995-08-15
Benzo(k)fluoranthene	W-SMA-1	207-08-9	Y	SSL_0.1	1.53	2.70	1995-08-15
Beryllium	W-SMA-1	Be	Y	BTV	1.83	2.02	1995-10-10
Chromium	W-SMA-1	Cr	Y	BTV	19.3	160	1995-08-21
Copper	W-SMA-1	Cu	Y	BTV	14.7	412	1995-08-15
Dibenz(a,h)anthracene	W-SMA-1	53-70-3	Y	SSL_0.1	0.0153	0.440	1995-08-15
Indeno(1,2,3-cd)pyrene	W-SMA-1	193-39-5	Y	SSL_0.1	0.153	1.60	1995-08-15
Iron	W-SMA-1	Fe	Y	BTV	21500	36100	1995-08-15
Lead	W-SMA-1	Pb	Y	BTV	22.3	103	1995-08-15
Mercury	W-SMA-1	Hg	Y	BTV	0.100	9.20	1995-05-04
Nickel	W-SMA-1	Ni	Y	BTV	15.4	26.1	1995-08-15
Silver	W-SMA-1	Ag	Y	BTV	1.00	7.77	1995-08-15
Uranium	W-SMA-1	U	Y	BTV	1.82	3.86	1995-10-10
Zinc	W-SMA-1	Zn	Y	BTV	48.8	321	1995-08-15

Figure 196.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-1

196.4 Stormwater Evaluation

196.4.1 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 October 2018. Analytical results from that sample are presented in Figures 196.4-1 through 196.4-4.

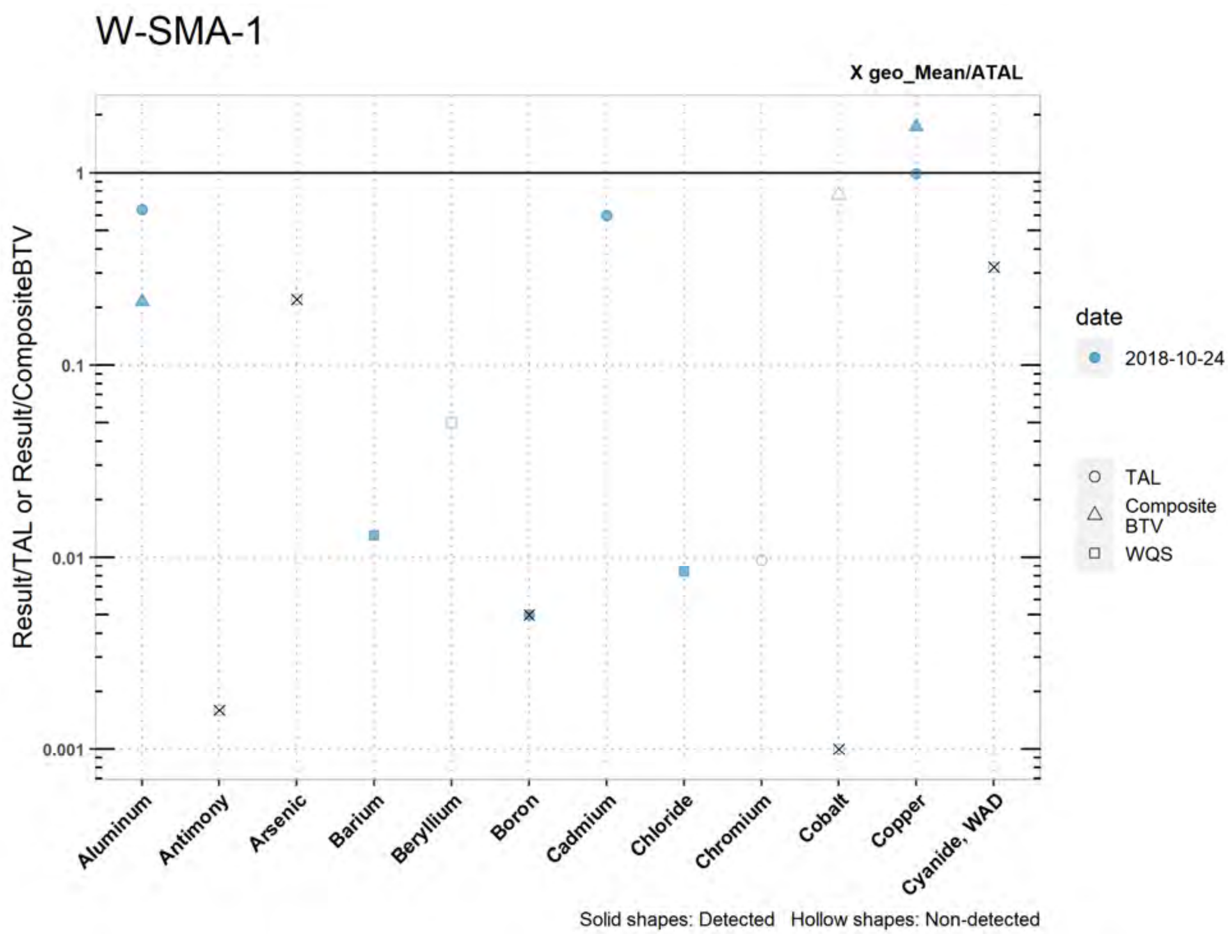


Figure 196.4-1 Analytical Results from Stormwater Sample, W-SMA-1 (Plot 1)

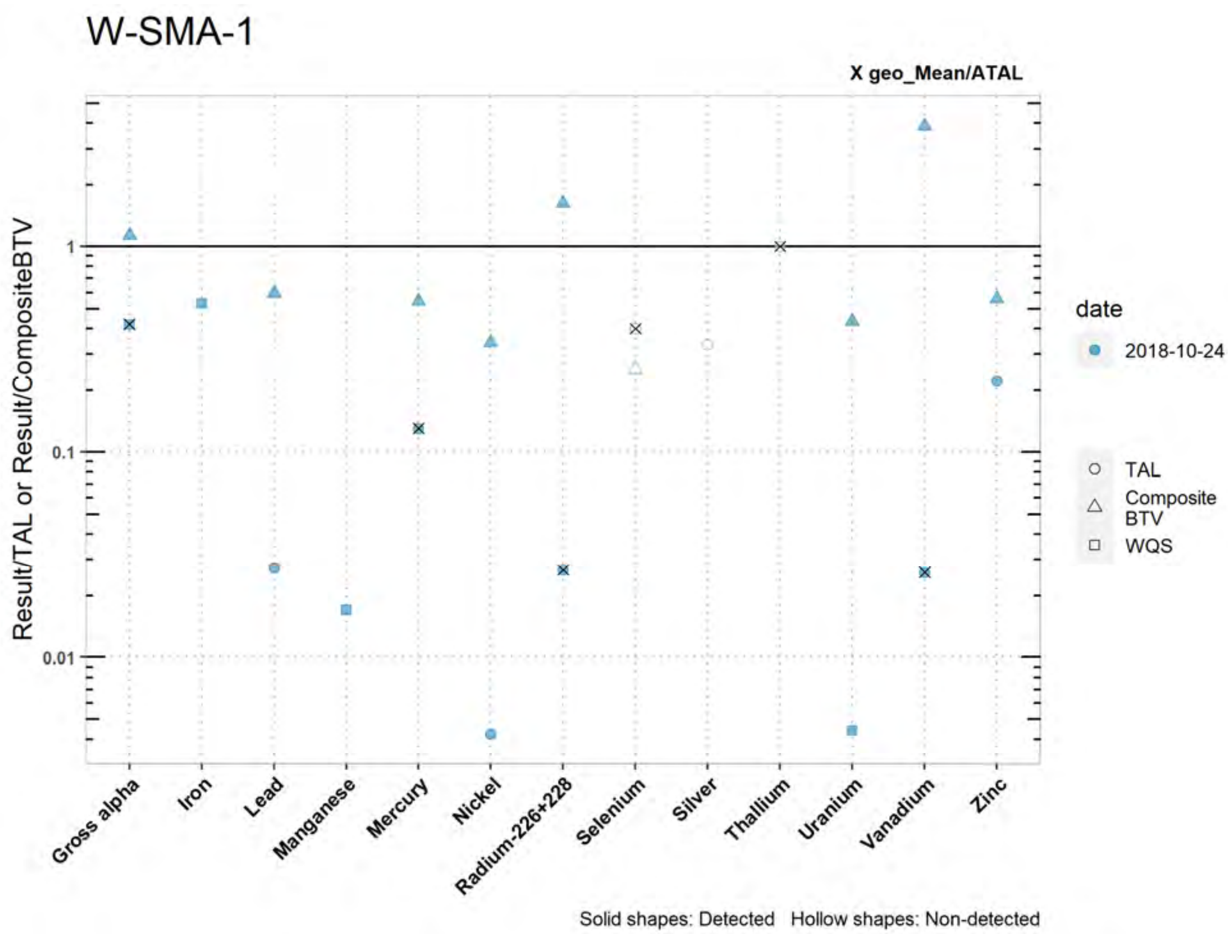


Figure 196.4-2 Analytical Results from Stormwater Sample, W-SMA-1 (Plot 2)

W-SMA-1

	Aluminum	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	1241	NA	340	NA	NA	NA	0.879	NA	311	NA	6.69	22
Composite_BTV	37000	NA	NA	NA	NA	NA	NA	NA	NA	1.31	3.82	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
2018-10-24 result	793	*1.00*	*2.00*	26.4	*0.200*	25.2	0.558	1940	*3.00*	*1.00*	6.63	*1.67*
2018-10-24 dT	0.639	NA	NA	0.013	NA	0.0050	0.6	0.0084	NA	NA	0.991	NA
2018-10-24 dB	0.214	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.74	NA
geo_mean/ATAL	NA	0.0016	0.22	NA	NA	0.0050	NA	NA	NA	0.0010	NA	0.321

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

Figure 196.4-3 Screening Results from Stormwater Samples, W-SMA-1 (Table 1)

W-SMA-1

	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	28.6	NA	NA	250	NA	20	0.9	NA	NA	NA	81.6
Composite_BTV	56.3	NA	1.32	NA	0.183	3.10	4.94	7.92	NA	NA	0.301	0.666	32.4
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
2018-10-24 result	6.34	526	0.785	22.7	0.100	1.06	0.800	*2.00*	*0.300*	*0.600*	0.131	2.57	18.1
2018-10-24 dT	0.42	0.53	0.0274	0.017	0.13	0.00424	0.0267	NA	NA	NA	0.0044	0.026	0.222
2018-10-24 dB	1.13	NA	0.595	NA	0.546	0.342	1.62	NA	NA	NA	0.435	3.86	0.559
geo_mean/ATAL	0.42	NA	NA	NA	0.13	NA	0.0267	0.40	NA	1	NA	0.026	NA

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

Figure 196.4-4 Screening Results from Stormwater Samples, W-SMA-1 (Table 2)

196.4.2 Assessment Unit and Stream Impairments

W-SMA-1 drains to Water Canyon (Area-A Canyon to NM 501) which has no impairments.

196.5 Site-Specific Demonstration

196.5.1 Soil Data Summary

The metals that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs, therefore they will not be added to the SAP. None of the HE Site-related POCs exceeded the applicable screening values in soil. Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene exceeded the applicable screening values in soil, but are not Site-related POCs and will not be added to the SAP.

196.5.2 Stormwater Data Summary

Copper exceeded the TAL but not the BTV.

196.5.3 2022 Permit Status

The SMA is eligible for long-term stewardship; all Site-related POCs were below their respective composite TALs and background threshold values (Part I.C.3.a). Once soil data has been collected for Sites within this SMA, the SMA will be re-screened.

197.0 W-SMA-1.5

Associated Sites	16-026(b2), 16-028(d)
Receiving Water	Water Canyon
Drainage Area	12.30 acres
Landscape Characteristics	37% impervious, 63% pervious
Consent Order Site Status	SWMU 16-026(b2): In Progress SWMU 16-028(d): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3.a criterion

197.1 2010 Administratively Continued Permit Summary

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

Following the October 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 228781), corrective-action monitoring was initiated and a stormwater sample was collected in July 2014. Analytical results from this sample initiated corrective action.

Following the September 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600911), the sampler was relocated to a more representative location and corrective-action monitoring was initiated. A stormwater sample was collected in September 2017. Analytical results from this sample yielded no TAL exceedances. Confirmation monitoring is ongoing to collect a second sample.

197.2 Site History

16-026(b2) (5/17/2019)

SWMU 16-026(b2) is an outfall and associated drainline that served decommissioned machine shop building 16-202 in the administrative area at TA-16. The drainline existed the northeast corner of building 16-202 and discharged to an outfall located approximately 135 ft east-southeast of the building in the drainage ditch along Anchor Ranch Road. The outfall received discharge from an oil-water separator, which consisted of a 3-ft × 3-ft × 3-ft cement pit located below floor level in a millwright shop. The separator was installed in 1952, when building 16-202 was built, and remains in place but is covered. Use of the separator ceased after 1977 and the millwright shop is now an office.

16-028(d) (no date)

SWMU 16-028(d) is a formerly NPDES-permitted outfall (04A083) located approximately 80 ft southeast of decommissioned building 16-202 in the administrative area of TA-16. The outfall formerly served the decommissioned machine shop in building 16-202 and connected to the building through an 8-in.-diameter VCP. The outfall received noncontact cooling water and wash water from two floor drains, effluent from two non- HE sumps, discharge from two sink drains, and rainwater from 16 roof drains. A variety of materials associated with machining metals and plastics were used in the building and could have been present in discharges to the outfall, including brazing alloy, trichloroethene, petroleum distillates, oils, and hydrochloric acid. In 1995, building 16-202 was converted to office space and the drains within the building were modified so that the outfall only receives stormwater from the building roof drains. The outfall was removed from the NPDES permit effective September 19, 1997.

No investigation activities have been conducted for these Sites. For more information on these Sites, refer to "Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1" (LANL 2010, 110409; LANL 2011, 111602.33).

197.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 197.2-1.

Table 197.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-026(b2)	Outfall from building 16-202 drain	Metals
16-028(d)	Outfall from building 16-202	Metals

197.3 Consent Order Soil Data

Decision-level data are not available for SWMU 16-026(b2) or 16-028(d).

197.4 Stormwater Evaluation

197.4.1 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 2017. Analytical results from that sample are presented in Figures 197.4-1 through 197.4-4.

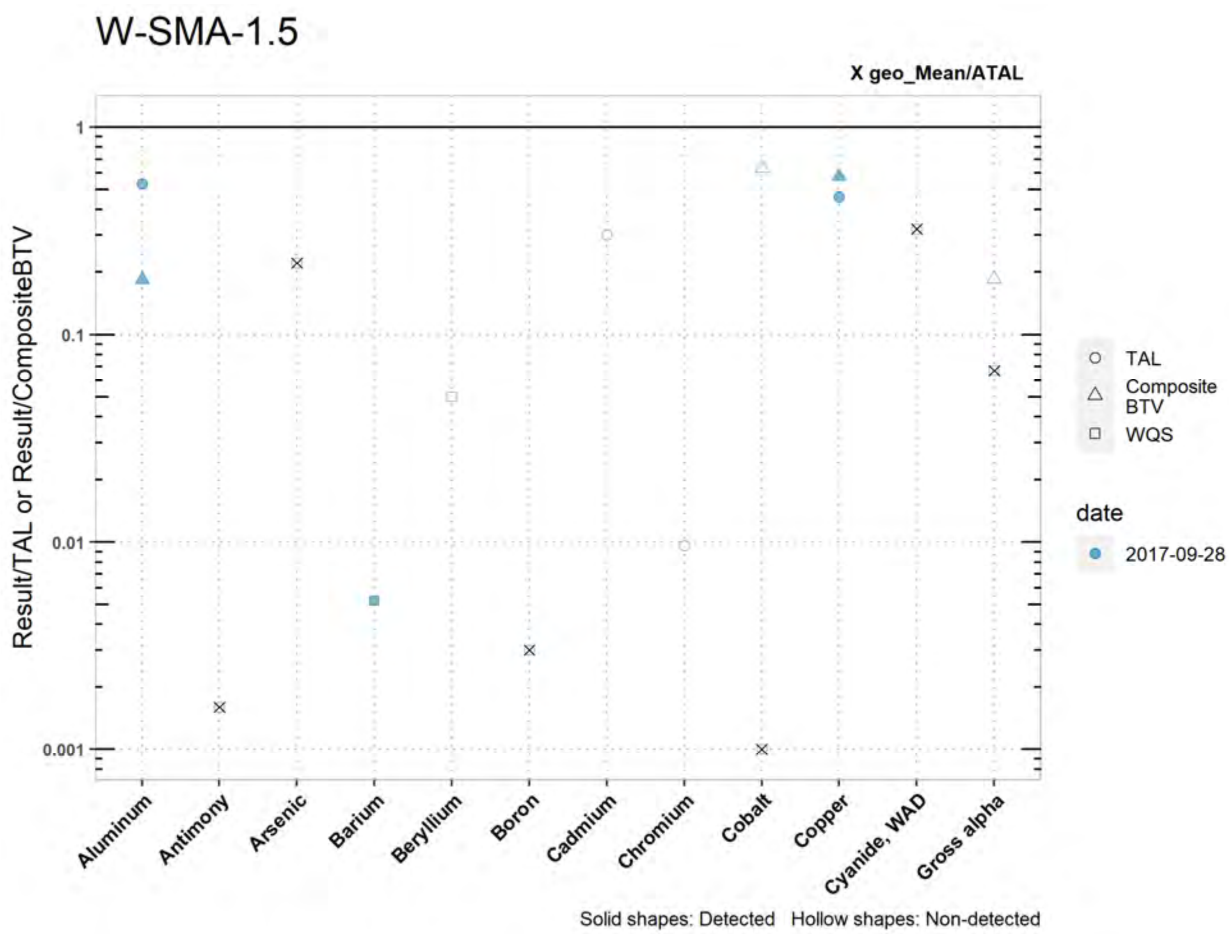


Figure 197.4-1 Analytical Results from Stormwater Sample, W-SMA-1.5 (Plot 1)

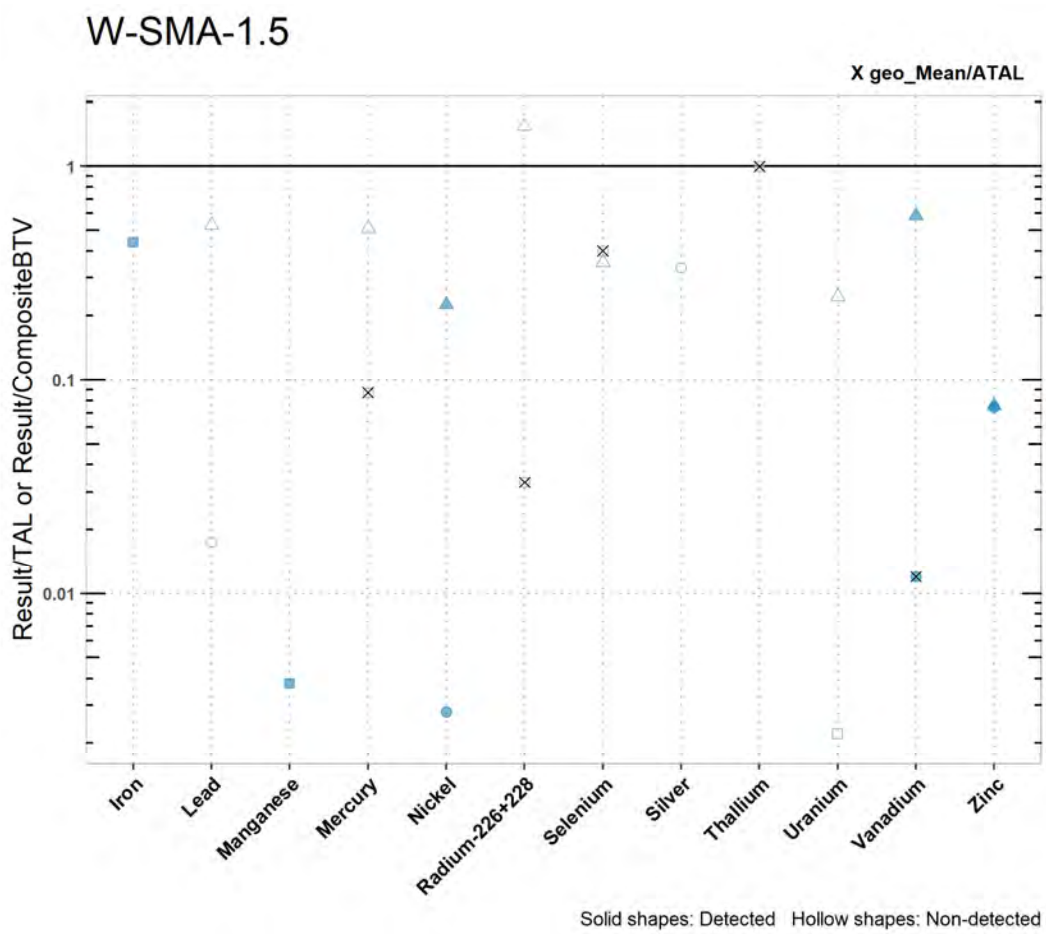


Figure 197.4-2 Analytical Results from Stormwater Sample, W-SMA-1.5 (Plot 2)

W-SMA-1.5

	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	1241	NA	340	NA	NA	NA	0.879	311	NA	6.69	22	NA
Composite_BTV	36100	NA	NA	NA	NA	NA	NA	NA	1.58	5.31	NA	54.4
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*
2017-09-28 result	661	*1.00*	*2.00*	10.4	*0.200*	*15.0*	*0.300*	*3.00*	*1.00*	3.06	*1.67*	*1.00*
2017-09-28 dT	0.533	NA	NA	0.0052	NA	NA	NA	NA	NA	0.457	NA	NA
2017-09-28 dB	0.183	NA	NA	NA	NA	NA	NA	NA	NA	0.576	NA	NA
geo_mean/ATAL	NA	0.0016	0.22	NA	NA	0.0030	NA	NA	0.0010	NA	0.321	0.067

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 197.4-3 Screening Results from Stormwater Sample, W-SMA-1.5 (Table 1)

W-SMA-1.5

	Iron	Lead	Manganese	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc
MQL	NA	0.5	NA	0.005	0.5	NA	5	0.5	0.5	NA	50	20
ATAL	NA	NA	NA	0.77	NA	30	5	NA	0.47	NA	100	NA
MTAL	NA	28.6	NA	NA	250	NA	20	0.9	NA	NA	NA	81.6
Composite_BTV	NA	0.945	NA	0.131	3.10	6.50	5.66	NA	NA	0.272	2.09	80.3
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
2017-09-28 result	439	*0.500*	4.90	*0.0670*	0.699	*1.00*	*2.00*	*0.300*	*0.600*	*0.0670*	1.22	6.07
2017-09-28 dT	0.44	NA	0.0038	NA	0.00280	NA	NA	NA	NA	NA	0.012	0.0744
2017-09-28 dB	NA	NA	NA	NA	0.225	NA	NA	NA	NA	NA	0.584	0.0756
geo_mean/ATAL	NA	NA	NA	0.087	NA	0.0333	0.40	NA	1	NA	0.012	NA

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

Figure 197.4-4 Screening Results from Stormwater Sample, W-SMA-1.5 (Table 2)

197.4.2 Assessment Unit and Stream Impairments

W-SMA-1.5 drains to Water Canyon (Area-A Canyon to NM 501) which has no impairments.

197.5 Site-Specific Demonstration

197.5.1 Soil Data Summary

No Consent Order data.

197.5.2 Stormwater Data Summary

No exceedances.

197.5.3 2022 Permit Status

The SMA is eligible for long-term stewardship. All Site-related POCs with TALs were below their respective composite BTVs (Part I.C.3.a).

198.0 W-SMA-2.05

Associated Sites	16-028(e)
Receiving Water	Water Canyon
Drainage Area	0.70 acres
Landscape Characteristics	3% impervious, 97% pervious
Consent Order Site Status	SWMU 16-028(e): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

198.1 2010 Administratively Continued Permit Summary

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

Following the October 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 228781), 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.

198.2 Site History

16-028(e) (3/21/2019)

SWMU 16-028(e) is a formerly NPDES-permitted outfall (EPA 04A091) that served the materials-testing laboratory in building 16-450 at TA-16. The outfall was located southeast of building 16-450 and received discharges through an outlet drainline from a former HE sump [SWMU 16-029(g)]. The outfall discharged outside the security fence at the edge of Water Canyon. The SWMU 16-029(g) sump was removed in 1997 and the outfall drainline was plugged and left in place. The outfall was removed from the LANL NPDES permit effective September 19, 1997.

For investigation activities, refer to “Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1” (LANL 2010, 110409; LANL 2011, 111602.33).

198.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 198.2-1.

Table 198.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-028(e)	Outfall associated with building 16-450	Metals, HE

198.3 Consent Order Soil Data

Decision-level data for SWMU 16-028(e) consist of results from samples collected in 1995. Analytical results for these samples are presented in Figures 198.3-1 through 198.3-4. The 2011 IWP (LANL 2011, 111602.33) concluded that the nature and extent of contamination have not been defined and additional sampling is recommended.

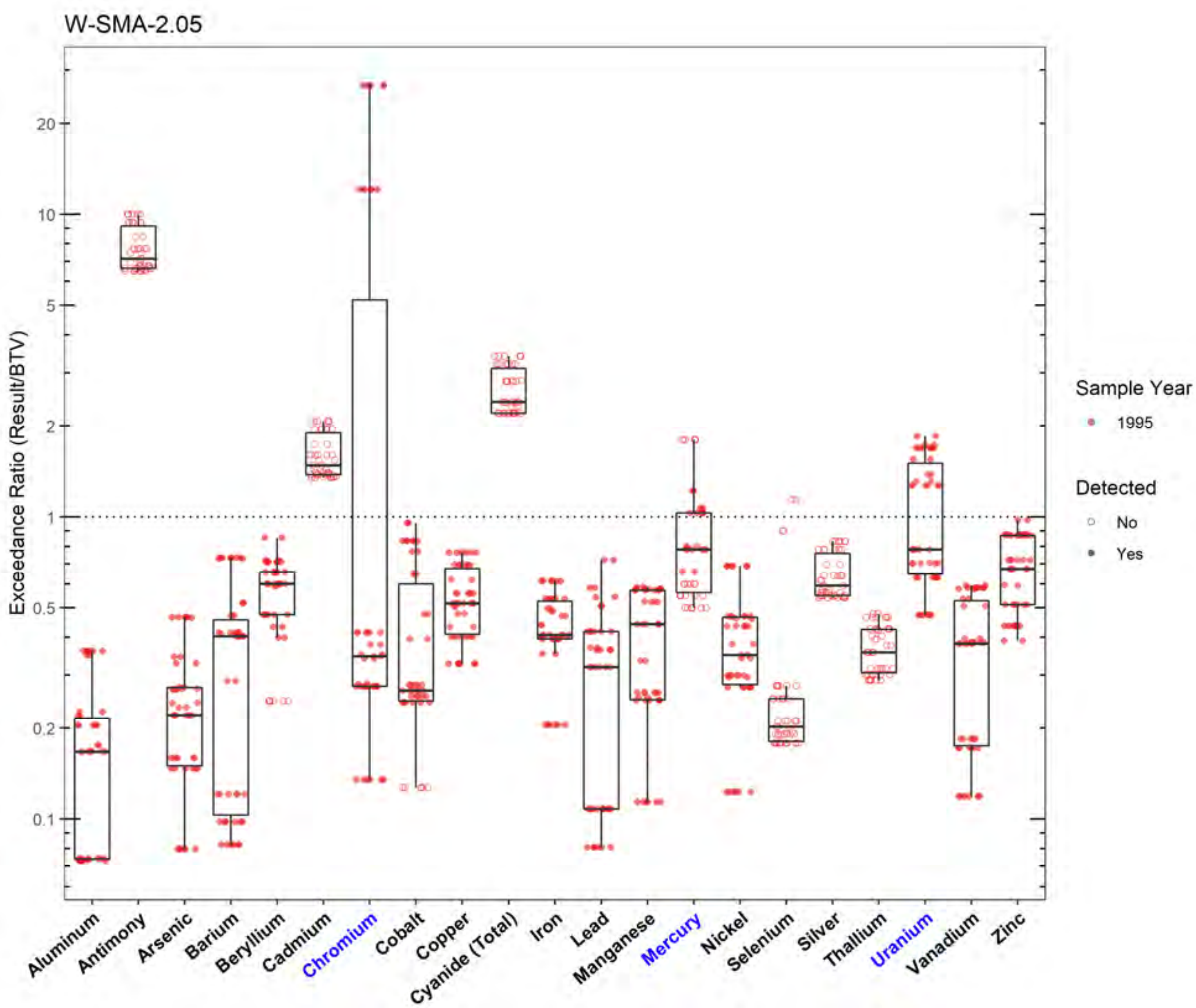


Figure 198.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-2.05

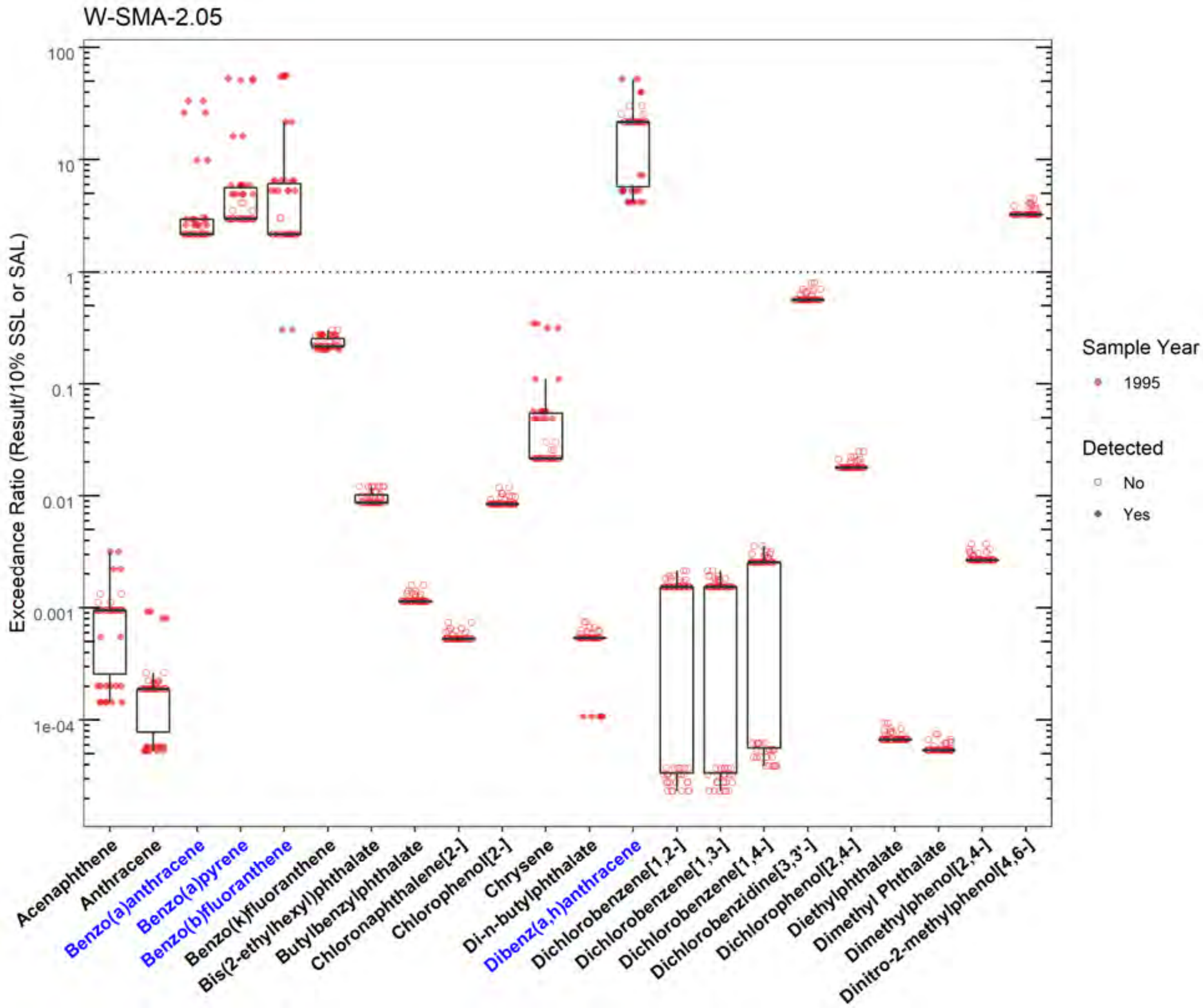


Figure 198.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-2.05 (Plot 1)

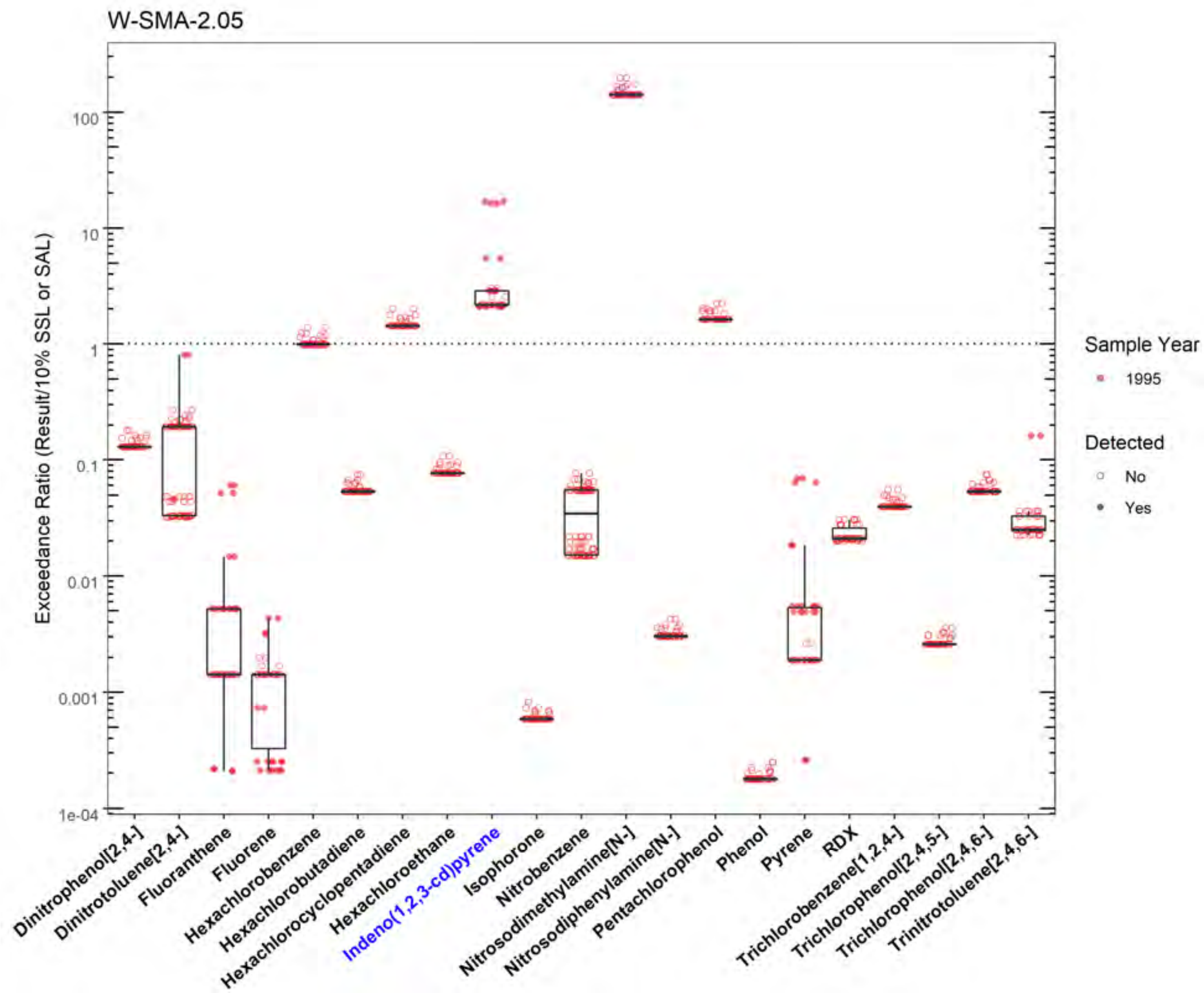


Figure 198.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-2.05 (Plot 2)

W-SMA-2.05

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	W-SMA-2.05	56-55-3	Y	SSL_0.1	0.153	5.10	1995-05-02
Benzo(a)pyrene	W-SMA-2.05	50-32-8	Y	SSL_0.1	0.112	5.90	1995-05-02
Benzo(b)fluoranthene	W-SMA-2.05	205-99-2	Y	SSL_0.1	0.153	8.60	1995-05-02
Chromium	W-SMA-2.05	Cr	Y	BTV	19.3	516	1995-08-24
Dibenz(a,h)anthracene	W-SMA-2.05	53-70-3	Y	SSL_0.1	0.0153	0.800	1995-05-02
Indeno(1,2,3-cd)pyrene	W-SMA-2.05	193-39-5	Y	SSL_0.1	0.153	2.60	1995-05-02
Mercury	W-SMA-2.05	Hg	Y	BTV	0.100	0.122	1995-05-02
Uranium	W-SMA-2.05	U	Y	BTV	1.82	3.36	1995-05-02

Figure 198.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-2.05

198.4 Stormwater Evaluation

198.4.1 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.

198.4.2 Assessment Unit and Stream Impairments

W-SMA-2.05 drains to Water Canyon (Area-A Canyon to NM 501), which has no impairments.

198.5 Site-Specific Demonstration

198.5.1 Soil Data Summary

The metals that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs and BTVs, therefore they will not be added to the SAP. HE compounds monitored for in soil did not exceed the applicable screening values. Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene exceeded the applicable screening values in soil but are not Site-related POCs, therefore they will not be added to the SAP.

198.5.2 Stormwater Data Summary

No data for the current monitoring stage have been collected. Dissolved aluminum exceeded TAL but not BTV in the previous monitoring stage data.

198.5.3 2022 Permit Status

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

198.5.4 Sampling and Analysis Plan

Table 198.5-1 is the proposed SAP for W-SMA-2.05.

Table 198.5-1 Proposed SAP, W-SMA-2.05

Monitoring Constituent	Background for Monitoring
Total aluminum	Site history and stormwater data
DOC	Permit requirement
SSC	Permit requirement

199.0 W-SMA-3.5

Associated Sites	16-026(y)
Receiving Water	Water Canyon
Drainage Area	1.89 acres
Landscape Characteristics	33% impervious, 67% pervious
Consent Order Site Status	SWMU 16-026(y): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

199.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, 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.

199.2 Site History

16-026(y) (no date)

SWMU 16-026(y) is an inactive outfall and associated outlet drainline that served building 16-411 at TA-16. The outlet drainline is a 4-in.-diameter VCP that exits the southwest wall of building 16-411 and turns south to terminate at its discharge point on the hill slope of Water Canyon. The discharge point is located south of a double security fence at the edge of Water Canyon. Building 16-411 was built in 1951 and used for the assembly of finished HE components. The outfall received discharges from an equipment room floor drain, a sink, roof drains, a water fountain, and an eyewash station. The outfall was decommissioned in the late 1980s when the roof drains were rerouted to a separate outfall and the other drains were either plugged or rerouted to a holding tank.

No investigation activities have been conducted for the site. For more information on this Site, refer to "Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1" (LANL 2010, 110409; LANL 2011, 111602.33).

199.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 199.2-1.

Table 199.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-026(y)	Outfall from building 16-411	HE

199.3 Consent Order Soil Data

Decision-level data are not available for SWMU 16-026(y).

199.4 Stormwater Evaluation

199.4.1 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.

199.4.2 Assessment Unit and Stream Impairments

W-SMA-3.5 drains to Water Canyon (Area-A Canyon to NM 501) which has no impairments.

199.5 Site-Specific Demonstration

199.5.1 Soil Data Summary

No Consent Order data.

199.5.2 Stormwater Data Summary

No confirmation-monitoring data.

199.5.3 2022 Permit Status

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

199.5.4 Sampling and Analysis Plan

Table 199.5-1 is the proposed SAP for W-SMA-3.5.

Table 199.5-1 Proposed SAP, W-SMA-3.5

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

200.0 W-SMA-4.1

Associated Sites	16-003(a)
Receiving Water	Water Canyon
Drainage Area	0.18 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 16-003(a): 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 sampler location did not capture some soil samples with elevated concentrations of zinc (16-01588, 16-01589, and 16-01590). Therefore, a coir log was installed in June 2017 to divert flow across the slope in order to include runoff from these three locations to the current sampling location.
2022 Permit Status	Active Monitoring

200.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, 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.

200.2 Site History

16-003(a) (3/21/2019)

SWMU 16-003(a) is an inactive HE sump, associated inlet and outlet drainlines, and former NPDES-permitted outfall (05A053) that served assembly building 16-410 at TA-16. The concrete sump is located on the exterior southeast wall of the building and measures 9.5 ft long × 3.5 ft wide × 2.5 ft deep. The sump served floor, roof, and equipment drains and removed suspended HE solids from process water before it was discharged to the outfall, which is located approximately 320 ft southeast of the building. The sump was installed in the early 1950s and modified in 1966 to improve its effectiveness and to reduce HE handling. The outlet drainline from the sump was plugged by 1995. The outfall was removed from the LANL NPDES permit effective January 14, 1998.

For investigation activities, refer to “Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1” (LANL 2010, 110409; LANL 2011, 111602.33).

200.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 200.2-1.

Table 200.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-003(a)	Sump	HE, uranium

200.3 Consent Order Soil Data

Decision-level data for SWMU 16-003(a) consist of results from samples collected in 1995. Analytical results for these samples are presented in Figures 200.3-1 through 200.3-4. The 2011 IWP

(LANL 2011, 111602.33) concluded that the nature and extent of contamination have not been defined and additional sampling is recommended.

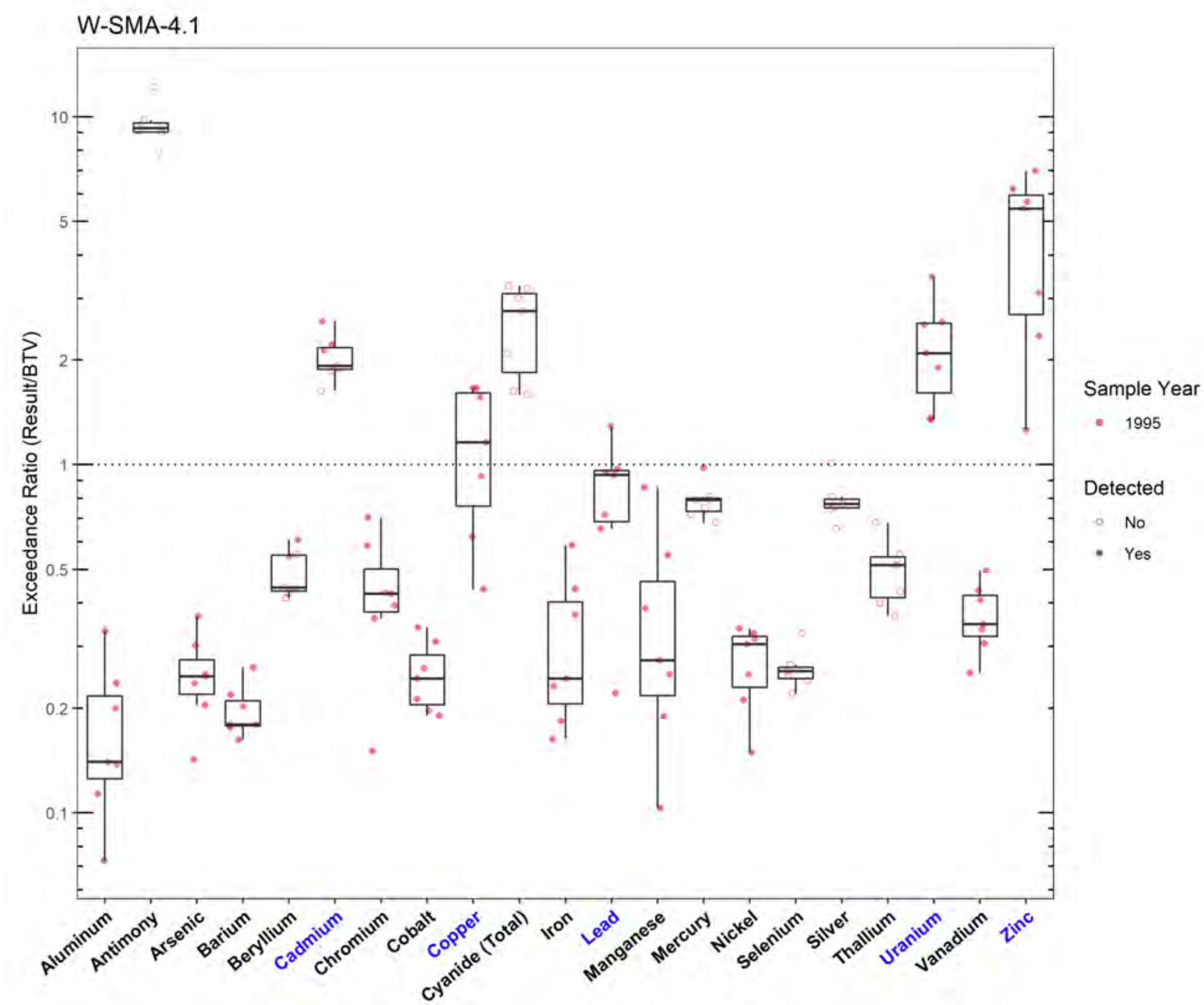


Figure 200.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-4.1

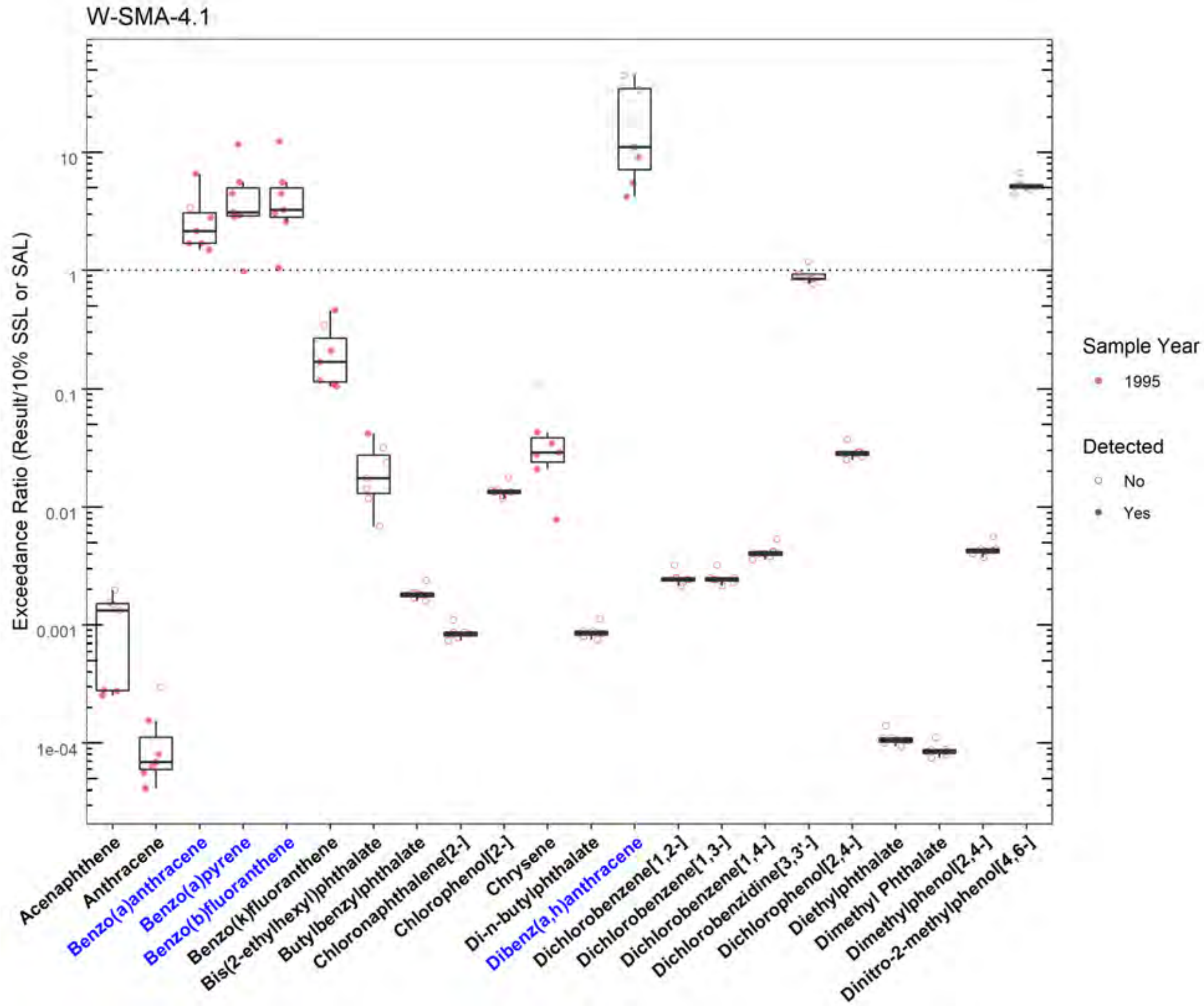


Figure 200.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-4.1 (Plot 1)

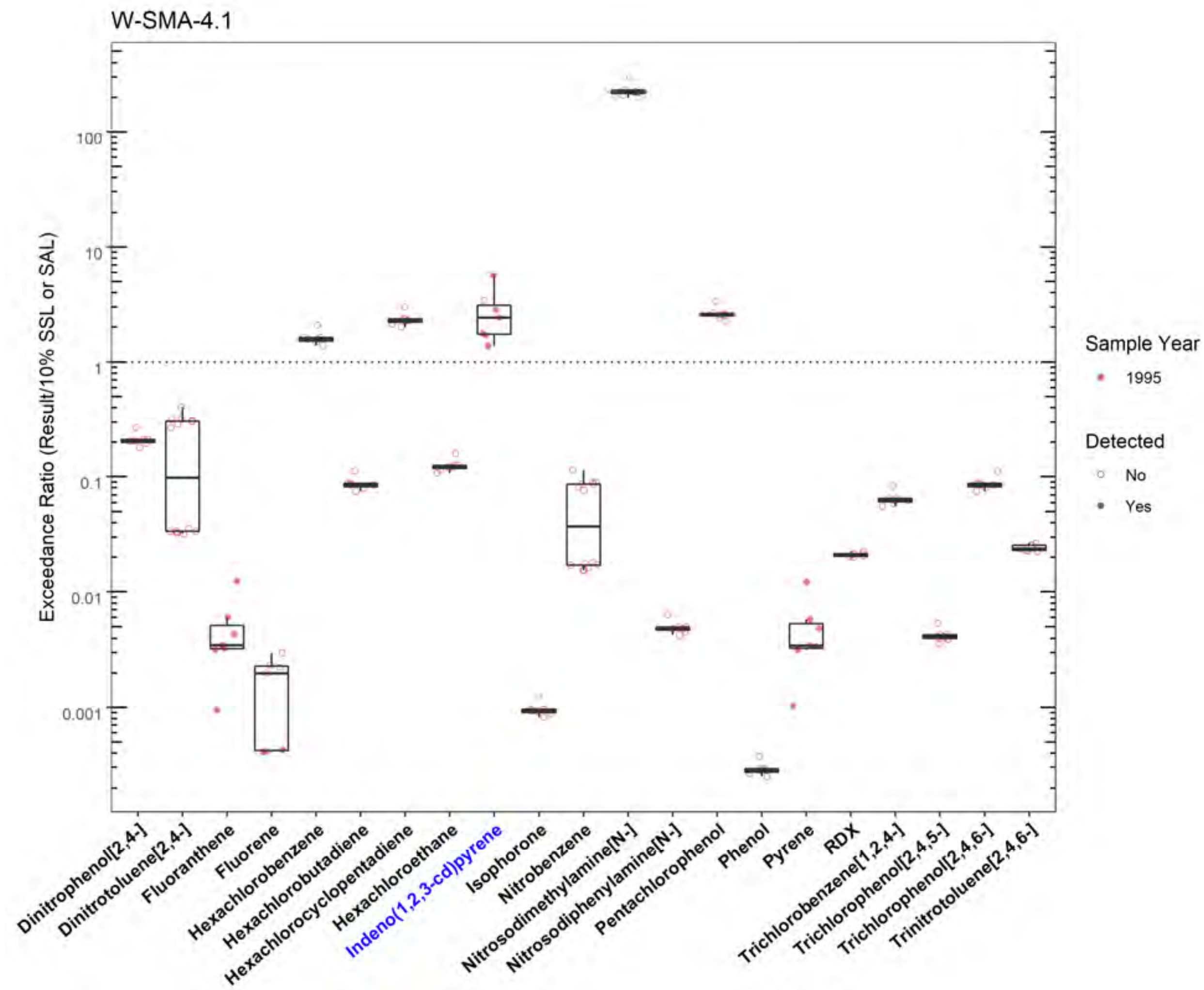


Figure 200.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-4.1 (Plot 2)

W-SMA-4.1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	W-SMA-4.1	56-55-3	Y	SSL_0.1	0.153	1.00	1995-10-12
Benzo(a)pyrene	W-SMA-4.1	50-32-8	Y	SSL_0.1	0.112	1.30	1995-10-12
Benzo(b)fluoranthene	W-SMA-4.1	205-99-2	Y	SSL_0.1	0.153	1.90	1995-10-12
Cadmium	W-SMA-4.1	Cd	Y	BTV	0.400	1.03	1995-05-25
Copper	W-SMA-4.1	Cu	Y	BTV	14.7	24.4	1995-05-25; 1995-10-12
Dibenz(a,h)anthracene	W-SMA-4.1	53-70-3	Y	SSL_0.1	0.0153	0.170	1995-10-12
Indeno(1,2,3-cd)pyrene	W-SMA-4.1	193-39-5	Y	SSL_0.1	0.153	0.870	1995-10-12
Lead	W-SMA-4.1	Pb	Y	BTV	22.3	28.8	1995-10-12
Uranium	W-SMA-4.1	U	Y	BTV	1.82	6.29	1995-05-25
Zinc	W-SMA-4.1	Zn	Y	BTV	48.8	340	1995-10-12

Figure 200.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-4.1

200.4 Stormwater Evaluation

200.4.1 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.

200.4.2 Assessment Unit and Stream Impairments

W-SMA-4.1 drains to Water Canyon (Area-A Canyon to NM 501) which has no impairments.

200.5 Site-Specific Demonstration

200.5.1 Soil Data Summary

Uranium exceeded the applicable screening values in soil data and has not yet been measured in stormwater.

High explosives are in the site history but did not exceed the applicable screening values in soil data. Therefore, they will not be added to the SAP.

200.5.2 Stormwater Data Summary

No confirmation-monitoring data.

200.5.3 2022 Permit Status

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

200.5.4 Sampling and Analysis Plan

Table 200.5-1 is the proposed SAP for W-SMA-4.1.

Table 200.5-1 Proposed SAP, W-SMA-4.1

Monitoring Constituent	Background for Monitoring
Dissolved uranium	Site history
DOC	Permit requirement
SSC	Permit requirement

201.0 W-SMA-5

Associated Sites	16-001(e), 16-003(f), 16-026(b), 16-026(c), 16-026(d), 16-026(e)
Receiving Water	S-Site Canyon - Tributary to Water Canyon
Drainage Area	68.41 acres
Landscape Characteristics	10% impervious, 90% impervious
Consent Order Site Status	SWMU 16-001(e): Pending Receipt of Certificate of Completion SWMU 16-003(f): In Progress SWMU 16-026(b): Pending Receipt of Certificate of Completion SWMU 16-026(c): Pending Receipt of Certificate of Completion SWMU 16-026(d): Pending Receipt of Certificate of Completion SWMU 16-026(e): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

201.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, 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.

201.2 Site History

16-001(e) (9/6/2019)

SWMU 16-001(e) is an inactive dry well located approximately 170 ft east of HE processing building 16-306 at the head of a small tributary to Water Canyon at TA-16. Constructed in the 1980s, the dry well served the building 16-300 series process line and never functioned properly because it drained to impermeable tuff. Building 16-300 was initially an HE-casting facility and was later converted to a mock (inert) explosives-preparation facility in 1962. The well was constructed of a 4-ft diameter corrugated metal pipe buried vertically to an unknown depth. A T-pipe was subsequently installed in the dry well to allow liquids discharged to the dry well to flow to a former NPDES-permitted outfall (EPA 05A058) where the liquid waste trunk line discharged effluent from HE sumps associated with the building 16-300 series process line. The dry well was filled with soil from the surrounding area and capped with concrete before 1992.

16-003(f) (9/6/2019)

SWMU 16-003(f) consists of two inactive HE sumps located on the exterior east side of building 16-304 at TA-16. Building 16-304 was constructed between 1951 and 1953 and was used as a plastics and plastics components development and production facility for the weapons program. Polycarbonate components were fabricated using injection molding machines and other components were fabricated using hydraulic presses. Large, high-temperature ovens were used for drying molding powders and curing thermoset plastics. Wash water from the building drained to the sumps. Chemical solvents including acetone and methyl ethyl ketone were used in the plastics processing operations were also discharged to the SWMU 16-003(f) sumps. One sump measured 123 in. × 41 in. × 31 in. with a 6 in. VCP outlet drainline, and the other sump measured 203 in. × 41 in. × 31 in. with an 8 in. VCP outlet drainline. HE-contaminated water and solvents from the SWMU 16-003(f) sumps discharged into the shared liquid waste trunk line located on the east side of the building. The effluent flowed through the liquid waste trunk line and discharged through a former NPDES-permitted outfall (EPA 05A058) into a well-defined drainage across HE Road and southeast of building 16-306. In the early 1990s, solvents were no longer discharged to the sumps. Discharges from the SWMU 16-003(f) sumps ceased in the mid-1990s, and the outfall was removed from the NPDES permit in 2000.

16-026(b) (11/26/2019)

SWMU 16-026(b) is an inactive outfall located northeast of a rest house (Structure 16-307) at TA-16. The outfall formerly received discharges from two HE sumps [SWMU 16-029(a)] located adjacent to the exterior southeast wall of the rest house. The outfall discharged to Water Canyon. The sumps were plugged in 1990–1991. Structure 16-307 was built between 1951 and 1953 to serve building 16-306. Structure 16-307 was used to store molds and other materials used in plastics development facilities and also previously housed a solvent disassembly tank used to remove HE from test devices. This operation was the principal source of potential HE contamination in the drainage downgradient of the inactive outfall.

16-026(c) (11/26/2019)

SWMU 16-026(c) is an inactive outfall located south of a rest house (Structure 16-305) at TA-16. The outfall formerly received discharges from two HE sumps [SWMU 16-029(b)] located adjacent to the exterior southwest wall of the rest house. The outfall discharged to Water Canyon. The sumps were plugged in 1990–1991. Structure 16-305 was built between 1951 and 1953 to serve buildings 16-304 and 16-306, the plastics development and production facility. Structure 16-305 was used to store chemicals and solvents for plastics development and production, and was also used for filament winding of developmental weapons components.

16-026(d) (11/26/2019)

SWMU 16-026(d) is an inactive outfall located southeast of a rest house (Structure 16-303) at TA-16. The outfall formerly received discharges from two HE sumps [SWMU 16-029(c)] located adjacent to the exterior west wall of the rest house. The outfall discharged to Martin Spring Canyon. The sumps were plugged in 1990–1991. Structure 16-303 was built between 1951 and 1953 to serve building 16-302, an HE casting facility. The rest house was used to store raw materials used in the casting process and HE castings produced in casting building 16-302.

For investigation activities for these Sites, refer to “Supplemental Investigation Report for S-Site Aggregate Area, Revision 1” (N3B 2019, 700414).

201.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 201.2-1.

Table 201.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-001(e)	Dry well	SVOCs, HE, chloride
16-003(f)	Sumps	SVOCs, chloride
16-026(b)	Outfall	Barium, SVOCs, HE
16-026(c)	Outfall	Barium, HE
16-026(d)	Outfall	Barium, HE
16-026(e)	Outfall	Barium, HE

201.3 Consent Order Soil Data

Decision-level data for SWMU 16-001(e) consist of results from samples collected in 2010. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination have been defined and further sampling for extent is not warranted.

Decision-level data for SWMU 16-003(f) consist of results from samples collected in 2010. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination have been defined for all detected inorganic and organic chemicals, except the lateral and vertical extent of arsenic and thallium.

Decision-level data for SWMU 16-026(b), SWMU 16-026(c), and SWMU 16-026(d) consist of results from samples collected in 1995 and 2010. The 2019 Revision 1 of the supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination are defined and no further sampling for extent is warranted.

Decision-level data for SWMU 16-026(e) consist of results from samples collected in 1995, 1997, and 2010. The 2019 Revision 1 of the supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination have not been defined and further sampling to define the lateral extent of RDX is warranted.

Analytical results for all decision-level soil samples for this SMA are presented in Figures 201.3-1 through 201.3-4.

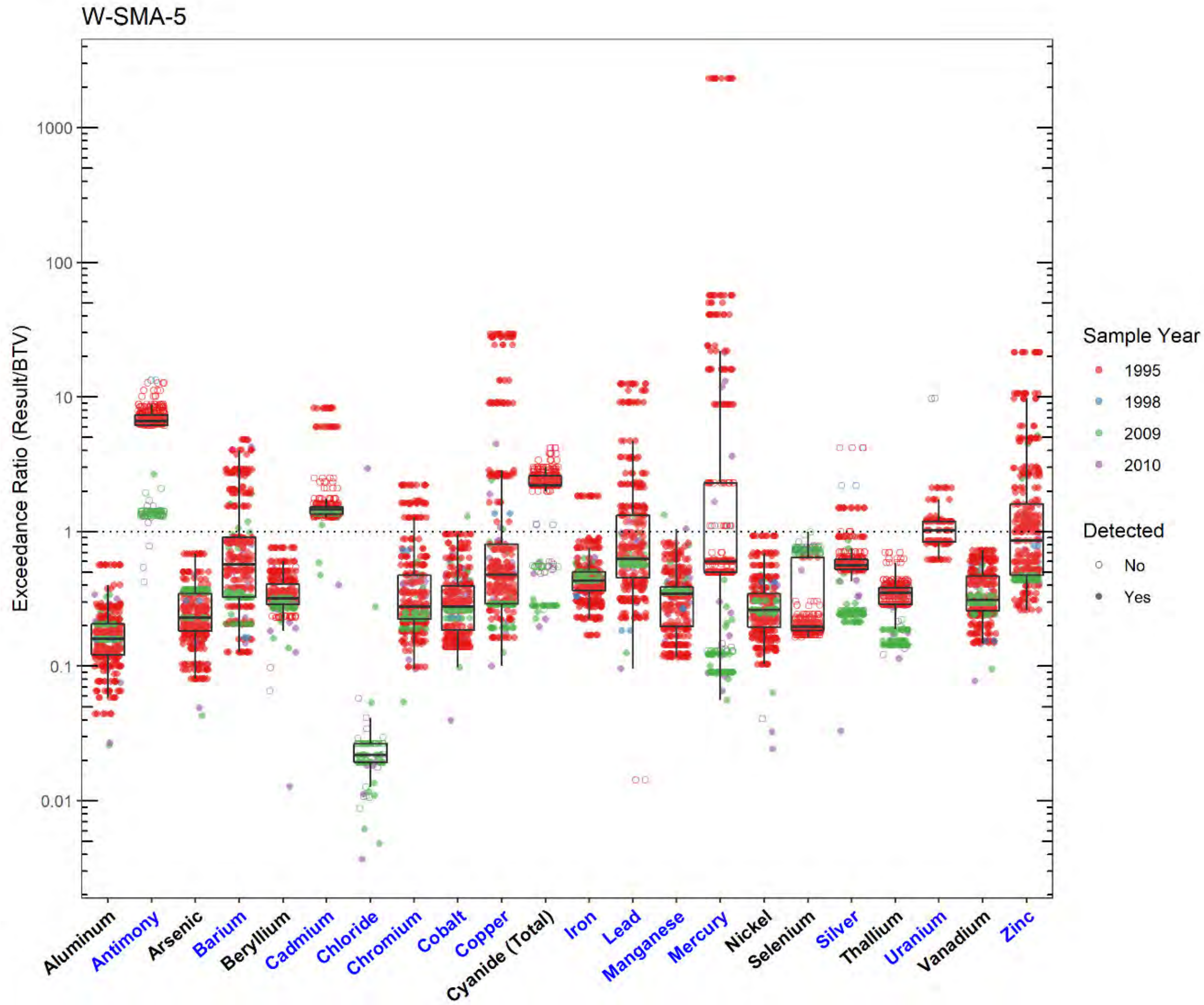


Figure 201.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-5

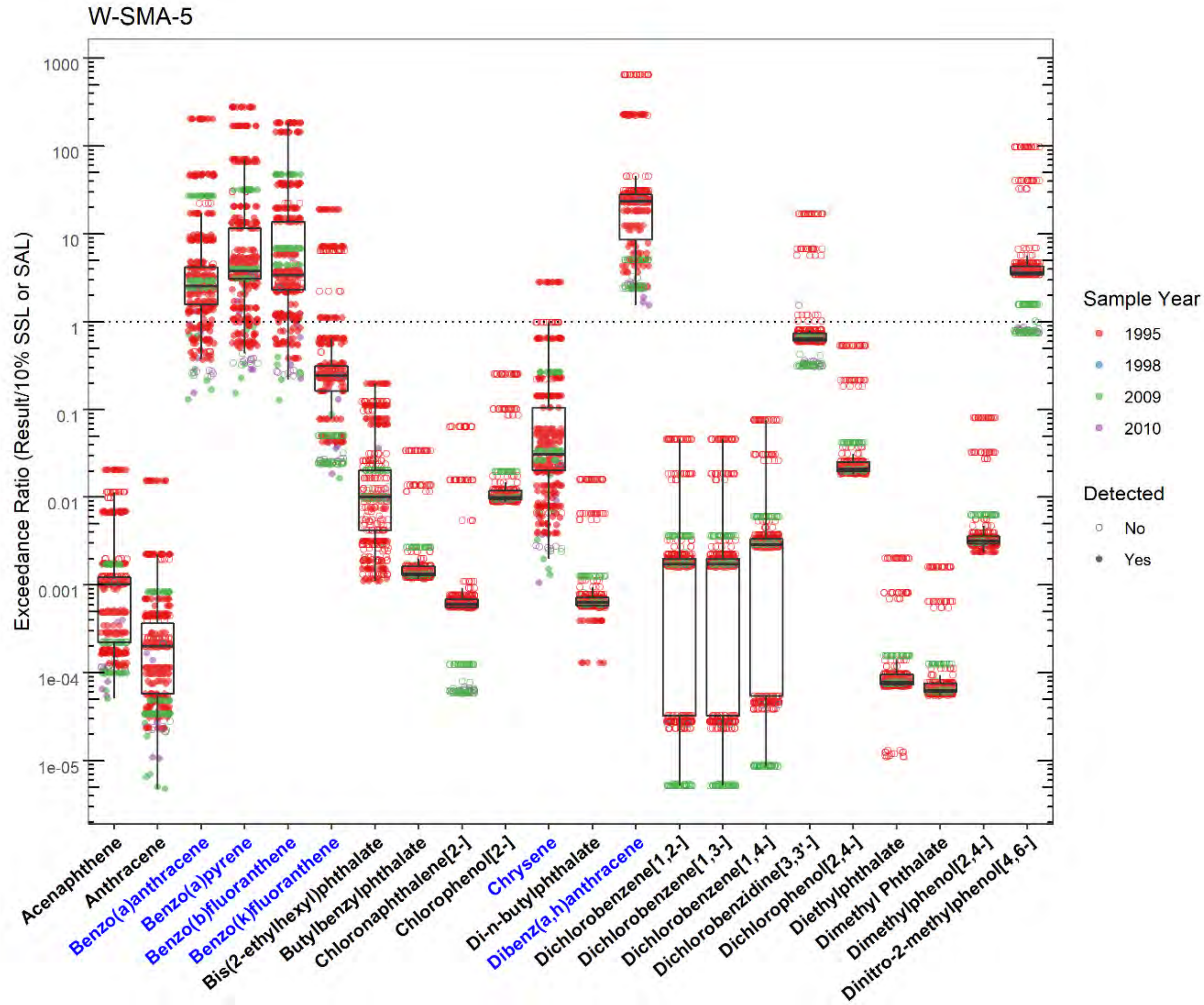


Figure 201.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-5 (Plot 1)

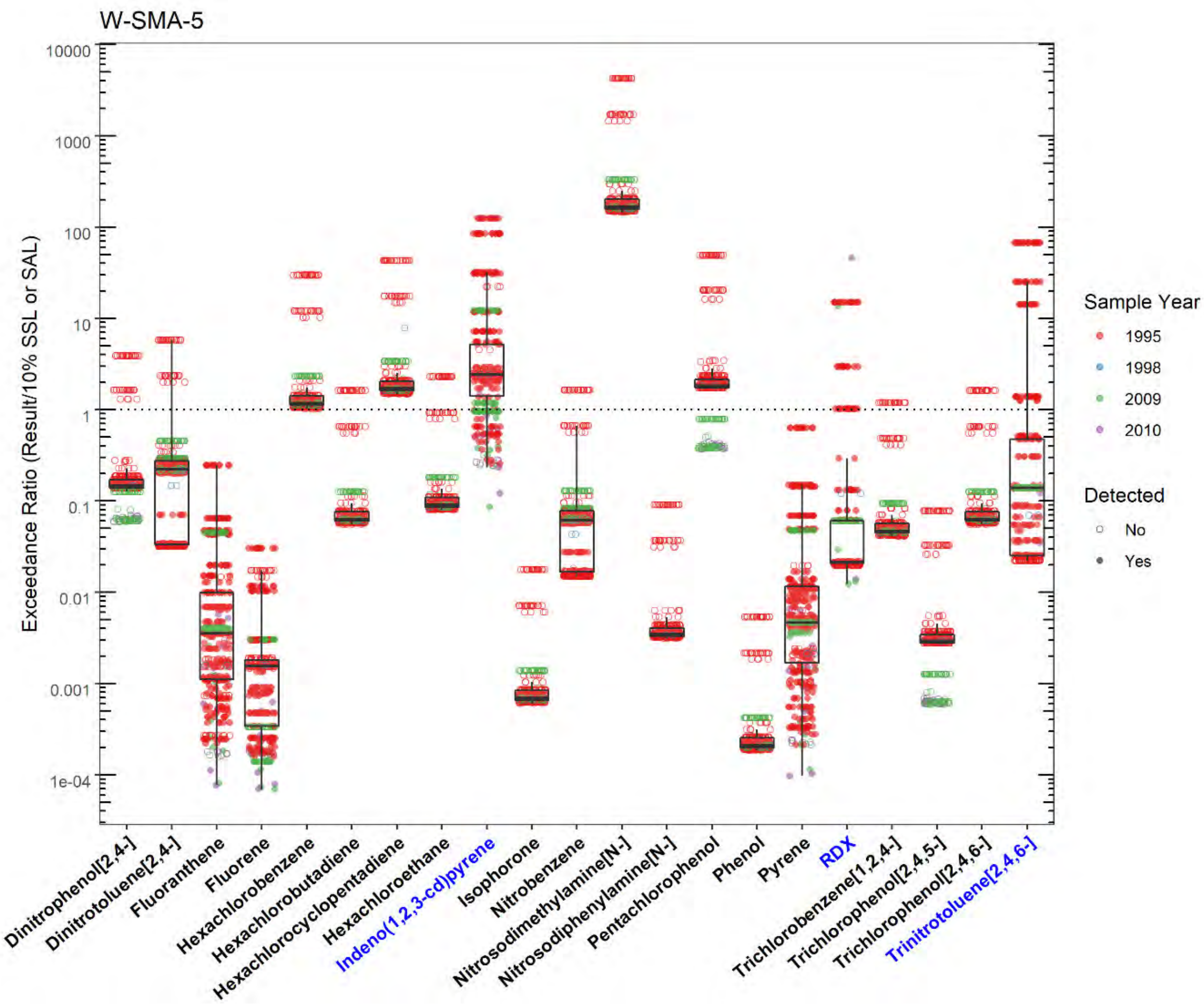


Figure 201.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-5 (Plot 2)

W-SMA-5

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	W-SMA-5	Sb	Y	BTV	0.830	2.22	2009-11-18
Barium	W-SMA-5	Ba	Y	BTV	295	1420	1995-06-19
Benzo(a)anthracene	W-SMA-5	56-55-3	Y	SSL_0.1	0.153	31.0	1995-08-22
Benzo(a)pyrene	W-SMA-5	50-32-8	Y	SSL_0.1	0.112	31.0	1995-08-22
Benzo(b)fluoranthene	W-SMA-5	205-99-2	Y	SSL_0.1	0.153	28.0	1995-08-08
Benzo(k)fluoranthene	W-SMA-5	207-08-9	Y	SSL_0.1	1.53	29.0	1995-08-22
Cadmium	W-SMA-5	Cd	Y	BTV	0.400	3.30	1995-08-22
Chloride	W-SMA-5	Cl(-1)	Y	BTV	231	678	2010-01-29
Chromium	W-SMA-5	Cr	Y	BTV	19.3	42.8	1995-08-22
Chrysene	W-SMA-5	218-01-9	Y	SSL_0.1	15.3	43.0	1995-08-22
Cobalt	W-SMA-5	Co	Y	BTV	8.64	11.2	2009-12-18
Copper	W-SMA-5	Cu	Y	BTV	14.7	430	1995-08-22
Dibenz(a,h)anthracene	W-SMA-5	53-70-3	Y	SSL_0.1	0.0153	3.50	1995-08-08
Indeno(1,2,3-cd)pyrene	W-SMA-5	193-39-5	Y	SSL_0.1	0.153	19.0	1995-08-22
Iron	W-SMA-5	Fe	Y	BTV	21500	39500	1995-08-22
Lead	W-SMA-5	Pb	Y	BTV	22.3	278	1995-08-22
Manganese	W-SMA-5	Mn	Y	BTV	671	890	2009-12-18
Mercury	W-SMA-5	Hg	Y	BTV	0.100	233	1995-08-22
RDX	W-SMA-5	121-82-4	Y	SSL_0.1	8.31	380	2010-03-19
Silver	W-SMA-5	Ag	Y	BTV	1.00	1.50	1995-08-22
Trinitrotoluene[2,4,6-]	W-SMA-5	118-96-7	Y	SSL_0.1	3.60	243	1995-08-08
Uranium	W-SMA-5	U	Y	BTV	1.82	3.86	1995-05-18
Zinc	W-SMA-5	Zn	Y	BTV	48.8	1050	1995-08-22

Figure 201.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-5

201.4 Stormwater Evaluation

201.4.1 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 201.4-1 through 201.4-4.

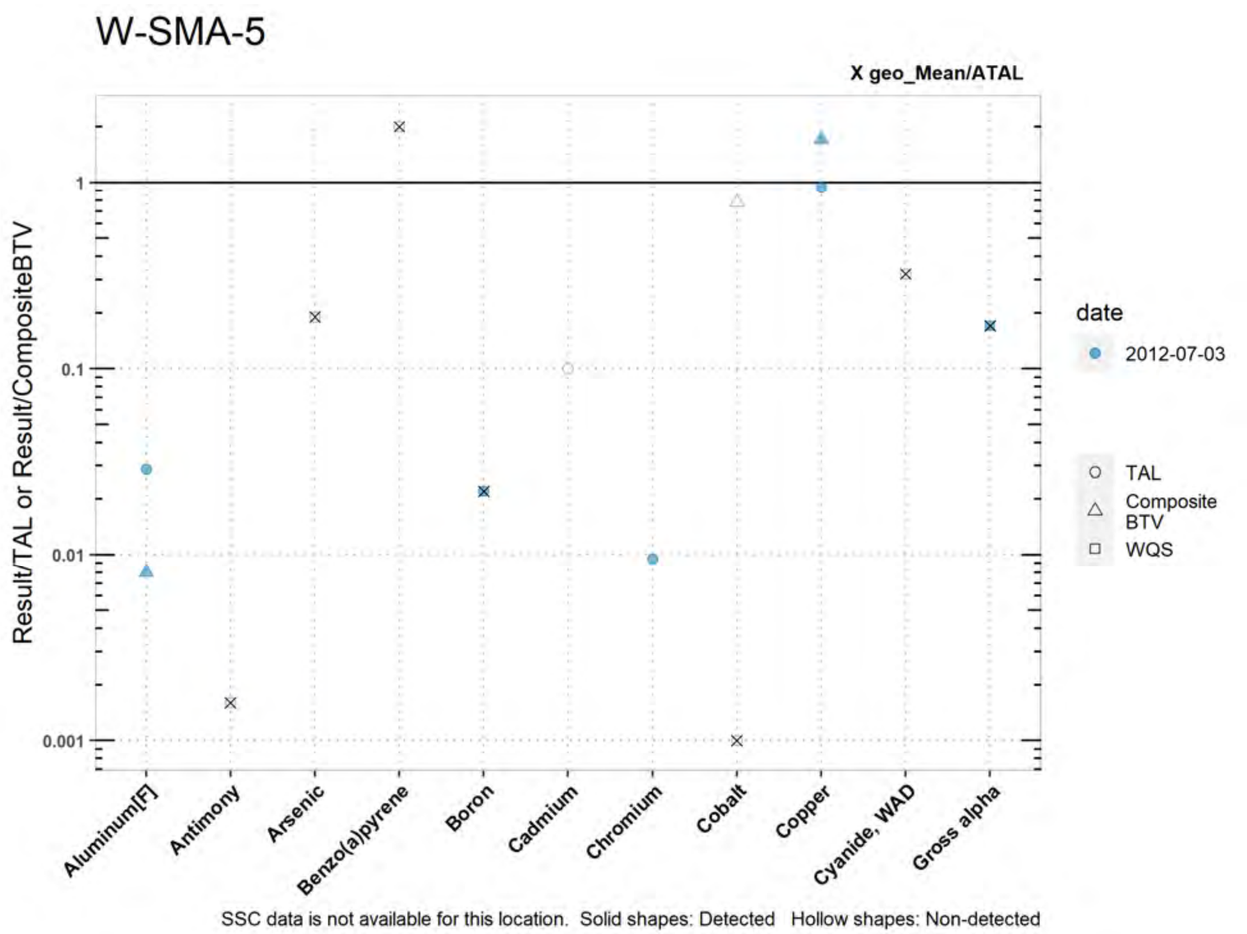


Figure 201.4-1 Analytical Results from Stormwater Sample, W-SMA-5 (Plot 1)

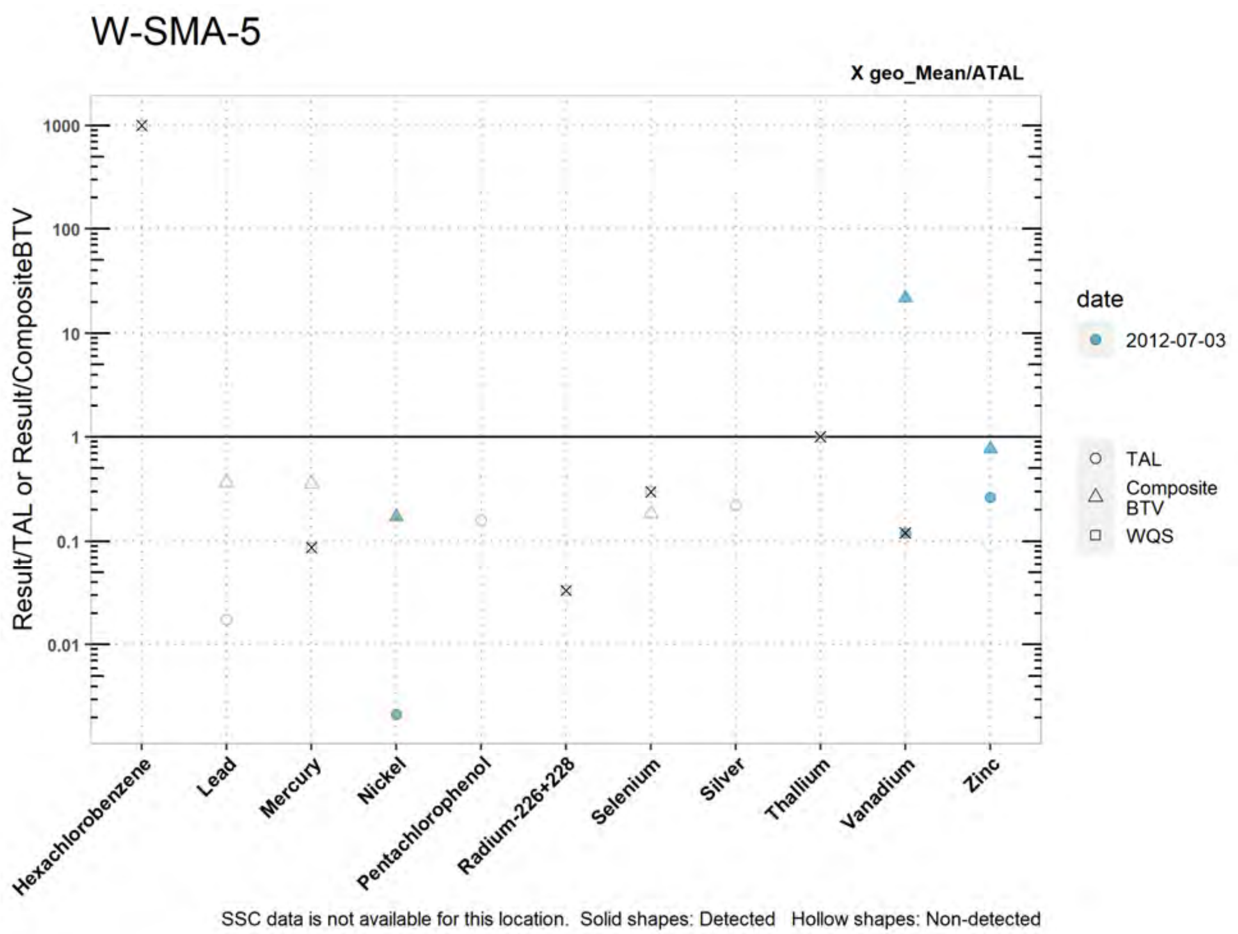


Figure 201.4-2 Analytical Results from Stormwater Sample, W-SMA-5 (Plot 2)

W-SMA-5

	Aluminum [F]	Antimony	Arsenic	Benzo(a)pyrene	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha
MQL	2.5	1	0.5	0.064	100	1	10	50	0.5	10	NA
ATAL	NA	640	9	0.18	5000	NA	NA	1000	NA	5.2	15
MTAL	750	NA	340	NA	NA	0.879	311	NA	6.69	22	NA
Composite_BTV	2680	NA	NA	NA	NA	NA	NA	1.28	3.69	NA	56.5
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L
2012-07-03 result	21.5	*1.00*	*1.70*	*0.440*	111	*0.110*	2.95	*1.00*	6.28	*1.67*	2.61
2012-07-03 dT	0.0287	NA	NA	NA	0.022	NA	0.00949	NA	0.939	NA	0.17
2012-07-03 dB	0.00802	NA	NA	NA	NA	NA	NA	NA	1.70	NA	NA
geo_mean/ATAL	NA	0.0016	0.19	2	0.022	NA	NA	0.0010	NA	0.321	0.17

Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 201.4-3 Analytical Results from Stormwater Sample, W-SMA-5 (Table 1)

W-SMA-5

	Hexachlorobenzene	Lead	Mercury	Nickel	Pentachlorophenol	Radium-226+228	Selenium	Silver	Thallium	Vanadium	Zinc
MQL	5	0.5	0.005	0.5	5	NA	5	0.5	0.5	50	20
ATAL	0.0029	NA	0.77	NA	NA	30	5	NA	0.47	100	NA
MTAL	NA	28.6	NA	250	19	NA	20	0.9	NA	NA	81.6
Composite_BTV	NA	1.36	0.188	3.10	NA	4.81	8.12	NA	NA	0.543	28.3
unit	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L
2012-07-03 result	*3.00*	*0.500*	*0.0670*	0.533	*3.00*	*1.00*	*1.50*	*0.200*	*0.450*	11.9	21.7
2012-07-03 dT	NA	NA	NA	0.00213	NA	NA	NA	NA	NA	0.12	0.266
2012-07-03 dB	NA	NA	NA	0.172	NA	NA	NA	NA	NA	21.9	0.767
geo_mean/ATAL	1000	NA	0.087	NA	NA	0.0333	0.30	NA	1	0.12	NA

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

Figure 201.4-4 Analytical Results from Stormwater Sample, W-SMA-5 (Table 2)

201.4.2 Assessment Unit and Stream Impairments

W-SMA-5 drains to S-Site Canyon (Water Canyon to headwaters) which has not been assessed for impairments.

201.5 Site-Specific Demonstration

201.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: barium, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chloride, chrysene, RDX, and TNT.

Iron, manganese, and uranium exceeded the applicable screening values, but are not Site-related POCs and will not be added to the SAP.

The other metals that exceeded the applicable screening values in soil data were previously monitored in stormwater data and did not exceed TALs. Therefore, they will not be added to the SAP.

201.5.2 Stormwater Data Summary

No TAL exceedances.

201.5.3 2022 Permit Status

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

201.5.4 Sampling and Analysis Plan

Table 201.5-1 is the proposed SAP for W-SMA-5.

Table 201.5-1 Proposed SAP, W-SMA-5

Monitoring Constituent	Background for Monitoring
SVOCs	Site history and soil data
Chloride	Site history and soil data
Dissolved barium	Site history and soil data
HE	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

202.0 W-SMA-6

Associated Sites	11-001(c)
Receiving Water	Water Canyon
Drainage Area	0.13 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 11-001(c): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the October 2016 field visit, the sampler was moved downgradient on the hillslope to capture stormwater runoff from the entire upper area.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3.a criterion

202.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in July 2012. Because of a 2013 change in the Site boundary the 2012 sample was not used for confirmation monitoring. The sampler location was moved in 2013 to a more representative location and baseline monitoring was reinitiated. 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 October 2019. 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 October 2020 (N3B 2020, 701098). No response has been received from EPA, and stormwater monitoring has not occurred since 2019.

202.2 Site History

11-001(c) (3/21/2019)

SWMU 11-001(c) is a former firing pit (former structure 11-15 that was located northwest of former building 16-370, near the edge of Water Canyon at TA-16). According to the 1990 SWMU Report, the firing pit was similar in construction to firing pit 11-14 [SWMU 11-001(a)], which consisted of a 12.5-ft semicircular concrete wall that was 4.5 ft high and 37 in. thick. The SWMU 11-001(c) firing pit was first used in 1944. The former TA-11 firing pits were arranged so that testing could be controlled and observed remotely. Components and assemblies were exposed to extreme physical environments including vibration, shock, and thermal testing. Shots fired at the former TA-11 firing pits reportedly contained uranium and aluminum. Use of the firing pit ceased by the early 1950s.

In 1989 when technical area boundaries were redefined within the Laboratory, portions of former TA-11 were absorbed into TA-16. As a result, SWMU 11-001(c) is now located within the northeast portion of TA-16.

For investigation activities, refer to “Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1” (LANL 2010, 110409; LANL 2011, 111602.33).

202.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 202.2-1.

Table 202.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
11-001(c)	Firing site	Aluminum, barium, HE, uranium

202.3 Consent Order Soil Data

Decision-level data are not available for SWMU 11-001(c).

202.4 Stormwater Evaluation

202.4.1 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 October 2019. Analytical results from these samples are presented in Figures 202.4-1 through 202.4-4.

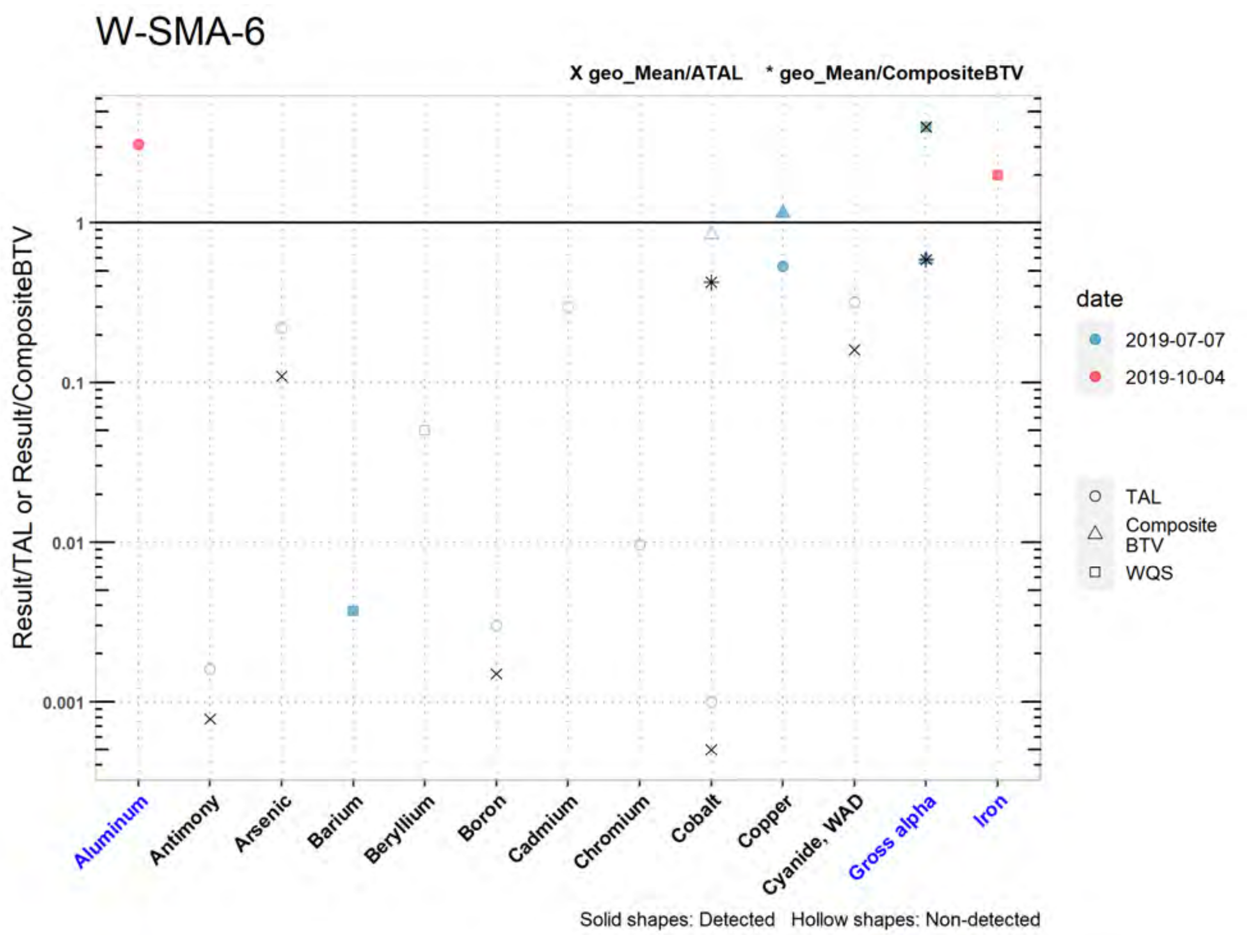


Figure 202.4-1 Analytical Results from Stormwater Samples, W-SMA-6 (Plot 1)

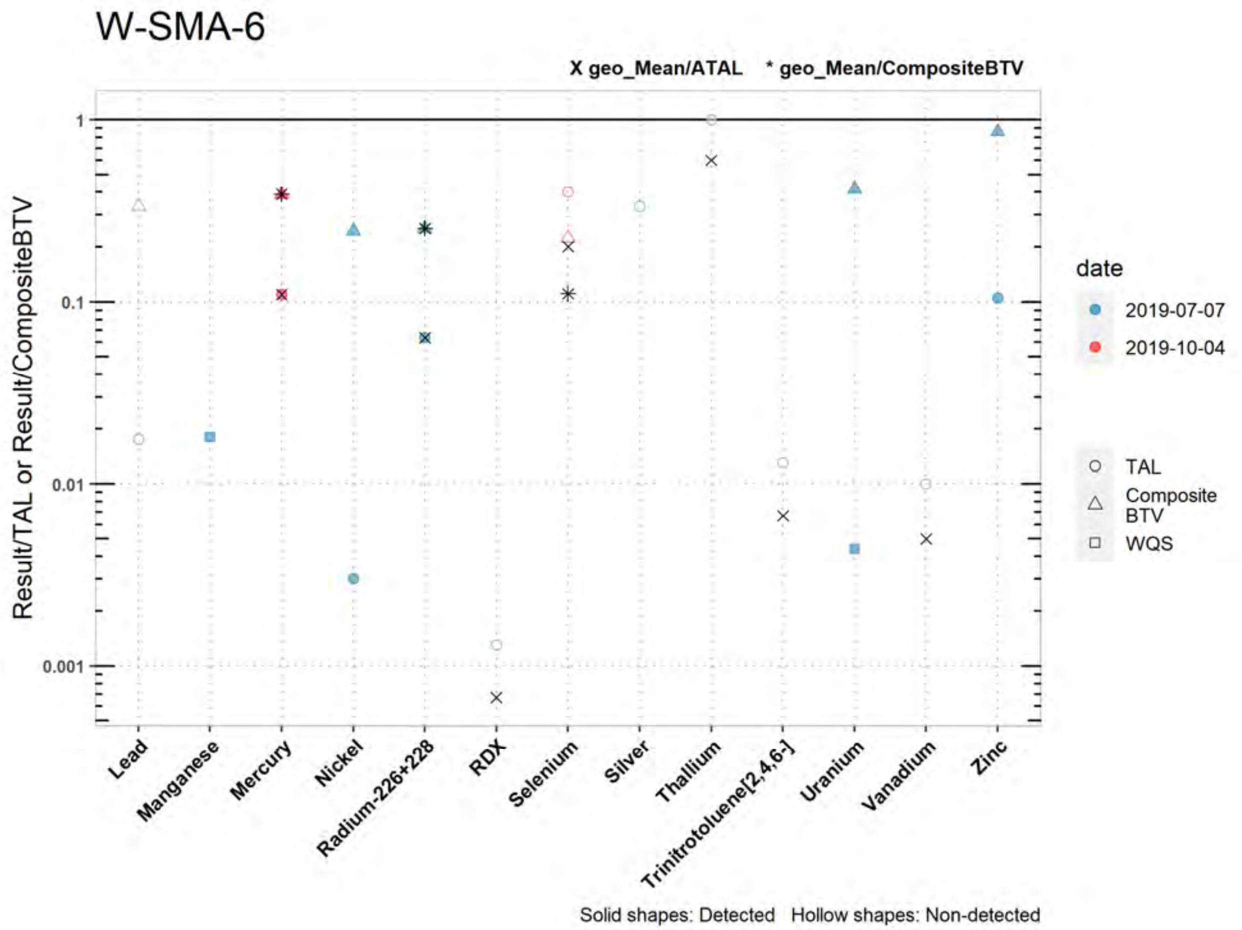


Figure 202.4-2 Analytical Results from Stormwater Samples, W-SMA-6 (Plot 2)

W-SMA-6

	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Iron
MQL	2.5	1	0.5	NA	NA	100	1	10	50	0.5	10	NA	NA
ATAL	NA	640	9	NA	NA	5000	NA	NA	1000	NA	5.2	15	NA
MTAL	1241	NA	340	NA	NA	NA	0.879	311	NA	6.69	22	NA	NA
Composite_BTV	37400	NA	NA	NA	NA	NA	NA	NA	1.18	3.12	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	pCi/L*	ug/L
2019-07-07 result	NA	*1.00*	*2.00*	7.40	*0.200*	*15.0*	*0.300*	*3.00*	*1.00*	3.58	*1.67*	60.5	NA
2019-07-07 dT	NA	NA	NA	0.0037	NA	NA	NA	NA	NA	0.535	NA	4.0	NA
2019-07-07 dB	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.15	NA	0.588	NA
2019-10-04 result	3870	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2010
2019-10-04 dT	3.12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.0
2019-10-04 dB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
geo_mean/ATAL	NA	0.00078	0.11	NA	NA	0.0015	NA	NA	0.00050	NA	0.161	4.0	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	NA	NA	0.424	NA	NA	0.588	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 202.4-3 Analytical Results from Stormwater Samples, W-SMA-6 (Table 1)

W-SMA-6

	Lead	Manganese	Mercury	Nickel	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Uranium	Vanadium	Zinc
MQL	0.5	NA	0.005	0.5	NA	NA	5	0.5	0.5	NA	NA	50	20
ATAL	NA	NA	0.77	NA	30	200	5	NA	0.47	20	NA	100	NA
MTAL	28.6	NA	NA	250	NA	NA	20	0.9	NA	NA	NA	NA	81.6
Composite_BTV	1.50	NA	0.208	3.10	4.21	NA	8.98	NA	NA	NA	0.315	NA	10.0
unit	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
2019-07-07 result	*0.500*	22.8	NA	0.755	1.91	*0.267*	NA	*0.300*	*0.600*	*0.267*	0.131	*1.00*	8.60
2019-07-07 dT	NA	0.018	NA	0.00302	0.0637	NA	NA	NA	NA	NA	0.0044	NA	0.105
2019-07-07 dB	NA	NA	NA	0.244	0.252	NA	NA	NA	NA	NA	0.416	NA	0.860
2019-10-04 result	NA	NA	0.0810	NA	NA	NA	*2.00*	NA	NA	NA	NA	NA	NA
2019-10-04 dT	NA	NA	0.11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2019-10-04 dB	NA	NA	0.389	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
geo_mean/ATAL	NA	NA	0.11	NA	0.0637	0.00067	0.20	NA	0.6	0.0067	NA	0.0050	NA
geo_mean/B	NA	NA	0.389	NA	0.252	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 202.4-4 Analytical Results from Stormwater Samples, W-SMA-6 (Table 2)

202.4.2 Assessment Unit and Stream Impairments

W-SMA-6 drains to Water Canyon (Area-A Canyon to NM 501) which has no impairments.

202.5 Site-Specific Demonstration

202.5.1 Soil Data Summary

No Consent Order data.

202.5.2 Stormwater Data Summary

Gross alpha exceeded TALs but not BTVs. Dissolved aluminum and copper exceeded the TALs but not the BTVs. Iron exceeded the WQS; however, there is no TAL in the Permit for iron. Only POCs with TALs are used in the SSD.

202.5.3 2022 Permit Status

The SMA is eligible for long-term stewardship. All Site-related POCs with TALs were below their respective composite BTVs (Part I.C.3.a).

203.0 W-SMA-7

Associated Sites	16-029(e)
Receiving Water	Water Canyon
Drainage Area	2.24 acres
Landscape Characteristics	2% impervious, 98% pervious
Consent Order Site Status	SWMU 16-029(e): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

203.1 2010 Administratively Continued Permit Summary

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

Following the September 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600931), 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 at least one confirmation sample is collected.

203.2 Site History

16-029(e) (5/17/2019)

SWMU 16-029(e) consists of an inactive HE sump and formerly NPDES-permitted outfall (05A159) that served HE equipment assembly building 16-360 at TA-16. The sump is a 12-ft × 4-ft × 5-ft reinforced-concrete structure located on the exterior southeast side of the building. The sump received wash water from historical cleaning activities and discharged southeast to the outfall through a 6-in.-diameter drainline. In the 1990s, the sump outlet was plugged. The outfall was removed from the NPDES permit effective August 16, 1995.

The OU 1082 RCRA RFI work plan identifies SWMU 16-029(e) as an HE sump at building 16 360 with SWMU 16-026(h2) as the associated NPDES permitted outfall. However, the 1990 SWMU Report identifies SWMU 16-026(h2) as four outfalls from building drains at building 16-360. Because the four outfalls identified as SWMU 16 026(h2) in the SWMU Report are not associated with the HE sump, SWMU 16-029(e) is identified as the inactive HE sump, and the associated inlet and outlet drainlines and the outfall.

For investigation activities, refer to “Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1” (LANL 2010, 110409; LANL 2011, 111602.33).

203.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 203.2-1.

Table 203.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-029(e)	Sump	HE

203.3 Consent Order Soil Data

Decision-level data for SWMU 16-029(e) consist of results from samples collected in 1995. Analytical results for these samples are presented in Figures 203.3-1 through 203.3-4. The 2011 IWP (LANL 2011, 111602.33) concluded that the nature and extent of contamination have not been defined and additional sampling is recommended.

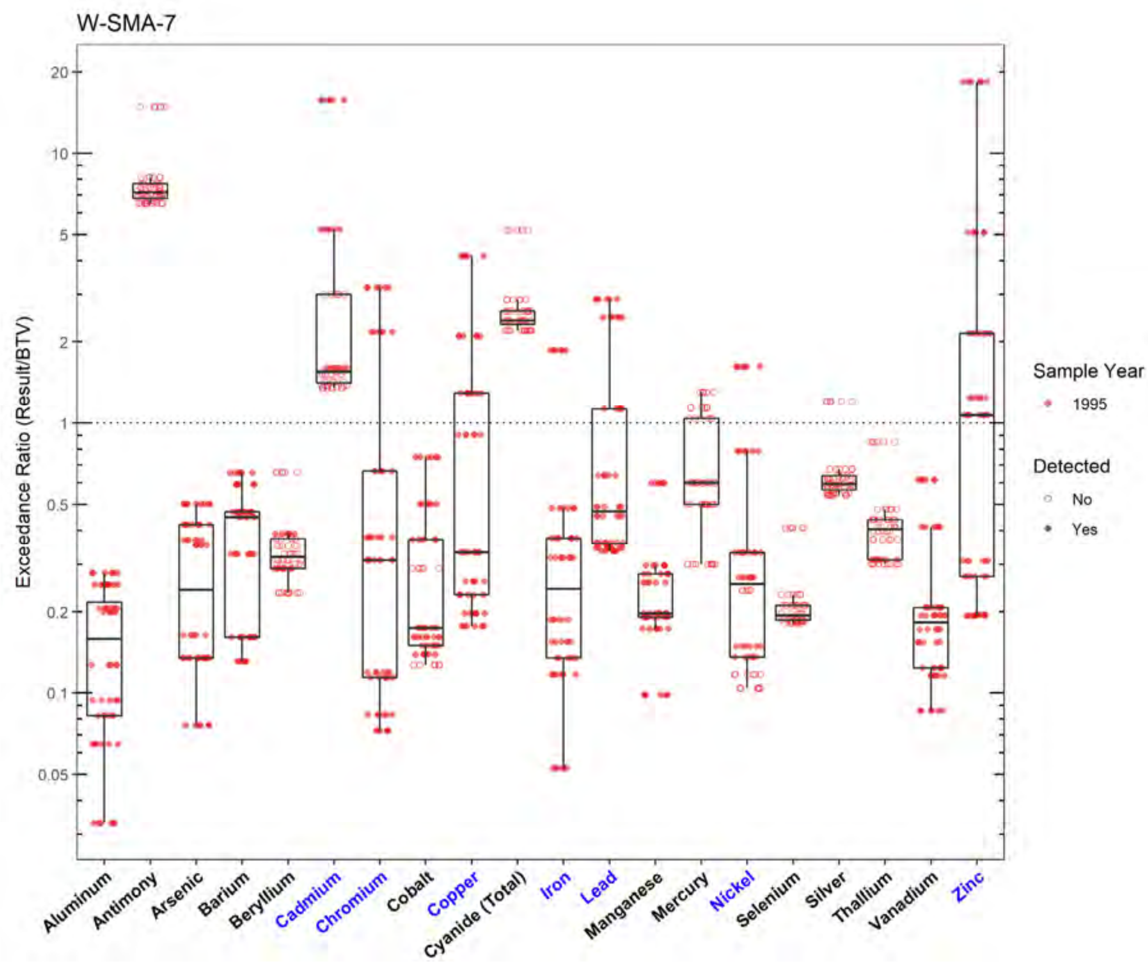


Figure 203.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-7

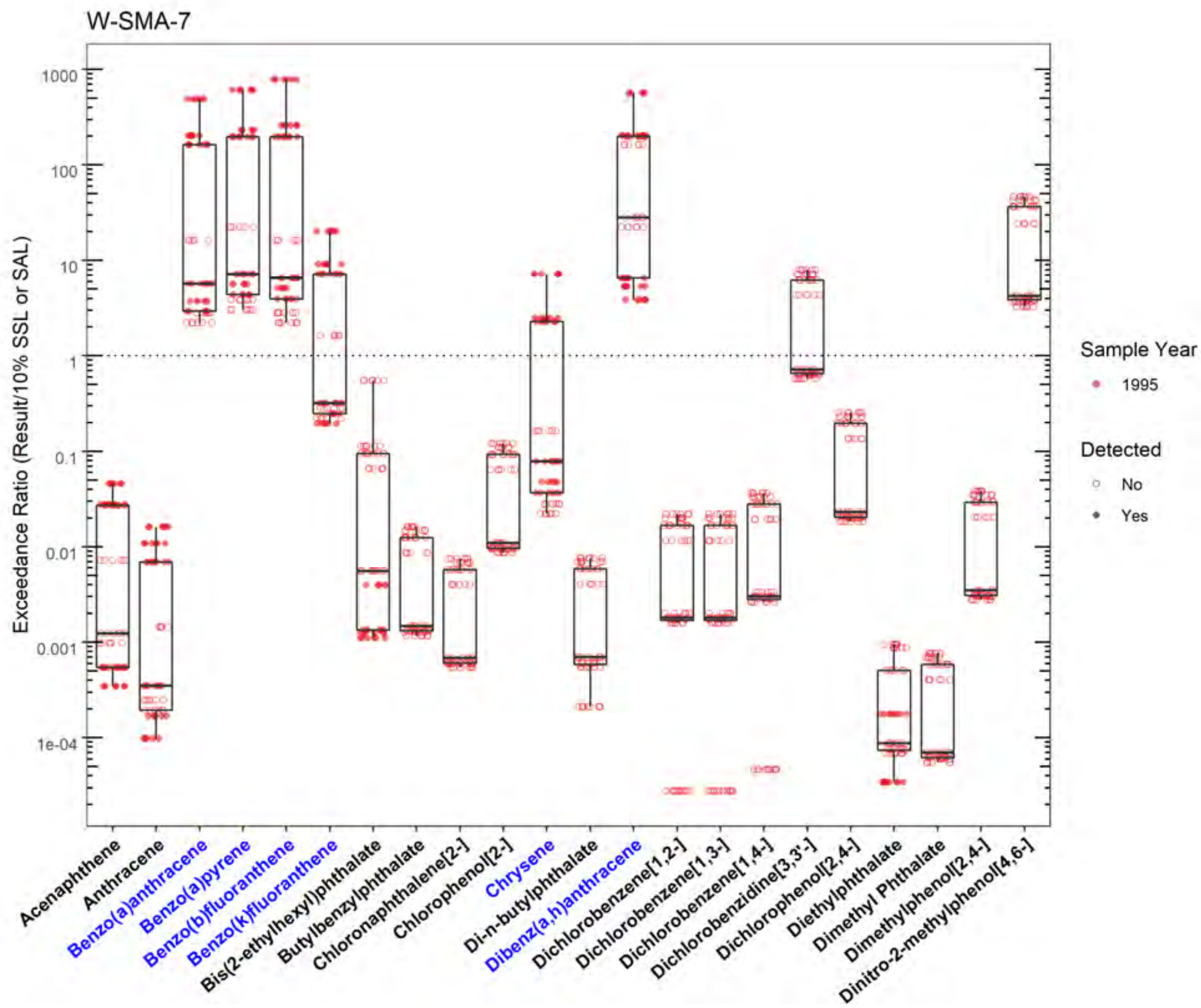


Figure 203.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-7 (Plot 1)

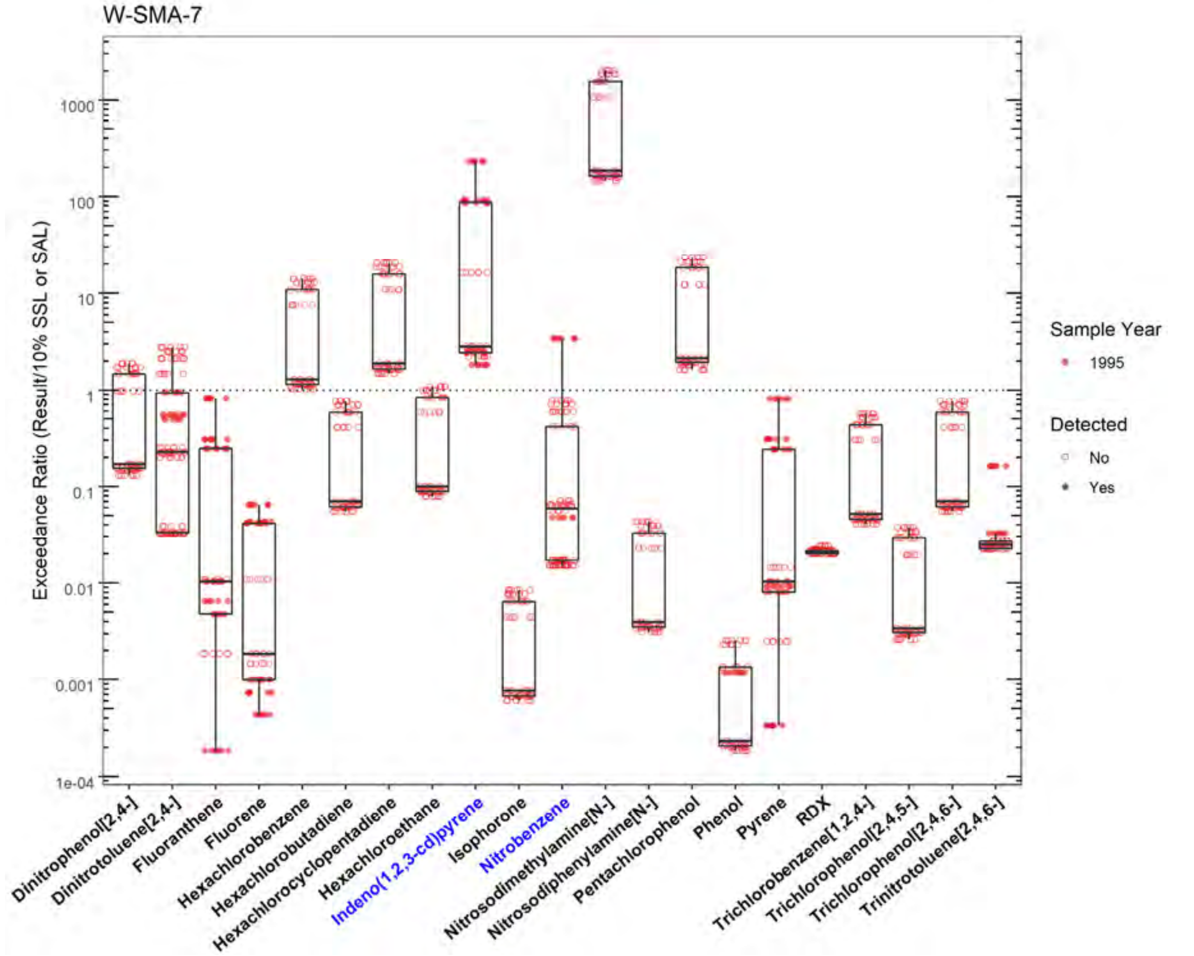


Figure 203.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-7 (Plot 2)

W-SMA-7

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	W-SMA-7	56-55-3	Y	SSL_0.1	0.153	75.0	1995-08-15
Benzo(a)pyrene	W-SMA-7	50-32-8	Y	SSL_0.1	0.112	68.0	1995-08-15
Benzo(b)fluoranthene	W-SMA-7	205-99-2	Y	SSL_0.1	0.153	120	1995-08-15
Benzo(k)fluoranthene	W-SMA-7	207-08-9	Y	SSL_0.1	1.53	31.0	1995-08-15
Cadmium	W-SMA-7	Cd	Y	BTV	0.400	6.30	1995-08-15
Chromium	W-SMA-7	Cr	Y	BTV	19.3	61.1	1995-08-15
Chrysene	W-SMA-7	218-01-9	Y	SSL_0.1	15.3	110	1995-08-15
Copper	W-SMA-7	Cu	Y	BTV	14.7	61.2	1995-08-15
Dibenz(a,h)anthracene	W-SMA-7	53-70-3	Y	SSL_0.1	0.0153	8.70	1995-08-15
Indeno(1,2,3-cd)pyrene	W-SMA-7	193-39-5	Y	SSL_0.1	0.153	35.0	1995-08-15
Iron	W-SMA-7	Fe	Y	BTV	21500	40000	1995-08-15
Lead	W-SMA-7	Pb	Y	BTV	22.3	64.0	1995-05-04
Nickel	W-SMA-7	Ni	Y	BTV	15.4	24.9	1995-08-15
Nitrobenzene	W-SMA-7	98-95-3	Y	SSL_0.1	6.04	20.5	1995-05-04
Zinc	W-SMA-7	Zn	Y	BTV	48.8	900	1995-08-15

Figure 203.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-7

203.4 Stormwater Evaluation

203.4.1 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 location at the SMA.

203.4.2 Assessment Unit and Stream Impairments

W-SMA-7 drains to Water Canyon (within LANL below Area-A Cyn) which has impairments for PCBs, adjusted gross alpha, total aluminum, and total mercury. The impairments are not likely to be Site related, based on Site history.

203.5 Site-Specific Demonstration

203.5.1 Soil Data Summary

Nitrobenzene exceeded the applicable screening values in soil data and has not yet been measured in stormwater.

203.5.2 Stormwater Data Summary

No confirmation-monitoring data.

203.5.3 2022 Permit Status

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

203.5.4 Sampling and Analysis Plan

Table 203.5-1 is the proposed SAP for W-SMA-7.

Table 203.5-1 Proposed SAP, W-SMA-7

Monitoring Constituent	Background for Monitoring
HE	Site history and soil data (nitrobenzene)
DOC	Permit requirement
SSC	Permit requirement

204.0 W-SMA-7.8

Associated Sites	16-031(a)
Receiving Water	Water Canyon
Drainage Area	0.78 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 16-031(a): In Progress
2010 Administratively Continued Permit Final Status	The SMA is being evaluated for a corrective action
2016–2018 SIP Actions	Based on the October 2016 field visit, there appeared to be two potential flow pathways for runoff. Therefore, gravel bags were installed in June 2017 to direct flow from both runoff pathways to the current sampler location.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3.a criterion

204.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, baseline stormwater samples were collected in July 2019 and May 2021. 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 April 2022 (N3B 2022, 701992). No response has been received from EPA and stormwater monitoring has not occurred since 2021.

204.2 Site History

16-031(a) (5/17/2019)

SWMU 16-031(a) is a former outfall and drainline that served a former cooling tower (former Structure 16-372) at TA-16. The outfall discharged approximately 150 ft south of the cooling tower at the edge of Water Canyon. The outfall drainline was a 6-in.-diameter VCP that originated from a drain inside the southeast corner of the cooling tower. The cooling tower served building 16-370, a barium nitrate-grinding facility and metal-forming shop. The cooling tower received chilled water that was cycled through pumps and machinery in building 16-372. The cooling water may have contained chromates, but there is no documentation confirming the use of chromates. The cooling tower was built in 1953 and burned down during the Cerro Grande fire in 2000. The concrete foundation remains in place.

For investigation activities, refer to “Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1” (LANL 2010, 110409; LANL 2011, 111602.33).

204.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 204.2-1.

Table 204.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-031(a)	Outfall from Cooling Tower 16-372	Metals, chromium, barium

204.3 Consent Order Soil Data

Decision-level data for SWMU 16-031(a) consist of results from a sample collected in 1998. Analytical results for these samples are presented in Figures 204.3-1 through 204.3-4. The 2011 IWP (LANL 2011, 111602.33) concluded that the nature and extent of contamination have not been defined and additional sampling is recommended.

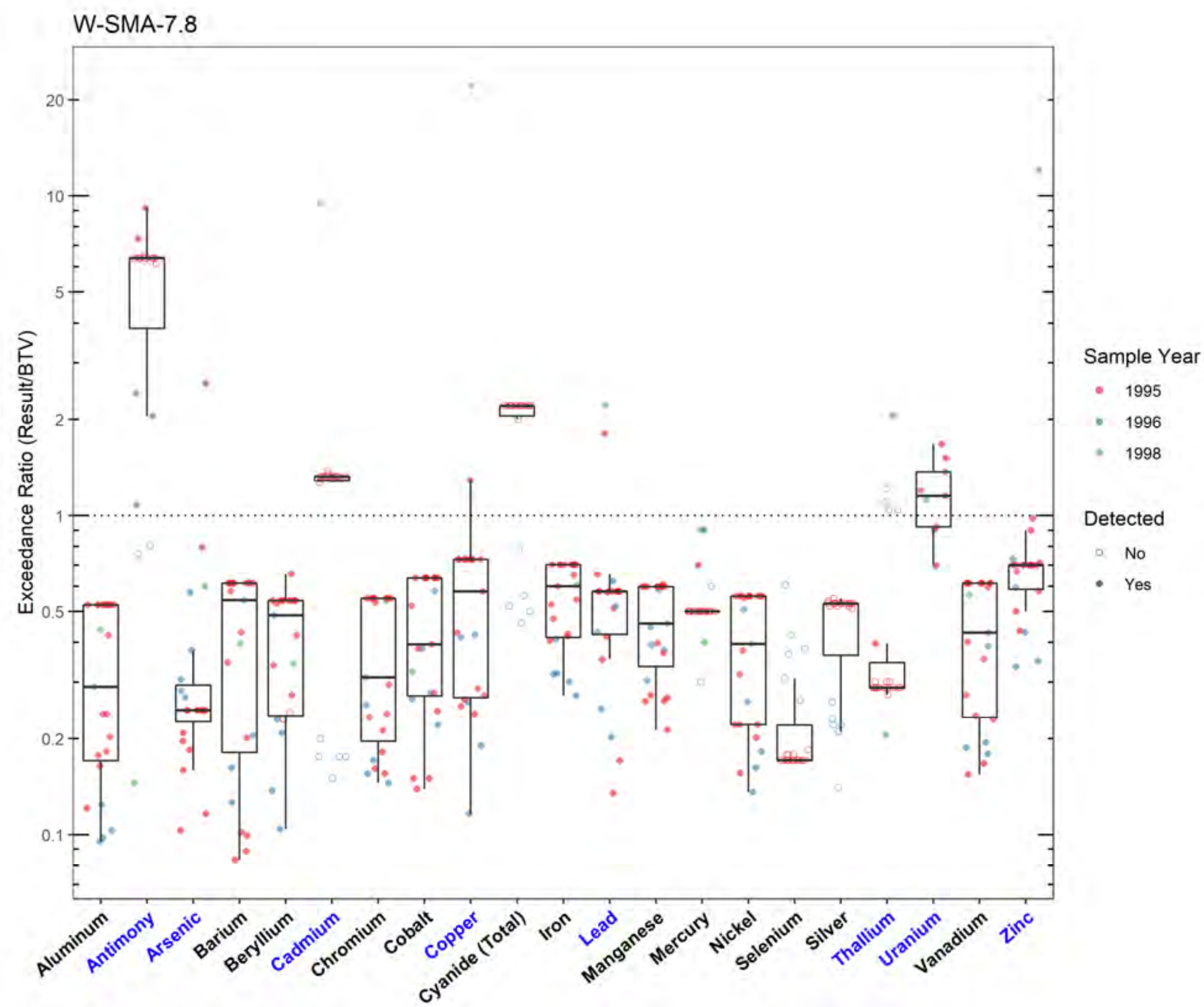


Figure 204.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-7.8

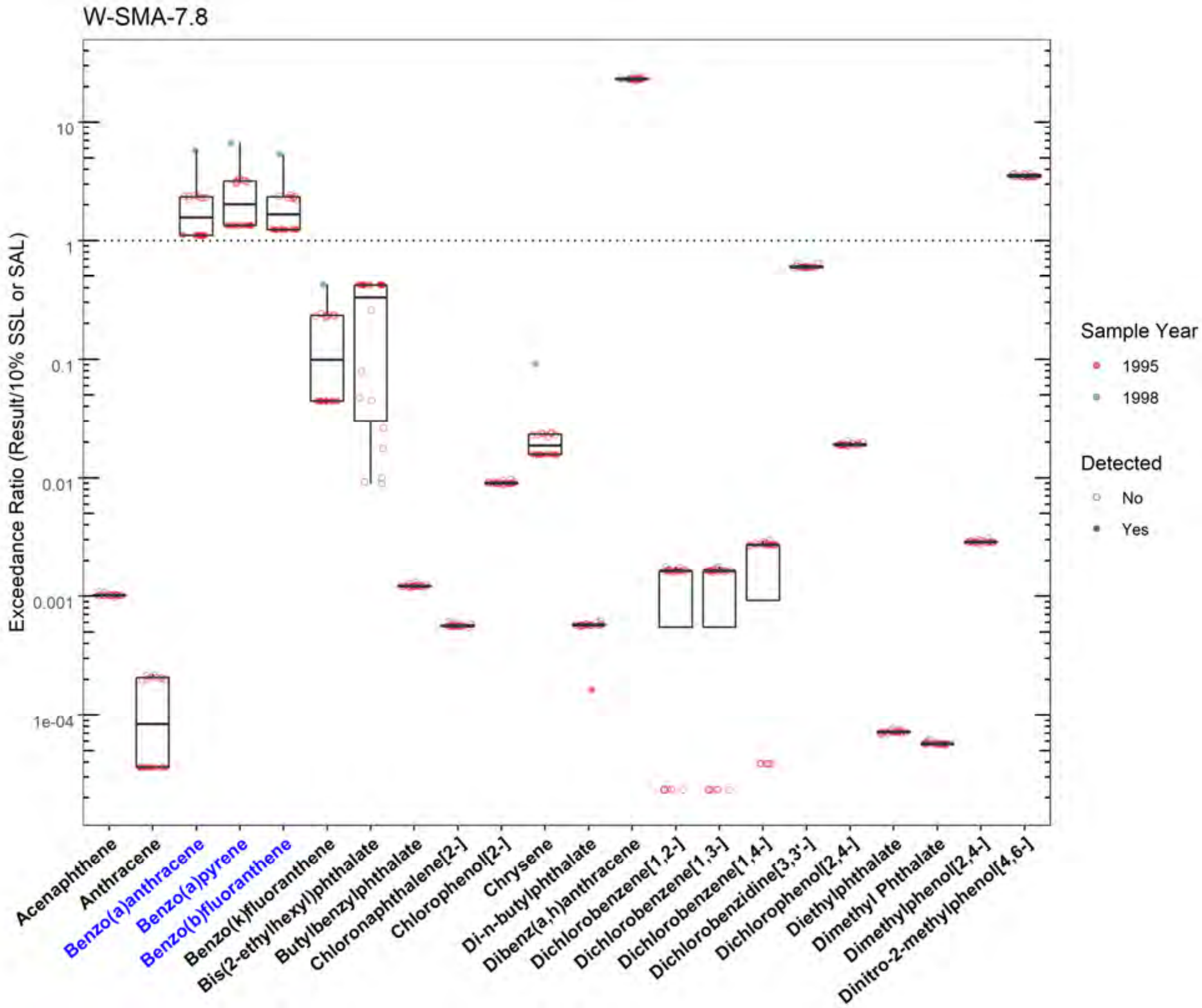


Figure 204.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-7.8 (Plot 1)

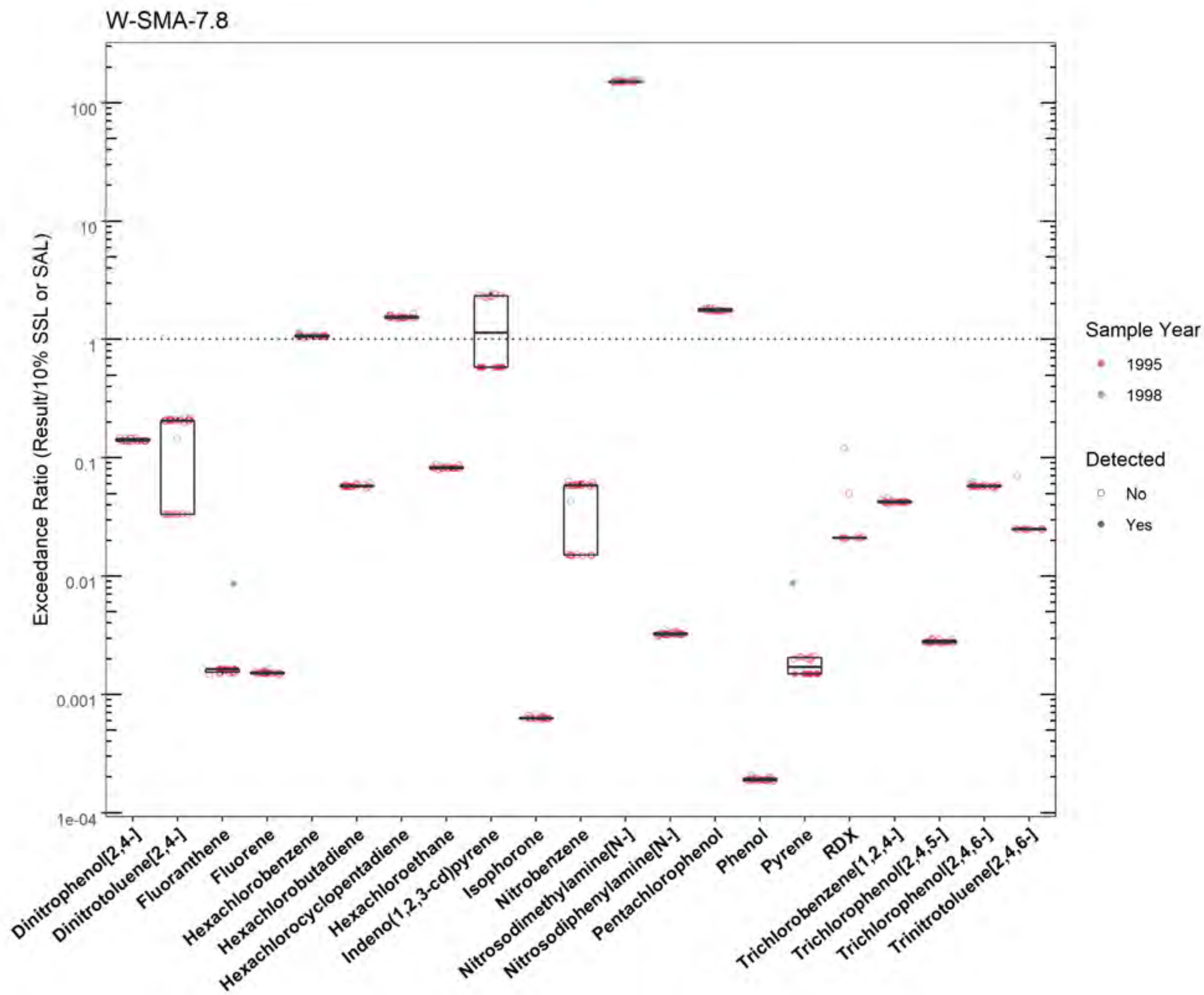


Figure 204.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-7.8 (Plot 2)

W-SMA-7.8

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	W-SMA-7.8	Sb	Y	BTV	0.830	7.60	1995-09-21
Arsenic	W-SMA-7.8	As	Y	BTV	8.17	21.2	1995-09-21
Benzo(a)anthracene	W-SMA-7.8	56-55-3	Y	SSL_0.1	0.153	0.880	1998-12-09
Benzo(a)pyrene	W-SMA-7.8	50-32-8	Y	SSL_0.1	0.112	0.750	1998-12-09
Benzo(b)fluoranthene	W-SMA-7.8	205-99-2	Y	SSL_0.1	0.153	0.820	1998-12-09
Cadmium	W-SMA-7.8	Cd	Y	BTV	0.400	3.80	1998-12-09
Copper	W-SMA-7.8	Cu	Y	BTV	14.7	326	1998-12-09
Lead	W-SMA-7.8	Pb	Y	BTV	22.3	49.3	1998-12-09
Thallium	W-SMA-7.8	Tl	Y	BTV	0.730	1.50	1996-09-03
Uranium	W-SMA-7.8	U	Y	BTV	1.82	3.04	1995-09-21
Zinc	W-SMA-7.8	Zn	Y	BTV	48.8	586	1998-12-09

Figure 204.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-7.8

204.4 Stormwater Evaluation

204.4.1 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 2019 and May 2021. Analytical results from these samples are presented in Figures 204.4-1 through 204.4-4.

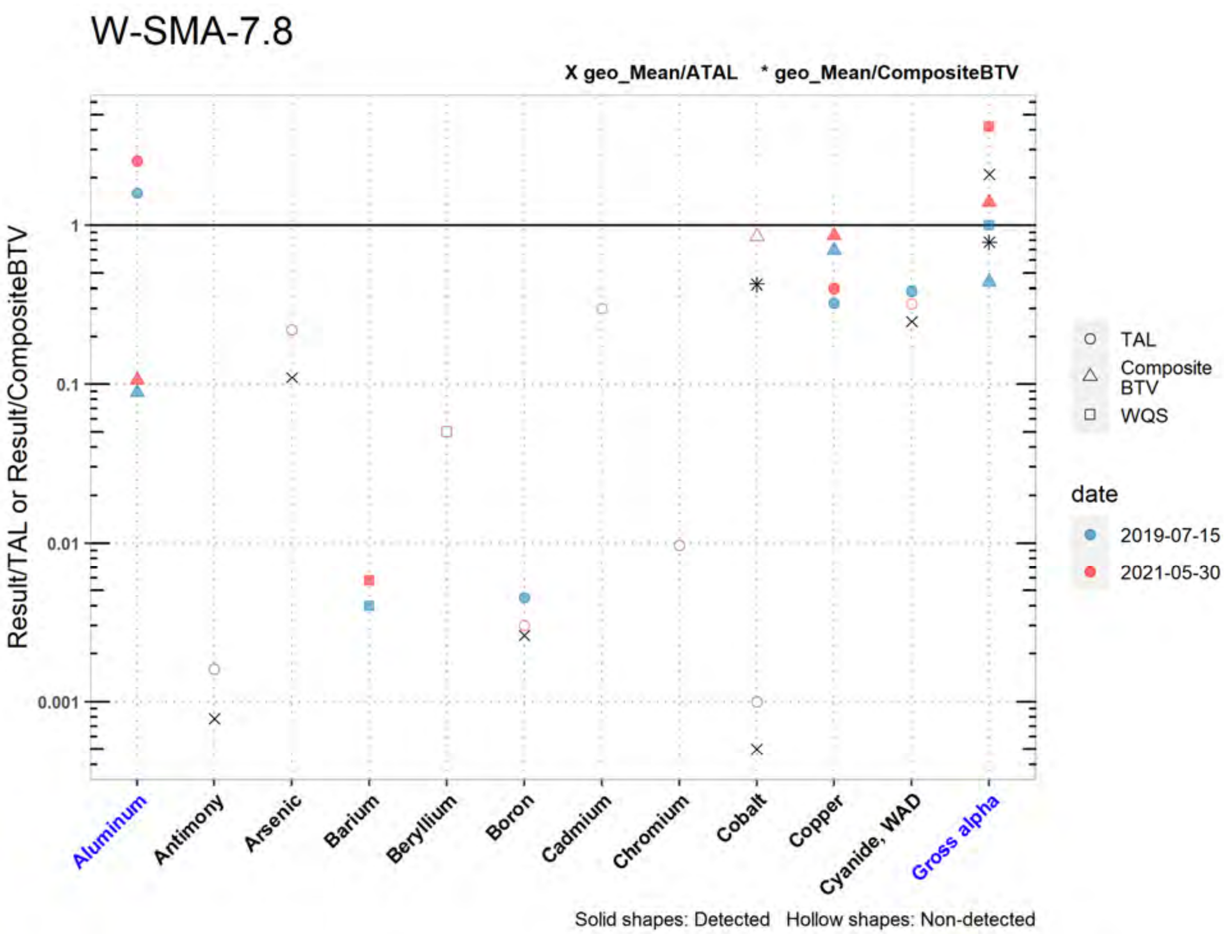


Figure 204.4-1 Analytical Results from Stormwater Samples, W-SMA-7.8 (Plot 1)

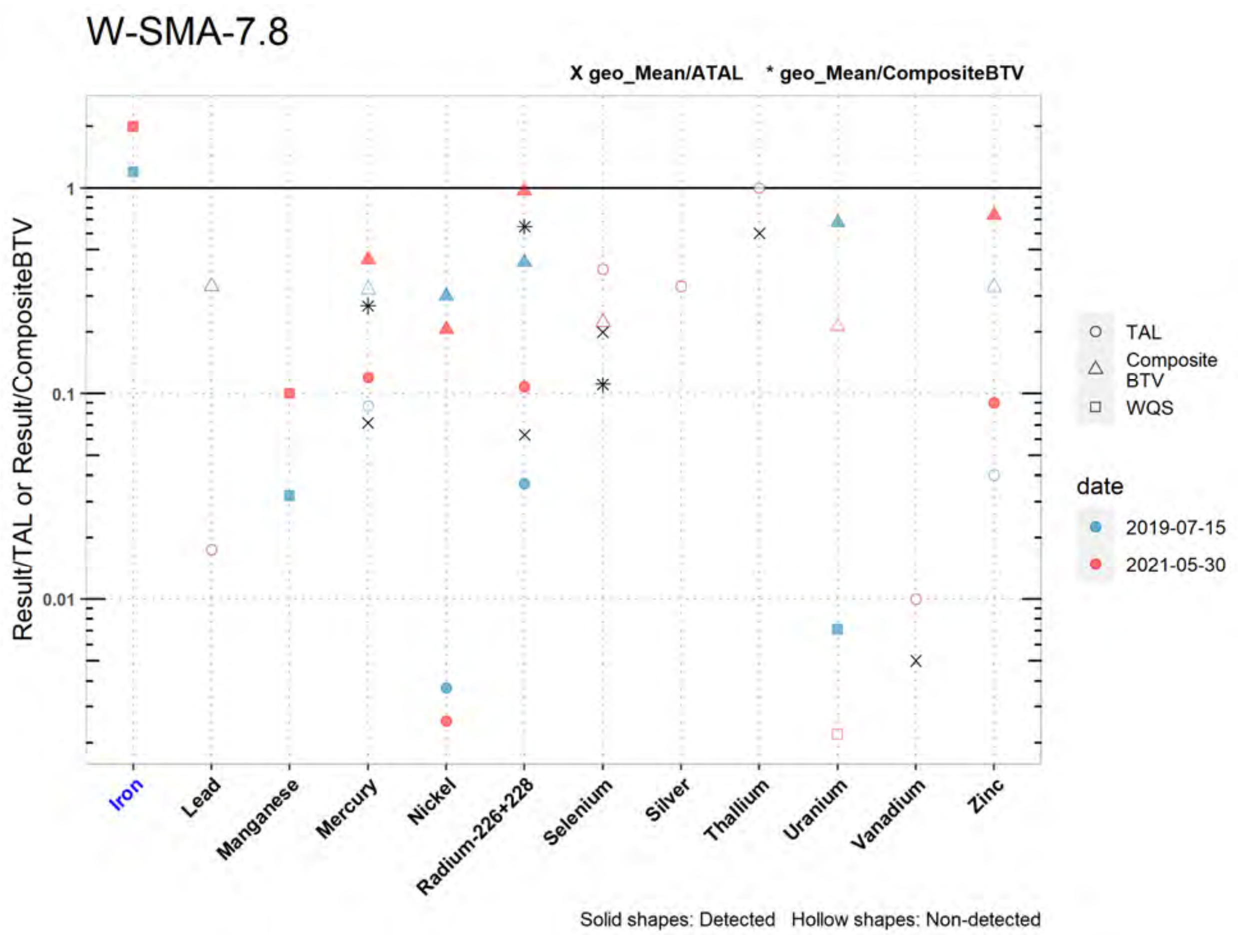


Figure 204.4-2 Analytical Results from Stormwater Samples, W-SMA-7.8 (Plot 2)

W-SMA-7.8

	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	1241	NA	340	NA	NA	NA	0.879	311	NA	6.69	22	NA
Composite_BTV	37400	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	pCi/L*
2019-07-15 result	1980	*1.00*	*2.00*	8.10	*0.200*	22.7	*0.300*	*3.00*	*1.00*	2.17	2.00	15.1
2019-07-15 dT	1.60	NA	NA	0.0040	NA	0.0045	NA	NA	NA	0.324	0.385	1.0
2019-07-15 dB	0.0882	NA	NA	NA	NA	NA	NA	NA	NA	0.696	NA	0.440
2021-05-30 result	3170	*1.00*	*2.00*	11.5	*0.200*	*15.0*	*0.300*	*3.00*	*1.00*	2.68	*1.67*	63.4
2021-05-30 dT	2.55	NA	NA	0.0058	NA	NA	NA	NA	NA	0.401	NA	4.2
2021-05-30 dB	0.106	NA	NA	NA	NA	NA	NA	NA	NA	0.859	NA	1.39
geo_mean/ATAL	NA	0.00078	0.11	NA	NA	0.0026	NA	NA	0.00050	NA	0.249	2.1
geo_mean/B	NA	NA	NA	NA	NA	NA	NA	NA	0.424	NA	NA	0.781

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 204.4-3 Analytical Results from Stormwater Samples, W-SMA-7.8 (Table 1)

W-SMA-7.8

	Iron	Lead	Manganese	Mercury	Nickel	Radium-226+228	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc
MQL	NA	0.5	NA	0.005	0.5	NA	5	0.5	0.5	NA	50	20
ATAL	NA	NA	NA	0.77	NA	30	5	NA	0.47	NA	100	NA
MTAL	NA	28.6	NA	NA	250	NA	20	0.9	NA	NA	NA	81.6
Composite_BTV	NA	1.50	NA	0.208	3.10	4.21	8.98	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
2019-07-15 result	1250	*0.500*	41.5	*0.0670*	0.926	1.10	*2.00*	*0.300*	*0.600*	0.214	*1.00*	*3.30*
2019-07-15 dT	1.2	NA	0.032	NA	0.00370	0.0367	NA	NA	NA	0.0071	NA	NA
2019-07-15 dB	NA	NA	NA	NA	0.299	0.435	NA	NA	NA	0.679	NA	NA
2021-05-30 result	1990	*0.500*	131	0.0930	0.639	3.25	*2.00*	*0.300*	*0.600*	*0.0670*	*1.00*	7.36
2021-05-30 dT	2.0	NA	0.10	0.12	0.00256	0.108	NA	NA	NA	NA	NA	0.0902
2021-05-30 dB	NA	NA	NA	0.447	0.206	0.965	NA	NA	NA	NA	NA	0.736
geo_mean/ATAL	NA	NA	NA	0.072	NA	0.0630	0.20	NA	0.6	NA	0.0050	NA
geo_mean/B	NA	NA	NA	0.268	NA	0.648	0.111	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 204.4-4 Analytical Results from Stormwater Samples, W-SMA-7.8 (Table 2)

204.4.2 Assessment Unit and Stream Impairments

W-SMA-7.8 drains to Water Canyon (Area-A Canyon to NM 501), which has no impairments.

204.5 Site-Specific Demonstration

204.5.1 Soil Data Summary

The metals that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

204.5.2 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.

204.5.3 2022 Permit Status

The SMA is eligible for long-term stewardship. All Site-related POCs with TALs were below their respective composite BTVs (Part I.C.3.a).

205.0 W-SMA-7.9

Associated Sites	16-006(c)
Receiving Water	Water Canyon
Drainage Area	0.09 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 16-006(c): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

205.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, 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.

205.2 Site History

16-006(c) (3/21/2019)

SWMU 16-006(c) is an inactive septic system located directly west of former building 16-370 in the eastern portion of TA-16. The septic system served building 16-370 and consists of a 1200-gal. concrete septic tank (Structure 16-371), a manhole (Structure 16-813), inlet and outlet drainlines, and an outfall near the rim of Water Canyon. The 1990 SWMU Report states the septic tank discharged to a drain field; however, engineering drawings do not verify the existence of a drain field. Building 16-370 was constructed in 1953 as a barium nitrate grinding facility. In the late 1950s, the building was converted to a metal forming shop for steel and aluminum operations. The septic system was constructed in 1953 and served floor drains and bathrooms on the third floor of former building 16-370. Associated drainlines connect to a manhole (Structure 16-813), which drained to the septic tank. The outlet drainline discharged to an outfall approximately 260 ft south of the septic tank at the edge of Water Canyon. After the outlet drainline was plugged, the tank was pumped regularly during the time building 16-370 remained operational; the building was removed in 2005.

For investigation activities, refer to “Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1” (LANL 2010, 110409; LANL 2011, 111602.33).

205.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 205.2-1.

Table 205.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-006(c)	Septic tank	Inorganic and organic chemicals

205.3 Consent Order Soil Data

Decision-level data for SWMU 16-006(c) consist of results from samples collected in 1995 and 1996. Analytical results for these samples are presented in Figures 205.3-1 through 205.3-4. The 2011 IWP (LANL 2011, 111602.33) concluded that the nature and extent of contamination have not been defined and additional sampling is recommended.

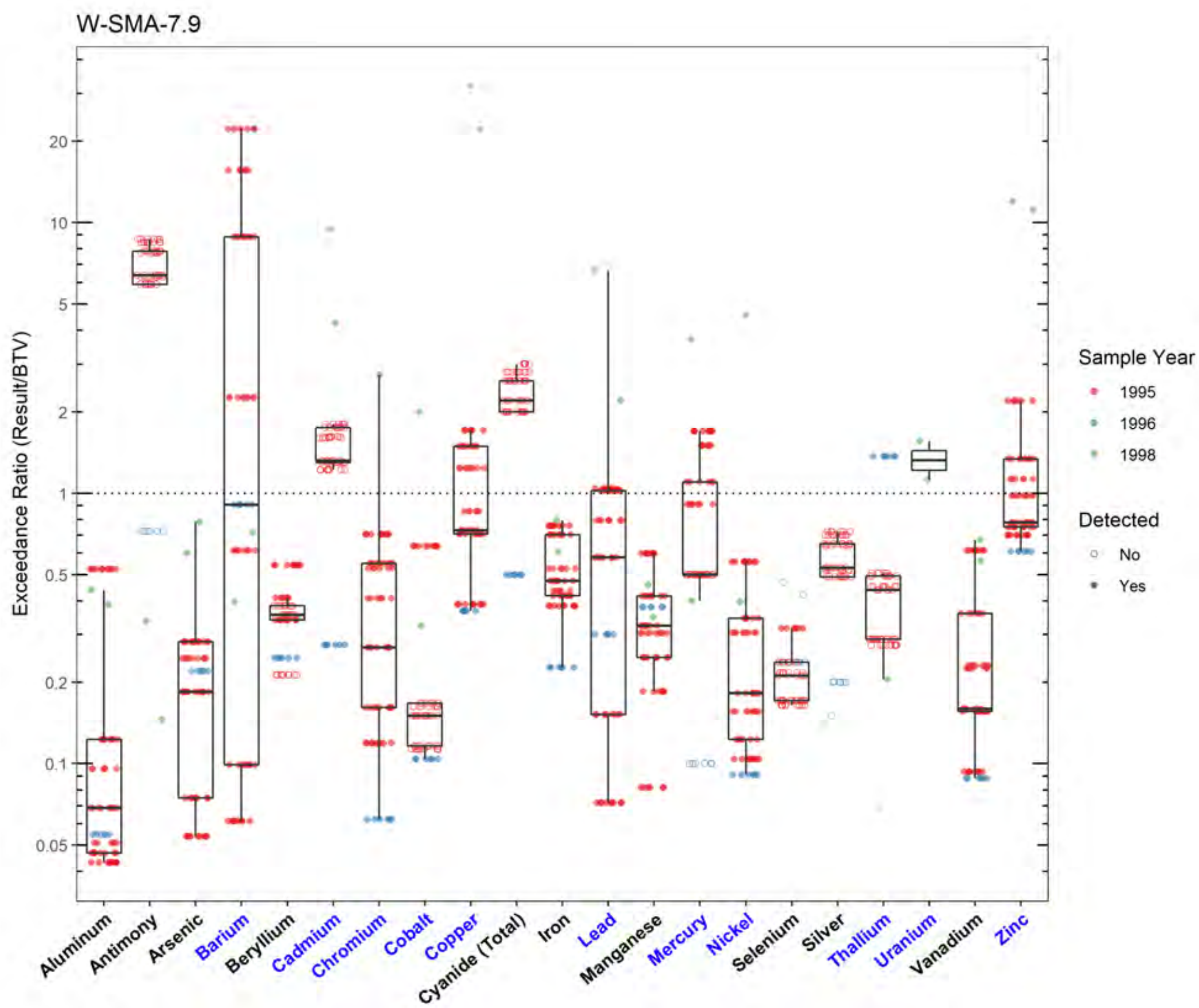


Figure 205.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-7.9

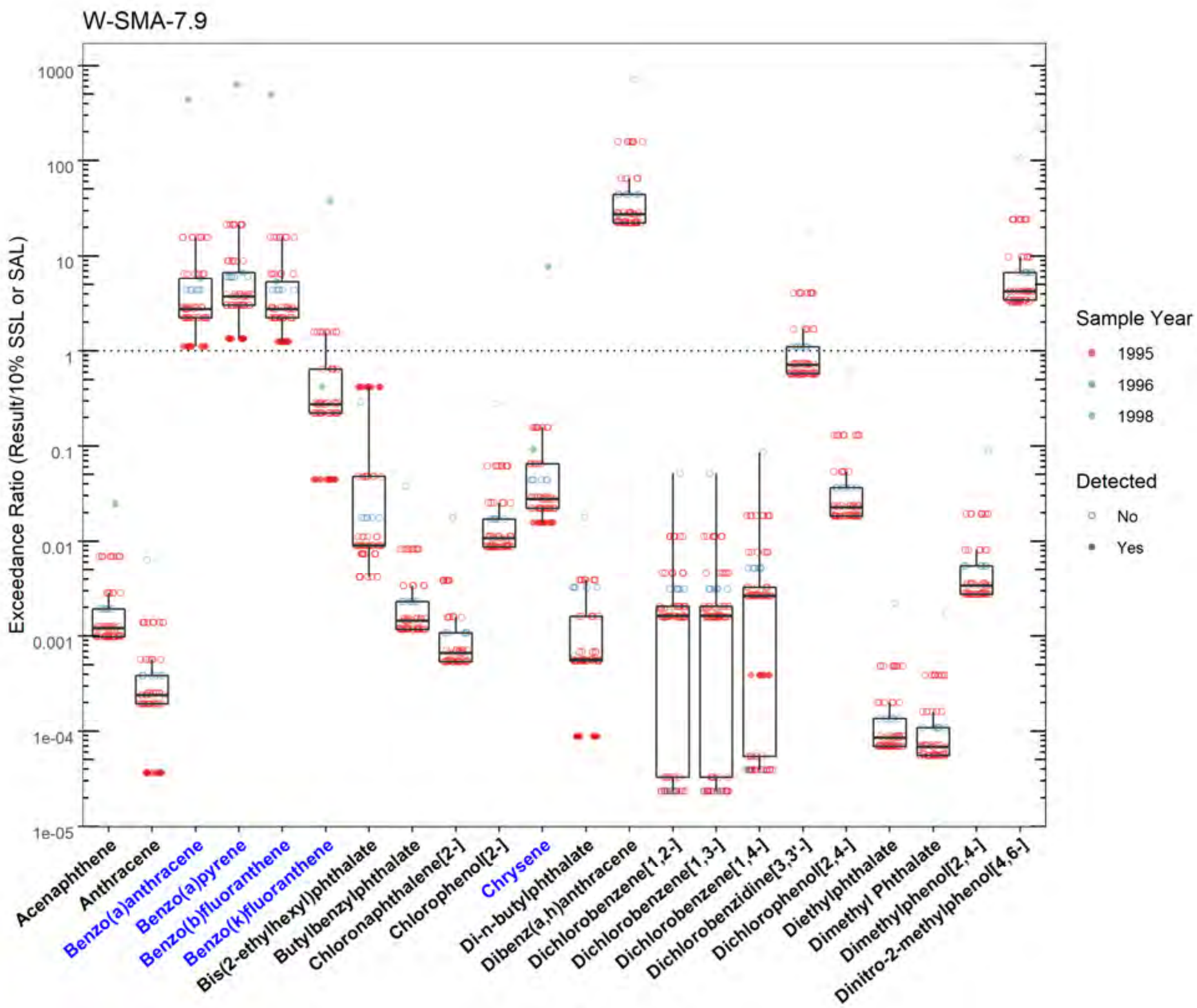


Figure 205.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-7.9 (Plot 1)

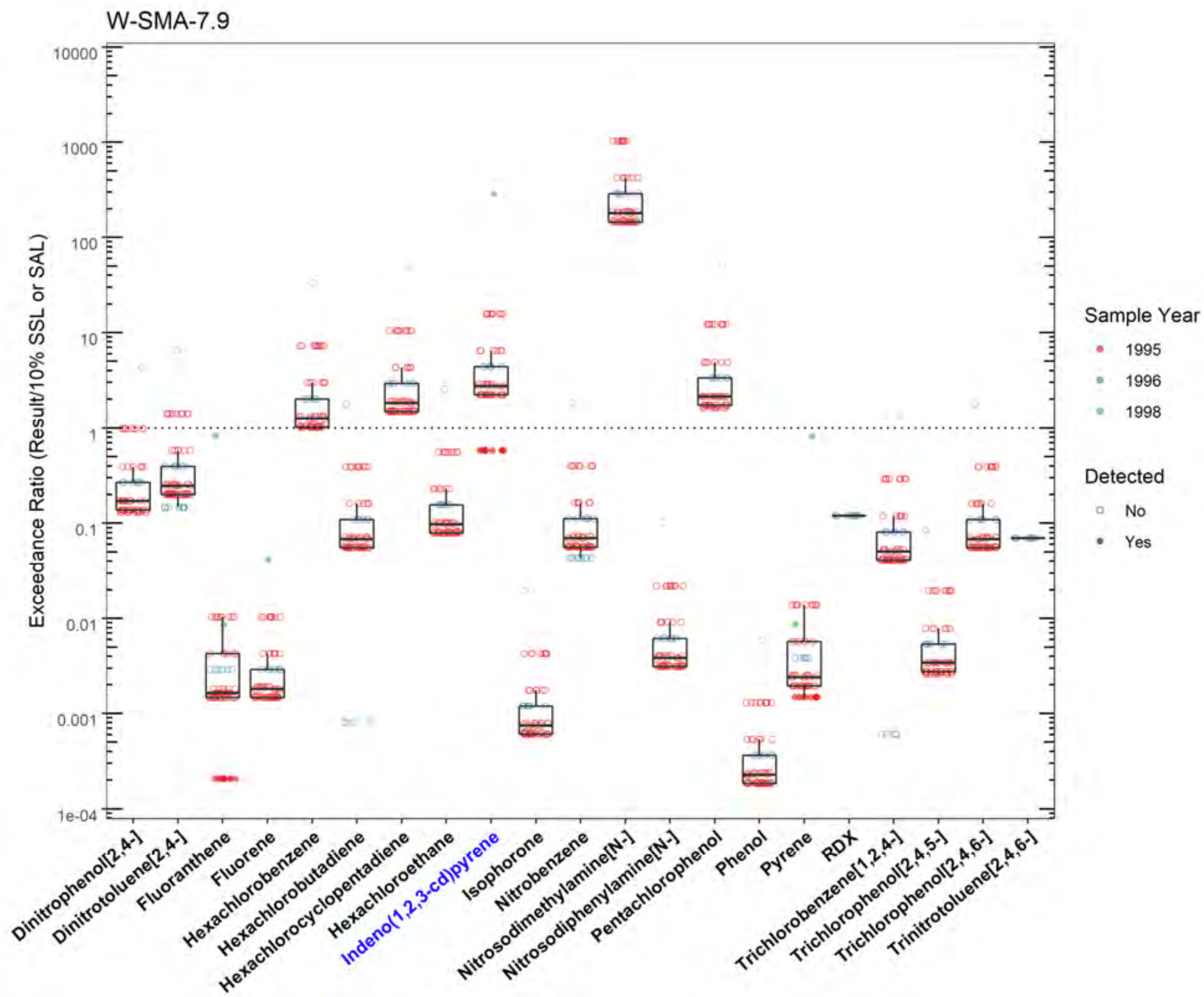


Figure 205.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-7.9 (Plot 2)

W-SMA-7.9

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Barium	W-SMA-7.9	Ba	Y	BTV	295	6540	1995-05-30
Benzo(a)anthracene	W-SMA-7.9	56-55-3	Y	SSL_0.1	0.153	67.0	1998-12-09
Benzo(a)pyrene	W-SMA-7.9	50-32-8	Y	SSL_0.1	0.112	71.0	1998-12-09
Benzo(b)fluoranthene	W-SMA-7.9	205-99-2	Y	SSL_0.1	0.153	75.0	1998-12-09
Benzo(k)fluoranthene	W-SMA-7.9	207-08-9	Y	SSL_0.1	1.53	58.0	1998-12-09
Cadmium	W-SMA-7.9	Cd	Y	BTV	0.400	3.80	1998-12-09
Chromium	W-SMA-7.9	Cr	Y	BTV	19.3	52.9	1998-12-09
Chrysene	W-SMA-7.9	218-01-9	Y	SSL_0.1	15.3	120	1998-12-09
Cobalt	W-SMA-7.9	Co	Y	BTV	8.64	17.3	1998-12-09
Copper	W-SMA-7.9	Cu	Y	BTV	14.7	472	1998-12-09
Indeno(1,2,3-cd)pyrene	W-SMA-7.9	193-39-5	Y	SSL_0.1	0.153	44.0	1998-12-09
Lead	W-SMA-7.9	Pb	Y	BTV	22.3	148	1998-12-09
Mercury	W-SMA-7.9	Hg	Y	BTV	0.100	0.370	1998-12-09
Nickel	W-SMA-7.9	Ni	Y	BTV	15.4	70.2	1998-12-09
Thallium	W-SMA-7.9	Tl	Y	BTV	0.730	1.00	1996-09-20
Uranium	W-SMA-7.9	U	Y	BTV	1.82	2.84	1998-12-09
Zinc	W-SMA-7.9	Zn	Y	BTV	48.8	586	1998-12-09

Figure 205.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-7.9

205.4 Stormwater Evaluation

205.4.1 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.

205.4.2 Assessment Unit and Stream Impairments

W-SMA-7.9 drains to Water Canyon (within LANL below Area-A Cyn) which has impairments for PCBs, adjusted gross alpha, total aluminum, and total mercury. The PCB and metal impairments may be Site related, based on Site history.

205.5 Site-Specific Demonstration

205.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: barium, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, cadmium, cobalt, chromium, copper, indeno(1,2,3-cd)pyrene, lead, mercury, nickel, thallium, uranium, and zinc.

205.5.2 Stormwater Data Summary

No confirmation-monitoring data.

205.5.3 2022 Permit Status

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

205.5.4 Sampling and Analysis Plan

Table 205.5-1 is the proposed SAP for W-SMA-7.9.

Table 205.5-1 Proposed SAP, W-SMA-7.9

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment and Site History
Total aluminum and mercury	Impairment, Site history (inorganics), and soil data
SVOCs	Site history and soil data
Dissolved barium, cadmium, cobalt, chromium, copper, nickel, lead, thallium, uranium, and zinc	Site history (inorganics) and soil data
DOC	Permit requirement
SSC	Permit requirement

206.0 W-SMA-8

Associated Sites	16-016(g), 16-028(b)
Receiving Water	Water Canyon
Drainage Area	0.18 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 16-016(g): In Progress SWMU 16-028(b): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

206.1 2010 Administratively Continued Permit Summary

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

Following the August 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600776), 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.

206.2 Site History

16-016(g) (3/21/2019)

SWMU 16-016(g) is a surface disposal area located in a drainage ditch approximately 60 ft south of former building 16-370 in the eastern portion of TA-16. Debris at the site includes cans and pipes distributed over a 20-ft-diameter area. The surface disposal area lies in the drainage ditch shared by SWMUs 16-026(a) and 16-028(b). Field observations indicate the debris is likely from construction-related activities and not of a hazardous nature.

16-028(b) (no date)

SWMU 16-028(b) is a former NPDES-permitted outfall (04A092) and associated outlet drainline that served former building 16-370 at TA-16. The outfall is located approximately 50 ft south of former building 16-370. The outlet drainline consists of a 6-in. VCP that exited the northwest side of former building 16-370 and discharged at the rim of Water Canyon. The outfall formerly received effluent from 29 floor drains, an eyewash station, a drinking fountain, a sink, and noncontact treated cooling water. Building 16-370 was constructed in 1953 as a barium nitrate–grinding facility. In the late 1950s, the building was converted to a metal-forming shop for steel and aluminum. Materials potentially present in discharges to the drains include barium compounds, metal chips, oils, kerosene, and trichloroethylene. HE were not used in building 16-370 due to explosive hazard posed by grinding and machining activities.

All drains that discharged to the outfall were plugged in the 1990s. The outfall was removed from the NPDES permit effective January 14, 1998. Building 16-370 was removed in 2000.

No investigation activities have been conducted for SWMU 16-016(g).

For more information on these Sites, refer to “Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1” (LANL 2010, 110409; LANL 2011, 111602.33).

206.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 206.2-1.

Table 206.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-016(g)	Surface disposal area	Metals, aluminum, barium, nitrate
16-028(b)	Outfall from building 16-370	Metals, nitrate, PAHs

206.3 Consent Order Soil Data

Decision-level data are not available for SWMU 16-016(g).

Decision-level data for SWMU 16-028(b) consist of results from a sample collected in 1998. Analytical results for that sample are presented in Figures 206.3-1 through 206.3-4. The 2011 IWP (LANL 2011, 111602.33) concluded that the nature and extent of contamination have not been defined and additional sampling is recommended.

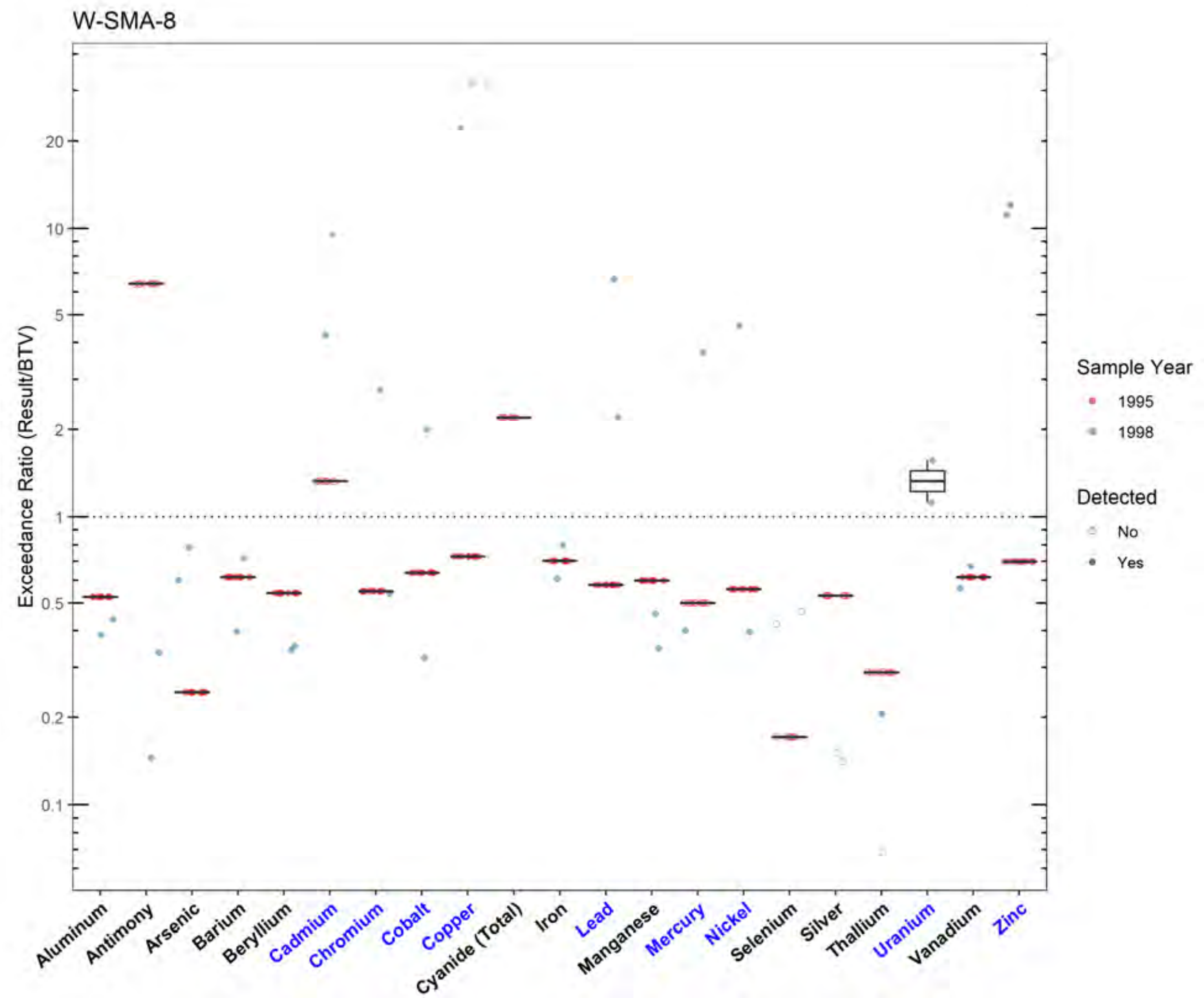


Figure 206.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-8

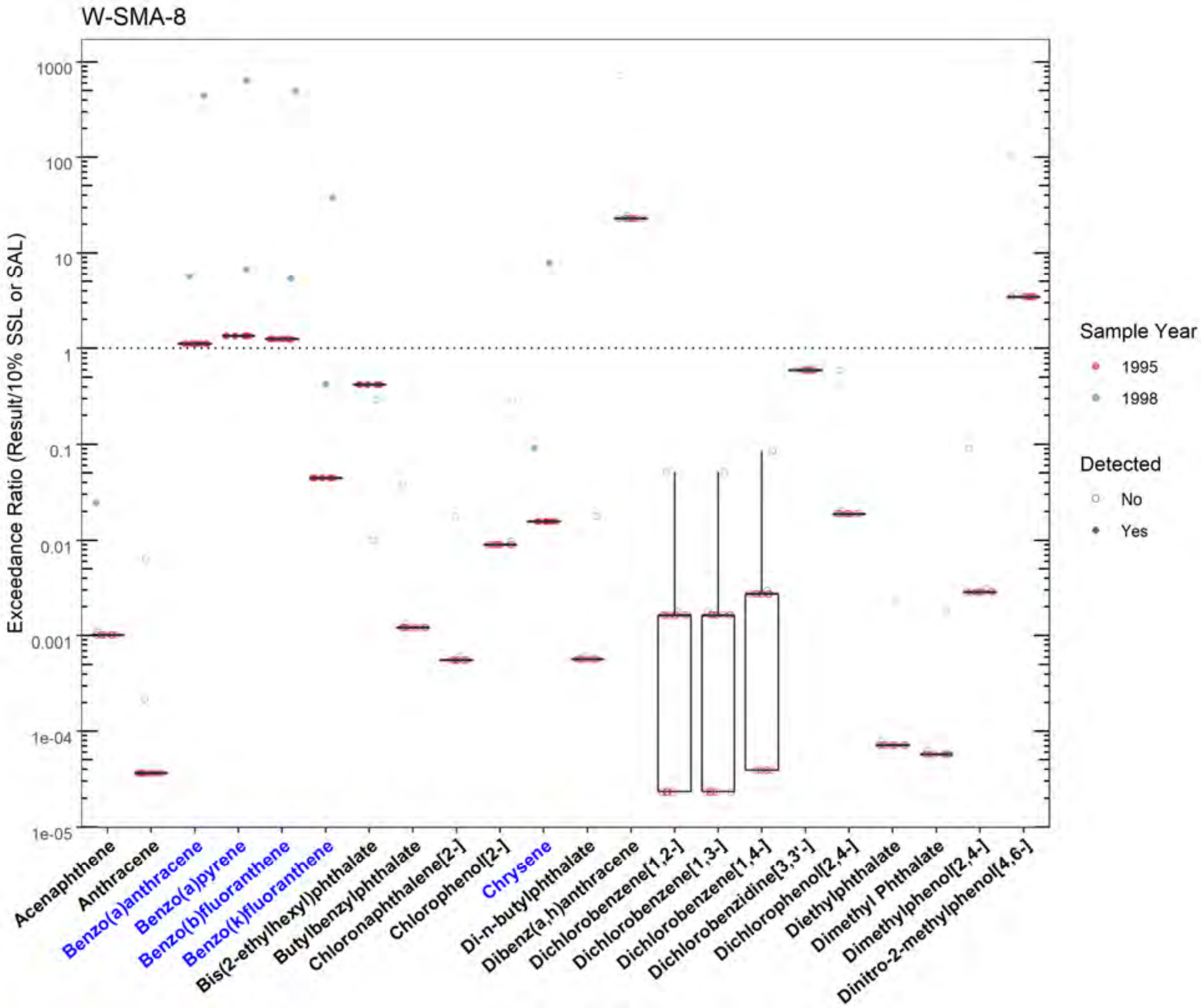


Figure 206.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-8 (Plot 1)

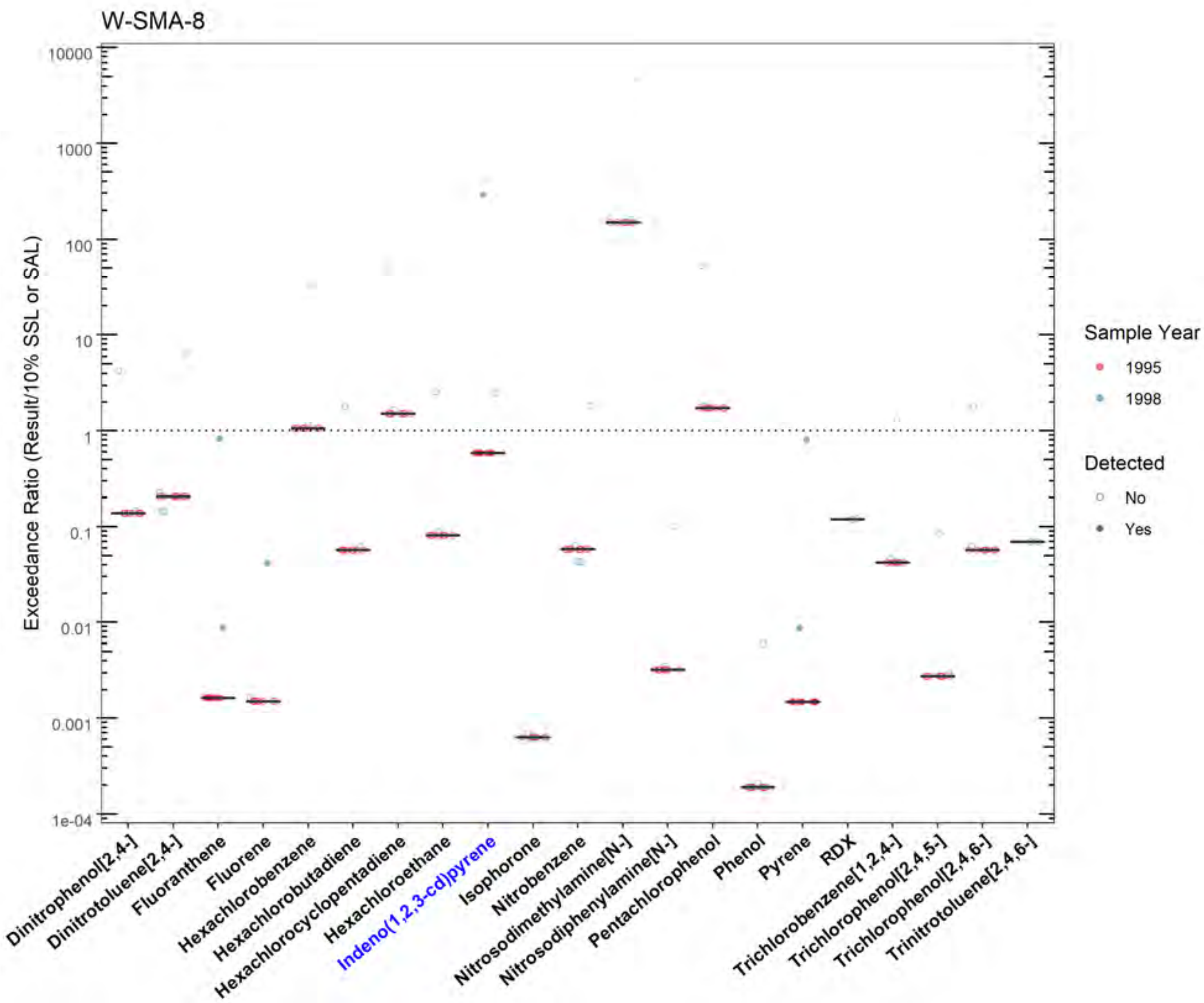


Figure 206.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-8 (Plot 2)

W-SMA-8

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	W-SMA-8	56-55-3	Y	SSL_0.1	0.153	67.0	1998-12-09
Benzo(a)pyrene	W-SMA-8	50-32-8	Y	SSL_0.1	0.112	71.0	1998-12-09
Benzo(b)fluoranthene	W-SMA-8	205-99-2	Y	SSL_0.1	0.153	75.0	1998-12-09
Benzo(k)fluoranthene	W-SMA-8	207-08-9	Y	SSL_0.1	1.53	58.0	1998-12-09
Cadmium	W-SMA-8	Cd	Y	BTV	0.400	3.80	1998-12-09
Chromium	W-SMA-8	Cr	Y	BTV	19.3	52.9	1998-12-09
Chrysene	W-SMA-8	218-01-9	Y	SSL_0.1	15.3	120	1998-12-09
Cobalt	W-SMA-8	Co	Y	BTV	8.64	17.3	1998-12-09
Copper	W-SMA-8	Cu	Y	BTV	14.7	472	1998-12-09
Indeno(1,2,3-cd)pyrene	W-SMA-8	193-39-5	Y	SSL_0.1	0.153	44.0	1998-12-09
Lead	W-SMA-8	Pb	Y	BTV	22.3	148	1998-12-09
Mercury	W-SMA-8	Hg	Y	BTV	0.100	0.370	1998-12-09
Nickel	W-SMA-8	Ni	Y	BTV	15.4	70.2	1998-12-09
Uranium	W-SMA-8	U	Y	BTV	1.82	2.84	1998-12-09
Zinc	W-SMA-8	Zn	Y	BTV	48.8	586	1998-12-09

Figure 206.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-8

206.4 Stormwater Evaluation

206.4.1 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 location at the SMA.

206.4.2 Assessment Unit and Stream Impairments

W-SMA-8 drains to Water Canyon (within LANL below Area-A Cyn) which has impairments for PCBs, adjusted gross alpha, total aluminum, and total mercury. The metal impairments may be Site-related, based on Site history.

206.5 Site-Specific Demonstration

206.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater at the current monitoring location: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, cadmium, chromium, chrysene, cobalt, copper, indeno(1,2,3-cd)pyrene, lead, mercury, nickel, uranium, and zinc.

206.5.2 Stormwater Data Summary

No confirmation-monitoring data.

206.5.3 2022 Permit Status

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

206.5.4 Sampling and Analysis Plan

Table 206.5-1 is the proposed SAP for W-SMA-8.

Table 206.5-1 Proposed SAP, W-SMA-8

Monitoring Constituent	Background for Monitoring
Total aluminum and mercury	Impairment, Site history, and soil data
Dissolved cadmium, chromium, cobalt, copper, lead, nickel, uranium, and zinc	Site history and soil data
SVOCs	Site history and soil data
Nitrate	Site history
DOC	Permit requirement
SSC	Permit requirement

207.0 W-SMA-8.7

Associated Sites	13-001, 13-002, 16-004(a), 16-026(j2), 16-029(h), 16-035
Receiving Water	Water Canyon
Drainage Area	16.37 acres
Landscape Characteristics	7% impervious, 93% pervious
Consent Order Site Status	SWMU 13-001: Pending Receipt of Certificate of Completion SWMU 13-002: Pending Receipt of Certificate of Completion SWMU 16-004(a): In Progress SWMU 16-026(j2): Pending Receipt of Certificate of Completion SWMU 16-029(h): In Progress SWMU 16-035: Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

207.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, 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, 600418). No response has been received from EPA, and stormwater monitoring has not occurred since 2013.

207.2 Site History

13-001 (11/26/2019)

SWMU 13-001 is an inactive firing site located east of former building 16-340, between battleship bunker buildings 16-477 and 16-478 at eastern end of TA-16. The firing site was associated with firing activities conducted at P-Site (former TA-13) and operated from 1944 to 1949. The battleship bunker buildings 16-477 and 16-478 housed x-ray and magnetic equipment and were capped with steel nose cones to protect this equipment from explosive detonations that occurred at the firing site between the two bunkers. Debris from firing site experiments includes shrapnel and debris, including firing cables, lead balls, and chunks of steel and copper.

13-002 (11/26/2019)

SWMU 13-002 is an inactive surface disposal area located east of former building 16-340, and south and east of the SWMU 13-001 firing point at eastern end of TA-16. The disposal area contains debris and shrapnel associated with firing activities conducted at P-Site (former TA-13) and based on a 1948 aerial photograph, the site includes the two battleship bunkers (buildings 16-477 and 16-478) and extends approximately 500 ft south of the SWMU 13-001 firing point. A portion of the former TA-16 wastewater treatment plant (WWTP) [SWMUs 16-004(b, c, and d)] is located on top of the southern end of the surface disposal area. The SWMU 13-001 firing site was decommissioned in 1949. It is not known if contaminated materials were removed from SWMU 13-002 at the time of the firing site decommissioning.

16-004(a) (11/26/2019)

SWMU 16-004(a) is the inactive Imhoff tank (Structure 16-530) that was used for sewage treatment at the former sanitary WWTP at TA-16. The concrete structure is approximately 18 ft × 35 ft × 22 ft deep, with nine interconnected compartments that served as settling boxes, with a total area of 700 ft^2. Located southeast of the former 16-340 Complex and 15 ft north of the communitor (a cutting device for sewage solids), the Imhoff tank received solids that the communitor had shredded into fine particles. In addition to functioning as a settling box, the tank also offered some sludge digestion capability. Effluent from the boxes flowed over a weir into a dosing siphon. Any sludge that may have collected in the tank was digested before being discharged to drying beds [SWMUs 16-004(d) and 16-004(f)]. The Imhoff tank also had an emergency overflow pipe that discharged onto the slope northeast of the tank. The TA-16 WWTP began operations in 1952 and was decommissioned in 1992 when the sanitary sewer system was connected to a Laboratory-wide system. There is no evidence that this tank has ever leaked, and a site inspection in October 2014 revealed that the tank contains water.

16-026(j2) (6/19/2017)

SWMU 16-026(j2) is the former outfall for a former HE sump [SWMU 16-029(f)] associated with former building 16-345, an HE rest house that served as a storage facility for building 16-340. The sump received wash-down water from cleaning activities in former building 16-345. Waste in the effluent consisted primarily of HE. The sump was connected to a 6-in. VCP that discharged to the SWMU 16-026(j2) outfall that was not visible on the ground surface. This outfall was located southeast of building 16-345. The sump removed suspended solids from wash-down water before it was discharged to the outfall. HE fines were collected in a cloth filter bag and secured inside a metal filter basket. The baskets and filter bags were periodically removed and taken to the TA-16 basket-washing facility for cleaning. HE fines too small to collect in the filter bags settled to the bottom of the sump. To help separate the suspended solids, the water flowed under an aluminum baffle and over a concrete weir before it discharged to the outfall. HE fines in the bottom of the sump were periodically removed and burned.

Building 16-345, the sump, and drainlines were decommissioned in 1999 and underwent D&D in 2004 and 2005.

16-029(h) (11/26/2019)

SWMU 16-029(h) consists of a former NPDES-permitted outfall and two inactive drainlines (one known and one alleged) from an inactive HE sump [AOC 16-003(p)] located on the south side of former Structure 16-478 at TA-16. The known drainline exits the southeast corner of the sump and extends 80 ft east of the sump to the rim of Cañon de Valle. This 6-in. VCP drainline discharged directly into Cañon de Valle before it was plugged in 1987. A second drainline possibly existed until the late 1960s and reportedly was a French drain that extended approximately 125 ft south of the sump. It was believed to be an 8-in. cast-iron pipe connected to an 8-in. VCP that intersected a drainage channel. Former Structure 16-478 was used as a bunker, utility room, control room, and high-speed machining room for tests on experimental HE. When Structure 16-478 was removed in 2005, the sump was left in place. During Phase I Consent Order investigation activities conducted in 2010, no evidence of the French drain was found.

SWMU 16-029(h) was identified as an HE sump (Structure 16-487) in the 1990 SWMU Report. The SWMU Report identified this sump twice: once as an inactive HE sump designated as SWMU 16-029(h) and also as an active HE sump designated as AOC 16-003(p). Addendum 2 to the OU 1082 Work Plan redefined SWMU 16-029(h) to be the drainlines and outfall associated with the sump adjacent to former structure 16-478. Currently, the boundary of SWMU 16-029(h) is adjacent to, and receives runoff from, an old paved roadway and parking area associated with former Structure 16-478 and also includes areas impacted by the 2000 Cerro Grande wildfire.

16-035 (2/5/2020)

SWMU 16-035 is an area of potential soil contamination associated with a former control bunker (former structure 13-2 renumbered to 16-476), located approximately 200 ft east of former building 16-340 within former TA-13 and SWMU 13-001 at TA-16. The control bunker was one of several structures constructed at former TA-13 in 1944 to support the Manhattan Project. It was principally designed as a site for counter x-ray diagnostics of HE lens configurations. Between 1950 and 1999, former building 16-476 was used for a variety of LANL activities including operating counter x-ray equipment, HE assembly, and research in the magnetic method program. The control bunker was removed during D&D activities in 2005.

For investigation activities for SWMU 16-026(j2) refer to “Phase II Investigation Report for the TA-16-340 Complex [Consolidated Units 13-003(a)-99 and 16-003(n)-99 and SWMUs 16-003(o), 16-026(j2), and 16-029(f)], Revision 1” (LANL 2009, 105061.17). For investigation activities for all other Sites, refer to “Supplemental Investigation Report for S-Site Aggregate Area, Revision 1” (N3B 2019, 700414).

207.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 207.2-1.

Table 207.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
13-001	Firing site	Beryllium, copper, lead, steel, HE, uranium
13-002	Surface disposal area	Metals, beryllium, lead, steel, HE, polonium, uranium
16-004(a)	Imhoff tank	Inorganic and organic chemicals, radionuclides
16-026(j2)	Outfall	HE, aluminum
16-029(h)	Drainlines and outfall	HE, uranium, niobium
16-035	Soil contamination	Metals, beryllium, HE, polonium, uranium

207.3 Consent Order Soil Data

Decision-level data for SWMU 13-001, SWMU 13-002, SWMU 16-004(a), and SWMU 16-035 consist of results from samples collected in 2010. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination have been defined and further sampling for extent is not warranted.

Decision-level data for SWMU 16-026(j2) consist of results from samples collected in 1995, 1997, 2005, and 2008. The 2008 Phase II IR (LANL 2009, 105061.17) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

Decision-level data for SWMU 16-029(h) consist of results from samples collected in 2010. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent have been defined except the vertical extent of arsenic.

Analytical results for all decision-level soil samples for this SMA are presented in Figures 207.3-1 through 207.3-4.

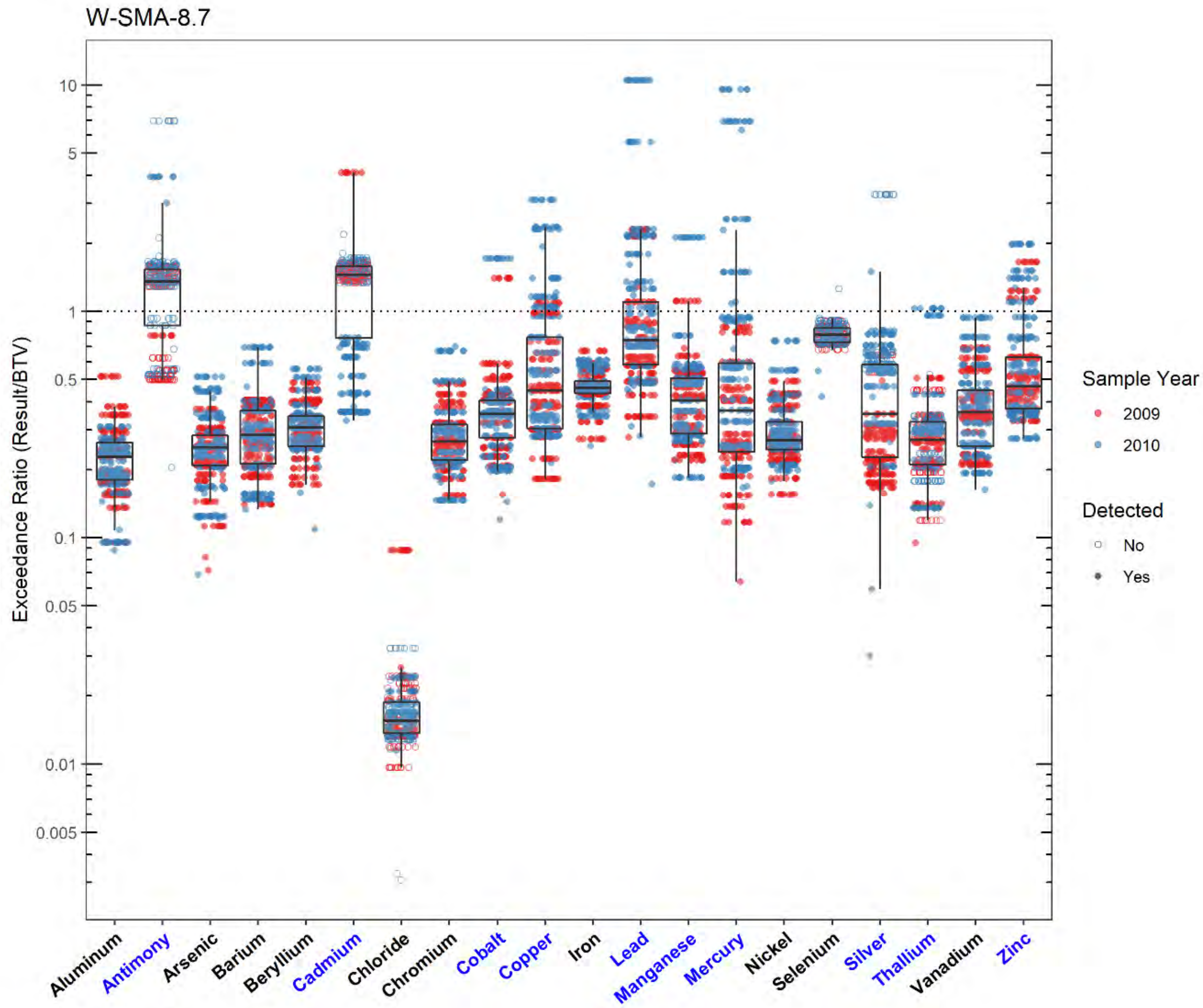


Figure 207.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-8.7

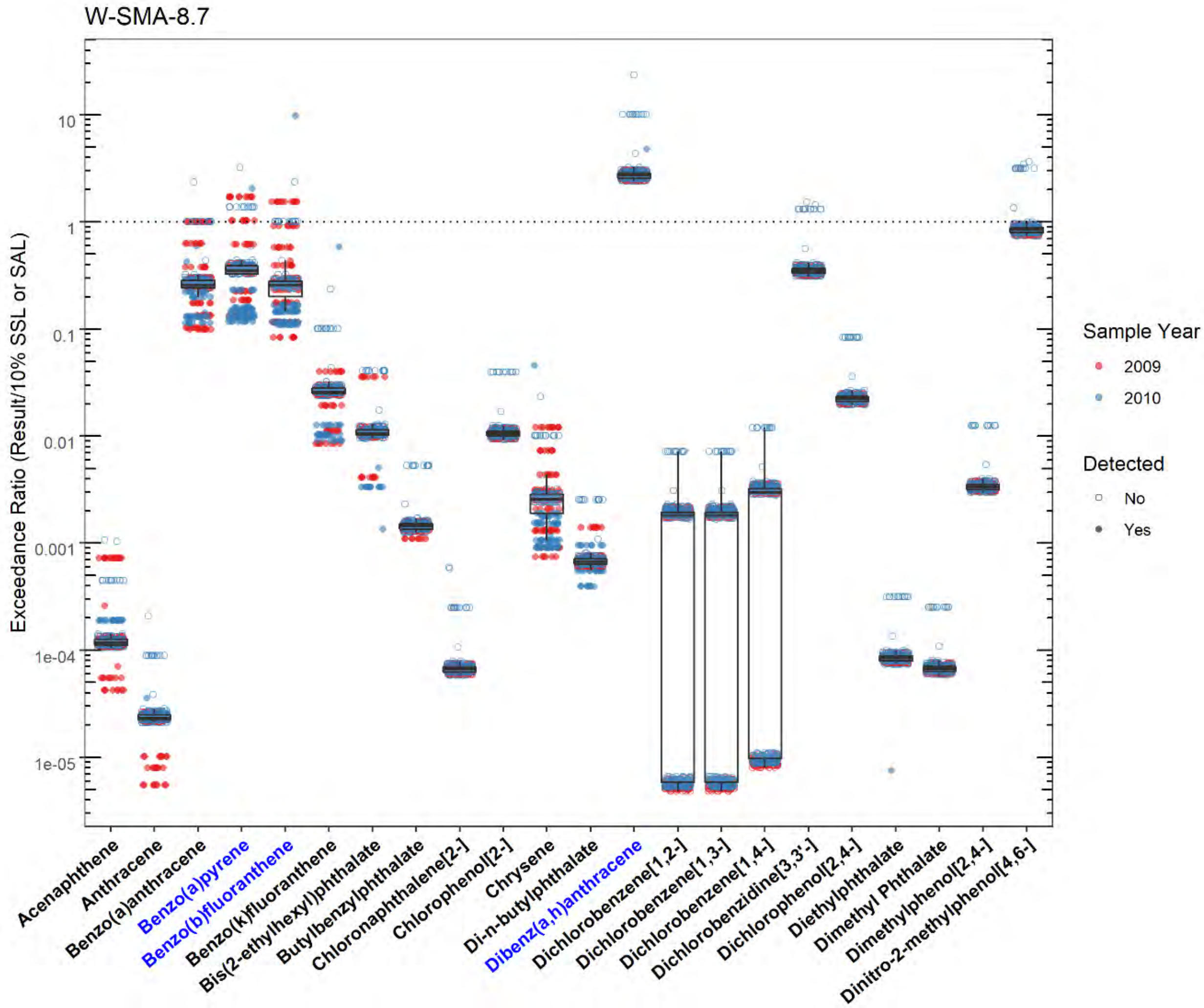


Figure 207.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-8.7 (Plot 1)

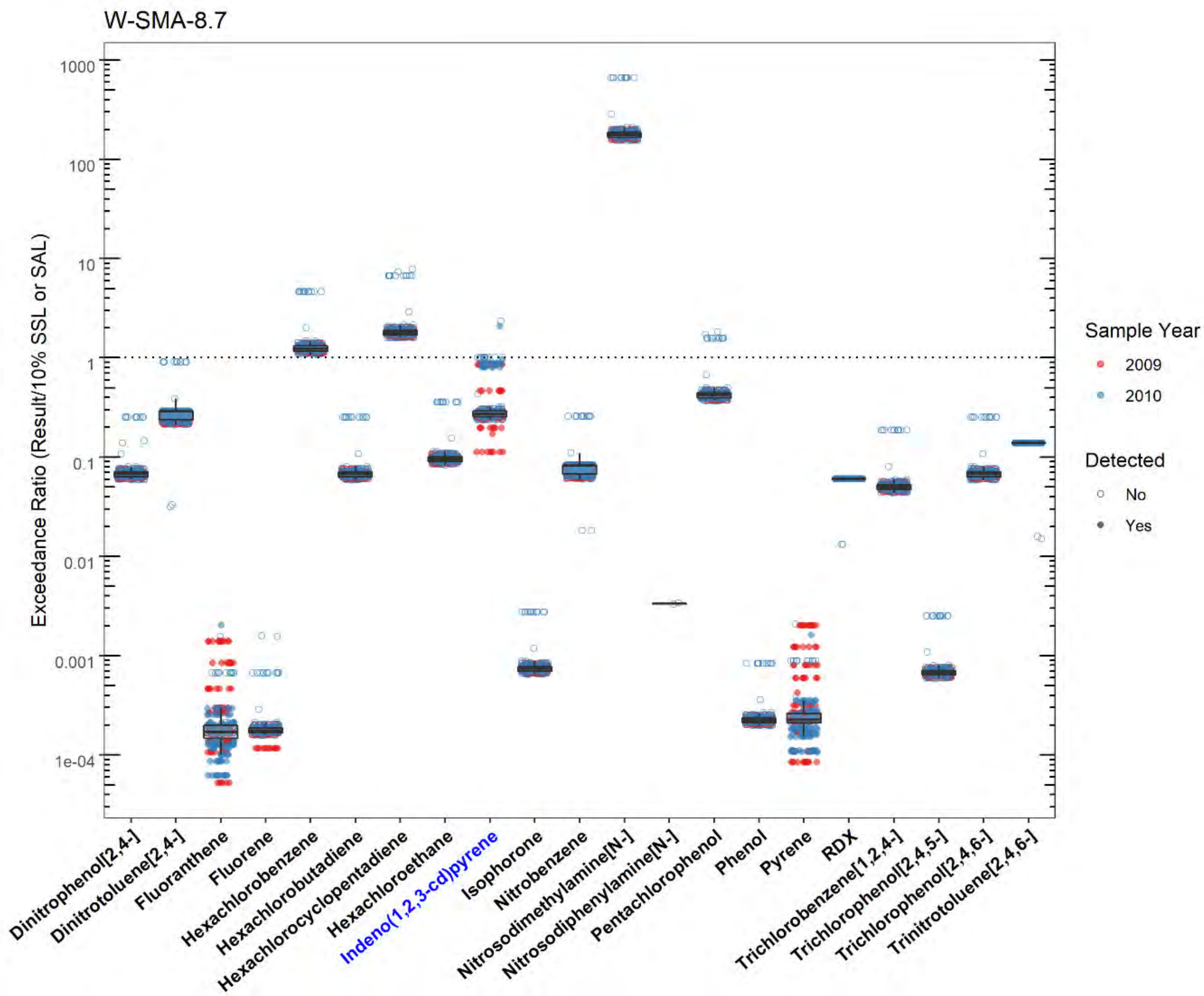


Figure 207.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-8.7 (Plot 2)

W-SMA-8.7

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	W-SMA-8.7	Sb	Y	BTV	0.830	3.26	2010-01-07
Benzo(a)pyrene	W-SMA-8.7	50-32-8	Y	SSL_0.1	0.112	0.230	2010-03-26
Benzo(b)fluoranthene	W-SMA-8.7	205-99-2	Y	SSL_0.1	0.153	1.50	2010-03-26
Cadmium	W-SMA-8.7	Cd	Y	BTV	0.400	1.64	2009-12-19
Cobalt	W-SMA-8.7	Co	Y	BTV	8.64	14.8	2010-01-07
Copper	W-SMA-8.7	Cu	Y	BTV	14.7	45.7	2010-01-08
Dibenz(a,h)anthracene	W-SMA-8.7	53-70-3	Y	SSL_0.1	0.0153	0.0730	2010-03-26
Indeno(1,2,3-cd)pyrene	W-SMA-8.7	193-39-5	Y	SSL_0.1	0.153	0.320	2010-03-26
Lead	W-SMA-8.7	Pb	Y	BTV	22.3	234	2010-01-11
Manganese	W-SMA-8.7	Mn	Y	BTV	671	1420	2010-01-07
Mercury	W-SMA-8.7	Hg	Y	BTV	0.100	0.955	2010-01-07
Silver	W-SMA-8.7	Ag	Y	BTV	1.00	1.50	2010-01-08
Thallium	W-SMA-8.7	Tl	Y	BTV	0.730	0.753	2010-01-07
Zinc	W-SMA-8.7	Zn	Y	BTV	48.8	96.4	2010-01-11

Figure 207.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-8.7

207.4 Stormwater Evaluation

207.4.1 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 207.4-1 and 207.4-2.

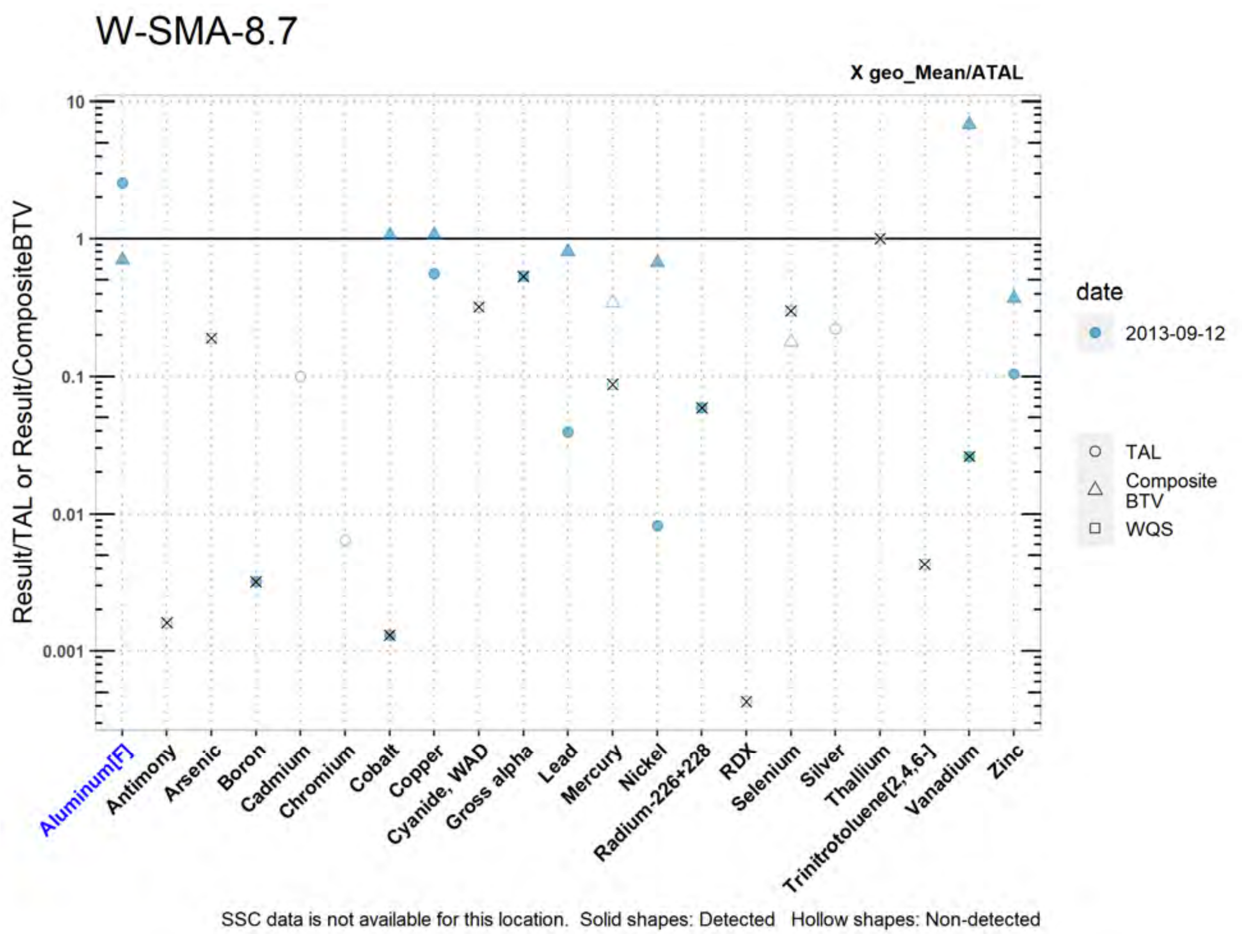


Figure 207.4-1 Analytical Results from Stormwater Sample, W-SMA-8.7 (Plot)

W-SMA-8.7

	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	0.879	311	NA	6.69	22	NA	28.6	NA	250	NA	NA	20	0.9	NA	NA	NA	81.6
Composite_BTV	2760	NA	NA	NA	NA	NA	1.25	3.52	NA	56.7	1.40	0.194	3.10	4.63	NA	8.37	NA	NA	NA	0.384	22.9
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	ug/L	ug/L
2013-09-12 result	1920	*1.00*	*1.70*	16.1	*0.110*	*2.00*	1.32	3.72	*1.67*	8.00	1.12	*0.0670*	2.06	1.77	*0.0865*	*1.50*	*0.200*	*0.450*	*0.0865*	2.62	8.47
2013-09-12 dT	2.56	NA	NA	0.0032	NA	NA	0.0013	0.556	NA	0.53	0.0392	NA	0.00824	0.0590	NA	NA	NA	NA	NA	0.026	0.104
2013-09-12 dB	0.696	NA	NA	NA	NA	NA	1.06	1.06	NA	NA	0.800	NA	0.665	NA	NA	NA	NA	NA	NA	6.82	0.370
geo_mean/ATAL	NA	0.0016	0.19	0.0032	NA	NA	0.0013	NA	0.321	0.53	NA	0.087	NA	0.0590	0.00043	0.30	NA	1	0.0043	0.026	NA

Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 207.4-2 Analytical Results from Stormwater Sample, W-SMA-8.7 (Table)

207.4.2 Assessment Unit and Stream Impairments

W-SMA-8.7 drains to S-Site Canyon (Water Canyon to headwaters) which has not been assessed for impairments.

207.5 Site-Specific Demonstration

207.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and manganese.

The remaining metals that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs. Therefore, they will not be added to the SAP.

207.5.2 Stormwater Data Summary

Aluminum exceeded the TAL but not the BTV.

207.5.3 2022 Permit Status

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

207.5.4 Sampling and Analysis Plan

Table 207.5-1 is the proposed SAP for W-SMA-8.7.

Table 207.5-1 Proposed SAP, W-SMA-8.7

Monitoring Constituent	Background for Monitoring
SVOCs	Site history and soil data
Dissolved manganese	Site history (metals) and soil data
Strontium-90	Site history (radionuclides)
Tritium	Site history (radionuclides)
DOC	Permit requirement
SSC	Permit requirement

208.0 W-SMA-8.71

Associated Sites	16-004(c)
Receiving Water	Water Canyon
Drainage Area	0.28 acres
Landscape Characteristics	3% impervious, 97% pervious
Consent Order Site Status	SWMU 16-004(c): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the September 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

208.1 2010 Administratively Continued Permit Summary

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

Following the December 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 232349), 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 these samples initiated corrective action.

Following the September 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600909), 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.

208.2 Site History

16-004(c) (11/26/2019)

SWMU 16-004(c) is the inactive clarifier or final tank (Structure 16-532) used for sewage treatment at the former sanitary wastewater treatment plant (WWTP) at TA-16. The structure is approximately 20 ft × 20 ft concrete box located approximately 45 ft below and southeast of the trickling filter [SWMU 16-004(b)], with a total area of 400 ft^2. The clarifier received discharges from the trickling filter; water flowed through an outlet in the clarifier and discharged through an 8-in. CMP to a metering concrete outfall box, and then to formerly NPDES-permitted outfall EPA SSS03S, which discharged to a tributary of Water Canyon. At full capacity, Structure 16-532 could manage 117,600 gal./day. The TA-16 WWTP began operations in 1952 and was decommissioned in 1992 when the sanitary sewer system was connected to a Laboratory-wide system. The clarifier has been inactive since 1992.

For investigation activities, refer to “Supplemental Investigation Report for S-Site Aggregate Area, Revision 1” (N3B 2019, 700414).

208.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 208.2-1.

Table 208.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-004(c)	Tank	Inorganic and organic chemicals, radionuclides

208.3 Consent Order Soil Data

Decision-level data for SWMU 16-004(c) consist of results from samples collected in 2010. Analytical results for these samples are presented in Figures 208.3-1 through 208.3-4. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination are not defined and further sampling for extent is warranted.

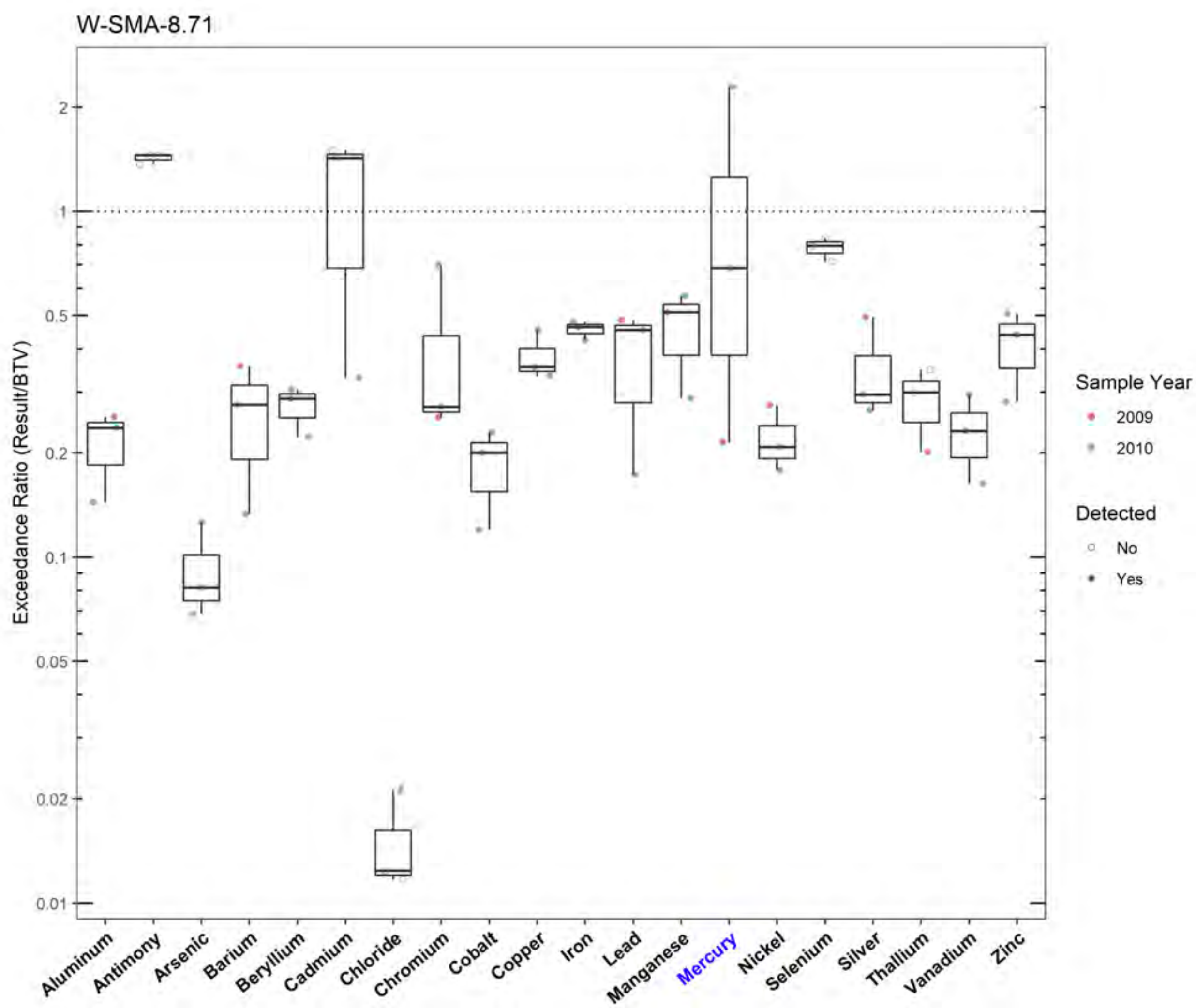


Figure 208.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-8.71

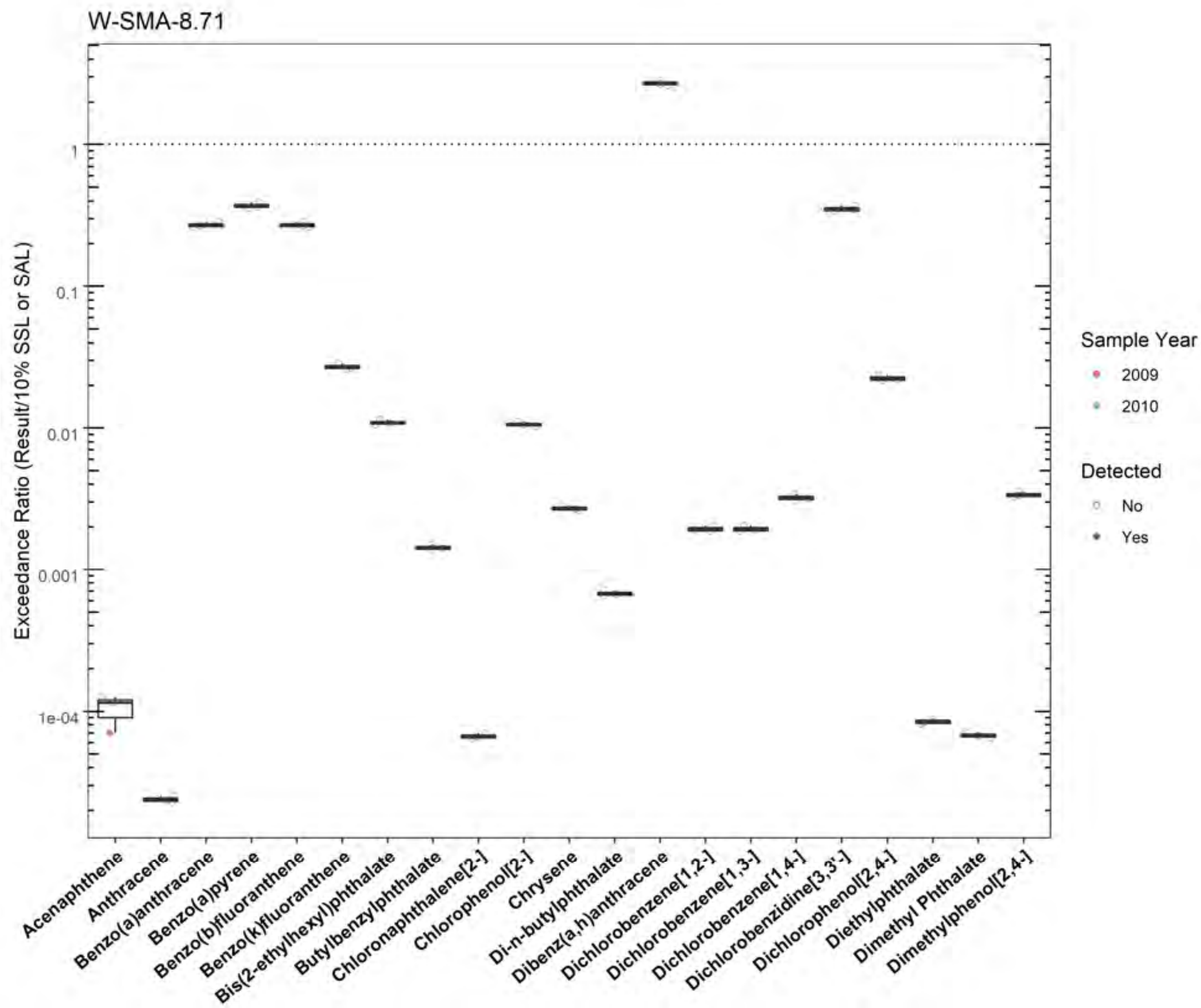


Figure 208.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-8.71 (Plot 1)

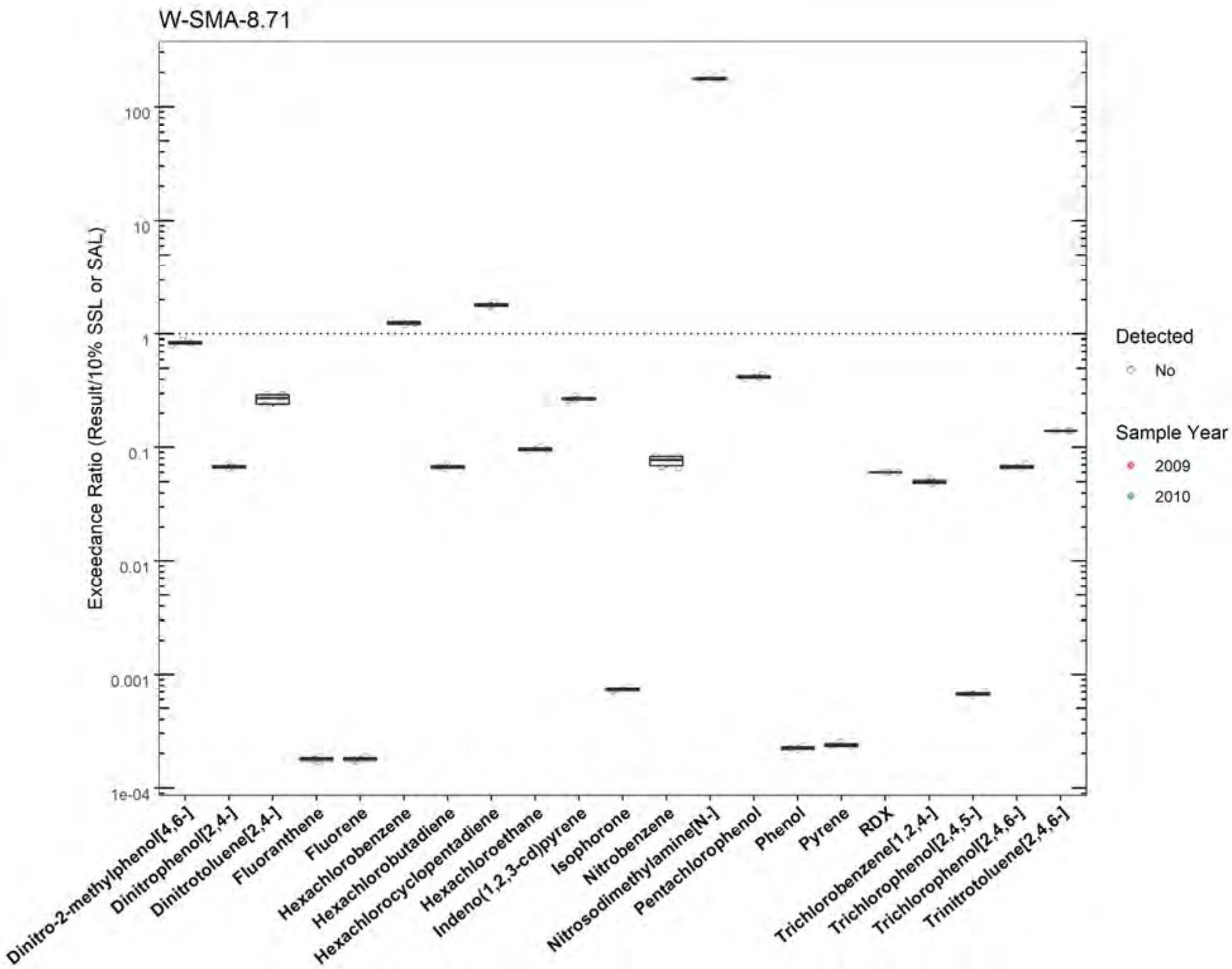


Figure 208.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-8.71 (Plot 2)

W-SMA-8.71

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Mercury	W-SMA-8.71	Hg	Y	BTV	0.100	0.229	2010-03-02

Figure 208.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-8.71

208.4 Stormwater Evaluation

208.4.1 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.

208.4.2 Assessment Unit and Stream Impairments

W-SMA-8.71 drains to S-Site Canyon (Water Canyon to headwaters) which has not been assessed for impairments.

208.5 Site-Specific Demonstration

208.5.1 Soil Data Summary

Mercury exceeded the applicable screening value in soil data, and was previously monitored in stormwater data and did exceed TALs. Therefore, it will be added to the SAP.

208.5.2 Stormwater Data Summary

No confirmation-monitoring data for the current monitoring stage have been collected. Copper and mercury exceeded the TAL and BTV in the previous monitoring stage. Gross alpha and zinc exceeded the TAL but not the BTV in the previous monitoring stage, therefore they will not be added to the SAP.

208.5.3 2022 Permit Status

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

208.5.4 Sampling and Analysis Plan

Table 208.5-1 is the proposed SAP for W-SMA-8.71.

Table 208.5-1 Proposed SAP, W-SMA-8.71

Monitoring Constituent	Background for Monitoring
Dissolved copper	Site history (inorganics) and stormwater data
SVOCs	Site history (organics)
Total PCBs	Site history (organics)
Strontium-90	Site history (radionuclides)
Tritium	Site history (radionuclides)
Total mercury	Site history (inorganics), stormwater data, and soil data
DOC	Permit requirement
SSC	Permit requirement

209.0 W-SMA-9.05

Associated Sites	16-030(g)
Receiving Water	Water Canyon
Drainage Area	0.54 acres
Landscape Characteristics	1% impervious, 99% pervious
Consent Order Site Status	AOC 16-030(g): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended*
2016–2018 SIP Actions	Based on the October 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

* 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.

209.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in September 2013. This sample had no TAL exceedances and stormwater monitoring ceased until 2020. Monitoring resumed in 2020 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. Since that time, stormwater flow has not been sufficient for full-volume sample collection, and monitoring is ongoing at this SMA.

209.2 Site History

16-030(g) (3/21/2019)

AOC 16-030(g) is a former NPDES-permitted outfall (05A052) and associated drainlines located adjacent to the southeast corner of building 16-380 in the eastern portion of TA-16. The outfall received effluent from a HE sump [SWMU 16-003(m)], two roof drains, a steam-heating system, and a drop inlet from a parking lot and discharged to Water Canyon. Building 16-380 was originally used to inspect raw HE powder brought into TA-16 and was later used to store ammunition for LANL security forces. From 1952 to the early 1990s, the sump received washdown water from building cleaning activities containing HE. Discharges from the sump ceased in 1993 when the outlet from the sump was plugged; the outfall was subsequently removed from the LANL NPDES permit effective June 24, 1994. The sump and the steam-heating system discharge lines have been plugged, and the outfall currently receives only roof drain and parking lot runoff. In 2010, Building 16-380 was being used to store ammunition for LANL security forces.

For investigation activities, refer to “Investigation Work Plan for Upper Water Canyon Aggregate Area, Revision 1” (LANL 2010, 110409; LANL 2011, 111602.33).

209.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 209.2-1.

Table 209.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
16-030(g)	Outfall from building 16-380	HE

209.3 Consent Order Soil Data

Decision-level data for AOC 16-030(g) consist of results from samples collected in 1995. Analytical results for these samples are presented in Figures 209.3-1 through 209.3-4. The 2011 IWP (LANL 2011, 111602.33) concluded that the nature and extent of contamination have not been defined and additional sampling is recommended.

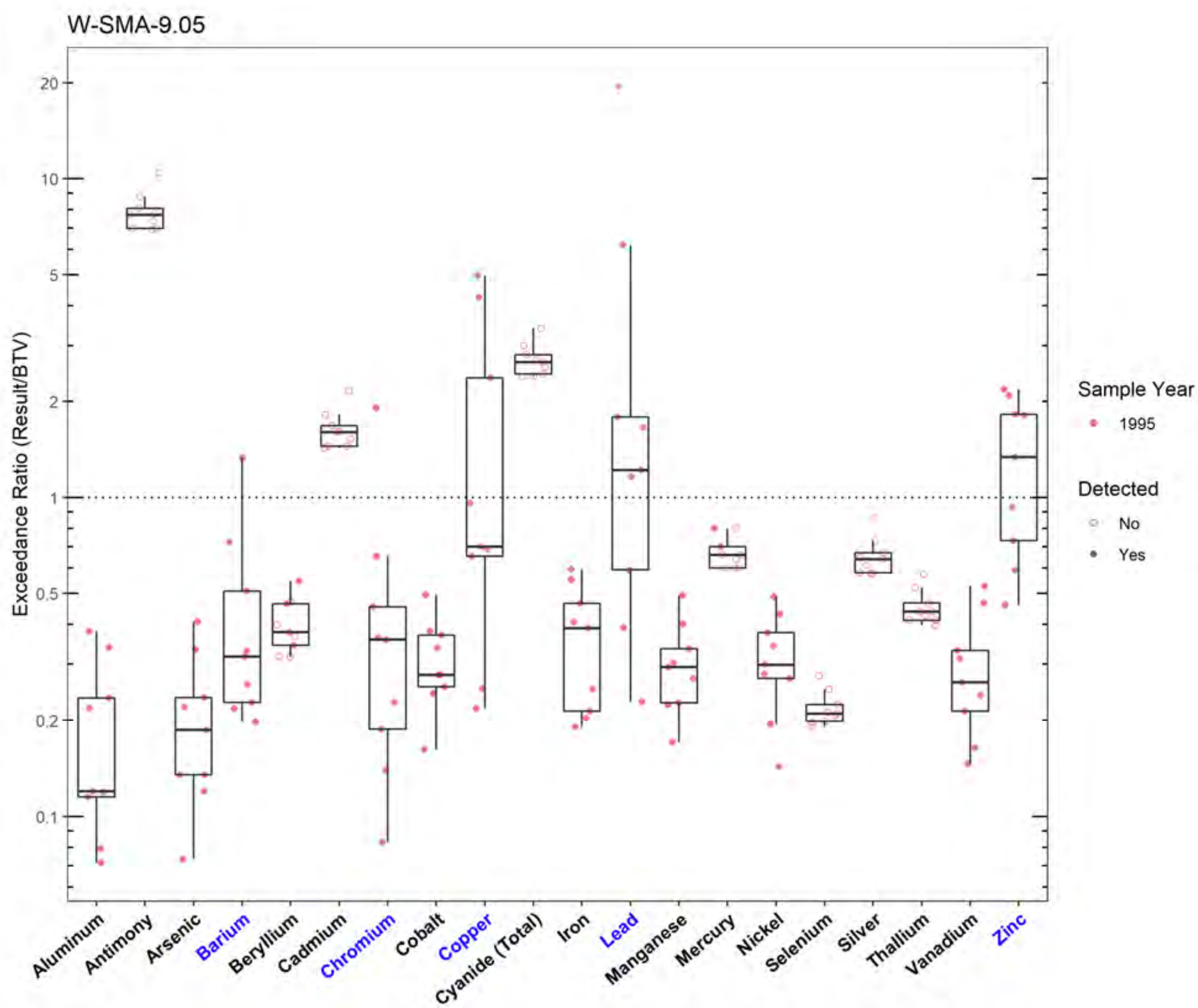


Figure 209.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-9.05

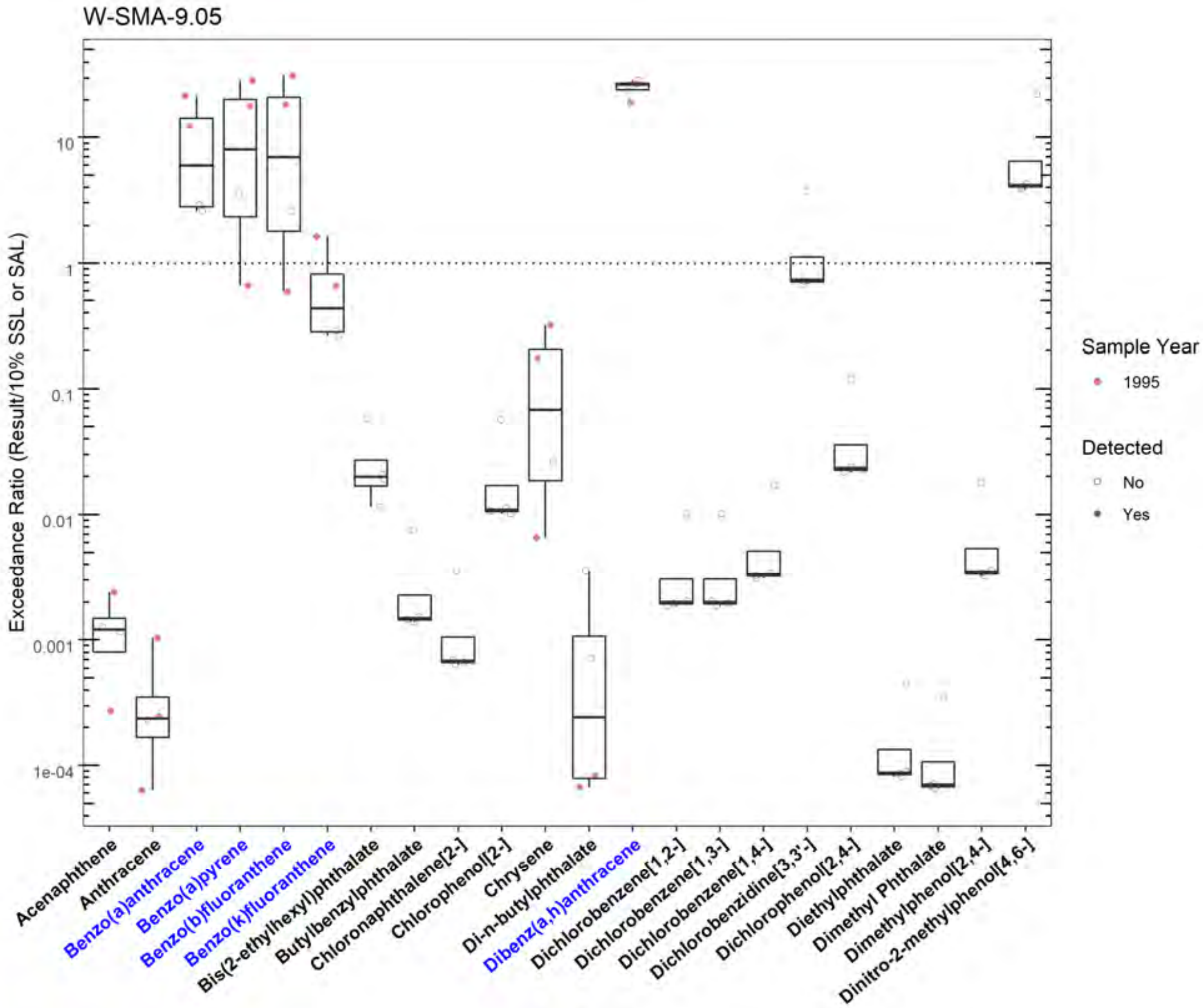


Figure 209.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-9.05 (Plot 1)

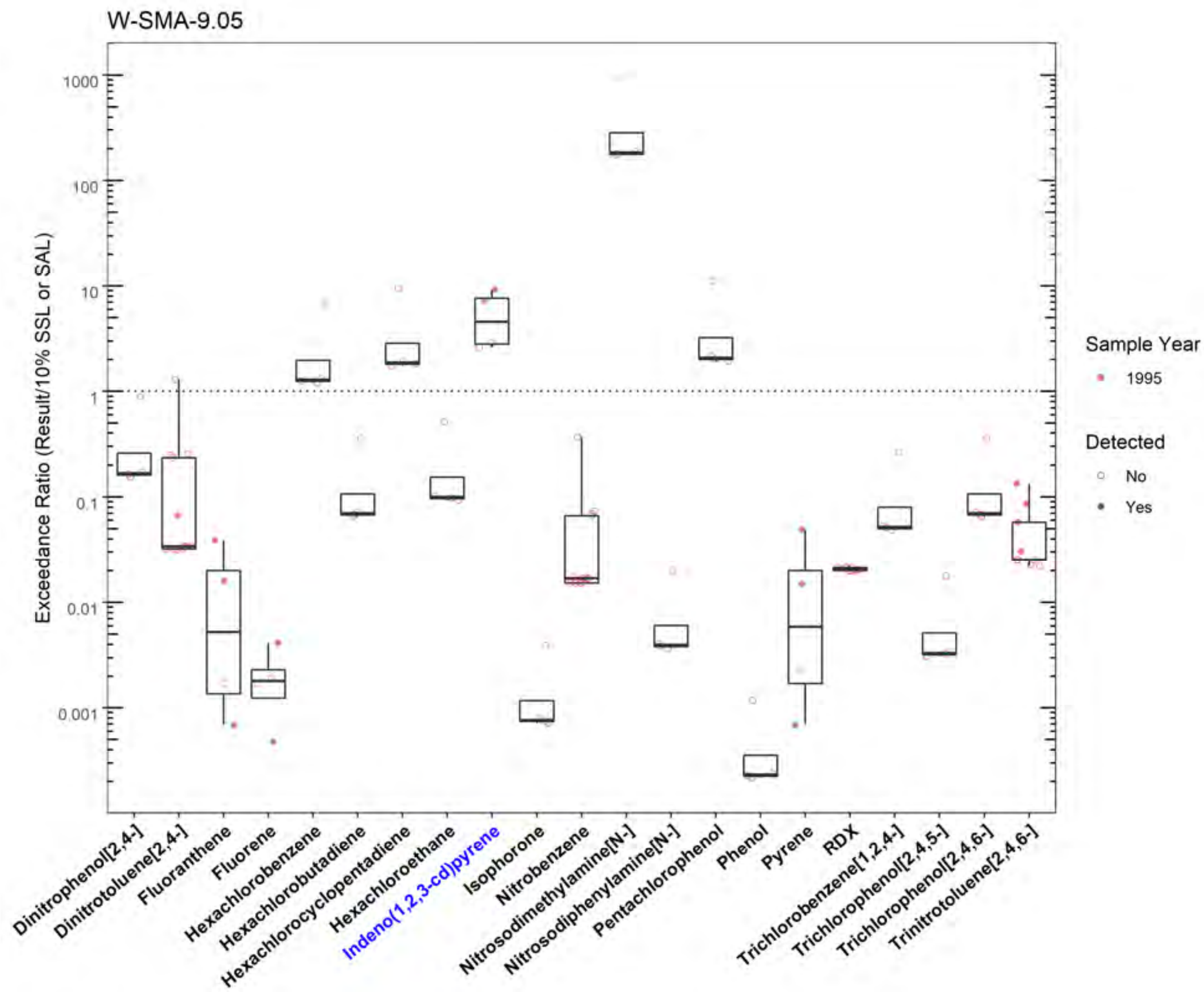


Figure 209.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-9.05 (Plot 2)

W-SMA-9.05

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Barium	W-SMA-9.05	Ba	Y	BTV	295	391	1995-08-15
Benzo(a)anthracene	W-SMA-9.05	56-55-3	Y	SSL_0.1	0.153	3.30	1995-08-15
Benzo(a)pyrene	W-SMA-9.05	50-32-8	Y	SSL_0.1	0.112	3.20	1995-08-15
Benzo(b)fluoranthene	W-SMA-9.05	205-99-2	Y	SSL_0.1	0.153	4.80	1995-08-15
Benzo(k)fluoranthene	W-SMA-9.05	207-08-9	Y	SSL_0.1	1.53	2.50	1995-08-15
Chromium	W-SMA-9.05	Cr	Y	BTV	19.3	36.9	1995-08-15
Copper	W-SMA-9.05	Cu	Y	BTV	14.7	73.0	1995-05-10
Dibenz(a,h)anthracene	W-SMA-9.05	53-70-3	Y	SSL_0.1	0.0153	0.410	1995-08-15
Indeno(1,2,3-cd)pyrene	W-SMA-9.05	193-39-5	Y	SSL_0.1	0.153	1.40	1995-08-15
Lead	W-SMA-9.05	Pb	Y	BTV	22.3	434	1995-05-10
Zinc	W-SMA-9.05	Zn	Y	BTV	48.8	107	1995-08-15

Figure 209.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-9.05

209.4 Stormwater Evaluation

209.4.1 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 209.4-1 and 209.4-2.

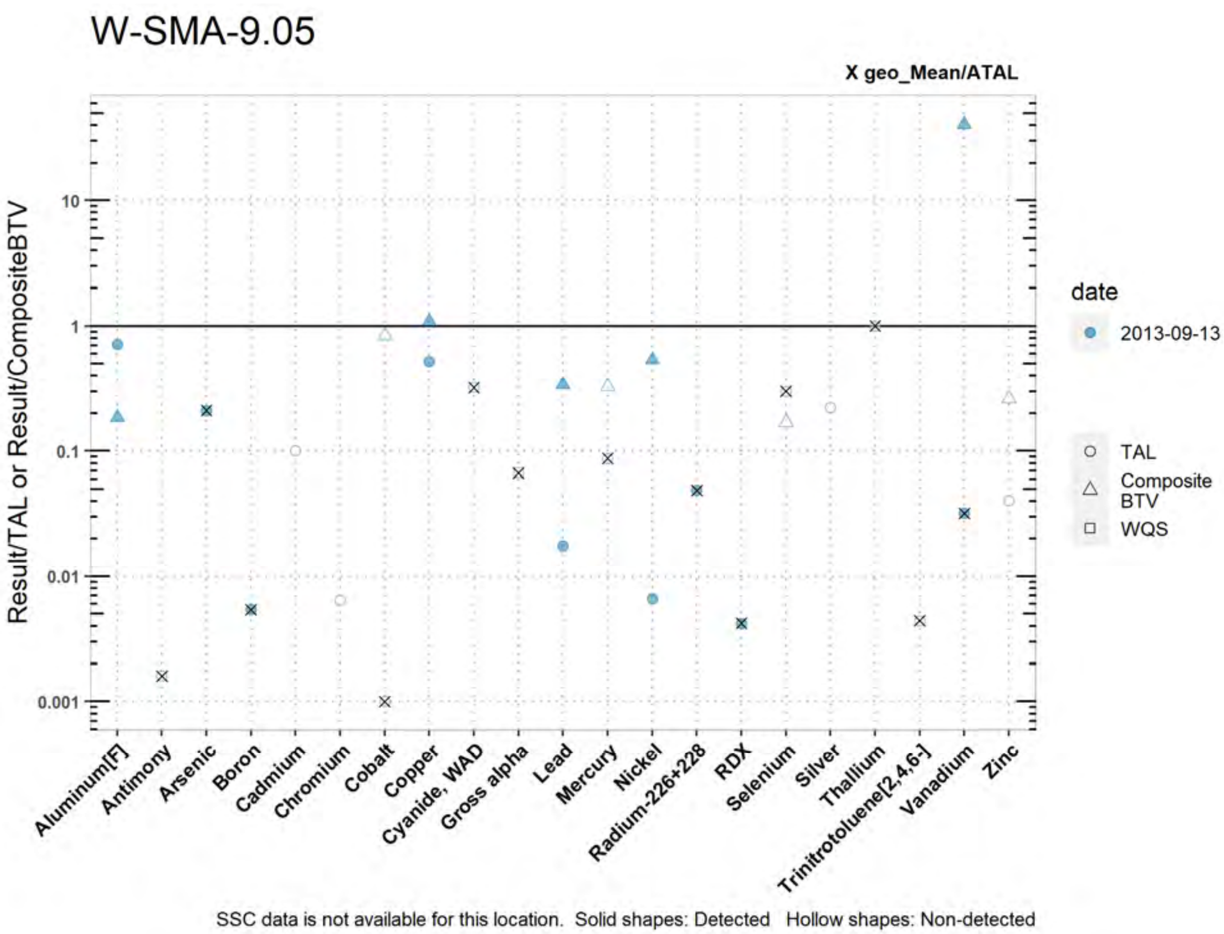


Figure 209.4-1 Analytical Results from Stormwater Sample, W-SMA-9.05 (Plot)

W-SMA-9.05

	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	0.879	311	NA	6.69	22	NA	28.6	NA	250	NA	NA	20	0.9	NA	NA	NA	81.6
Composite_BTV	2910	NA	NA	NA	NA	NA	1.19	3.20	NA	57.1	1.48	0.205	3.10	4.29	NA	8.85	NA	NA	NA	0.0778	12.6
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	ug/L	ug/L
2013-09-13 result	537	*1.00*	1.90	26.8	*0.110*	*2.00*	*1.00*	3.49	*1.67*	*1.00*	0.501	*0.0670*	1.66	1.46	0.847	*1.50*	*0.200*	*0.450*	*0.0879*	3.17	*3.30*
2013-09-13 dT	0.716	NA	0.21	0.0054	NA	NA	NA	0.522	NA	NA	0.0175	NA	0.00664	0.0487	0.0042	NA	NA	NA	NA	0.032	NA
2013-09-13 dB	0.185	NA	NA	NA	NA	NA	NA	1.09	NA	NA	0.339	NA	0.535	NA	NA	NA	NA	NA	NA	40.7	NA
geo_mean/ATAL	NA	0.0016	0.21	0.0054	NA	NA	0.0010	NA	0.321	0.067	NA	0.087	NA	0.0487	0.0042	0.30	NA	1	0.0044	0.032	NA

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

Figure 209.4-2 Analytical Results from Stormwater Sample, W-SMA-9.05 (Table)

209.4.2 Assessment Unit and Stream Impairments

W-SMA-9.05 drains to Water Canyon (within LANL below Area-A Cyn) which has impairments for PCBs, adjusted gross alpha, total aluminum, and total mercury. The impairments are not likely to be Site related, based on Site history.

209.5 Site-Specific Demonstration

209.5.1 Soil Data Summary

No Site-related POCs exceeded the soil screening levels.

209.5.2 Stormwater Data Summary

No TAL exceedances.

209.5.3 2022 Permit Status

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

209.5.4 Sampling and Analysis Plan

Table 209.5-1 is the proposed SAP for W-SMA-9.05.

Table 209.5-1 Proposed SAP, W-SMA-9.05

Monitoring Constituent	Background for Monitoring
HE (1)	Site history
DOC (1)	Permit requirement
SSC (1)	Permit requirement

210.0 W-SMA-9.5

Associated Sites	11-012(c)
Receiving Water	S-Site Canyon - Tributary to Water Canyon
Drainage Area	0.11 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	AOC 11-012(c): In Progress Deferred per Consent Order
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the October 2016 field visit, the sampler was moved to catch runoff from the up-gradient side of the berm.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3 criterion

210.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation 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. A baseline stormwater sample was collected in June 2017. Analytical results from this sample initiated corrective action.

Following the September 2020 submittal to EPA of certification of enhanced control installation as a corrective action (N3B 2020, 701029), 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.

210.2 Site History

11-012(c) (5/31/2022)

AOC 11-012(c) is an area of potential soil contamination associated with the footprint of former HE storage magazine 11-9 that was located approximately 500 ft west of building 11-4 at TA-11. Constructed of wood, the 16-ft square by 9-ft high HE magazine was built in 1945 and destroyed by intentional burning in 1960. In 1956, a survey of four HE storage magazines, including magazine 11-9, was found to be free of radioactive contamination. A second survey in 1959, again found all four HE magazines free of radioactivity, but did show HE contamination. After burning in 1960, any remaining post-burn combustible materials were segregated and removed to the TA-16 burning ground and burned again. Post-burn non-combustibles were taken to former MDA P [SWMU 16-018] for disposal.

No investigations have been conducted at this Site. For more information on historical activities, refer to “RFI Work Plan for Operable Unit 1082” (LANL 1993, 020948).

210.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 210.2-1.

Table 210.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
11-012(c)	Potential soil contamination	HE

210.3 Consent Order Soil Data

Samples have not been collected from AOC 11-012(c).

210.4 Stormwater Evaluation

210.4.1 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.

210.4.2 Assessment Unit and Stream Impairments

W-SMA-9.5 drains to S-Site Canyon (Water Canyon to headwaters) which has not been assessed for impairments.

210.5 Site-Specific Demonstration

210.5.1 Soil Data Summary

Samples have not been collected from AOC 11-012(c).

210.5.2 Stormwater Data Summary

No data for the current monitoring stage have been collected. Aluminum, gross alpha and mercury exceeded TALs in the previous monitoring stage.

210.5.3 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.

211.0 W-SMA-9.7

Associated Sites	11-011(a), 11-011(b)
Receiving Water	S-Site Canyon - Tributary to Water Canyon
Drainage Area	0.15 acres
Landscape Characteristics	15% impervious, 85% pervious
Consent Order Site Status	SWMU 11-011(a): In Progress SWMU 11-011(b): Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the September 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Corrective Action

211.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, 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, 600418). No response has been received from EPA and stormwater monitoring has not occurred since 2013.

211.2 Site History

11-011(a) (9/3/2019)

SWMU 11-011(a) is an inactive drainline and former NPDES-permitted outfall (EPA 03A130) located north of the K-Site complex and approximately 6 ft northeast of the Electrodynamics Vibration Test Facility (building 11-30) at TA-11. An insulated 2-in. pipe received cooling water blowdown from a cooling tower and deionized water from floor drains in from building 11-30A (an adjunct of building 11-30). The drainline discharged northward to an outfall in a drainage channel that flowed to a tributary of Water Canyon. The outfall became inactive following removal of the water-cooled equipment in building 11-30 and was removed from the NPDES permit during the 2013 permit renewal.

11-011(b) (9/6/2019)

SWMU 11-011(b) is an inactive 3-in. diameter outlet drainline and outfall located north of the Electrodynamics Vibration Test Facility (building 11-30) at TA-11. The 3-in. diameter outlet drainline extends about 10 ft beyond the side of a hill to the outfall. The outfall received discharge from floor drains in building 11-30 from the early 1960s until the early 1990s. A sink drain that formerly discharged to the outfall was removed prior to 1990. A 1992 wastewater characterization report prepared by Santa Fe Engineering stated discharges from two floor drains in building 11-30 consisted of deionized water and residual HE potentially released from containers processed on shakers in the building. The report recommended the outlet drainline be plugged; the drainline was subsequently plugged.

For investigation activities for these Sites, refer to “Supplemental Investigation Report for S-Site Aggregate Area, Revision 1” (N3B 2019, 700414).

211.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 211.2-1.

Table 211.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
11-011(a)	Outfall	Naturally occurring metals concentrated by evaporation; copper, cyanide
11-011(b)	Outfall	HE

211.3 Consent Order Soil Data

Decision-level data for SWMU 11-011(a) and SWMU 11-011(b) consist of results from samples collected in 2010. Analytical results for these samples are presented in Figures 211.3-1 through 211.3-4.

The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination are not defined at SWMU 11-011(a) and further sampling for extent is warranted. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination have been defined at SWMU 11-011(b) and further sampling for extent is not warranted.

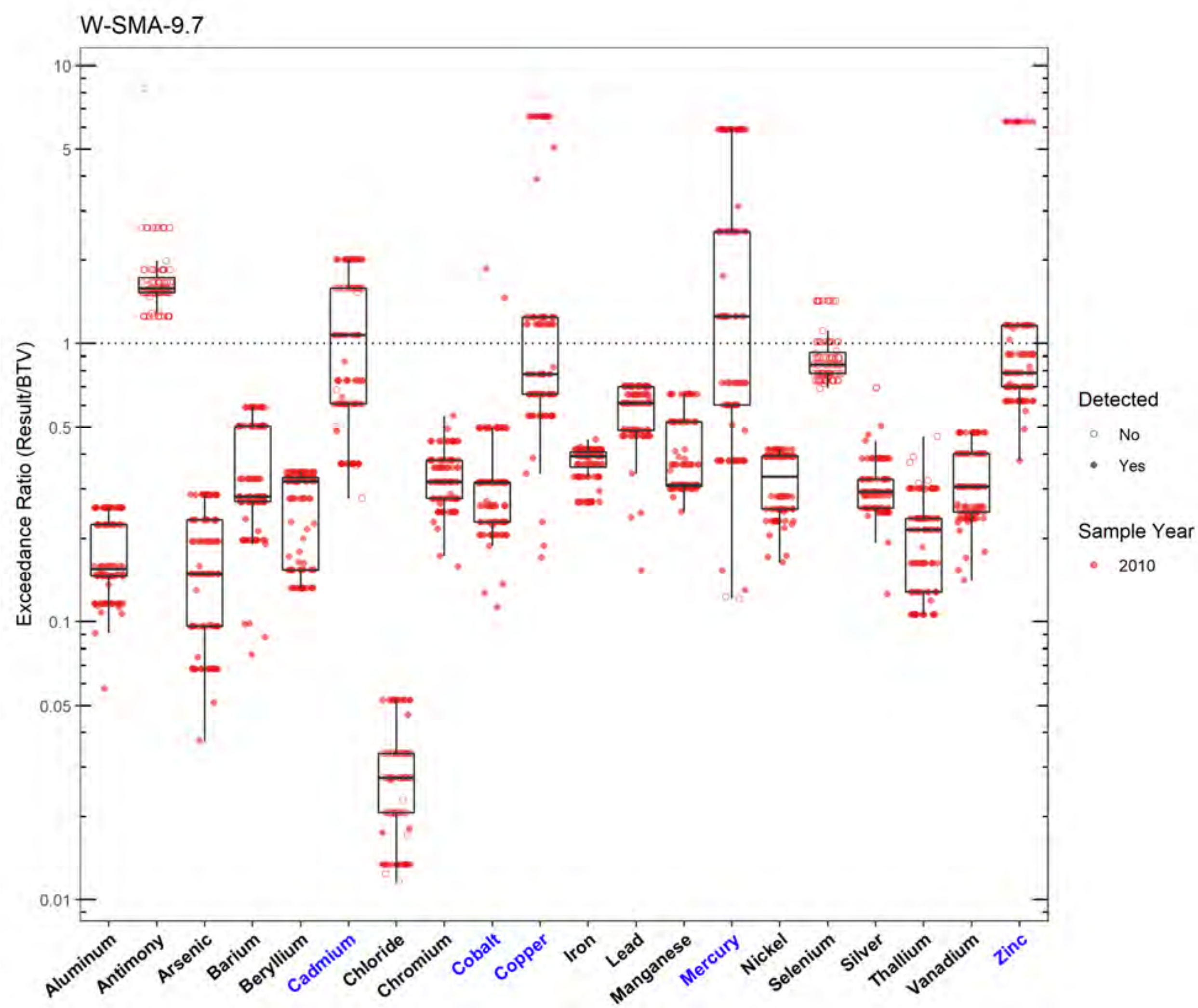


Figure 211.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-9.7

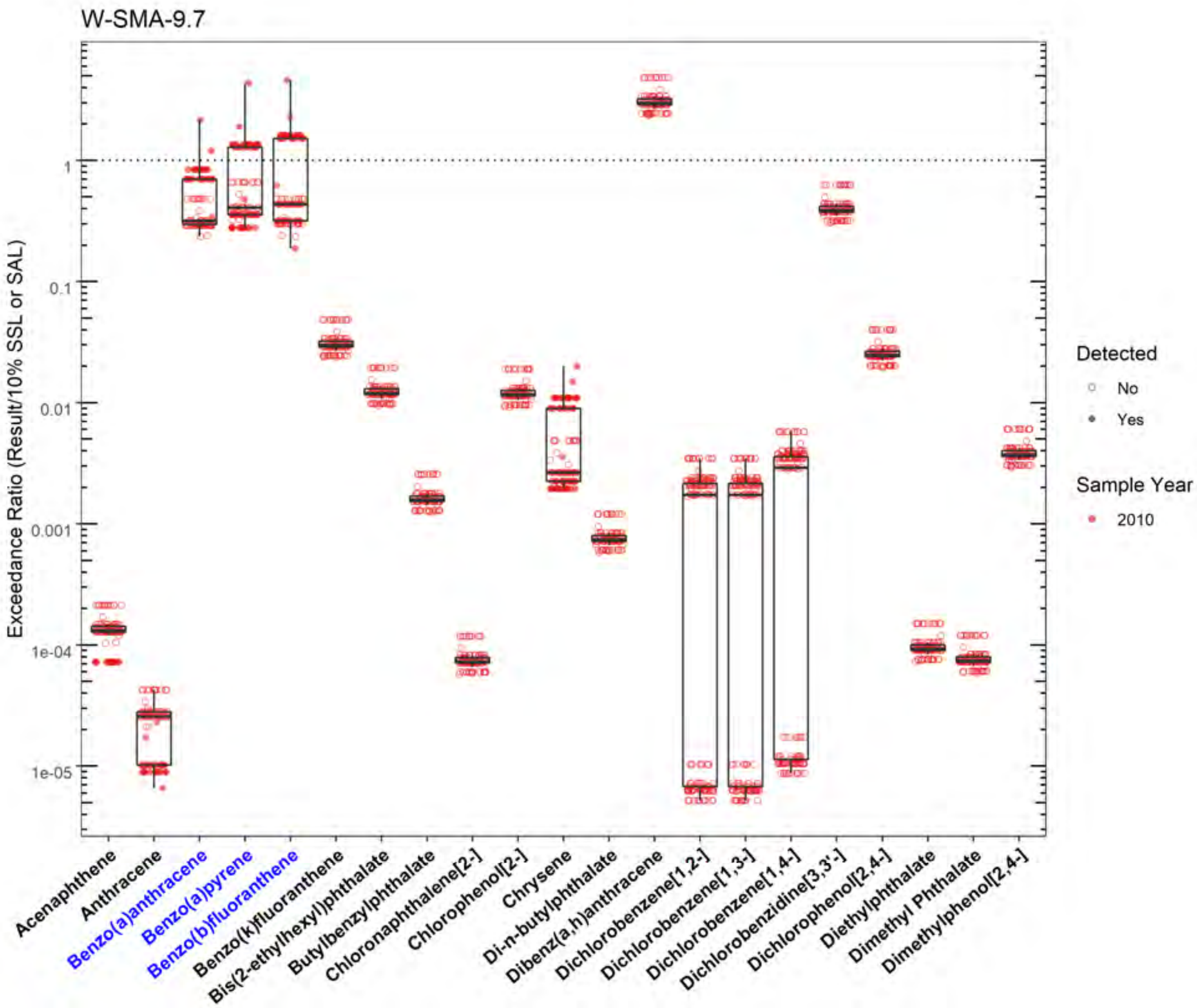


Figure 211.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-9.7 (Plot 1)

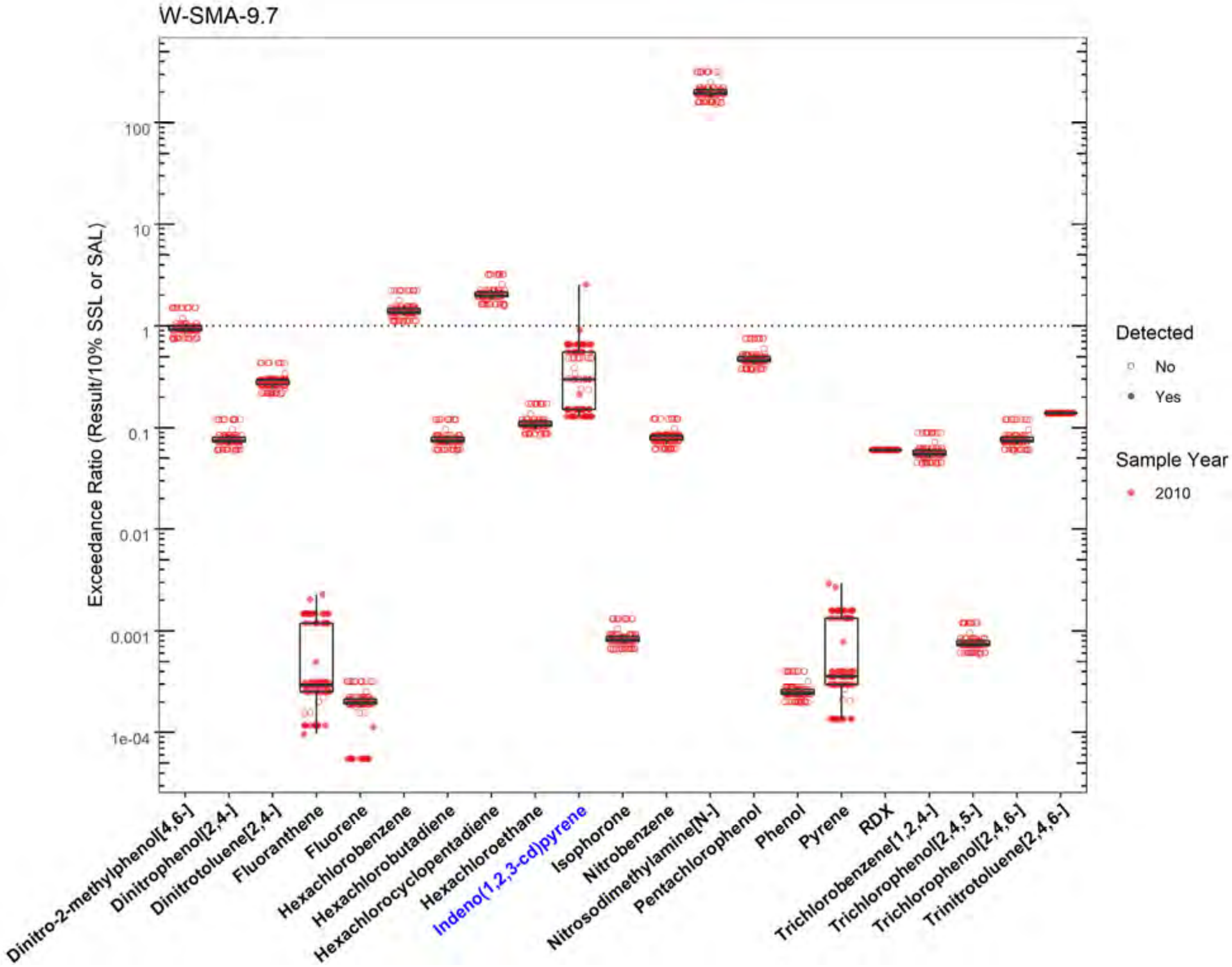


Figure 211.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-9.7 (Plot 2)

W-SMA-9.7

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Benzo(a)anthracene	W-SMA-9.7	56-55-3	Y	SSL_0.1	0.153	0.330	2010-02-25
Benzo(a)pyrene	W-SMA-9.7	50-32-8	Y	SSL_0.1	0.112	0.488	2010-02-25
Benzo(b)fluoranthene	W-SMA-9.7	205-99-2	Y	SSL_0.1	0.153	0.707	2010-02-25
Cadmium	W-SMA-9.7	Cd	Y	BTV	0.400	0.803	2010-02-27
Cobalt	W-SMA-9.7	Co	Y	BTV	8.64	16.2	2010-02-25
Copper	W-SMA-9.7	Cu	Y	BTV	14.7	96.4	2010-02-25
Indeno(1,2,3-cd)pyrene	W-SMA-9.7	193-39-5	Y	SSL_0.1	0.153	0.388	2010-02-25
Mercury	W-SMA-9.7	Hg	Y	BTV	0.100	0.590	2010-02-25
Zinc	W-SMA-9.7	Zn	Y	BTV	48.8	307	2010-02-25

Figure 211.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-9.7

211.4 Stormwater Evaluation

211.4.1 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 211.4-1 and 211.4-2.

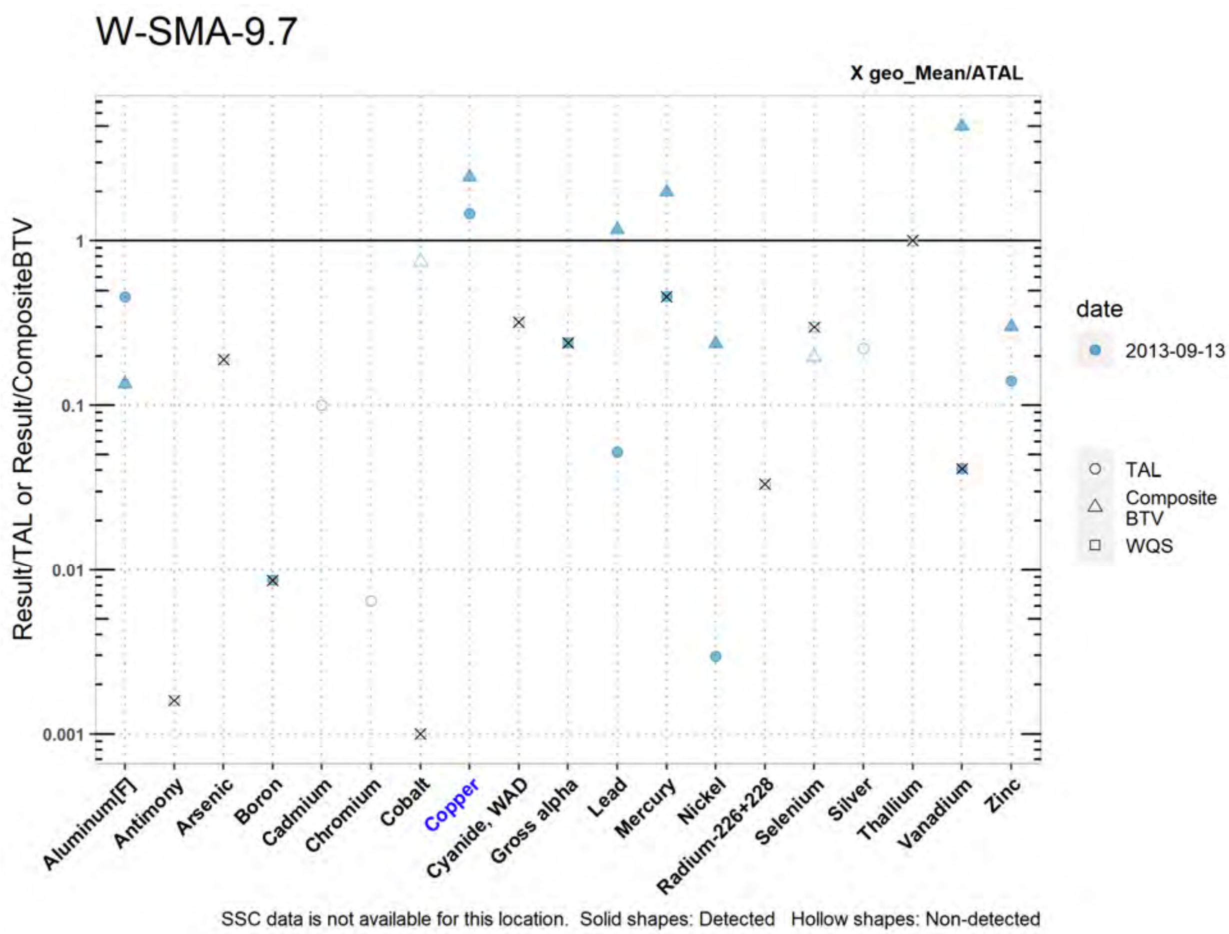


Figure 211.4-1 Analytical Results from Stormwater Sample, W-SMA-9.7 (Plot)

W-SMA-9.7

	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	0.879	311	NA	6.69	22	NA	28.6	NA	250	NA	20	0.9	NA	NA	81.6
Composite_BTV	2540	NA	NA	NA	NA	NA	1.34	3.98	NA	56.1	1.28	0.178	3.10	5.11	7.67	NA	NA	0.823	37.7
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
2013-09-13 result	344	*1.00*	*1.70*	43.2	*0.110*	*2.00*	*1.00*	9.74	*1.67*	3.55	1.48	0.352	0.738	*1.00*	*1.50*	*0.200*	*0.450*	4.10	11.4
2013-09-13 dT	0.459	NA	NA	0.0086	NA	NA	NA	1.46	NA	0.24	0.0517	0.46	0.00295	NA	NA	NA	NA	0.041	0.140
2013-09-13 dB	0.135	NA	NA	NA	NA	NA	NA	2.45	NA	NA	1.16	1.98	0.238	NA	NA	NA	NA	4.98	0.302
geo_mean/ATAL	NA	0.0016	0.19	0.0086	NA	NA	0.0010	NA	0.321	0.24	NA	0.46	NA	0.0333	0.30	NA	1	0.041	NA

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

Figure 211.4-2 Analytical Results from Stormwater Sample, W-SMA-9.7 (Table)

211.4.2 Assessment Unit and Stream Impairments

W-SMA-9.7 drains to S-Site Canyon (Water Canyon to headwaters) which has not been assessed for impairments.

211.5 Site-Specific Demonstration

211.5.1 Soil Data Summary

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

211.5.2 Stormwater Data Summary

Copper exceeded TAL and BTV.

211.5.3 2022 Permit Status

Due to the exceedances of composite BTV and/or TAL, corrective action will be initiated at this SMA for copper (Part I.C.2.b.i).

212.0 W-SMA-9.8

Associated Sites	11-005(c)
Receiving Water	S-Site Canyon - Tributary to Water Canyon
Drainage Area	0.05 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the September 2016 field visit, sampler adjustment is needed. The sampler was moved approximately 50 feet down gradient.
2022 Permit Status	Active Monitoring

212.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation 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. 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.

212.2 Site History

11-005(c) (9/3/2019)

SWMU 11-005(c) is an inactive outlet drainline and outfall and located approximately 50 ft north of building 11-2 at TA-11. The drainline was installed in 1944 and received discharges from a sink, hot water heater, and floor drain in building 11-2. The outfall discharged to a slightly sloped area consisting of fill from an adjacent roadbed. The outlet drainline from building 11-2 was capped before the drop tower complex was constructed in 1956. Building 11-2 was used as a control room for the drop tower and is currently vacant.

For investigation activities, refer to “Supplemental Investigation Report for S-Site Aggregate Area, Revision 1” (N3B 2019, 700414).

212.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 212.2-1.

Table 212.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
11-005(c)	Outfall	Inorganic chemicals, plutonium, uranium

212.3 Consent Order Soil Data

Decision-level data for SWMU 11-005(c) consist of results from samples collected in 2010. Analytical results for these samples are presented in Figures 212.3-1 through 212.3-4. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination have been defined and further sampling for extent is not warranted.

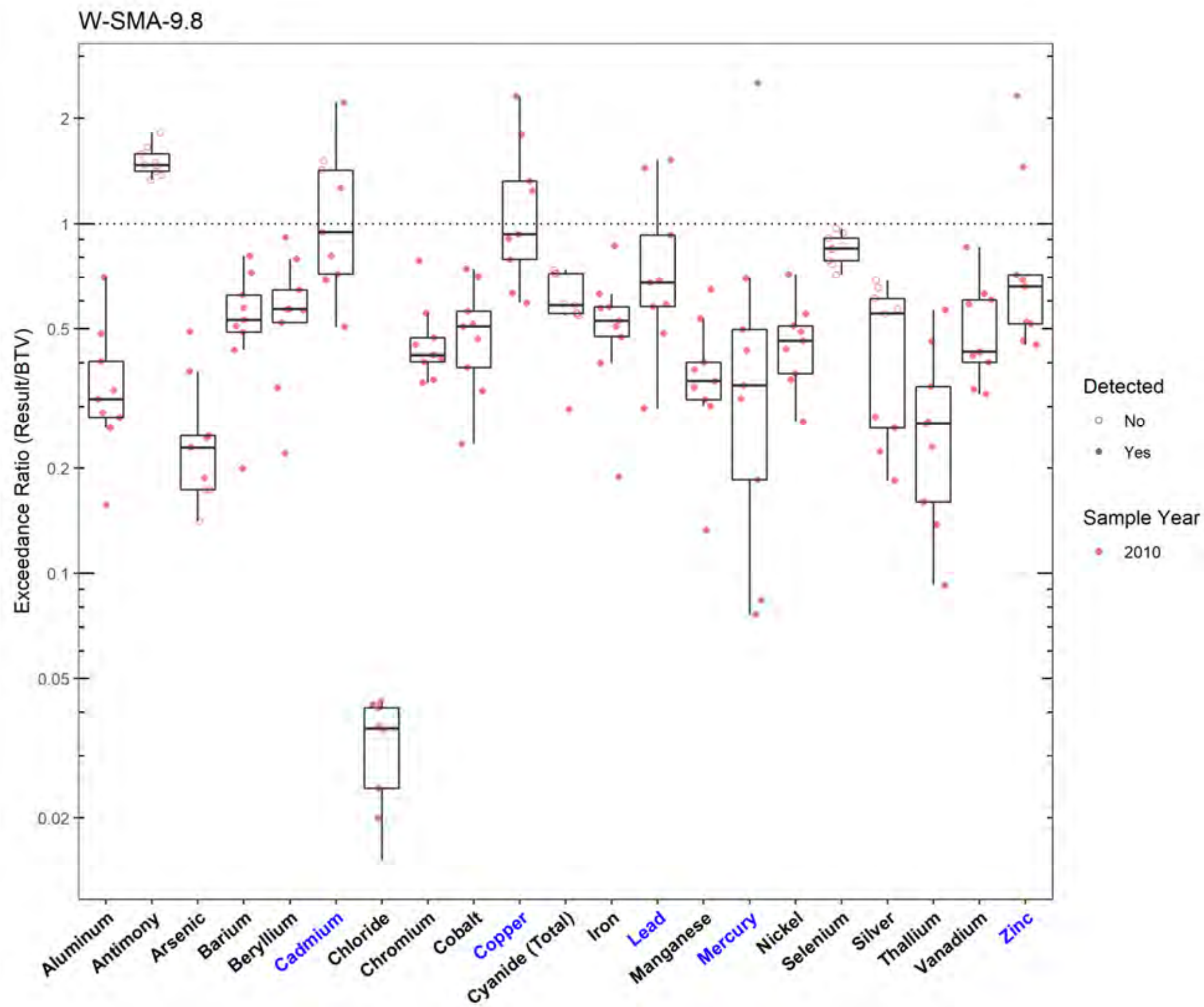


Figure 212.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-9.8

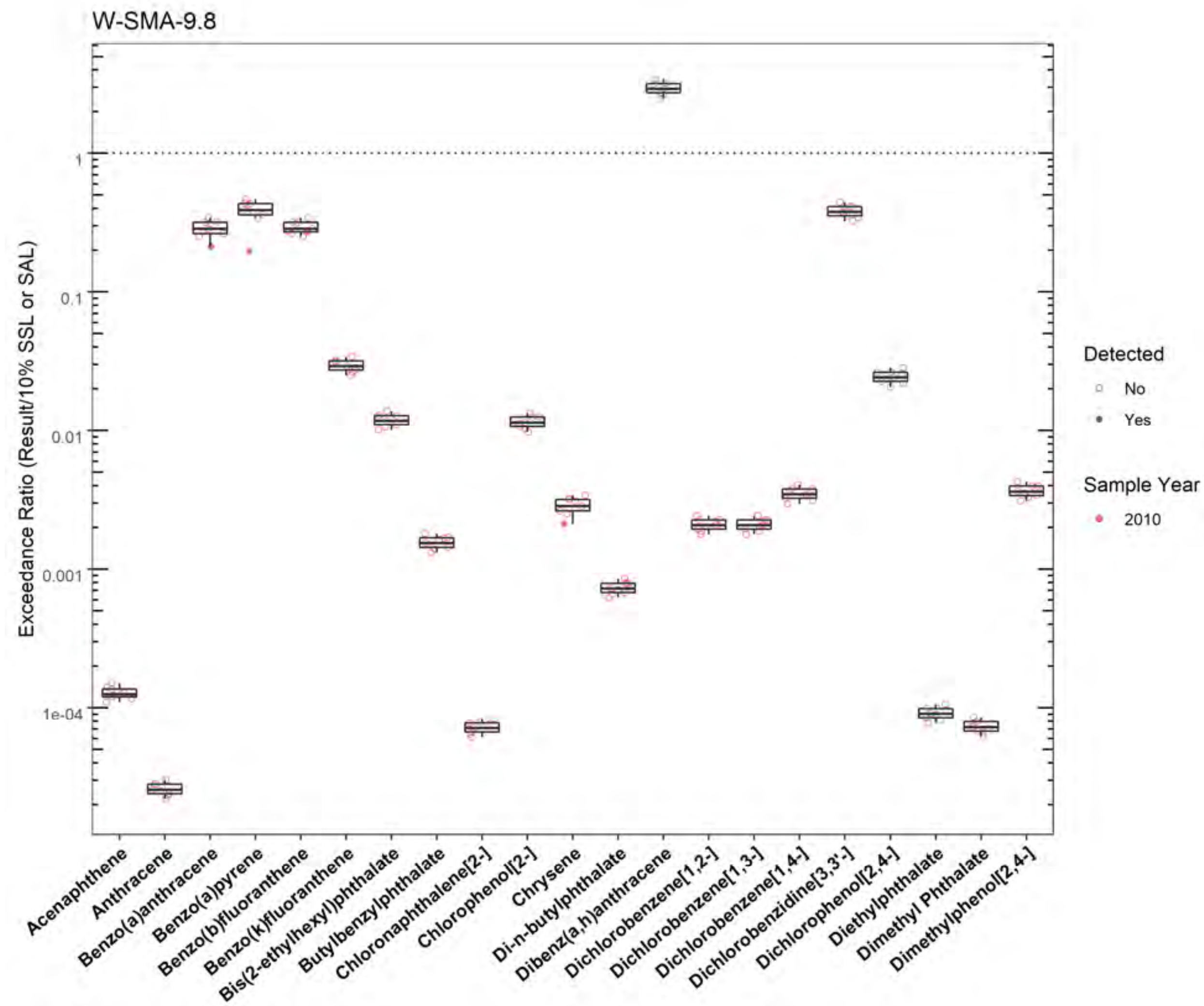


Figure 212.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-9.8 (Plot 1)

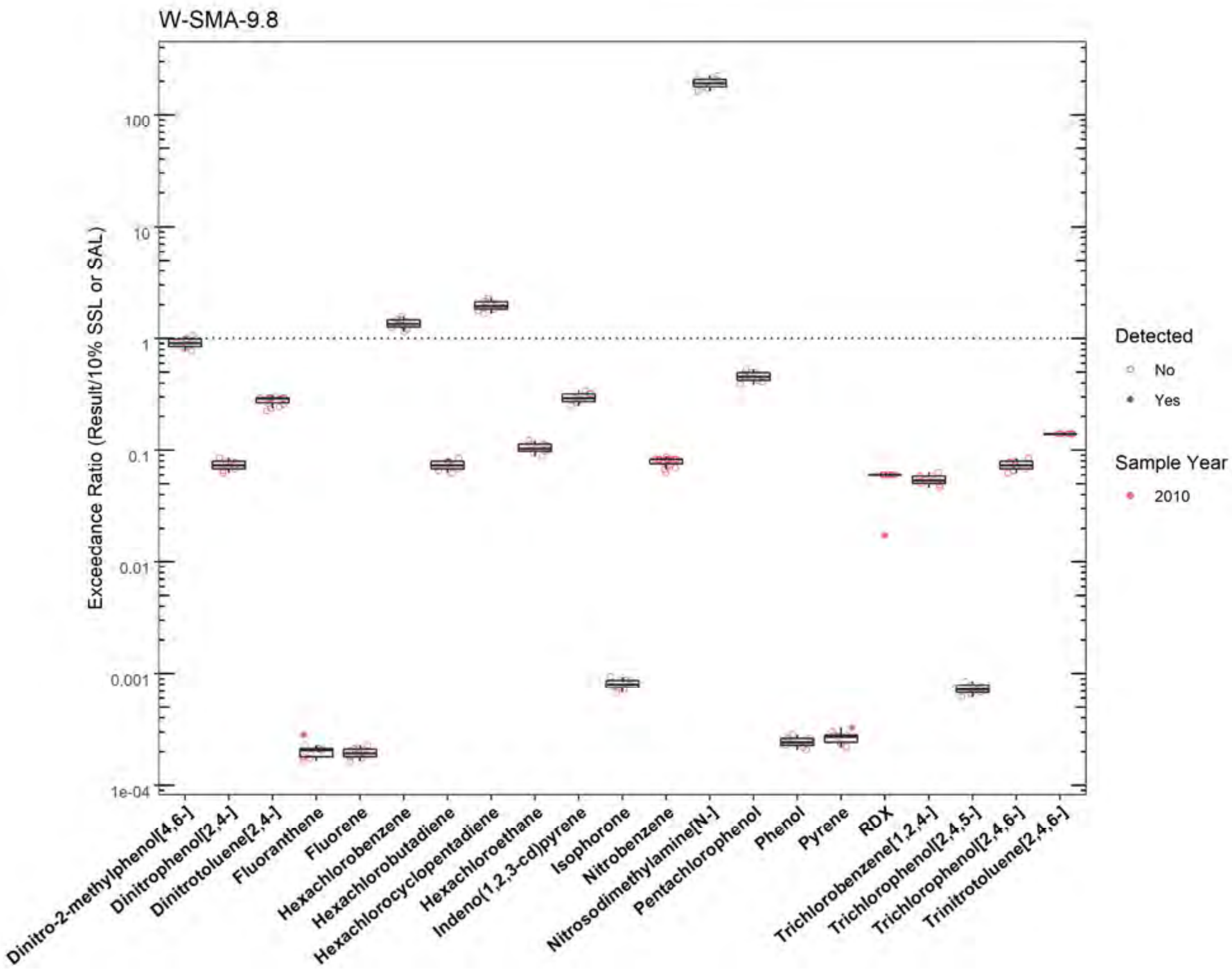


Figure 212.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-9.8 (Plot 2)

W-SMA-9.8

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Cadmium	W-SMA-9.8	Cd	Y	BTV	0.400	0.887	2010-02-18
Copper	W-SMA-9.8	Cu	Y	BTV	14.7	33.9	2010-02-18
Lead	W-SMA-9.8	Pb	Y	BTV	22.3	33.8	2010-02-18
Mercury	W-SMA-9.8	Hg	Y	BTV	0.100	0.253	2010-02-18
Zinc	W-SMA-9.8	Zn	Y	BTV	48.8	113	2010-02-18

Figure 212.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-9.8

212.4 Stormwater Evaluation

212.4.1 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.

212.4.2 Assessment Unit and Stream Impairments

W-SMA-9.8 drains to S-Site Canyon (Water Canyon to headwaters) which has not been assessed for impairments.

212.5 Site-Specific Demonstration

212.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: cadmium, copper, lead, mercury, and zinc.

212.5.2 Stormwater Data Summary

No confirmation-monitoring data.

212.5.3 2022 Permit Status

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

212.5.4 Sampling and Analysis Plan

Table 212.5-1 is the proposed SAP for W-SMA-9.8.

Table 212.5-1 Proposed SAP, W-SMA-9.8

Monitoring Constituent	Background for Monitoring
Dissolved cadmium, copper, lead, and zinc	Site history and soil data
Total mercury	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

213.0 W-SMA-9.9

Associated Sites	11-006(b)
Receiving Water	S-Site Canyon - Tributary to Water Canyon
Drainage Area	0.29 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 11-006(b): Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the September 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Long-term Stewardship per Permit Part I.C.3.c criterion

213.1 2010 Administratively Continued Permit Summary

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

Following the July 2012 submittal to EPA of certification of enhanced control installation 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 to collect a second sample.

213.2 Site History

11-006(b) (2/5/2020)

SWMU 11-006(b) is one of three inactive HE catch basins and a former NPDES-permitted outfall (EPA 05A069) located on the north side of the former drop-tower complex [SWMUs 11-004(a-f)] at TA-11. The SWMU 11-006(b) catch basin consists of a concrete basin (structure 11-50) measuring 6 ft × 4 ft × 2 ft deep, equipped with an overflow drain, and a former NPDES-permitted outfall (EPA 05A069). Historically, following a drop test of an experiment containing HE, DU, and potentially small quantities of beryllium, the concrete pad and asphalt apron at the base of the former drop tower were washed down to remove residual HE not detonated upon impact. SWMU 11-006(b) received washdown water from the concrete pad and asphalt apron at the base of the former drop tower via an HE sump [SWMU 11-006(a)]. Any HE particles remaining in the washdown water after it exited the sump were further filtered out in the catch basin. After exiting the catch basin, the remaining washdown water was channeled to a drainage and the NPDES-permitted outfall on the northeast side of the catch basin, which discharged into Water Canyon. Waste HE collected from the catch basin was disposed of at the TA-16 burning ground. The outfall was removed from the LANL NPDES permit in May 1998 after drop tower activities ceased. In 2002, the sump and catch basins were pumped and any associated debris was treated at the HEWTF.

The drop tower underwent D&D and was removed in 2004. Currently, the catch basin is capped and sealed; however, the outfall still receives storm-water runoff. Any runoff collected on the concrete pad and asphalt apron is now diverted to the other two catch basins associated with the former drop-tower complex [SWMUs 11-006(c) and 11-006(d)].

For investigation activities, refer to "Supplemental Investigation Report for S-Site Aggregate Area, Revision 1" (N3B 2019, 700414).

213.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 213.2-1.

Table 213.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
11-006(b)	Catch basin	Beryllium, HE, uranium

213.3 Consent Order Soil Data

Decision-level data for SWMU 11-006(b) consist of results from samples collected in 1998 and 2010. Analytical results for these samples are presented in Figures 213.3-1 through 213.3-4. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination have been defined and further sampling for extent is not warranted.

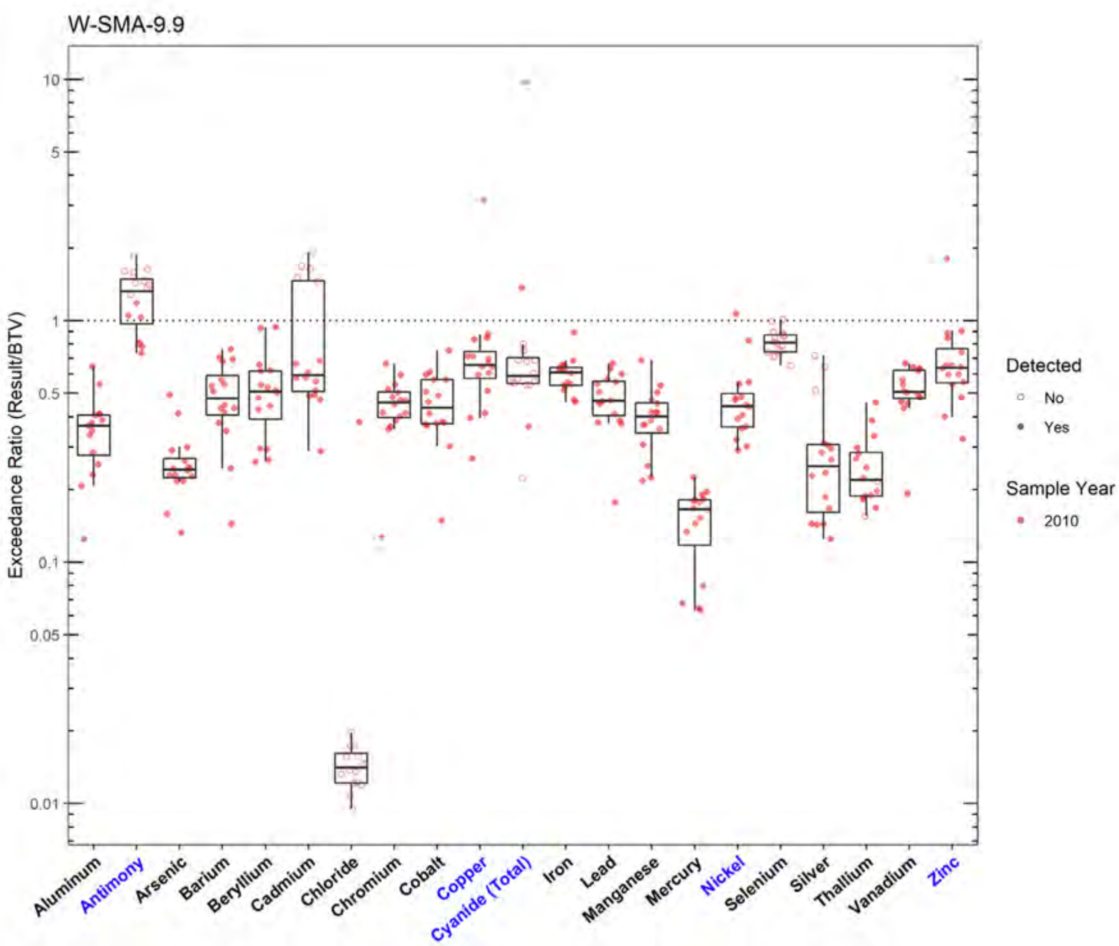


Figure 213.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-9.9

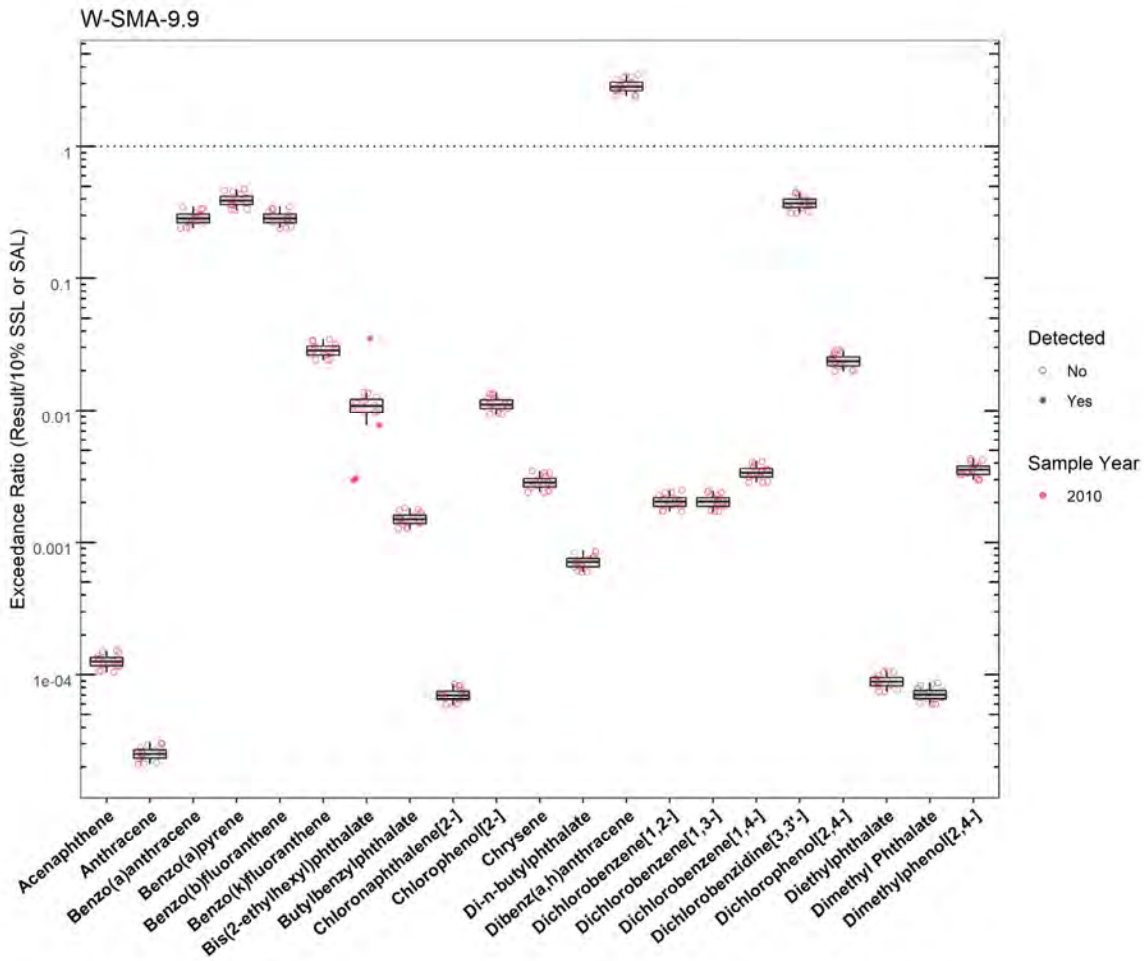


Figure 213.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-9.9 (Plot 1)

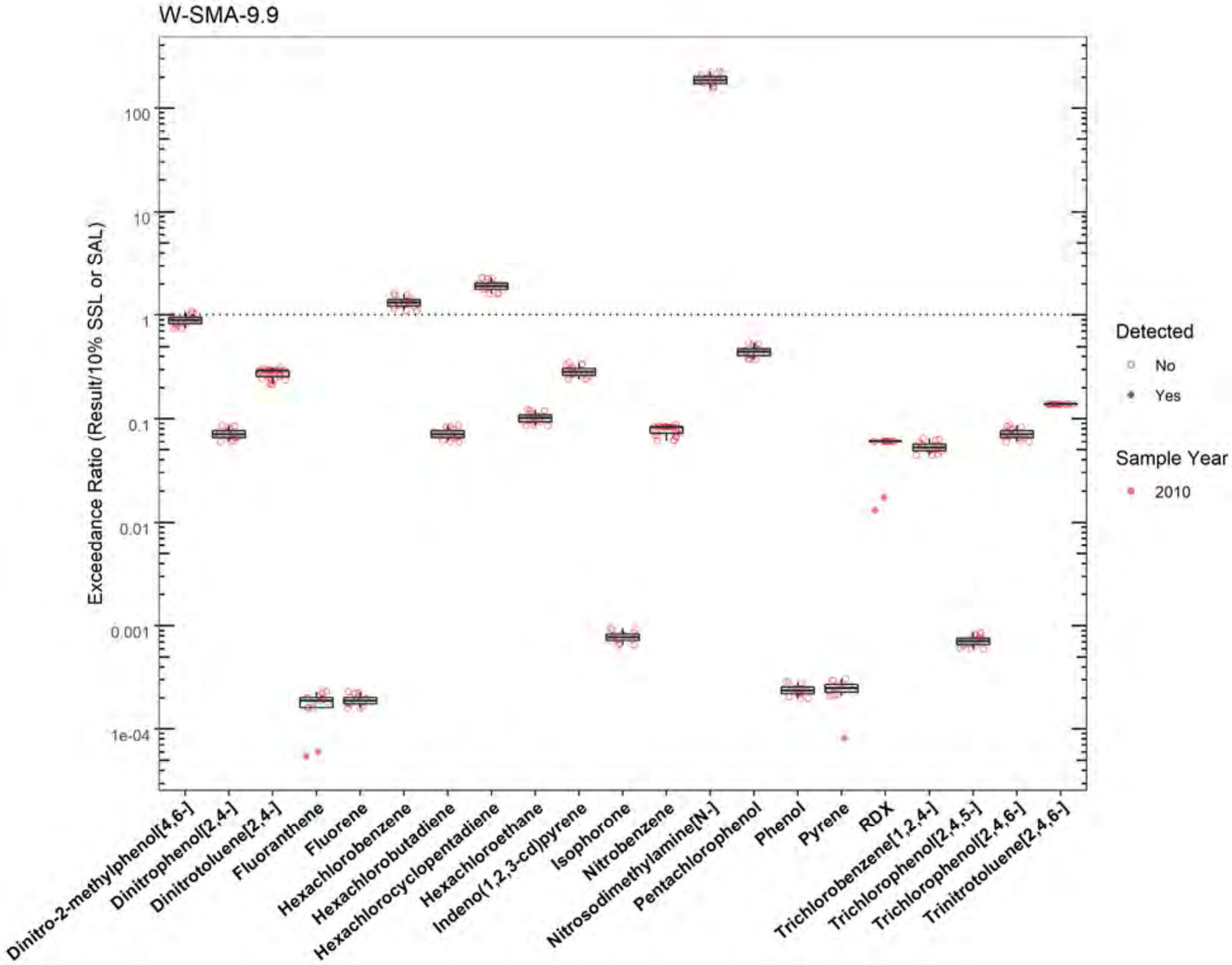


Figure 213.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-9.9 (Plot 2)

W-SMA-9.9

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	W-SMA-9.9	Sb	Y	BTV	0.830	0.981	2010-02-23
Copper	W-SMA-9.9	Cu	Y	BTV	14.7	46.3	2010-02-23
Cyanide (Total)	W-SMA-9.9	CN(TOTAL)	Y	BTV	0.500	4.87	2010-02-23
Nickel	W-SMA-9.9	Ni	Y	BTV	15.4	16.5	2010-02-24
Zinc	W-SMA-9.9	Zn	Y	BTV	48.8	88.1	2010-02-23

Figure 213.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-9.9

213.4 Stormwater Evaluation

213.4.1 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 213.4-1 and 213.4-2.

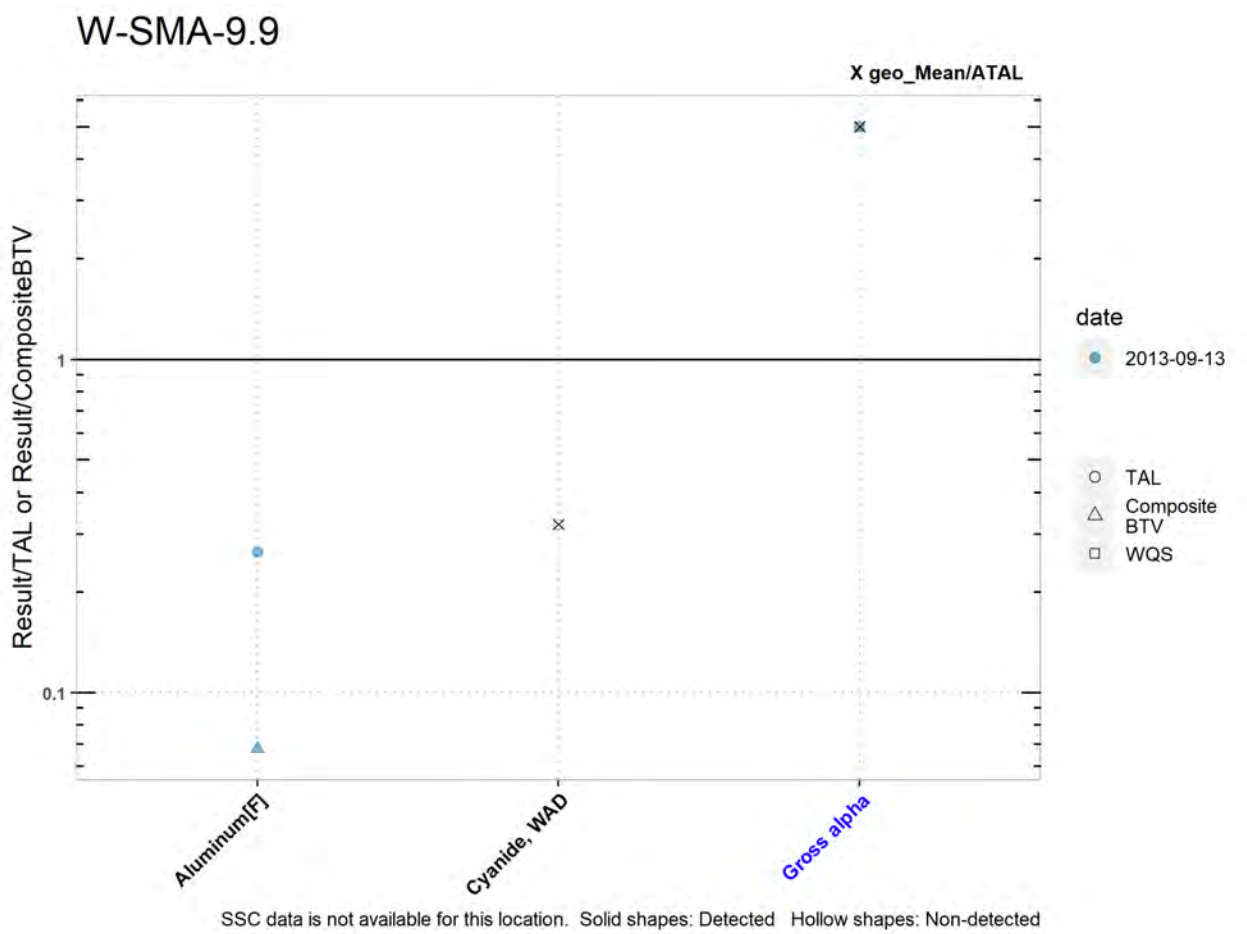


Figure 213.4-1 Analytical Results from Stormwater Sample, W-SMA-9.9 (Plot)

W-SMA-9.9

	Aluminum [F]	Cyanide, WAD	Gross alpha
MQL	2.5	10	NA
ATAL	NA	5.2	15
MTAL	750	22	NA
Composite_BTV	2950	NA	57.2
unit	ug/L	ug/L	pCi/L
2013-09-13 result	199	*1.67*	74.4
2013-09-13 dT	0.265	NA	5.0
2013-09-13 dB	0.0675	NA	NA
geo_mean/ATAL	NA	0.321	5.0

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

Figure 213.4-2 Analytical Results from Stormwater Sample, W-SMA-9.9 (Table)

213.4.2 Assessment Unit and Stream Impairments

W-SMA-9.9 drains to S-Site Canyon (Water Canyon to headwaters) which has not been assessed for impairments.

213.5 Site-Specific Demonstration

213.5.1 Soil Data Summary

All Site-related POCs that exceeded the applicable screening values in soil data were measured in stormwater data in a previous stage and did not exceed TALs. Therefore, they will not be added to the SAP.

213.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL.

213.5.3 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.

214.0 W-SMA-10

Associated Sites	11-002, 11-003(b), 11-005(a), 11-005(b), 11-006(c), 11-006(d), 11-011(d)
Receiving Water	S-Site Canyon - Tributary to Water Canyon
Drainage Area	7.06 acres
Landscape Characteristics	5% impervious, 95% pervious
Consent Order Site Status	SWMU 11-002: In Progress Deferred per Consent Order AOC 11-003(b): In Progress Deferred per Consent Order SWMU 11-005(a): Pending Receipt of Certificate of Completion SWMU 11-005(b): Pending Receipt of Certificate of Completion SWMU 11-006(c): Pending Receipt of Certificate of Completion SWMU 11-006(d): Pending Receipt of Certificate of Completion SWMU 11-011(d): Pending Receipt of Certificate of Completion
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the September 2016 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

214.1 2010 Administratively Continued Permit Summary

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

Following the September 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 227785), 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 Sites 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.

214.2 Site History

11-002 (5/31/2022)

SWMU 11-002 is an inactive open burning area that consisted of two sand pads located east of the former TA-11 drop tower (former structure 11-25) at the edge of the asphalt apron at TA-11. The 1990 SWMU Report describes the former burn site as a 10-ft × 10-ft area where two former sand burn pads were located. The 1993 July 1993 RCRA RFI Work Plan for OU 1082 indicates the open burn area measured 30 ft in diameter. Beginning in 1948, this area was used as an experimental burning area for components on or in assembled configurations with HE, propellants, and jet fuel. HE and propellant burns were conducted directly on the sand pads, and jet fuel was burned within an open-top steel containment tank. In 1975, a burn test involving thorium was performed at the site. Wastes burned at the site contained uranium-238 and HE-contaminated materials. Infrequent burning activities continued through 1992.

11-003(b) (5/31/2022)

AOC 11-003(b) is a former mortar impact area used as a target associated with the decommissioned air gun facility (building 11-24) located immediately adjacent to the inactive drop tower complex at TA-11 (K-Site). The air gun facility was completed in 1956. The gun had a 24-in. bore and an overall length of 96 ft and was used to launch experimental packages into targets located south of building 11-24. The targets, located 150 ft to 250 ft south of building 11-24, were 12-ft × 12-ft × 12-in.-thick concrete slabs set in line with the gun bore. Firing into the targets tested various weapons packages designed to withstand extremes of acceleration and deceleration. Some devices contained HE and DU. Interviews with site personnel who worked at the air-gun facility indicated the outer payload envelope was never compromised, which was concurred by OU 1082 personnel after review of post-shot target/projectile photographs. On a single occasion in 1972, during an impact test involving an inert mockup consisting of a 12-in.-diameter, hollow-steel sphere filled with steel or lead ball bearings suspended in a graphite matrix, the sphere fractured upon impact, potentially leaving behind 0.5-in.-diameter steel or lead balls.

11-005(a) (9/3/2019)

SWMU 11-005(a) is an active septic system located at approximately 70 ft southwest of building 11-24 at TA-11. The septic system began operation in 1944 and consists of inlet drainlines from buildings 11-1 and 11-4, a 500-gal. capacity concrete septic tank (structure 11-20) that discharged to an open-joint tile drainline in a rock-filled trench that extends to an outfall on a sloped area to the south of the septic tank. Building 11-1 was originally used as a control building for the Betatron Facility (building 11-2) and the Cloud Chamber (building 11-3), and building 11-4 was historically used as a machine shop and photo-processing facility. A memorandum from 1950 indicated a mercury spill occurred in building 11-4; however, the location, source, and extent of the spill are unknown.

Building 11-1 is currently a storage area for electrical equipment and building 11-4 is currently the control building for the Vibration-Test Facility (building 11-30). The drainline from building 11-1 has been plugged. Currently, only a restroom in building 11-4 discharges to the SWMU 11-005(a) septic tank. The outlet drainline from SWMU 11-005(a) was plugged in 1992; since that time, the septic tank has been pumped out on a regular basis.

11-005(b) (9/3/2019)

SWMU 11-005(b) is an active septic system located approximately 70 ft south of building 11-3 at TA-11. The septic system began operation in 1963 and consists of inlet drainlines from a restroom on the exterior of building 11-3 and building 11-24, a concrete septic tank (structure 11-43), an outlet drainline to an outfall south of the septic tank, and a drain field west of the outlet drainline. The septic system serves the restroom added to the exterior of building 11-3. Engineering drawings confirm the drainline for floor drains in building 11-24 was tied into septic tank 11-43 in 1992. Discharges to the outfall ceased in 1992. Building 11-24, a former air-gun facility now houses offices and a light machine shop and no longer discharges to the septic system.

11-006(c) (12/10/2019)

SWMU 11-006(c) is one of three inactive HE catch basins and a former NPDES-permitted outfall (EPA 05A096) located on the southeast side of the former drop-tower complex [SWMUs 11-004(a-f)] at TA-11. The SWMU 11-006(c) catch basin consists of a concrete basin (structure 11-51) measuring 6 ft × 4 ft × 2 ft deep, equipped with an overflow drain, and a former NPDES-permitted outfall (EPA 05A096). Historically, following a drop test of an experiment containing HE, DU, and potentially small quantities of beryllium, the concrete pad and asphalt apron at the base of the former drop tower were washed down to remove residual HE not detonated upon impact. SWMU 11-006(c) received washdown water from the concrete pad and asphalt apron at the base of the former drop tower via an HE sump [SWMU 11-006(a)]. Any HE particles remaining in the washdown water after it exited the sump were further filtered out in the catch basin. After exiting the catch basin, the remaining washdown water was channeled to a drainage and the NPDES-permitted outfall on the northeast side of the catch basin, which discharged into Water Canyon. Waste HE collected from the catch basin was disposed of at the TA-16 burning ground. The outfall was removed from the LANL NPDES permit in May 1998 after drop tower activities ceased. In 2002, the sump and catch basins were pumped and any associated debris was treated at the HEWTF.

The drop tower underwent D&D and was removed in 2004. Since 1998, any stormwater runoff collected in the SWMU 11-006(c) catch basin is routed to the SWMU 11-006(d) catch basin and the associated outfall.

11-006(d) (12/10/2019)

SWMU 11-006(d) is one of three inactive HE catch basins and a former NPDES-permitted outfall (EPA 05A097) located on the south side of the former drop-tower complex [SWMUs 11-004(a-f)] at TA-11. The SWMU 11-006(d) catch basin consists of a concrete basin (structure 11-52) measuring 6 ft × 4 ft × 2 ft deep, equipped with an overflow drain, and a former NPDES-permitted outfall (EPA 05A097). Historically, following a drop test of an experiment containing HE, DU, and potentially small quantities of beryllium, the concrete pad and asphalt apron at the base of the former drop tower were washed down to remove residual HE not detonated upon impact. SWMU 11-006(d) received washdown water from the concrete pad and asphalt apron at the base of the former drop tower via an HE sump [SWMU 11-006(a)]. Any HE particles remaining in the washdown water after it exited the sump were further filtered out in the catch basin. After exiting the catch basin, the remaining washdown water was channeled to a drainage and the NPDES-permitted outfall on the northeast side of the catch basin, which discharged into Water Canyon. Waste HE collected from the catch basin was disposed of at the TA-16 burning ground. In 2002, the sump and catch basins were pumped and any associated debris was treated at the HEWTF. The outfall was removed from the LANL NPDES permit in January 2006 after drop tower activities ceased.

The drop tower underwent D&D and was removed in 2004. Since drop tower operations ceased in 1998, this catch basin has collected only stormwater runoff, including runoff routed from the SWMU 11-006(c) catch basin, and discharges only stormwater to the outfall.

11-011(d) (9/6/2019)

SWMU 11-011(d) is an inactive drainline and outfall located south of building 11-24, the former air-gun facility at TA-11. The SWMU consists of a 4-in. steel drainline tied to floor drains and a sink in building 11-24. Originally, operations at building 11-24 consisted of acceleration and impact tests on full-scale warhead mockups. After World War II, building 11-24 was converted to an office and light machine shop. The drainline was tied into the SWMU 11-005(b) septic tank in 1992 and all discharges to the outfall ceased at that time.

No investigations have been conducted at SWMU 11-002 or AOC 11-003(b). For investigation activities for all other Sites, refer to “Supplemental Investigation Report for S-Site Aggregate Area, Revision 1” (N3B 2019, 700414).

214.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 214.2-1.

Table 214.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
11-002	Burn site	Dioxins/furans, HE, gross alpha, thorium, DU, iridium
11-003(b)	Air gun	Lead, HE, DU
11-005(a)	Septic system	Metals, silver, cyanide
11-005(b)	Septic system	Metals, organic chemicals
11-006(c)	Catch basin	Beryllium, HE, uranium
11-006(d)	Catch basin	Beryllium, HE, uranium
11-011(d)	Outfall	No known POCs

214.3 Consent Order Soil Data

Decision level data for SWMU 11-002 consist of results from samples collected in 1998.

There are no decision-level data for SWMU 11-003(b).

Decision-level data for SWMU 11-005(a), SWMU 11-005(b), and SWMU 11-011(d) consist of results from samples collected in 2010. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination have been defined and further sampling for extent is not warranted.

Decision-level data for SWMU 11-006(c) and SWMU 11-006(d) consist of results from samples collected in 1998 and 2010. The 2019 Revision 1 of the 2015 supplemental IR (N3B 2019, 700414) concluded that the nature and extent of contamination have been defined and further sampling for extent is not warranted.

Analytical results for all decision-level soil samples for this SMA are presented in Figures 214.3-1 through 214.3-4.

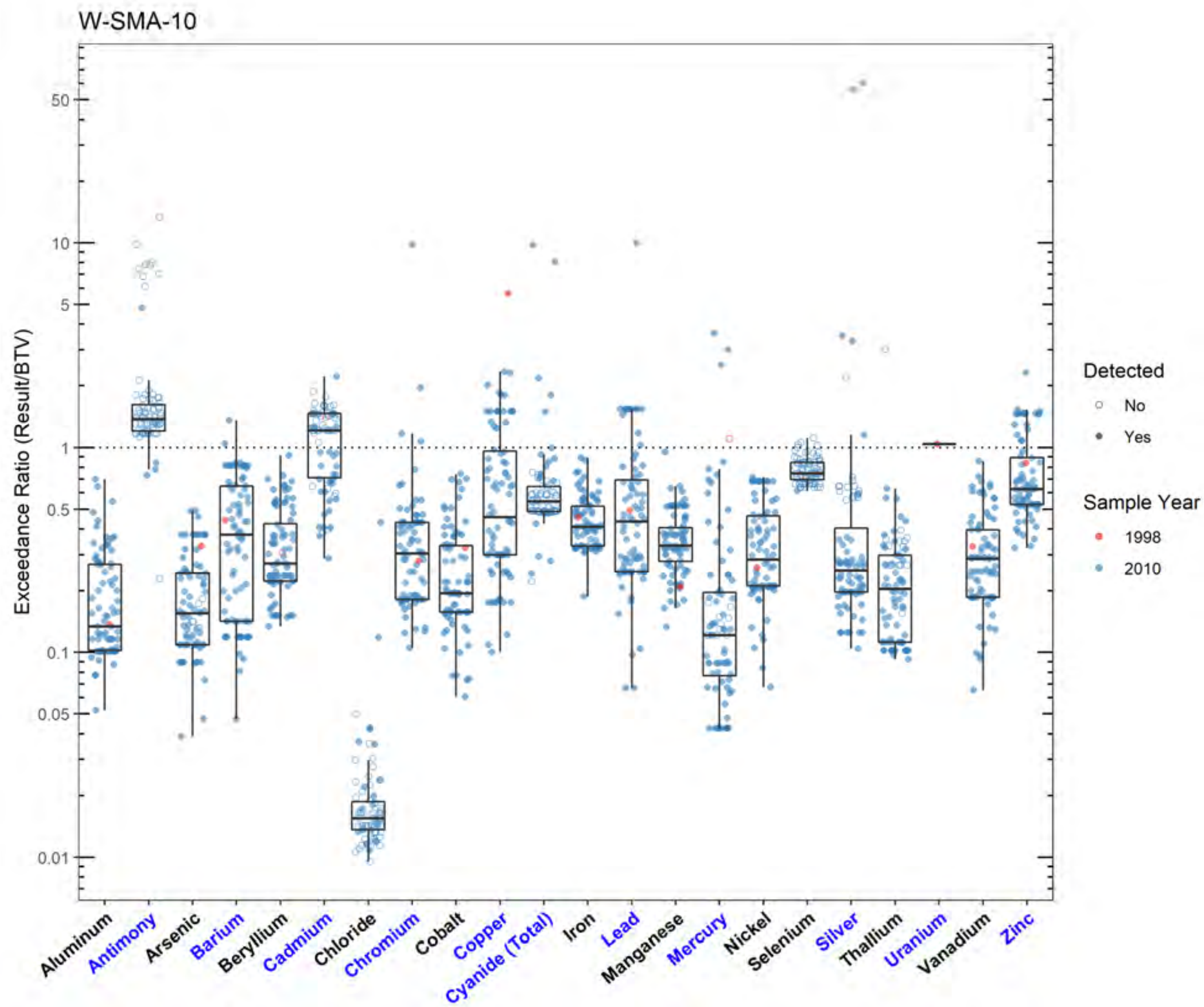


Figure 214.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-10

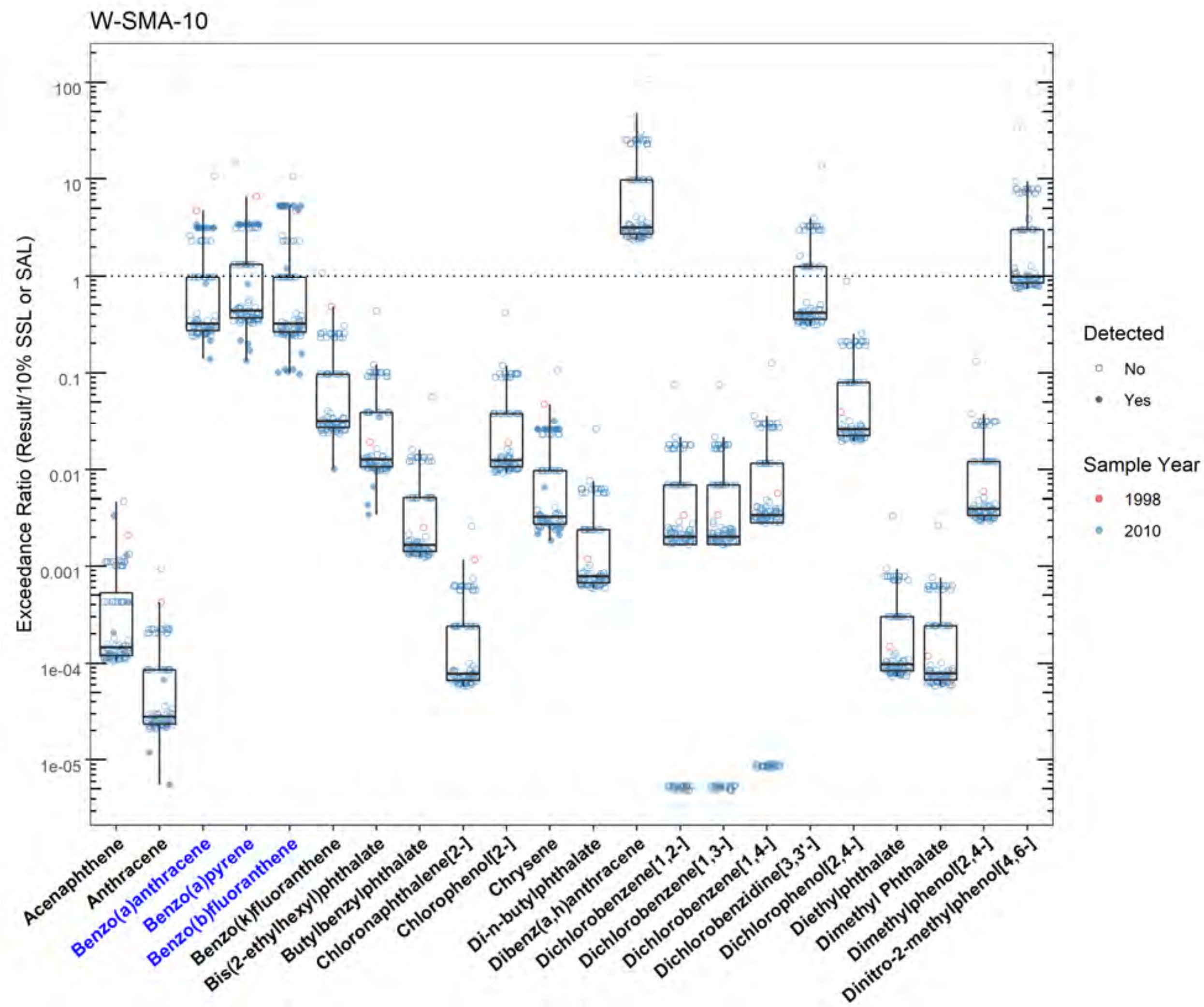


Figure 214.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-10 (Plot 1)

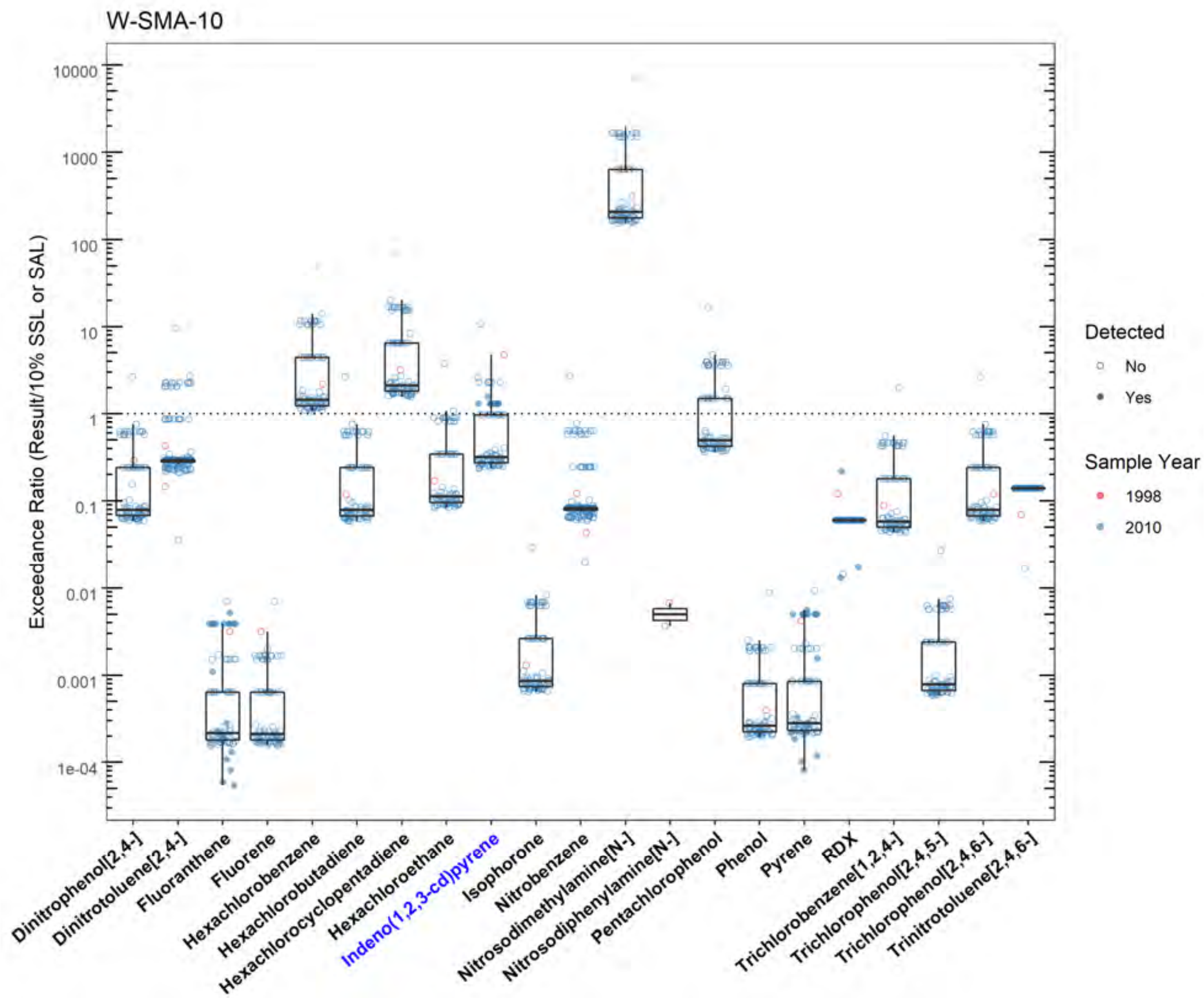


Figure 214.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-10 (Plot 2)

W-SMA-10

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	W-SMA-10	Sb	Y	BTV	0.830	3.98	2010-02-19
Barium	W-SMA-10	Ba	Y	BTV	295	398	2010-03-12
Benzo(a)anthracene	W-SMA-10	56-55-3	Y	SSL_0.1	0.153	0.522	2010-02-24
Benzo(a)pyrene	W-SMA-10	50-32-8	Y	SSL_0.1	0.112	0.387	2010-02-24
Benzo(b)fluoranthene	W-SMA-10	205-99-2	Y	SSL_0.1	0.153	0.808	2010-02-25
Cadmium	W-SMA-10	Cd	Y	BTV	0.400	0.887	2010-02-18
Chromium	W-SMA-10	Cr	Y	BTV	19.3	189	2010-02-19
Copper	W-SMA-10	Cu	Y	BTV	14.7	83.0	1998-11-12
Cyanide (Total)	W-SMA-10	CN(TOTAL)	Y	BTV	0.500	4.87	2010-02-23
Indeno(1,2,3-cd)pyrene	W-SMA-10	193-39-5	Y	SSL_0.1	0.153	0.238	2010-02-24
Lead	W-SMA-10	Pb	Y	BTV	22.3	222	2010-02-19
Mercury	W-SMA-10	Hg	Y	BTV	0.100	0.362	2010-02-19
Silver	W-SMA-10	Ag	Y	BTV	1.00	60.5	2010-02-19
Uranium	W-SMA-10	U	Y	BTV	1.82	1.90	1998-11-12
Zinc	W-SMA-10	Zn	Y	BTV	48.8	113	2010-02-18

Figure 214.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-10

214.4 Stormwater Evaluation

214.4.1 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 214.4-1 and 214.4-2.

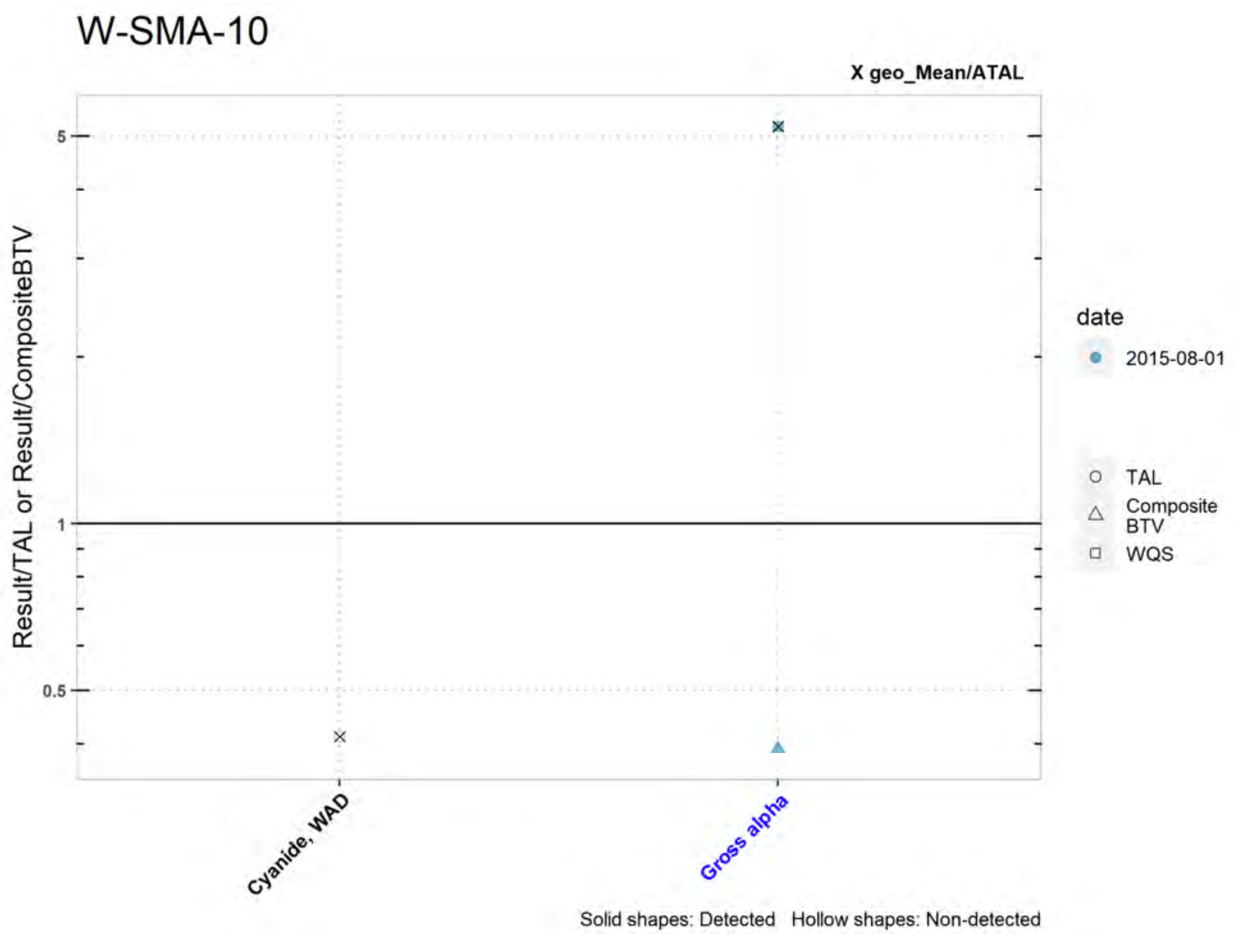


Figure 214.4-1 Analytical Results from Stormwater Sample, W-SMA-10 (Plot)

W-SMA-10

	Cyanide, WAD	Gross alpha
MQL	10	NA
ATAL	5.2	15
MTAL	22	NA
Composite_BTV	NA	56.8
unit	ug/L	pCi/L*
2015-08-01 result	*2.14*	77.8
2015-08-01 dT	NA	5.2
2015-08-01 dB	NA	0.391
geo_mean/ATAL	0.412	5.2

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

Figure 214.4-2 Analytical Results from Stormwater Sample, W-SMA-10 (Table)

214.4.2 Assessment Unit and Stream Impairments

W-SMA-10 drains to S-Site Canyon (Water Canyon to headwaters) which has not been assessed for impairments.

214.5 Site-Specific Demonstration

214.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene.

The remaining metals and cyanide that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

214.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL but not the BTV.

214.5.3 2022 Permit Status

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

214.5.4 Sampling and Analysis Plan

Table 214.5-1 is the proposed SAP for W-SMA-10.

Table 214.5-1 Proposed SAP, W-SMA-10

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

215.0 W-SMA-11.7

Associated Sites	49-008(c)
Receiving Water	Water Canyon
Drainage Area	7.16 acres
Landscape Characteristics	15% impervious, 85% pervious
Consent Order Site Status	AOC 49-008(c): In Progress
2010 Administratively Continued Permit Final Status	Installation of Enhanced Controls
2016–2018 SIP Actions	Based on the September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

215.1 2010 Administratively Continued Permit Summary

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

Following the October 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 228781), corrective-action monitoring was initiated and stormwater samples were collected in September 2013 and August 2021. Analytical results from these samples initiated corrective action.

Following the September 2022 submittal to EPA of certification of enhanced control installation as a corrective-action (N3B 2022, 702307), corrective-action monitoring was initiated in 2022.

215.2 Site History

49-008(c) (8/30/2017)

AOC 49-008(c) consists of an area of potentially contaminated soil from historical radiochemistry operations and small-scale containment experiments within Area 11 at TA-49. Area 11 is an approximately 220 ft × 300 ft area. Activities conducted at Area 11 from 1959 to 1961 supported hydronuclear experiments conducted elsewhere at TA-49. Radiochemistry operations were conducted in a former laboratory and change house (former building 49-15) that was the main structure at Area 11. Other structures included a small storage building, latrines, and butane and propane tanks. The former building 49-15 laboratory was used to analyze samples collected during experiments in the experimental shafts at Areas 2, 2A, 2B, and 4. Laboratory processes included sample dissolution in acids (nitric, hydrochloric, hydrofluoric, sulfuric, and perchloric) and solvent extraction using methyl isobutyl ketone, ammonium hydroxide, and sodium hydroxide. Wastes generated during radiochemical operations were typically collected in containers and taken to radioactive waste disposal facilities elsewhere at the Laboratory. Interim waste storage boxes were stored south of former building 49-15. Some liquid wastes reportedly discharged to a drain field [SWMU 49-003]. Small-scale containment experiments were conducted in 13 underground shafts located on the west side of Area 11. These shafts were drilled to a depth of 12 ft and lined with 10-in.-diameter steel casing. HE was placed in the shafts, which were backfilled to contain the explosions. Small amounts of irradiated uranium-238 tracer were used in some experiments. The structures in Area 11 were decontaminated and removed in 1970 and 1971.

Contamination was detected in sinks, ducts, and hoods in former building 49-15. Contaminated debris was removed and disposed of at TA-54, and uncontaminated debris (approximately 2,160 ft^3) was taken to the open-burning/landfill area at Area 6 (SWMU 49-004).

In May 2015, the TA-49 NES boundary was reduced to encompass three individual shaft fields at TA-49; SWMU-49-001(a) – Area 1; SWMUs 49-001(b), 49-001(c), and 49-001(d) – Area 2; and SWMU 49-001(f) – Area 4. Area 11 including SWMU 49-008(c) are no longer within the TA-49 NES boundary.

For investigation activities, refer to “Supplemental Investigation Report for Sites at Technical Area 49 Inside the Nuclear Environmental Site Boundary, Revision 1” (N3B 2022, 702072).

215.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 215.2-1.

Table 215.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
49-008(c)	Soil contamination	HE, radionuclides, uranium-238

215.3 Consent Order Soil Data

Decision-level data for AOC 49-008(c) include results from samples collected in 1995 and 2010. Analytical results for these samples are presented in Figures 215.3-1 through 215.3-4. The 2022 Revision 1 of the 2016 supplemental IR (N3B 2022, 702072) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

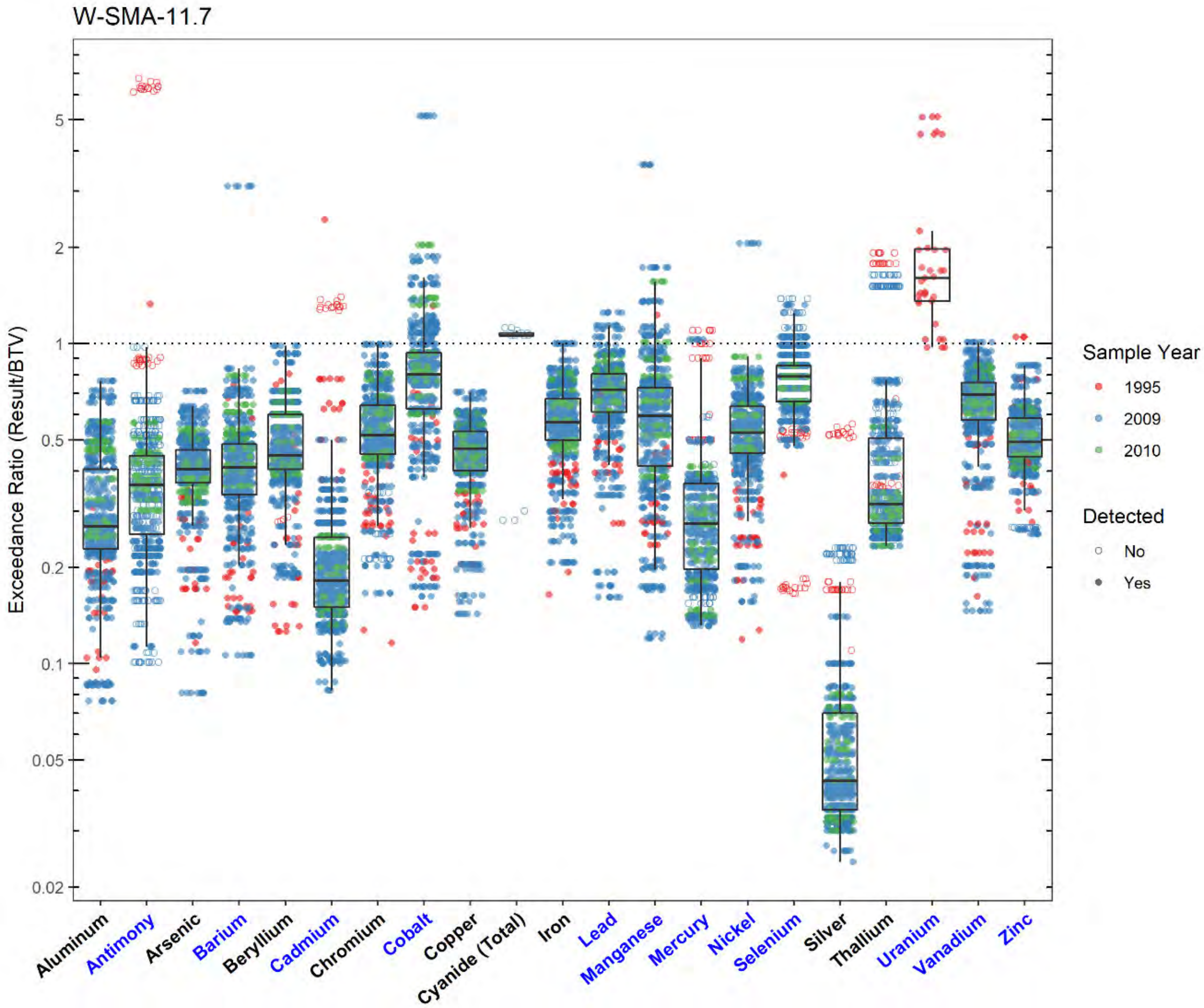


Figure 215.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-11.7

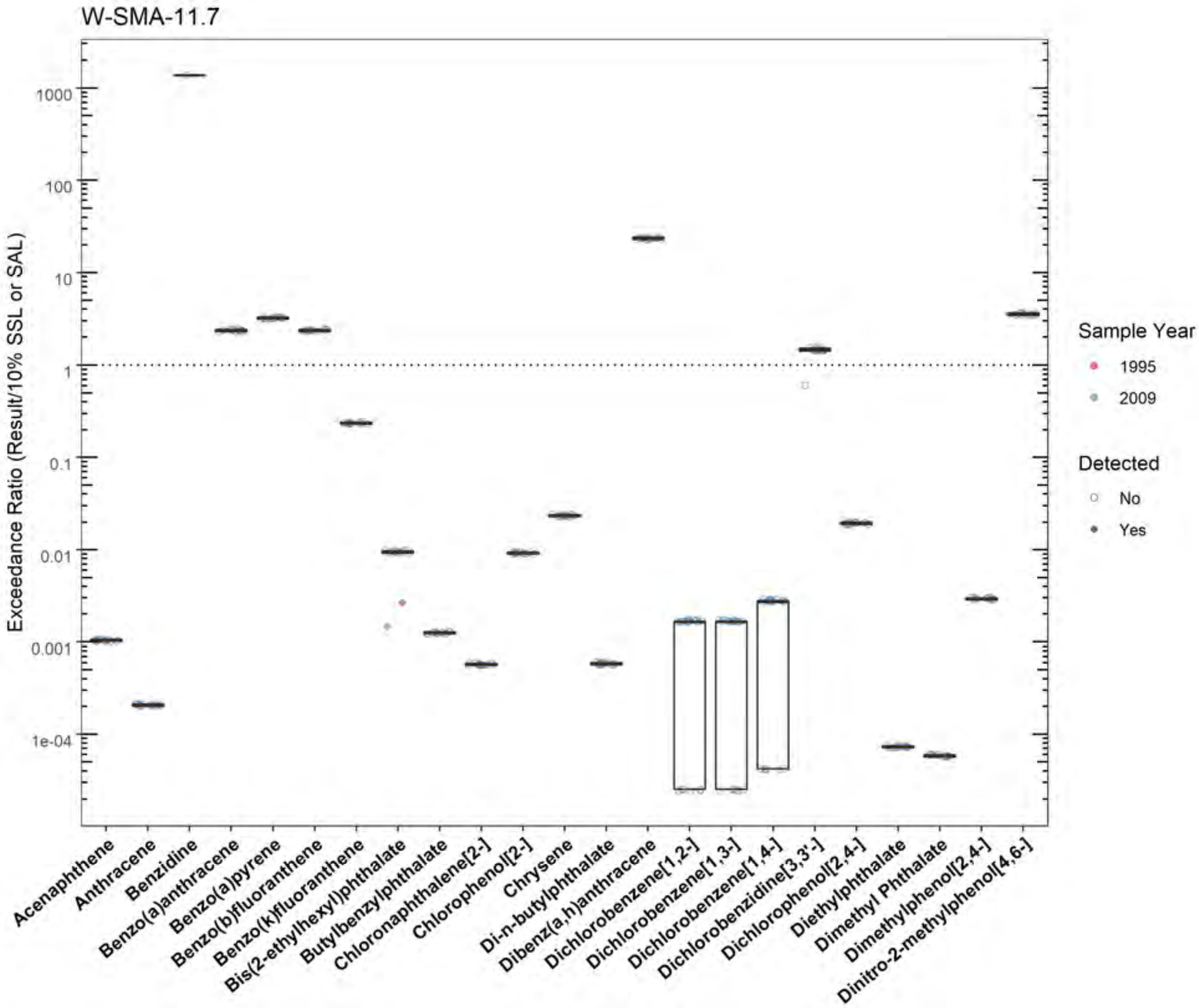


Figure 215.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-11.7 (Plot 1)

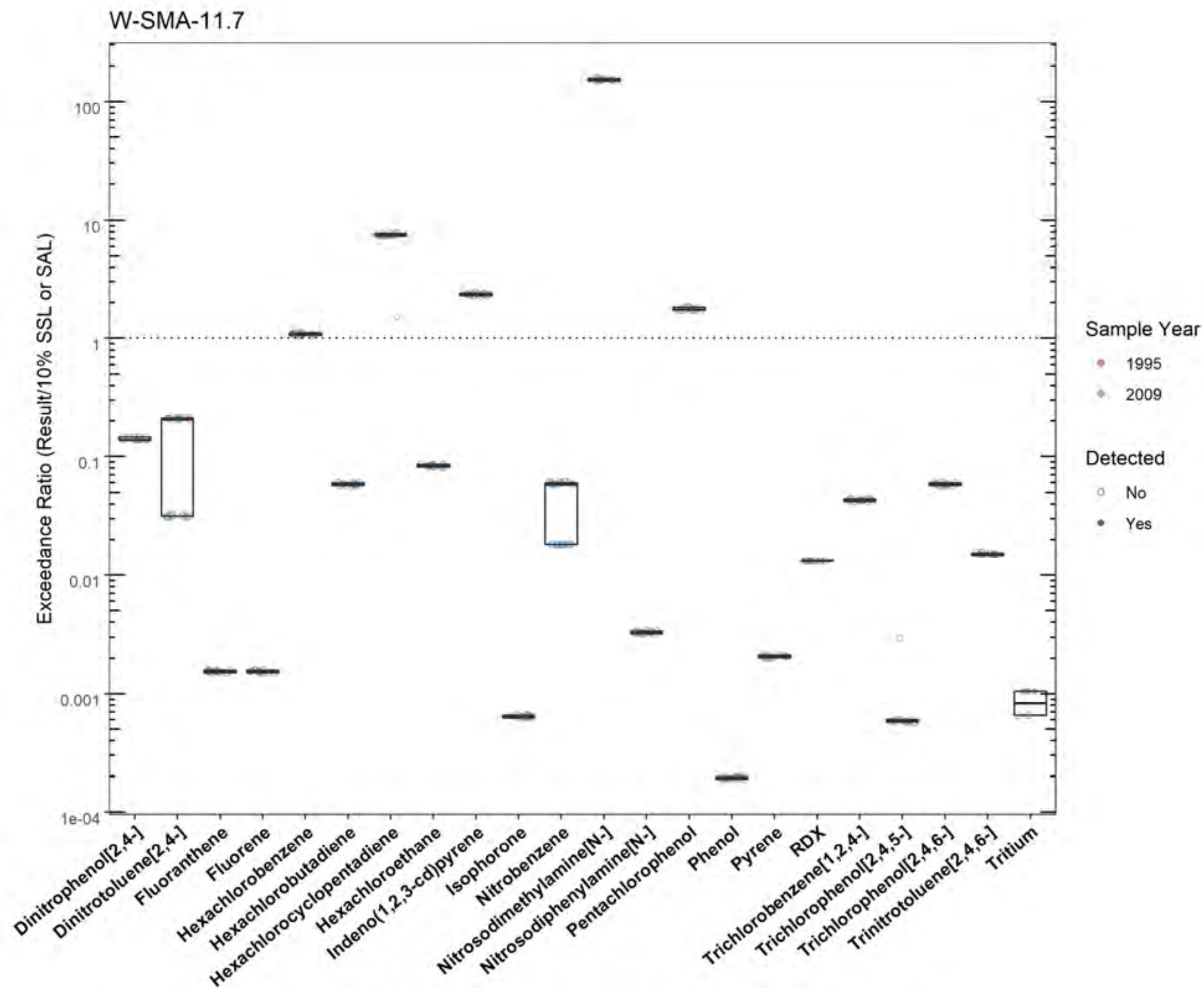


Figure 215.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-11.7 (Plot 2)

W-SMA-11.7

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	W-SMA-11.7	Sb	Y	BTV	0.830	1.10	1995-07-11
Barium	W-SMA-11.7	Ba	Y	BTV	295	915	2009-12-11
Cadmium	W-SMA-11.7	Cd	Y	BTV	0.400	0.975	1995-07-06
Cobalt	W-SMA-11.7	Co	Y	BTV	8.64	44.5	2009-12-11
Lead	W-SMA-11.7	Pb	Y	BTV	22.3	27.8	2009-12-11
Manganese	W-SMA-11.7	Mn	Y	BTV	671	2430	2009-12-11
Mercury	W-SMA-11.7	Hg	Y	BTV	0.100	0.103	2009-12-11
Nickel	W-SMA-11.7	Ni	Y	BTV	15.4	31.7	2009-12-11
Selenium	W-SMA-11.7	Se	Y	BTV	1.52	2.00	2009-12-11
Uranium	W-SMA-11.7	U	Y	BTV	1.82	9.30	1995-08-08
Vanadium	W-SMA-11.7	V	Y	BTV	39.6	40.1	2009-11-24
Zinc	W-SMA-11.7	Zn	Y	BTV	48.8	51.2	1995-08-08

Figure 215.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-11.7

215.4 Stormwater Evaluation

215.4.1 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 have not been collected in this monitoring stage.

215.4.2 Assessment Unit and Stream Impairments

W-SMA-11.7 drains to Water Canyon (within LANL below Area-A Cyn) which has impairments for PCBs, adjusted gross alpha, total aluminum, and total mercury. The adjusted gross alpha impairment may be Site related, based on Site history.

215.5 Site-Specific Demonstration

215.5.1 Soil Data Summary

Strontium-90 is a Site-related POC not monitored in soil data; it will be added to the SAP. HE was monitored in soil data and did not exceed the applicable screening value, therefore it will not be added to the SAP.

215.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL but not the BTV in the previous stage of stormwater monitoring; therefore it will not be added to the SAP.

215.5.3 2022 Permit Status

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

215.5.4 Sampling and Analysis Plan

Table 215.5-1 is the proposed SAP for W-SMA-11.7.

Table 215.5-1 Proposed SAP, W-SMA-11.7

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

216.0 W-SMA-12.05

Associated Sites	49-001(g)
Receiving Water	Water Canyon
Drainage Area	0.49 acres
Landscape Characteristics	8% impervious, 92% pervious
Consent Order Site Status	SWMU 49-001(g): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

216.1 2010 Administratively Continued Permit Summary

Following the January 2011 submittal to EPA of certification of baseline control installation, 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.

216.2 Site History

49-001(g) (1/31/2017)

SWMU 49-001(g) is an area of potential soil contamination directly north of SWMUs 49-001(b) and 49-001(c) (Areas 2 and 2A), resulting from the transport of surface and near-surface radionuclide contamination associated with the shaft 2-M incident at Area 2. During the drilling of a drift at the bottom of shaft 2-M at SWMU 49-001(b), (Area 2) in November 1960, contamination was encountered from the experiment previously detonated at the bottom of shaft 2-L in April 1960. (Shaft 2-L is 25 ft west of shaft 2-M.) As a result, alpha contamination was measured at 100,000 cpm within unused shaft 2-M, and as high as 800,000 cpm on the ground surface within Area 2. Contaminated equipment and surface soils from this incident were placed in shaft 2-M and the shaft was backfilled and capped. SWMU 49-001(g) is the approximate 0.8-acre natural drainage on the slope north of Area 2 that runs from the mesa to the bottom of Water Canyon.

For investigation activities, refer to “Supplemental Investigation Report for Sites at Technical Area 49 Inside the Nuclear Environmental Site Boundary, Revision 1” (N3B 2022, 702072).

216.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 216.2-1.

Table 216.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
49-001(g)	MDA AB	Beryllium, lead, plutonium, tritium, uranium

216.3 Consent Order Soil Data

Data collected from the sites associated with MDA AB [SWMUs 49-001(b, c, d, g)] are addressed together because of their geographic proximity and similar operational history. Decision-level data for MDA AB consist of results from samples collected in 1998, 2000, and 2010. Analytical results for these samples are presented in Figures 216.3-1 and 216.3-2. The 2022 Revision 1 of the 2016 supplemental IR (N3B 2022, 702072) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted for SWMU 49-001(g).

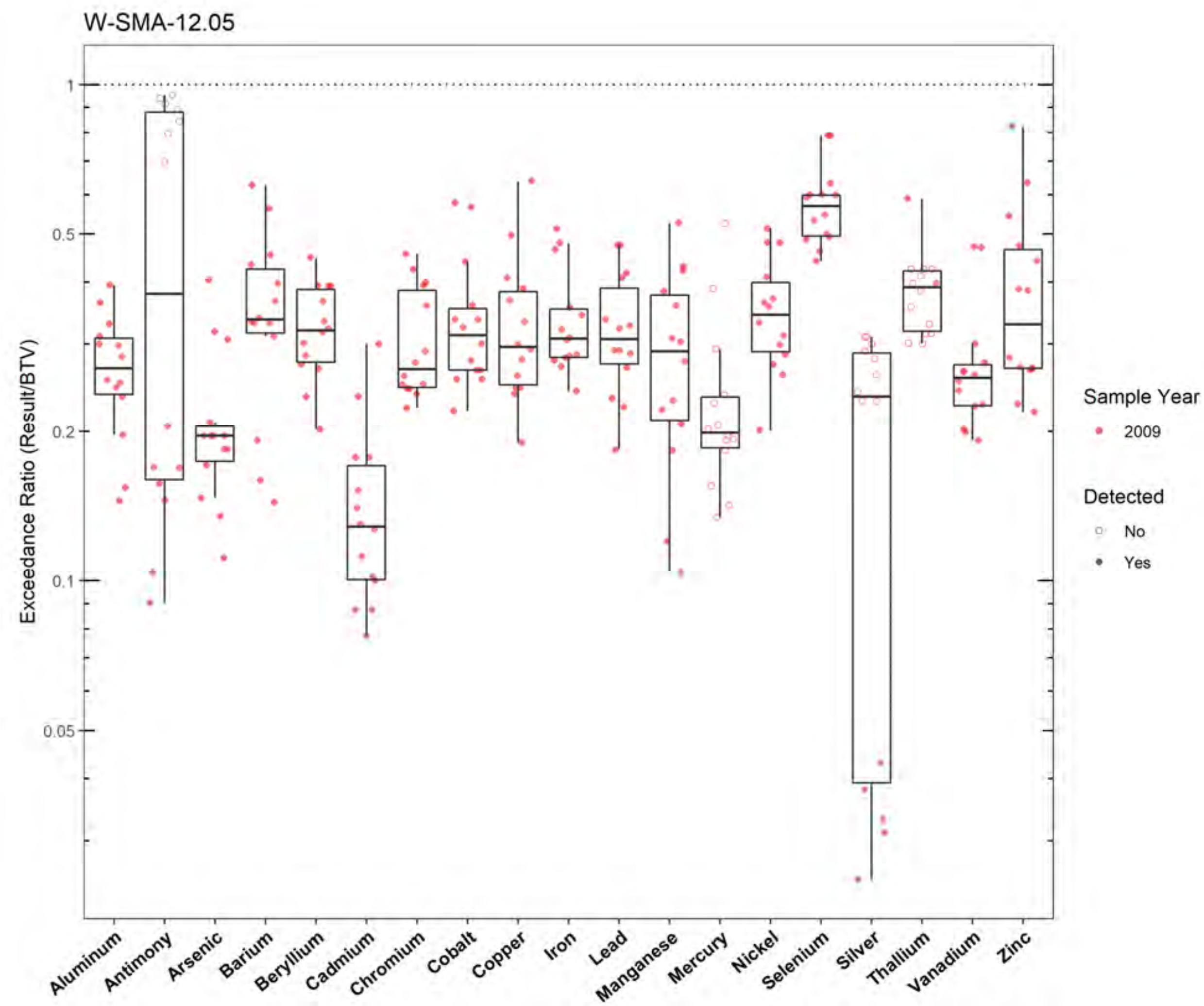


Figure 216.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-12.05

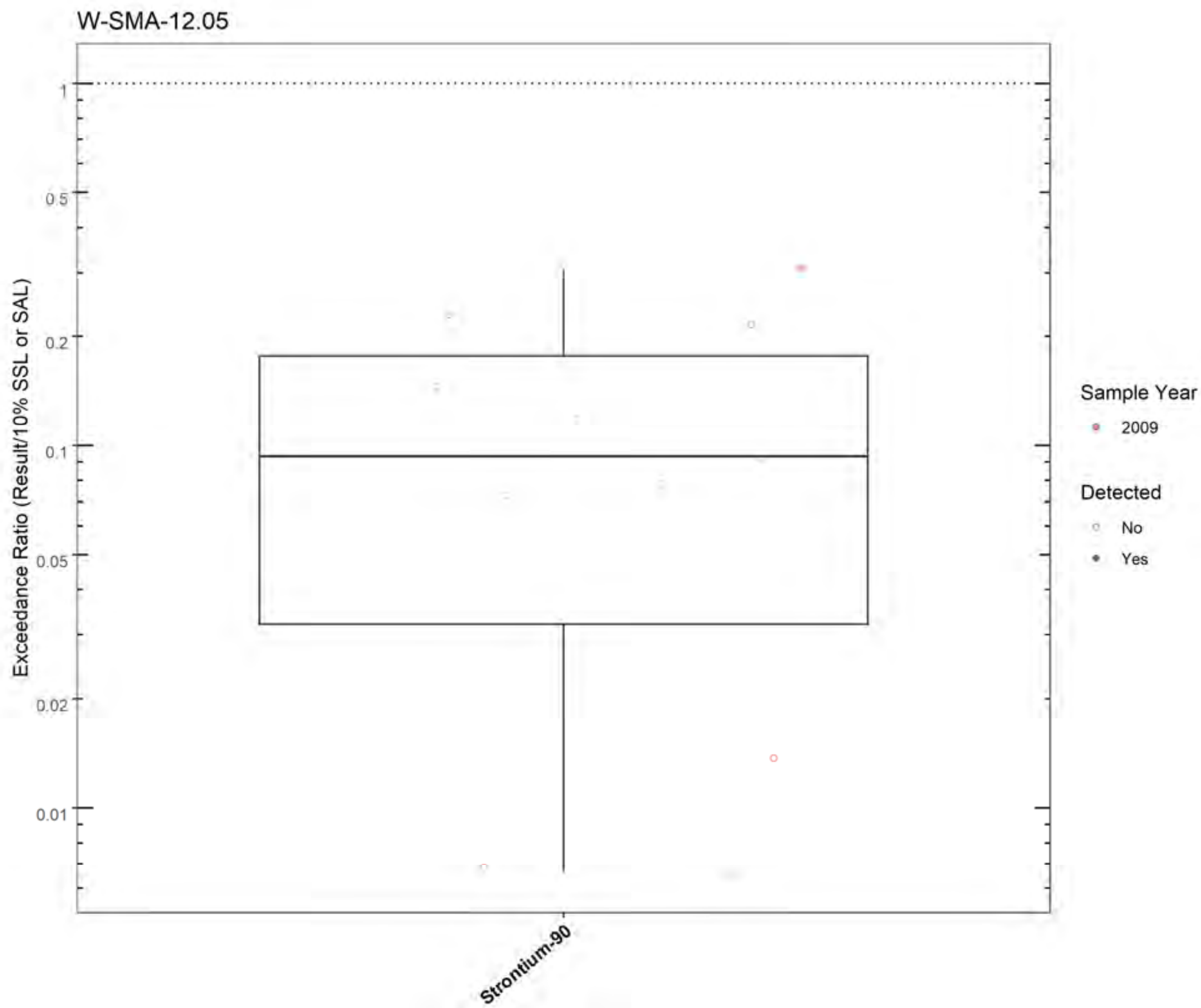


Figure 216.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-12.05

216.4 Stormwater Evaluation

216.4.1 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.

216.4.2 Assessment Unit and Stream Impairments

W-SMA-12.05 drains to Water Canyon (within LANL below Area-A Cyn), which has impairments for PCBs, adjusted gross alpha, total aluminum, and total mercury. The adjusted gross alpha impairment may be Site related, based on Site history.

216.5 Site-Specific Demonstration

216.5.1 Soil Data Summary

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

216.5.2 Stormwater Data Summary

No confirmation-monitoring data.

216.5.3 2022 Permit Status

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

216.5.4 Sampling and Analysis Plan

Table 216.5-1 is the proposed SAP for W-SMA-12.05.

Table 216.5-1 Proposed SAP, W-SMA-12.05

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history
Dissolved uranium	Site history
Tritium	Site history
DOC	Permit requirement
SSC	Permit requirement

217.0 W-SMA-14.1

Associated Sites	15-004(h), 15-014(l)
Receiving Water	Water Canyon
Drainage Area	5.8 acres
Landscape Characteristics	22% impervious, 78% pervious
Consent Order Site Status	AOC 15-004(h): In Progress SWMU 15-014(l): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the March 2018 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

217.1 2010 Administratively Continued Permit Summary

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

Following the October 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 228781), corrective-action monitoring was initiated and stormwater samples were collected in September 2013 and July 2014. 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, 600417). No response has been received from EPA, and stormwater monitoring has not occurred since 2014.

217.2 Site History

15-004(h) (4/7/2017)

AOC 15-004(h) is an inactive Firing Site H located northwest of the PHERMEX facility at TA-15. Firing Site H is located approximately 100 ft north of the PHERMEX power control building (structure 15-185). The explosives testing firing site was constructed in 1948 and included a concrete pad, a protective berm, an instrument chamber (former structure 15-17), and a camera chamber (structure 15-92). The exact nature of the materials used during tests is not known but may have included DU, beryllium, lead, and HE. Firing site operations were discontinued in approximately 1953 and the instrument chamber was demolished in 1967. The camera chamber and the concrete pad remain on-site, but the concrete pad has been partially covered with fill. Hazardous debris from explosions at PHERMEX may have impacted AOC 15-004(h).

15-014(l) (4/7/2017)

SWMU 15-014(l) consists of a former NPDES-permitted outfall (EPA 03A028) and associated drainline for a cooling tower (structure 15-202) located at the PHERMEX facility at TA-15. This drainline and outfall received blowdown discharge from the cooling tower, which was installed in 1961. Cooling water was piped to building 15-185 and blowdown discharged to a basement floor drain. The basement floor drain discharged to a concrete gutter in the paved area south of building 15-185. Discharges from the gutter flowed to a drainage ditch adjacent to the roadway and into a culvert that drained to the ground surface south of the roadway. This culvert also received discharges from the floor drains in building 15-184. In 1969, a corrugated metal pipe was installed to convey discharges from the SWMU 15-014(l) outfall to a new outfall south of the parking area and roadway, AOC 15-014(d). The SWMU 15-014(l) outfall is currently located within a drop inlet in a paved area outside the southeast corner of building 15-185. Outfall 03A028 was removed from the Laboratory's NPDES permit in 2007. The SWMU 15-014(l) outfall currently receives only stormwater discharges from the paved area around the drop inlet.

For investigation activities at the Sites, refer to “Investigation Report for Lower Water/Indio Canyons Aggregate Area” (N3B 2021, 701694).

217.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 217.2-1.

Table 217.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
15-004(h)	Firing Site H	Beryllium, lead, HE, DU
15-014(l)	Outfall from building 15-202	Inorganic chemicals

217.3 Consent Order Soil Data

Decision-level data for AOC 15-004(h) and SWMU 15-014(l) consist of results from samples collected in 2020 and 2021. Analytical results for these samples are presented in Figures 217.3-1 through 217.3-4. The 2021 IR (N3B 2021, 701694) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

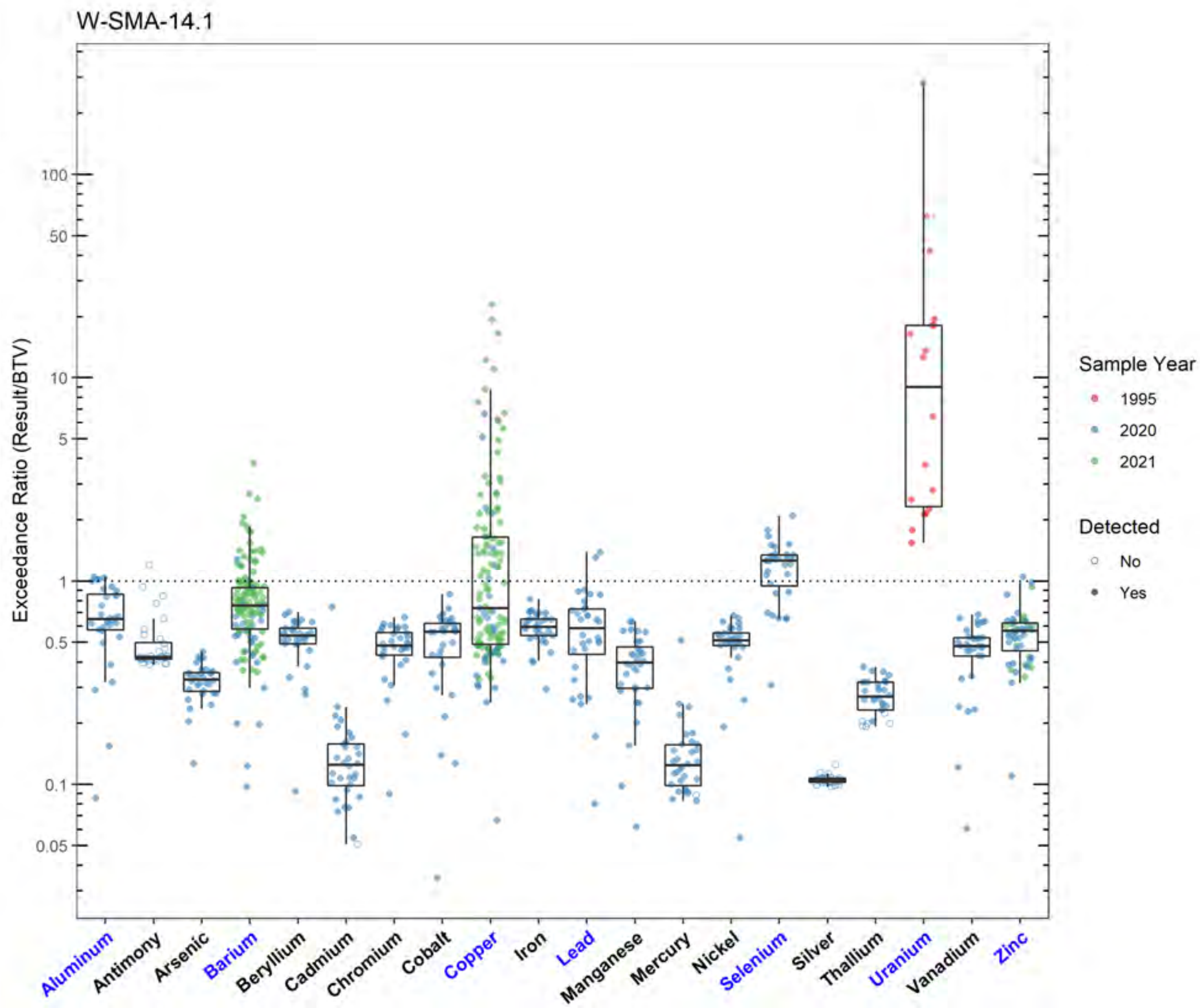


Figure 217.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-14.1

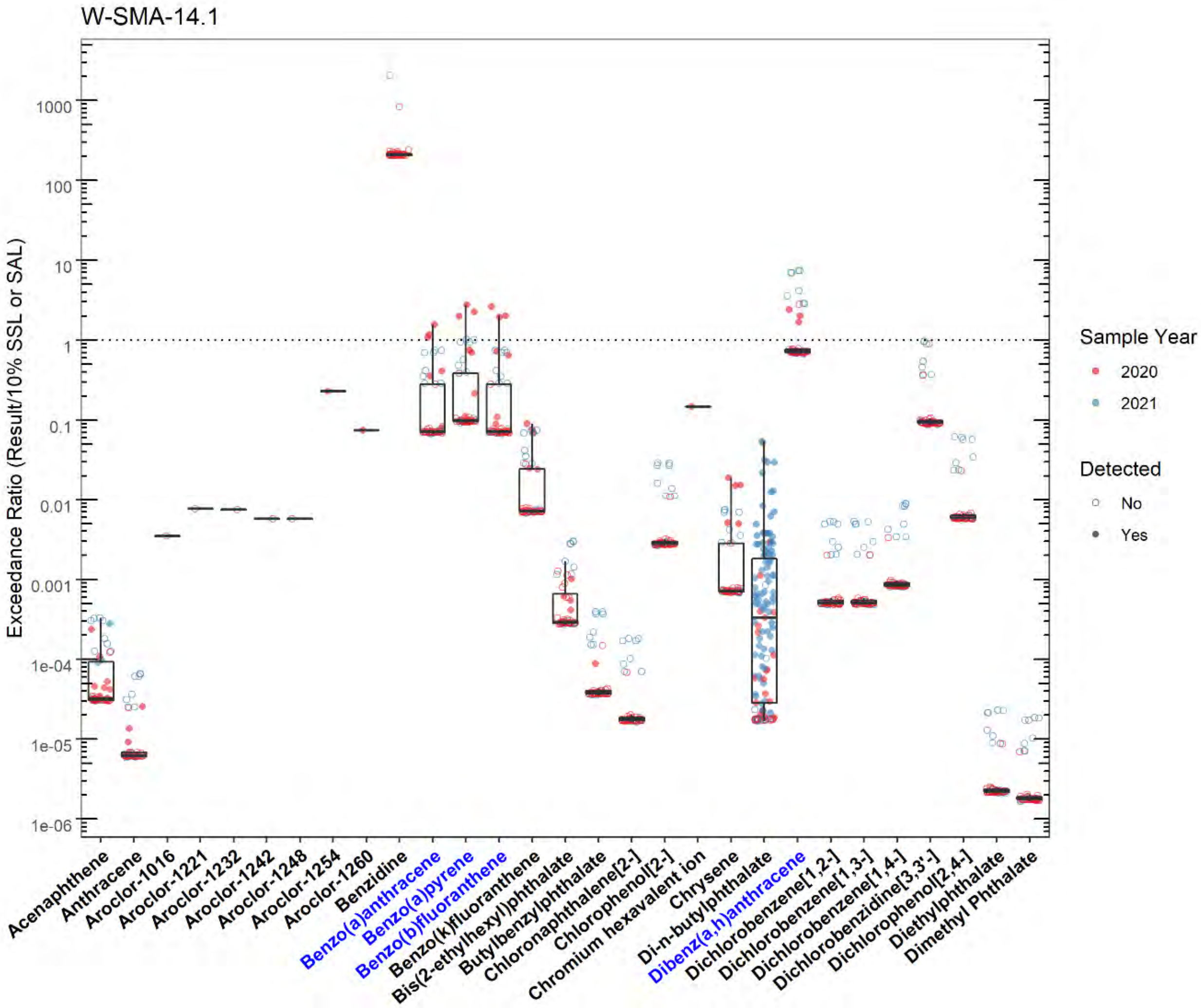


Figure 217.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-14.1 (Plot 1)

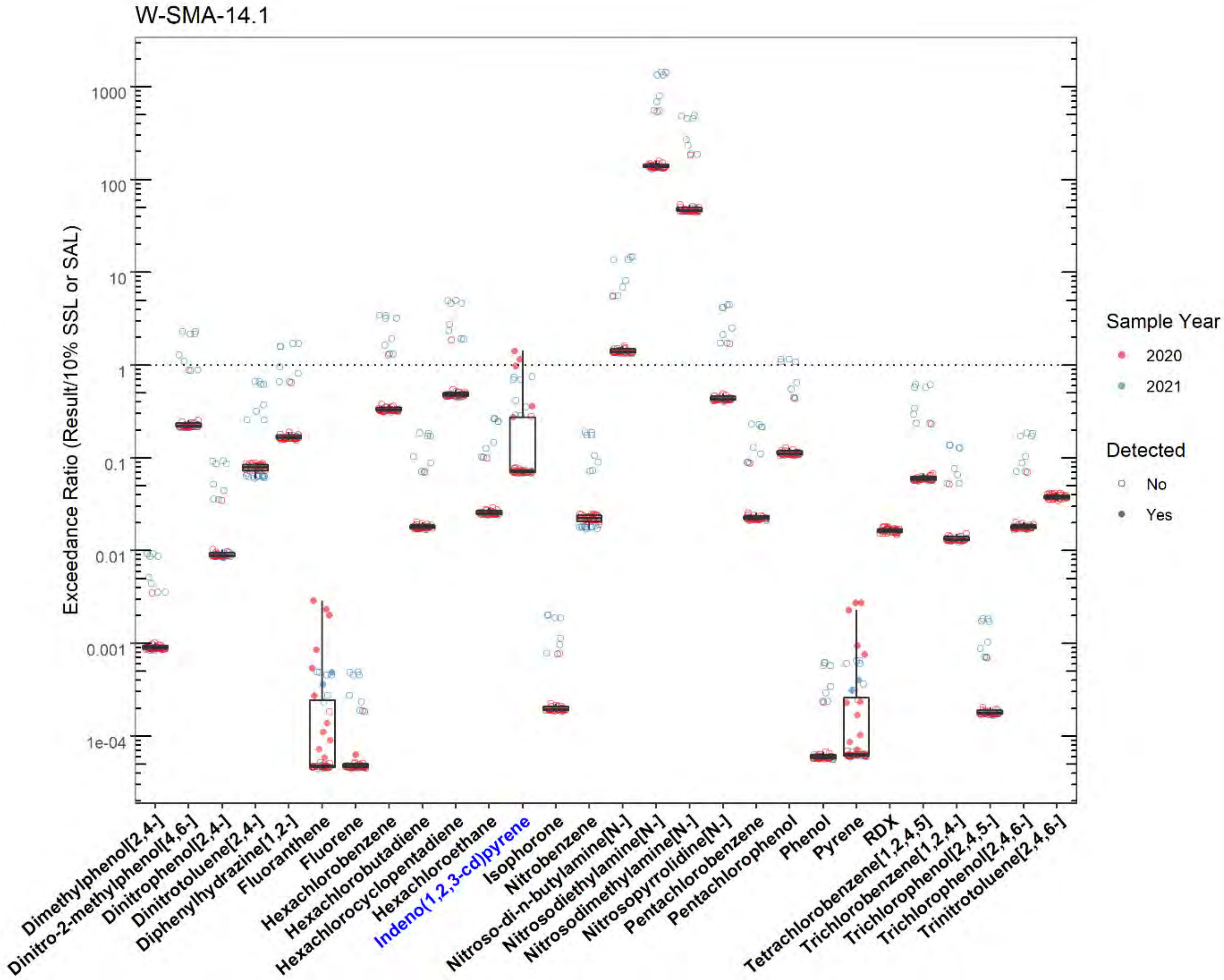


Figure 217.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-14.1 (Plot 2)

W-SMA-14.1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aluminum	W-SMA-14.1	Al	Y	BTV	29200	30600	2020-09-01
Barium	W-SMA-14.1	Ba	Y	BTV	295	1120	2021-07-28
Benzo(a)anthracene	W-SMA-14.1	56-55-3	Y	SSL_0.1	0.153	0.238	2020-09-01
Benzo(a)pyrene	W-SMA-14.1	50-32-8	Y	SSL_0.1	0.112	0.308	2020-09-01
Benzo(b)fluoranthene	W-SMA-14.1	205-99-2	Y	SSL_0.1	0.153	0.401	2020-09-01
Copper	W-SMA-14.1	Cu	Y	BTV	14.7	337	2021-03-17
Dibenz(a,h)anthracene	W-SMA-14.1	53-70-3	Y	SSL_0.1	0.0153	0.0369	2020-09-01
Indeno(1,2,3-cd)pyrene	W-SMA-14.1	193-39-5	Y	SSL_0.1	0.153	0.218	2020-09-01
Lead	W-SMA-14.1	Pb	Y	BTV	22.3	30.9	2020-09-02
Selenium	W-SMA-14.1	Se	Y	BTV	1.52	3.17	2020-09-02
Uranium	W-SMA-14.1	U	Y	BTV	1.82	510	1995-06-27
Zinc	W-SMA-14.1	Zn	Y	BTV	48.8	51.0	2020-09-10

Figure 217.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-14.1

217.4 Stormwater Evaluation

217.4.1 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 September 2013 and July 2014. Analytical results from these samples are presented in Figures 217.4-1 and 217.4-2.

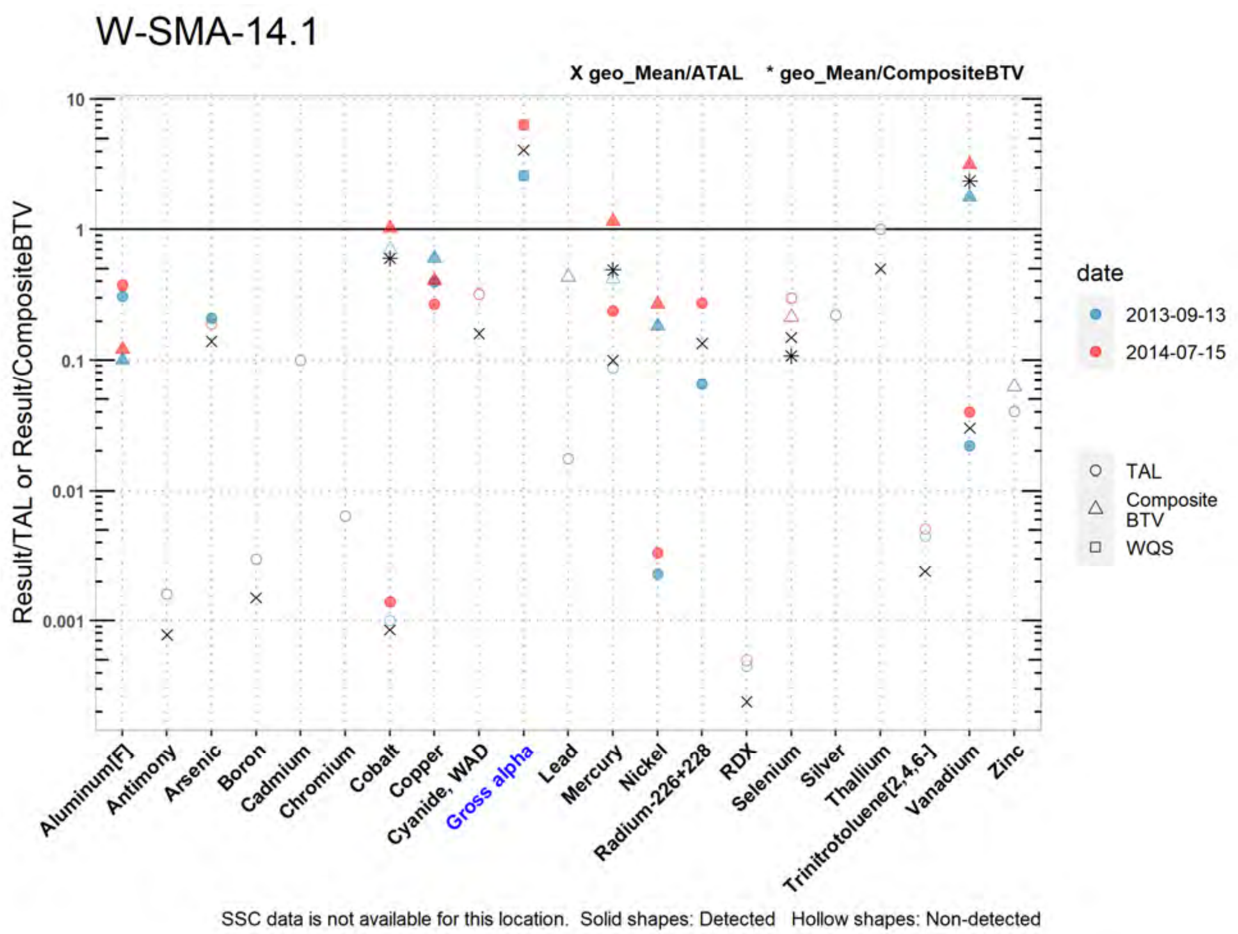


Figure 217.4-1 Analytical Results from Stormwater Samples, W-SMA-14.1 (Plot)

W-SMA-14.1

	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	0.879	311	NA	6.69	22	NA	28.6	NA	250	NA	NA	20	0.9	NA	NA	NA	81.6
Composite_BTV	2330	NA	NA	NA	NA	NA	1.42	4.44	NA	55.5	1.16	0.161	3.10	5.60	NA	6.97	NA	NA	NA	1.26	52.6
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	ug/L	ug/L
2013-09-13 result	233	*1.00*	1.90	*15.0*	*0.110*	*2.00*	*1.00*	2.66	*1.67*	38.7	*0.500*	*0.0670*	0.569	1.97	*0.0899*	*1.50*	*0.200*	*0.450*	*0.0899*	2.23	*3.30*
2013-09-13 dT	0.311	NA	0.21	NA	NA	NA	NA	0.398	NA	2.6	NA	NA	0.00228	0.0657	NA	NA	NA	NA	NA	0.022	NA
2013-09-13 dB	0.100	NA	NA	NA	NA	NA	NA	0.599	NA	NA	NA	NA	0.184	NA	NA	NA	NA	NA	NA	1.77	NA
2014-07-15 result	283	*1.00*	*1.70*	*15.0*	*0.110*	*2.00*	1.45	1.80	*1.67*	96.2	*0.500*	0.185	0.833	8.28	*0.101*	*1.50*	*0.200*	*0.450*	*0.101*	4.00	*3.30*
2014-07-15 dT	0.377	NA	NA	NA	NA	NA	0.0014	0.269	NA	6.4	NA	0.24	0.00333	0.276	NA	NA	NA	NA	NA	0.040	NA
2014-07-15 dB	0.121	NA	NA	NA	NA	NA	1.02	0.405	NA	NA	NA	1.15	0.269	NA	NA	NA	NA	NA	NA	3.17	NA
geo_mean/ATAL	NA	0.00078	0.14	0.0015	NA	NA	0.00085	NA	0.161	4.1	NA	0.10	NA	0.135	0.00024	0.15	NA	0.5	0.0024	0.030	NA
geo_mean/B	NA	NA	NA	NA	NA	NA	0.600	NA	NA	NA	NA	0.489	NA	NA	NA	0.108	NA	NA	NA	2.37	NA

Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV, geo_mean/B=geo_mean/composite_BTV

Figure 217.4-2 Analytical Results from Stormwater Samples, W-SMA-14.1 (Table)

217.4.2 Assessment Unit and Stream Impairments

W-SMA-14.1 drains to Water Canyon (within LANL below Area-A Cyn) which has impairments for PCBs, adjusted gross alpha, total aluminum, and total mercury. The adjusted gross alpha impairment may be Site-related, based on Site history.

217.5 Site-Specific Demonstration

217.5.1 Soil Data Summary

Barium and uranium exceeded the applicable screening values in soil data and have not yet been measured in stormwater.

The remaining metals that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs, therefore they will not be added to the SAP.

Although there is an impairment for mercury, it is not a Site-related POC, the applicable screening value was not exceeded in soil data, and the TAL was not exceeded in stormwater data. Therefore, it will not be added to the SAP.

217.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL in stormwater data, and there was no paired SSC result to confirm whether it was below BTVs; therefore, it will be added to the SAP.

217.5.3 2022 Permit Status

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

217.5.4 Sampling and Analysis Plan

Table 217.5-1 is the proposed SAP for W-SMA-14.1.

Table 217.5-1 Proposed SAP, W-SMA-14.1

Monitoring Constituent	Background for Monitoring
Gross alpha	Impairment and Site history
Dissolved barium and uranium	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

218.0 W-SMA-15.1

Associated Sites	49-005(a)
Receiving Water	Water Canyon
Drainage Area	0.19 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 49-005(a): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

218.1 2010 Administratively Continued Permit Summary

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

Following the October 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 228781), 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.

218.2 Site History

49-005(a) (1/31/2017)

SWMU 49-005(a) is an inactive landfill located east of Area 10 at TA-49. The landfill is located north of the road that runs east from Area 10 and is approximately 75 ft northeast of the Area 10 experimental chamber facility [AOC 49-002]. The landfill, described as a small pit in the 1990 SWMU Report, was excavated in 1984 for the disposal of uncontaminated debris generated during the 1984 general surface cleanup of TA-49.

For investigation activities, refer to “Supplemental Investigation Report for Sites at Technical Area 49 Outside the Nuclear Environmental Site Boundary, Revision 1” (N3B 2022, 702072).

218.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 218.2-1.

Table 218.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
49-005(a)	Landfill	Metals, beryllium, lead, plutonium, uranium

218.3 Consent Order Soil Data

Decision-level data for SWMU 49-005(a) consist of results from samples collected in 1995 and 2010. Analytical results for these samples are presented in Figures 218.3-1 through 218.3-4. The 2022

Revision 1 of the 2016 supplemental IR (N3B 2022, 702072) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

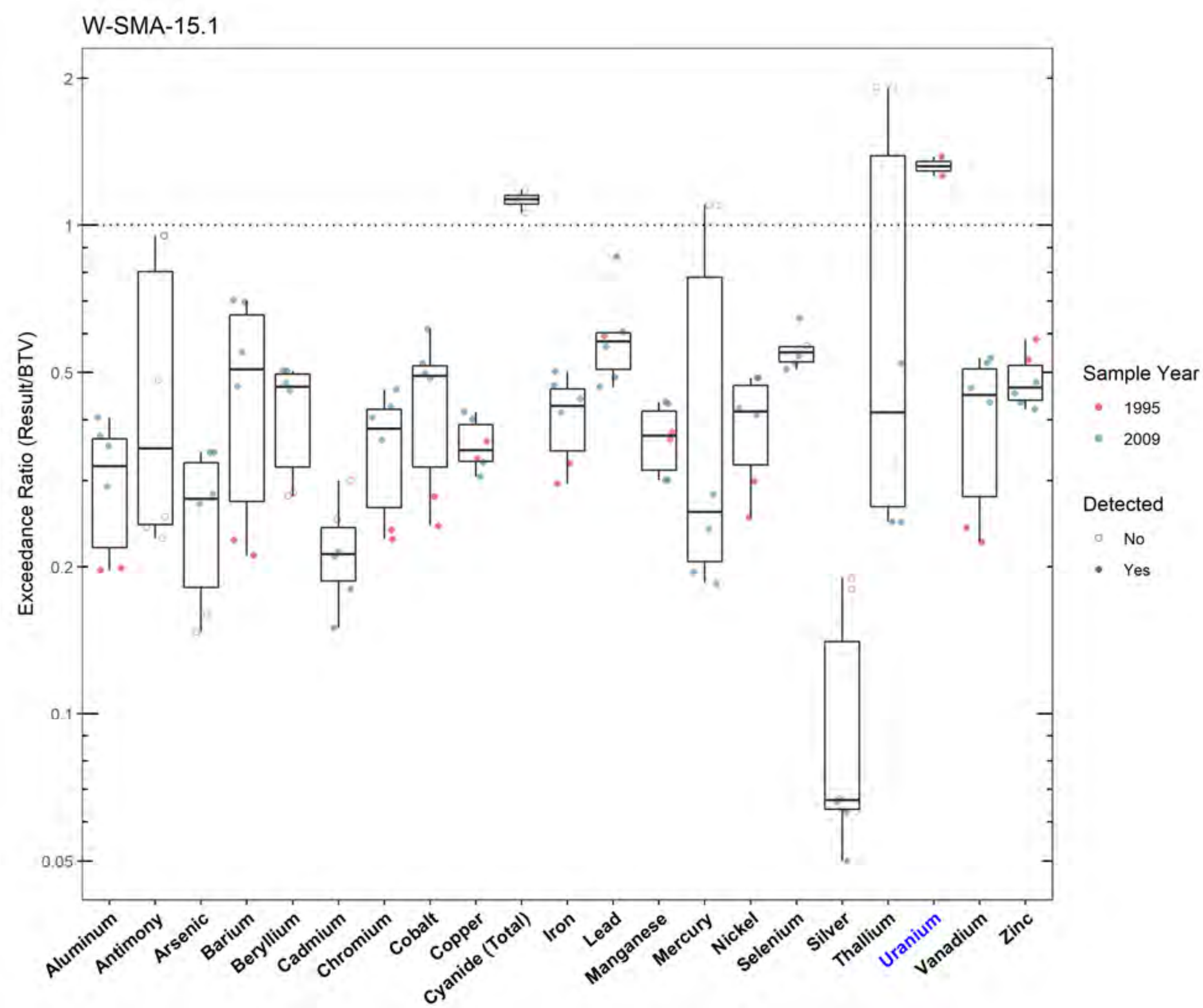


Figure 218.3-1 Inorganics Analytical Results from Soil Samples Associated with W-SMA-15.1

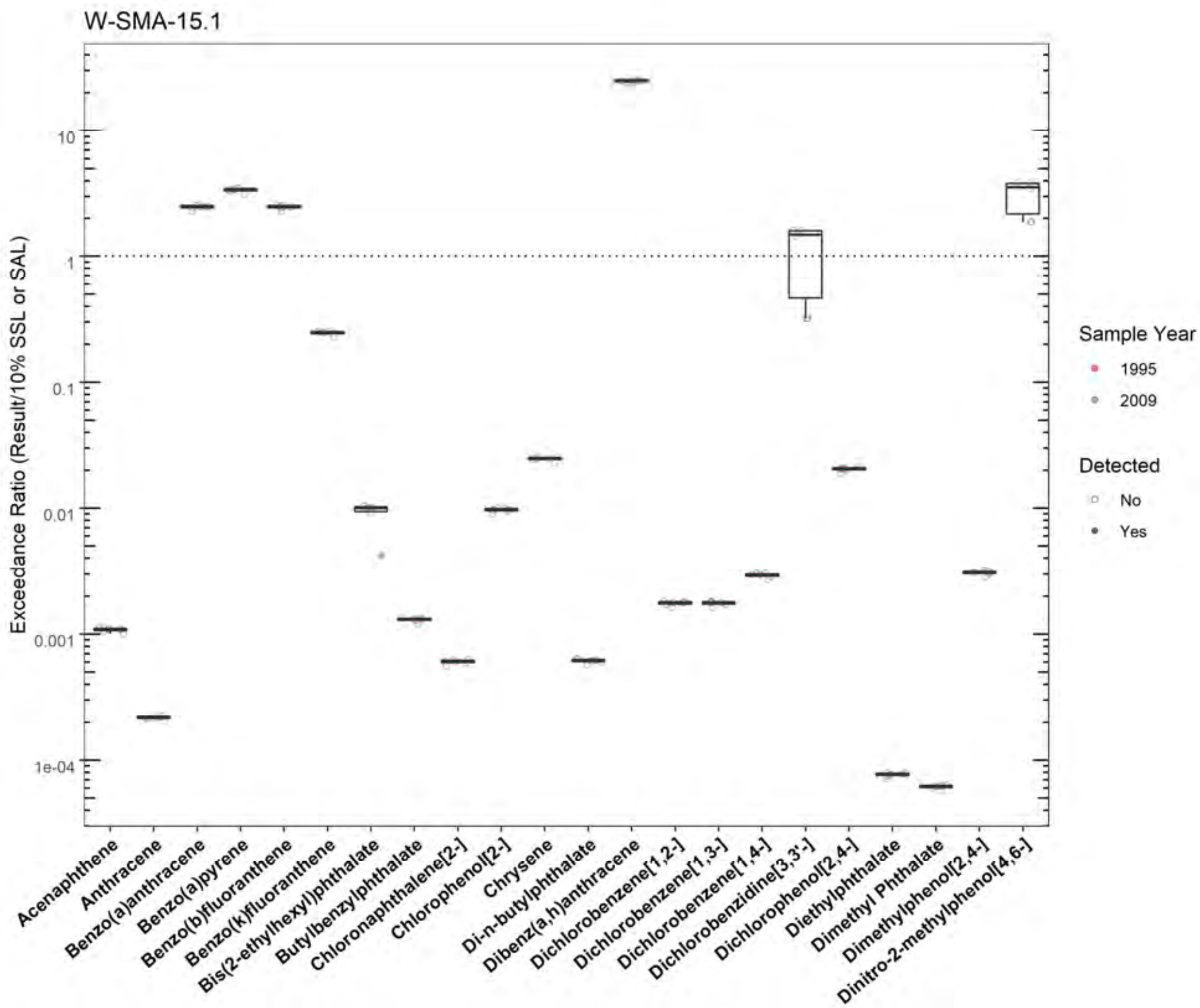


Figure 218.3-2 Organics Analytical Results from Soil Samples Associated with W-SMA-15.1 (Plot 1)

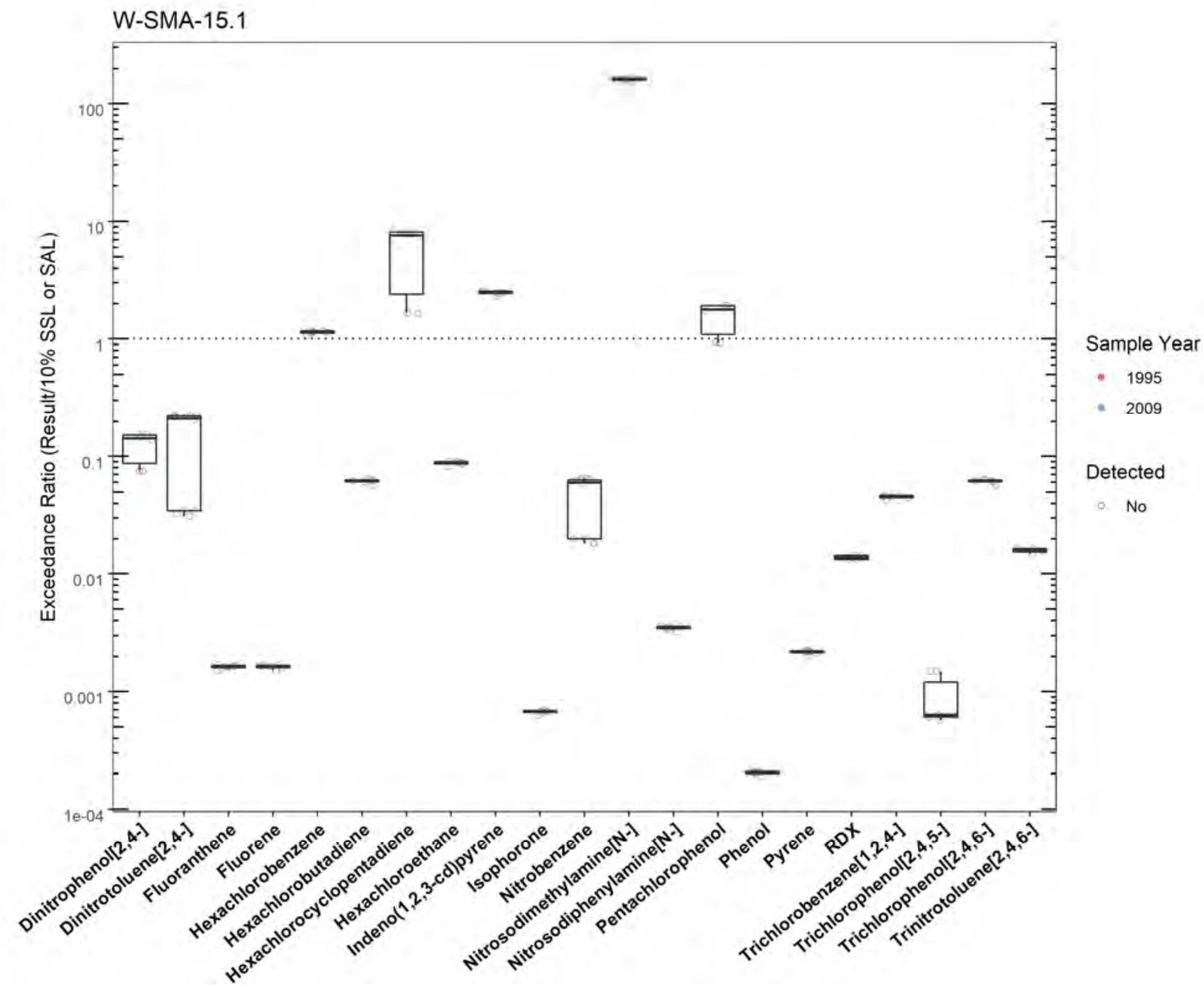


Figure 218.3-3 Organics Analytical Results from Soil Samples Associated with W-SMA-15.1 (Plot 2)

W-SMA-15.1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Uranium	W-SMA-15.1	U	Y	BTV	1.82	2.51	1995-07-19

Figure 218.3-4 Screening-Level Exceedances from Soil Samples Associated with W-SMA-15.1

218.4 Stormwater Evaluation

218.4.1 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.

218.4.2 Assessment Unit and Stream Impairments

W-SMA-15.1 drains to Water Canyon (within LANL below Area-A Cyn) which has impairments for PCBs, adjusted gross alpha, total aluminum, and total mercury. The metals and adjusted gross alpha impairments may be Site-related, based on Site history.

218.5 Site-Specific Demonstration

218.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: uranium.

218.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL but not the BTV.

218.5.3 2022 Permit Status

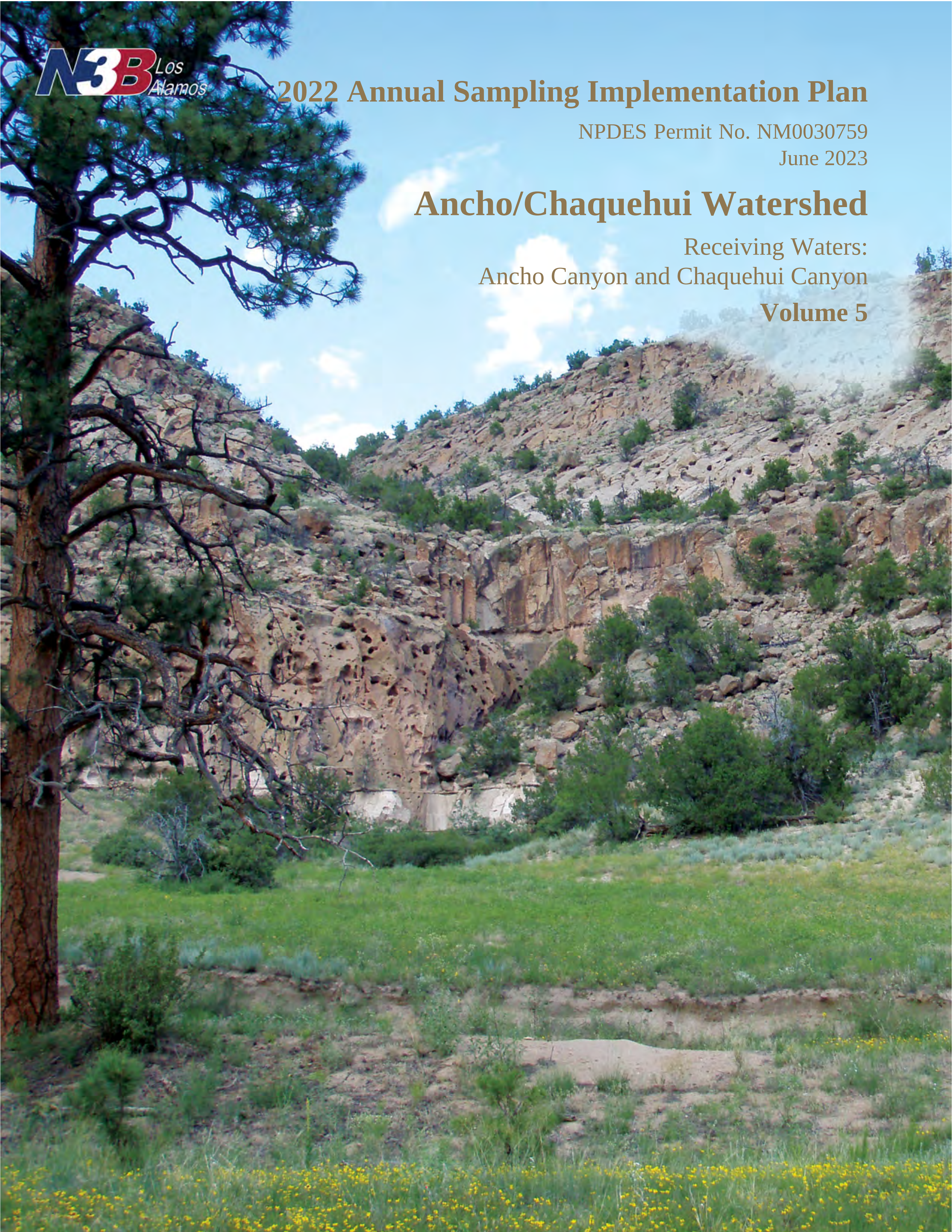
The SMA is in active monitoring; not all Site-related POCs were monitored for in previous samples.

218.5.4 Sampling and Analysis Plan

Table 218.5-1 is the proposed SAP for W-SMA-15.1.

Table 218.5-1 Proposed SAP, W-SMA-15.1

Monitoring Constituent	Background for Monitoring
Dissolved uranium	Site history
DOC	Permit requirement
SSC	Permit requirement



2022 Annual Sampling Implementation Plan

NPDES Permit No. NM0030759

June 2023

Ancho/Chaquehui Watershed

Receiving Waters:

Ancho Canyon and Chaquehui Canyon

Volume 5

CONTENTS

219.0 A-SMA-1.1

Associated Sites	39-004(a), 39-004(d)
Receiving Water	North Ancho Canyon
Drainage Area	192.06 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 39-004(a): In Progress Deferred per Consent Order SWMU 39-004(d): In Progress Deferred per Consent Order
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Long-Term Stewardship per Permit Part I.C.3 criterion

219.1 2010 Administratively Continued Permit Summary

Following the December 2010 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in August 2018. Analytical results from this sample initiated corrective action.

Following the December 2021 submittal to EPA of certification of enhanced control installation as a corrective action (N3B 2021, 701797), 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. Corrective-action monitoring is ongoing until at least one confirmation sample is collected from this SMA.

219.2 Site History

39-004(a) (8/25/2017)

SWMU 39-004(a) is a firing site (structure 39-7) at TA-39. This site was constructed in 1953 as a remote test firing facility to test materials. The experiments conducted at this firing site are designed to expend all the HE contained in the device. If a shot fails such that not all of the HE is spent, an effort is made to pick up and destroy the unexploded HE. A typical shot carries 10 lb to 100 lb of explosives, but on occasion, up to 1,000 lb may be used.

Signs of impact are generally noticeable only within a 200-ft radius around the firing pad. This firing site is within the fall zone of a high cliff that erodes when explosives experiments are conducted at the site. SWMU 39-004(a) is currently inactive, but firing site activities may begin at any time. SWMU 39-004(d), another remote test-firing facility, is located near SWMU 39-004(a) and is currently active. Both SWMUs 39-004(a) and 39-004(d) are located along the northern tributary of the upper reach of Ancho Canyon. The firing pads are located in the canyon bottom between a diverted ephemeral stream and the canyon wall.

39-004(d) (8/25/2017)

SWMU 39-004(d) is an active firing site (structure 39-57) at TA-39. This site was constructed in 1953 as a remote test-firing facility to test materials. The experiments conducted at this firing site are designed to expend all the HE contained in the device. If a shot fails such that not all of the HE is spent, an effort is made to pick up and destroy the unexploded HE. A typical shot carries 10 lb to 100 lb of explosives, but on occasion, up to 1000 lb may be used.

Signs of impact are generally noticeable only within a 200-ft radius around the firing pad. This firing site is within the fall zone of a high cliff that erodes when explosives experiments are conducted at the site. SWMU 39-004(a), another remote test-firing facility, is located near SWMU 39-004(d) and is currently inactive. Both SWMUs 39-004(a) and 39-004(d) are located along the northern tributary of the upper reach of Ancho Canyon. The firing pads are located in the canyon bottom between a diverted ephemeral stream and the canyon wall.

Consent Order investigations of SWMUs 39-004(a) and 39-004(d) are deferred per Appendix A of the 2016 Consent Order. Some sampling was performed in the drainage adjacent to, and downgradient of, the sites, and is considered decision-level data. Refer to “Investigation Report for North Ancho Canyon Aggregate Area, Revision 1” (LANL 2010, 108500.11) for information on those activities.

219.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 219.2-1.

Table 219.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
39-004(a)	Firing site	Aluminum, beryllium, cadmium, chromium, copper, lead, mercury, thallium, PCBs, HE, uranium
39-004(d)	Firing site 39-57 (open detonation) RCRA Unit (active)	Aluminum, beryllium, cadmium, chromium, copper, lead, mercury, thallium, HE, uranium

219.3 Consent Order Soil Data

Decision-level data for SWMU 39-004(a) and SWMU 39-004(d) consist of results from samples collected in 1995 and 2009. These results are presented in Figures 219.3-1 to 219.3-4. The approved IR (LANL 2010, 108500.11) concluded that the extent of detected inorganic and organic chemicals and radionuclides is not defined at the Site; however, results of the preliminary characterization indicated that contaminants are not migrating off-site.

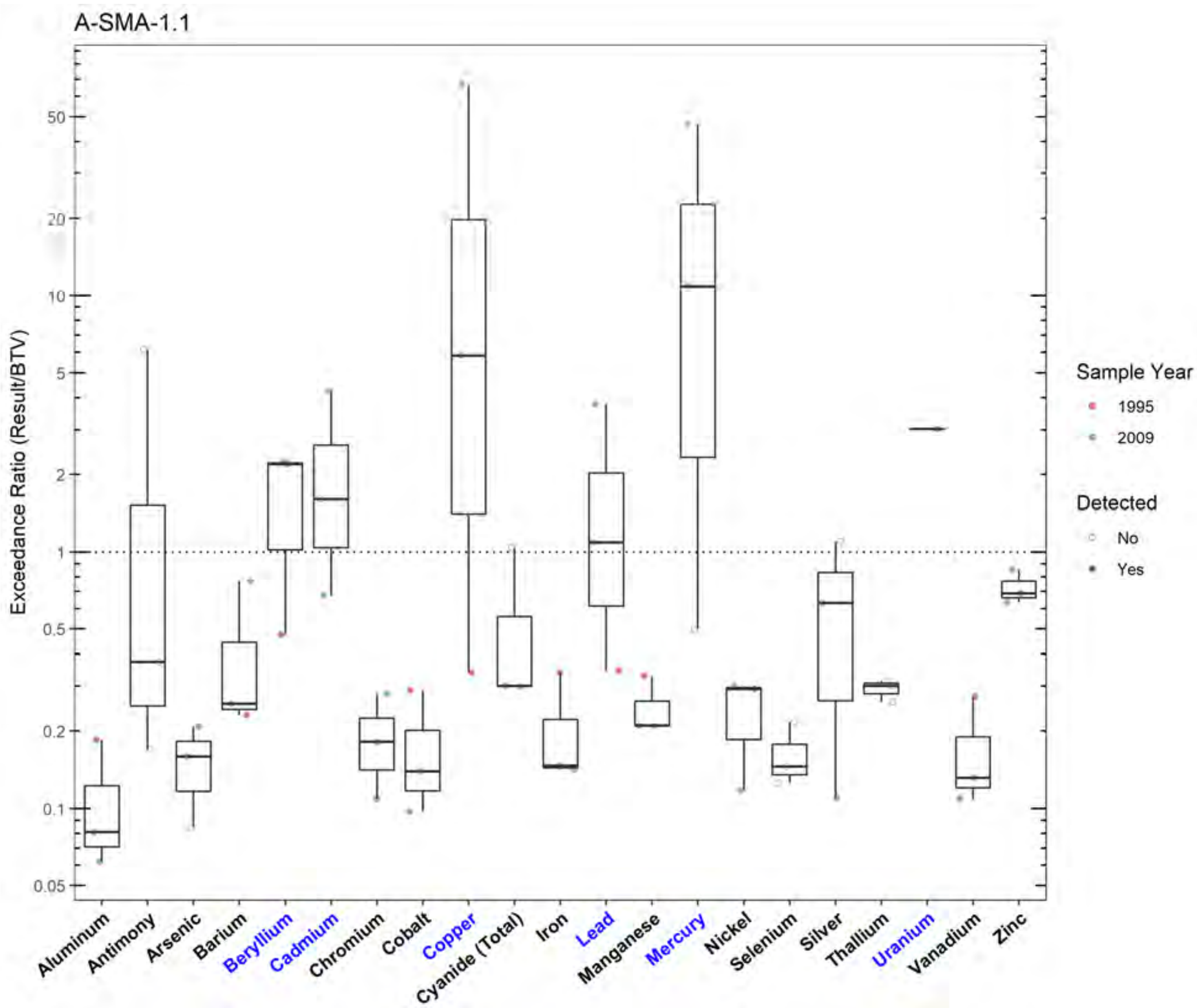


Figure 219.3-1 Inorganics Analytical Results from Soil Samples Associated with A-SMA-1.1

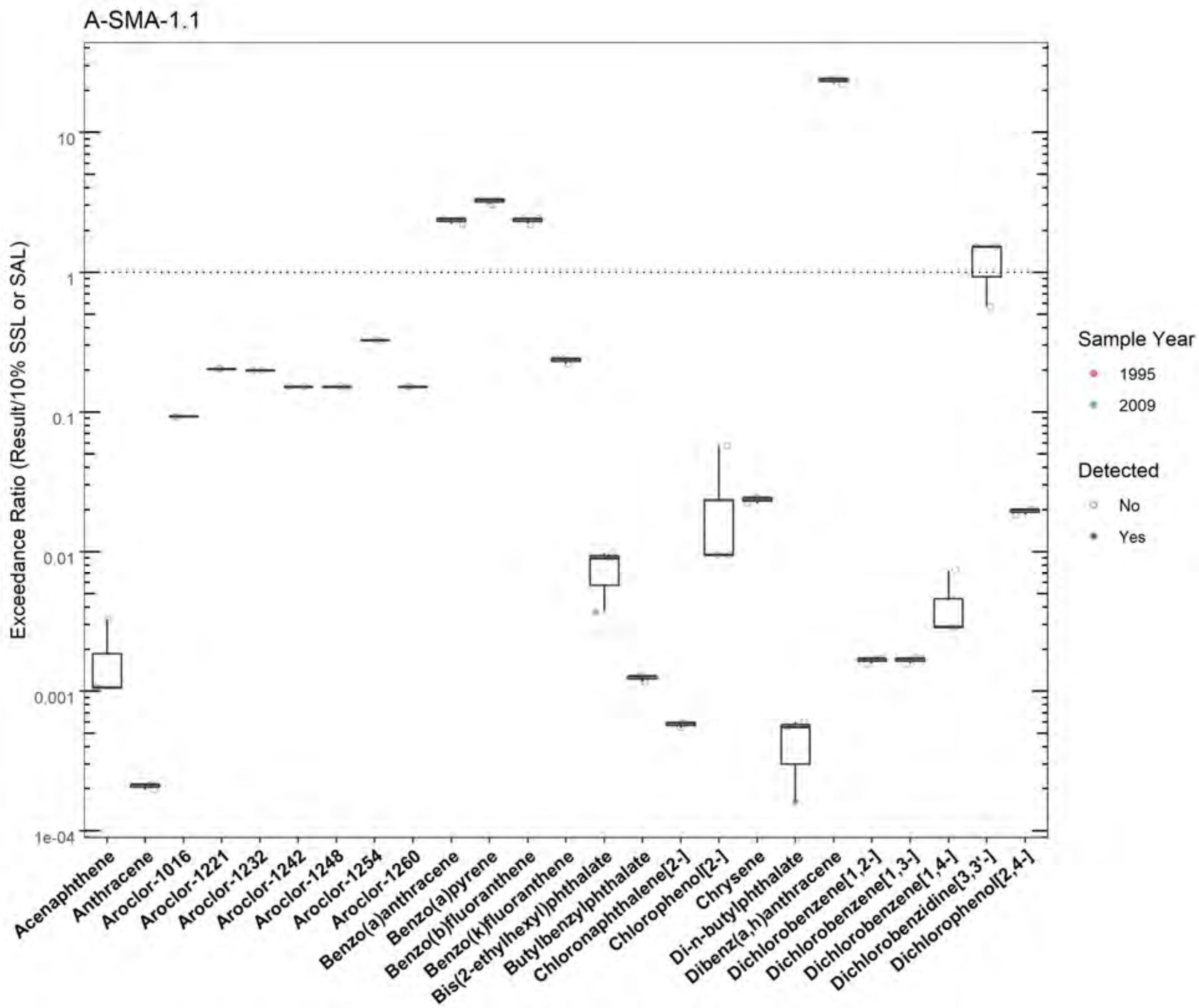


Figure 219.3-2 Organics Analytical Results from Soil Samples Associated with A-SMA-1.1 (Plot 1)

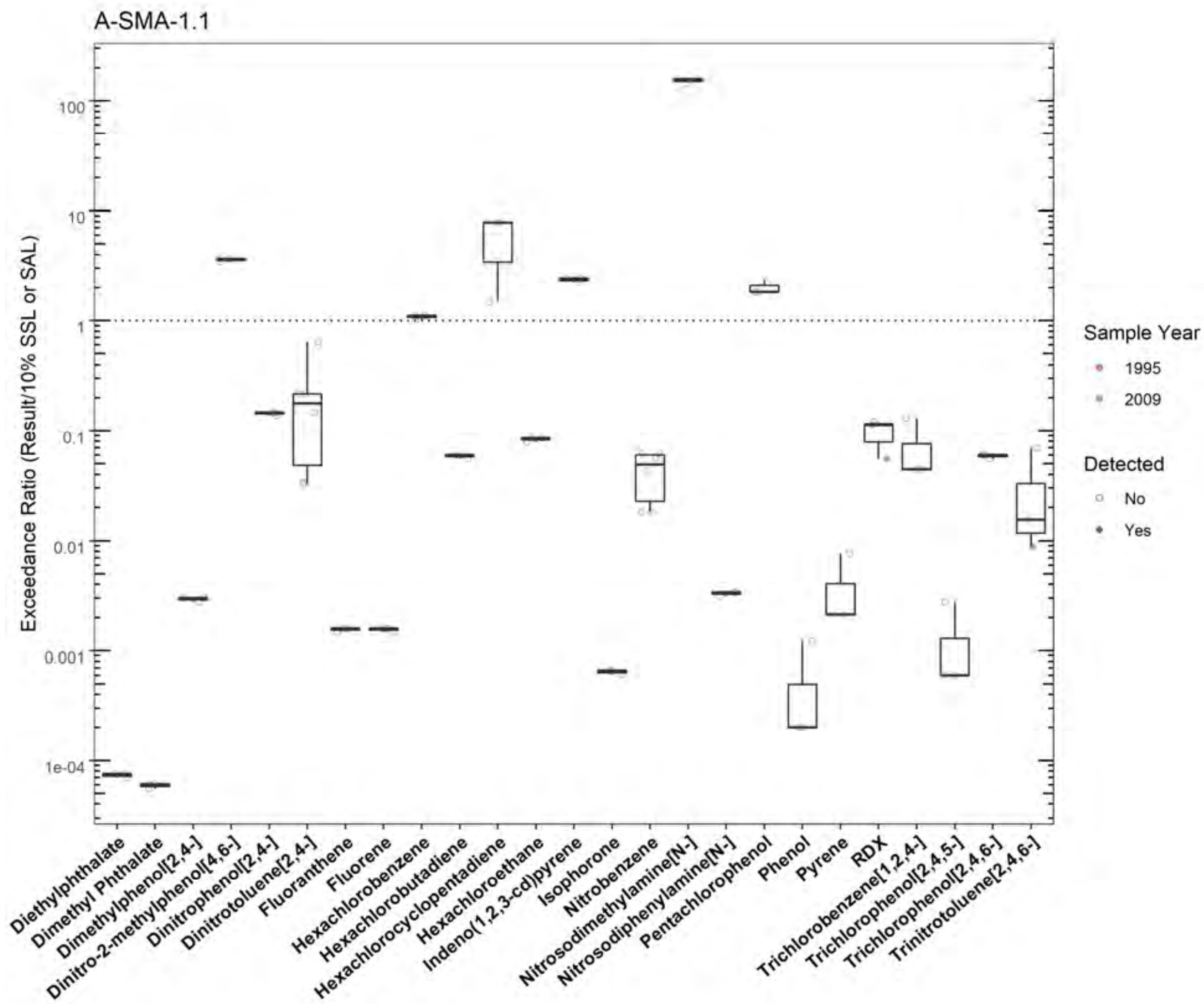


Figure 219.3-3 Organics Analytical Results from Soil Samples Associated with A-SMA-1.1 (Plot 2)

A-SMA-1.1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Beryllium	A-SMA-1.1	Be	Y	BTV	1.83	4.10	2009-04-02
Cadmium	A-SMA-1.1	Cd	Y	BTV	0.400	1.70	2009-04-02
Copper	A-SMA-1.1	Cu	Y	BTV	14.7	984	2009-04-02
Lead	A-SMA-1.1	Pb	Y	BTV	22.3	84.4	2009-04-02
Mercury	A-SMA-1.1	Hg	Y	BTV	0.100	4.69	2009-04-02
Uranium	A-SMA-1.1	U	Y	BTV	1.82	5.50	1995-09-21

Figure 219.3-4 Screening-Level Exceedances from Soil Samples Associated with A-SMA-1.1

219.4 Stormwater Evaluation

219.4.1 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.

219.4.2 Assessment Unit and Stream Impairments

A-SMA-1.1 drains to North Fork Ancho Canyon (Ancho Canyon to headwaters), which has impairments for PCBs and adjusted gross alpha. The impairments may be Site-related, based on Site history.

219.5 Site-Specific Demonstration

219.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater at the current monitoring location: beryllium, cadmium, copper, lead, mercury, and uranium.

219.5.2 Stormwater Data Summary

No confirmation-monitoring data.

219.5.3 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 permit Part 1.C.3.

220.0 A-SMA-2

Associated Sites	39-004(b), 39-004(e)
Receiving Water	North Ancho Canyon
Drainage Area	523.21 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 39-004(b): In Progress Deferred per Consent Order SWMU 39-004(e): In Progress Deferred per Consent Order
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Long-Term Stewardship per Permit Part I.C.3 criterion

220.1 2010 Administratively Continued Permit Summary

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

Following the August 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600911), the sampler was relocated to a more representative location, and corrective-action monitoring was initiated. Stormwater samples were collected in July and October 2019. Analytical results from these samples initiated corrective action.

Following the March 2022 submittal to EPA of certification of enhanced control installation as a corrective action (N3B 2022, 701927), corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection. Corrective-action monitoring is ongoing until at least one confirmation sample is collected from this SMA.

220.2 Site History

39-004(b) (8/25/2017)

SWMU 39-004(b) is an inactive firing site (structure 39-8) located at TA-39. The SWMU 39-004(b) firing site is located in the western tributary of the upper reach of Ancho Canyon. The firing pad is located in the canyon bottom between an ephemeral stream and the northern canyon wall. This site had been used to test materials from the time TA-39 was established as a remote test firing facility in 1953. The experiments conducted at this firing site were designed to expend all HE in the device. Signs of impact are generally noticeable only within a 200-ft radius around the firing pad. The SWMU 39-004(b) firing site is located in the western tributary of the upper reach of Ancho Canyon within the same tributary as the SWMU 39-004(e) firing site.

Activities at this site were discontinued in 1980 because of the constant hazard of falling debris from the nearby cliff.

39-004(e) (8/25/2017)

SWMU 39-004(e) is a firing site (structure 39-88) located at TA-39. This site was constructed in 1978 as a remote test firing facility to test materials, and has been in use since that time. The SWMU 39-004(e) firing site is located in the western tributary of the upper reach of Ancho Canyon within the same tributary as the SWMU 39-004(b) firing site. The experiments conducted at this firing site are designed to expend all HE in the device. Signs of impact are generally noticeable only within a 200-ft radius around the firing pad.

Consent Order investigations of SWMUs 39-004(b) and 39-004(e) are deferred per Appendix A of the 2016 Consent Order. Some sampling was performed in the drainage adjacent to and downgradient of the sites, and is considered decision-level data. Refer to "Investigation Report for North Ancho Canyon Aggregate Area, Revision 1" (LANL 2010, 108500.11) for information on those activities.

220.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 220.2-1.

Table 220.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
39-004(b)	Firing site	Aluminum, beryllium, cadmium, chromium, copper, lead, mercury, thallium, HE, uranium
39-004(e)	Firing site	Aluminum, beryllium, cadmium, chromium, copper, lead, mercury, thallium, PCBs, HE, uranium

220.3 Consent Order Soil Data

Decision-level data for SWMU 39-004(b) and SWMU 39-004(e) consist of results from samples collected in 1995 and 2009. These results are presented in Figures 220.3-1 to 220.3-4. The approved IR (LANL 2010, 108500.11) concluded that the extent of detected inorganic and organic chemicals and radionuclides is not defined at the Site. However, results of the preliminary characterization indicated that contaminants are not migrating off-site.

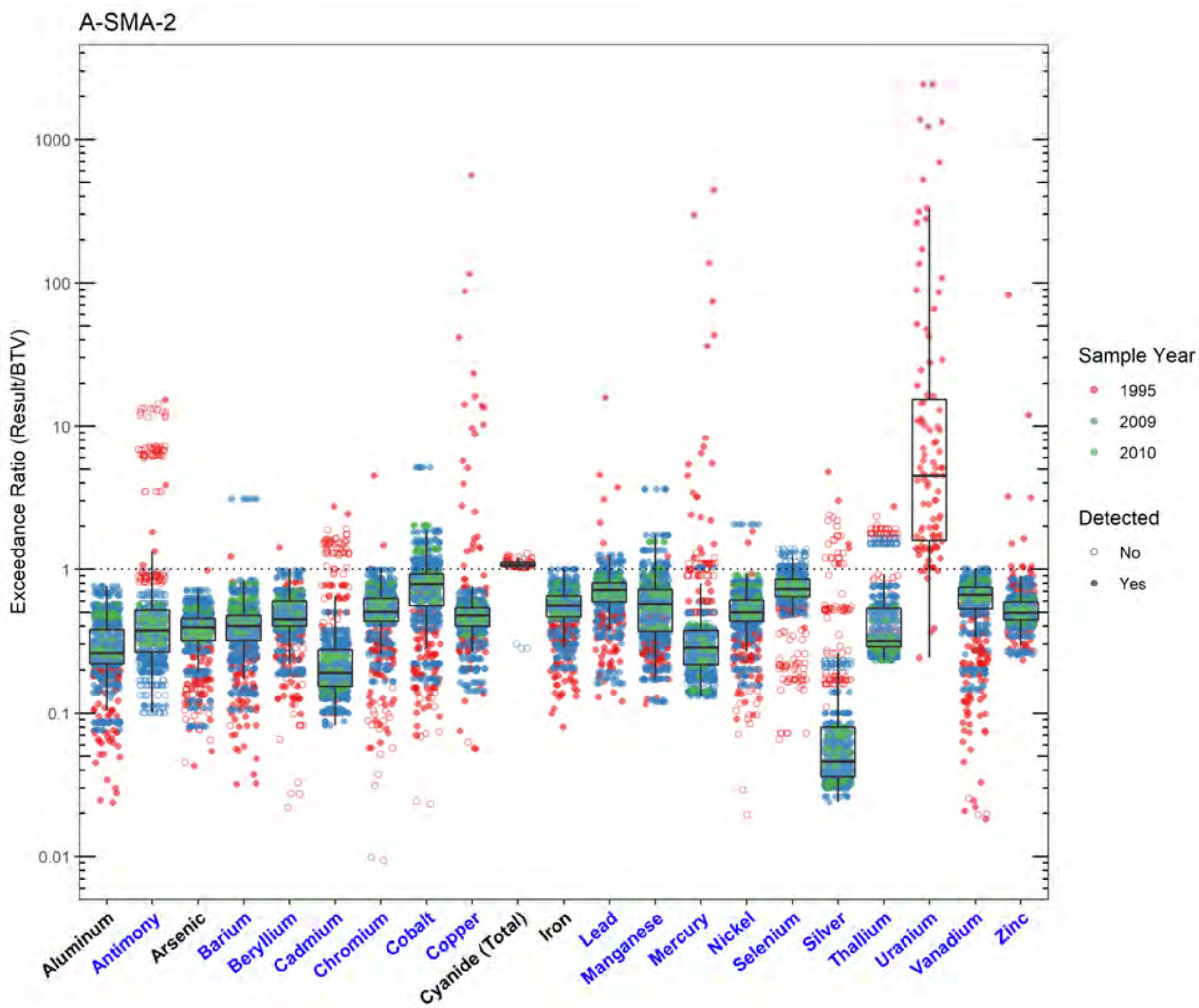


Figure 220.3-1 Inorganics Analytical Results from Soil Samples Associated with A-SMA-2

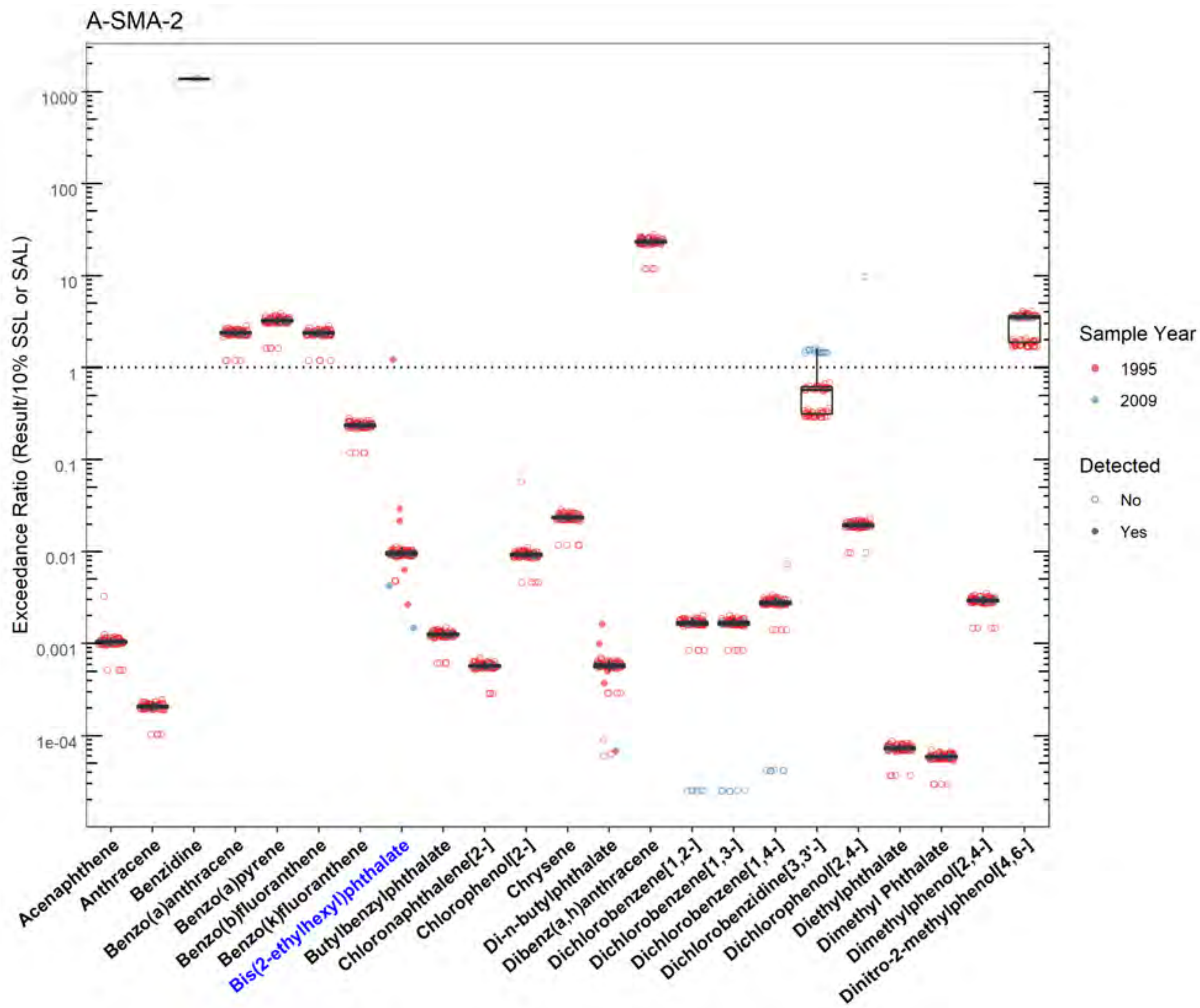


Figure 220.3-2 Organics Analytical Results from Soil Samples Associated with A-SMA-2 (Plot 1)

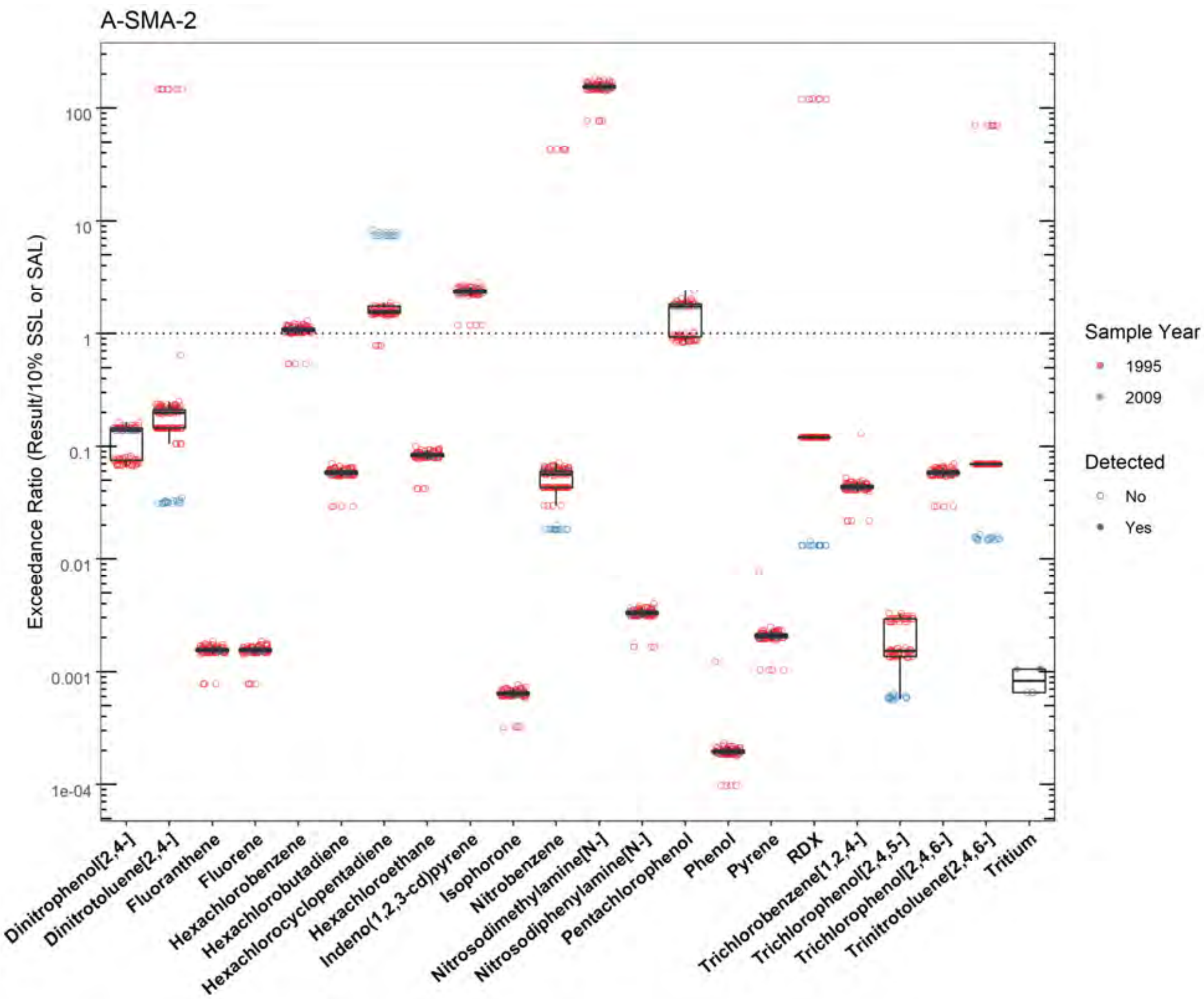


Figure 220.3-3 Organics Analytical Results from Soil Samples Associated with A-SMA-2 (Plot 2)

A-SMA-2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	A-SMA-2	Sb	Y	BTV	0.830	12.8	1995-08-29
Barium	A-SMA-2	Ba	Y	BTV	295	915	2009-12-11
Beryllium	A-SMA-2	Be	Y	BTV	1.83	2.60	1995-09-21
Bis(2-ethylhexyl)phthalate	A-SMA-2	117-81-7	Y	SSL_0.1	38.0	46.0	1995-08-17
Cadmium	A-SMA-2	Cd	Y	BTV	0.400	1.10	1995-08-09
Chromium	A-SMA-2	Cr	Y	BTV	19.3	86.8	1995-08-09
Cobalt	A-SMA-2	Co	Y	BTV	8.64	44.5	2009-12-11
Copper	A-SMA-2	Cu	Y	BTV	14.7	8280	1995-08-09
Lead	A-SMA-2	Pb	Y	BTV	22.3	355	1995-08-09
Manganese	A-SMA-2	Mn	Y	BTV	671	2430	2009-12-11
Mercury	A-SMA-2	Hg	Y	BTV	0.100	44.1	1995-08-15
Nickel	A-SMA-2	Ni	Y	BTV	15.4	31.7	2009-12-11
Selenium	A-SMA-2	Se	Y	BTV	1.52	2.00	2009-12-11
Silver	A-SMA-2	Ag	Y	BTV	1.00	4.80	1995-08-30
Thallium	A-SMA-2	Tl	Y	BTV	0.730	2.00	1995-08-17
Uranium	A-SMA-2	U	Y	BTV	1.82	4460	1995-08-15
Vanadium	A-SMA-2	V	Y	BTV	39.6	40.1	2009-11-24
Zinc	A-SMA-2	Zn	Y	BTV	48.8	4020	1995-08-09

Figure 220.3-4 Screening-Level Exceedances from Soil Samples Associated with A-SMA-2

220.4 Stormwater Evaluation

220.4.1 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.

220.4.2 Assessment Unit and Stream Impairments

A-SMA-2 drains to North Fork Ancho Canyon (Ancho Canyon to headwaters), which has impairments for PCBs and adjusted gross alpha. The impairments may be Site-related, based on Site history.

220.5 Site-Specific Demonstration

220.5.1 Soil Data Summary

Copper exceeded the applicable screening value in soil data and previously exceeded the TAL in stormwater. When the Site is removed from deferred status, this Site-related POC will be added to the SAP.

All other metals which exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs; therefore, they will not be added to the SAP. Bis(2-ethylhexyl)phthalate exceeded the applicable screening value in soil data but is not a Site-related POC and will not be added to the SAP.

220.5.2 Stormwater Data Summary

No data for the current monitoring stage have been collected. In the previous monitoring stage, copper exceed the TAL and the BTV; aluminum and gross alpha exceeded TALs but not BTVs.

220.5.3 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 permit Part 1.C.3.

221.0 A-SMA-2.5

Associated Sites	39-010
Receiving Water	North Ancho Canyon
Drainage Area	0.08 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 39-010: In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the September 2017 field visit, the sampler was moved to increase the likelihood of collecting a sample from this SMA.
2022 Permit Status	Active Monitoring

221.1 2010 Administratively Continued Permit Summary

Following the February 2011 submittal to EPA of certification of baseline control installation, baseline monitoring was initiated. While developing the 2018 SAP, a decision was made to implement the monitoring location move recommended during the 2017 SIP review, and monitoring was reinitiated. To date, stormwater flow has not been sufficient for full-volume sample collection. Monitoring is ongoing until one confirmation sample is collected from this SMA.

221.2 Site History

39-010 (8/28/2017)

SWMU 39-010 is an area that was used for staging soil excavated during the 1978 construction of a firing site [SWMU 39-004(e)] at TA-39. This soil staging area is located in the central portion of TA-39 along the North Ancho Canyon stream channel. During construction of the firing site, large quantities of soil were removed and deposited in the canyon east of the firing site, forming SWMU 39-010. This soil dump, covering approximately 76,200 ft^2, was not identified in the 1990 SWMU Report. However, it was noted in the RFI work plan and described in a letter notification to NMED designating a new SWMU.

Data are not available concerning potential contaminants associated with the excavated soil that was placed at this site, but potential contaminants at this site are expected to be similar to those at SWMU 39-004(e) (i.e., HE, radionuclides, and inorganic chemicals).

For investigation activities, refer to “Phase II Investigation Work Plan for North Ancho Canyon Aggregate Area Revision 1” (LANL 2011, 201561).

221.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 221.2-1.

Table 221.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
39-010	Excavated soil dump	Aluminum, beryllium, copper, iron, lead, mercury, PCBs, HE, uranium

221.3 Consent Order Soil Data

Decision-level data for SWMU 39-010 consist of results from samples collected in 2009. These results are presented in Figures 221.3-1 to 221.3-4. The IR (LANL 2011, 201561) concluded that the nature and extent of contamination have been defined, except for the lateral and vertical extent of uranium-234, uranium-235/236, and uranium-238, and the vertical extent of copper; lead; mercury; benzo(a)pyrene; bis(2-ethylhexyl)phthalate; di-n-butylphthalate; 1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX); and tritium.

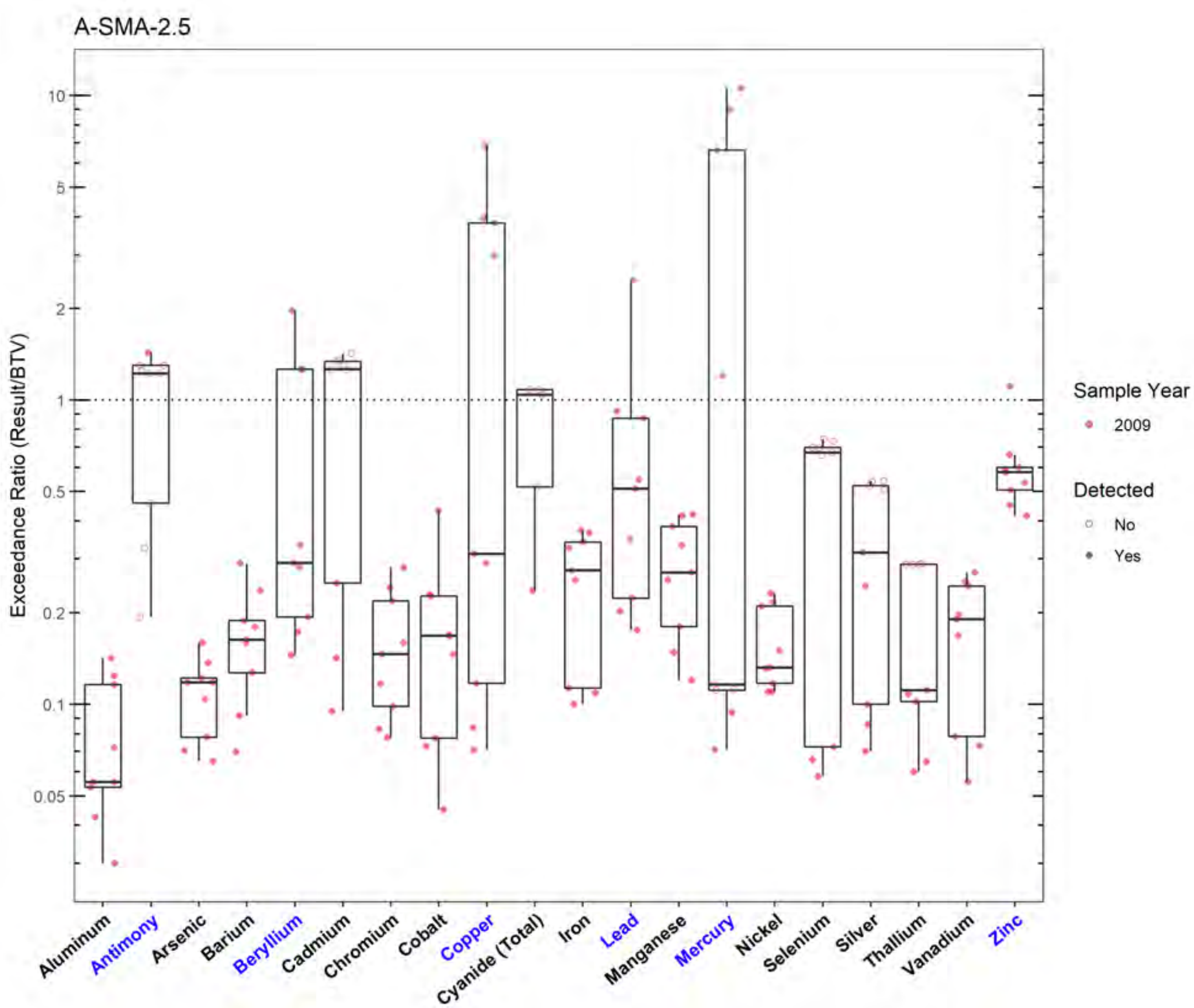


Figure 221.3-1 Inorganics Analytical Results from Soil Samples Associated with A-SMA-2.5

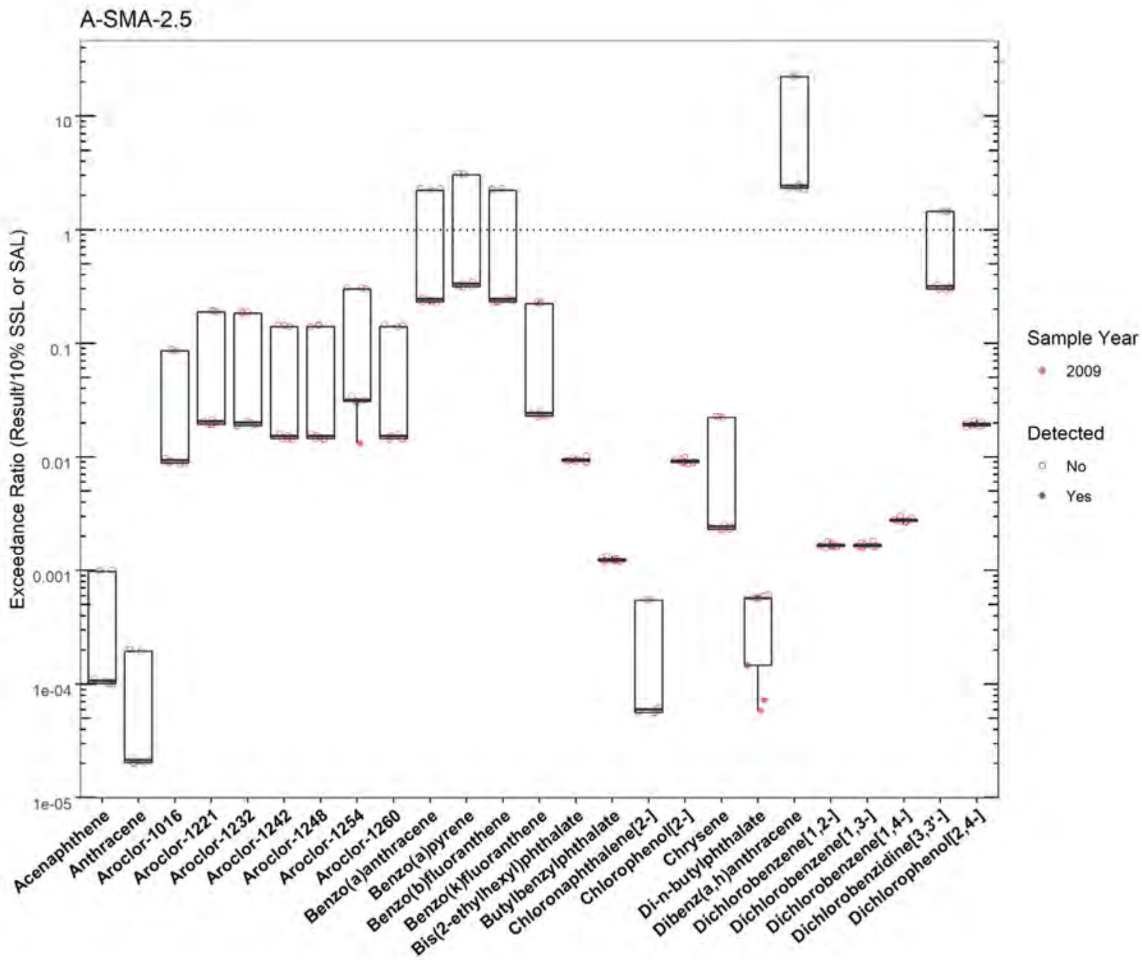


Figure 221.3-2 Organics Analytical Results from Soil Samples Associated with A-SMA-2.5 (Plot 1)

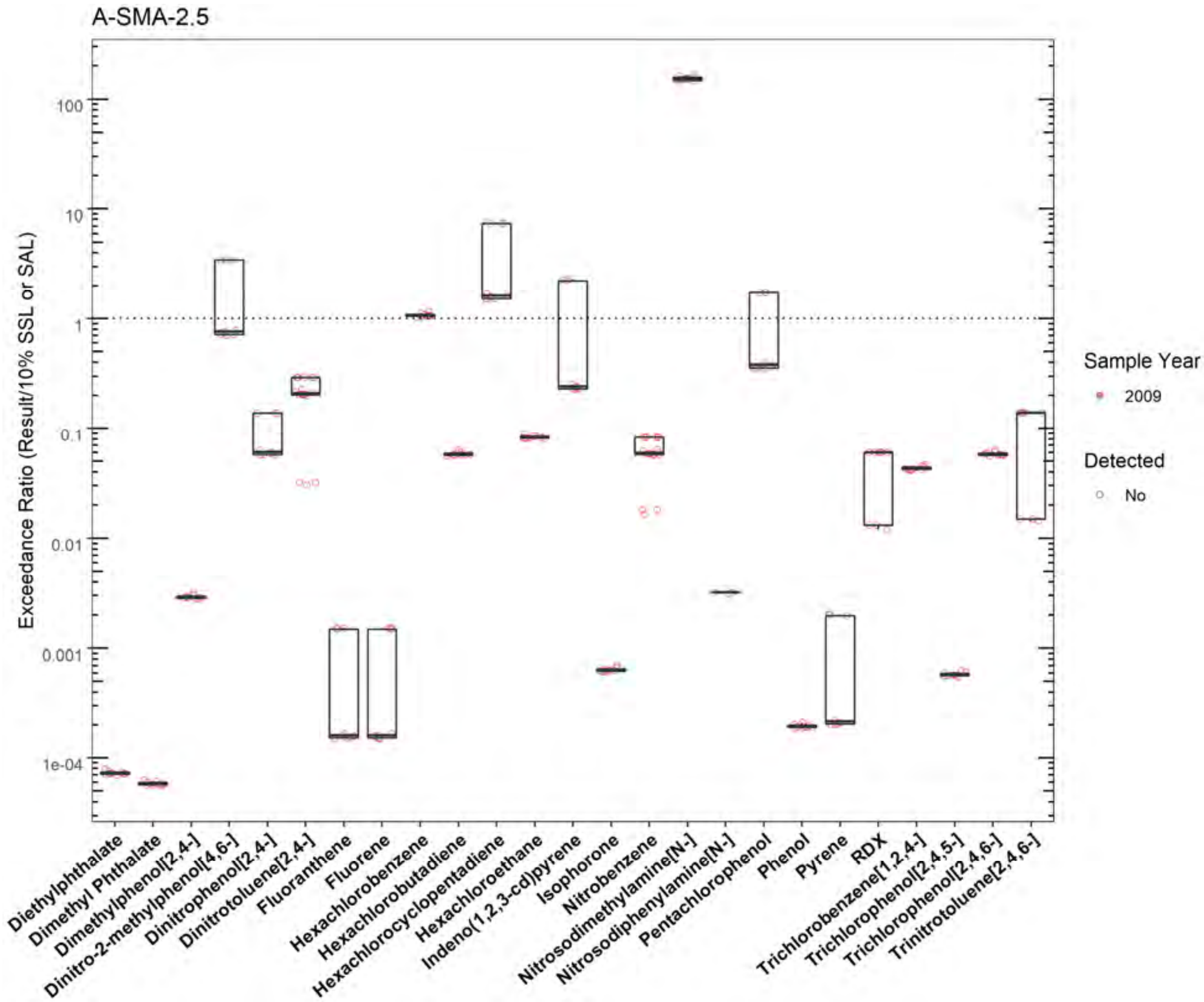


Figure 221.3-3 Organics Analytical Results from Soil Samples Associated with A-SMA-2.5 (Plot 2)

A-SMA-2.5

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	A-SMA-2.5	Sb	Y	BTV	0.830	1.19	2009-03-16
Beryllium	A-SMA-2.5	Be	Y	BTV	1.83	3.60	2009-05-11
Copper	A-SMA-2.5	Cu	Y	BTV	14.7	101	2009-05-11
Lead	A-SMA-2.5	Pb	Y	BTV	22.3	55.4	2009-03-16
Mercury	A-SMA-2.5	Hg	Y	BTV	0.100	1.06	2009-05-11
Zinc	A-SMA-2.5	Zn	Y	BTV	48.8	54.4	2009-03-16

Figure 221.3-4 Screening-Level Exceedances from Soil Samples Associated with A-SMA-2.5

221.4 Stormwater Evaluation

221.4.1 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.

221.4.2 Assessment Unit and Stream Impairments

A-SMA-2.5 drains to North Fork Ancho Canyon (Ancho Canyon to headwaters), which has impairments for PCBs and adjusted gross alpha. The impairments may be Site-related, based on Site history.

221.5 Site-Specific Demonstration

221.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data and have not yet been measured in stormwater: antimony, beryllium, copper, mercury, lead, and zinc.

Site-related POCs aluminum, iron, and HE were measured below the applicable screening values in soil data. Therefore, they will not be added to the SAP.

Uranium, also a Site-related POC, was not measured in soil data. Therefore, it will be added to the SAP.

221.5.2 Stormwater Data Summary

No confirmation-monitoring data.

221.5.3 2022 Permit Status

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

221.5.4 Sampling and Analysis Plan

Table 221.5-1 is the proposed SAP for A-SMA-2.5.

Table 221.5-1 Proposed SAP, A-SMA-2.5

Monitoring Constituent	Background for Monitoring
Gross alpha	Site history (uranium) and impairment
Total PCBs	Impairment and Site history
Dissolved beryllium, copper, lead, antimony, uranium, and zinc	Site history and soil data
Total mercury	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

222.0 A-SMA-2.7

Associated Sites	39-002(c), 39-008
Receiving Water	North Ancho Canyon
Drainage Area	9.50 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	AOC 39-002(c): Pending Inclusion in Permit Modification Request. Certificate of Completion Received Without Controls SWMU 39-008: In Progress Deferred per Consent Order
2010 Administratively Continued Permit Final Status	Corrective Action Complete/ Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

222.1 2010 Administratively Continued Permit Summary

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

AOC 39-002(c) received a COC under the Consent Order from NMED in April 2010. The Permittees submitted a certification of completion of corrective action per Permit part I.E.2(d) for the Site in November 2012 (LANL 2012, 232272; LANL 2012/2013, 232273) and resubmitted in August 2013 (LANL 2013, 250035).

Following the September 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 227785; LANL 2012, 227786), the sampler was relocated to a more representative location, and corrective-action monitoring was initiated for SWMU 39-008. A stormwater sample was collected in September 2013, and stormwater monitoring is ongoing to attempt to collect a second sample.

222.2 Site History

39-002(c) (8/25/2017)

AOC 39-002(c) is a former outdoor SAA that was located on an asphalt-paved area next to the southwest corner of the gas-gun support structure (structure 39-56) at TA-39. In accordance with RCRA, SAA provisions allow generators to accumulate up to 55 gal. of hazardous waste (or 1 quart of acute hazardous waste) in containers, as long as those containers are (a) at or near any point of generation, (b) under the control of the operator, and (c) kept closed except when adding or removing waste.

Waste paper, solvent-contaminated rags (ethanol, acetone, and trichloroethane), and vacuum grease were stored in a 55-gal. drum at the AOC 39-002(c) SAA. It is not known if this area was used for storage before it was registered as an SAA. According to the LANL RCRA storage area database dated July 2017, the AOC 39-002(c) SAA was removed in February 1994. No known or documented releases are associated with this SAA.

39-008 (8/28/2017)

SWMU 39-008 is an area of potential soil contamination from a gas-gun firing site near a Morgan shed (building 39-137) that houses a single-stage gas-gun with a 6-in.-diameter barrel. The gas gun is used for outdoor experiments; gas is used as a propellant to fire DU projectiles at targets on the cliff face. Testing at this site was conducted from 1960 to 1975, suspended for 13 yr, and then resumed in 1988.

Most of the debris from the gas-gun firings is scattered over the area just west of the building, but occasionally projectiles and target fragments hit the cliff face, which is situated approximately 200 ft west of another building associated with this experimental gun (building 39-56). Photographic evidence shows that the area between the buildings and the cliff has been leveled, and the removed surface materials were pushed into a mound on the south side of the test area.

The gas gun is currently used for experimental purposes. Further investigation of SWMU 39-008 is deferred per Appendix A of the 2016 Consent Order because the site is impacted by continuing Site operations.

For investigation activities for these Sites, refer to "Investigation Report for North Ancho Canyon Aggregate Area, Revision 1" (LANL 2010, 108500.11).

222.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 222.2-1.

Table 222.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
39-002(c)	Storage area	Lead, PCBs, DU
39-008	Area of potential soil contamination	Aluminum, beryllium, lead, DU

222.3 Consent Order Soil Data

Decision-level data for AOC 39-002(c) consist of samples collected in 2009. The 2010 IR (LANL 2010, 108500.11) concluded that the nature and extent of contamination have been defined, and no further sampling for extent is warranted.

Decision-level data for SWMU 39-008 consist of results from samples collected in 1995 and 2009. The approved IR (LANL 2010, 108500.11) concluded that the nature and extent of contamination are defined except for total uranium or isotopic uranium.

Analytical results from all soil samples collected for A-SMA-2.7 are presented in Figures 222.3-1 to 222.3-4.

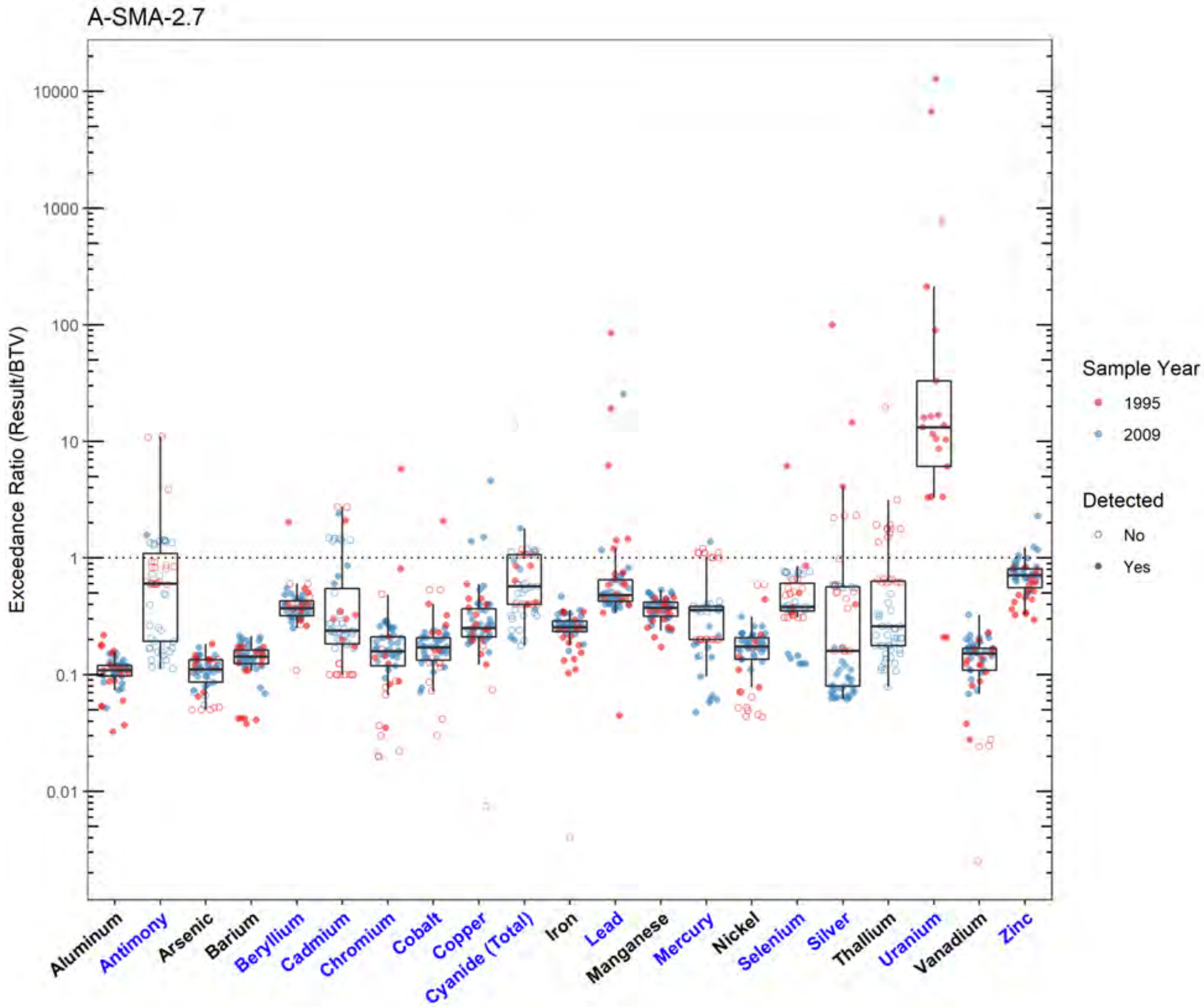


Figure 222.3-1 Inorganics Analytical Results from Soil Samples Associated with A-SMA-2.7

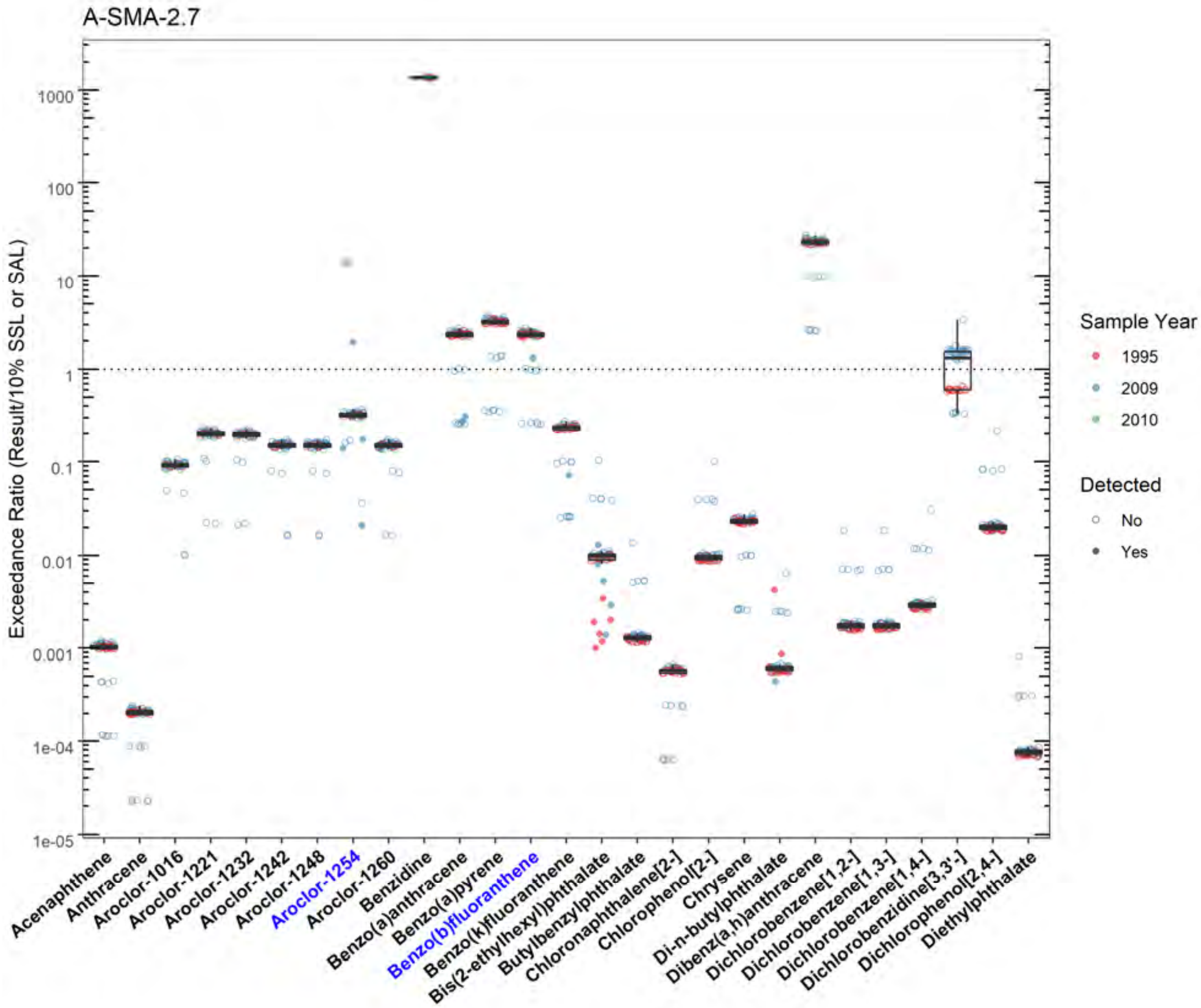


Figure 222.3-2 Organics Analytical Results from Soil Samples Associated with A-SMA-2.7 (Plot 1)

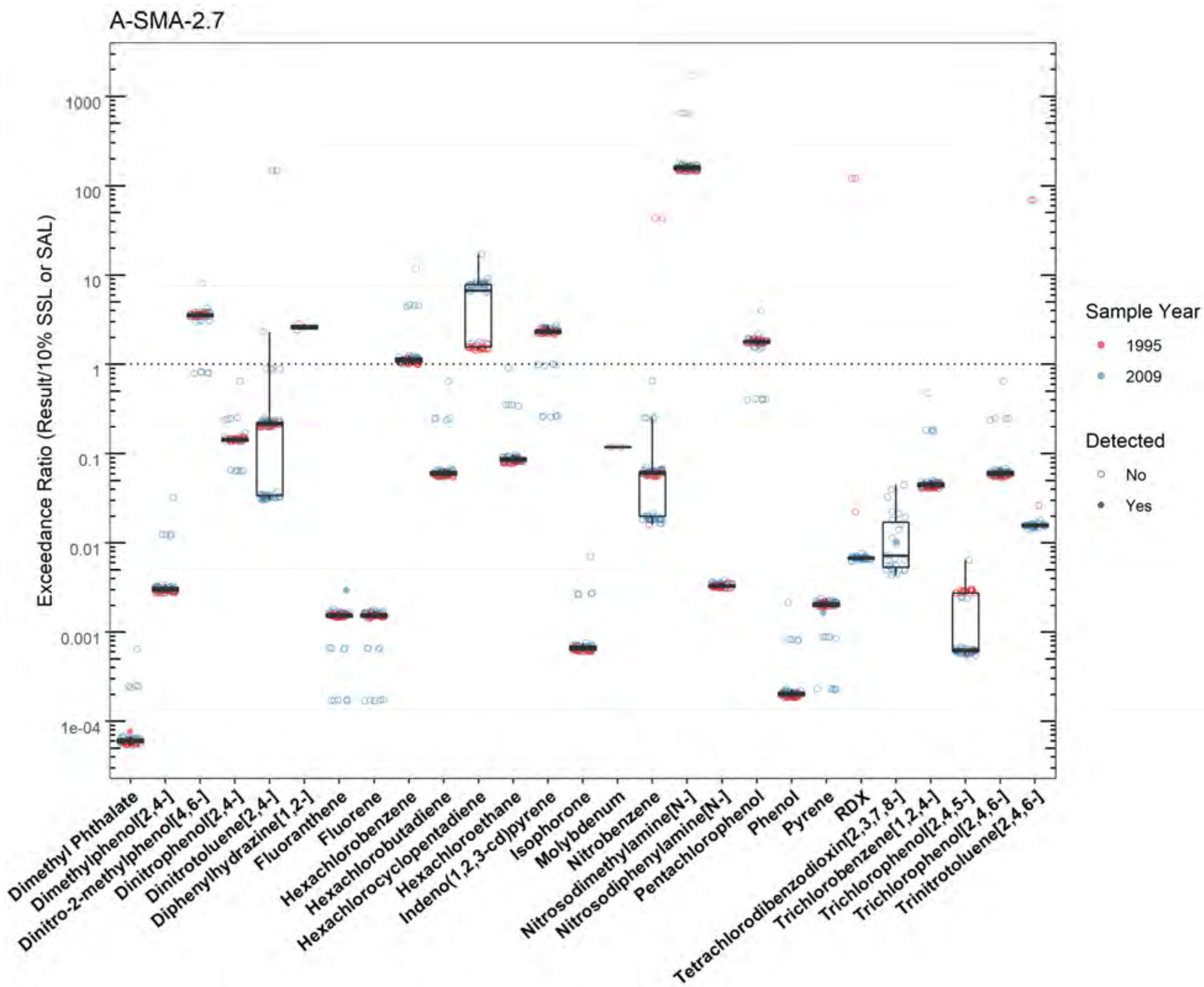


Figure 222.3-3 Organics Analytical Results from Soil Samples Associated with A-SMA-2.7 (Plot 2)

A-SMA-2.7

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	A-SMA-2.7	Sb	Y	BTV	0.830	1.30	2009-02-19
Aroclor-1254	A-SMA-2.7	11097-69-1	Y	SSL_0.1	0.114	1.60	2010-06-03
Benzo(b)fluoranthene	A-SMA-2.7	205-99-2	Y	SSL_0.1	0.153	0.200	2009-02-19
Beryllium	A-SMA-2.7	Be	Y	BTV	1.83	3.70	1995-09-28
Cadmium	A-SMA-2.7	Cd	Y	BTV	0.400	0.966	2009-03-12
Chromium	A-SMA-2.7	Cr	Y	BTV	19.3	111	1995-09-28
Cobalt	A-SMA-2.7	Co	Y	BTV	8.64	18.0	1995-09-28
Copper	A-SMA-2.7	Cu	Y	BTV	14.7	67.4	2009-02-18
Cyanide (Total)	A-SMA-2.7	CN(TOTAL)	Y	BTV	0.500	0.899	2009-03-12
Lead	A-SMA-2.7	Pb	Y	BTV	22.3	1880	1995-10-03
Mercury	A-SMA-2.7	Hg	Y	BTV	0.100	0.138	2009-03-12
Selenium	A-SMA-2.7	Se	Y	BTV	1.52	9.30	1995-09-28
Silver	A-SMA-2.7	Ag	Y	BTV	1.00	100	1995-09-28
Uranium	A-SMA-2.7	U	Y	BTV	1.82	23300	1995-09-28
Zinc	A-SMA-2.7	Zn	Y	BTV	48.8	112	2009-03-12

Figure 222.3-4 Screening-Level Exceedances from Soil Samples Associated with A-SMA-2.7

222.4 Stormwater Evaluation

222.4.1 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 222.4-1 and 222.4-2.

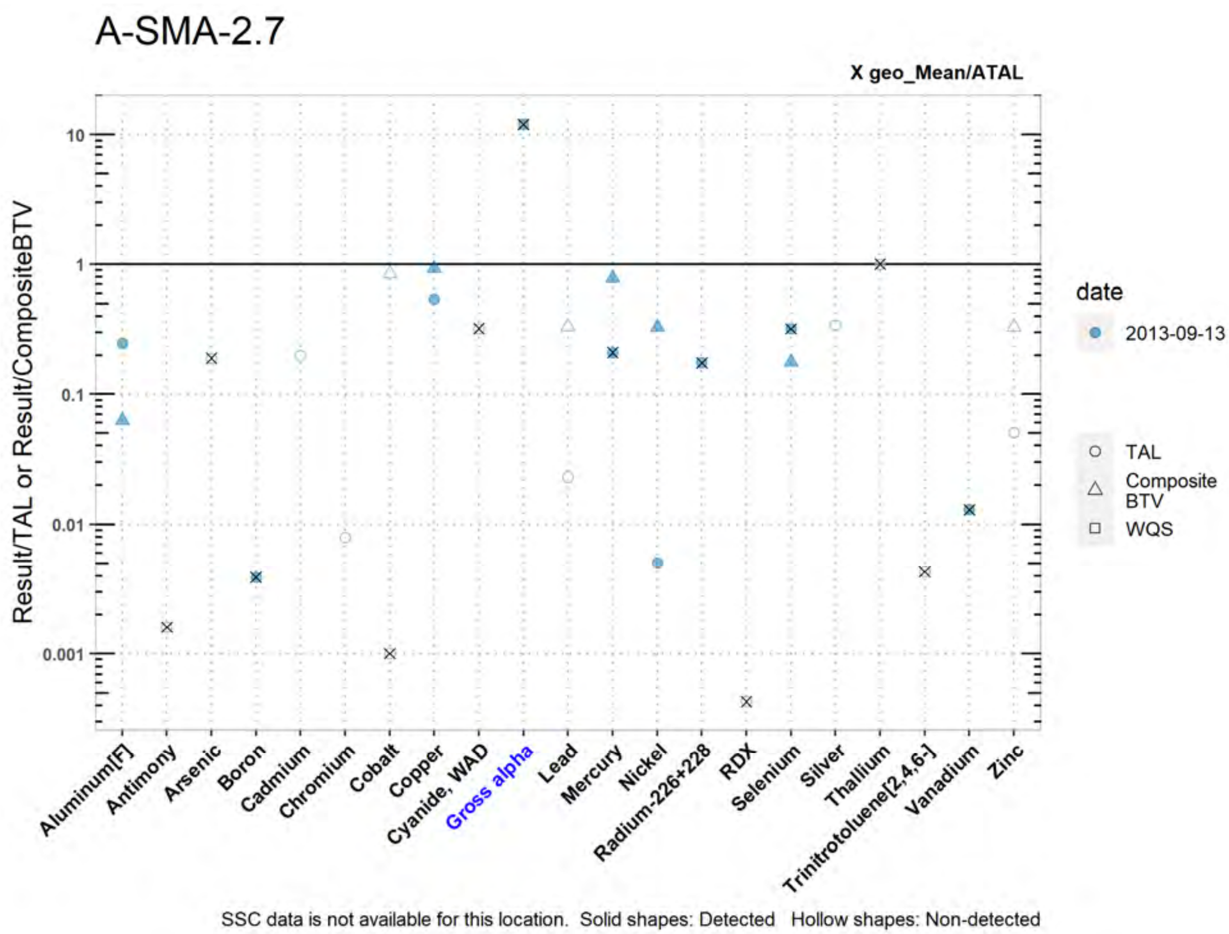


Figure 222.4-1 Analytical Results from Stormwater Sample, A-SMA-2.7 (Plot)

A-SMA-2.7

	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	0.711	253	NA	5.29	22	NA	21.7	NA	203	NA	NA	20	0.587	NA	NA	NA	65.1
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
2013-09-13 result	185	*1.00*	*1.70*	19.5	*0.110*	*2.00*	*1.00*	2.88	*1.67*	175	*0.500*	0.162	1.02	5.24	*0.0856*	1.60	*0.200*	*0.450*	*0.0856*	1.32	*3.30*
2013-09-13 dT	0.247	NA	NA	0.0039	NA	NA	NA	0.544	NA	12	NA	0.21	0.00502	0.175	NA	0.32	NA	NA	NA	0.013	NA
2013-09-13 dB	0.0627	NA	NA	NA	NA	NA	NA	0.923	NA	NA	NA	0.779	0.329	NA	NA	0.178	NA	NA	NA	NA	NA
geo_mean/ATAL	NA	0.0016	0.19	0.0039	NA	NA	0.0010	NA	0.321	12	NA	0.21	NA	0.175	0.00043	0.32	NA	1	0.0043	0.013	NA

Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 222.4-2 Analytical Results from Stormwater Sample, A-SMA-2.7 (Table)

222.4.2 Assessment Unit and Stream Impairments

A-SMA-2.7 drains to North Fork Ancho Canyon (Ancho Canyon to headwaters), which has impairments for PCBs and adjusted gross alpha. The impairments may be Site-related, based on Site history.

222.5 Site-Specific Demonstration

222.5.1 Soil Data Summary

Aroclor-1254, beryllium, and uranium exceeded the applicable screening values in soil data and have not yet been measured in stormwater.

Benzo(b)fluoranthene exceeded the applicable screening value, but is not a Site-related POC and will not be added to the SAP.

The other metals that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs. Therefore, they will not be added to the SAP.

222.5.2 Stormwater Data Summary

Gross alpha exceeded the TAL in 2013 stormwater data; there was no paired SSC result to confirm whether it was below BTVs. Therefore, it will be added to the SAP.

222.5.3 2022 Permit Status

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

222.5.4 Sampling and Analysis Plan

Table 222.5-1 is the proposed SAP for A-SMA-2.7.

Table 222.5-1 Proposed SAP, A-SMA-2.7

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment, Site history, and soil data
Gross alpha	Impairment and Site history
Dissolved beryllium and uranium	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

223.0 A-SMA-2.8

Associated Sites	39-001(b)
Receiving Water	North Ancho Canyon
Drainage Area	0.97 acres
Landscape Characteristics	22% impervious, 78% pervious
Consent Order Site Status	SWMU 39-001(b): 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 September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

223.1 2010 Administratively Continued Permit Summary

Following the February 2011 submittal to EPA of certification of baseline control installation, baseline monitoring was initiated. To date, stormwater flow has not been sufficient for full-volume sample collection. Monitoring is ongoing until one confirmation sample is collected from this SMA.

223.2 Site History

39-001(b) (7/20/2017)

SWMU 39-001(b) is a former landfill that was located east of Ancho Road and structure 39-56 in North Ancho Canyon at TA-39. The 1990 SWMU Report identified the site as consisting of four trenches used in succession. Only the original trench, known as MDA Y, appears in engineering drawings, with dimensions of 148 ft × 20 ft × 12 ft deep. According to the 1990 SWMU Report, the second trench was excavated in parallel with, and west of, MDA Y, with the same dimensions, and a third trench was excavated directly south of MDA Y with dimensions of 150 ft × 40 ft × 10 ft deep. Although a fourth trench was described in the 1990 SWMU Report, it never appeared in any site photographs or engineering drawings, and the reported location of the fourth trench, east of trench 3, is in the Ancho Canyon stream channel.

The 1990 SWMU Report indicated that MDA Y was excavated in the late 1960s; however, engineering drawings indicate that trench 1 was surveyed and excavated in 1973 and used until 1976. Trench 2 was used from approximately 1976 to 1986, and trench 3 was used from 1986 to 1989. All three disposal trenches were backfilled and covered over by May 1989; historical photographs indicate trench 3 was only half full when it was backfilled in 1989.

Wastes disposed of in this landfill included firing-site debris consisting of metal, cabling, and wire, empty chemical containers, glass, wood, plastics, Styrofoam, concrete, and office waste. Waste disposed of in disposal trench 1 prior to 1976 may have included heavy metals, PCB-containing oils, HE, thorium isotopes, natural and DU, and solvents.

Based on the results of the 1993 geophysical survey, the 1997 RFI concluded that this landfill was more amorphous than the three distinct disposal trenches that had been previously reported. Excavation activities associated with the 2009 Phase I Consent Order field investigation confirmed a solitary, irregularly shaped disposal trench coincident with the anomalies identified by the 1997 RFI geophysical survey. SWMU 39-001(b) was completely excavated during the 2009 Phase I Consent Order investigation.

For investigation activities, refer to "Investigation Report for North Ancho Canyon Aggregate Area Revision 1" (LANL 2010, 108500.11).

223.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 223.2-1.

Table 223.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
39-001(b)	MDA Y	Beryllium, lead, mercury, PCBs, HE, uranium

223.3 Consent Order Soil Data

Decision-level data for SWMU 39-001(b) consist of results from samples collected in 2009. These results are presented in Figures 223.3-1 to 223.3-4. The 2010 IR (LANL 2010, 108500.11) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted. This Site does not pose a potential unacceptable risk or dose under the residential scenario, and poses no potential ecological risk.

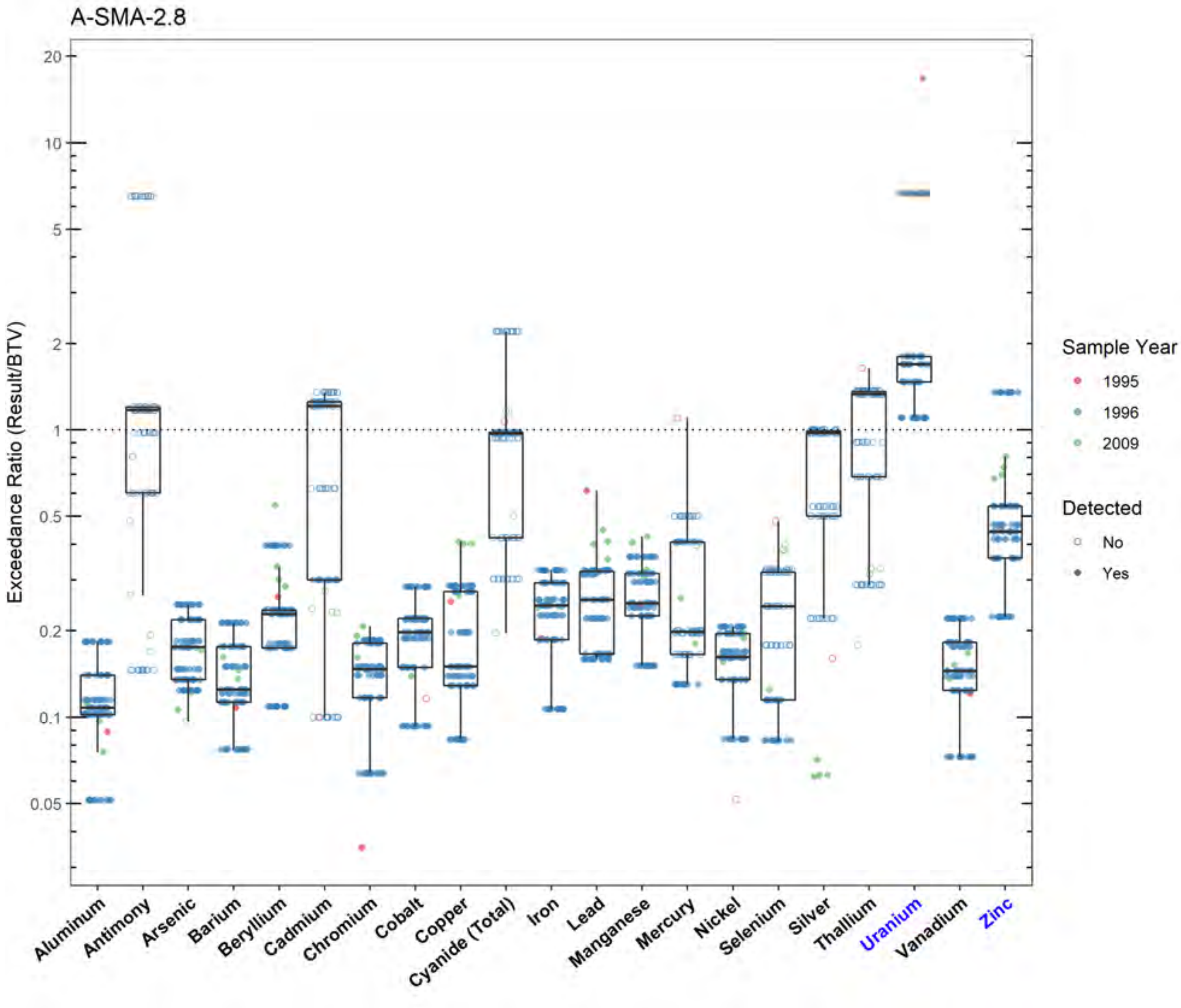


Figure 223.3-1 Inorganics Analytical Results from Soil Samples Associated with A-SMA-2.8

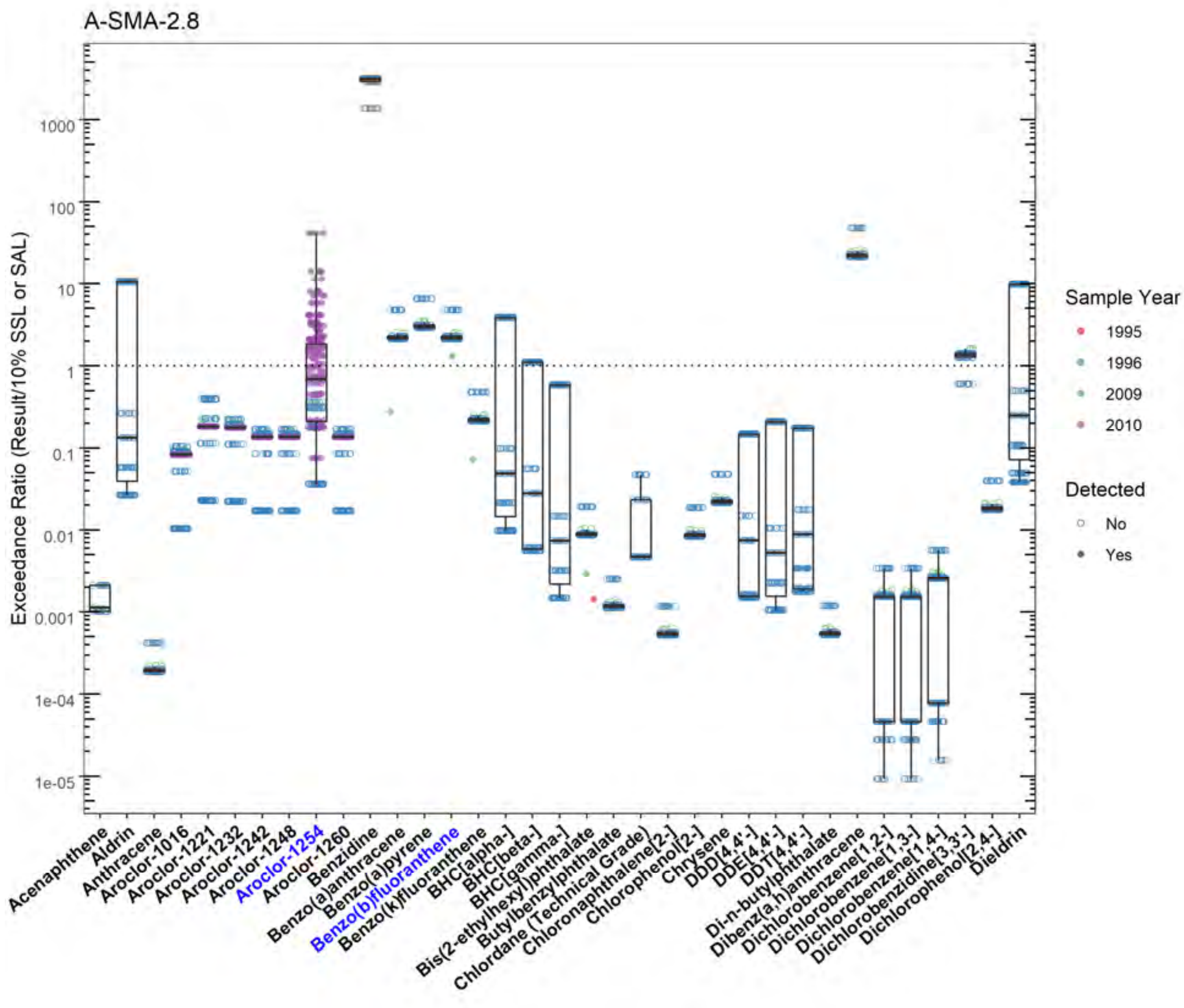


Figure 223.3-2 Organics Analytical Results from Soil Samples Associated with A-SMA-2.8 (Plot 1)

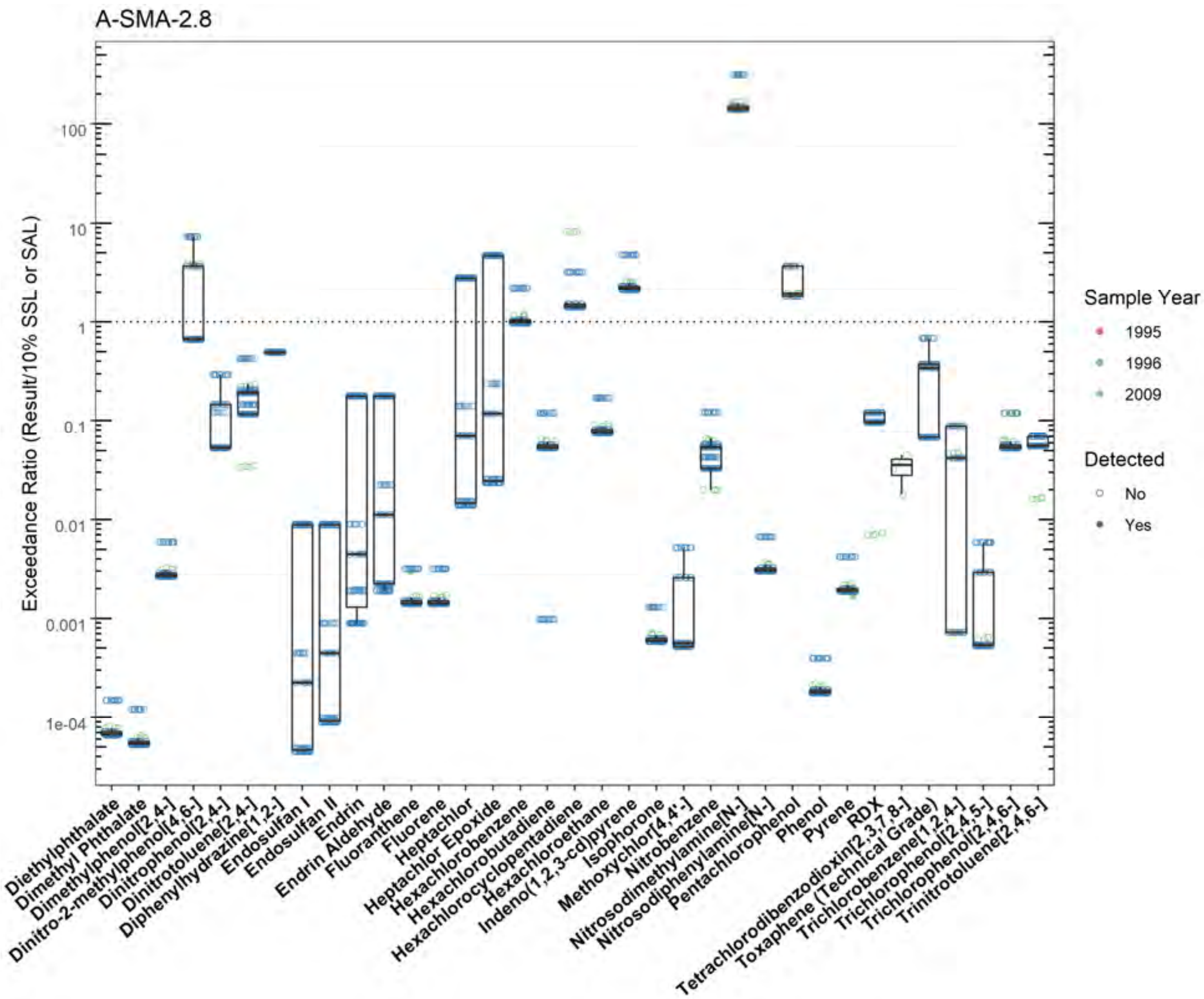


Figure 223.3-3 Organics Analytical Results from Soil Samples Associated with A-SMA-2.8 (Plot 2)

A-SMA-2.8

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1254	A-SMA-2.8	11097-69-1	Y	SSL_0.1	0.114	4.70	2010-06-03
Benzo(b)fluoranthene	A-SMA-2.8	205-99-2	Y	SSL_0.1	0.153	0.200	2009-02-19
Uranium	A-SMA-2.8	U	Y	BTV	1.82	30.5	1995-10-03
Zinc	A-SMA-2.8	Zn	Y	BTV	48.8	65.7	1996-03-04

Figure 223.3-4 Screening-Level Exceedances from Soil Samples Associated with A-SMA-2.8

223.4 Stormwater Evaluation

223.4.1 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.

223.4.2 Assessment Unit and Stream Impairments

A-SMA-2.8 drains to North Fork Ancho Canyon (Ancho Canyon to headwaters), which has impairments for PCBs and adjusted gross alpha. The impairments may be Site-related, based on Site history.

223.5 Site-Specific Demonstration

223.5.1 Soil Data Summary

Aroclor-1254 and uranium are Site-related POCs that exceeded the applicable screening values in soil data and have not yet been measured in stormwater. Benzo(b)fluoranthene and zinc exceeded the applicable screening values, but are not Site-related POCs and will not be added to the SAP. Beryllium, lead, and HE are Site-related POCs but did not exceed the applicable screening values in soil data and will not be added to the SAP.

223.5.2 Stormwater Data Summary

No confirmation-monitoring data.

223.5.3 2022 Permit Status

The SMA is in active monitoring; no confirmation-monitoring sample has been collected.

223.5.4 Sampling and Analysis Plan

Table 223.5-1 is the proposed SAP for A-SMA-2.8.

Table 223.5-1 Proposed SAP, A-SMA-2.8

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

224.0 A-SMA-3

Associated Sites	39-002(b), 39-004(c)
Receiving Water	North Ancho Canyon
Drainage Area	200.42 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	AOC 39-002(b): In Progress SWMU 39-004(c): In Progress Deferred per Consent Order
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

224.1 2010 Administratively Continued Permit Summary

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

Following the September 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600909), corrective-action monitoring was initiated and a stormwater sample was collected in August 2018. Analytical results from this sample initiated corrective action.

Following the December 2021 submittal to EPA of certification of enhanced control installation as a corrective action (N3B 2021, 701797), 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. Corrective-action monitoring is ongoing until at least one confirmation sample is collected from this SMA.

224.2 Site History

39-002(b) (8/25/2017)

AOC 39-002(b) is a former SAA that was located on a 5-ft × 5-ft concrete pad adjacent to a firing site support building (structure 39-6) [SWMU 39-004(c)] at TA-39. In accordance with RCRA, SAA provisions allow generators to accumulate up to 55 gal. of hazardous waste (or 1 quart of acute hazardous waste) in containers, as long as those containers are (a) at or near any point of generation, (b) under the control of the operator, and (c) kept closed except when adding or removing waste.

Beginning in 1953, the area was used to store small quantities of paper contaminated with waste solvents (ethanol, acetone, and trichloroethane), copper sulfate, transformer oil, vacuum pump grease, and photographic waste. The date when the SAA was established is not known; however, the SAA was removed from service in 1993. The concrete pad is intact; no staining is visible on the pad. AOC 39-002(b) is located within the blast radius of active firing site [SWMU 39-004(c)].

39-004(c) (8/25/2017)

SWMU 39-004(c) is an active firing site and active operating RCRA OD Site (structure 39-6), subject to RCRA closure requirements. The site is located in the southernmost western tributary of Ancho Canyon in the canyon bottom, between an ephemeral stream and steep hill slopes to both the north and south. The site is used for explosives experiments and for treating reactive hazardous waste by OD. The experiments conducted at this firing site are designed to expend all HE in the device.

Use of this site as a test-firing site began when TA-39 was established in 1953. Materials used in significant quantities at the TA-39 firing sites over the years include beryllium, mercury, natural and DU, lead, aluminum, copper, brass, iron, stainless steel, and various types of HE. Other materials used at TA-39 firing sites in lesser quantities include thallium, cadmium, chromium, and thorium (as naturally-occurring thorium-232). In addition, firing assemblies were covered with dielectric oil (about 100 gal. per shot), much of which ended up in the soil of the firing pad. This oil may have contained PCBs.

For investigation activities for AOC 39-002(b), refer to "Phase II Investigation Work Plan for North Ancho Canyon Aggregate Area Revision 1" (LANL 2011, 201561). For investigation activities at SWMU 39-004(c), refer to "Investigation Report for North Ancho Canyon Aggregate Area, Revision 1" (LANL 2010, 108500.11).

224.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 224.2-1.

Table 224.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
39-002(b)	Storage area	Silver, cyanide, PCBs
39-004(c)	Firing site	Aluminum, beryllium, cadmium, chromium, copper, lead, mercury, thallium, PCBs, HE, uranium

224.3 Consent Order Soil Data

No decision-level data are available for AOC 39-002(b). However, decision-level data from samples collected from locations within a tributary drainage channel downgradient of the Site are available to determine if contamination is migrating from the Site. The approved 2010 IR (LANL 2011, 201561) concluded that the nature and extent of all detected chemicals and radionuclides are defined in the drainage downgradient of AOC 39-002(b).

Decision-level data for SWMU 39-004(c) consist of results from samples collected in 1995 and 2009. These results are presented in Figures 224.3-1 to 224.3-4. The approved IR (LANL 2011, 201561) concluded that the extent of detected inorganic and organic chemicals and radionuclides is not defined at the Site; however, results of the preliminary characterization indicated that contaminants are not migrating off-site.

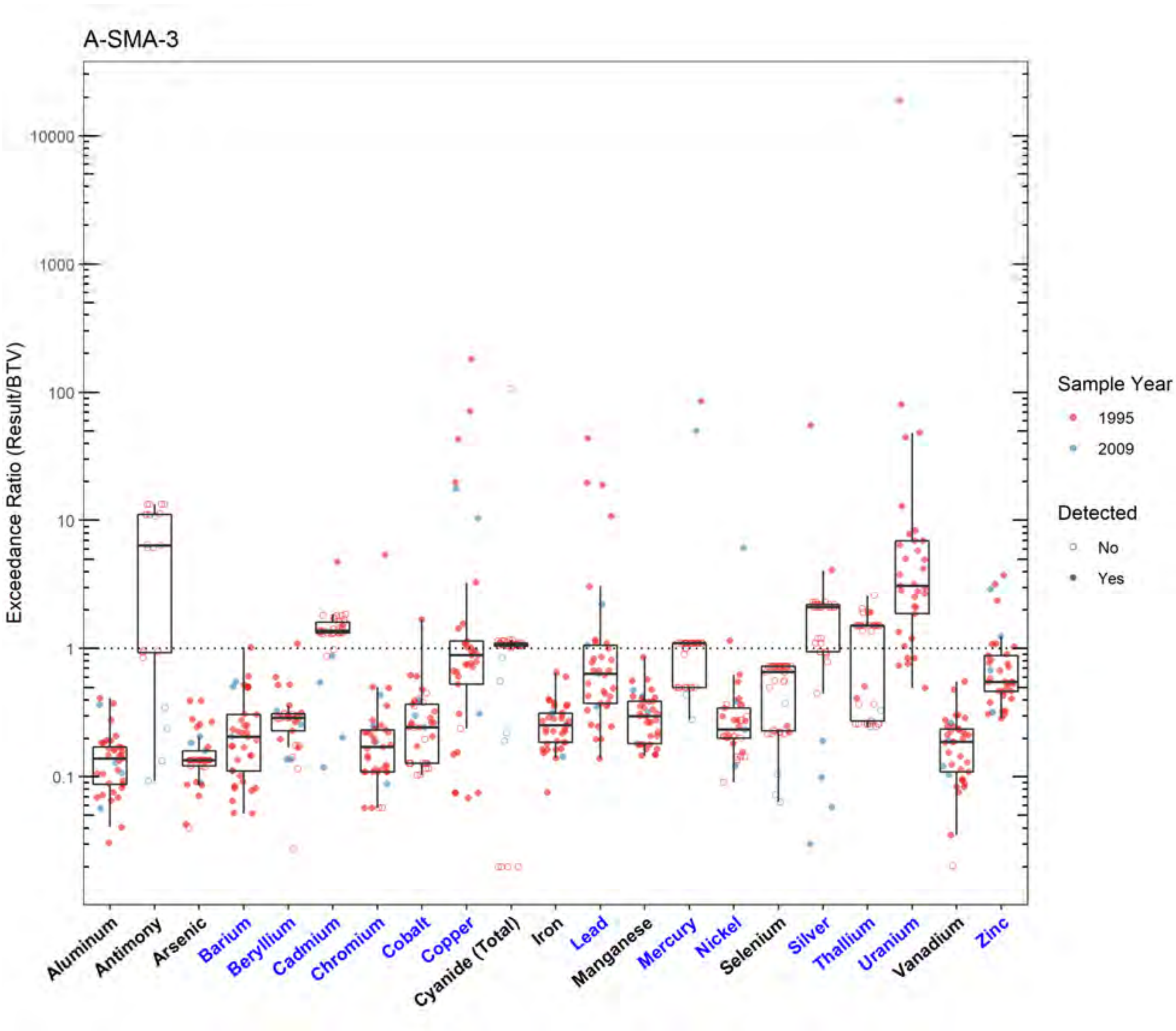


Figure 224.3-1 Inorganics Analytical Results from Soil Samples Associated with A-SMA-3

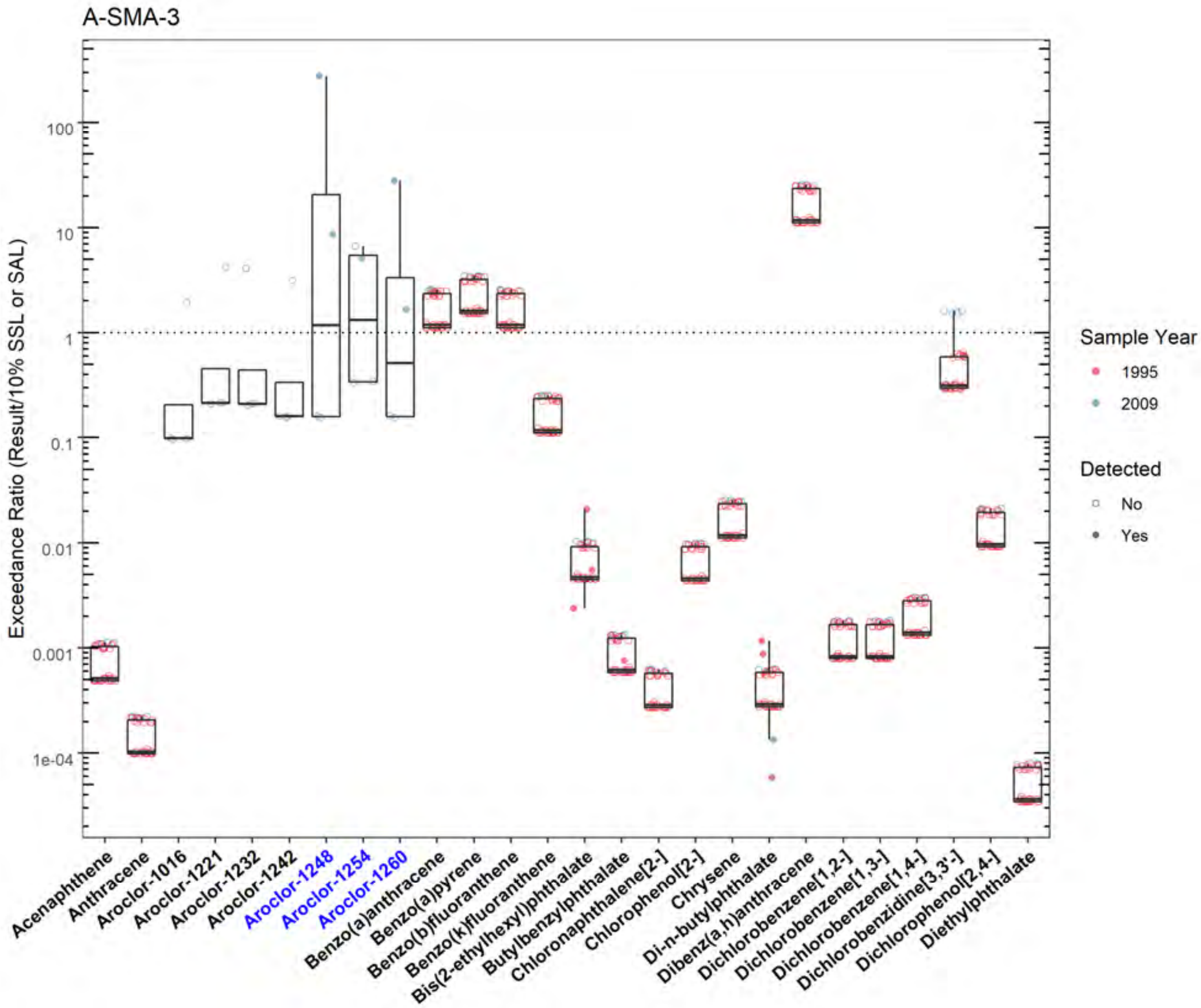


Figure 224.3-2 Organics Analytical Results from Soil Samples Associated with A-SMA-3 (Plot 1)

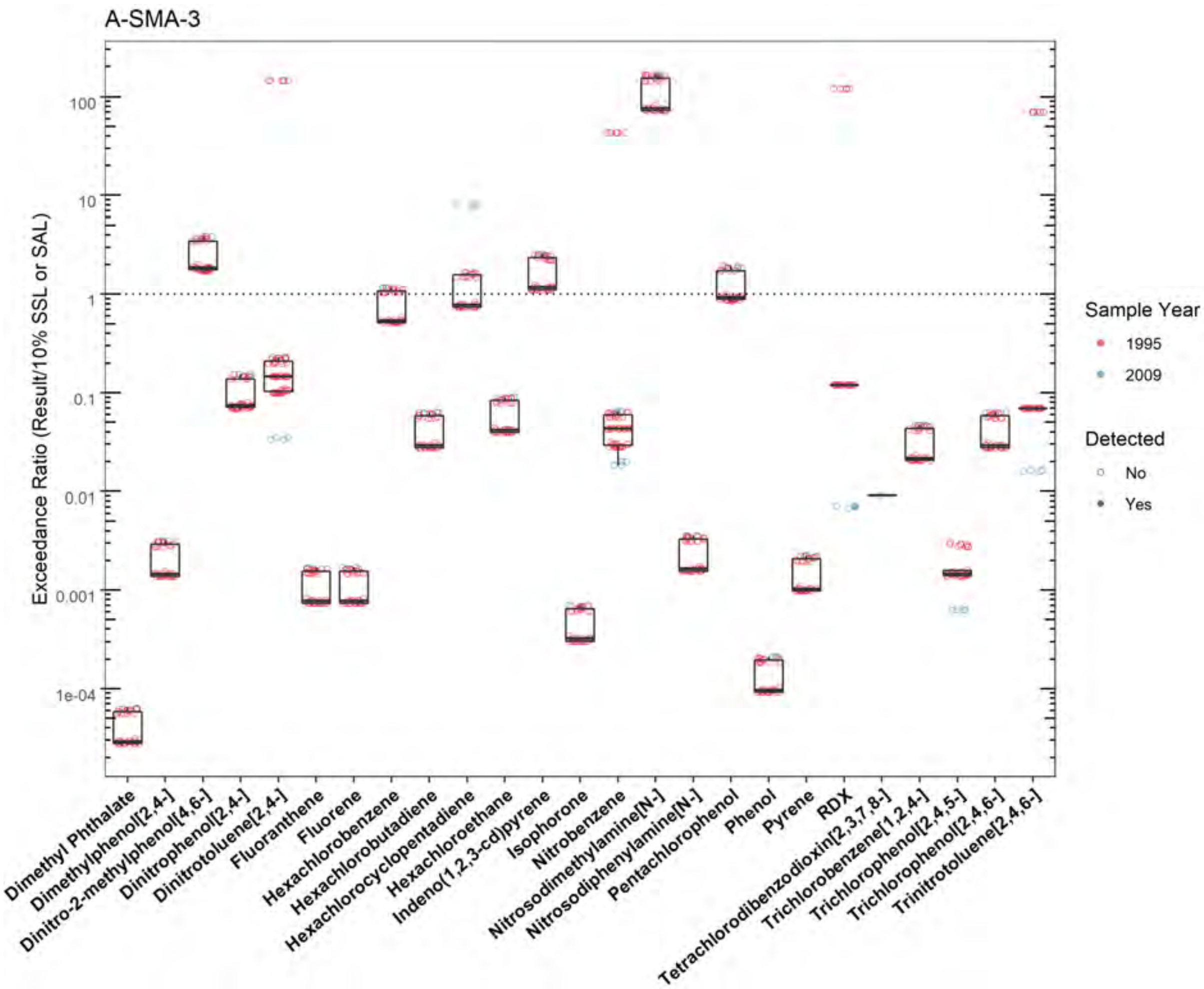


Figure 224.3-3 Organics Analytical Results from Soil Samples Associated with A-SMA-3 (Plot 2)

A-SMA-3

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Aroclor-1248	A-SMA-3	12672-29-6	Y	SSL_0.1	0.243	67.0	2009-03-13
Aroclor-1254	A-SMA-3	11097-69-1	Y	SSL_0.1	0.114	0.580	2009-03-13
Aroclor-1260	A-SMA-3	11096-82-5	Y	SSL_0.1	0.243	6.80	2009-03-13
Barium	A-SMA-3	Ba	Y	BTV	295	302	1995-08-15
Beryllium	A-SMA-3	Be	Y	BTV	1.83	2.00	1995-08-15
Cadmium	A-SMA-3	Cd	Y	BTV	0.400	1.90	1995-08-15
Chromium	A-SMA-3	Cr	Y	BTV	19.3	104	1995-08-15
Cobalt	A-SMA-3	Co	Y	BTV	8.64	14.5	1995-08-15
Copper	A-SMA-3	Cu	Y	BTV	14.7	2640	1995-08-15
Lead	A-SMA-3	Pb	Y	BTV	22.3	978	1995-08-15
Mercury	A-SMA-3	Hg	Y	BTV	0.100	8.50	1995-08-15
Nickel	A-SMA-3	Ni	Y	BTV	15.4	94.9	2009-03-13
Silver	A-SMA-3	Ag	Y	BTV	1.00	55.1	1995-08-15
Thallium	A-SMA-3	Tl	Y	BTV	0.730	1.40	1995-08-15
Uranium	A-SMA-3	U	Y	BTV	1.82	34500	1995-08-15
Zinc	A-SMA-3	Zn	Y	BTV	48.8	183	1995-08-15

Figure 224.3-4 Screening-Level Exceedances from Soil Samples Associated with A-SMA-3

224.4 Stormwater Evaluation

224.4.1 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.

224.4.2 Assessment Unit and Stream Impairments

A-SMA-3 drains to North Fork Ancho Canyon (Ancho Canyon to headwaters), which has impairments for PCBs and adjusted gross alpha. The impairments may be Site-related, based on Site history.

224.5 Site-Specific Demonstration

224.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data, but have not yet been measured in stormwater at the current monitoring location: Aroclor-1248, Aroclor-1254, Aroclor-1260, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, silver, thallium, uranium, and zinc.

Barium, cobalt, nickel, and zinc exceeded the applicable screening values in soil data, but are not Site-related POCs. Therefore, they will not be added to the SAP.

224.5.2 Stormwater Data Summary

No confirmation-monitoring data.

224.5.3 2022 Permit Status

The SMA is in active monitoring; no confirmation-monitoring sample has been collected at the current location.

224.5.4 Sampling and Analysis Plan

Table 224.5-1 is the proposed SAP for A-SMA-3.

Table 224.5-1 Proposed SAP, A-SMA-3

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment, Site history, and soil data
Gross alpha	Impairment and Site history (uranium)
Dissolved beryllium, cadmium, chromium, copper, lead, silver, thallium, and uranium	Site history and soil data
Total mercury	Site history and soil data
DOC	Permit requirement
SSC	Permit requirement

225.0 A-SMA-3.5

Associated Sites	39-006(a)
Receiving Water	South Ancho Canyon
Drainage Area	0.002 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 39-006(a): In Progress Deferred per Consent Order
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended*
2016–2018 SIP Actions	Based on the September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Long-Term Stewardship per Permit Part I.C.3 criterion

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

225.1 2010 Administratively Continued Permit Summary

Following the February 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in July 2013. This sample had no TAL exceedances, and stormwater monitoring ceased until 2020. Baseline-confirmation monitoring resumed in 2020 and is ongoing to attempt to collect a second sample with all results below the applicable MTAL or ATAL, potentially allowing the Permittees to make a Site deletion request per Permit part I.I.2.

225.2 Site History

39-006(a) (12/21/2021)

SWMU 39-006(a) consists of a septic system with inactive and active components, located east and south of former building 39-2 at TA-39. The 1990 SWMU Report describes SWMU 39-006(a) as an active septic system consisting of a septic tank (structure 39-104), a former septic tank (former structure 39-12), inlet and outlet drainlines, a siphon box, distribution boxes, a subsurface sand filter, and a former outfall that served as a sanitary waste system for former building 39-2.

The original/inactive portion of the septic system was constructed in 1952. It consisted of a septic tank (former structure 39-12) measuring approximately 12 ft long × 7 ft wide × 6 ft deep, 4-in.- and 6-in.-diameter VCP inlet and outlet drainlines, a subsurface sand filter, three manholes (structures 39-85, 39-86, and 39-87), and an outfall located approximately 225 ft south of the original subsurface sand filter. The septic tank was located 100 ft east of former building 39-2 and was connected to a sand filter north of NM State Road 4. The sand filter discharged to an outfall south of NM State Road 4 in North Ancho Canyon.

The system received discharges from building 39-2, as shown in as-constructed drawing ENG-C 42762 (p. 17 of 18) and engineering drawing ENG-R 1437 (p. 15 of 15). Photographic-processing chemicals from former building 39-2 were routinely discharged to former septic tank 39-12, eventually causing the septic tank to malfunction. To correct the problem, a chemical seepage pit was installed directly north of former septic tank 39-12 in 1973 to manage the photographic-processing chemicals. The chemical seepage pit consisted of an open pit approximately 12 ft deep and filled with cobble as shown in engineering drawing ENG-C 44331 (p. 2 of 4). A CMP approximately 1 ft in diameter runs vertically through the center of the seepage pit. The seepage pit handled approximately 75 gal./yr until 1992.

In 1973, the entire septic system was upgraded when the septic tank (former structure 39-12) was enlarged to an 1860-gal. capacity, and a new subsurface sand filter and outfall were installed on the south side of NM State Road 4; use of the original subsurface sand filter and outfall were discontinued at that time. The 1975 Zia Company Drawing for TA-39 (Sheet S-7), as-constructed drawing ENG-C 42762 (p. 17 of 18), and the 1991 orthographic photo show the upgraded septic system, consisting of the expanded septic tank (former structure 39-12), 4-in. and 6-in. VCP inlet and outlet drainlines, siphon box, two distribution boxes, a new subsurface sand filter, three manholes (structures 39-85, 39-86, and 39-87), and a new outfall located south of NM State Road 4.

In 1984, the original septic tank (former structure 39-12) was abandoned and a new 2400-gal.-capacity septic tank (structure 39-104) was installed, as shown on engineering drawings ENG-C 44331 (p. 2 of 4), ENG-C 45423 (p. 3 of 23), ENG-C 45423 (p. 14 of 23), the 1993 RFI Work Plan (Figure 5-17), and the LANL KSL Utility GIS layer. The newly installed septic tank served former buildings 39-2, 39-100, 39-103, 39-107, and 39-101, and buildings 39-62 and 39-98, and discharged to the subsurface sand filter and the outfall located south of NM State Road 4.

Septic tank 39-104, the new sand filter south of NM State Road 4, and the still-active drainlines are part of the SWMU 39-006(a) active components. In 1989, the 6-in. VCP outlet from the new sand filter was plugged, eliminating the discharge to the outfall. Buildings 39-2, 39-100, 39-101, 39-103, and 39-107 underwent D&D and were removed from TA-39 at various dates. Buildings 39-62 and 39-98 remain in place. The original/inactive septic tank (former structure 39-12), inactive chemical seepage pit, and the original subsurface sand filter were removed during 2009 Phase I Consent Order investigation field activities.

For investigation activities, refer to “Phase II investigation Work Plan for North Ancho Canyon Aggregate Area Revision 1” (LANL 2011, 201561).

225.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 225.2-1.

Table 225.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
39-006(a)	Septic system	Silver, inorganic and organic chemicals, cyanide

225.3 Consent Order Soil Data

Decision-level data for the inactive components of SWMU 39-006(a) consist of results from samples collected in 1996 and 2009. The IR (LANL 2011, 201561) concluded that the nature and extent of contamination have been defined except for the vertical extent of cadmium, cyanide, silver, and tritium.

Decision-level data for the active components of SWMU 39-006(a) consist of results for seven samples collected from four locations in 2009 at the sand filter outfall and downgradient of the outfall. These results are presented in Figures 225.3-1 to 225.3-4. The IR (LANL 2011, 201561) concluded that the nature and extent of contamination have been defined and no further sampling for extent is warranted.

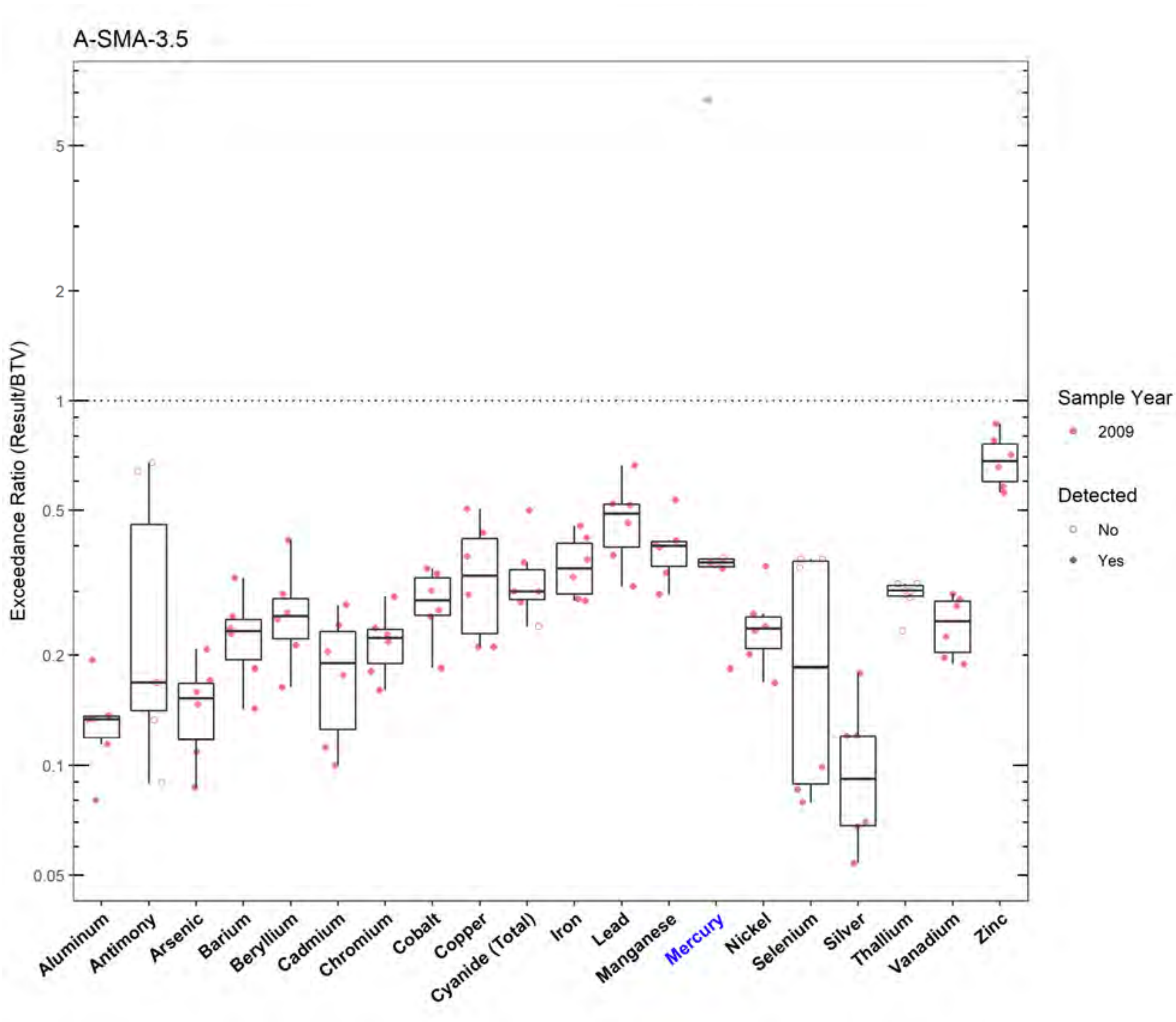


Figure 225.3-1 Inorganics Analytical Results from Soil Samples Associated with A-SMA-3.5

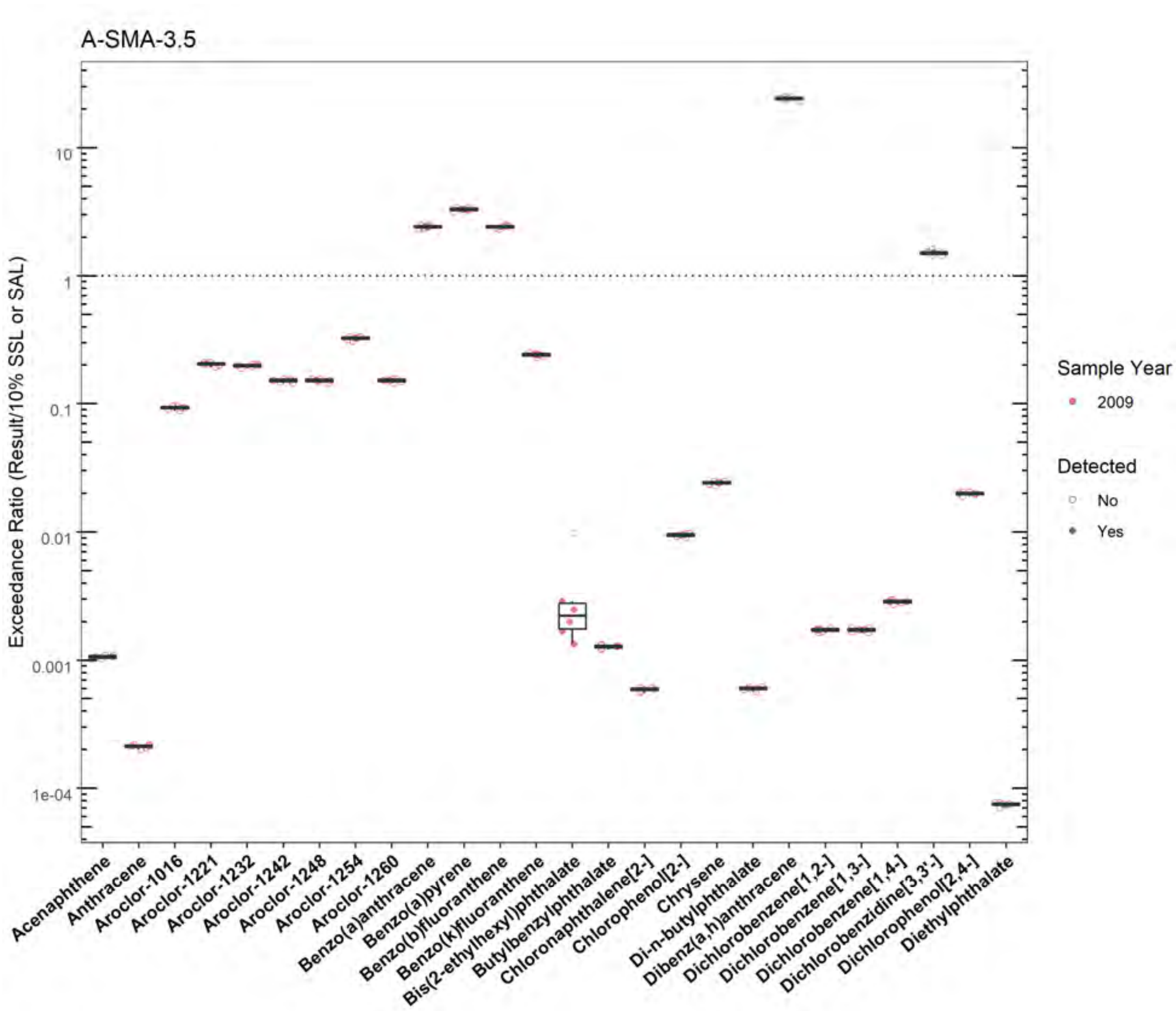


Figure 225.3-2 Organics Analytical Results from Soil Samples Associated with A-SMA-3.5 (Plot 1)

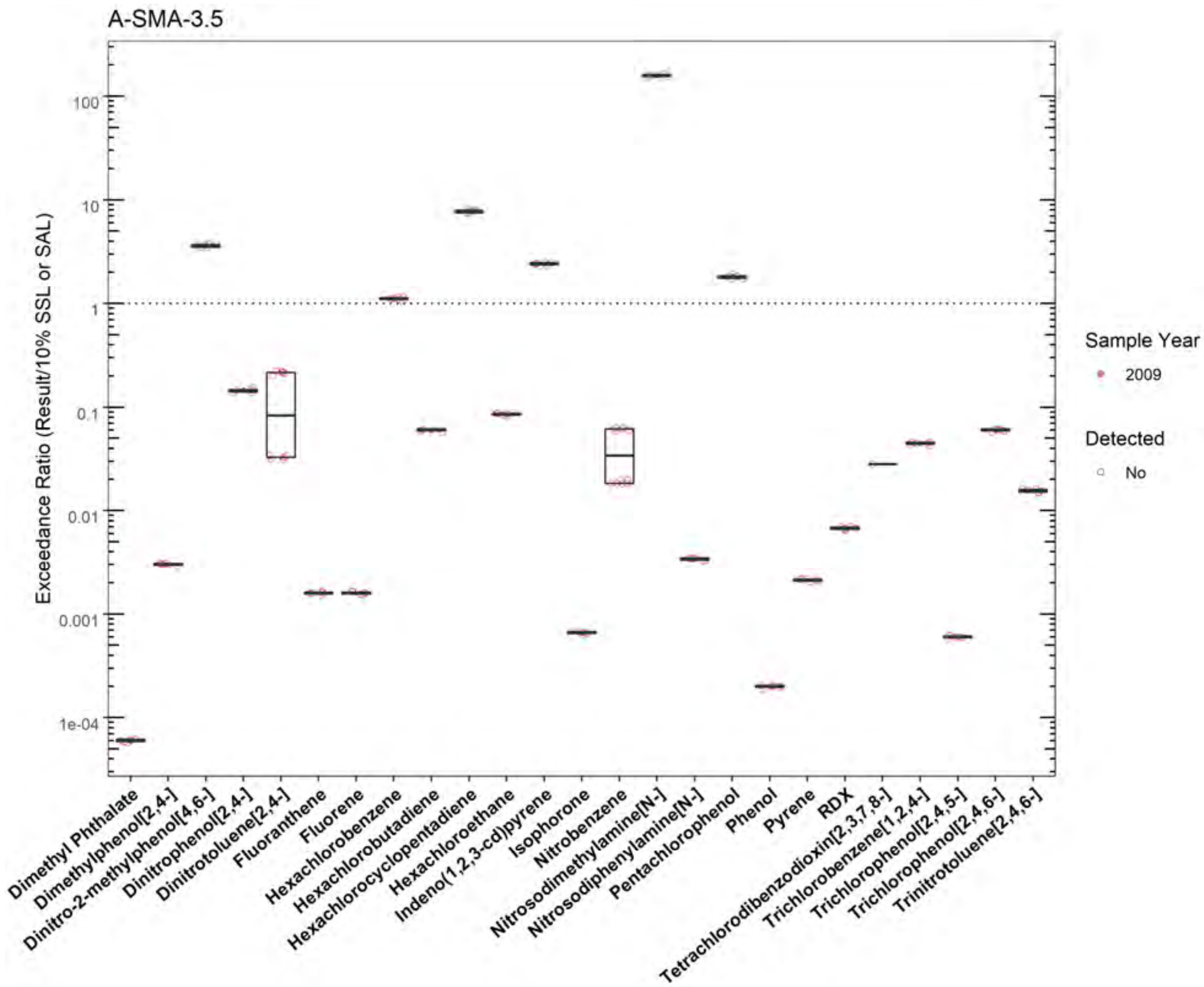


Figure 225.3-3 Organics Analytical Results from Soil Samples Associated with A-SMA-3.5 (Plot 2)

A-SMA-3.5

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Mercury	A-SMA-3.5	Hg	Y	BTV	0.100	0.669	2009-03-31

Figure 225.3-4 Screening-Level Exceedances from Soil Samples Associated with A-SMA-3.5

225.4 Stormwater Evaluation

225.4.1 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 225.4-1 and 225.4-2.

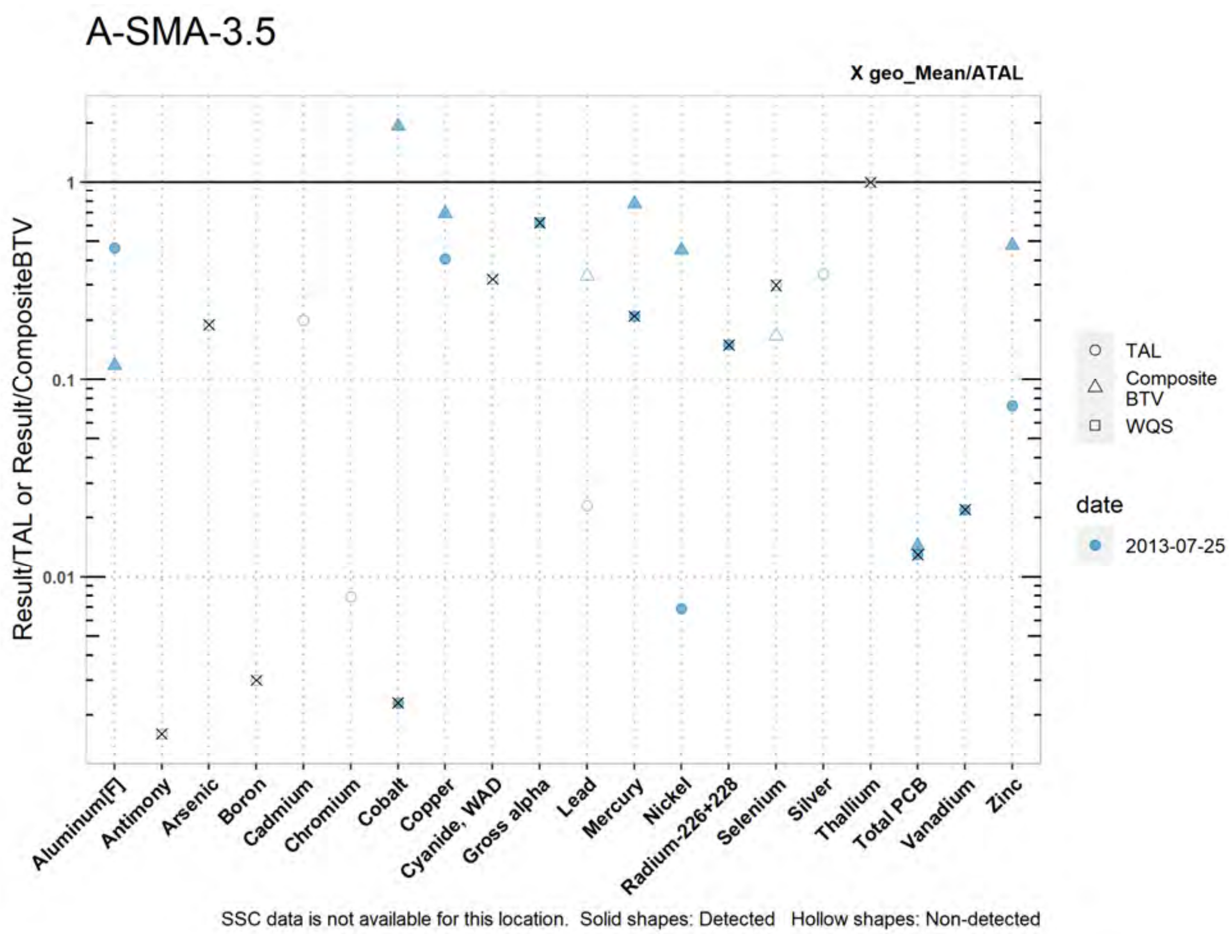


Figure 225.4-1 Analytical Results from Stormwater Sample, A-SMA-3.5 (Plot)

A-SMA-3.5

	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	0.711	253	NA	5.29	22	NA	21.7	NA	203	NA	20	0.587	NA	NA	NA	65.1
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	0.0122	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
2013-07-25 result	347	*1.00*	*1.70*	*15.0*	*0.110*	*2.00*	2.27	2.15	*1.67*	9.37	*0.500*	0.161	1.40	4.49	*1.50*	*0.200*	*0.450*	0.000176	2.16	4.77
2013-07-25 dT	0.463	NA	NA	NA	NA	NA	0.0023	0.406	NA	0.62	NA	0.21	0.00690	0.150	NA	NA	NA	0.013	0.022	0.0733
2013-07-25 dB	0.118	NA	NA	NA	NA	NA	1.92	0.689	NA	NA	NA	0.774	0.452	NA	NA	NA	NA	0.0144	NA	0.477
geo_mean/ATAL	NA	0.0016	0.19	0.0030	NA	NA	0.0023	NA	0.321	0.62	NA	0.21	NA	0.150	0.30	NA	1	0.013	0.022	NA

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

Figure 225.4-2 Analytical Results from Stormwater Sample, A-SMA-3.5 (Table)

225.4.2 Assessment Unit and Stream Impairments

A-SMA-3.5 drains to Ancho Canyon (Above Ancho Springs to North Fork Ancho), which has impairments for PCBs and total mercury. The impairments may be Site-related, based on Site history.

225.5 Site-Specific Demonstration

225.5.1 Soil Data Summary

Mercury exceeded the applicable screening value in soil data. However, it was previously monitored in stormwater data and did not exceed the TAL, therefore it will not be added to the SAP.

225.5.2 Stormwater Data Summary

No TAL exceedances.

225.5.3 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 permit Part 1.C.3.

226.0 A-SMA-4

Associated Sites	33-010(d)
Receiving Water	South Ancho Canyon
Drainage Area	0.64 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 33-010(d): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	The February 2018 field visit determined that the current SMA sampler location encompassed soil sampling locations in the area of this SWMU and stormwater from where industrial materials were known or potentially managed. The SIP team decided that BMP controls would be modified to encourage flow to the current sampler location. Therefore, the sampler was not moved. On July 23, 2018, prior to BMP modifications, the automated sampler collected a stormwater sample with results exceeding TAL(s), and N3B determined that modification of BMP controls to encourage flow to the sampler was no longer necessary.
2022 Permit Status	Active Monitoring

226.1 2010 Administratively Continued Permit Summary

Following the February 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in July 2018. 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 October 2020 (N3B 2020, 701098). No response has been received from EPA, and stormwater monitoring has not occurred since 2018.

226.2 Site History

33-010(d) (12/21/2021)

SWMU 33-010(d) is a former canyon-side disposal area situated in the northeastern portion of East Site at TA-33. This site is an area formerly scattered with debris from East Site firing sites, and is located on a steep slope directly north of the former gun-firing site berms [SWMU 33-006(b)]. Debris scattered along the canyon rim and in a small drainage leading to Ancho Canyon consisted of concrete blocks, empty glass specimen vials, pieces of foam, cable, and metal cans. The date this debris was deposited at the site is not known; however, operations at East Site occurred between 1948 and 1972. Much of the debris was removed from SWMU 33-010(d) during the 1984 surface cleanup of East Site.

For investigation activities, refer to “Investigation Report for South Ancho Canyon Aggregate Area” (N3B 2021, 701686).

226.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 226.2-1.

Table 226.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
33-010(d)	Surface disposal site	Metals, organic chemicals, radionuclides

226.3 Consent Order Soil Data

Decision-level data for SWMU 33-010(d) consist of results from samples collected in 2020. Analytical results from those samples are presented in Figures 226.3-1 to 226.3-4. The 2021 IR (N3B 2021, 701686) concluded that the nature and extent of contamination have been defined.

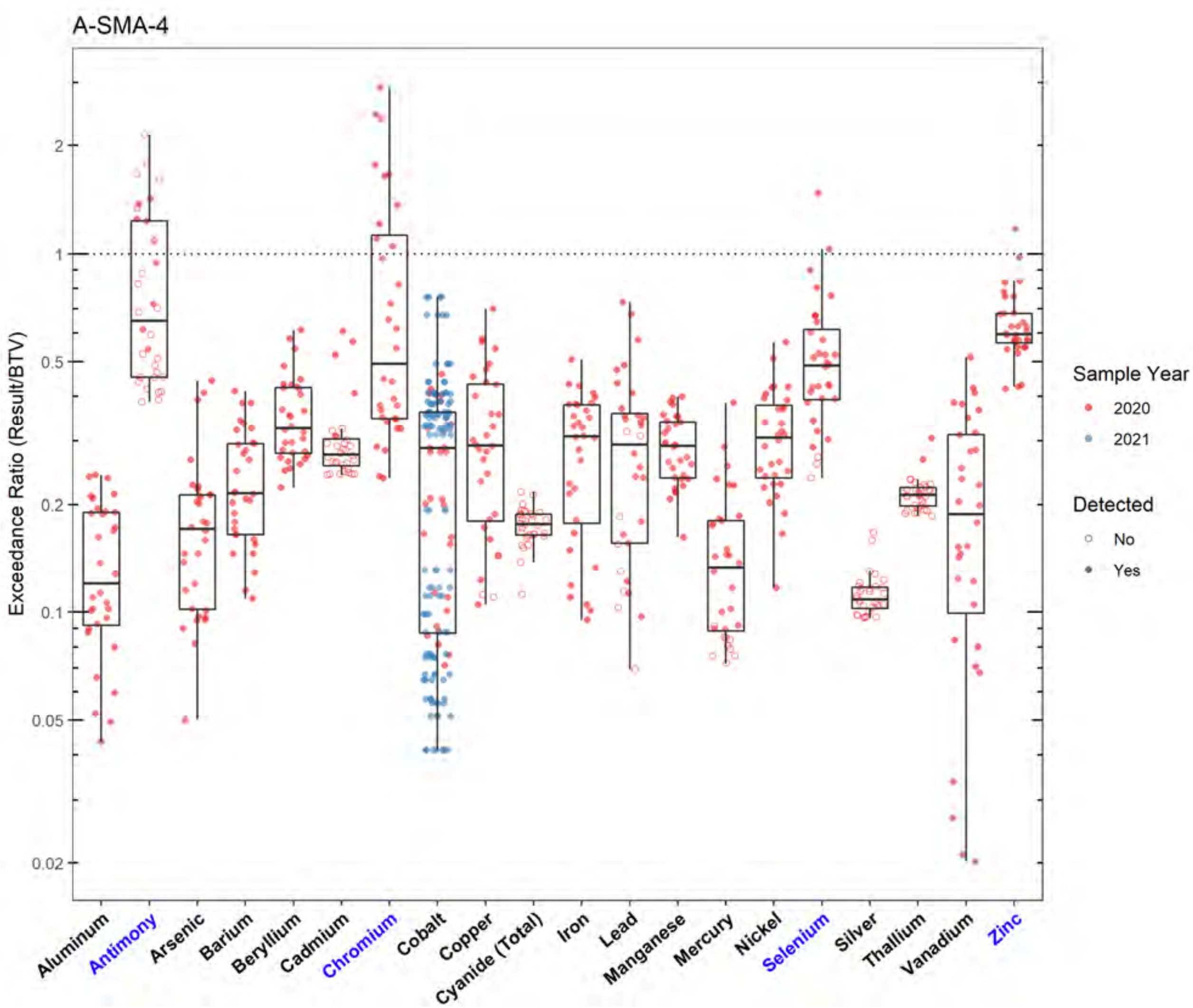


Figure 226.3-1 Inorganics Analytical Results from Soil Samples Associated with A-SMA-4

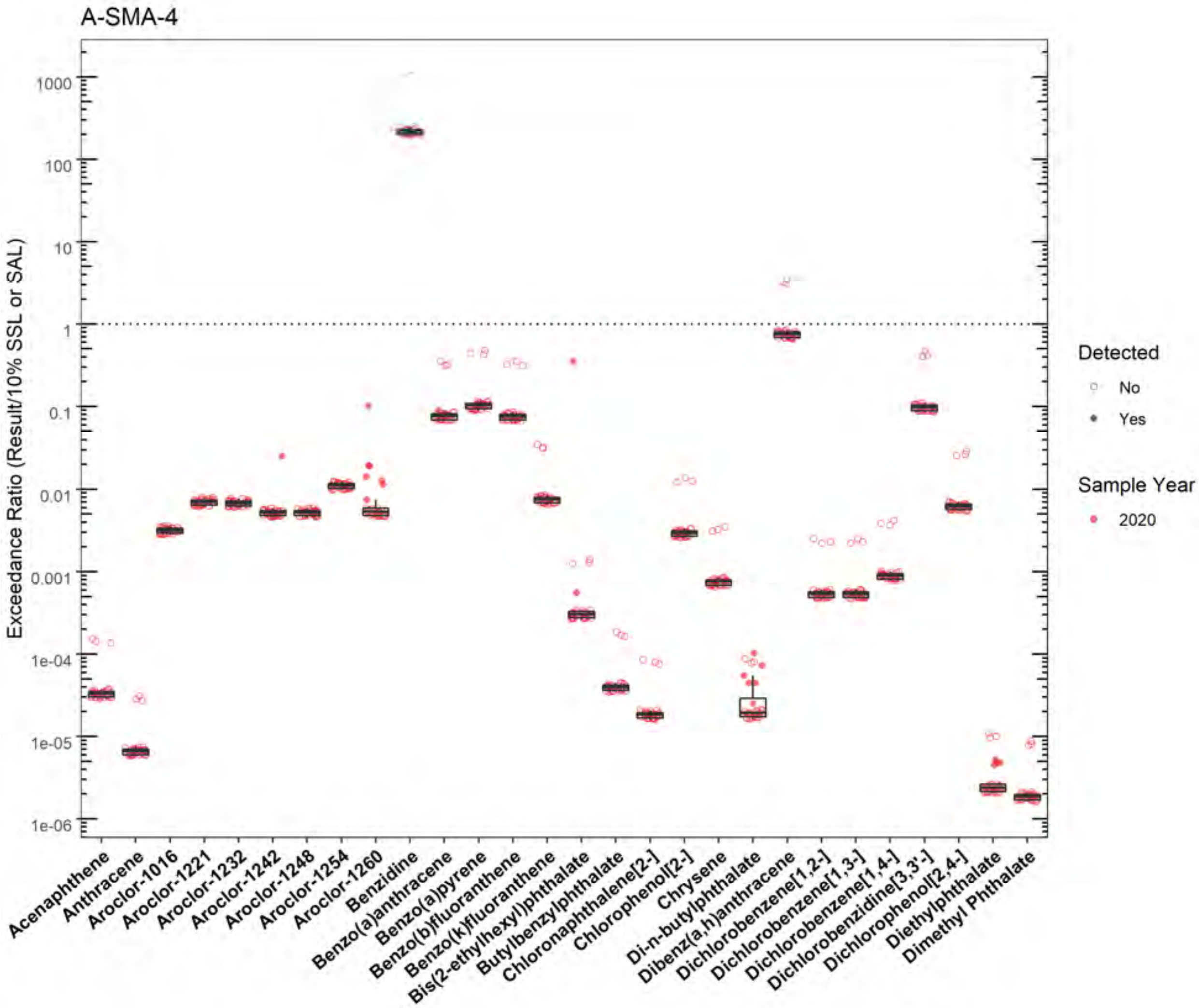


Figure 226.3-2 Organics Analytical Results from Soil Samples Associated with A-SMA-4 (Plot 1)

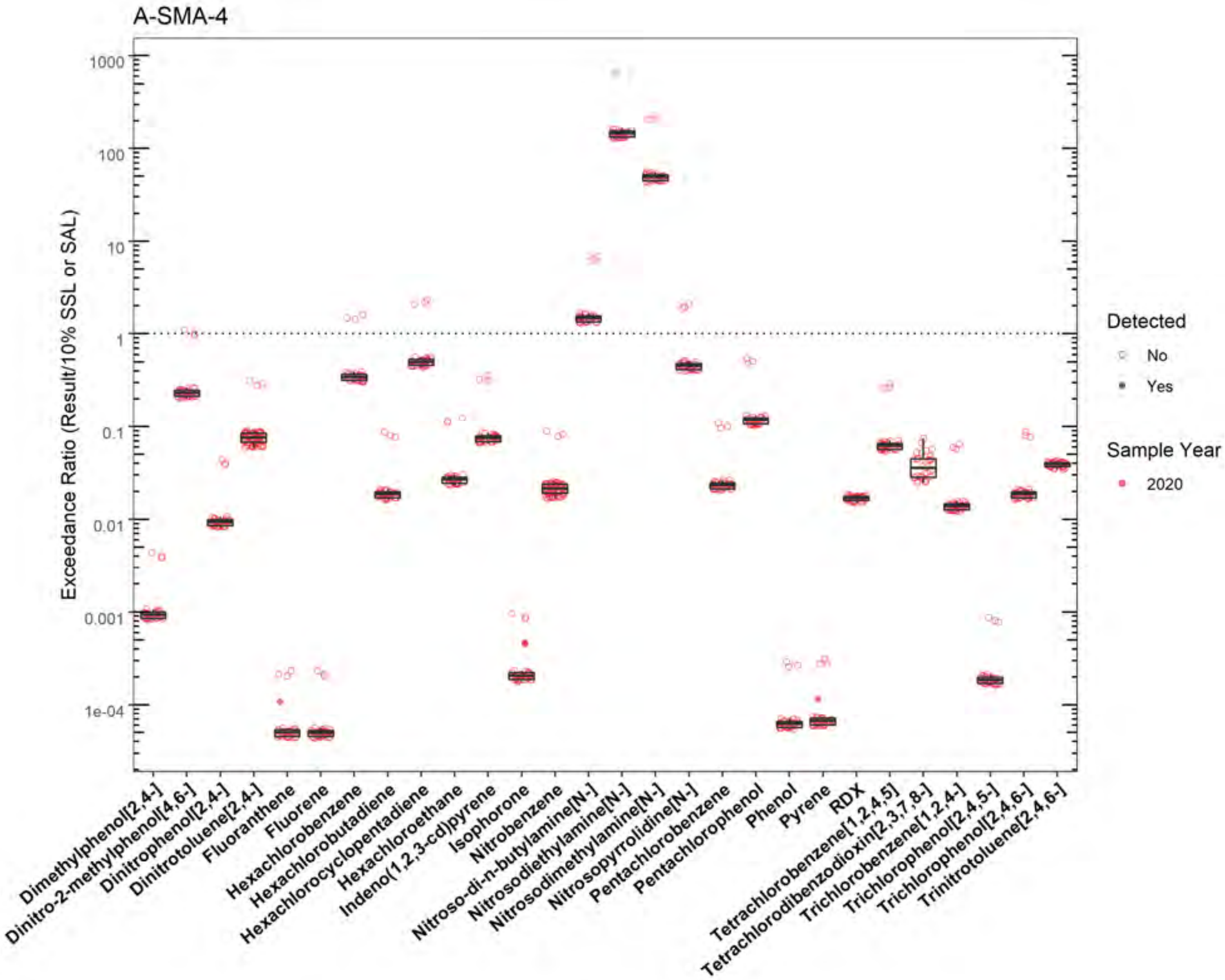


Figure 226.3-3 Organics Analytical Results from Soil Samples Associated with A-SMA-4 (Plot 2)

A-SMA-4

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	A-SMA-4	Sb	Y	BTV	0.830	1.18	2020-03-16
Chromium	A-SMA-4	Cr	Y	BTV	19.3	56.1	2020-03-17
Selenium	A-SMA-4	Se	Y	BTV	1.52	2.24	2020-03-17
Zinc	A-SMA-4	Zn	Y	BTV	48.8	57.1	2020-03-16

Figure 226.3-4 Screening-Level Exceedances from Soil Samples Associated with A-SMA-4

226.4 Stormwater Evaluation

226.4.1 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 2018. Analytical results from that sample are presented in Figures 226.4-1 to 226.4-4.

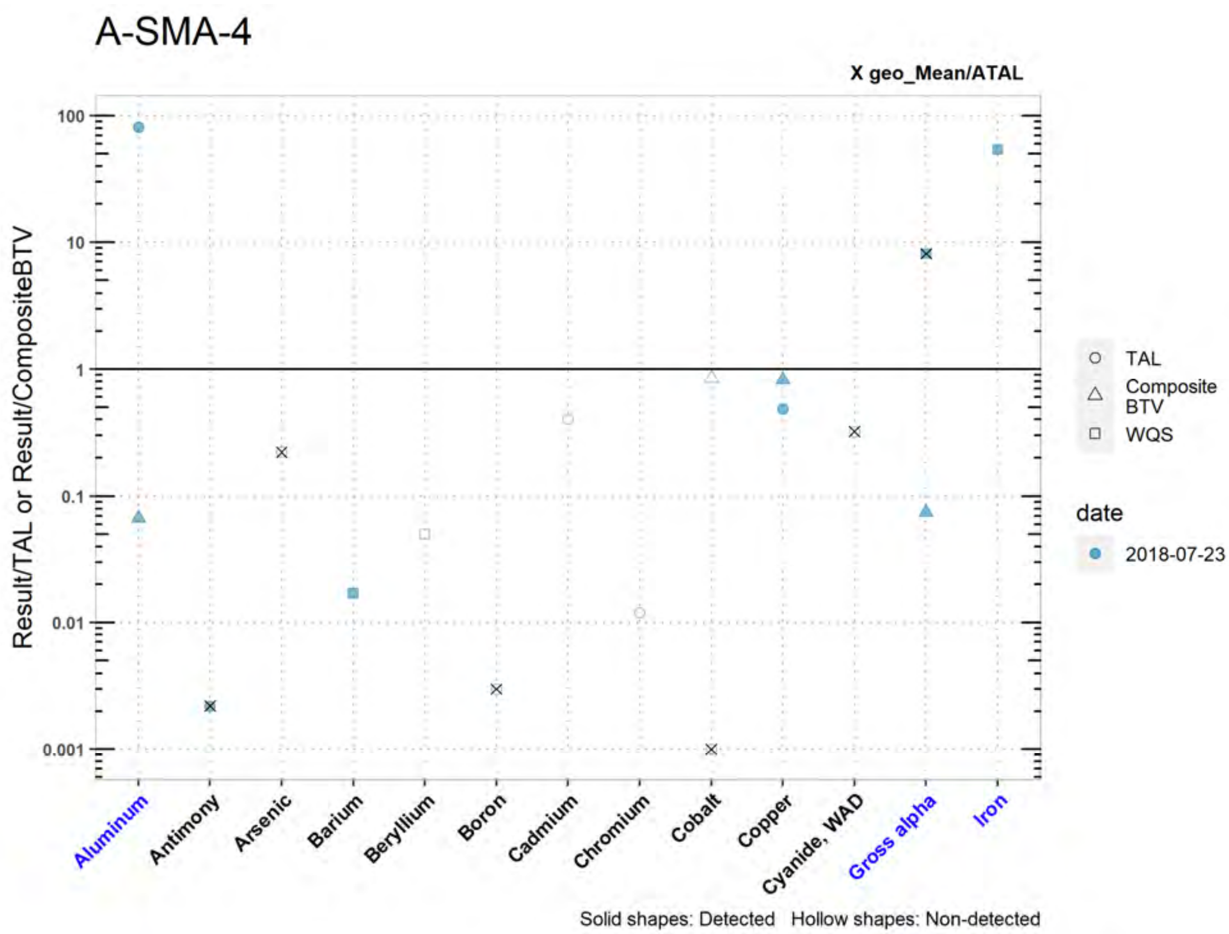


Figure 226.4-1 Analytical Results from Stormwater Sample, A-SMA-4 (Plot 1)

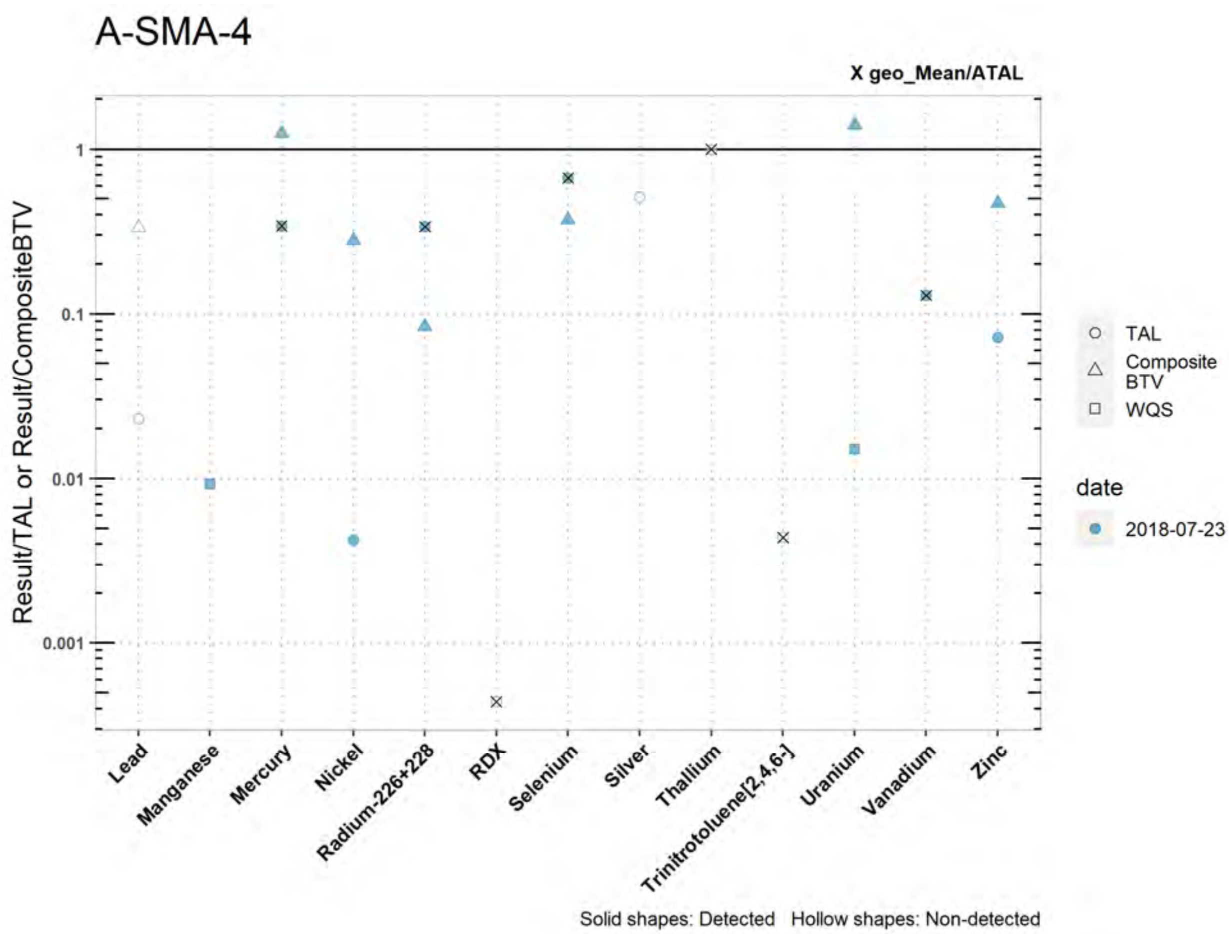


Figure 226.4-2 Analytical Results from Stormwater Sample, A-SMA-4 (Plot 2)

A-SMA-4

	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Iron
MQL	2.5	1	0.5	NA	NA	100	1	10	50	0.5	10	NA	NA
ATAL	NA	640	9	NA	NA	5000	NA	NA	1000	NA	5.2	15	NA
MTAL	883	NA	340	NA	NA	NA	0.711	253	NA	5.29	22	NA	NA
Composite_BTV	37400	NA	NA	NA	NA	NA	NA	NA	1.18	3.12	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	pCi/L*	ug/L
2018-07-23 result	71800	1.39	*2.00*	34.2	*0.200*	*15.0*	*0.300*	*3.00*	*1.00*	2.56	*1.67*	122	54400
2018-07-23 dT	81.3	0.0022	NA	0.017	NA	NA	NA	NA	NA	0.484	NA	8.1	54
2018-07-23 dB	0.0671	NA	NA	NA	NA	NA	NA	NA	NA	0.821	NA	0.0746	NA
geo_mean/ATAL	NA	0.0022	0.22	NA	NA	0.0030	NA	NA	0.0010	NA	0.321	8.1	NA

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 226.4-3 Analytical Results from Stormwater Sample, A-SMA-4 (Table 1)

A-SMA-4

	Lead	Manganese	Mercury	Nickel	Radium-226+228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Uranium	Vanadium	Zinc
MQL	0.5	NA	0.005	0.5	NA	NA	5	0.5	0.5	NA	NA	50	20
ATAL	NA	NA	0.77	NA	30	200	5	NA	0.47	20	NA	100	NA
MTAL	21.7	NA	NA	203	NA	NA	20	0.587	NA	NA	NA	NA	65.1
Composite_BTV	1.50	NA	0.208	3.10	4.21	NA	8.98	NA	NA	NA	0.315	NA	10.0
unit	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
2018-07-23 result	*0.500*	11.2	0.261	0.863	10.1	*0.0889*	3.33	*0.300*	*0.600*	*0.0889*	0.444	13.4	4.68
2018-07-23 dT	NA	0.0093	0.34	0.00425	0.337	NA	0.67	NA	NA	NA	0.015	0.13	0.0719
2018-07-23 dB	NA	NA	1.25	0.278	0.0839	NA	0.371	NA	NA	NA	1.41	NA	0.468
geo_mean/ATAL	NA	NA	0.34	NA	0.337	0.00044	0.67	NA	1	0.0044	NA	0.13	NA

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

Figure 226.4-4 Analytical Results from Stormwater Sample, A-SMA-4 (Table 2)

226.4.2 Assessment Unit and Stream Impairments

A-SMA-4 drains to Ancho Canyon (Above Ancho Springs to North Fork Ancho), which has impairments for PCBs and total mercury. The impairments may be Site-related, based on Site history.

226.5 Site-Specific Demonstration

226.5.1 Soil Data Summary

The metals that exceeded the applicable screening values in soil data were previously monitored in stormwater data and did not exceed TALs. Therefore, they will not be added to the SAP.

226.5.2 Stormwater Data Summary

Aluminum and gross alpha exceeded the TALs but not the BTVs. Iron exceeded the WQS. However, there is no TAL in the Permit for iron; only POCs with TALs are used in the SSD.

226.5.3 2022 Permit Status

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

226.5.4 Sampling and Analysis Plan

Table 226.5-1 is the proposed SAP for A-SMA-4.

Table 226.5-1 Proposed SAP, A-SMA-4

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment and Site history
Strontium-90	Site history (radionuclides)
Tritium	Site history (radionuclides)
SVOCs	Site history (organic chemicals)
DOC	Permit requirement
SSC	Permit requirement

227.0 A-SMA-6

Associated Sites	33-004(k), 33-007(a), 33-010(a), 33-010(b)
Receiving Water	South Ancho Canyon
Drainage Area	6.35 acres
Landscape Characteristics	7% impervious, 93% pervious
Consent Order Site Status	SWMU 33-004(k): In Progress SWMU 33-007(a): In Progress SWMU 33-010(a): In Progress SWMU 33-010(b): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the February 2018 field visit, the SIP team agreed that the current SMA sampler may not encompass stormwater from areas where industrial material were known or potentially managed at this Site. Given that Consent Order investigation and M&O Contractor activities were planned for these Sites, no sampler move was recommended. Phase I Consent Order investigations were completed in 2021. No sampler move is planned at this time, but the N3B SIP team plans to reassess the monitoring location during the winter of 2022/2023.
2022 Permit Status	Active Monitoring/Corrective Action

227.1 2010 Administratively Continued Permit Summary

Following the February 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in August 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, 600418). No response has been received from EPA, and stormwater monitoring has not occurred since 2013.

33-010(b) was not monitored on the Administratively Continued Permit. It will be added to the 2022 Individual Permit based on NMED's State Certification.

227.2 Site History

33-004(k) (12/21/2021)

SWMU 33-004(k) is described in the 1990 SWMU Report as two parallel drainlines, exiting control bunker 33-87, that merged and discharged to a single outfall located near former gun mount 33-116 [SWMU 33-007(a)] within East Site at TA-33. Control bunker 33-87 was constructed in 1955 as a bunkered concrete structure covered on all sides and the roof with earthen fill to support firing site tests that were conducted until the early 1970s. The outfall reportedly received discharges from a toilet, sink, floor drains, and an electrical water cooler within the control bunker.

Engineering drawing C-3304, sheet 3 (stamped "As Built" in 1955) for structure 33-87 depicts a perforated CMP drainline along the entire south side of the bunker that ties into a single CMP at the southeast corner of structure 33-87 and extends approximately 125 ft southeast of the bunker to an inactive outfall. Engineering drawing C34651-00001, from 1967, shows the planned extension of the

8-in. CMP to a ditch and outfall southeast of the bunker. There is no documented use of hazardous or radioactive materials within control bunker 33-87.

Attempts to locate the drainline and outfall in 1994 and 1995, using geophysics and test trenches, were unsuccessful. An inspection of the control bunker in 1996 revealed that no floor drains existed within the structure. The sink and toilet in the bunker discharged to septic tank 33-96 [SWMU 33-004(c)], located north of the building.

33-007(a) (12/21/2021)

SWMU 33-007(a) is a former gun-firing site consisting of three gun mounts (structures 33-116 and 33-135 and former structure 33-117), two former catcher boxes (former structures 33-118 and 33-136), and a former recoil box, within East Site at TA-33. Concrete gun mounts 33-116 and 33-135 were located at the west end of the site, former gun mount 33-117 was located in the center of the site, and the former catcher boxes were located at the east end of the site. A sandbag barricade was located east of the catcher boxes. The recoil box was located immediately west of gun mount 33-116. The only remaining structures associated with SWMU 33-007(a) are concrete pads 33-116 and 33-135.

Firing-site activities began at East Site in the early-1950s, and included firing projectiles from large cannons into the catcher boxes filled with vermiculite and sand. Other activities included experiments using scintillation fluids and x-rays. Cobalt-60 was used in some projectiles to aid in recovery of projectiles from the catcher boxes. During a test firing on June 4, 1962, a projectile disintegrated in a gun barrel; the cobalt-60 vial and 30 kg of DU in the projectile were never recovered.

Firing-site activities ceased in 1972. During the 1984 cleanup of selected portions of East Site, radioactively-contaminated material was transported to TA-54 for disposal, and non-radioactively-contaminated material, including the catcher boxes and their contents, were removed and disposed of in a landfill [SWMU 33-008(b)] created west of structure 33-151 in the south-central portion of the site.

33-010(a) (12/21/2021)

SWMU 33-010(a) is an inactive surface disposal site located southeast of structure 33-151 on the slope at the eastern edge of East Site at TA-33. Much of the debris disposed of at this site was associated with the initial clearing of East Site, and included dead tree trunks, rocks, and scraped earth. Other debris, such as metal scrap, timber, and plastic foam, is associated with firing-site operations conducted from 1955 to 1972. Debris was scattered at the rim of White Rock Canyon.

33-010(b) (12/21/2021)

SWMU 33-010(b) is a former canyon-side disposal site that was located on a narrow ledge in the middle of a 60-ft cliff at the southern edge of East Site at TA-33. This disposal area consisted of a large pile of metal turnings, strapping strips, timbers, and asbestos boards. The debris was likely disposed of between 1947 and 1972. The ledge is approximately 10 ft to 15 ft wide. At the base of the cliff, a succession of steep slopes and cliffs extend into White Rock Canyon.

For investigation activities, refer to “Investigation Report for South Ancho Canyon Aggregate Area” (N3B 2021, 701686).

227.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 227.2-1.

227.3 Consent Order Soil Data

Decision-level data for SWMU 33-004(k), SWMU 33-007(a), SWMU 33-010(a), and SWMU 33-010(b) consist of results from samples collected in 2020. Analytical results from those samples are presented in

Figures 227.3-1 through 227.3-4. The 2021 IR (N3B 2021, 701686) concluded that the nature and extent of contamination have been defined.

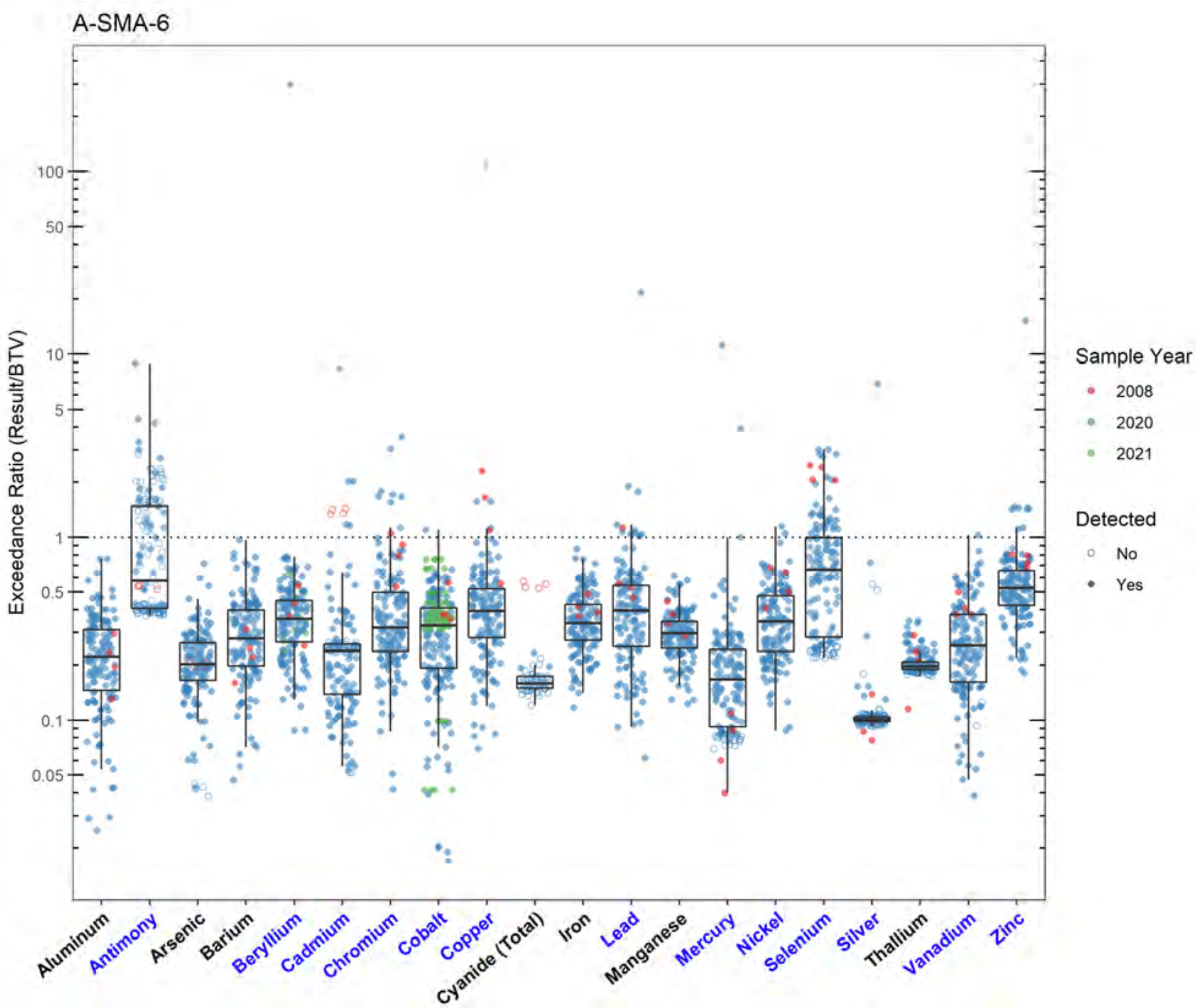


Table 227.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
33-004(k)	Drainline and outfall associated with building 33-87	No known POCs
33-007(a)	Firing range (inactive)	Beryllium, cadmium, lead, HE, tritium, uranium
33-010(a)	Surface disposal site	Metals, beryllium, lead, organic chemicals, radionuclides
33-010(b)	Surface disposal site	Metals, asbestos, radionuclides

Figure 227.3-1 Inorganics Analytical Results from Soil Samples Associated with A-SMA-6

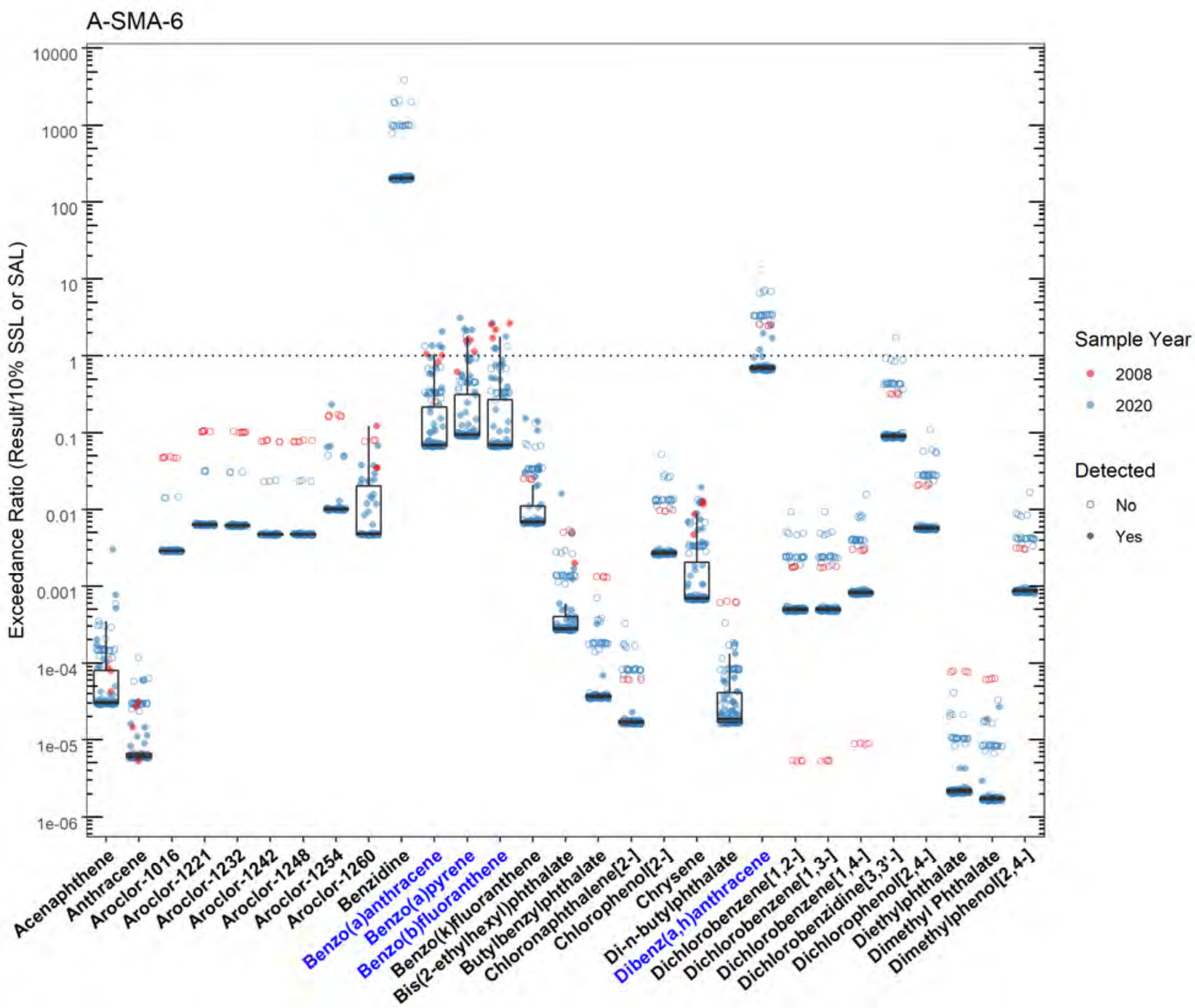


Figure 227.3-2 Organics Analytical Results from Soil Samples Associated with A-SMA-6 (Plot 1)

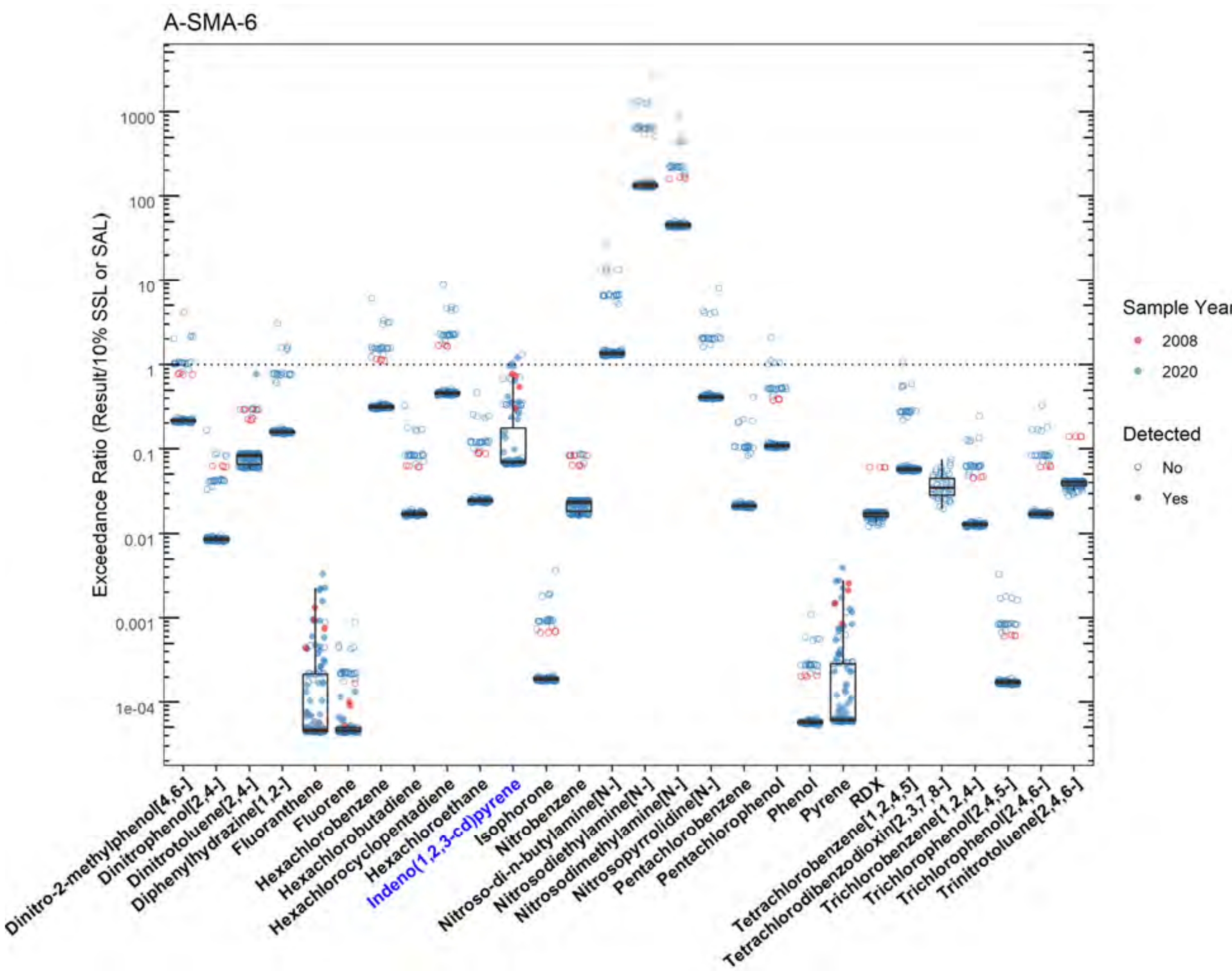


Figure 227.3-3 Organics Analytical Results from Soil Samples Associated with A-SMA-6 (Plot 2)

A-SMA-6

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	A-SMA-6	Sb	Y	BTV	0.830	7.35	2020-07-27
Benzo(a)anthracene	A-SMA-6	56-55-3	Y	SSL_0.1	0.153	0.317	2020-07-29
Benzo(a)pyrene	A-SMA-6	50-32-8	Y	SSL_0.1	0.112	0.348	2020-07-29
Benzo(b)fluoranthene	A-SMA-6	205-99-2	Y	SSL_0.1	0.153	0.406	2020-07-29
Beryllium	A-SMA-6	Be	Y	BTV	1.83	545	2020-07-29
Cadmium	A-SMA-6	Cd	Y	BTV	0.400	3.35	2020-07-27
Chromium	A-SMA-6	Cr	Y	BTV	19.3	68.3	2020-10-07
Cobalt	A-SMA-6	Co	Y	BTV	8.64	9.51	2020-07-29
Copper	A-SMA-6	Cu	Y	BTV	14.7	1570	2020-10-08
Dibenz(a,h)anthracene	A-SMA-6	53-70-3	Y	SSL_0.1	0.0153	0.0382	2020-07-29
Indeno(1,2,3-cd)pyrene	A-SMA-6	193-39-5	Y	SSL_0.1	0.153	0.185	2020-07-29
Lead	A-SMA-6	Pb	Y	BTV	22.3	485	2020-10-08
Mercury	A-SMA-6	Hg	Y	BTV	0.100	1.12	2020-10-08
Nickel	A-SMA-6	Ni	Y	BTV	15.4	17.7	2020-10-07
Selenium	A-SMA-6	Se	Y	BTV	1.52	4.58	2020-10-08
Silver	A-SMA-6	Ag	Y	BTV	1.00	6.91	2020-07-21
Vanadium	A-SMA-6	V	Y	BTV	39.6	40.7	2020-10-13
Zinc	A-SMA-6	Zn	Y	BTV	48.8	743	2020-10-08

Figure 227.3-4 Screening-Level Exceedances from Soil Samples Associated with A-SMA-6

227.4 Stormwater Evaluation

227.4.1 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 2013. Analytical results from that sample are presented in Figures 227.4-1 and 227.4-2.

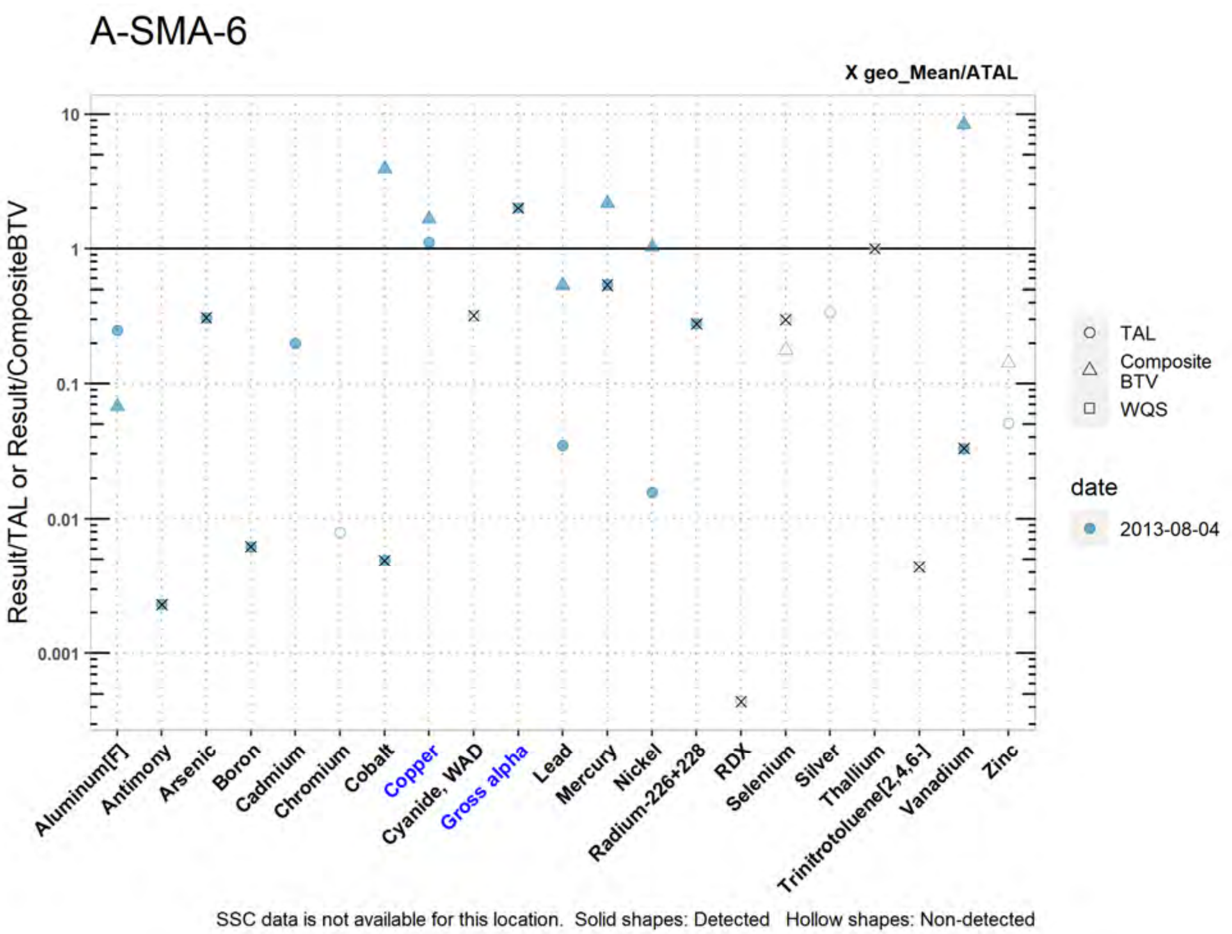


Figure 227.4-1 Analytical Results from Stormwater Sample, A-SMA-6 (Plot)

A-SMA-6

	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	0.711	253	NA	5.29	22	NA	21.7	NA	203	NA	NA	20	0.587	NA	NA	NA	65.1
Composite_BTV	2760	NA	NA	NA	NA	NA	1.25	3.53	NA	56.7	1.40	0.194	3.10	4.64	NA	8.36	NA	NA	NA	0.390	23.1
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
2013-08-04 result	187	1.49	2.79	31.1	0.128	*2.00*	4.92	5.86	*1.67*	29.6	0.752	0.419	3.18	8.39	*0.0889*	*1.50*	*0.200*	*0.450*	*0.0889*	3.28	*3.30*
2013-08-04 dT	0.249	0.0023	0.31	0.0062	0.2	NA	0.0049	1.11	NA	2.0	0.0347	0.54	0.0157	0.280	NA	NA	NA	NA	NA	0.033	NA
2013-08-04 dB	0.0678	NA	NA	NA	NA	NA	3.94	1.66	NA	NA	0.537	2.16	1.03	NA	NA	NA	NA	NA	NA	8.41	NA
geo_mean/ATAL	NA	0.0023	0.31	0.0062	NA	NA	0.0049	NA	0.321	2.0	NA	0.54	NA	0.280	0.00044	0.30	NA	1	0.0044	0.033	NA

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

Figure 227.4-2 Analytical Results from Stormwater Sample, A-SMA-6 (Table)

227.4.2 Assessment Unit and Stream Impairments

A-SMA-6 drains to Rio Grande (Cochiti Reservoir to boundary of Pueblo de San Ildefonso), which has impairments for mercury (fish consumption advisory), PCBs, adjusted gross alpha, total aluminum, total selenium, temperature, and turbidity. The PCBs, adjusted gross alpha, and metals impairments may be Site-related, based on Site history.

227.5 Site-Specific Demonstration

227.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data, and have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and beryllium.

Copper exceeded the applicable screening value in soil data and the TAL in stormwater data and will be added to the SAP. The other metals that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs. Therefore, they will not be added to the SAP.

227.5.2 Stormwater Data Summary

Gross alpha exceeded TAL in 2013 stormwater data. There was no paired SSC result to confirm whether it was below BTVs, therefore it will be added to the SAP.

Copper exceeded the TAL and BTV. Asbestos, tritium, and uranium are Site-related POCs that have not yet been measured in stormwater or soil data. Therefore, they will be added to the SAP.

227.5.3 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.2.b.i) for copper. The SMA is also in active monitoring; not all Site-related POCs were monitored for in previous samples.

227.5.4 Sampling and Analysis Plan

Table 227.5-1 is the proposed SAP for A-SMA-6.

Table 227.5-1 Proposed SAP, A-SMA-6

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment and Site history (organic chemicals)
Gross alpha (1)	Impairment and Site history
Total aluminum,	Impairment, soil data, and Site history
Dissolved beryllium, uranium	Stormwater data, soil data, and Site history (metals)
SVOCs	Soil data and Site history (organic chemicals)
Strontium-90	Site history (radionuclides)
Asbestos	Site history
Tritium	Site history
DOC	Permit requirement
SSC	Permit requirement

228.0 CHQ-SMA-0.5

Associated Sites	33-004(g), 33-007(c), 33-009
Receiving Water	Chaquehui Canyon
Drainage Area	0.52 acres
Landscape Characteristics	2% impervious, 98% pervious
Consent Order Site Status	SWMU 33-004(g): In Progress SWMU 33-007(c): In Progress SWMU 33-009: In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring

228.1. 2010 Administratively Continued Permit Summary

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

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

228.2 Site History

33-004(g) (2/18/2021)

SWMU 33-004(g) is an inactive drainline and outfall that discharged wastewater from building 33-16 at Area 6 in TA-33. The outfall is located at the end of a VCP that runs west approximately 50 ft from the northwest corner of building 33-16 and daylights at the edge of a level area above a drainage channel that leads to a tributary of Chaquehui Canyon. The ground surface below the outfall slopes steeply down to the tributary channel, which is approximately 70 ft lower than the outfall. A culvert under a roadway, approximately 60 ft southwest of the outfall, receives runoff from most of the paved portion of Area 6.

Building 33-16 was constructed in 1949 as a gun building for initiator tests. It housed a gas gun that was used to fire projectiles, as well as electronic equipment used to measure neutron production. Large-bore (2-in. to 5-in.) guns were also mounted on concrete pads around building 33-16 and used to fire projectiles containing initiator test assemblies. These activities continued until 1955.

Photographs may have been developed in building 33-16 or in a small trailer parked next to the drainage from the site. In 1956, building 33-16 was used to make and machine laminating materials that contained barium, lead, titanium, and zinc. Toxic fumes from curing epoxy resins were reportedly released from a fume hood in the building. Building 33-16 later was used as a library and storage building and has been empty since 1991.

According to the 1990 SWMU Report, building 33-16 was originally built for office space and was converted to the gun-firing building in 1961. A long-time TA-33 staff member reported that the drainline from building 33-16 also served two trailers that were parked on the pad north of the building when Area 6 was occupied. One trailer was used for assembly and the other contained a darkroom.

In 1992, a study of drains and discharges at TA-33 was conducted to identify all sources of discharges from buildings throughout TA-33. This study identified no discharges from building 33-16. Thus, the source of the reported discharges from the SWMU 33-004(g) outfall is not known.

33-007(c) (1/25/2022)

SWMU 33-007(c) consists of two abandoned gun-firing areas associated with the initiator tests conducted at Area 6 in the west-central portion of TA-33. The first gun-firing area included a gun building (former structure 33-16), a gun mount (structure 33-64), and an earthen berm (structure 33-60). Structure 33-16 was completed in 1949 and housed an air gun, and then electronic equipment, to measure neutron production in gun-type initiators containing beryllium and polonium-210. Gun sizes with bore diameters ranging from 4-in. to 8-in. fired projectiles into berms where two 6-ft × 6-ft catcher boxes constructed of wood timbers were embedded in the north end of berm structure 33-60. Each catcher box contained soil, wood chips, and vermiculite. The second gun-firing area included a large gun (structure 33-65), a hillside embankment (structure 33-61), and two barricades (structures 33-62 and 33-72), located north and east of the gun.

One concrete firing pad, on which a large bore gun was mounted, was located immediately west of structure 33-16. The pad measured 6 ft × 10 ft and was surrounded by a concrete apron. The other two concrete firing pads were located in a level area excavated into a basaltic cinder cone, approximately 100 ft southwest of structure 33-16. Two wooden barricades constructed of 8-in. × 8-in. timbers are located north and east of the shot pads. This area was used to test nuclear gun mockups. A 4-in.- to 5-in.-bore gun was used to fire projectiles into the back of the excavation. The back of the excavation currently extends about 75 ft farther back than when the site was used.

The two catcher boxes were located approximately 20 ft south of structure 33-16 and measured approximately 6 ft × 6 ft, were constructed of timber, and were filled with soil, wood chips, and vermiculite. Guns with a 2-in.- to 5-in.-bore diameter were placed on the concrete pads and used to fire projectiles containing test assemblies into targets placed in front of the catcher boxes. Materials used in the projectiles included beryllium, polonium-210, uranium, copper, lead, tungsten, and stainless steel. The projectiles frequently cracked open, contaminating the pads and surrounding area with polonium-210. Contaminated areas on the guns and pads were painted with lead-based paint to fix surface contamination.

A 1951 memorandum describes a test at Area 6 that resulted in a release of radioactive material from a projectile. The site was cleaned up using a bulldozer to scrape away the contaminated soil and embankment. A 1954 memorandum describes decontamination of one of the Area 6 gun barrels, removing loose material and leaving impregnated spots as high as 1 million cpm. Contaminated surface soil was bulldozed from the shot area into the adjacent canyon.

Shots were discontinued at Area 6 by 1955. In 1956, structure 33-16 was used to make and machine laminating materials containing barium, titanium, lead, and zinc, using epoxy resins. An exhaust blower and stack were installed along with an emissions stack. The buildings in Area 6 have been vacant since the late 1950s.

The cinder cone has been further excavated. Currently, an aluminum tower (structure 33-192) is used for atmospheric physics monitoring within the excavated portion of the cinder cone.

33-009 (2/18/2021)

SWMU 33-009 consists of an inactive surface disposal area located at Area 6 in the northwest portion of TA-33. The disposal site measures approximately 100 ft long × 75 ft wide and was leveled into the side of a natural basaltic cinder cone. It includes an area that extends approximately 80 ft down the slope of the cinder cone, continuing below the disposal site until it reaches a tributary of Chaquehui Canyon.

The debris within this surface disposal area is believed to be associated with the activities at a nearby former gun-firing site [SWMU 33-007(c)] which operated from 1949 to 1955. When the firing area became contaminated as a result of firing activities, contaminated soil and debris was bulldozed over the edge of the canyon. SWMU 33-009 also received various types of debris from general operations at TA-33, including metal wastes, light bulbs, tires, and drums. In 1960, the site received uranium turnings from the building 33-113 machine shop. In addition, from 1967 until 1972, the site served as a storage and disposal site for defective electrical capacitors from the Sherwood Project. These capacitors had an average weight of 300 lb with an approximately 4- to 6-ft^3 volume for dielectric fluid. Disposal of the capacitors at this site ceased in 1972.

In December 1974, the site was partially cleaned up as part of general cleanup activities conducted at TA-33. Several truckloads of debris were disposed of at MDA G at TA-54. Debris removed from the site included pieces of DU, electrical capacitors, metal turnings, old tires, and fluorescent light tubes. A radiation survey of the area was performed after the cleanup, at intervals of about 10 ft across the slope and 16 ft up and down the slope. Radiation above background was not detected.

Broken glass and chunks of metal were still present at the site when the Phase I RFI was conducted at the site in 1993. An empty capacitor containing small amounts of PCB-contaminated oil was also discovered partially buried on the site in 1994, and was removed.

For investigation activities for SWMUs 33-004(g) and 33-009, refer to “Investigation Report for Chaquehui Canyon Aggregate Area” (N3B 2020, 701046). For investigation activities for SWMU 33-007(c), refer to “Phase II Investigation Report for Chaquehui Canyon Aggregate Area” (N3B 2021, 701606).

228.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 228.2-1.

Table 228.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
33-004(g)	Drainline and outfall associated with building 33-16	Barium, lead, silver, zinc, cyanide
33-007(c)	Firing site	Beryllium, copper, lead, polonium-210, uranium
33-009	Surface disposal site	Metals, beryllium, copper, lead, organic chemicals, PCBs, polonium-210, uranium

228.3 Consent Order Soil Data

Decision-level data for SWMUs 33-004(g) and 33-009 consist of results from samples collected in 2020. The 2020 IR (N3B 2020, 701046) concluded that the nature and extent of contamination have been defined.

Decision-level data at SWMU 33-007(c) consist of results from samples collected at in 2020 and 2021. The 2021 Phase II IR (N3B 2021, 701606) concluded that the lateral and vertical extent of contamination is defined and no further sampling for extent is warranted.

Analytical results for all soil samples for this SMA are presented in Figures 228.3-1 through 228.3-4.

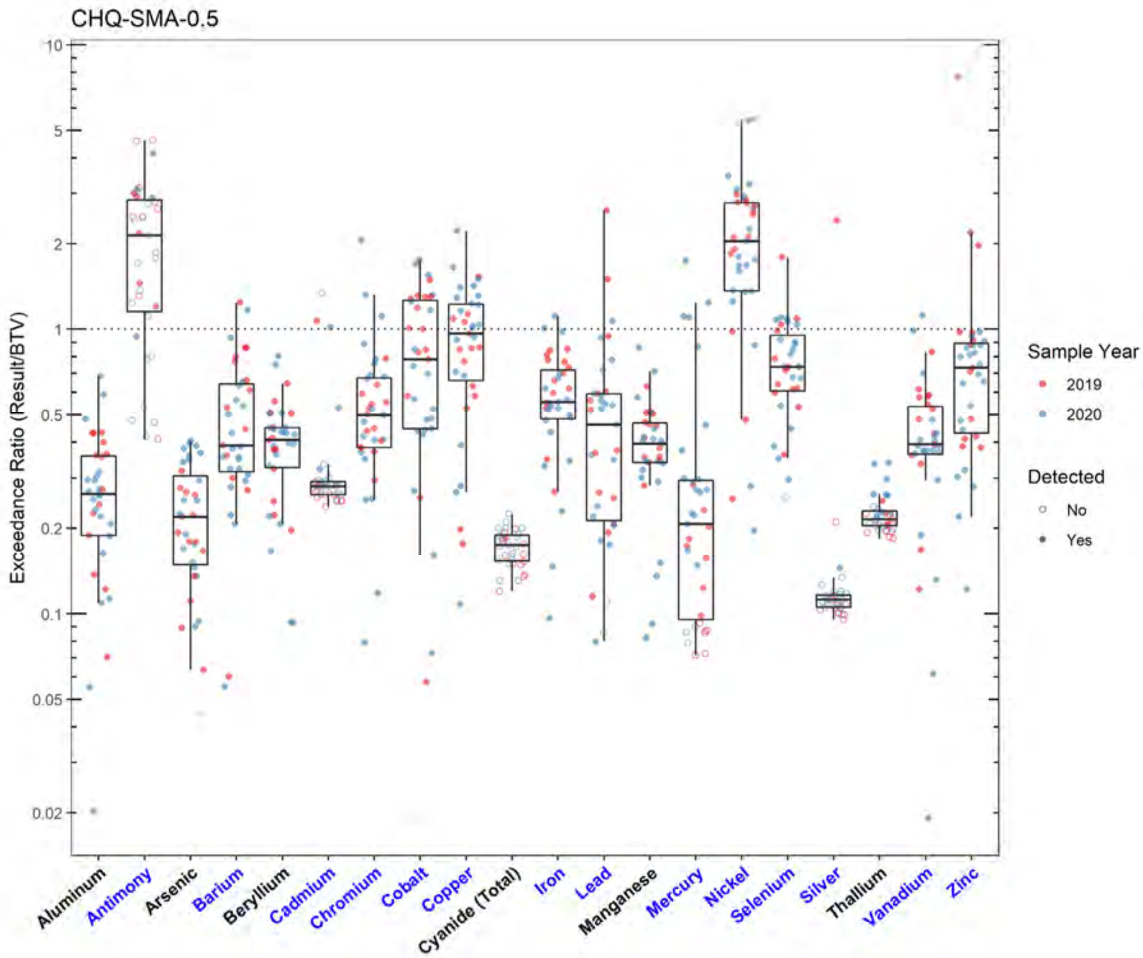


Figure 228.3-1 Inorganics Analytical Results from Soil Samples Associated with CHQ-SMA-0.5

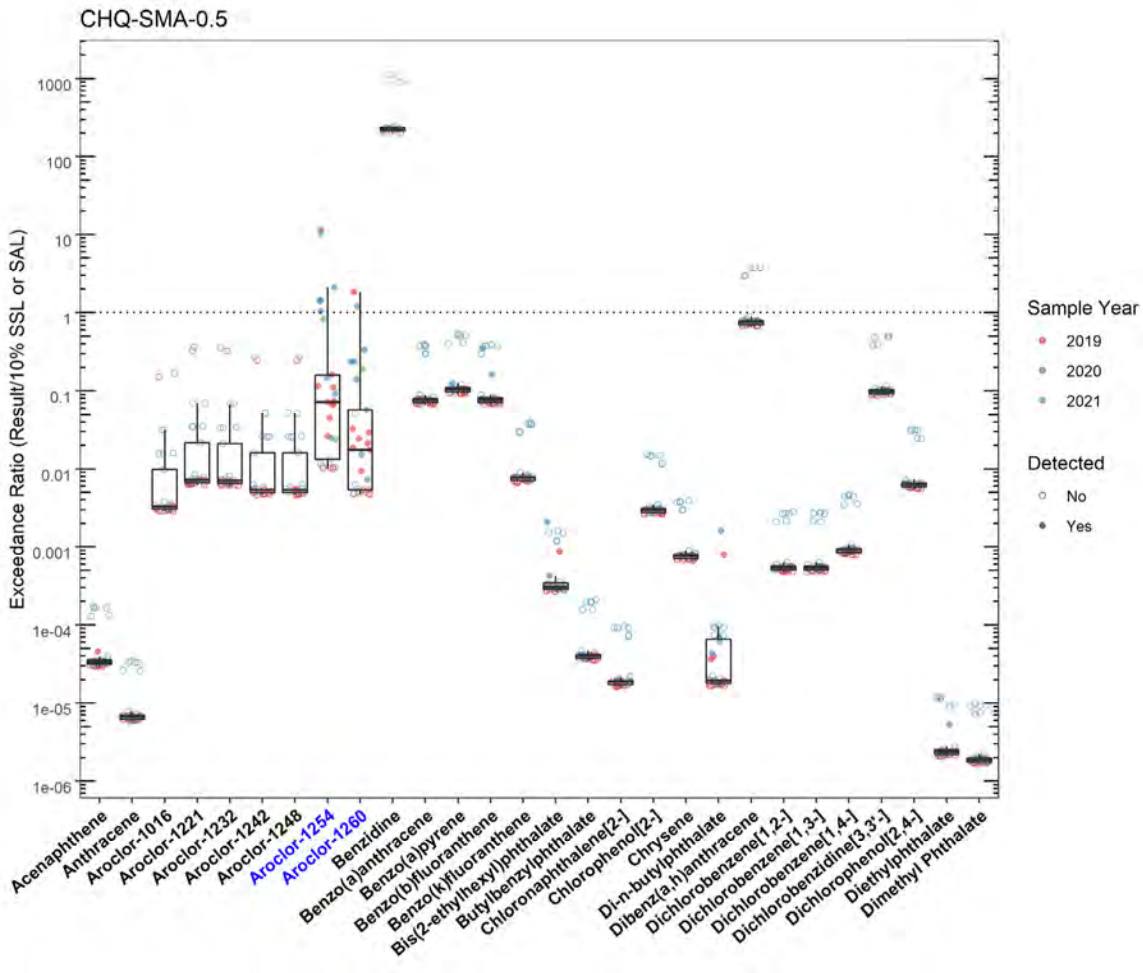


Figure 228.3-2 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-0.5 (Plot 1)

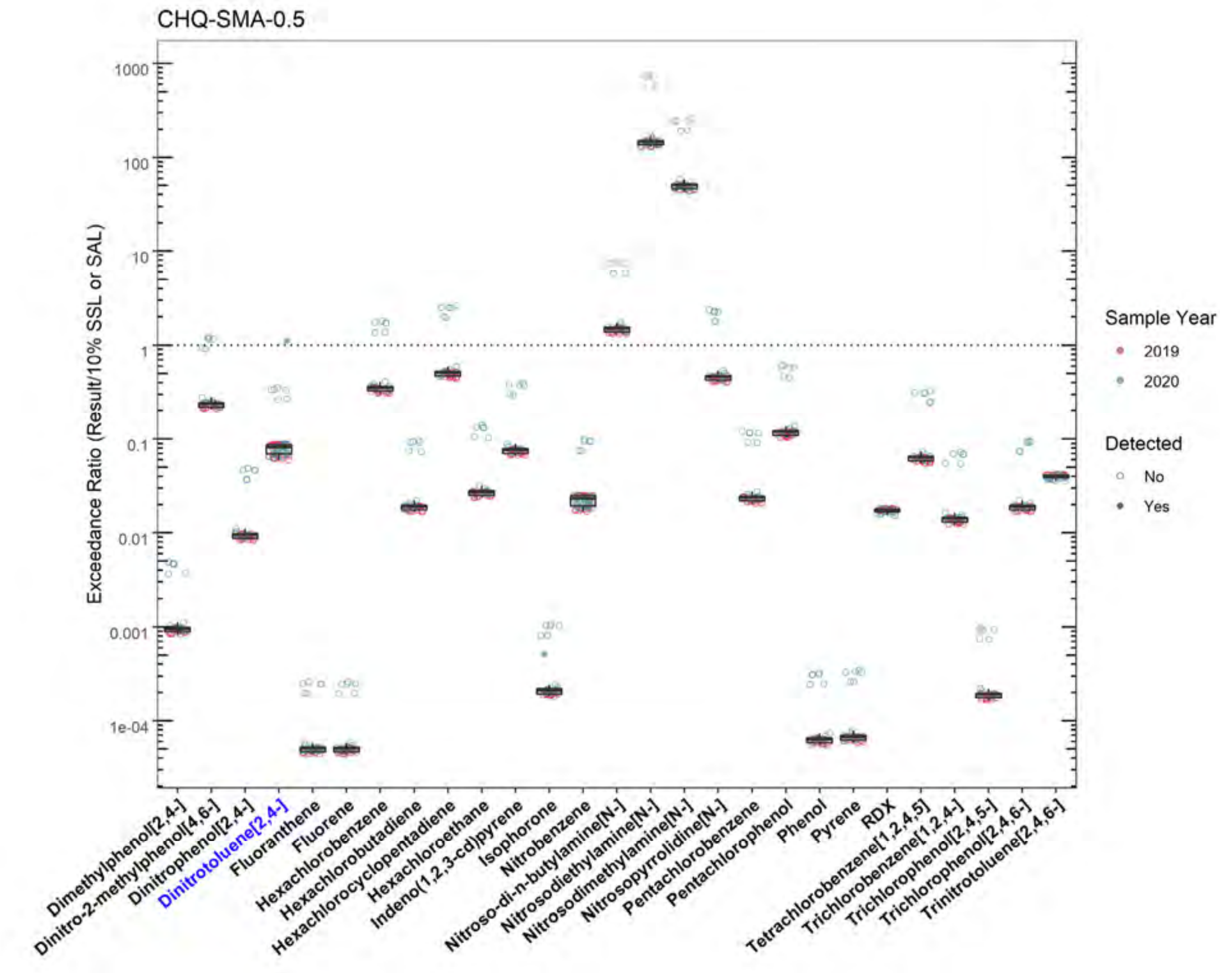


Figure 228.3-3 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-0.5 (Plot 2)

CHQ-SMA-0.5

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	CHQ-SMA-0.5	Sb	Y	BTV	0.830	3.43	2020-03-10
Aroclor-1254	CHQ-SMA-0.5	11097-69-1	Y	SSL_0.1	0.114	1.27	2019-11-20
Aroclor-1260	CHQ-SMA-0.5	11096-82-5	Y	SSL_0.1	0.243	0.445	2019-11-20
Barium	CHQ-SMA-0.5	Ba	Y	BTV	295	367	2019-11-20
Cadmium	CHQ-SMA-0.5	Cd	Y	BTV	0.400	0.427	2019-12-04
Chromium	CHQ-SMA-0.5	Cr	Y	BTV	19.3	39.5	2020-02-07
Cobalt	CHQ-SMA-0.5	Co	Y	BTV	8.64	15.1	2020-02-07
Copper	CHQ-SMA-0.5	Cu	Y	BTV	14.7	32.7	2020-02-07
Dinitrotoluene[2,4-]	CHQ-SMA-0.5	121-14-2	Y	SSL_0.1	1.71	1.88	2020-03-11
Iron	CHQ-SMA-0.5	Fe	Y	BTV	21500	23900	2020-02-07
Lead	CHQ-SMA-0.5	Pb	Y	BTV	22.3	58.4	2019-11-20
Mercury	CHQ-SMA-0.5	Hg	Y	BTV	0.100	0.174	2020-02-10
Nickel	CHQ-SMA-0.5	Ni	Y	BTV	15.4	84.0	2020-03-11
Selenium	CHQ-SMA-0.5	Se	Y	BTV	1.52	2.72	2019-11-20
Silver	CHQ-SMA-0.5	Ag	Y	BTV	1.00	2.41	2019-11-20
Vanadium	CHQ-SMA-0.5	V	Y	BTV	39.6	44.2	2020-02-07
Zinc	CHQ-SMA-0.5	Zn	Y	BTV	48.8	376	2019-11-22

Figure 228.3-4 Screening-Level Exceedances from Soil Samples Associated with CHQ-SMA-0.5

228.4 Stormwater Evaluation

228.4.1 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 228.4-1 through 228.4-4.

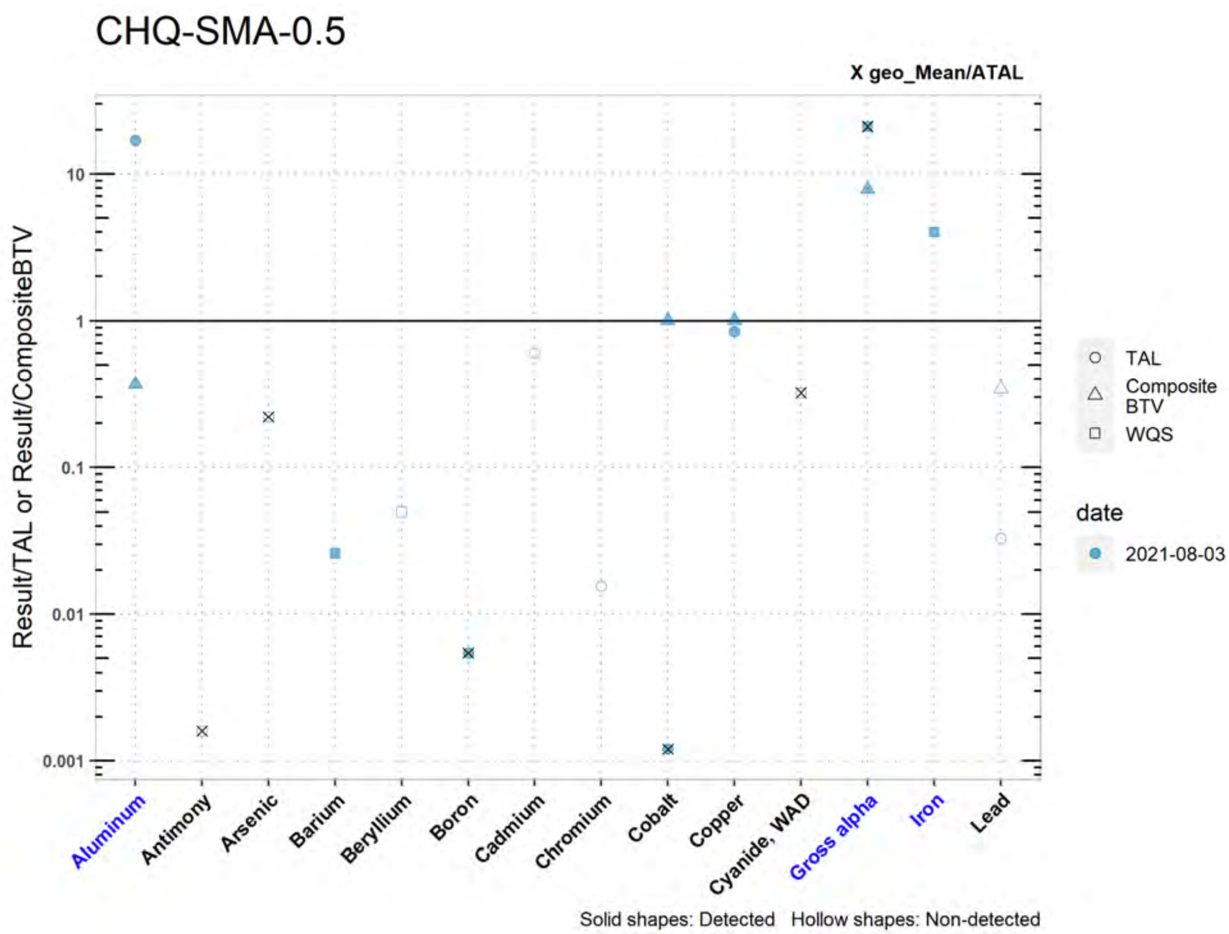


Figure 228.4-1 Analytical Results from Stormwater Sample, CHQ-SMA-0.5 (Plot 1)

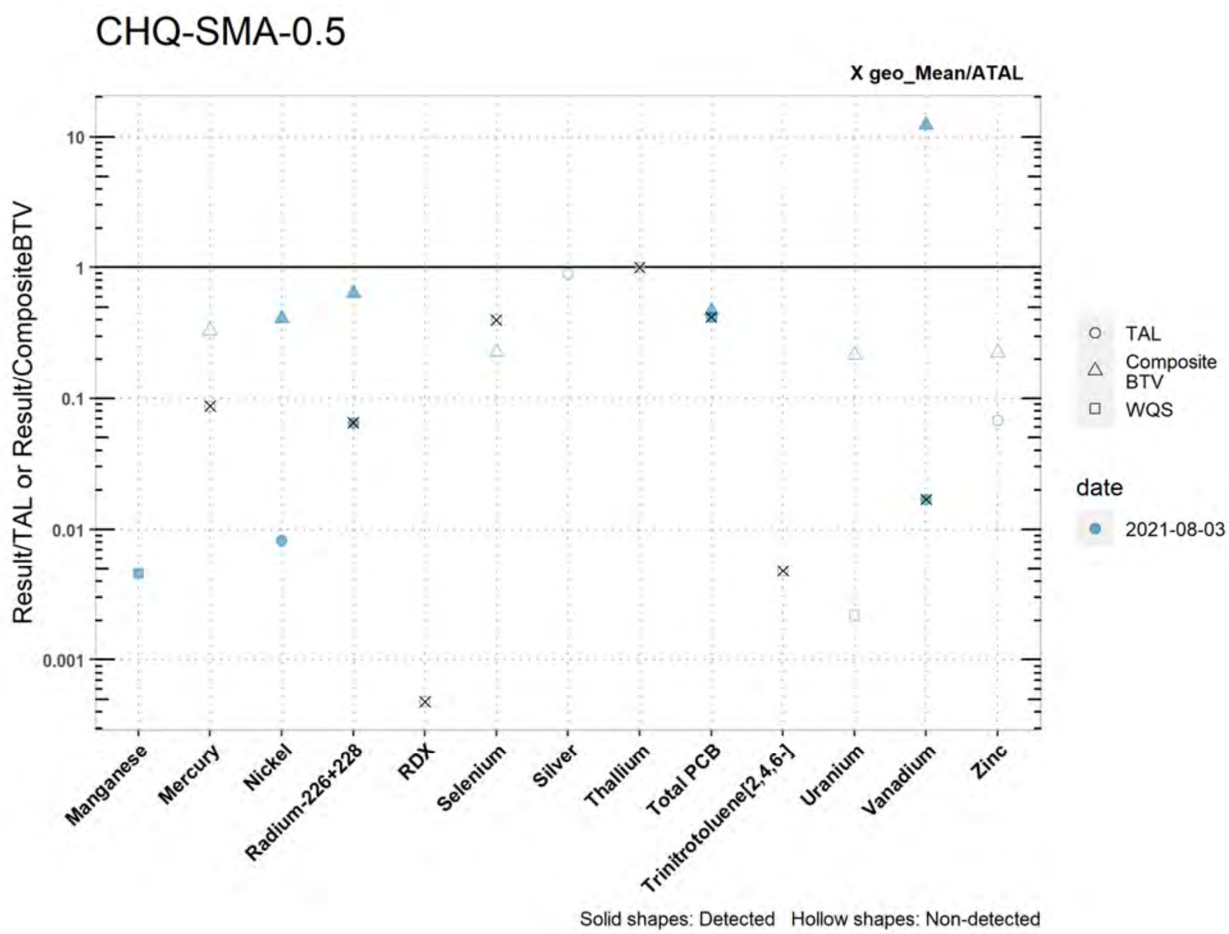


Figure 228.4-2 Analytical Results from Stormwater Sample, CHQ-SMA-0.5 (Plot 2)

CHQ-SMA-0.5

	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, WAD	Gross alpha	Iron	Lead
MQL	2.5	1	0.5	NA	NA	100	1	10	50	0.5	10	NA	NA	0.5
ATAL	NA	640	9	NA	NA	5000	NA	NA	1000	NA	5.2	15	NA	NA
MTAL	566	NA	340	NA	NA	NA	0.539	194	NA	3.9	22	NA	NA	15.1
Composite_BTV	37300	NA	NA	NA	NA	NA	NA	NA	1.21	3.27	NA	57.0	NA	1.46
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*	ug/L	ug/L
2021-08-03 result	9600	*1.00*	*2.00*	51.9	*0.200*	27.2	*0.300*	*3.00*	1.22	3.29	*1.67*	312	3960	*0.500*
2021-08-03 dT	17.0	NA	NA	0.026	NA	0.0054	NA	NA	0.0012	0.844	NA	21	4.0	NA
2021-08-03 dB	0.368	NA	NA	NA	NA	NA	NA	NA	1.01	1.01	NA	7.82	NA	NA
geo_mean/ATAL	NA	0.0016	0.22	NA	NA	0.0054	NA	NA	0.0012	NA	0.321	21	NA	NA

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 228.4-3 Analytical Results from Stormwater Sample, CHQ-SMA-0.5 (Table 1)

CHQ-SMA-0.5

	Manganese	Mercury	Nickel	Radium-226+228	RDX	Selenium	Silver	Thallium	Total PCB	Trinitrotoluene [2,4,6-]	Uranium	Vanadium	Zinc
MQL	NA	0.005	0.5	NA	NA	5	0.5	0.5	0.2	NA	NA	50	20
ATAL	NA	0.77	NA	30	200	5	NA	0.47	0.014	20	NA	100	NA
MTAL	NA	NA	154	NA	NA	20	0.336	NA	NA	NA	NA	NA	48.5
Composite_BTV	NA	0.203	3.10	4.36	NA	8.76	NA	NA	0.0124	NA	0.312	0.140	14.7
unit	ug/L	ug/L	ug/L	pCi/L*	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2021-08-03 result	5.02	*0.0670*	1.27	1.95	*0.0952*	*2.00*	*0.300*	*0.600*	0.00582	*0.0952*	*0.0670*	1.74	*3.30*
2021-08-03 dT	0.0046	NA	0.00825	0.0650	NA	NA	NA	NA	0.42	NA	NA	0.017	NA
2021-08-03 dB	NA	NA	0.410	0.639	NA	NA	NA	NA	0.469	NA	NA	12.4	NA
geo_mean/ATAL	NA	0.087	NA	0.0650	0.00048	0.40	NA	1	0.42	0.0048	NA	0.017	NA

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

Figure 228.4-4 Analytical Results from Stormwater Sample, CHQ-SMA-0.5 (Table 2)

228.4.2 Assessment Unit and Stream Impairments

CHQ-SMA-0.5 drains to Chaquehui Canyon (within LANL), which has an impairment for PCBs. The impairment may be Site-related, based on Site history.

228.5 Site-Specific Demonstration

228.5.1 Soil Data Summary

All Site-related POCs that exceeded the applicable soil screening values were previously measured in stormwater data and did not exceed TALs, with the exception of PCBs.

228.5.2 Stormwater Data Summary

Aluminum and gross alpha exceeded the TAL in the current monitoring stage but did not exceed the BTV. PCBs exceeded the TAL in the previous stage and corrective action was taken in 2015. PCBs did not exceed the TAL or BTV in the current monitoring. However, because this stage is for confirmation monitoring of the 2015 corrective action for the PCB exceedance from the previous stage, PCBs are included in the SAP until a second confirmation-monitoring sample is collected.

Iron exceeded the WQS in one sample. However, there is no TAL in the Permit for iron; only POCs with TALs are used in the SSD.

228.5.3 2022 Permit Status

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

228.5.4 Sampling and Analysis Plan

Table 228.5-1 is the proposed SAP for CHQ-SMA-0.5.

Table 228.5-1 Proposed SAP, CHQ-SMA-0.5

Monitoring Constituent	Background for Monitoring
Total PCBs (1)	Impairment, Site history, soil data, stormwater data
SVOCs	Site History, soil data
DOC	Permit requirement
SSC	Permit requirement

229.0 CHQ-SMA-1.01

Associated Sites	33-002(d)
Receiving Water	Chaquehui Canyon
Drainage Area	0.36 acres
Landscape Characteristics	3% impervious, 97% pervious
Consent Order Site Status	SWMU 33-002(d): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

229.1 2010 Administratively Continued Permit Summary

Following the February 2011 submittal to EPA of certification of baseline control installation, baseline monitoring was initiated. To date, stormwater flow has not been sufficient for full-volume sample collection. Monitoring is ongoing until one confirmation sample is collected from this SMA.

229.2 Site History

33-002(d) (12/21/2021)

SWMU 33-002(d) is a former outfall and associated 90-ft outlet drainline that discharged noncontact cooling water from former building 33-86, the Tritium Facility, at TA-33. This outfall was created when the SWMU 33-002(c) seepage pit was deactivated and disconnected from the inlet drainline at building 33-86 to the sump in 1959. At that time, a 4-in. VCP outlet drainline was attached to the inactive cast-iron inlet to former sump 33-133 [SWMU 33-002(c)], and was extended 90 ft to the east of former sump 33-133 to create an outfall for the discharge of noncontact cooling water from building 33-86. Tritium and metals were potential contaminants in the noncontact cooling water.

The outfall operated under the LANL NPDES permit (Outfall 04A147) until July 11, 1995, when it was removed from the permit following the D&D of the former building 33-86. The 90-ft outlet drainline that discharged to the outfall was removed during the 2005 VCA.

SWMU 33-002(d) is a component of MDA K, which consists of the former locations of a septic system and two seepage pits with drainlines and outfalls that served the former building 33-86 and a former surface disposal area. MDA K is located in the southeast area of Main Site at TA- 33.

For investigation activities, refer to “Investigation Report for Chaquehui Canyon Aggregate Area” and the “Addendum to the Investigation Report for Chaquehui Canyon Aggregate Area for Material Disposal Area K, at Technical Area 33” (N3B 2020, 701046; N3B 2021, 701735).

229.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the site are listed in Table 229.2-1.

Table 229.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
33-002(d)	Drainline and outfall from former building 33-86	Metals, tritium

229.3 Consent Order Soil Data

Decision-level data for SWMU 33-002(d) consist of results from samples collected in 2005 and 2020. Analytical results for those samples are presented in Figures 229.3-1 through 229.3-4. The 2020 IR (N3B 2020, 701046) concluded that the nature and extent of contamination have not been defined, and additional sampling is needed to determine the lateral and vertical extent of subsurface tritium contamination.

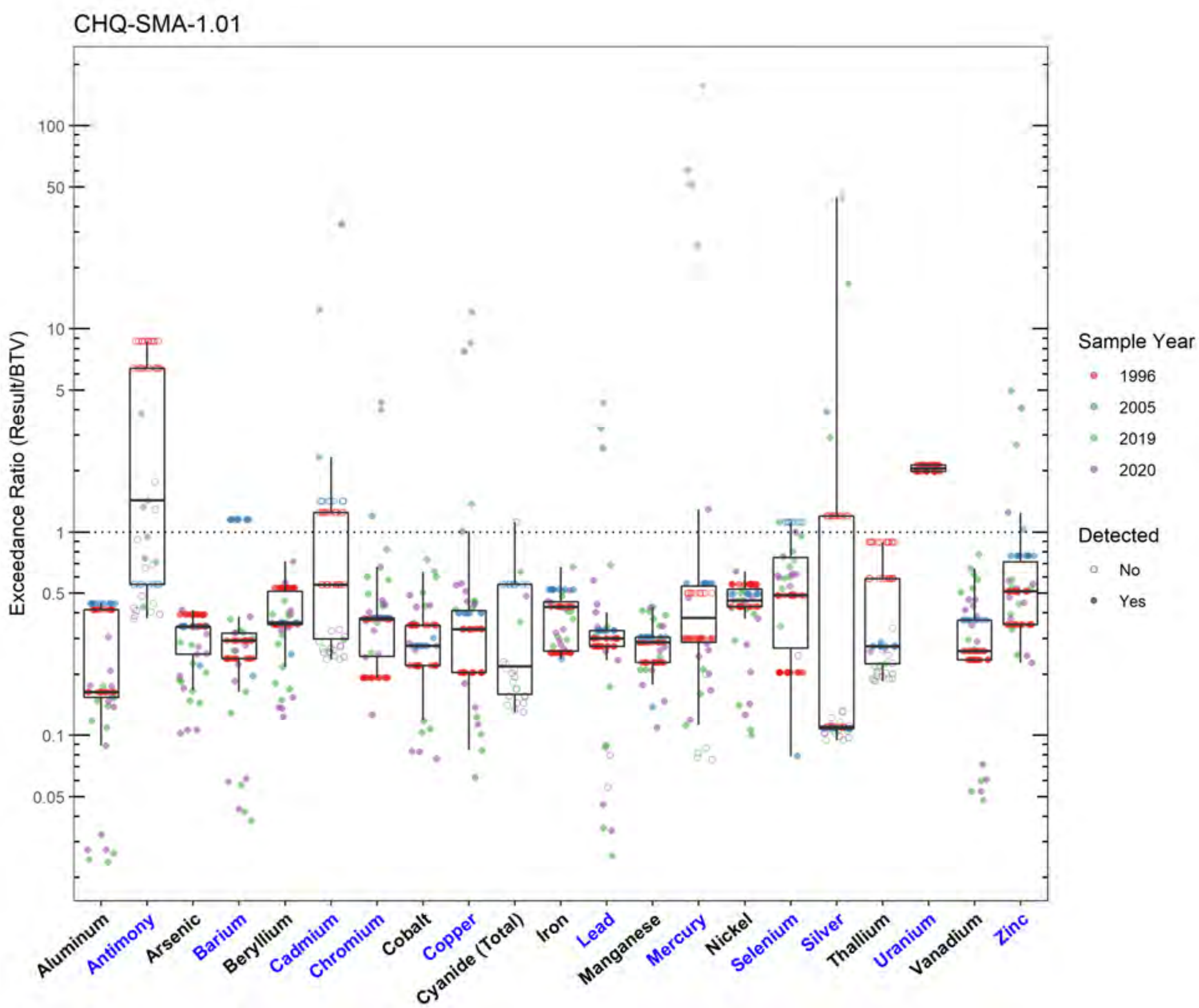


Figure 229.3-1 Inorganics Analytical Results from Soil Samples Associated with CHQ-SMA-1.01

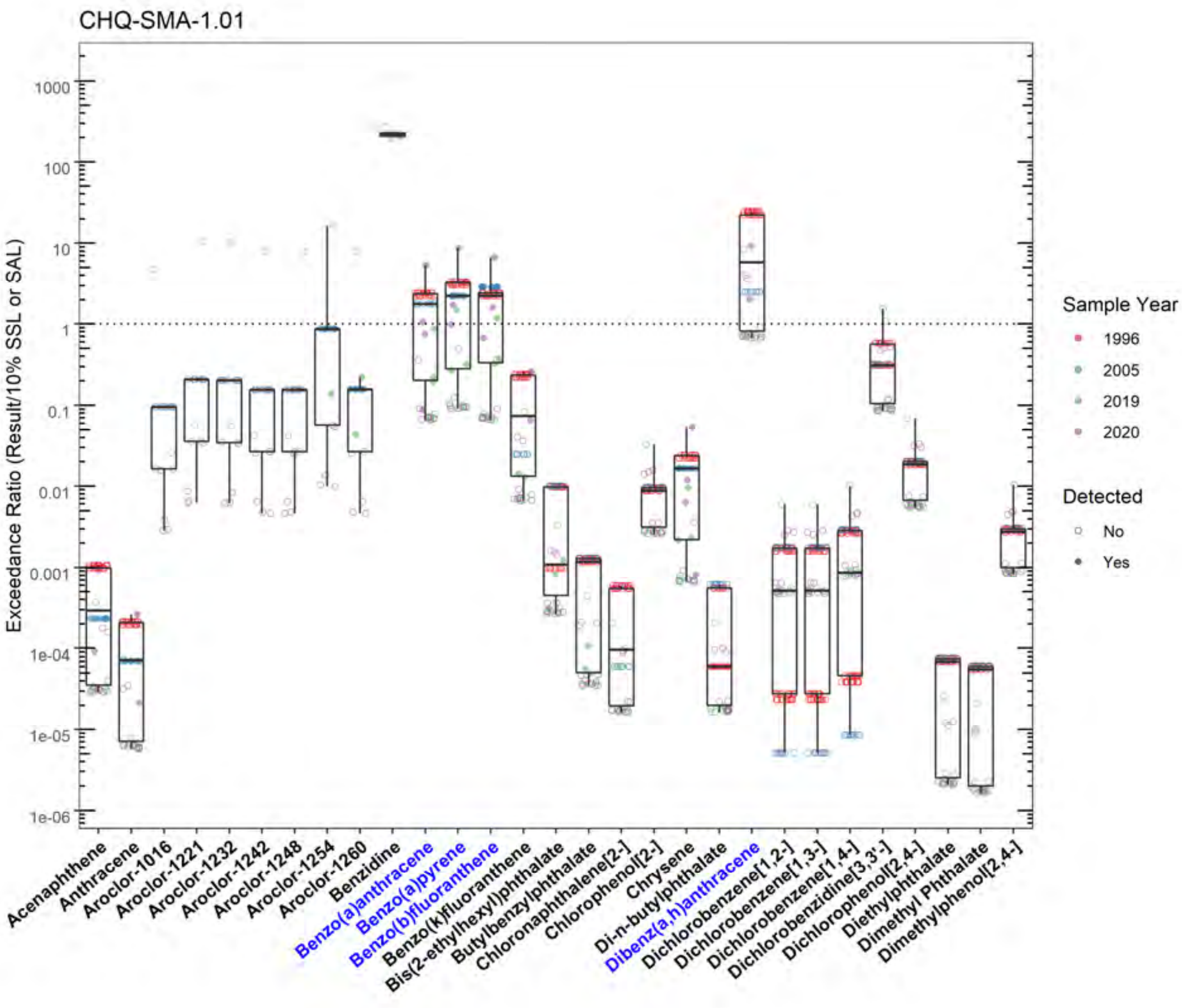


Figure 229.3-2 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-1.01 (Plot 1)

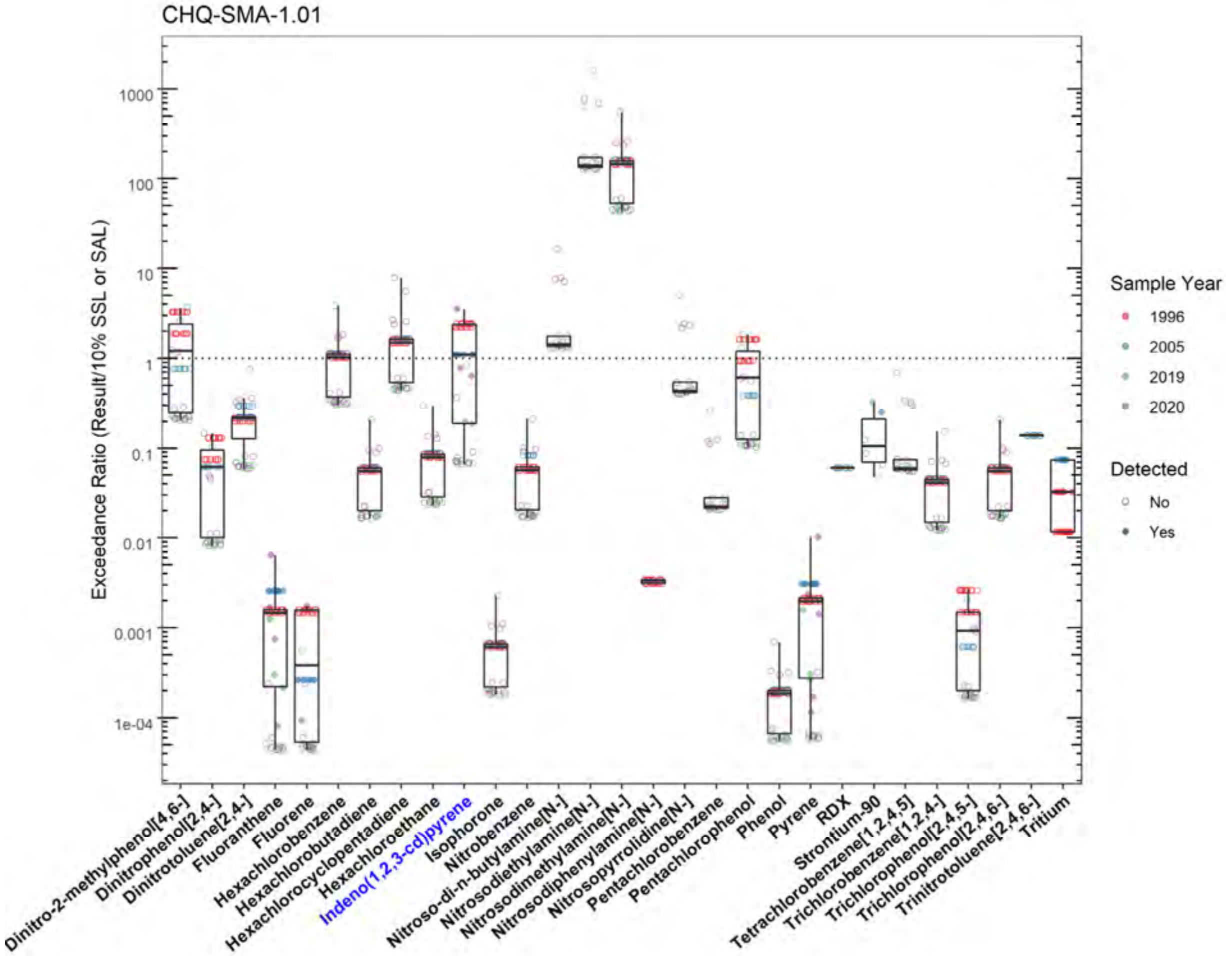


Figure 229.3-3 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-1.01 (Plot 2)

CHQ-SMA-1.01

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	CHQ-SMA-1.01	Sb	Y	BTV	0.830	3.17	2019-12-17
Barium	CHQ-SMA-1.01	Ba	Y	BTV	295	339	2005-06-27
Benzo(a)anthracene	CHQ-SMA-1.01	56-55-3	Y	SSL_0.1	0.153	0.814	2020-02-12
Benzo(a)pyrene	CHQ-SMA-1.01	50-32-8	Y	SSL_0.1	0.112	0.970	2020-02-12
Benzo(b)fluoranthene	CHQ-SMA-1.01	205-99-2	Y	SSL_0.1	0.153	1.02	2020-02-12
Cadmium	CHQ-SMA-1.01	Cd	Y	BTV	0.400	13.3	2019-12-17
Chromium	CHQ-SMA-1.01	Cr	Y	BTV	19.3	83.7	2019-12-17
Copper	CHQ-SMA-1.01	Cu	Y	BTV	14.7	178	2019-12-17
Dibenz(a,h)anthracene	CHQ-SMA-1.01	53-70-3	Y	SSL_0.1	0.0153	0.141	2020-02-12
Indeno(1,2,3-cd)pyrene	CHQ-SMA-1.01	193-39-5	Y	SSL_0.1	0.153	0.540	2020-02-12
Lead	CHQ-SMA-1.01	Pb	Y	BTV	22.3	95.8	2019-12-17
Mercury	CHQ-SMA-1.01	Hg	Y	BTV	0.100	15.8	2019-12-17
Selenium	CHQ-SMA-1.01	Se	Y	BTV	1.52	1.71	2019-12-17
Silver	CHQ-SMA-1.01	Ag	Y	BTV	1.00	44.3	2019-12-17
Uranium	CHQ-SMA-1.01	U	Y	BTV	1.82	3.90	1996-05-28
Zinc	CHQ-SMA-1.01	Zn	Y	BTV	48.8	242	2019-12-17

Figure 229.3-4 Screening-Level Exceedances from Soil Samples Associated with CHQ-SMA-1.01

229.4 Stormwater Evaluation

229.4.1 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.

229.4.2 Assessment Unit and Stream Impairments

CHQ-SMA-1.01 drains to Chaquehui Canyon (within LANL), which has an impairment for PCBs. The impairment is not likely to be Site-related, based on Site history.

229.5 Site-Specific Demonstration

229.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data, but have not yet been measured in stormwater: antimony, barium, cadmium, chromium, copper, lead, mercury, selenium, silver, uranium, and zinc.

Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene exceeded the applicable screening values in soil data but are not Site-related POCs and will not be added to the SAP.

229.5.2 Stormwater Data Summary

No confirmation-monitoring data.

229.5.3 2022 Permit Status

The SMA is in active monitoring; no confirmation-monitoring sample has been collected.

229.5.4 Sampling and Analysis Plan

Table 229.5-1 is the proposed SAP for CHQ-SMA-1.01.

Table 229.5-1 Proposed SAP, CHQ-SMA-1.01

Monitoring Constituent	Background for Monitoring
Dissolved antimony, barium, cadmium, chromium, copper, lead, silver, uranium, and zinc	Site history (metals) and soil data
Total mercury and selenium	Site history (metals) and soil data
Tritium	Site history
DOC	Permit requirement
SSC	Permit requirement

230.0 CHQ-SMA-1.02

Associated Sites	33-004(h), 33-008(c), 33-011(d), 33-015
Receiving Water	Chaquehui Canyon
Drainage Area	2.20 acres
Landscape Characteristics	6% impervious, 94% pervious
Consent Order Site Status	SWMU 33-004(h): In Progress SWMU 33-008(c): In Progress SWMU 33-011(d): In Progress SWMU 33-015: In Progress
2010 Administratively Continued Permit Final Status	This SMA is being evaluated for a corrective action recommendation
2016–2018 SIP Actions	Based on the September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Corrective Action

230.1 2010 Administratively Continued Permit Summary

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

Following the October 2012 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2012, 228781), corrective-action monitoring was initiated, and stormwater samples were collected in July and September 2013. Analytical results from these samples initiated corrective action.

Following the September 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600909), corrective-action monitoring was initiated, and stormwater samples were collected in July and August 2018. Analytical results from these samples initiated corrective action.

Following the April 2021 submittal to EPA of certification of enhanced control installation as a corrective action (N3B 2021, 701388), the sampler was relocated to a more representative location, and corrective-action monitoring was initiated. Stormwater samples were collected in May and August 2021. Analytical results from these samples initiated corrective action, and installation of enhanced controls is ongoing.

230.2 Site History

33-004(h) (2/18/2021)

SWMU 33-004(h) reportedly consists of an inactive drainline and outfall associated with a warehouse (building 33-20) located at the south end of Main Site at TA-33. The warehouse was constructed in 1950 and used from 1952 to 1972 to store materials associated with initiator tests, including beryllium and uranium. The building subsequently was cleaned and used by other groups as a light laboratory and for general storage.

The RFI work plan for OU 1122 states that historical engineering drawings show an 8-in. VCP drain, which reportedly discharged to an outfall, exiting the southeast corner of the building. A study of building drains at TA-33 identified two floor drains in building 33-20 but could not locate an outfall. The study also noted that there was no source of water in the building.

33-008(c) (1/25/2022)

SWMU 33-008(c) is a former surface disposal area located east of Main Site buildings 33-39 and 33-113 outside of the Main Site security fence at TA-33. This former disposal site consists of one area near a culvert outfall directly east of building 33-39 where glass bottles and other debris were discovered, and another area consisting of surface debris situated north of the culvert. The culvert receives stormwater runoff from Main Site and is located in a drainage channel that leads to a tributary of Chaquehui Canyon. Debris observed at the site included machined metal turnings, cable, glass bottles, and general trash on the ground surface and in the channel downstream of the culvert.

The outlines of a possible trenched area are visible in aerial photographs from 1958. A small asphalt pad is located at the west end of the northern area and a partially full bottle was present on the ground surface. In 1999, a BMP was performed at the site, during which all visible debris was removed from the watercourse. Residual debris was removed from SWMU 33-008(c) during the 2019–2020 investigation.

This site was originally reported as a SWMU in the 1996 notification letter to NMED and is listed as such in Attachment K-1 of the RCRA permit and in the 2005 and 2016 Consent Orders. However, the site is identified as an AOC in recent reports and NMED correspondence.

33-011(d) (1/25/2022)

SWMU 33-011(d) consists of a former storage area that was located on an asphalt pad around a warehouse (building 33-20) in the southwest corner of Main Site at TA-33. Beryllium and uranium were stored in and outside of building 33-20 from 1950 until 1972. In addition, recovered scrap from shots containing uranium, beryllium, and tungsten was stored on the asphalt south of building 33-20. The amount of uranium stored at this site is reported to have been tons. Much of the material stored at the site was salvaged for use elsewhere. A 1987 site survey found no materials remaining in storage at this location.

33-015 (2/18/2021)

SWMU 33-015 is the location of an inactive incinerator (structure 33-110) located approximately 50 ft southeast of building 33-39 on a hillside that slopes to a side wash of Chaquehui Canyon in the southeast corner of Main Site at TA-33. The incinerator measured approximately 4 ft × 4 ft × 6 ft high and was mounted on a concrete base. The incinerator was used to burn uncontaminated office trash and was first used in 1955. The date the incinerator ceased to be used is not known; however, it was no longer in use during the 1993 Phase I RFI. The incinerator (structure 33-110) and the associated concrete base were removed during the 2019–2020 Consent Order investigation.

For investigation activities for SWMUs 33-004(h) and 33-015, refer to “Investigation Report for Chaquehui Canyon Aggregate Area” (N3B 2020, 701046). For investigation activities for SWMUs 33-008(c) and 33-011(d), refer to “Phase II Investigation Report for Chaquehui Canyon Aggregate Area” (N3B 2021, 701606).

230.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 230.2-1.

Table 230.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
33-004(h)	Drainline and outfall associated with building 33-20	Beryllium, uranium
33-008(c)	Landfill	Metals, inorganic and organic chemicals, PAHs
33-011(d)	Storage area	Beryllium, uranium
33-015	Incinerator	Metals, dioxins/furans, PAHs, uranium

230.3 Consent Order Soil Data

Decision-level data for SWMU 33-004(h) and SWMU 33-015 consist of results from samples collected in 2020. The 2020 IR (N3B 2020, 701046) concluded that the nature and extent of contamination have been defined.

Decision-level data for SWMU 33-008(c) consist of results from samples collected in 1996, 2020, and 2021. The 2021 Phase II IR (N3B 2021, 701606)concluded that the extent of contamination is not defined, and additional sampling is required to define the extent of copper; lead; mercury; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; dibenz(a,h)anthracene; and indeno(1,2,3-cd)pyrene at several sampling locations.

Decision-level data for SWMU 33-011(d) consist of results from samples collected in 1996, 2020, and 2021. The 2021 Phase II IR (N3B 2021, 701606) concluded that the lateral and vertical extent of contamination is defined, and no further sampling for extent is warranted.

Analytical results for all soil samples for this SMA are presented in Figures 230.3-1 through 230.3-4.

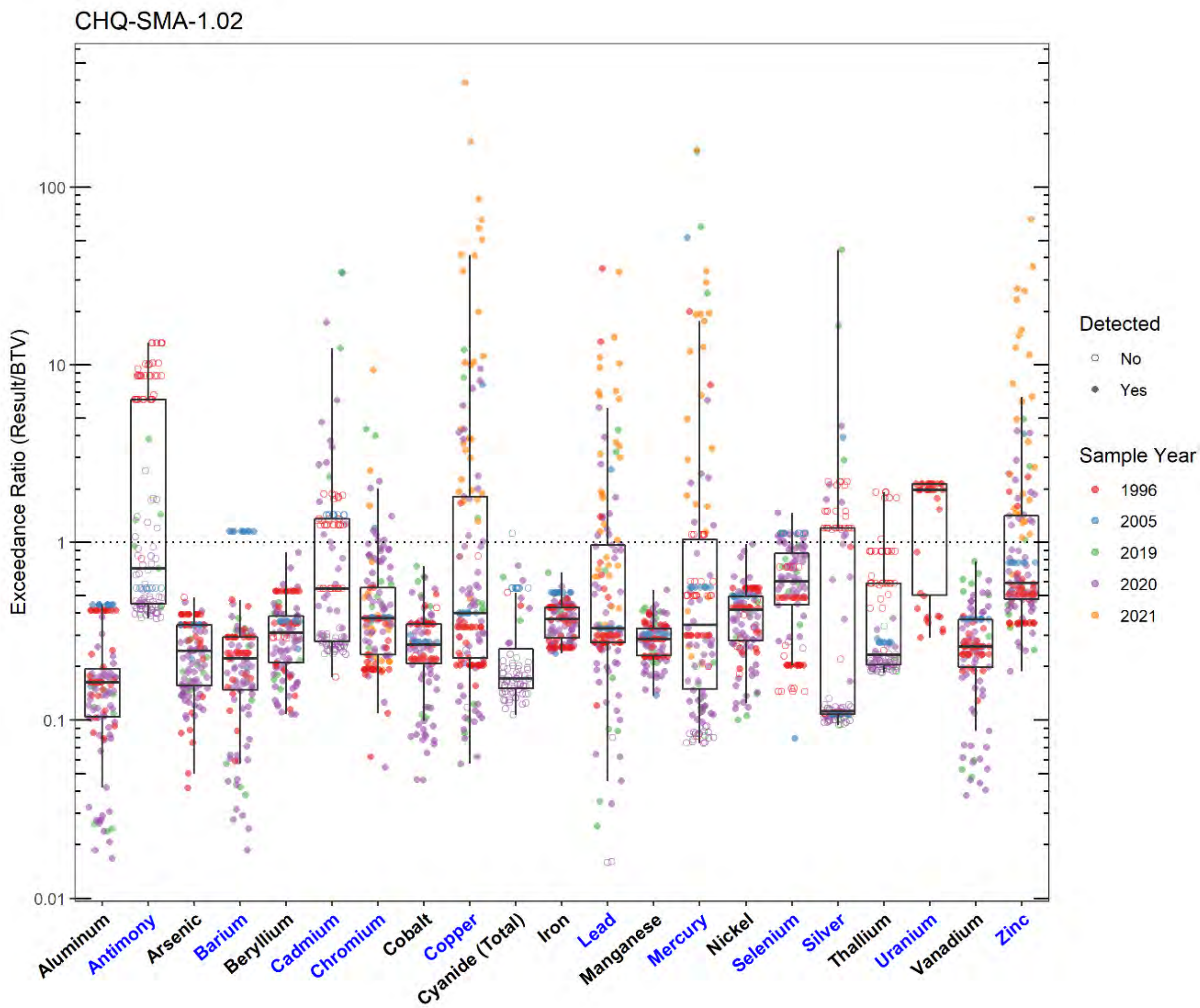


Figure 230.3-1 Inorganics Analytical Results from Soil Samples Associated with CHQ-SMA-1.02

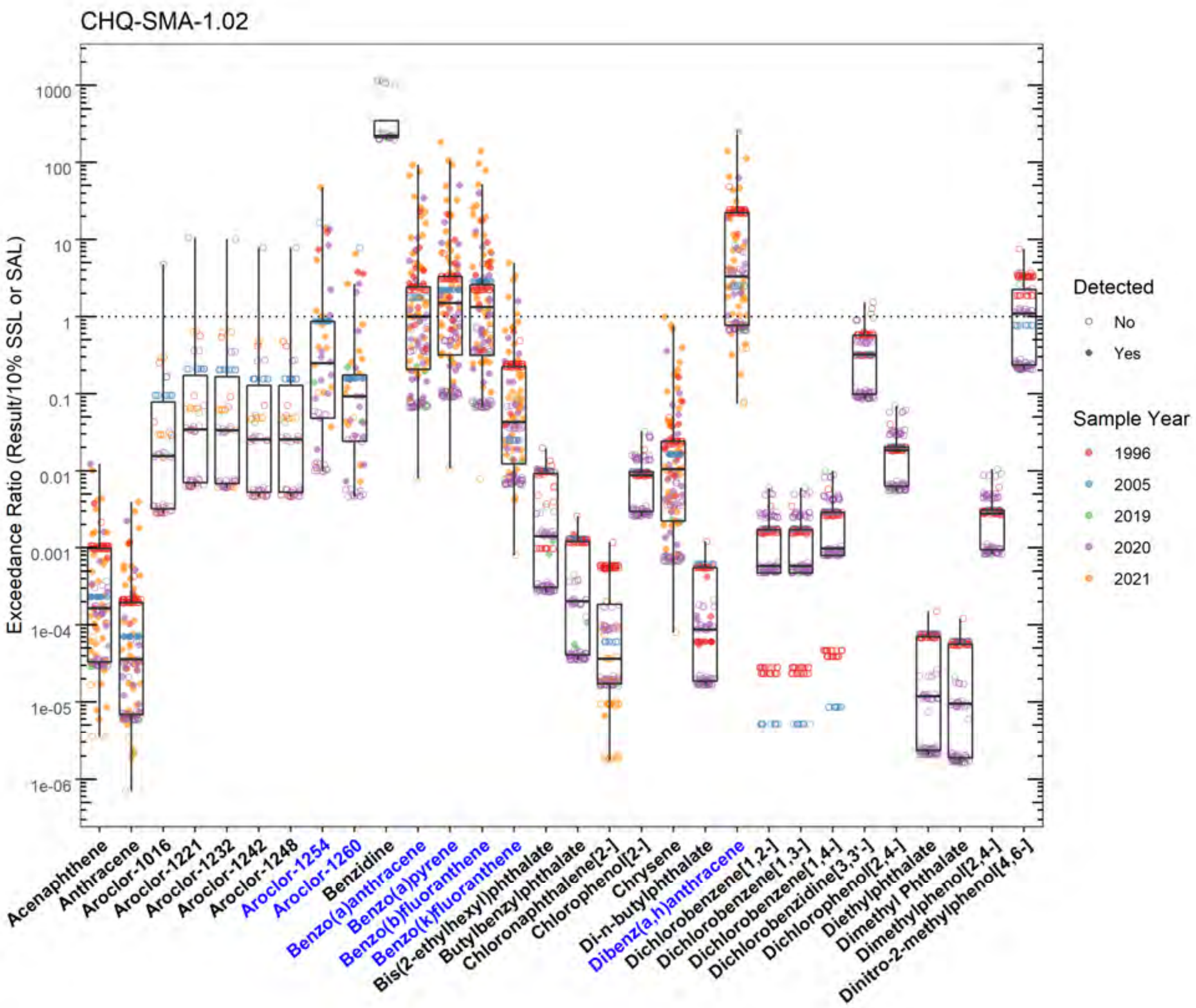


Figure 230.3-2 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-1.02 (Plot 1)

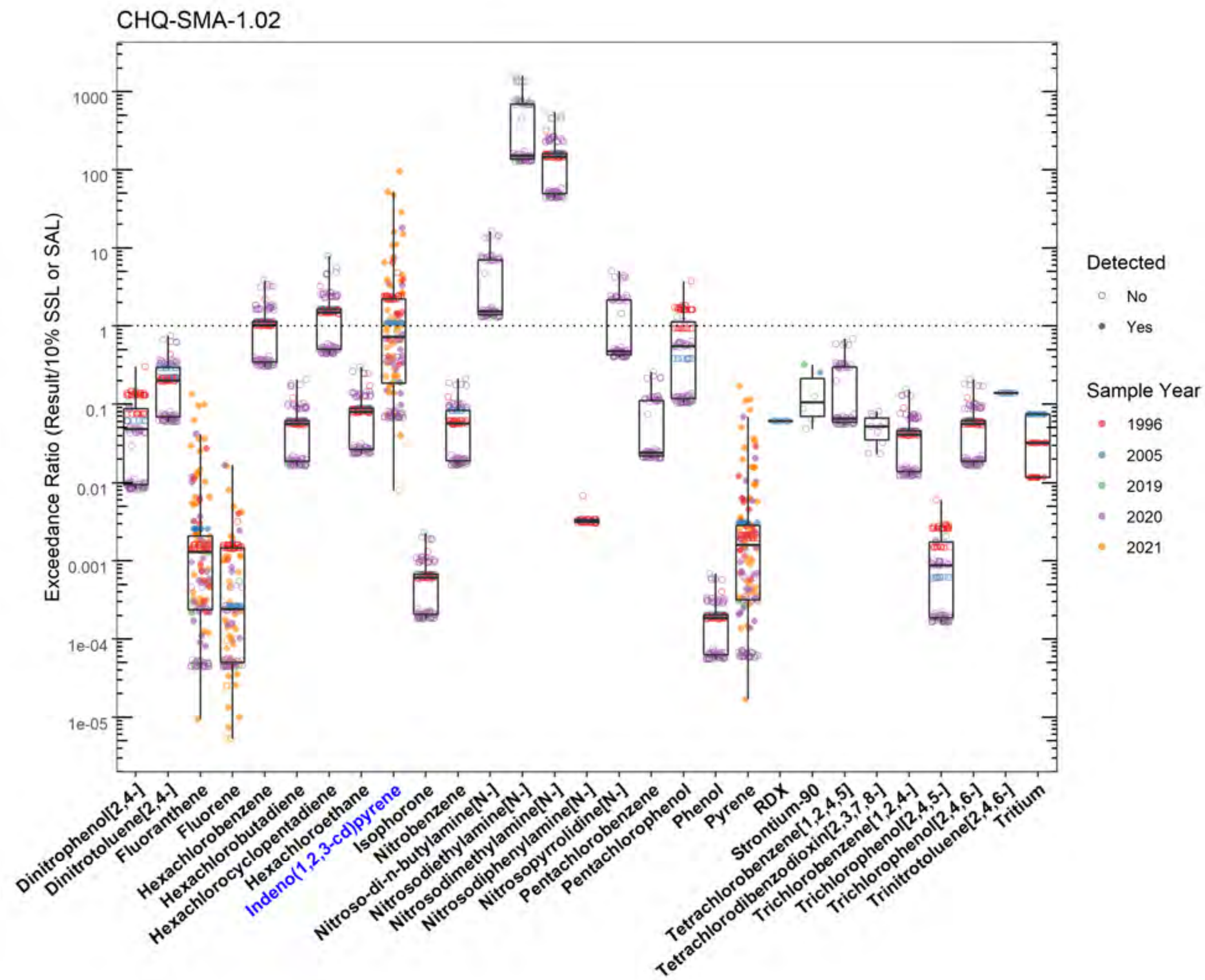


Figure 230.3-3 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-1.02 (Plot 2)

CHQ-SMA-1.02

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	CHQ-SMA-1.02	Sb	Y	BTV	0.830	3.17	2019-12-17
Aroclor-1254	CHQ-SMA-1.02	11097-69-1	Y	SSL_0.1	0.114	5.35	2021-04-14
Aroclor-1260	CHQ-SMA-1.02	11096-82-5	Y	SSL_0.1	0.243	1.59	2021-04-14
Barium	CHQ-SMA-1.02	Ba	Y	BTV	295	339	2005-06-27
Benzo(a)anthracene	CHQ-SMA-1.02	56-55-3	Y	SSL_0.1	0.153	14.2	2021-05-05
Benzo(a)pyrene	CHQ-SMA-1.02	50-32-8	Y	SSL_0.1	0.112	20.5	2021-05-05
Benzo(b)fluoranthene	CHQ-SMA-1.02	205-99-2	Y	SSL_0.1	0.153	21.1	2021-05-05
Benzo(k)fluoranthene	CHQ-SMA-1.02	207-08-9	Y	SSL_0.1	1.53	7.57	2021-05-05
Cadmium	CHQ-SMA-1.02	Cd	Y	BTV	0.400	13.3	2019-12-17
Chromium	CHQ-SMA-1.02	Cr	Y	BTV	19.3	180	2021-05-05
Copper	CHQ-SMA-1.02	Cu	Y	BTV	14.7	5710	2021-05-05
Dibenz(a,h)anthracene	CHQ-SMA-1.02	53-70-3	Y	SSL_0.1	0.0153	4.05	2021-05-05
Indeno(1,2,3-cd)pyrene	CHQ-SMA-1.02	193-39-5	Y	SSL_0.1	0.153	14.6	2021-05-05
Lead	CHQ-SMA-1.02	Pb	Y	BTV	22.3	774	1996-07-02
Mercury	CHQ-SMA-1.02	Hg	Y	BTV	0.100	16.2	2021-05-05
Selenium	CHQ-SMA-1.02	Se	Y	BTV	1.52	2.22	2020-02-07
Silver	CHQ-SMA-1.02	Ag	Y	BTV	1.00	44.3	2019-12-17
Uranium	CHQ-SMA-1.02	U	Y	BTV	1.82	3.90	1996-05-28
Zinc	CHQ-SMA-1.02	Zn	Y	BTV	48.8	3220	2021-05-05

Figure 230.3-4 Screening-Level Exceedances from Soil Samples Associated with CHQ-SMA-1.02

230.4 Stormwater Evaluation

230.4.1 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 May and August 2021. Analytical results from those samples are presented in Figures 230.4-1 through 230.4-4.

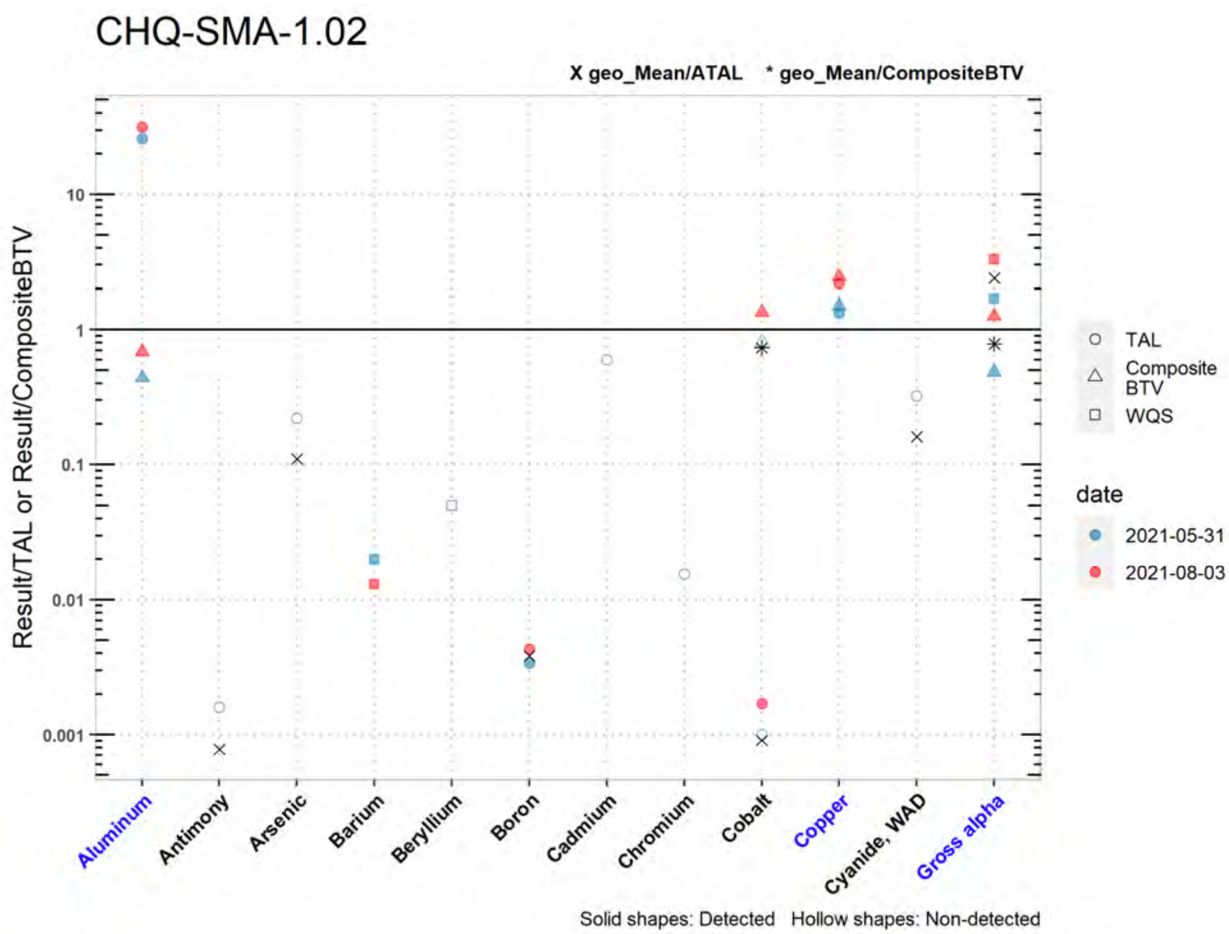


Figure 230.4-1 Analytical Results from Stormwater Samples, CHQ-SMA-1.02 (Plot 1)

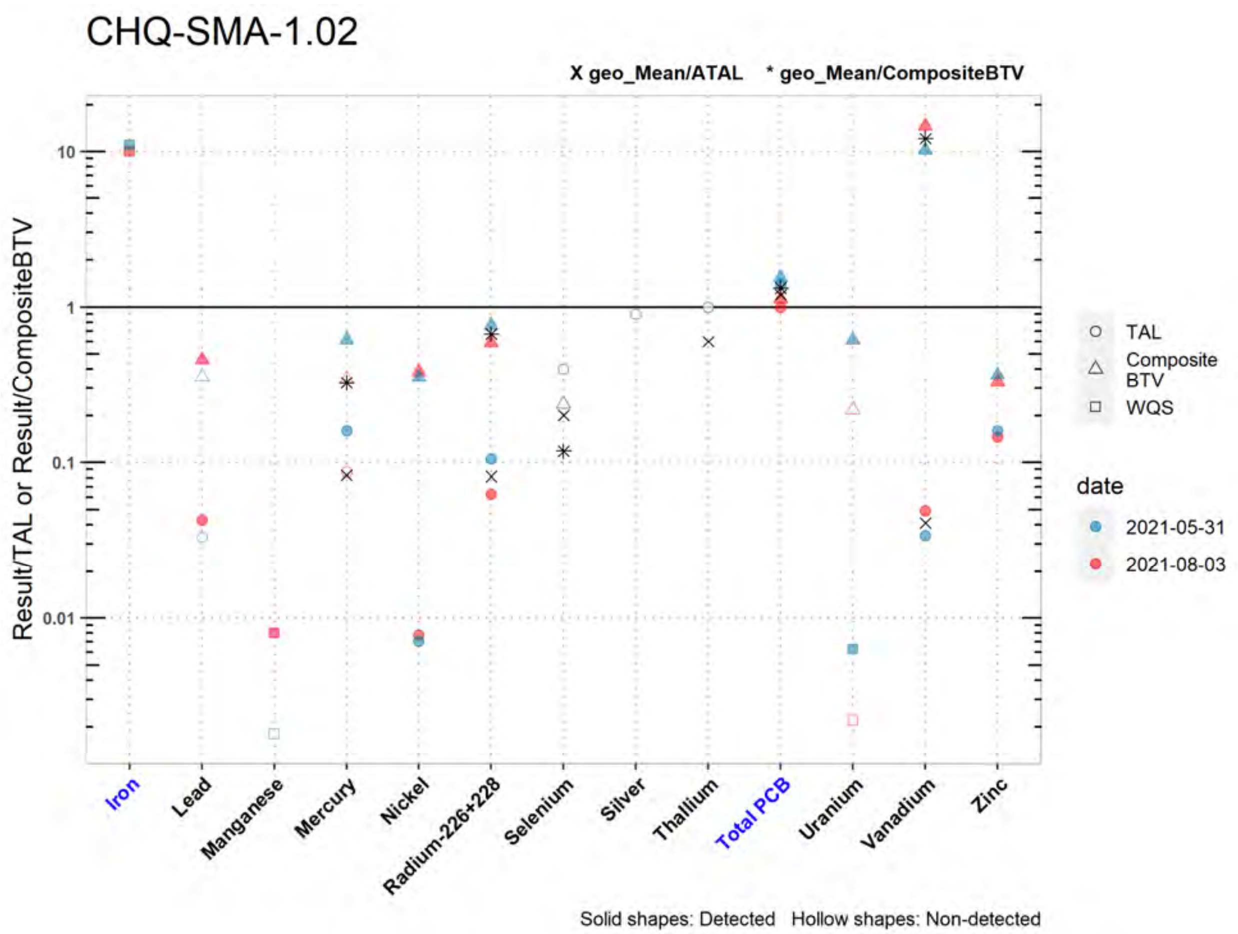


Figure 230.4-2 Analytical Results from Stormwater Samples, CHQ-SMA-1.02 (Plot 2)

CHQ-SMA-1.02

	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	566	NA	340	NA	NA	NA	0.539	194	NA	3.9	22	NA
Composite_BTV	37200	NA	NA	NA	NA	NA	NA	NA	1.24	3.47	NA	56.7
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*
2021-05-31 result	14700	*1.00*	*2.00*	39.6	*0.200*	16.9	*0.300*	*3.00*	*1.00*	5.20	*1.67*	24.8
2021-05-31 dT	26.0	NA	NA	0.020	NA	0.0034	NA	NA	NA	1.33	NA	1.7
2021-05-31 dB	0.439	NA	NA	NA	NA	NA	NA	NA	NA	1.50	NA	0.486
2021-08-03 result	17900	*1.00*	*2.00*	25.1	*0.200*	21.6	*0.300*	*3.00*	1.66	8.50	*1.67*	50.2
2021-08-03 dT	31.6	NA	NA	0.013	NA	0.0043	NA	NA	0.0017	2.18	NA	3.3
2021-08-03 dB	0.687	NA	NA	NA	NA	NA	NA	NA	1.34	2.45	NA	1.26
geo_mean/ATAL	NA	0.00078	0.11	NA	NA	0.0038	NA	NA	0.00091	NA	0.161	2.4
geo_mean/B	NA	NA	NA	NA	NA	NA	NA	NA	0.735	NA	NA	0.784

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 230.4-3 Analytical Results from Stormwater Samples, CHQ-SMA-1.02 (Table 1)

CHQ-SMA-1.02

	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	15.1	NA	NA	154	NA	20	0.336	NA	NA	NA	NA	48.5
Composite_BTV	NA	1.41	NA	0.196	3.10	4.58	8.44	NA	NA	0.0126	0.308	0.338	21.4
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
2021-05-31 result	11200	*0.500*	*2.00*	0.121	1.09	3.15	*2.00*	*0.300*	*0.600*	0.0194	0.189	3.44	7.76
2021-05-31 dT	11	NA	NA	0.16	0.00708	0.105	NA	NA	NA	1.4	0.0063	0.034	0.160
2021-05-31 dB	NA	NA	NA	0.617	0.352	0.764	NA	NA	NA	1.54	0.614	10.2	0.363
2021-08-03 result	10400	0.647	8.82	*0.0670*	1.19	1.89	*2.00*	*0.300*	*0.600*	0.0143	*0.0670*	4.90	7.06
2021-08-03 dT	10	0.0428	0.0080	NA	0.00773	0.0630	NA	NA	NA	1.0	NA	0.049	0.146
2021-08-03 dB	NA	0.459	NA	NA	0.384	0.590	NA	NA	NA	1.13	NA	14.5	0.330
geo_mean/ATAL	NA	NA	NA	0.083	NA	0.0813	0.20	NA	0.6	1.2	NA	0.041	NA
geo_mean/B	NA	NA	NA	0.325	NA	0.671	0.118	NA	NA	1.32	NA	12.1	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 230.4-4 Analytical Results from Stormwater Samples, CHQ-SMA-1.02 (Table 2)

230.4.2 Assessment Unit and Stream Impairments

CHQ-SMA-1.02 drains to Chaquehui Canyon (within LANL), which has an impairment for PCBs. The impairment may be Site-related, based on Site history.

230.5 Site-Specific Demonstration

230.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data but have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

Copper exceeded the applicable screening value in soil data and stormwater data, and will be included in the SAP. The other metals that exceeded the applicable screening values in soil data were previously measured in stormwater, and did not exceed TALs and BTVs. Therefore, they will not be added to the SAP.

230.5.2 Stormwater Data Summary

Copper and PCBs exceeded the TAL and BTV. Aluminum and gross alpha exceeded the TAL but not the BTV.

230.5.3 2022 Permit Status

Due to the exceedance of a composite BTV and/or TAL, corrective action will be initiated at this SMA for copper and PCBs (Part I.C.2.b.i)

231.0 CHQ-SMA-1.03

Associated Sites	33-008(c), 33-012(a), 33-017, C-33-001, C-33-003
Receiving Water	Chaquehui Canyon
Drainage Area	10.52 acres
Landscape Characteristics	23% impervious, 77% pervious
Consent Order Site Status	SWMU 33-008(c): In Progress SWMU 33-012(a): In Progress SWMU 33-017: In Progress AOC C-33-001: In Progress AOC C-33-003: In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Sites.
2022 Permit Status	Active Monitoring/Corrective Action

231.1 2010 Administratively Continued Permit Summary

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

Following the May 2014 submittal to EPA of certification of enhanced control installation as a corrective action (LANL, 2014, 256722), the sampler was relocated to a more representative location, and corrective-action monitoring was initiated. A stormwater sample was collected in August 2018. Monitoring is ongoing until a second confirmation sample is collected from this SMA.

231.2 Site History

33-008(c) (1/25/2022)

SWMU 33-008(c) is a former surface disposal area located east of Main Site buildings 33-39 and 33-113 outside of the Main Site security fence at TA-33. This former disposal site consists of two areas, one near a culvert outfall directly east of building 33-39 where glass bottles and other debris were discovered, and the other consisting of surface debris situated north of the culvert. The culvert receives stormwater runoff from Main Site and is located in a drainage channel that leads to a tributary of Chaquehui Canyon. Debris observed at the site included machined metal turnings, cable, glass bottles, and general trash on the ground surface and in the channel downstream of the culvert.

The outlines of a possible trenched area are visible in aerial photographs from 1958. A small asphalt pad is located at the west end of the northern area, and a partially full bottle was present on the ground surface. In 1999, a BMP was performed at the site, during which all visible debris was removed from the watercourse. Residual debris was removed from SWMU 33-008(c) during the 2019–2020 investigation.

This site was originally reported as a SWMU in the 1996 notification letter to NMED, and is listed as such in Attachment K-1 of the RCRA permit and in the 2005 and 2016 Consent Orders. However, the site is identified as an AOC in recent reports and NMED correspondence.

33-012(a) (1/25/2022)

SWMU 33-012(a) is a former SAA for a former machine shop in building 33-39 at Main Site in the northern portion of TA-33. This SAA was located on an asphalt pad (approximately 20 ft wide × 20 ft long) on the east side of building 33-39, between the building and a storage shed. The area was used to accumulate spent solvents and solvent-contaminated oil, in one 55-gal. drum at a time, in accordance with RCRA requirements (40 CFR 262, Standards Applicable to Generators of Hazardous Waste). Each drum was placed on a pallet or directly on the asphalt pad. Drums containing PCB-contaminated oil and used oil with heavy metals may have also been stored on the asphalt pad. The SAA was established in the mid-1980s and was deactivated by 1992 and moved to the interior of building 33-39.

SAAs and less-than-ninety-day storage areas at the Laboratory are regulated under 40 CFR 262, Standards Applicable to Generators of Hazardous Waste, and 20.4.1 NMAC, Hazardous Waste Management Regulations, and are managed under the LANL SPCC plan when operational. The Laboratory conducts training classes for the operation of these areas, inspects, and has institutional controls governing the closure of these units. The NMED also performs annual inspections of a subset of all active SAAs and less-than-ninety-day storage areas. Because any releases will be cleaned up immediately, these units do not have the potential to become historical release sites. Therefore, these areas will continue to be regulated under 3004(a) of RCRA, rather than 3004(u), HSWA.

The 1990 SWMU Report noted the presence of multiple oil stains at this site. However, the 1992 RFI work plan states that no evidence of oil staining was observed.

33-017 (1/25/2022)

SWMU 33-017 consists of areas potentially impacted by operational releases from former operations within Main Site at TA-33. SWMU 33-017 is located at the northern and eastern edges of Main Site and is approximately 600 ft long × 100 to 600 ft wide. The site generally slopes downward to the east and is located at the head of a small drainage tributary of Chaquehui Canyon. SWMU 33-017 is potentially impacted by runoff from the paved areas of the Main Site complex, by deposition from airborne releases from TA-33 Main Site facilities, and by operational releases from an area east of building 33-39 previously used for vehicle maintenance.

Operations conducted within Main Site include uranium processing and machining, cadmium and silver welding and soldering, lead melting and casting, cadmium and beryllium machining, and tritium processing and decontamination. Additional materials handled at Main Site facilities included mercury and organic solvents. Operations at Main Site began in 1949 and continued until 1972. When these operations ceased, some of the facilities were used for offices and electronics laboratories, and remain active.

C-33-001 (1/25/2022)

AOC C-33-001 consists of a former PCB transformer (former structure 33-124) adjacent to the northeast corner of building 33-114, in the northern portion of the Main Site at TA-33. The transformer was mounted on a 15-ft-long × 50-ft-wide concrete pad next to the northeast wall of building 33-114, and was bounded by asphalt to the north, east, and south. The pad was enclosed by a fence and accessible only through a locked gate.

The transformer (former structure 33-124) was placed into service in the 1950s, and the mineral oil in the transformer contained PCBs. Oil stains were observed on the concrete pad, and leaks from the transformer were observed, during routine inspections conducted between September 1985 and March 1992.

In 1992, the transformer was removed and replaced with a non-PCB transformer as part of the DOE program to remove all PCB-containing electrical equipment. The stained areas on the concrete pad were double-washed and double-rinsed; however, post-cleanup sampling was not conducted to verify the completion of cleanup as required by the TSCA PCB-spill cleanup requirements [40 CFR 761.130]. Sampling conducted during the transformer replacement was limited to the area where the old transformer had been placed temporarily during removal.

C-33-003 (2/18/2021)

AOC C-33-003 consists of two fill areas located at the Main Site area at the northern end of TA-33. This fill was used to level sites for two portable trailers. One of the trailers (former structure 33-169) was installed next to the Main Site water tower. The area filled to accommodate trailer 33-169 is approximately 100 ft × 100 ft × 4 ft deep. The other trailer (former structure 33-170) was installed north of building 33-114. The area filled to accommodate trailer 33-170 is approximately 70 ft × 90 ft × 7 ft deep.

Both trailers were installed in January 1984 and removed in June 1988. After the trailers were removed, no further improvements were made to these sites. Three projectiles, one of which contained uranium, were discovered in the fill area next to the water tower during brush-clearing activities conducted during the spring of 1996. The source of these projectiles appears to have been the fill material that had been obtained from the cinder cone located in Area 6, just west of Main Site. Projectiles historically were fired into the base of the cinder cone during experiments conducted at the Area 6 firing area [SWMU 33-007(c)].

For investigation activities for AOC C-33-003, refer to "Investigation Report for Chaquehui Canyon Aggregate Area" (N3B 2020, 701046). For investigation activities for SWMUs 33-008(c), 33-012(a), 33-017, and AOC C-33-001, refer to "Phase II Investigation Report for Chaquehui Canyon Aggregate Area" (N3B 2021, 701606).

231.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 231.2-1.

Table 231.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
33-008(c)	Landfill	Metals, inorganic and organic chemicals, PAHs
33-012(a)	Drum storage area	Metals, PCBs
33-017	Operational release	Beryllium, cadmium, lead, mercury, silver, PCBs, polonium, tritium, DU and enriched uranium, pesticides
C-33-001	Former transformer	PCBs
C-33-003	Soil contamination	Metals, uranium

231.3 Consent Order Soil Data

Decision-level data for SWMU 33-008(c) consist of results from samples collected in 1996, 2020, and 2021. The 2021 Phase II IR (N3B 2021, 701606) concluded that the extent of contamination is not defined and additional sampling is required.

Decision-level data for SWMU 33-012(a) consist of results from samples collected at in 2020 and 2021. The 2021 Phase II IR (N3B 2021, 701606) concluded that the lateral and vertical extent of inorganic and organic chemicals is not fully defined at SWMU 33-012(a).

Decision-level data for SWMU 33-017 consist of results from samples collected in 1996, 2020, and 2021. The 2021 Phase II IR (N3B 2021, 701606) concluded that the lateral and vertical extent of contamination is defined, except for the lateral extent of lead at one location.

Decision-level data for AOC C-33-001 consist of results from samples collected in 1996, 2020, and 2021. The 2021 Phase II IR (N3B 2021, 701606) concluded that the lateral and vertical extent of organic compounds are defined, or no further sampling for extent is warranted, except for determining lateral extent of Aroclor-1254 at one sample location and Aroclor-1260 at an additional sample location.

Decision-level data for AOC C-33-003 consist of results from samples collected in 1999 and 2020. The 2020 IR (N3B 2020, 701046) concluded that the nature and extent of contamination are defined.

Analytical results for all soil samples for this SMA are presented in Figures 231.3-1 through 231.3-4.

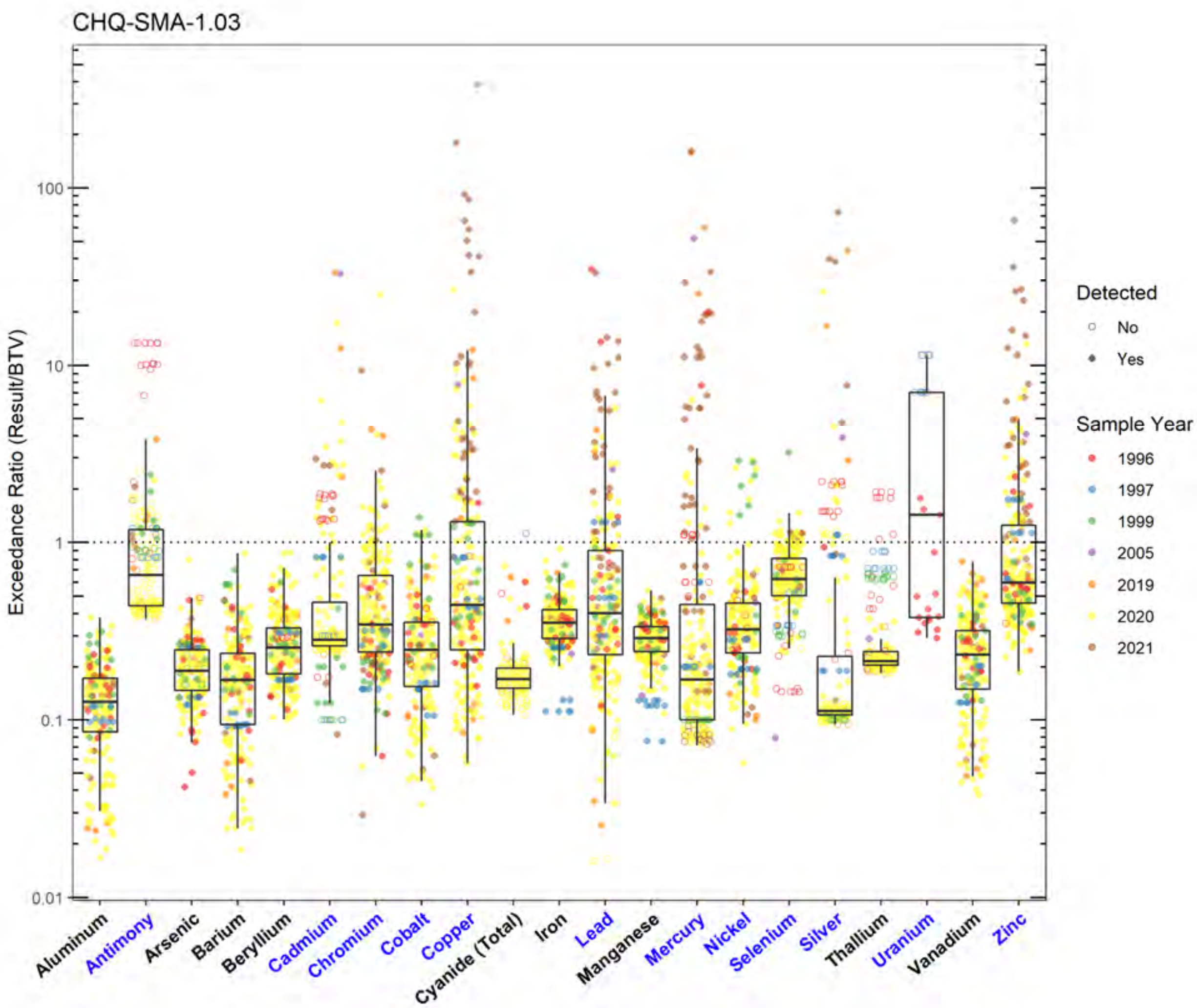


Figure 231.3-1 Inorganics Analytical Results from Soil Samples Associated with CHQ-SMA-1.03

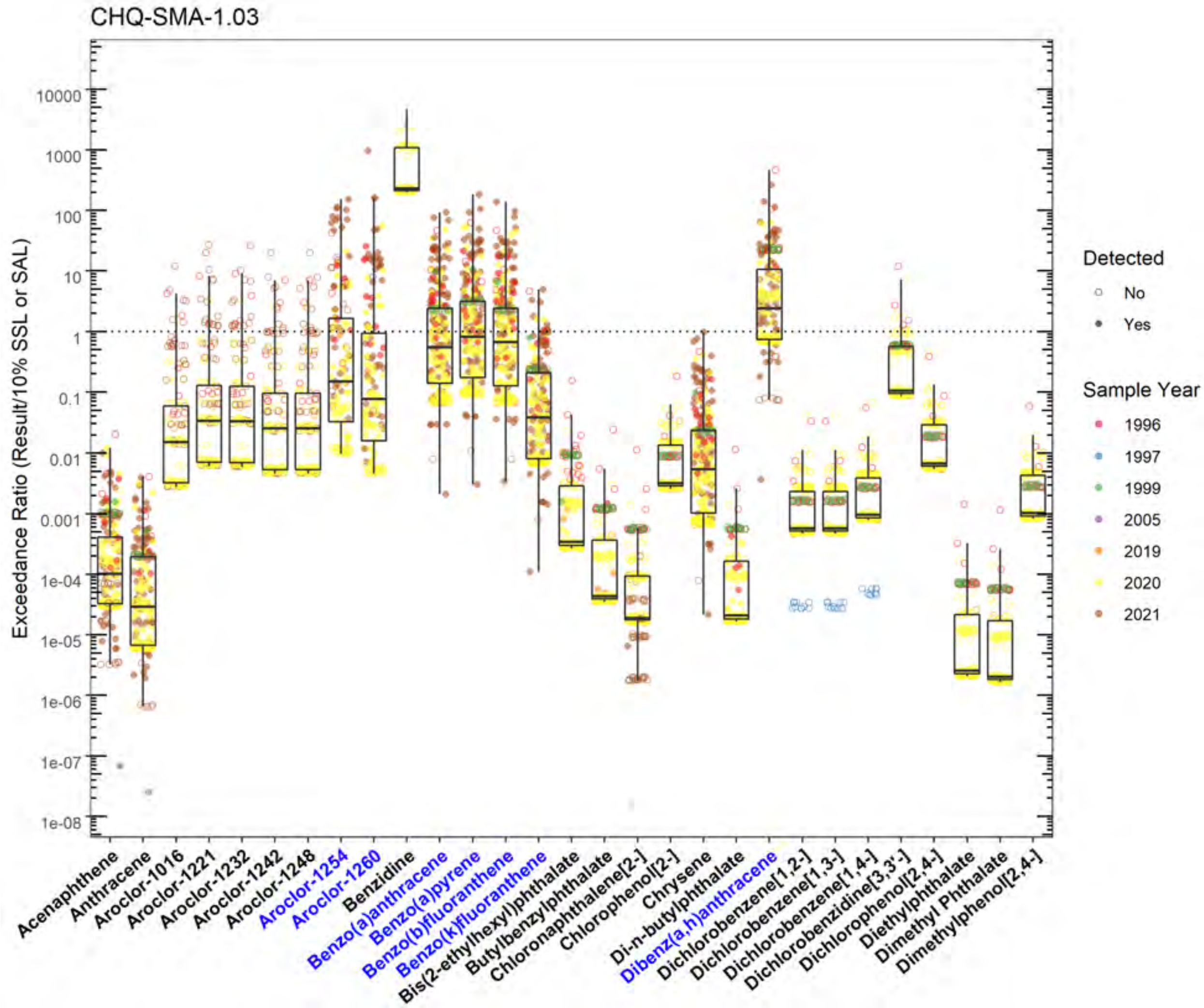


Figure 231.3-2 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-1.03 (Plot 1)

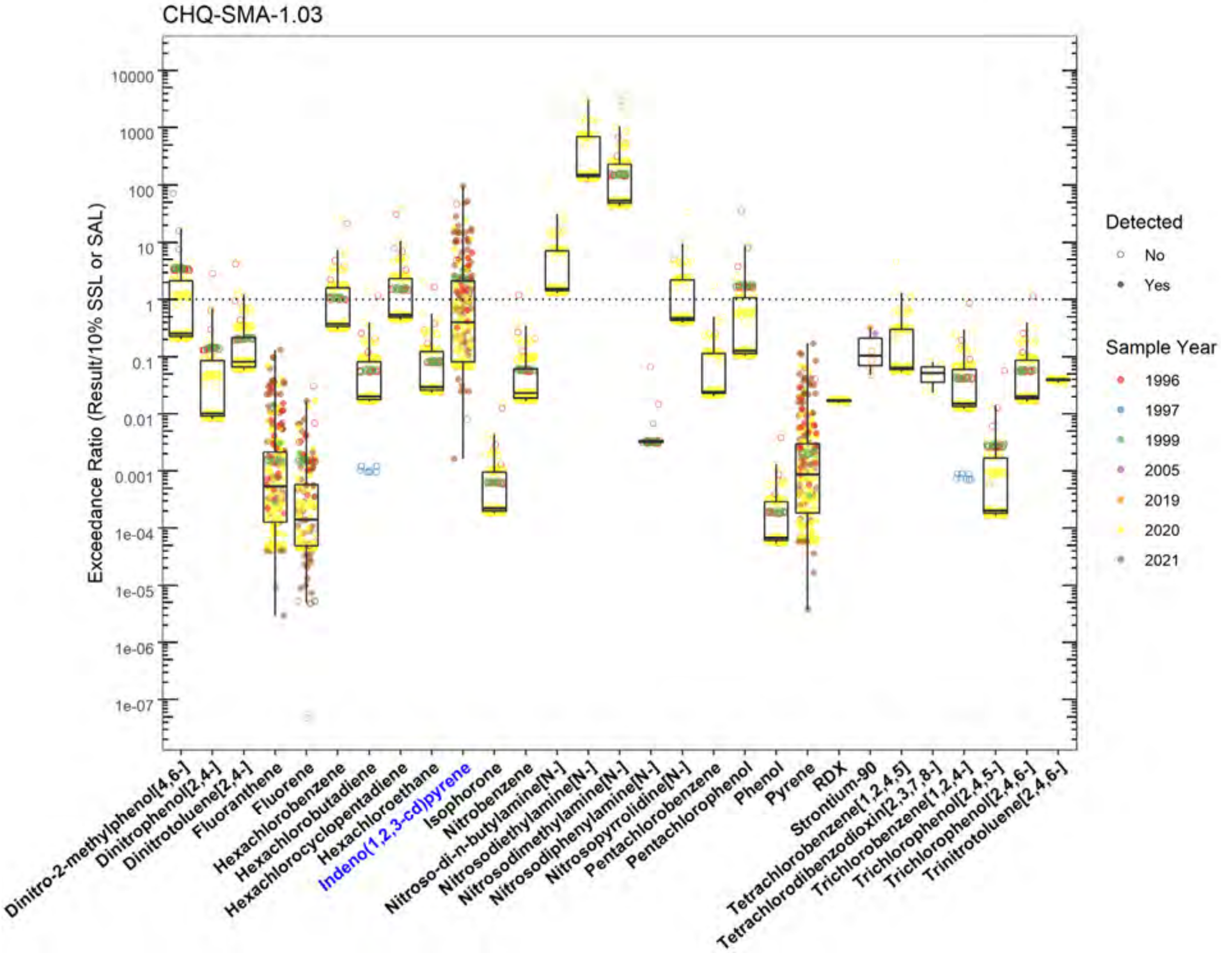


Figure 231.3-3 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-1.03 (Plot 2)

CHQ-SMA-1.03

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	CHQ-SMA-1.03	Sb	Y	BTV	0.830	3.17	2019-12-17
Aroclor-1254	CHQ-SMA-1.03	11097-69-1	Y	SSL_0.1	0.114	17.3	2021-04-14
Aroclor-1260	CHQ-SMA-1.03	11096-82-5	Y	SSL_0.1	0.243	233	2021-04-12
Benzo(a)anthracene	CHQ-SMA-1.03	56-55-3	Y	SSL_0.1	0.153	14.2	2021-05-05
Benzo(a)pyrene	CHQ-SMA-1.03	50-32-8	Y	SSL_0.1	0.112	20.5	2021-05-05
Benzo(b)fluoranthene	CHQ-SMA-1.03	205-99-2	Y	SSL_0.1	0.153	21.1	2021-05-05
Benzo(k)fluoranthene	CHQ-SMA-1.03	207-08-9	Y	SSL_0.1	1.53	7.57	2021-05-05
Cadmium	CHQ-SMA-1.03	Cd	Y	BTV	0.400	13.3	2019-12-17
Chromium	CHQ-SMA-1.03	Cr	Y	BTV	19.3	482	2020-02-19
Cobalt	CHQ-SMA-1.03	Co	Y	BTV	8.64	11.9	1999-05-12
Copper	CHQ-SMA-1.03	Cu	Y	BTV	14.7	5710	2021-05-05
Dibenz(a,h)anthracene	CHQ-SMA-1.03	53-70-3	Y	SSL_0.1	0.0153	4.05	2021-05-05
Indeno(1,2,3-cd)pyrene	CHQ-SMA-1.03	193-39-5	Y	SSL_0.1	0.153	14.6	2021-05-05
Lead	CHQ-SMA-1.03	Pb	Y	BTV	22.3	774	1996-07-02
Mercury	CHQ-SMA-1.03	Hg	Y	BTV	0.100	16.2	2021-05-05
Nickel	CHQ-SMA-1.03	Ni	Y	BTV	15.4	44.9	2020-02-12
Selenium	CHQ-SMA-1.03	Se	Y	BTV	1.52	4.90	1999-05-12
Silver	CHQ-SMA-1.03	Ag	Y	BTV	1.00	72.9	2021-02-01
Uranium	CHQ-SMA-1.03	U	Y	BTV	1.82	3.22	1996-10-02
Zinc	CHQ-SMA-1.03	Zn	Y	BTV	48.8	3220	2021-05-05

Figure 231.4-1 Screening-Level Exceedances from Soil Samples Associated with CHQ-SMA-1.03

231.4 Stormwater Evaluation

231.4.1 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 for that sample are presented in Figures 231.4-1 through 231.4-4.

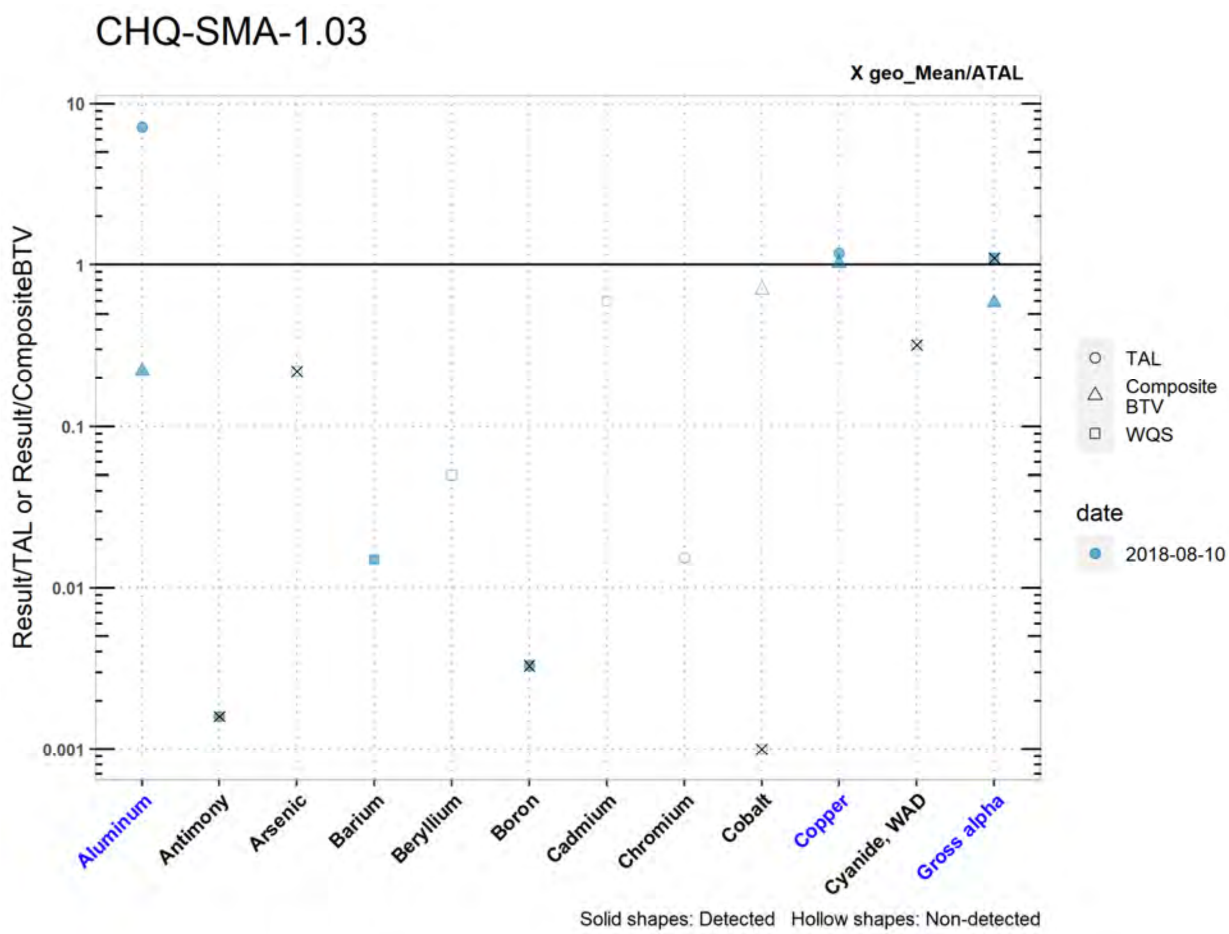


Figure 231.4-1 Analytical Results from Stormwater Sample, CHQ-SMA-1.03 (Plot 1)

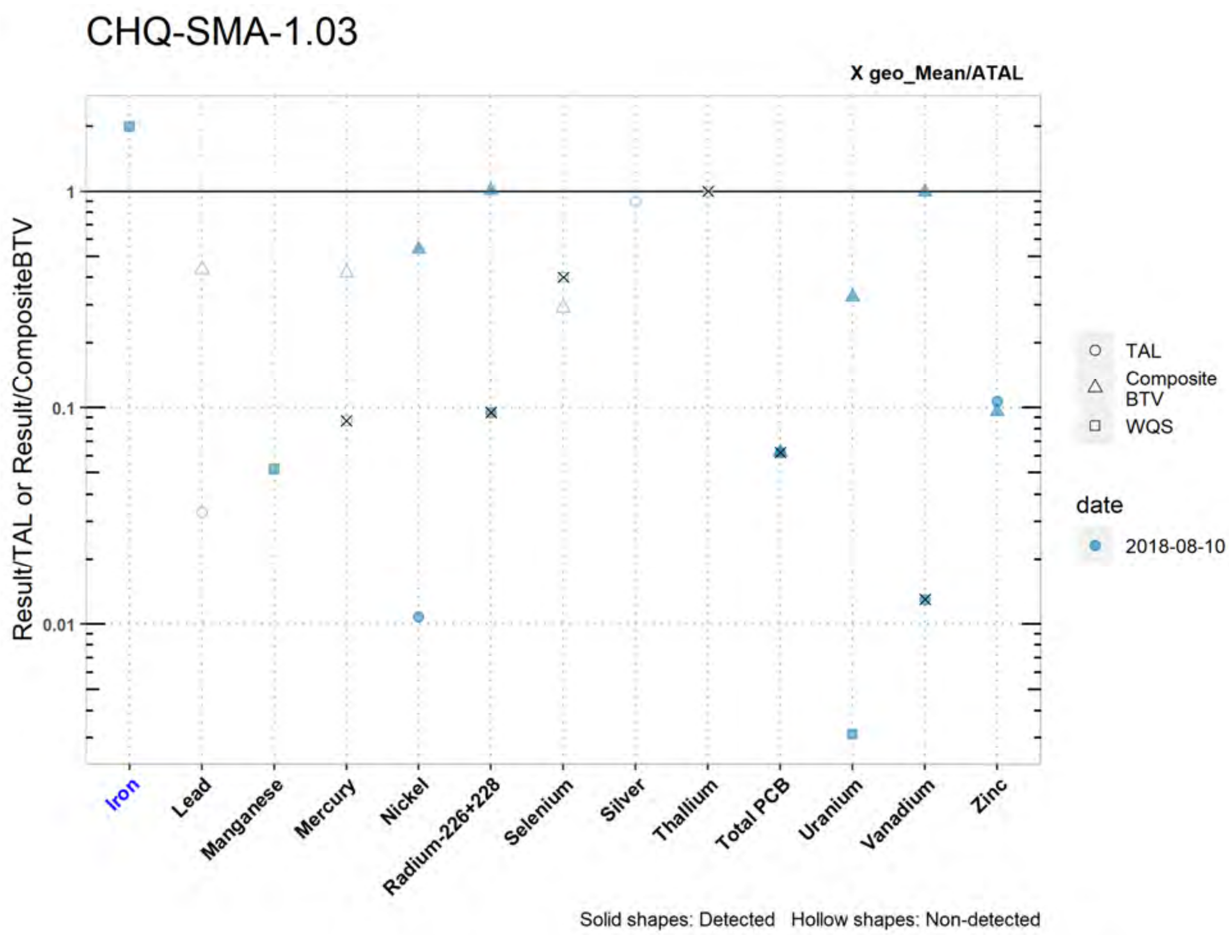


Figure 231.4-2 Analytical Results from Stormwater Sample, CHQ-SMA-1.03 (Plot 2)

CHQ-SMA-1.03

	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	566	NA	340	NA	NA	NA	0.539	194	NA	3.9	22	NA
Composite_BTV	36600	NA	NA	NA	NA	NA	NA	NA	1.43	4.50	NA	55.4
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*
2018-08-10 result	4050	1.01	*2.00*	29.2	*0.200*	16.5	*0.300*	*3.00*	*1.00*	4.60	*1.67*	16.2
2018-08-10 dT	7.16	0.0016	NA	0.015	NA	0.0033	NA	NA	NA	1.18	NA	1.1
2018-08-10 dB	0.221	NA	NA	NA	NA	NA	NA	NA	NA	1.02	NA	0.585
geo_mean/ATAL	NA	0.0016	0.22	NA	NA	0.0033	NA	NA	0.0010	NA	0.321	1.1

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 231.4-3 Analytical Results from Stormwater Sample, CHQ-SMA-1.03 (Table 1)

CHQ-SMA-1.03

	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	15.1	NA	NA	154	NA	20	0.336	NA	NA	NA	NA	48.5
Composite_BTV	NA	1.15	NA	0.160	3.10	5.65	6.89	NA	NA	0.0139	0.288	1.31	54.3
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
2018-08-10 result	1990	*0.500*	57.6	*0.0670*	1.67	2.85	*2.00*	*0.300*	*0.600*	0.000863	0.0940	1.30	5.21
2018-08-10 dT	2.0	NA	0.052	NA	0.0108	0.0950	NA	NA	NA	0.062	0.0031	0.013	0.107
2018-08-10 dB	NA	NA	NA	NA	0.539	1.01	NA	NA	NA	0.0621	0.326	0.992	0.0959
geo_mean/ATAL	NA	NA	NA	0.087	NA	0.0950	0.40	NA	1	0.062	NA	0.013	NA

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

Figure 231.4-4 Analytical Results from Stormwater Sample, CHQ-SMA-1.03 (Table 2)

231.4.2 Assessment Unit and Stream Impairments

CHQ-SMA-1.03 drains to Chaquehui Canyon (within LANL), which has an impairment for PCBs. The impairment may be Site-related, based on Site history.

231.5 Site-Specific Demonstration

231.5.1 Soil Data Summary

The following parameters exceeded the applicable screening values in soil data and have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

Copper exceeded the applicable screening value in soil data and the TAL and BTV in stormwater data, and will be included in the SAP. The other metals that exceeded the applicable screening values in soil data were previously monitored in stormwater data and did not exceed TALs and BTVs. Therefore, they will not be added to the SAP.

231.5.2 Stormwater Data Summary

Copper exceeded the TAL and BTV.

Aluminum and gross alpha exceeded the TAL but not the BTV.

Iron exceeded the WQS in one sample. However, there is no TAL in the Permit for iron; only POCs with TALs are used in the SSD.

231.5.3 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.2.b.i) for copper. The SMA is also in active monitoring; not all Site-related POCs were monitored for in previous samples.

231.5.4 Sampling and Analysis Plan

Table 231.5-1 is the proposed SAP for CHQ-SMA-1.03.

Table 231.5-1 Proposed SAP, CHQ-SMA-1.03

Monitoring Constituent	Background for Monitoring
SVOCs	Site history (organics) and soil data
Pesticides	Site history
DOC	Permit requirement
SSC	Permit requirement

232.0 CHQ-SMA-2

Associated Sites	33-004(d), 33-007(c), C-33-003
Receiving Water	Chaquehui Canyon
Drainage Area	13.70 acres
Landscape Characteristics	6% impervious, 94% pervious
Consent Order Site Status	SWMU 33-004(d): In Progress SWMU 33-007(c): In Progress AOC C-33-003: In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

232.1 2010 Administratively Continued Permit Summary

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

Following the October 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600980), corrective-action monitoring was initiated, and stormwater samples were collected in July and August 2018. Analytical results from these samples initiated corrective action.

Following the April 2021 submittal to EPA of certification of enhanced control installation as a corrective action (N3B 2021, 701388), corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection. Corrective-action monitoring is ongoing until at least one confirmation sample is collected from this SMA.

232.2 Site History

33-004(d) (2/18/2021)

SWMU 33-004(d) is an abandoned septic system consisting of a septic tank (structure 33-121), inlet and outlet drainlines, an outfall, and an associated tile drain field located at Area 6 in TA-33.
Septic tank 33-121 is located approximately 100 ft east of building 33-16 in the northwest portion of TA-33. The septic tank is constructed of corrugated iron and has a capacity of 500 gal.

Septic tank 33-121 received wastewater from a toilet and sink in former laboratory building 33-01. Building 33-01 and an associated machine shop (former building 33-02) were constructed on skids and moved on-site in 1946 or 1947. Use of building 33-01 was discontinued in 1991 and the building was removed in 1994; the septic system was abandoned in place. While building 33-01 was occupied, effluent was discharged from the septic tank to a drain field located approximately 20 ft east of the tank.

Building 33-01 was used from 1948 to 1955 to support nonexplosive initiator tests conducted at Area 6. In 1958, the building was used to grow crystals of potassium niobate, and possibly other types of crystals (aluminates, titanates, tungstates, etc.). Silver plating was also reportedly performed in this building. Later, building 33-01 was used as office space and for storage, until use of the building was discontinued in 1991. A 1993 study of drains and discharges at TA-33 determined that the only discharges to the septic system were from a lavatory, toilet, and sink drain.

The 1992 RFI work plan identifies a small drain field 20 ft east of the tank and a 4-in. PVC pipe that drained to a buried outfall in a side wash of Chaquehui Canyon. The 1995 RFI report describes the septic tank as a 500-gal. corrugated iron tank located 50 ft southeast of building 33-01, associated with 4-in. inlet and outlet drainlines, and a single line of vitrified clay tiles at the end of the outlet line, laid in gravel and terminating at the outfall 5 ft below grade. Land surface at the tank location slopes east approximately 200 ft to a shallow drainage eroded into the bedrock that flows south. The septic system components were uncovered during the 1993 RFI.

The septic tank (structure 33-121) was removed during the 2019–2020 Consent Order investigation. The inlet and outlet were plugged but the drainlines and drain field remain in place.

33-007(c) (1/25/2022)

SWMU 33-007(c) consists of two abandoned gun-firing areas associated with the initiator tests conducted at Area 6 in the west-central portion of TA-33. The first gun-firing area included a gun building (former structure 33-16), a gun mount (structure 33-64), and an earthen berm (structure 33-60). Structure 33-16 was completed in 1949 and housed an air gun, and then electronic equipment, to measure neutron production in gun-type initiators containing beryllium and polonium-210. The concrete firing pad, on which the gun was mounted, was located immediately west of structure 33-16. The pad measured 6 ft × 10 ft and was surrounded by a concrete apron. Guns with bore diameters ranging from 4-in. to 8-in. fired projectiles into berms where two 6-ft × 6-ft catcher boxes constructed of wood timbers were embedded in the north end of berm structure 33-60. The two catcher boxes were located approximately 20 ft south of structure 33-16 and contained soil, wood chips, and vermiculite.

The second gun-firing area included a large gun (structure 33-65), a hillside embankment (structure 33-61), and two barricades (structures 33-62 and 33-72) located north and east of the gun. The two concrete firing pads were located in a level area excavated into a basaltic cinder cone, approximately 100 ft southwest of structure 33-16. Guns with bore diameters ranging from 2 in. to 5 in. were placed on the concrete pads and used to fire projectiles containing test assemblies into targets placed in front of the catcher boxes. Materials used in the projectiles included beryllium, polonium-210, uranium, copper, lead, tungsten, and stainless steel. The projectiles frequently cracked open, contaminating the pads and surrounding area with polonium-210.

Two wooden barricades constructed of 8-in. × 8-in. timbers are located north and east of the shot pads. This area was used to test nuclear gun mockups. A gun with a 4-in. to 5-in. bore was used to fire projectiles into the back of the excavation, which currently extends about 75 ft farther back than when the site was used. Contaminated areas on the guns and pads were painted with lead-based paint to fix surface contamination.

A 1951 memorandum describes a test at Area 6 that resulted in a release of radioactive material from a projectile. The site was cleaned up using a bulldozer to scrape away the contaminated soil and embankment. A 1954 memorandum describes decontamination of one of the Area 6 gun barrels by removing loose material, leaving impregnated spots as high as 1 million cpm. Contaminated surface soil was bulldozed from the shot area into the adjacent canyon. Shots were discontinued at Area 6 by 1955. In 1956, structure 33-16 was used to make and machine laminating materials containing barium, titanium, lead, and zinc using epoxy resins. An exhaust blower and stack were installed along with an emissions stack.

The buildings in Area 6 have been vacant since the late 1950s. The cinder cone has been further excavated. Currently, an aluminum tower (structure 33-192) is used for atmospheric physics monitoring within the excavated portion of the cinder cone.

C-33-003 (2/18/2021)

AOC C-33-003 consists of two fill areas located at the Main Site area at the northern end of TA-33. This fill was used to level sites for two portable trailers. One of the trailers (former structure 33-169) was installed next to the Main Site water tower. The area filled to accommodate trailer 33-169 is approximately 100 ft × 100 ft × 4 ft deep. The other trailer (former structure 33-170) was installed north of building 33-114. The area filled to accommodate trailer 33-170 is approximately 70 ft × 90 ft × 7 ft deep.

Both trailers were installed in January 1984 and removed in June 1988. After the trailers were removed, no further improvements were made to these sites. Three projectiles, one of which contained uranium, were discovered in the fill area next to the water tower during brush-clearing activities conducted during the spring of 1996. The source of these projectiles appears to have been the fill material that had been obtained from the cinder cone located in Area 6, just west of Main Site. Projectiles historically were fired into the base of the cinder cone during experiments conducted at the Area 6 firing area [SWMU 33-007(c)].

For investigation activities for SWMU 33-004(d) and AOC C-33-003, refer to “Investigation Report for Chaquehui Canyon Aggregate Area” (N3B 2020, 701046). For investigation activities for SWMU 33-007(c), refer to “Phase II Investigation Report for Chaquehui Canyon Aggregate Area” (N3B 2021, 701606).

232.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 232.2-1.

Table 232.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
33-004(d)	Septic system	Metals, aluminum, iron, beryllium, silver, cyanide, organic chemicals, natural uranium
33-007(c)	Firing site	Beryllium, barium, copper, lead, polonium-210, uranium, zinc
C-33-003	Soil contamination	Metals, uranium

232.3 Consent Order Soil Data

Decision-level data for SWMU 33-004(d) consist of results from samples collected in 1995 and 2020. The 2020 IR (N3B 2020, 701046) concluded that the nature and extent of contamination have been defined.

Decision-level data at SWMU 33-007(c) consist of results from samples collected in 2020 and 2021. The 2021 Phase II IR (N3B 2021, 701606) concluded that the lateral and vertical extent of contamination is defined and no further sampling for extent is warranted.

Decision-level data for AOC C-33-003 consist of results from samples collected in 1999 and 2020. The 2020 IR (N3B 2020, 701046) concluded that the nature and extent of contamination are defined.

Analytical results for all soil samples for this SMA are presented in Figures 232.3-1 through 232.3-4.

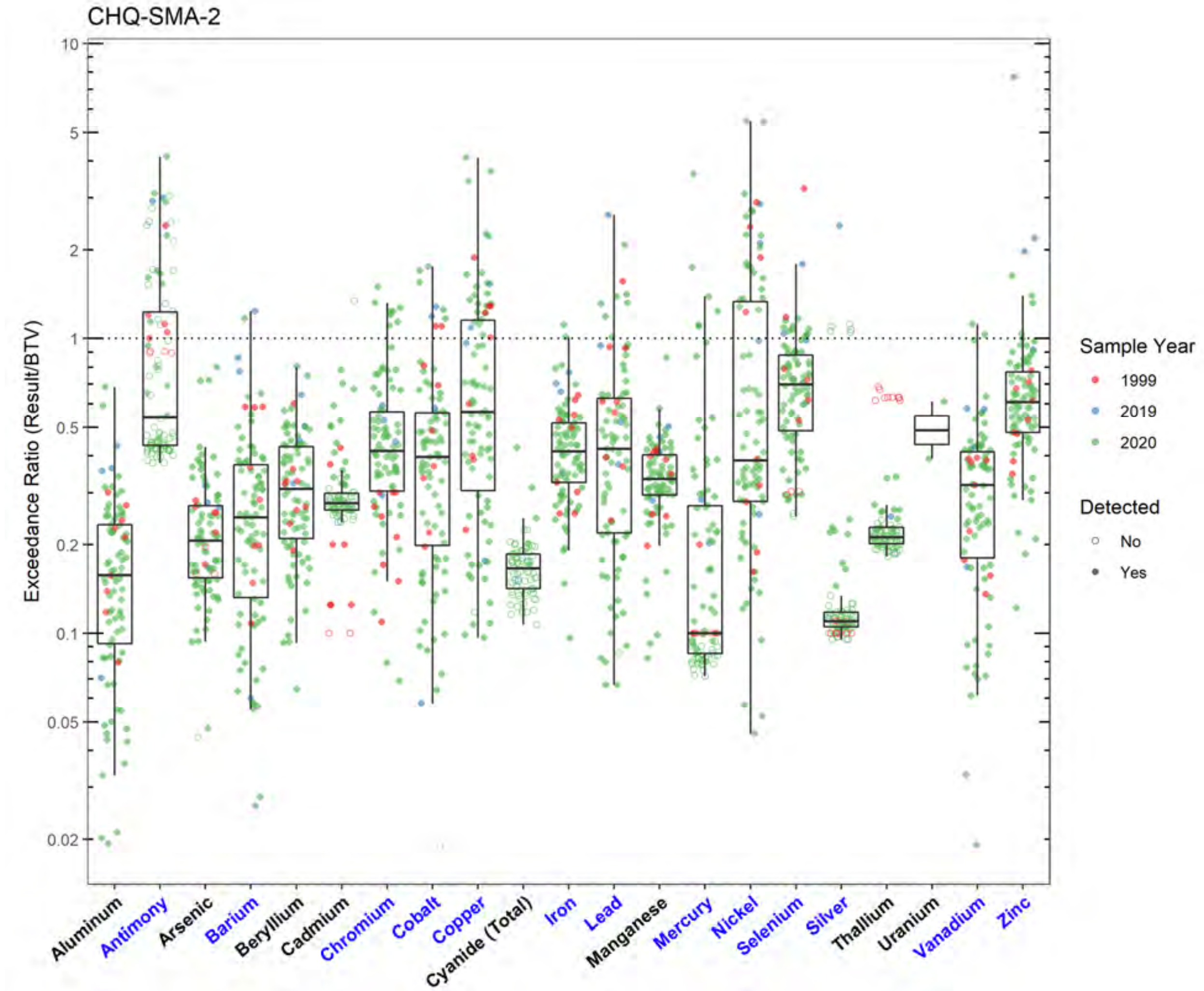


Figure 232.3-1 Inorganics Analytical Results from Soil Samples Associated with CHQ-SMA-2

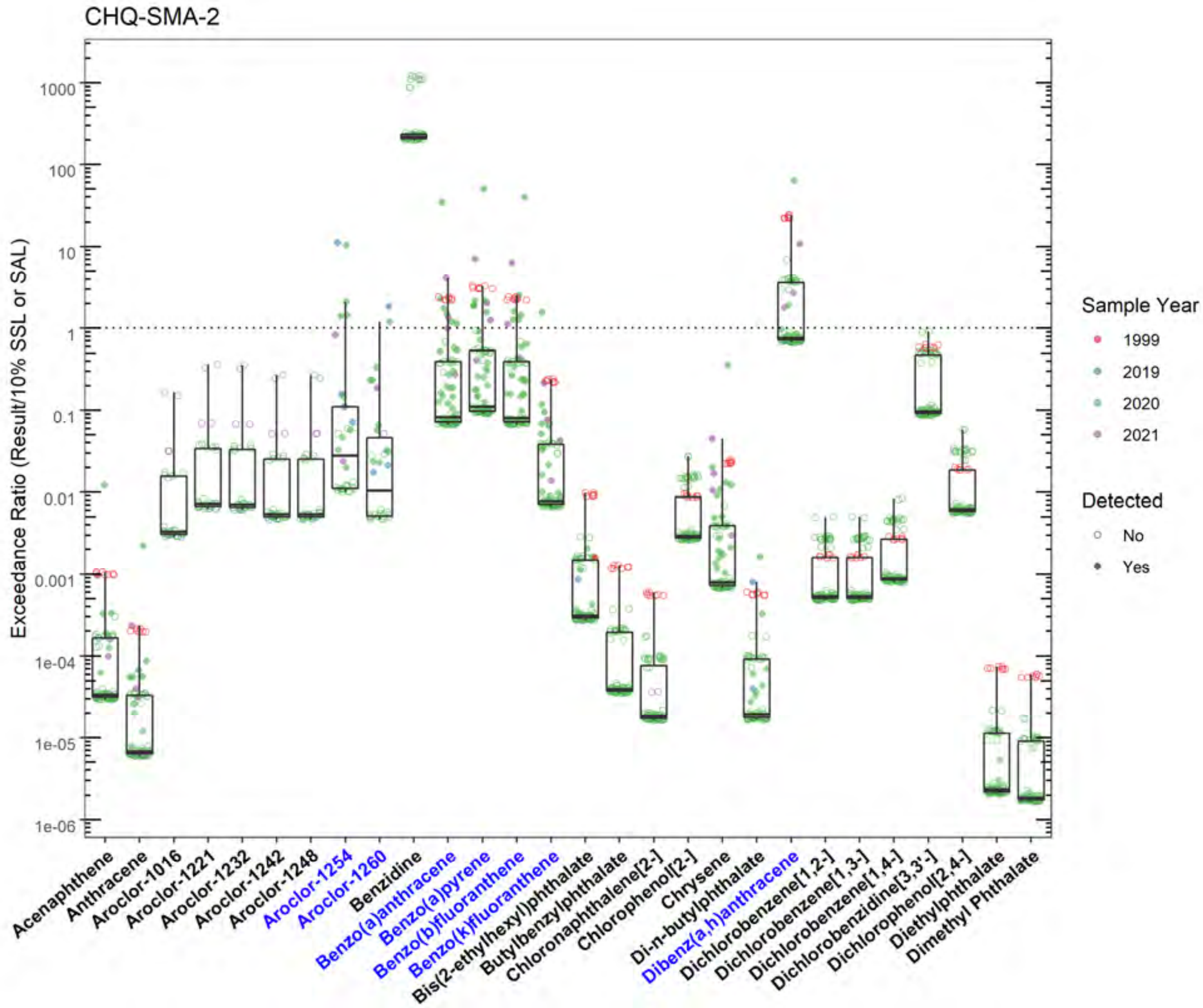


Figure 232.3-2 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-2 (Plot 1)

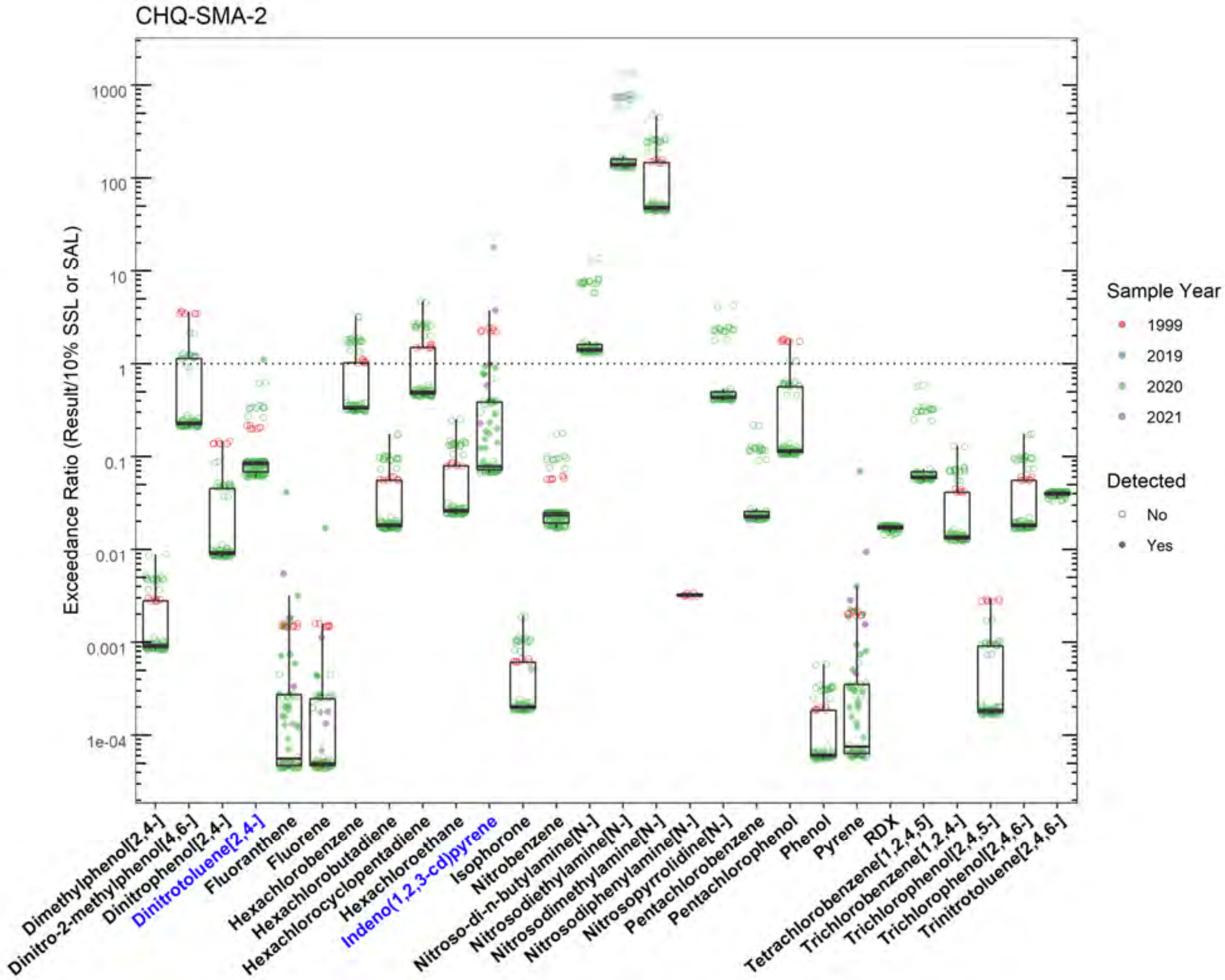


Figure 232.3-3 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-2 (Plot 2)

CHQ-SMA-2

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	CHQ-SMA-2	Sb	Y	BTV	0.830	3.43	2020-03-10
Aroclor-1254	CHQ-SMA-2	11097-69-1	Y	SSL_0.1	0.114	1.27	2019-11-20
Aroclor-1260	CHQ-SMA-2	11096-82-5	Y	SSL_0.1	0.243	0.445	2019-11-20
Barium	CHQ-SMA-2	Ba	Y	BTV	295	367	2019-11-20
Benzo(a)anthracene	CHQ-SMA-2	56-55-3	Y	SSL_0.1	0.153	5.31	2020-02-12
Benzo(a)pyrene	CHQ-SMA-2	50-32-8	Y	SSL_0.1	0.112	5.64	2020-02-12
Benzo(b)fluoranthene	CHQ-SMA-2	205-99-2	Y	SSL_0.1	0.153	6.07	2020-02-12
Benzo(k)fluoranthene	CHQ-SMA-2	207-08-9	Y	SSL_0.1	1.53	2.40	2020-02-12
Chromium	CHQ-SMA-2	Cr	Y	BTV	19.3	28.9	2020-01-28
Cobalt	CHQ-SMA-2	Co	Y	BTV	8.64	15.1	2020-02-07
Copper	CHQ-SMA-2	Cu	Y	BTV	14.7	60.2	2020-02-04
Dibenz(a,h)anthracene	CHQ-SMA-2	53-70-3	Y	SSL_0.1	0.0153	0.965	2020-02-12
Dinitrotoluene[2,4-]	CHQ-SMA-2	121-14-2	Y	SSL_0.1	1.71	1.88	2020-03-11
Indeno(1,2,3-cd)pyrene	CHQ-SMA-2	193-39-5	Y	SSL_0.1	0.153	2.75	2020-02-12
Iron	CHQ-SMA-2	Fe	Y	BTV	21500	23900	2020-02-07
Lead	CHQ-SMA-2	Pb	Y	BTV	22.3	58.4	2019-11-20
Mercury	CHQ-SMA-2	Hg	Y	BTV	0.100	0.361	2020-01-09
Nickel	CHQ-SMA-2	Ni	Y	BTV	15.4	84.0	2020-03-11
Selenium	CHQ-SMA-2	Se	Y	BTV	1.52	4.90	1999-05-12
Silver	CHQ-SMA-2	Ag	Y	BTV	1.00	2.41	2019-11-20
Vanadium	CHQ-SMA-2	V	Y	BTV	39.6	44.2	2020-02-07
Zinc	CHQ-SMA-2	Zn	Y	BTV	48.8	376	2019-11-22

Figure 232.3-4 Screening-Level Exceedances from Soil Samples Associated with CHQ-SMA-2

232.4 Stormwater Evaluation

232.4.1 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.

232.4.2 Assessment Unit and Stream Impairments

CHQ-SMA-2 drains to Chaquehui Canyon (within LANL), which has an impairment for PCBs. The impairment may be Site-related, based on Site history.

232.5 Site-Specific Demonstration

232.5.1 Soil Data Summary

The following Site-related POCs exceeded the applicable screening values in soil data, but have not yet been measured in stormwater: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, dinitrotoluene[2,4-], and indeno(1,2,3-cd)pyrene.

The metals that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs, Therefore, they will not be added to the SAP.

232.5.2 Stormwater Data Summary

No data for the current monitoring stage have been collected. In the previous monitoring stage:

- Copper exceeded the TAL and BTV, and will be added to the SAP.
- Gross alpha result exceeded TAL and was below BTV.
- PCBs did not exceed TAL.

- Iron exceeded BV in soil but did not exceed the WQS. However, there is no TAL in the Permit for iron; only POCs with TALs are used in the SSD.

232.5.3 2022 Permit Status

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

232.5.4 Sampling and Analysis Plan

Table 232.5-1 is the proposed SAP for CHQ-SMA-2.

Table 232.5-1 Proposed SAP, CHQ-SMA-2

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

233.0 CHQ-SMA-3.05

Associated Sites	33-010(f)
Receiving Water	Chaquehui Canyon
Drainage Area	0.30 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 33-010(f): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

233.1 2010 Administratively Continued Permit Summary

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

Following the August 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600776), 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. Corrective-action monitoring is ongoing until at least one confirmation sample is collected from this SMA.

233.2 Site History

33-010(f) (12/21/2021)

SWMU 33-010(f) is a reported surface disposal area consisting of two small surface disposal areas, located 300 ft southeast of former building 33-86 and approximately 50 ft apart at Main Site at TA-33. The history of the site and the origins of the wastes are not known.

The 1990 SWMU Report states that the SWMU was identified during a 1987 ER Project reconnaissance, and describes the site as concrete, cans, and metal pieces that littered the area east of the former Tritium Facility (former building 33-86). The 1995 RFI report describes this SWMU as consisting of two small surface disposal areas, located 300 ft southeast of former building 33-86 and approximately 50 ft apart. One of the areas is described as approximately 15 ft^2 and the other as approximately 10 ft × 20 ft. Materials at the site included pieces of concrete; piles of tuff and cured asphalt; rusted metal cans, rebar, and strapping bands; and other miscellaneous construction debris. Although the source of these materials is not known, some were believed to be associated with roadwork activities. During the 2005 VCA conducted at SWMUs 33-002(a-e) directly north and east of SWMU 33-010(f), only small piles of soil and a few pieces of concrete were observed to be present at the site. Residual debris was removed from SWMU 33-010(f) during the 2019–2020 Consent Order investigation.

SWMU 33-010(f) is a component of MDA K, which consists of the former locations of a septic system and two seepage pits with drainlines and outfalls that served building 33-86, and a former surface disposal area. MDA K is in the southeast area of Main Site at TA-33.

For investigation activities, refer to "Investigation Report for Chaquehui Canyon Aggregate Area" and "Addendum to the Investigation Report for Chaquehui Canyon Aggregate Area for Material Disposal Area K, at Technical Area 33" (N3B 2020, 701046; N3B 2021, 701735).

233.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 233.2-1.

Table 233.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
33-010(f)	Surface disposal site	Iron, PAHs

233.3 Consent Order Soil Data

Decision-level data for SWMU 33-010(f) consist of results from samples collected in 2020. Analytical results for these samples are presented in Figures 233.3-1 through 233.3-4. The 2020 IR (N3B 2020, 70) concluded that the nature and extent of contamination are defined.

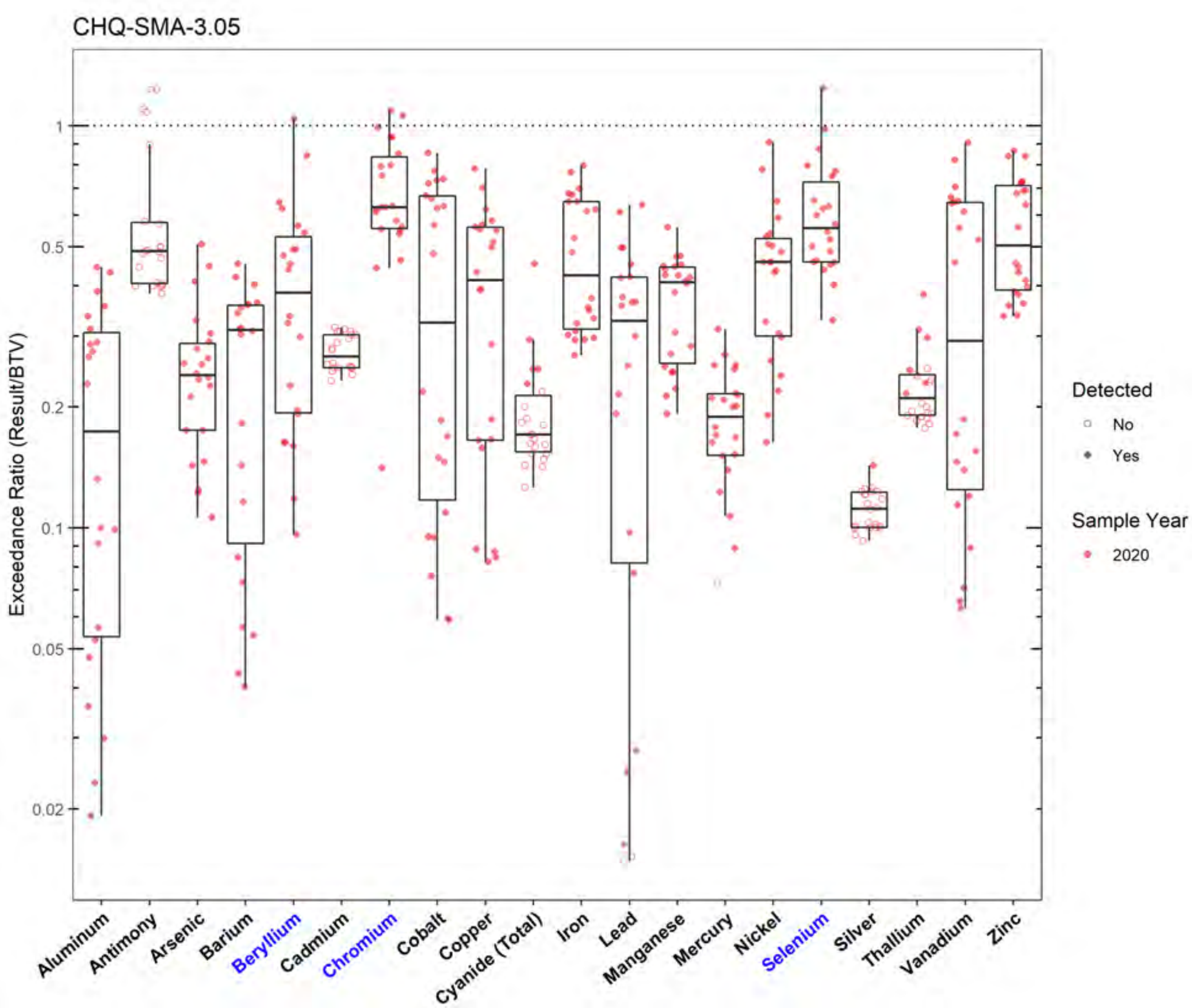


Figure 233.3-1 Inorganics Analytical Results from Soil Samples Associated with CHQ-SMA-3.05

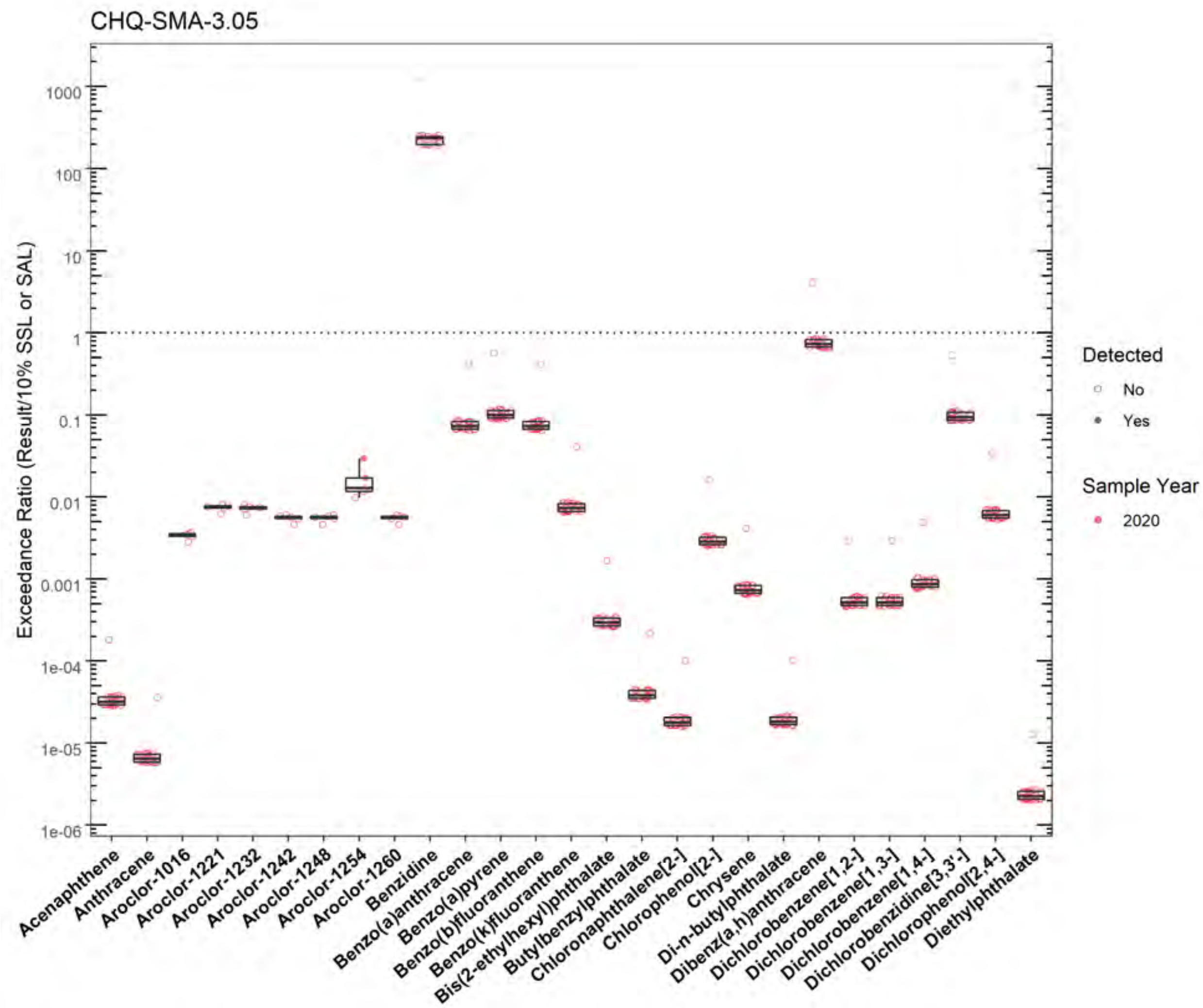


Figure 233.3-2 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-3.05 (Plot 1)

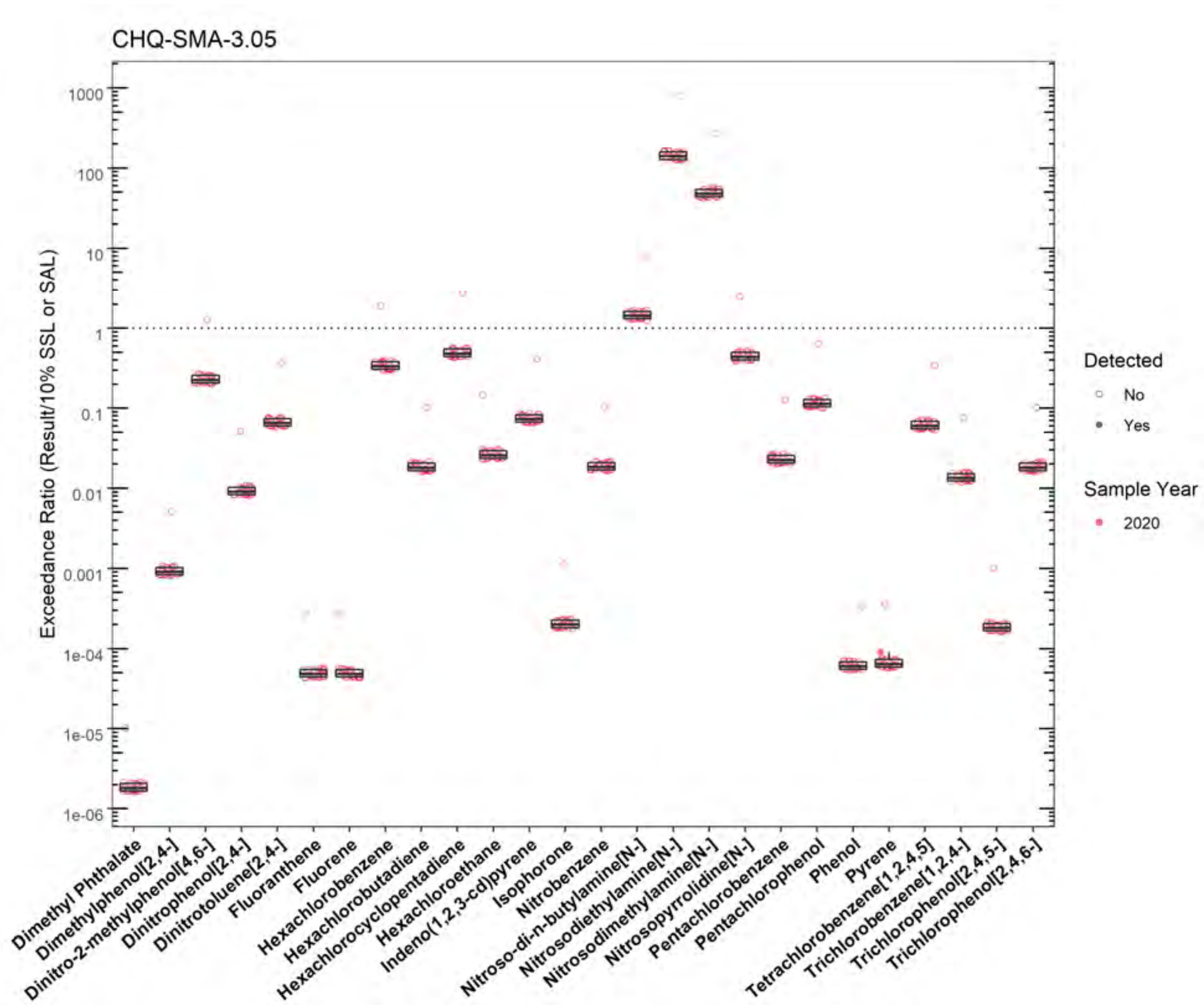


Figure 233.3-3 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-3.05 (Plot 2)

CHQ-SMA-3.05

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Beryllium	CHQ-SMA-3.05	Be	Y	BTV	1.83	1.91	2020-02-25
Chromium	CHQ-SMA-3.05	Cr	Y	BTV	19.3	21.0	2020-02-25
Selenium	CHQ-SMA-3.05	Se	Y	BTV	1.52	1.89	2020-02-26

Figure 233.3-4 Screening-Level Exceedances from Soil Samples Associated with CHQ-SMA-3.05

233.4 Stormwater Evaluation

233.4.1 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.

233.4.2 Assessment Unit and Stream Impairments

CHQ-SMA-3.05 drains to Chaquehui Canyon (within LANL), which has an impairment for PCBs. The impairment is not likely to be Site-related, based on Site history.

233.5 Site-Specific Demonstration

233.5.1 Soil Data Summary

All Site-related POCs which exceeded the applicable screening values in soil data did not exceed the TAL. Beryllium, chromium, and selenium exceeded BVs in soil data but are not Site-related POCs. Therefore, they will not be added to the SAP.

233.5.2 Stormwater Data Summary

No confirmation-monitoring data.

233.5.3 2022 Permit Status

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

233.5.4 Sampling and Analysis Plan

Table 233.5-1 is the proposed SAP for CHQ-SMA-3.05.

Table 233.5-1 Proposed SAP, CHQ-SMA-3.05

Monitoring Constituent	Background for Monitoring
SVOCs	Site history (PAHs)
DOC	Permit requirement
SSC	Permit requirement

234.0 CHQ-SMA-4

Associated Sites	33-011(e)
Receiving Water	Chaquehui Canyon
Drainage Area	0.21 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 33-011(e): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

234.1 2010 Administratively Continued Permit Summary

Following the February 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in July 2018. Analytical results from this sample initiated corrective action.

Following the October 2021 submittal to EPA of certification of enhanced control installation as a corrective action (N3B 2021, 701717), 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. Corrective-action monitoring is ongoing until at least one confirmation sample is collected from this SMA.

234.2 Site History

33-011(e) (2/8/2021)

SWMU 33-011(e) is a former drum-storage area located south of Main Site at TA-33. The storage area was reportedly a 20-ft × 100-ft area located approximately 30 ft northwest of building 33-22, a former HE storage magazine. The area is unpaved and gradually slopes to the southwest. Drums containing unknown materials were previously stored on the ground at this area. The date the materials were first stored at this site is not known.

During the 1987 DOE Environmental Survey conducted in support of the 1990 SWMU Report, all drums had been removed from the site; however, stained soil was observed in the former storage area. The site is currently inactive.

For investigation activities refer to “Investigation Report for Chaquehui Canyon Aggregate Area” (N3B 2020, 701046).

234.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 234.2-1.

Table 234.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
33-011(e)	Storage area	Uranium

234.3 Consent Order Soil Data

Decision-level data for SWMU 33-011(e) consist of results from samples collected within, and adjacent to, the former storage area in 2020. Analytical results for these samples are presented in Figures 234.3-1 through 234.3-4. The 2020 IR (N3B 2020, 701046) concluded that the nature and extent of contamination are defined.

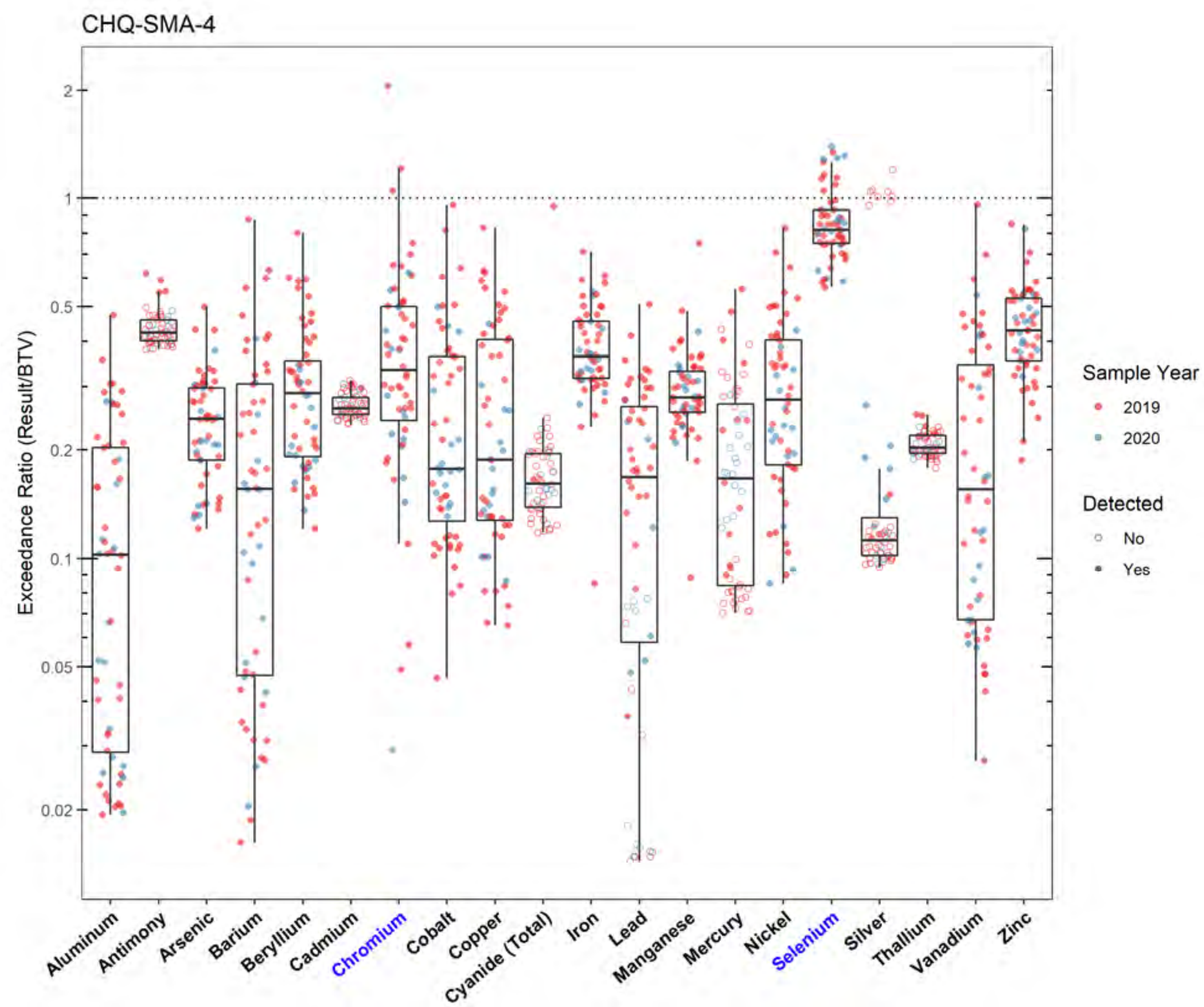


Figure 234.3-1 Inorganics Analytical Results from Soil Samples Associated with CHQ-SMA-4

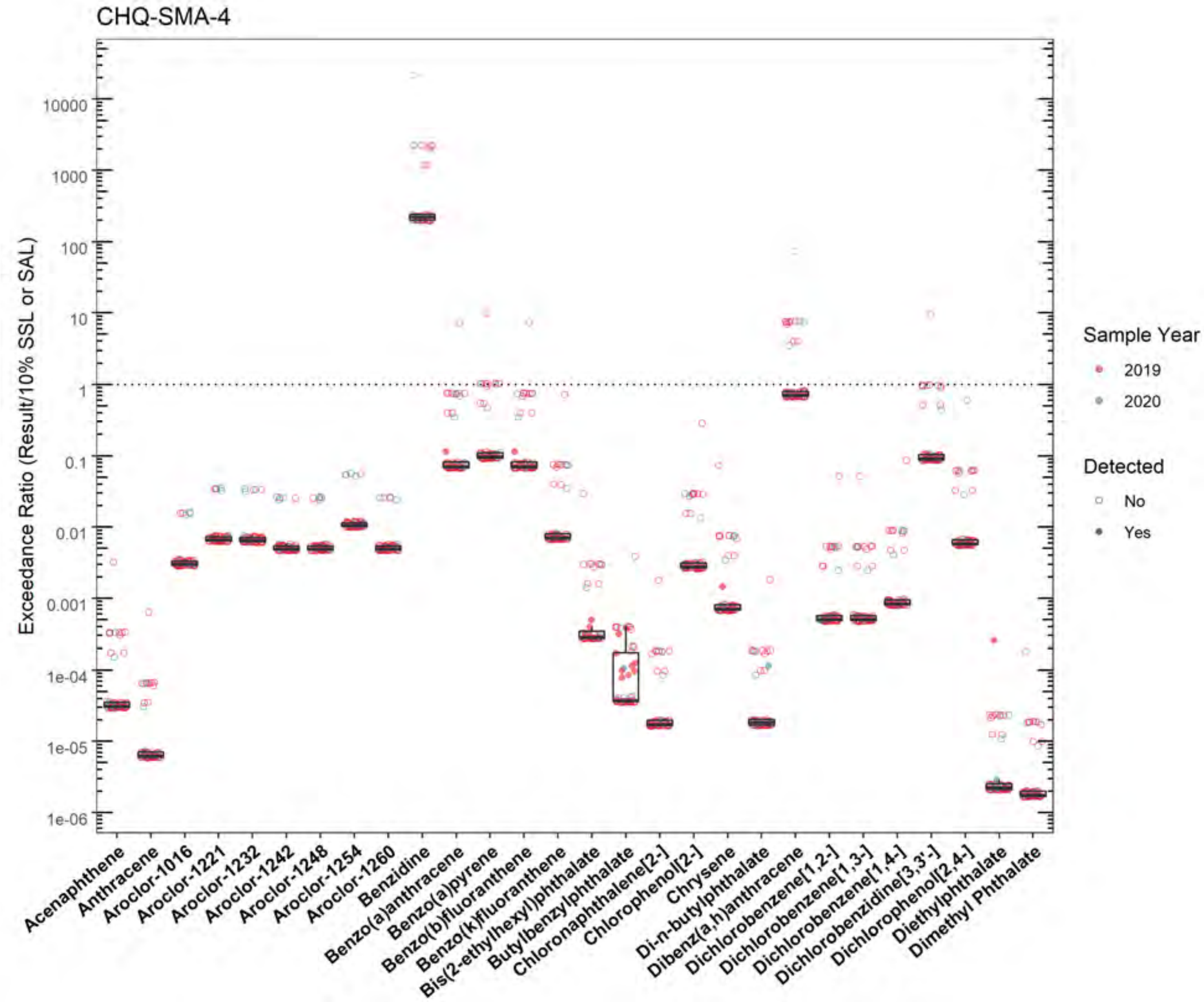


Figure 234.3-2 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-4 (Plot 1)

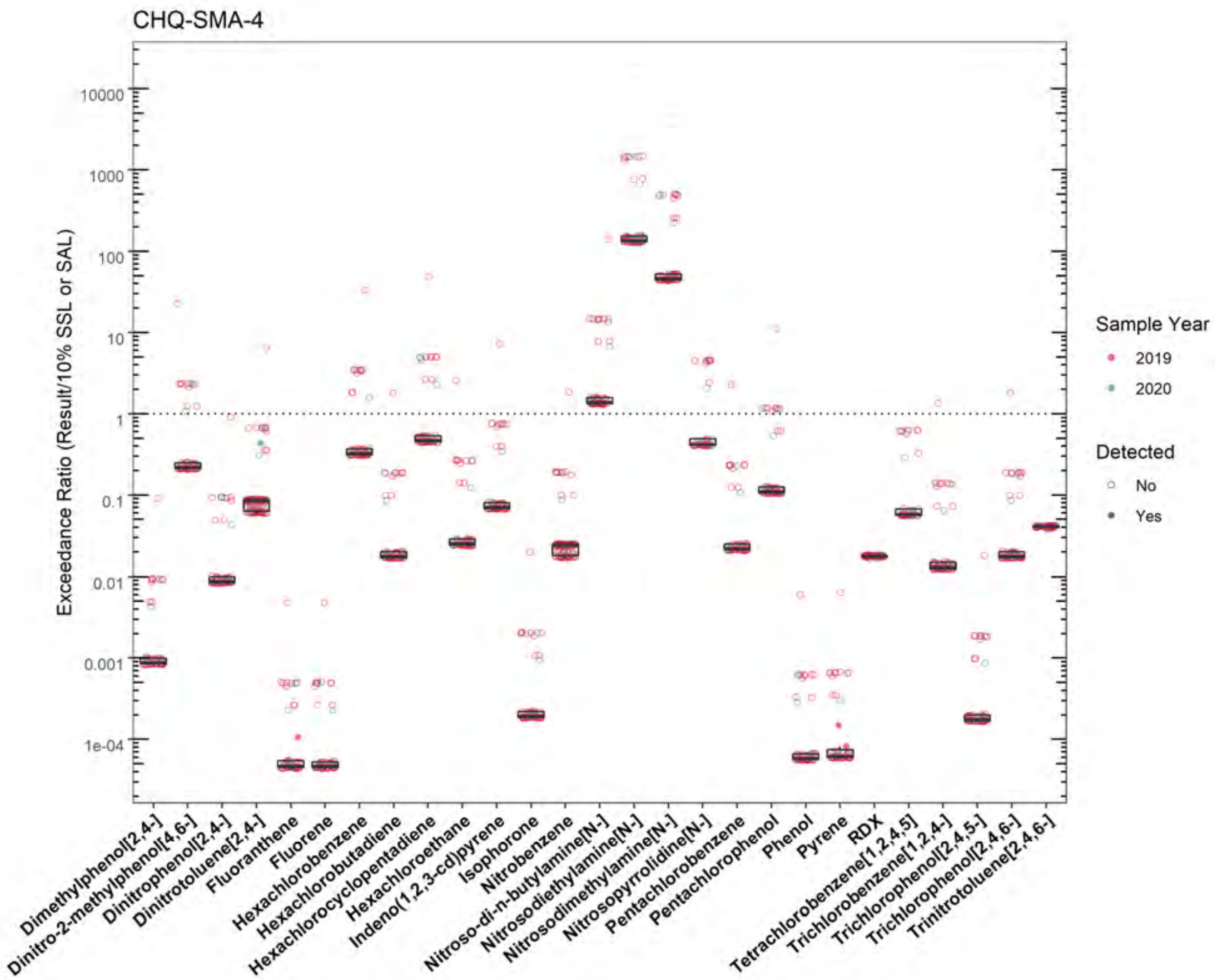


Figure 234.3-3 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-4 (Plot 2)

CHQ-SMA-4

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Chromium	CHQ-SMA-4	Cr	Y	BTV	19.3	39.7	2019-12-20
Selenium	CHQ-SMA-4	Se	Y	BTV	1.52	2.11	2020-01-02

Figure 234.3-4 Screening-Level Exceedances from Soil Samples Associated with CHQ-SMA-4

234.4 Stormwater Evaluation

234.4.1 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.

234.4.2 Assessment Unit and Stream Impairments

CHQ-SMA-4 drains to Chaquehui Canyon (within LANL), which has an impairment for PCBs. The impairment is not likely to be Site-related, based on Site history.

234.5 Site-Specific Demonstration

234.5.1 Soil Data Summary

Uranium was not monitored in soil data and will be added to the SAP.

234.5.2 Stormwater Data Summary

No confirmation-monitoring data has been collected at the current location. PCBs exceeded the TAL and BTV at a previous location and will be added to the SAP for monitoring.

234.5.3 2022 Permit Status

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

234.5.4 Sampling and Analysis Plan

Table 234.5-1 is the proposed SAP for CHQ-SMA-4.

Table 234.5-1 Proposed SAP, CHQ-SMA-4

Monitoring Constituent	Background for Monitoring
Total PCBs	Stormwater data
Gross alpha	Site history (uranium)
Dissolved uranium	Site history
DOC	Permit requirement
SSC	Permit requirement

235.0 CHQ-SMA-4.1

Associated Sites	33-016
Receiving Water	Chaquehui Canyon
Drainage Area	0.92 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 33-016: In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	The September 2017 field visit determined that the sampler will be moved downgradient in the drainage to capture runoff from more of the potentially affected area.
2022 Permit Status	Active Monitoring

235.1 2010 Administratively Continued Permit Summary

Following the February 2011 submittal to EPA of certification of baseline control installation, 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 2013.

235.2 Site History

33-016 (2/18/2021)

SWMU 33-016 is an inactive HE sump, outlet drainline, and outfall that served inactive HE processing bunker 33-23, directly south of Main Site at TA-33. The 1990 SWMU Report describes SWMU 33-016 as a sump with approximate dimensions of 3 ft long × 2 ft wide × 2 ft deep, located next to the northwest corner of the exterior wall of the bunker, near the door that discharged to an outfall approximately 150 ft west of the building in Chaquehui Canyon. The 1995 RFI report correctly identified the concrete sump dimensions as 5 ft long × 2.5 ft wide × 7 ft deep; these dimensions were confirmed during the 2020 Chaquehui Aggregate Area investigation. Engineering drawing ENG-C 11644 shows the sump located adjacent to the western outside wall of building 33-23, and the outlet drainline extending directly from the sump to an outfall approximately 150 ft west of the sump, to a side canyon of Chaquehui Canyon.

The sump was connected to a sink and floor drain in the bunker, which was constructed in 1950. From 1950 to 1972, the bunker was used as a trim building to prepare propellant charges for gun tests conducted at South Site. Structure 33-23 was subsequently used until 1994 to store lithologic cores from the Hot Dry Rock Program. In addition to the sink and floor drain, the sump also may have received rainwater and snowmelt. The sump was decommissioned during a VCA implemented at the Site in 1995.

For investigation activities, refer to “Investigation Report for Chaquehui Canyon Aggregate Area” (N3B 2020, 701046).

235.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 235.2-1.

Table 235.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
33-016	Sump	PAHs, SVOCs, HE

235.3 Consent Order Soil Data

Decision-level data for SWMU 33-016 consist of results from samples collected in 2020. Analytical results for these samples are presented in Figures 235.3-1 through 235.3-4. The 2020 IR (N3B 2020, 701046) concluded that the nature and extent of contamination are defined.

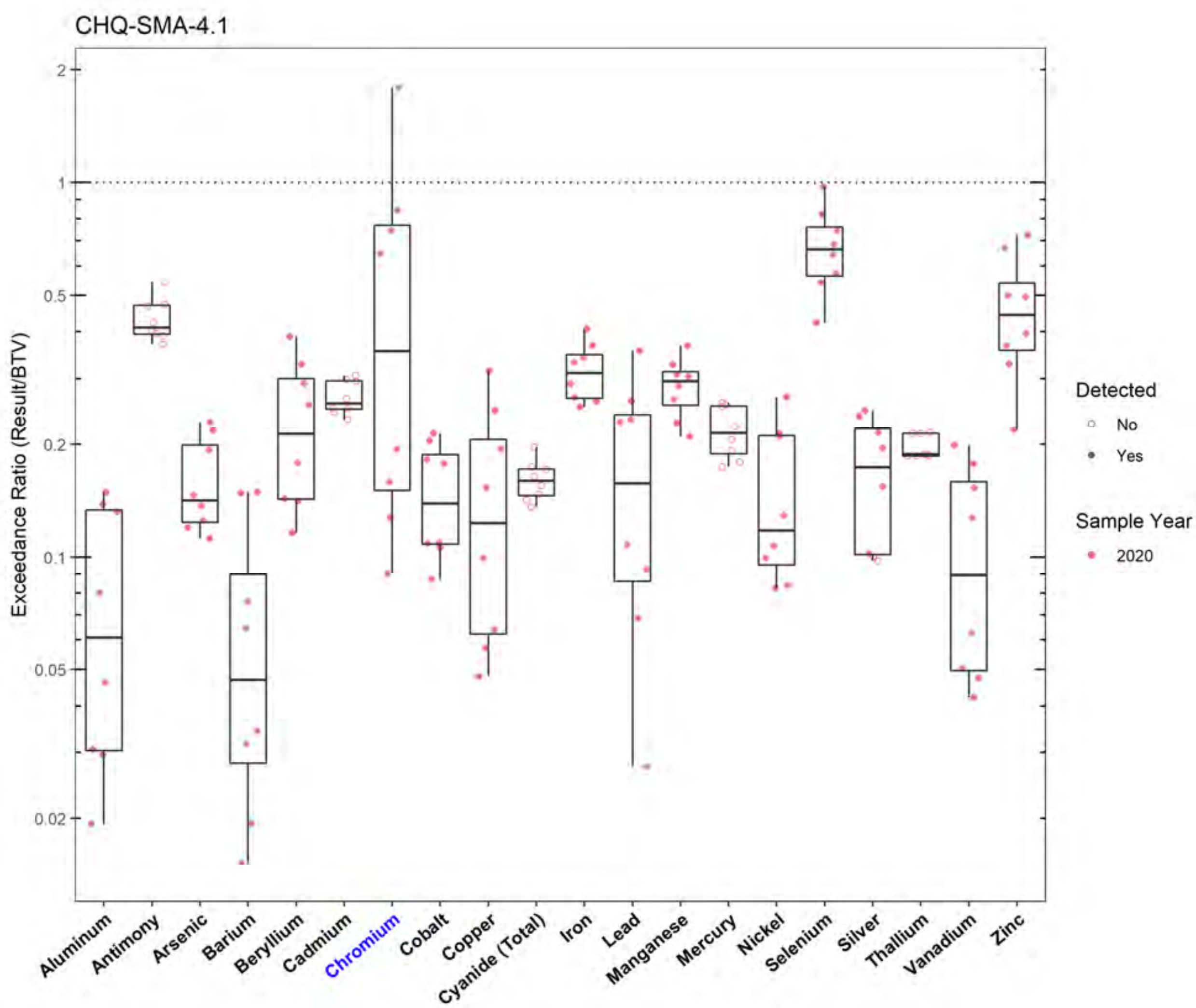


Figure 235.3-1 Inorganics Analytical Results from Soil Samples Associated with CHQ-SMA-4.1

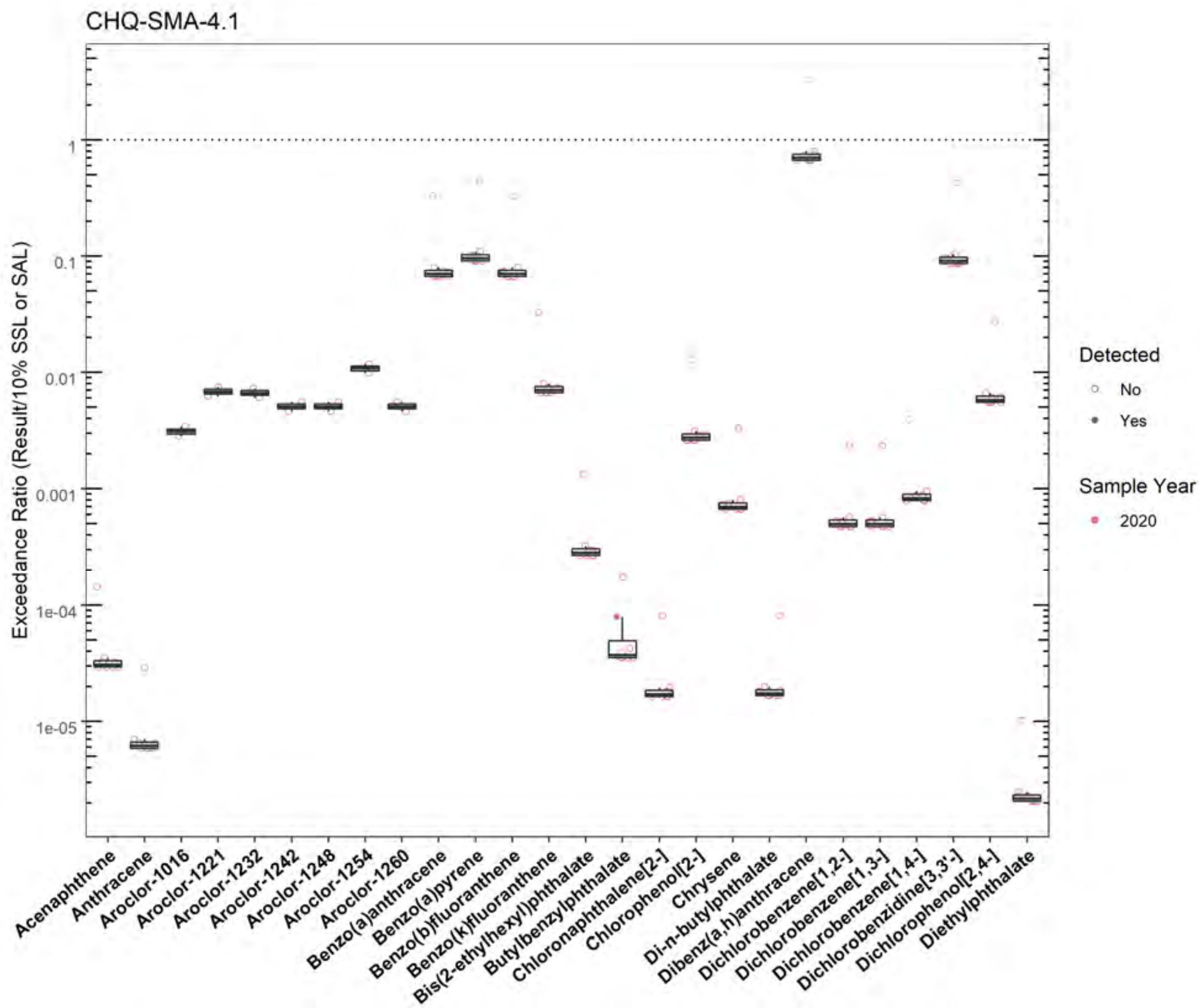


Figure 235.3-2 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-4.1 (Plot 1)

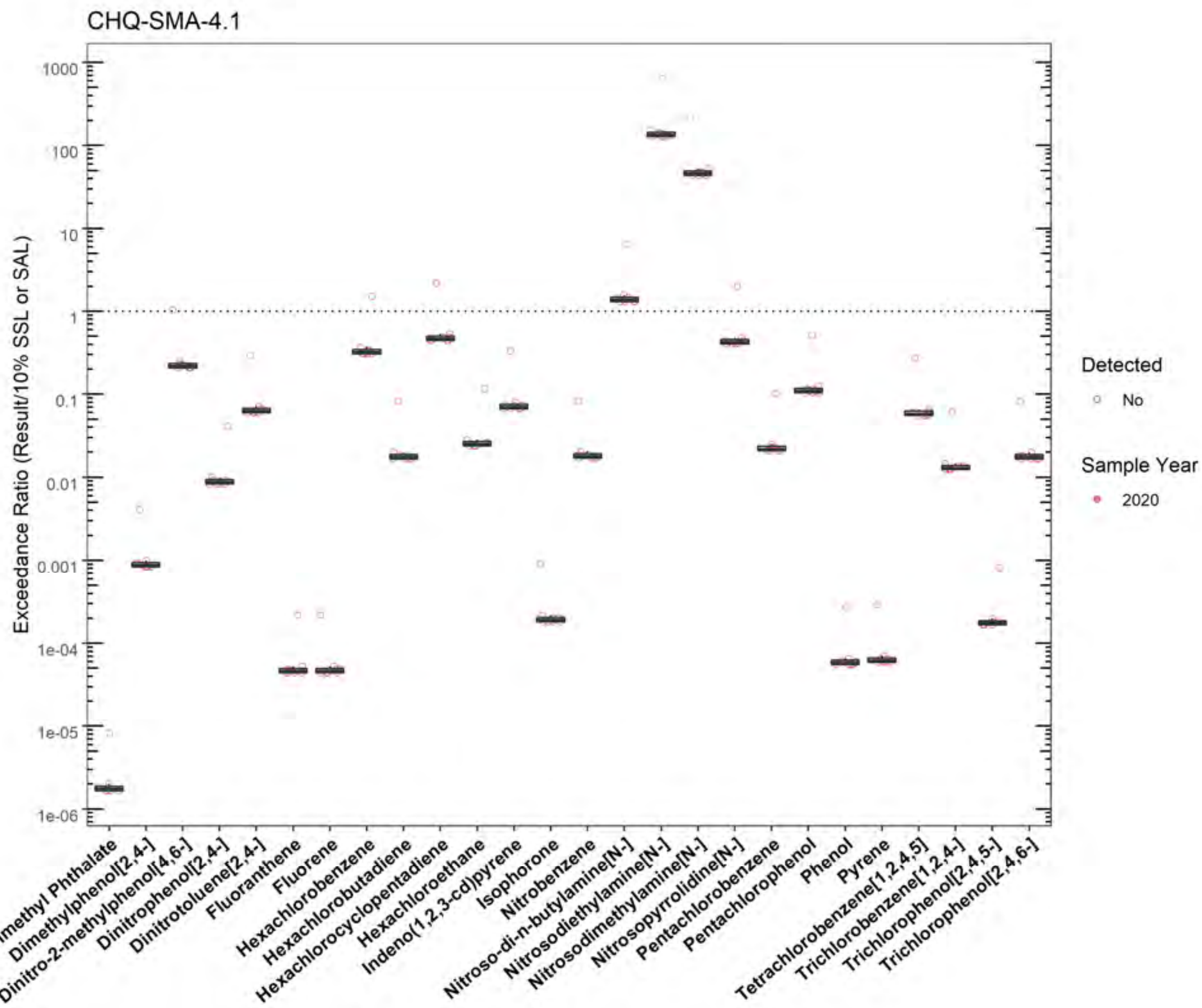


Figure 235.3-3 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-4.1 (Plot 2)

CHQ-SMA-4.1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Chromium	CHQ-SMA-4.1	Cr	Y	BTV	19.3	34.7	2020-01-07

Figure 235.3-4 Screening-Level Exceedances from Soil Samples Associated with CHQ-SMA-4.1

235.4 Stormwater Evaluation

235.4.1 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.

235.4.2 Assessment Unit and Stream Impairments

CHQ-SMA-4.1 drains to Chaquehui Canyon (within LANL), which has an impairment for PCBs. The impairment is not likely to be Site-related, based on Site history.

235.5 Site-Specific Demonstration

235.5.1 Soil Data Summary

Chromium exceeded the applicable screening value in soil data but is not a Site-related POC and will not be added to the SAP. HE is a Site-related POC, but it has not been sampled in soil data. Therefore, it will be added to the SAP.

235.5.2 Stormwater Data Summary

No confirmation-monitoring data.

235.5.3 2022 Permit Status

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

235.5.4 Sampling and Analysis Plan

Table 235.5-1 is the proposed SAP for CHQ-SMA-4.1.

Table 235.5-1 Proposed SAP, CHQ-SMA-4.1

Monitoring Constituent	Background for Monitoring
HE	Site history
SVOCs	Site history
DOC	Permit requirement
SSC	Permit requirement

236.0 CHQ-SMA-4.5

Associated Sites	33-011(b)
Receiving Water	Chaquehui Canyon
Drainage Area	3.32 acres
Landscape Characteristics	4% impervious, 96% pervious
Consent Order Site Status	AOC 33-011(b): In Progress
2010 Administratively Continued Permit Final Status	Alternative Compliance Requested
2016–2018 SIP Actions	Based on the September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

236.1 2010 Administratively Continued Permit Summary

Following the February 2011 submittal to EPA of certification of baseline control installation, 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.

236.2 Site History

33-011(b) (2/18/2021)

AOC 33-011(b) is a former storage area located directly west of the National Radio Astronomy Observatory Site in the eastern portion of TA-33. This storage area was approximately 300 ft wide × 600 ft long. The storage area was established in 1948 around the former elevator building (building 33-3), and was used to store equipment used at the TA-33 firing sites. The equipment was stored until a sufficient quantity was accumulated to allow a strategic materials recovery program to recover materials including tungsten, uranium, and beryllium. HE from firing site equipment may have also been present at the site.

The storage area was cleaned up in 1984. Most materials and debris were removed at that time, although some scrap iron and a large, insulated tank remained on-site. All remaining debris was removed from the site during the 1996 VCA. Approximately 75% of the storage area had been scraped and leveled to or near the tuff bedrock, and the area remains vacant. AOC 33-011(b) has been referred to as SWMU 33-011(b) in historical documents.

For investigation activities, refer to “Investigation Report for Chaquehui Canyon Aggregate Area” (N3B 2020, 701046).

236.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 236.2-1.

Table 236.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
33-011(b)	Storage area	Metals, beryllium, organic chemicals, HE, uranium

236.3 Consent Order Soil Data

Decision-level data for AOC 33-011(b) consist of results from samples collected in 2020. Analytical results for those samples are presented in Figures 236.3-1 through 236.3-4. The 2020 IR (N3B 2020, 701046) concluded that the nature and extent of contamination are defined.

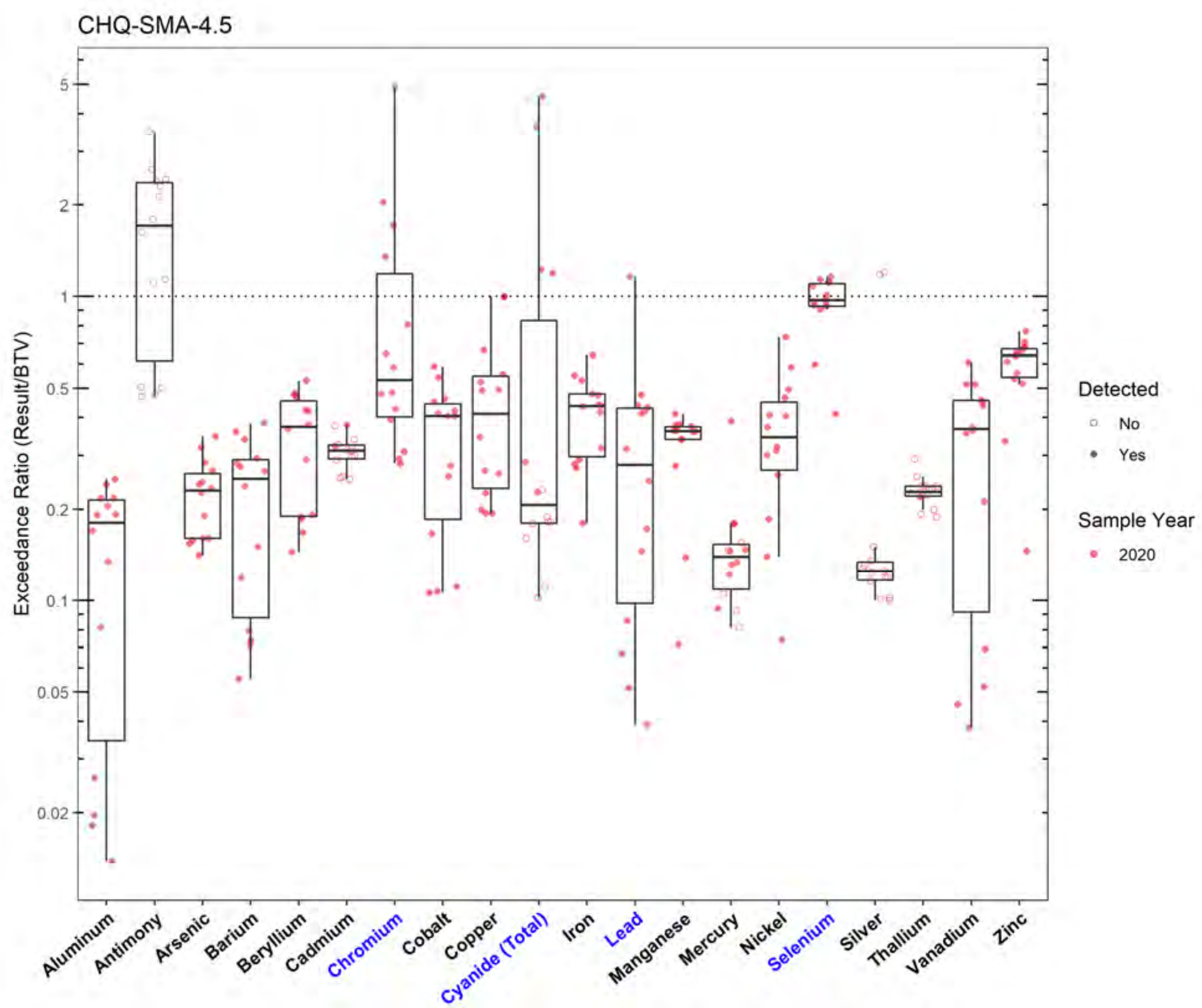


Figure 236.3-1 Inorganics Analytical Results from Soil Samples Associated with CHQ-SMA-4.5

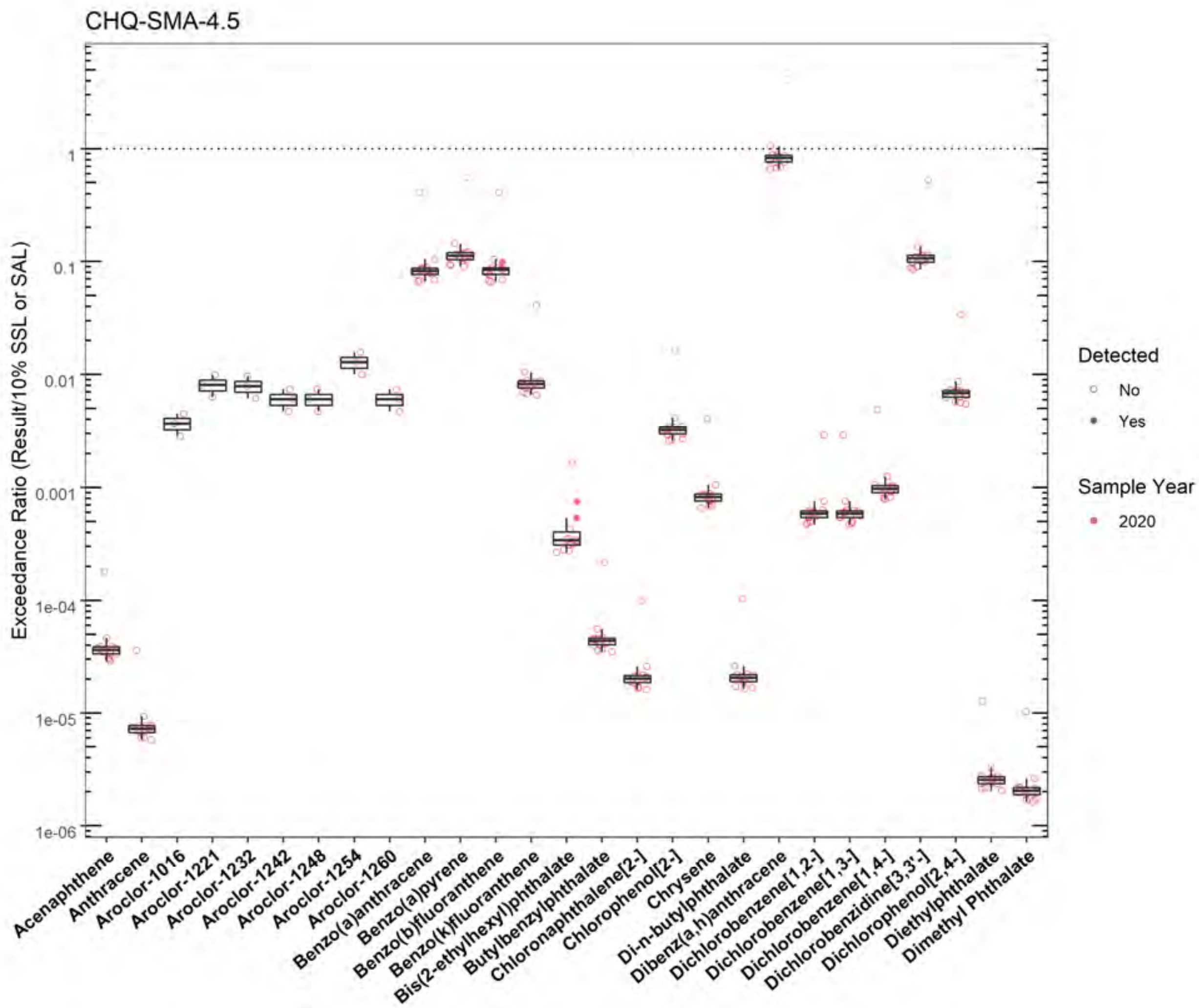


Figure 236.3-2 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-4.5 (Plot 1)

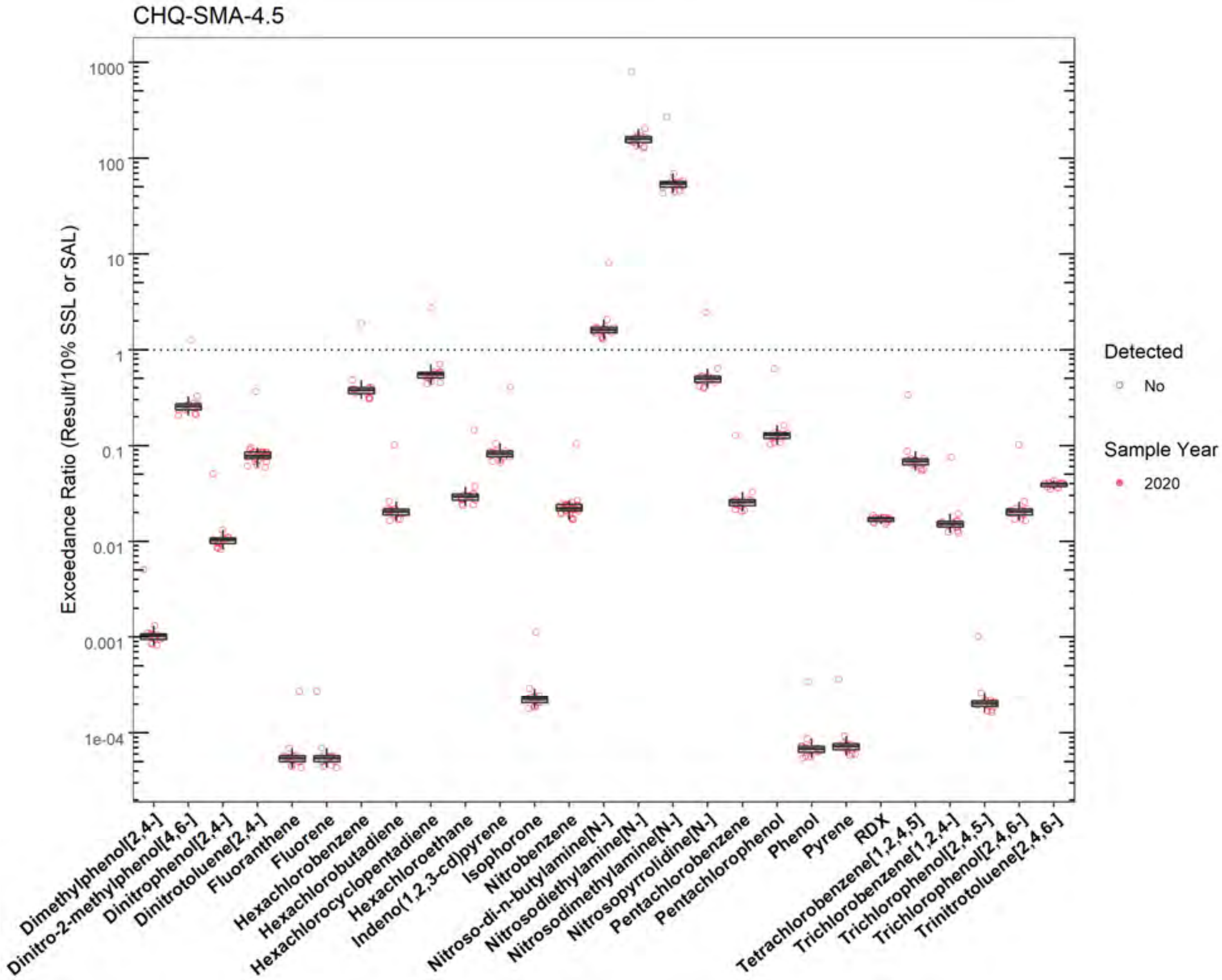


Figure 236.3-3 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-4.5 (Plot 2)

CHQ-SMA-4.5

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Chromium	CHQ-SMA-4.5	Cr	Y	BTV	19.3	94.8	2020-02-05
Cyanide (Total)	CHQ-SMA-4.5	CN(TOTAL)	Y	BTV	0.500	2.28	2020-02-06
Lead	CHQ-SMA-4.5	Pb	Y	BTV	22.3	25.9	2020-02-04
Selenium	CHQ-SMA-4.5	Se	Y	BTV	1.52	1.77	2020-02-06

Figure 236.3-4 Screening-Level Exceedances from Soil Samples Associated with CHQ-SMA-4.5

236.4 Stormwater Evaluation

236.4.1 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 236.4-1 and 236.4-2.

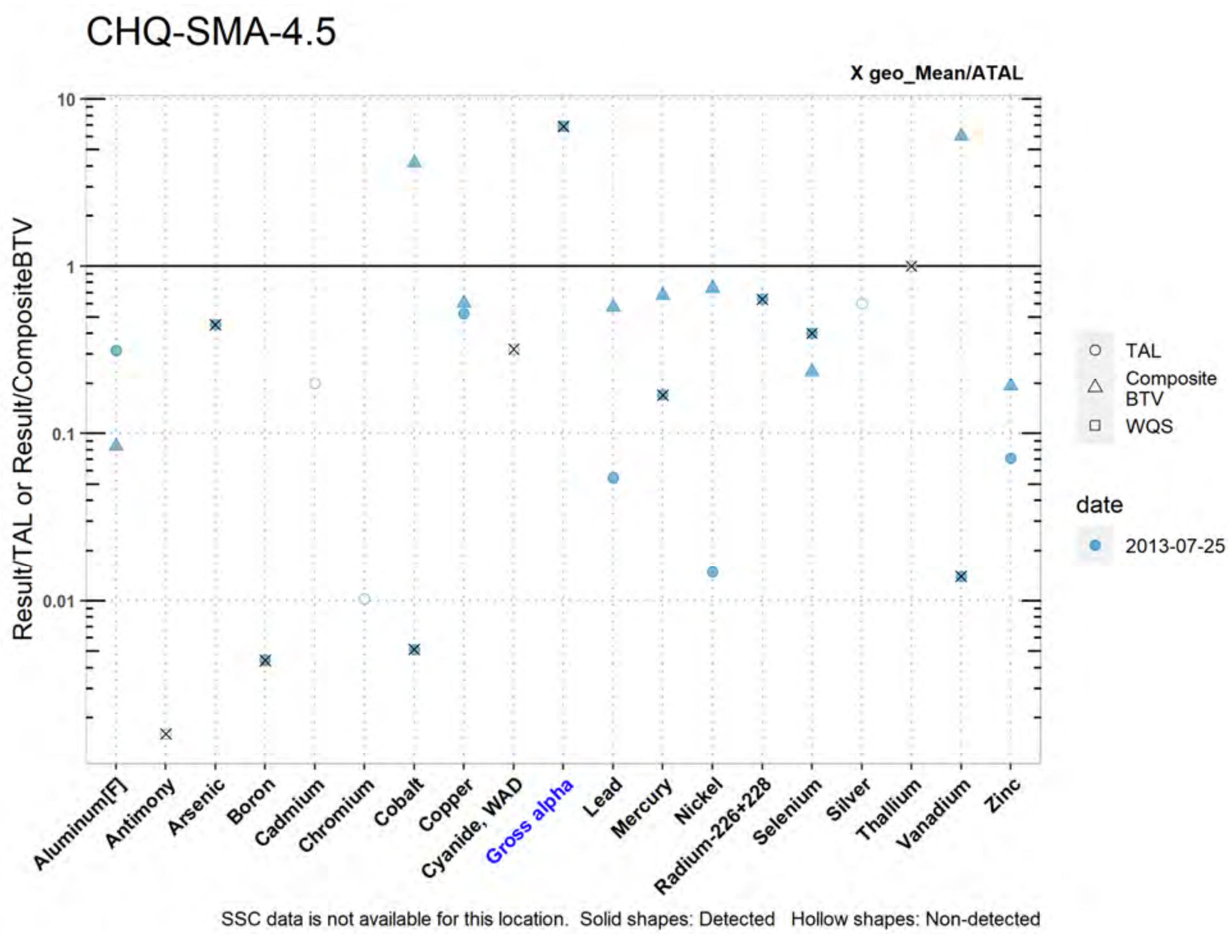


Figure 236.4-1 Analytical Results from Stormwater Sample, CHQ-SMA-4.5 (Plot)

CHQ-SMA-4.5

	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	0.539	194	NA	3.9	22	NA	15.1	NA	154	NA	20	0.336	NA	NA	48.5
Composite_BTV	2830	NA	NA	NA	NA	NA	1.23	3.37	NA	56.9	1.44	0.199	3.10	4.47	8.60	NA	NA	0.237	18.0
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
2013-07-25 result	237	*1.00*	4.02	21.9	*0.110*	*2.00*	5.11	2.04	*1.67*	103	0.825	0.134	2.29	19.2	2.02	*0.200*	*0.450*	1.43	3.46
2013-07-25 dT	0.316	NA	0.45	0.0044	NA	NA	0.0051	0.523	NA	6.9	0.0546	0.17	0.0149	0.640	0.40	NA	NA	0.014	0.0713
2013-07-25 dB	0.0837	NA	NA	NA	NA	NA	4.15	0.605	NA	NA	0.573	0.673	0.739	NA	0.235	NA	NA	6.03	0.192
geo_mean/ATAL	NA	0.0016	0.45	0.0044	NA	NA	0.0051	NA	0.321	6.9	NA	0.17	NA	0.640	0.40	NA	1	0.014	NA

Italic font indicates nondetect results

dT=detected_result/TAL, dB=detected_result/composite_BTV

Figure 236.4-2 Analytical Results from Stormwater Sample, CHQ-SMA-4.5 (Table)

236.4.2 Assessment Unit and Stream Impairments

CHQ-SMA-4.5 drains to Chaquehui Canyon (within LANL), which has an impairment for PCBs. The impairment may be Site-related, based on Site history.

236.5 Site-Specific Demonstration

236.5.1 Soil Data Summary

All Site-related POCs that exceeded the applicable screening values in soil data were previously monitored in stormwater data and did not exceed TALs. Therefore, they will not be added to the SAP.

236.5.2 Stormwater Data Summary

Gross alpha exceeded TAL in 2013 stormwater data. There was no paired SSC result to confirm whether it was below BTVs, so it will be added to the SAP.

236.5.3 2022 Permit Status

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

236.5.4 Sampling and Analysis Plan

Table 236.5-1 is the proposed SAP for CHQ-SMA-4.5.

Table 236.5-1 Proposed SAP, CHQ-SMA-4.5

Monitoring Constituent	Background for Monitoring
Total PCBs	Impairment and Site history (organic chemicals)
Gross alpha	Site history (uranium) and stormwater data
SVOCs	Site history (organic chemicals)
Dissolved uranium	Site history
HE	Site history
DOC	Permit requirement
SSC	Permit requirement

237.0 CHQ-SMA-5.05

Associated Sites	33-007(b)
Receiving Water	Chaquehui Canyon
Drainage Area	0.35 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 33-007(b): In Progress
2010 Administratively Continued Permit Final Status	Baseline Monitoring Extended
2016–2018 SIP Actions	Based on the September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

237.1 2010 Administratively Continued Permit Summary

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

237.2 Site History

33-007(b) (2/18/2021)

SWMU 33-007(b) consists of two former gun-firing sites located within what was known as the tower area at South Site at the southern end of TA-33. The first (northern) gun-firing site consisted of a 6-ft × 6-ft concrete pad and gun mount (former structure 33-85), a U-shaped soil berm (structure 33-43), and a catcher box. The U-shaped berm measured approximately 50 ft wide and 10 ft high, with an inner diameter of approximately 125 ft. The former catcher box was located in the soil embankment northeast of the gun mount.

The berm and catcher box were constructed in August 1950, and the concrete pad and gun mount were constructed in June 1952. This gun site was used to test free-recoil weapons, tests which involved firing projectiles into the berm and the catcher box. Projectiles fired from the guns contained uranium, beryllium, titanium, and tritium housed inside steel casings.

The second (southern) gun-firing site included a gun building (structure 33-25) and a soil barricade (former structure 33-63). Both structures were built in 1950. The gun building housed 2-in. to 4-in.-bore guns that were used to fire projectiles into berm 33-63. The projectiles used at this site contained uranium, beryllium, and tungsten. Components of both former gun sites are shown in engineering drawings AB1114 (2 of 7) and ENG-R-4461, and a 1958 aerial photograph of the site.

Firing-site activities at SWMU 33-007(b) were discontinued in the late 1950s. The area was used to support atmospheric physics measurements during the late 1980s and early 1990s. Structures associated with these activities included a tower (former structure 33-203) constructed in 1987 and two trailers (former structures 33-201 and 33-202). All structures have been removed.

During the 1999 VCA performed at the structure 33-63 barricade, the berm was removed and treated to remove radioactively-contaminated soil and debris exceeding dose-based cleanup levels, as well as any projectiles. Treated soil was returned to the location of the former berm. The site was graded, compacted, and reseeded. Approximately 1 to 2 ft of engineered fill was placed over the location of the former berm when building 33-25 was renovated in 2005 and 2006.

For investigation activities, refer to “Investigation Report for Chaquehui Canyon Aggregate Area” (N3B 2020, 701046).

237.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 237.2-1.

Table 237.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
33-007(b)	Firing site	Beryllium, iron, tritium, uranium

237.3 Consent Order Soil Data

Decision-level data for SWMU 33-007(b) consist of results from samples collected in 1995, 1999, and 2020. Analytical results for those samples are presented in Figures 237.3-1 through 237.3-4. The 2020 IR (N3B 2020, 701046) concluded that the nature and extent of contamination are defined.

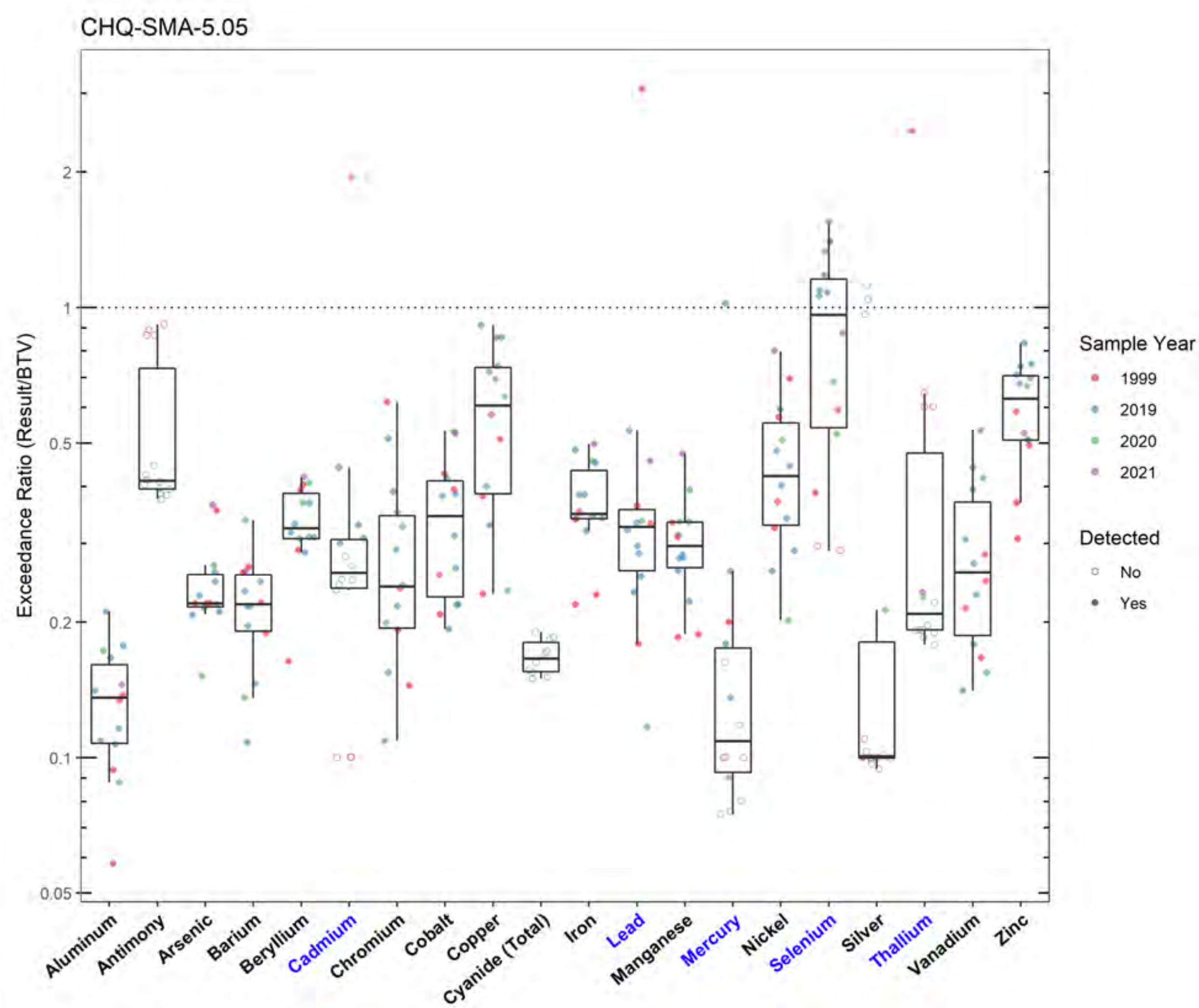


Figure 237.3-1 Inorganics Analytical Results from Soil Samples Associated with CHQ-SMA-5.05

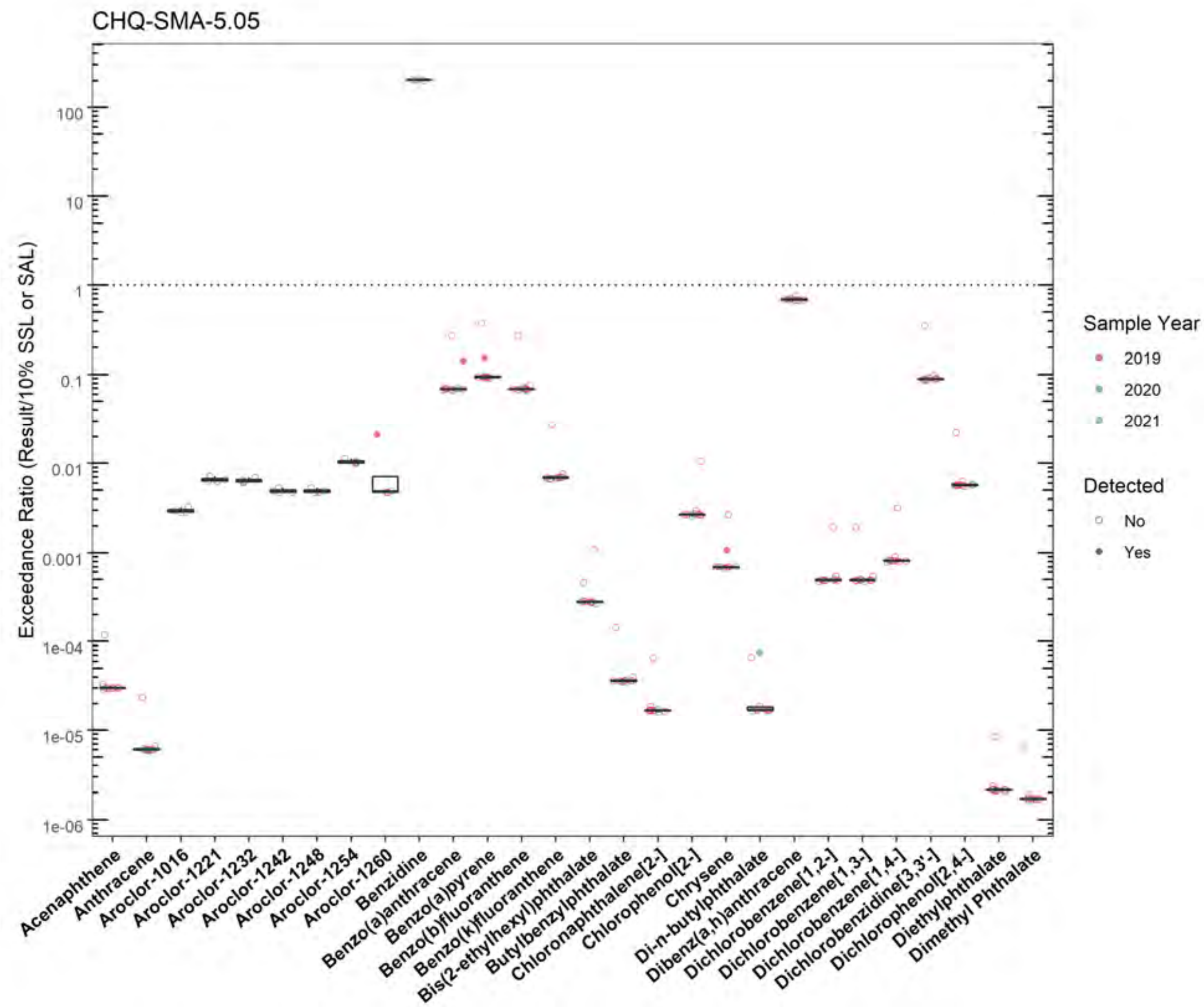


Figure 237.3-2 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-5.05 (Plot 1)

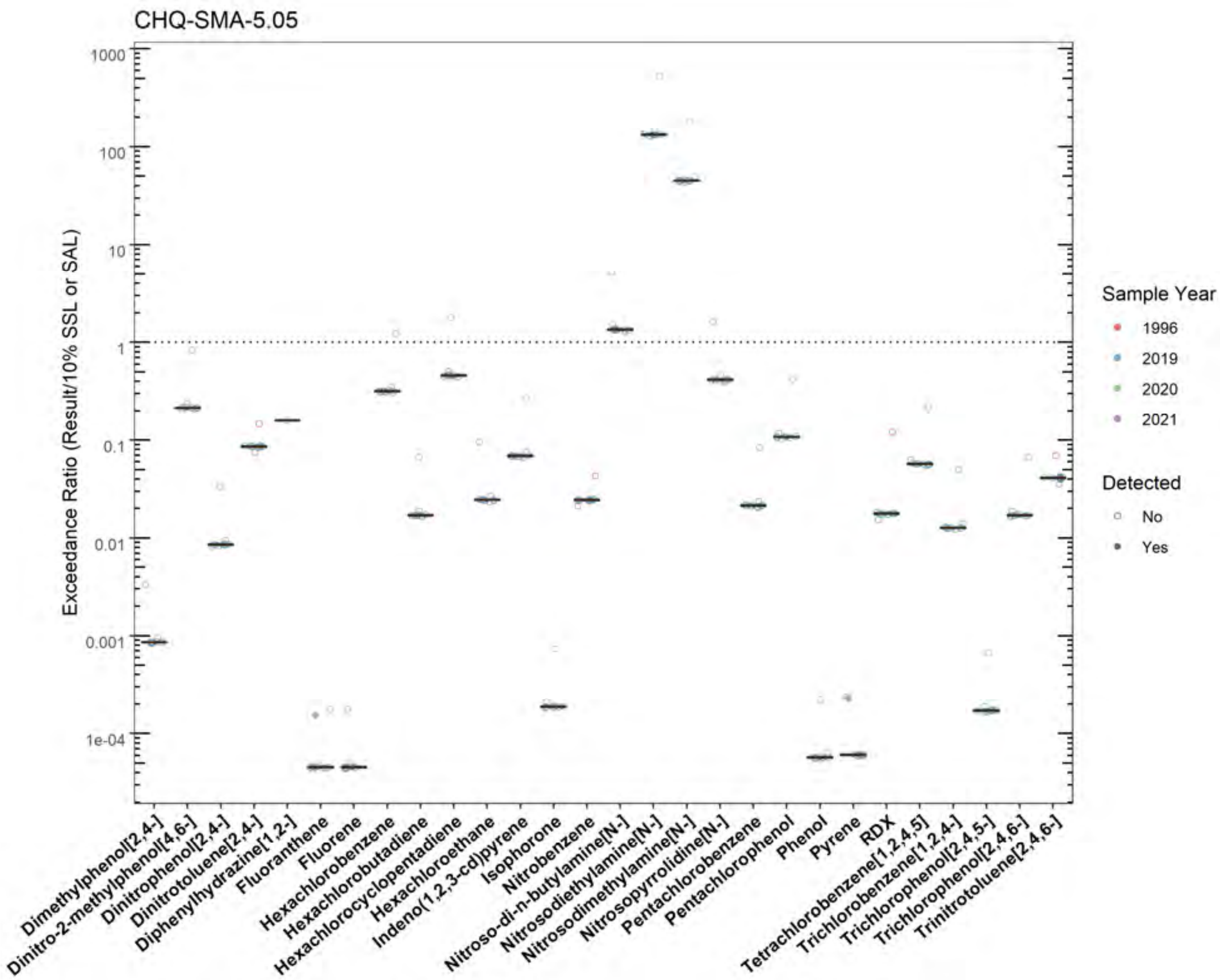


Figure 237.3-3 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-5.05 (Plot 2)

CHQ-SMA-5.05

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Cadmium	CHQ-SMA-5.05	Cd	Y	BTV	0.400	0.780	1999-05-21
Lead	CHQ-SMA-5.05	Pb	Y	BTV	22.3	68.5	1999-05-21
Mercury	CHQ-SMA-5.05	Hg	Y	BTV	0.100	0.102	2019-12-12
Selenium	CHQ-SMA-5.05	Se	Y	BTV	1.52	2.35	2019-12-13
Thallium	CHQ-SMA-5.05	Tl	Y	BTV	0.730	1.80	1999-05-21

Figure 237.3-4 Screening-Level Exceedances from Soil Samples Associated with CHQ-SMA-5.05

237.4 Stormwater Evaluation

237.4.1 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.

237.4.2 Assessment Unit and Stream Impairments

CHQ-SMA-5.05 drains to Chaquehui Canyon (within LANL), which has an impairment for PCBs. The impairment is not likely to be Site-related, based on Site history.

237.5 Site-Specific Demonstration

237.5.1 Soil Data Summary

No Site-related POCs exceed the applicable screening values in soil data. Beryllium and iron were measured in soil and did not exceed the applicable screening values in soil. Therefore, they will not be added to the SAP.

237.5.2 Stormwater Data Summary

No confirmation-monitoring data.

237.5.3 2022 Permit Status

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

237.5.4 Sampling and Analysis Plan

Table 237.5-1 is the proposed SAP for CHQ-SMA-5.05.

Table 237.5-1 Proposed SAP, CHQ-SMA-5.05

Monitoring Constituent	Background for Monitoring
Dissolved uranium	Site history
Tritium	Site history
Gross alpha	Site history (uranium)
DOC	Permit requirement
SSC	Permit requirement

238.0 CHQ-SMA-6

Associated Sites	33-004(j), 33-006(a), 33-007(b), 33-010(c), 33-010(g), 33-010(h), 33-014
Receiving Water	Chaquehui Canyon
Drainage Area	11.27 acres
Landscape Characteristics	2% impervious, 98% pervious
Consent Order Site Status	SWMU 33-004(j): In Progress SWMU 33-006(a): In Progress SWMU 33-007(b): In Progress SWMU 33-010(c): In Progress SWMU 33-010(g): In Progress SWMU 33-010(h): In Progress SWMU 33-014: In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

238.1 2010 Administratively Continued Permit Summary

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

Following the August 2015 submittal to EPA of certification of enhanced control installation as a corrective action (LANL 2015, 600776), corrective-action monitoring was initiated and stormwater samples were collected in May and July 2021. Analytical results from these samples initiated corrective action.

Following the June 2022 submittal to EPA of certification of enhanced control installation as a corrective action (N3B 2022, 702165), corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection. Corrective-action monitoring is ongoing until at least one confirmation sample is collected from this SMA.

238.2 Site History

33-004(j) (2/18/2021)

SWMU 33-004(j) consists of a 4-in. steel stormwater drainline and outfall that drained the entrance to the South Site x-unit vault (structure 33-26) at South Site in the southern portion of TA-33. The drainline is connected to a drain located on the concrete pad at the entrance to structure 33-26. The storm drainline extends 75 ft southeast to the outfall that discharged to an open drainage channel emptying into Chaquehui Canyon. A stormwater culvert situated beneath the unpaved portion of the road, that extends beyond structure 33-26, also discharges to the open drainage channel below the SWMU 33-004(j) outfall. At the upper portion of the drainage channel, both the SWMU 33-004(j) storm drainline and the culvert discharge have been cut into the tuff.

The 1990 SWMU report describes SWMU 33-004(j) as an inactive outfall system from structure 33-26 including an outlet drainline from the east side of building 33-26, a channel cut into the tuff, a culvert, and an arroyo draining into Chaquehui Canyon. However, review of engineering drawing AB26 and a 1958 aerial photograph of South Site confirmed that the unit boundary should include only the storm drain at the entrance of structure 33-26, the 75-ft long storm drainline, and the outfall discharge point at the end of the drainline.

Structure 33-26 is an x-unit chamber (i.e., a control chamber that housed a firing-voltage-distribution system used for the remote detonation of test firings). It stored electronic devices used to detonate initiators for experiments conducted on the shot pad [SWMU 33-006(a)] located directly above the structure. The SWMU 33-006(a) shot pad was built in 1948, and structure 33-26 was constructed in 1950.

33-006(a) (1/25/2022)

SWMU 33-006(a) is an inactive shot pad at South Site, where implosion tests were conducted at the southern end of TA-33. The shot pad consists of a 50-ft-diameter circular area located immediately north of, and next to, the roof of structure 33-26. Implosion tests performed at the shot pad contained up to 5000 lb of HE covered in wooden boxes. The detonations scattered debris, shrapnel, and wood fragments over the mesa top of South Site and into Chaquehui Canyon, including the drainage channel below the SWMU 33-004(j) outfall. Shrapnel has been found at distances up to a mile away from the shot pad. Use of the site ceased in 1956, and structure 33-26 has remained vacant since then.

During an IA conducted in 1996, firing-site shrapnel and debris were removed from mesa-top areas and drainages along the southern rim of Chaquehui Canyon within Bandelier National Monument, from drainage channels along the northern rim of Chaquehui Canyon, and from the canyon bottom. Residual debris was removed from SWMU 33-006(a) during the 2019–2020 Phase I Consent Order investigation. Currently, the pad is covered with a foot or more of sand.

33-007(b) (2/18/2021)

SWMU 33-007(b) consists of two former gun-firing sites located within what was known as the tower area at South Site at the southern end of TA-33. The first (northern) gun-firing site consisted of a 6-ft × 6-ft concrete pad and gun mount (former structure 33-85), a U-shaped soil berm (structure 33-43), and a catcher box. The U-shaped berm measured approximately 50 ft wide and 10 ft high, with an inner diameter of approximately 125 ft, and the former catcher box was located in the soil embankment northeast of the gun mount.

The berm and catcher box were constructed in August 1950, and the concrete pad and gun mount were constructed in June 1952. This gun site was used to test free-recoil weapons. Tests involved firing projectiles containing uranium, beryllium, titanium, and tritium, housed inside steel casings, into the berm and the catcher box.

The second (southern) gun-firing site included a gun building (structure 33-25) and a soil barricade (former structure 33-63). Both structures were built in 1950. The gun building housed 2-in. to 4-in. guns that were used to fire projectiles, containing uranium, beryllium, and tungsten, into berm 33-63. Components of both former gun sites are shown in engineering drawings AB1114 (2 of 7) and ENG-R-4461, and in a 1958 aerial photograph of the site. Firing site activities at SWMU 33-007(b) were discontinued in the late 1950s.

During the late 1980s and early 1990s, this area was used to support atmospheric physics measurements. Structures associated with these activities include a tower (former structure 33-203) constructed in 1987 and two trailers (former structures 33-201 and 33-202). All structures have been removed.

During the 1999 VCA performed at the structure 33-63 barricade, the berm was removed and treated to remove radioactively-contaminated soil and debris exceeding dose-based cleanup levels, and any projectiles. Treated soil was returned to the location of the former berm. The site was graded, compacted, and reseeded. Approximately 1 to 2 ft of engineered fill was placed over the location of the former berm when building 33-25 was renovated in 2005 and 2006.

33-010(c) (2/18/2021)

SWMU 33-010(c) is a former surface-disposal area located at South Site on the northern rim of Chaquehui Canyon, at the southern end of TA-33. The disposal area measured approximately 50 ft × 30 ft × 2ft deep, and was approximately 230 ft south of structure 33-26 [SWMU 33-006(a)] along the western edge of the main South Site drainage channel.

From approximately 1950 to 1955, this site was used to dispose of debris from the implosion tests conducted at SWMU 33-006(a). Debris disposed of at the site included copper and aluminum shrapnel, pieces of electronic cable, sand and soil with residual HE, and wood. Between shots, the shot pad and surrounding area were scraped and the debris was bulldozed over the canyon edge and onto the hillside below.

During the VCA performed at the site in 1999, all debris was removed from the site. Residual debris was removed from SWMU 33-010(c) during the 2019–2020 Consent Order investigation.33-010(g) (2/18/2021)

SWMU 33-010(g) is a former surface disposal area, located on the northern rim of Chaquehui Canyon at South Site at the southern end of TA-33. Debris was scattered along the rim and upper walls of the canyon east and south of MDA E. Chaquehui Canyon is about 200 ft wide at this point, with a 40-ft cliff at the canyon rim. A three-strand barbed-wire fence ran along the east side of the unimproved road adjacent to MDA E, separating SWMU 33-010(g) from the rest of South Site.

Some debris present at SWMU 33-010(g) (such as dead tree trunks, rocks, and scraped earth) appears to have originated from the initial clearing of South Site in the 1940s. Other debris, including shrapnel, cables, and burnt wood, likely originated from shot pad and gun firing activities. The period of operation for this disposal site is not known, but firing-site operations associated with initiator testing at South Site were conducted from 1950 to 1956. The debris was removed and disposed of off-site during the 1995 VCA. Residual debris was removed from SWMU 33-010(g) during the 2019–2020 investigation.

33-010(h) (2/18/2021)

SWMU 33-010(h) is a surface disposal area located approximately 450 ft northeast of structure 33-26 [SWMU 33-006(a)] and immediately south of berm 33-43 [SWMU 33-007(b)], in the northeast portion of South Site at the southern end of TA-33. The disposal area consists of a mound of dirt and firing-site debris, including metal, wood, cable, and shrapnel, scattered on the soil surface. The area is approximately 100 ft × 100 ft. There is no documentation regarding the history of the disposal area. The main drainage for South Site bounds the disposal area on the west, and an unimproved road is located to the east. Residual debris was removed from SWMU 33-010(h) during the 2019–2020 Consent Order investigation.

33-014 (2/18/2021)

SWMU 33-014 is the former location of an open burn site located approximately 300 ft north of the fence surrounding MDA E [SWMUs 33-001(a-e)] at South Site, at the south end of TA-33. The soil at the burn site has been scraped to bedrock, and some bedrock is blackened from burning. This burn area was believed to have been established in 1950 when operations at South Site began, and may have served all of TA-33 for a few years. Materials burned at this site included construction debris, timber, and sawdust used in the firing berms at TA-33. These materials contained DU, beryllium black powder, propellant powders, and residual HE. It is not known when burning operations were discontinued at this site, but operations at the site were likely discontinued before 1960.

For investigation activities for SWMU 33-006(a), refer to “Phase II Investigation Report for Chaquehui Canyon Aggregate Area” (N3B 2021, 701606). For investigation activities for all other Sites in this SMA, refer to “Investigation Report for Chaquehui Canyon Aggregate Area” (N3B 2020, 701046).

238.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 238.2-1.

Table 238.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
33-004(j)	Drainline and outfall from building 33-26	No known POCs
33-006(a)	Firing site	Metals, aluminum, copper, iron, lead, HE, uranium
33-007(b)	Firing site	Beryllium, iron, tritium, uranium
33-010(c)	Surface disposal site	Aluminum, copper
33-010(g)	Surface disposal site	Metals, beryllium, copper, HE, uranium
33-010(h)	Surface disposal site	Metals
33-014	Burn site	Metals, beryllium, dioxins/furans, HE, DU

238.3 Consent Order Soil Data

Decision-level data for SWMU 33-004(j), SWMU 33-010(g), SWMU 33-010(h), and SWMU 33-014 consist of results from samples collected in 2020. The 2020 IR (N3B 2020, 701046) concluded that the nature and extent of contamination have been defined.

Decision-level data for SWMU 33-006(a) consist of results from samples collected in 2020 and 2021. The 2021 Phase II IR (N3B 2021, 701606) concluded that the lateral and vertical extent of contamination are defined, except for lateral extent of copper around two sample locations.

Decision-level data for SWMU 33-007(b) consist of results from samples collected in 1995, 1999, and 2020. The 2020 IR (N3B 2020, 701046) concluded that the nature and extent of contamination are defined.

Decision-level data for SWMU 33-010(c) consist of results from samples collected in 1999, 2020, and 2021. The 2021 Phase II IR (N3B 2021, 701606) concluded that the lateral and vertical extent of contamination are defined or no further sampling for extent is warranted.

Analytical results for all soil samples for this SMA are presented in Figures 238.3-1 through 238.3-4.

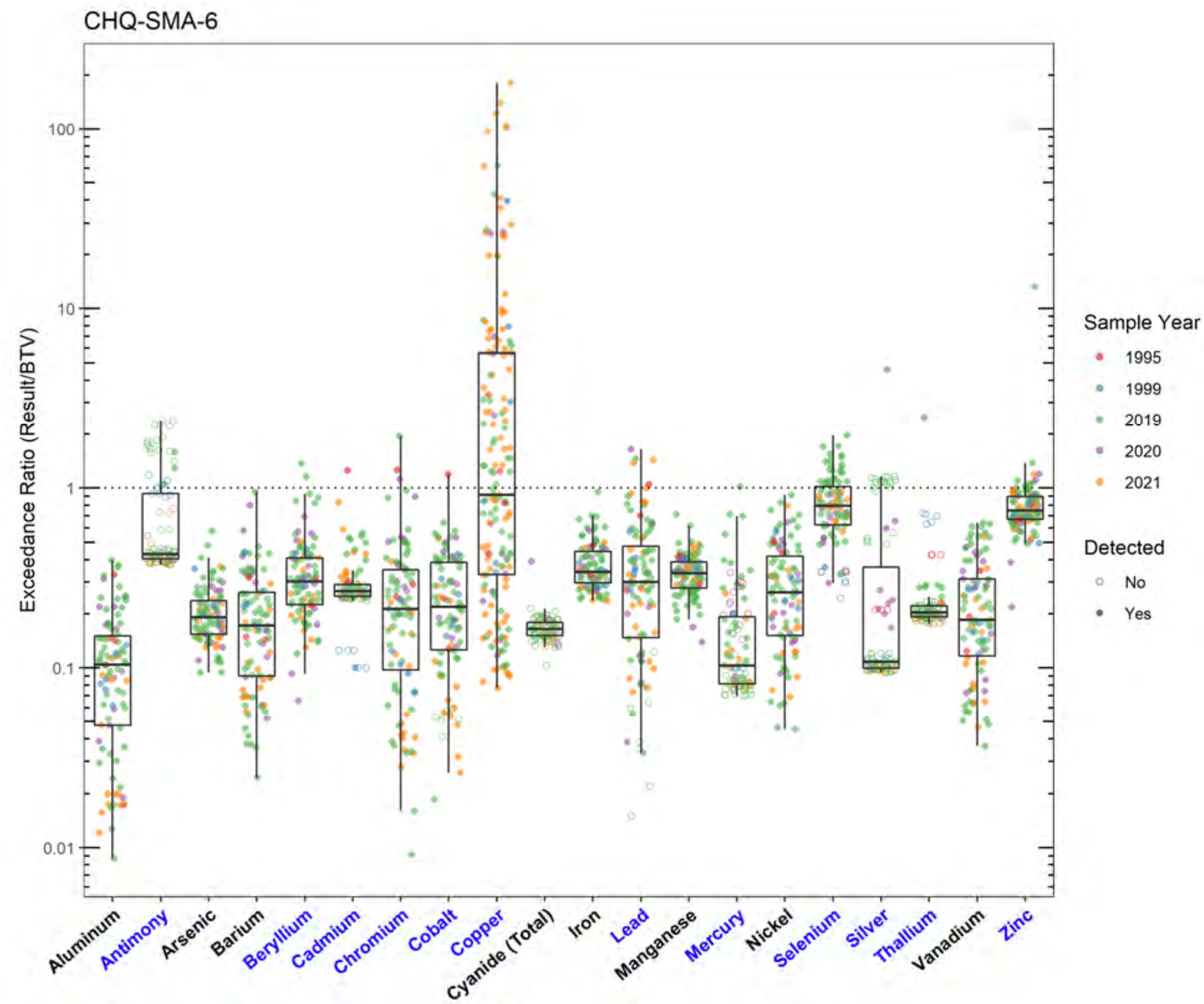


Figure 238.3-1 Inorganics Analytical Results from Soil Samples Associated with CHQ-SMA-6

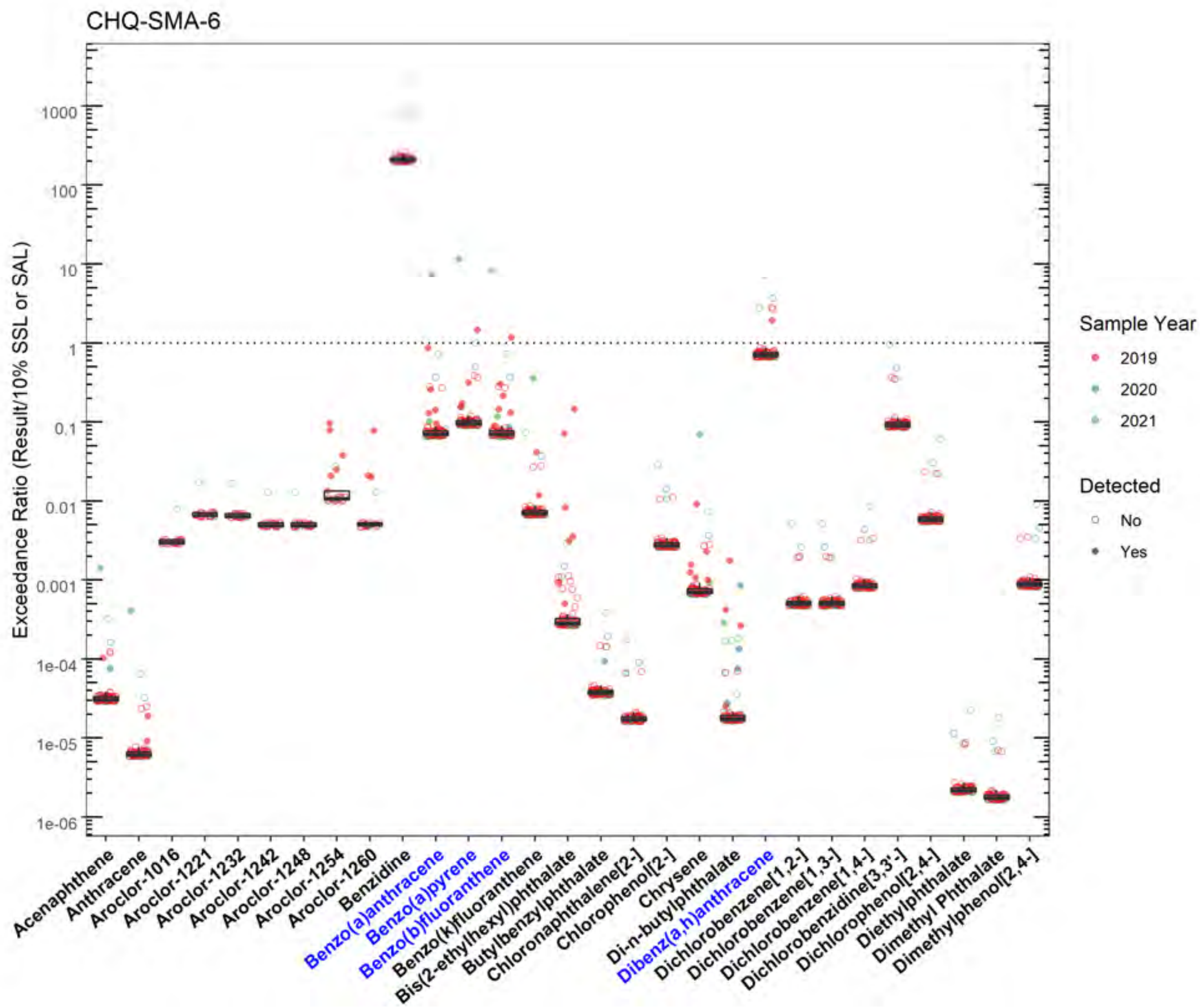


Figure 238.3-2 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-6 (Plot 1)

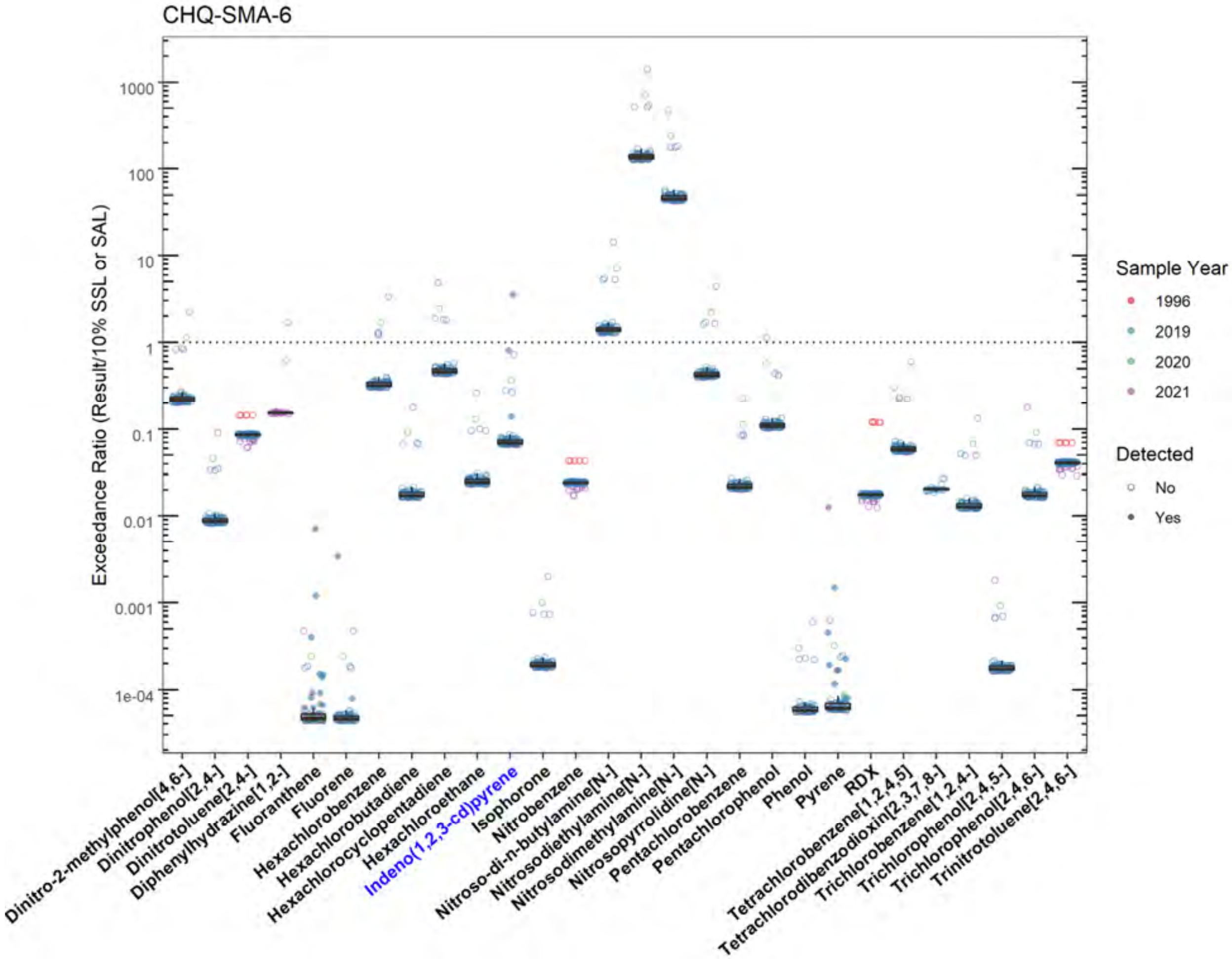


Figure 238.3-3 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-6 (Plot 2)

CHQ-SMA-6

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	CHQ-SMA-6	Sb	Y	BTV	0.830	1.31	2019-12-02
Benzo(a)anthracene	CHQ-SMA-6	56-55-3	Y	SSL_0.1	0.153	1.13	2021-01-13
Benzo(a)pyrene	CHQ-SMA-6	50-32-8	Y	SSL_0.1	0.112	1.30	2021-01-13
Benzo(b)fluoranthene	CHQ-SMA-6	205-99-2	Y	SSL_0.1	0.153	1.26	2021-01-13
Beryllium	CHQ-SMA-6	Be	Y	BTV	1.83	2.51	2019-11-07
Cadmium	CHQ-SMA-6	Cd	Y	BTV	0.400	0.500	1995-11-06
Chromium	CHQ-SMA-6	Cr	Y	BTV	19.3	37.7	2019-11-15
Cobalt	CHQ-SMA-6	Co	Y	BTV	8.64	10.3	1995-11-06
Copper	CHQ-SMA-6	Cu	Y	BTV	14.7	2660	2021-01-11
Dibenz(a,h)anthracene	CHQ-SMA-6	53-70-3	Y	SSL_0.1	0.0153	0.0293	2019-12-17
Indeno(1,2,3-cd)pyrene	CHQ-SMA-6	193-39-5	Y	SSL_0.1	0.153	0.536	2021-01-13
Lead	CHQ-SMA-6	Pb	Y	BTV	22.3	36.8	2020-01-06
Mercury	CHQ-SMA-6	Hg	Y	BTV	0.100	0.102	2019-12-12
Selenium	CHQ-SMA-6	Se	Y	BTV	1.52	3.00	2019-11-07
Silver	CHQ-SMA-6	Ag	Y	BTV	1.00	4.60	1999-06-08
Thallium	CHQ-SMA-6	Tl	Y	BTV	0.730	1.80	1999-05-21
Zinc	CHQ-SMA-6	Zn	Y	BTV	48.8	645	2019-12-06

Figure 238.3-4 Screening-Level Exceedances from Soil Samples Associated with CHQ-SMA-6

238.4 Stormwater Evaluation

238.4.1 Summary of Stormwater Results Compared with TALs and BTVs

The 2022 Individual Permit uses current-stage compliance data for the SSD. No corrective action monitoring samples have been collected in the current monitoring stage.

238.4.2 Assessment Unit and Stream Impairments

CHQ-SMA-6 drains to Chaquehui Canyon (within LANL), which has an impairment for PCBs. The impairment is not likely to be Site-related, based on Site history.

238.5 Site-Specific Demonstration

238.5.1 Soil Data Summary

The metals that exceeded the applicable screening values in soil data were previously measured in stormwater data and did not exceed TALs. Therefore, they will not be added to the SAP (with the exception of copper).

Tetrachlorodibenzodioxin[2,3,7,8-] (the POC for dioxins/furans) was measured in soil data and did not exceed TALs. Therefore, it will not be added to the SAP.

238.5.2 Stormwater Data Summary

Copper exceeded the TAL and BTV in stormwater data in a previous stage and will continue to be monitored. Aluminum and gross alpha exceeded the TALs but not the BTVs. Iron exceeded the WQS; however, there is no TAL in the Permit for iron. Only POCs with TALs are used in the SSD.

238.5.3 2022 Permit Status

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

238.5.4 Sampling and Analysis Plan

Table 238.5-1 is the proposed SAP for CHQ-SMA-6.

Table 238.5-1 Proposed SAP, CHQ-SMA-6

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

239.0 CHQ-SMA-7.1

Associated Sites	33-010(g)
Receiving Water	Chaquehui Canyon
Drainage Area	0.47 acres
Landscape Characteristics	100% pervious
Consent Order Site Status	SWMU 33-010(g): In Progress
2010 Administratively Continued Permit Final Status	Enhanced Control Corrective Action Monitoring
2016–2018 SIP Actions	Based on the September 2017 field visit, all parties agreed that the current SMA sampling location and boundary were the best representation of stormwater discharge from the Site.
2022 Permit Status	Active Monitoring

239.1 2010 Administratively Continued Permit Summary

Following the February 2011 submittal to EPA of certification of baseline control installation, a baseline stormwater sample was collected in July 2018. Analytical results from this sample initiated corrective action.

Following the April 2021 submittal to EPA of certification of enhanced control installation as a corrective action (N3B 2021, 701388), corrective-action monitoring was initiated. Since that time, stormwater flow has not been sufficient for full-volume sample collection. Corrective-action monitoring is ongoing until at least one confirmation sample is collected from this SMA.

239.2 Site History

33-010(g) (2/18/2021)

SWMU 33-010(g) is a former surface disposal area located on the northern rim of Chaquehui Canyon at South Site, at the southern end of TA-33. Debris was scattered along the rim and upper walls of the canyon east and south of MDA E. Chaquehui Canyon is about 200 ft wide at this point, with a 40-ft cliff at the canyon rim. A three-strand barbed-wire fence ran along the east side of the unimproved road adjacent to MDA E, separating SWMU 33-010(g) from the rest of South Site.

Some debris present at SWMU 33-010(g) (such as dead tree trunks, rocks, and scraped earth) appears to have originated from the initial clearing of South Site in the 1940s. Other debris, including shrapnel, cables, and burnt wood, likely originated from shot-pad and gun-firing activities. The period of operation for this disposal site is not known, but firing-site operations associated with initiator testing at South Site were conducted from 1950 to 1956. The debris was removed and disposed of off-site during the 1995 VCA. Residual debris was removed from SWMU 33-010(g) during the 2019–2020 investigation.

For investigation activities, refer to “Investigation Report for Chaquehui Canyon Aggregate Area” (N3B 2020, 701046).

239.2.1 Known or Potential Use of POCs

POCs known to be managed or potentially used at the Site are listed in Table 239.2-1.

Table 239.2-1 POCs Known or Suspected to Have Been Used Historically at the Site

Site	Potential POC Source	Potential POCs
33-010(g)	Surface disposal site	Metals, beryllium, copper, HE, uranium

239.3 Consent Order Soil Data

Decision-level data for SWMU 33-010(g) consist of results from samples collected in 2020. Analytical results for those samples are presented in Figures 239.3-1 through 239.3-4. The 2020 IR (N3B 2020, 701046) concluded that the nature and extent of contamination are defined.

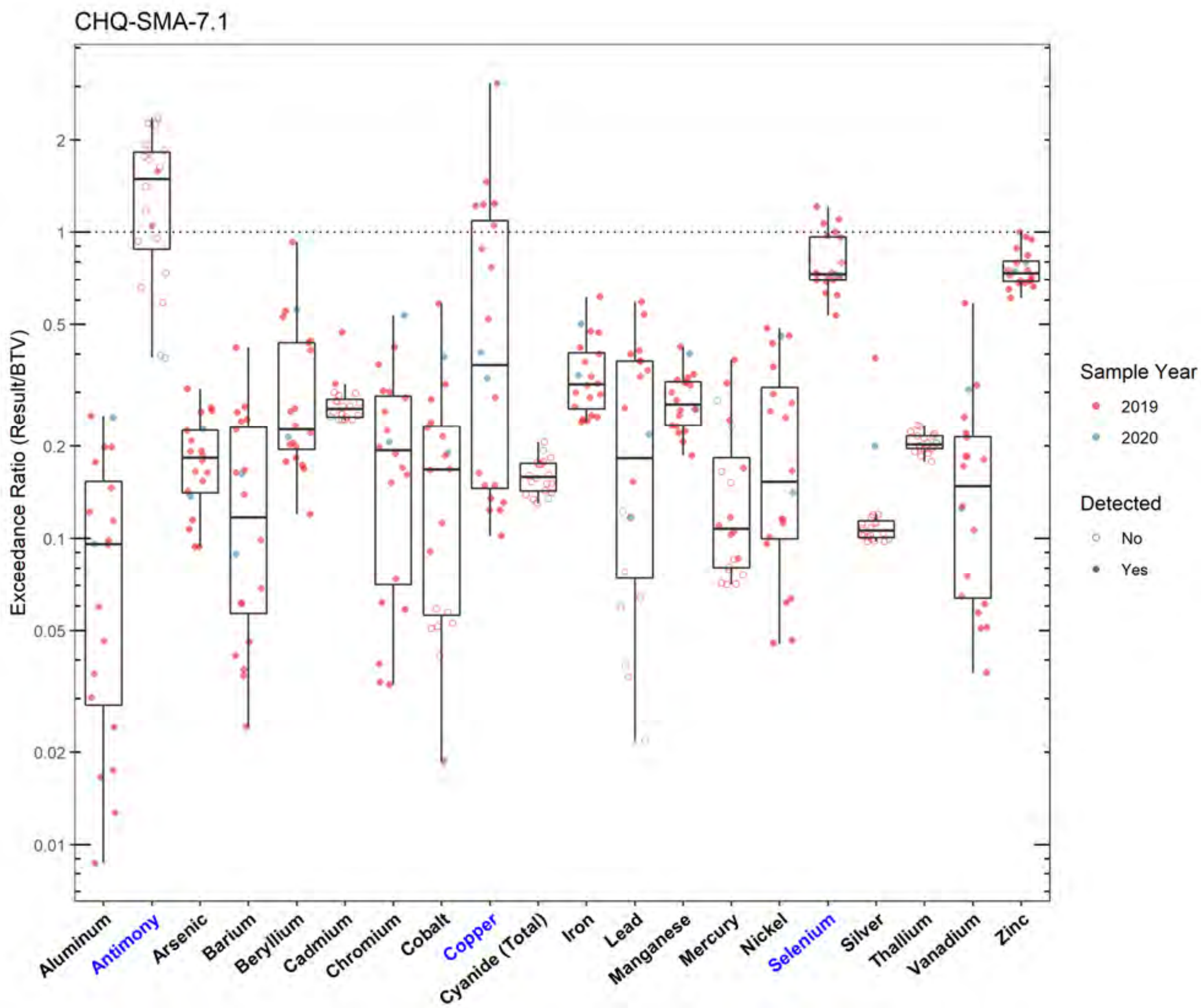


Figure 239.3-1 Inorganics Analytical Results from Soil Samples Associated with CHQ-SMA-7.1

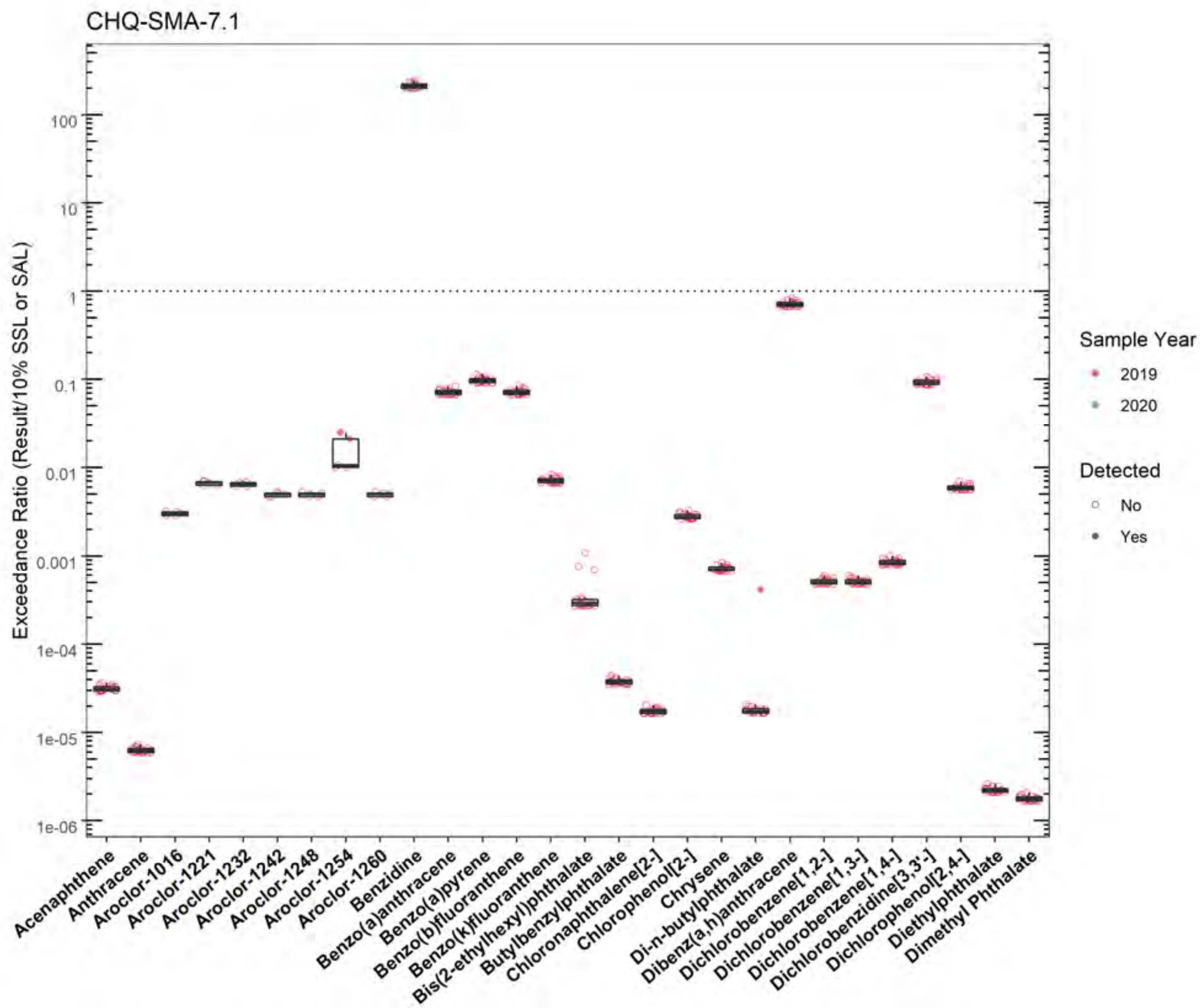


Figure 239.3-2 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-7.1 (Plot 1)

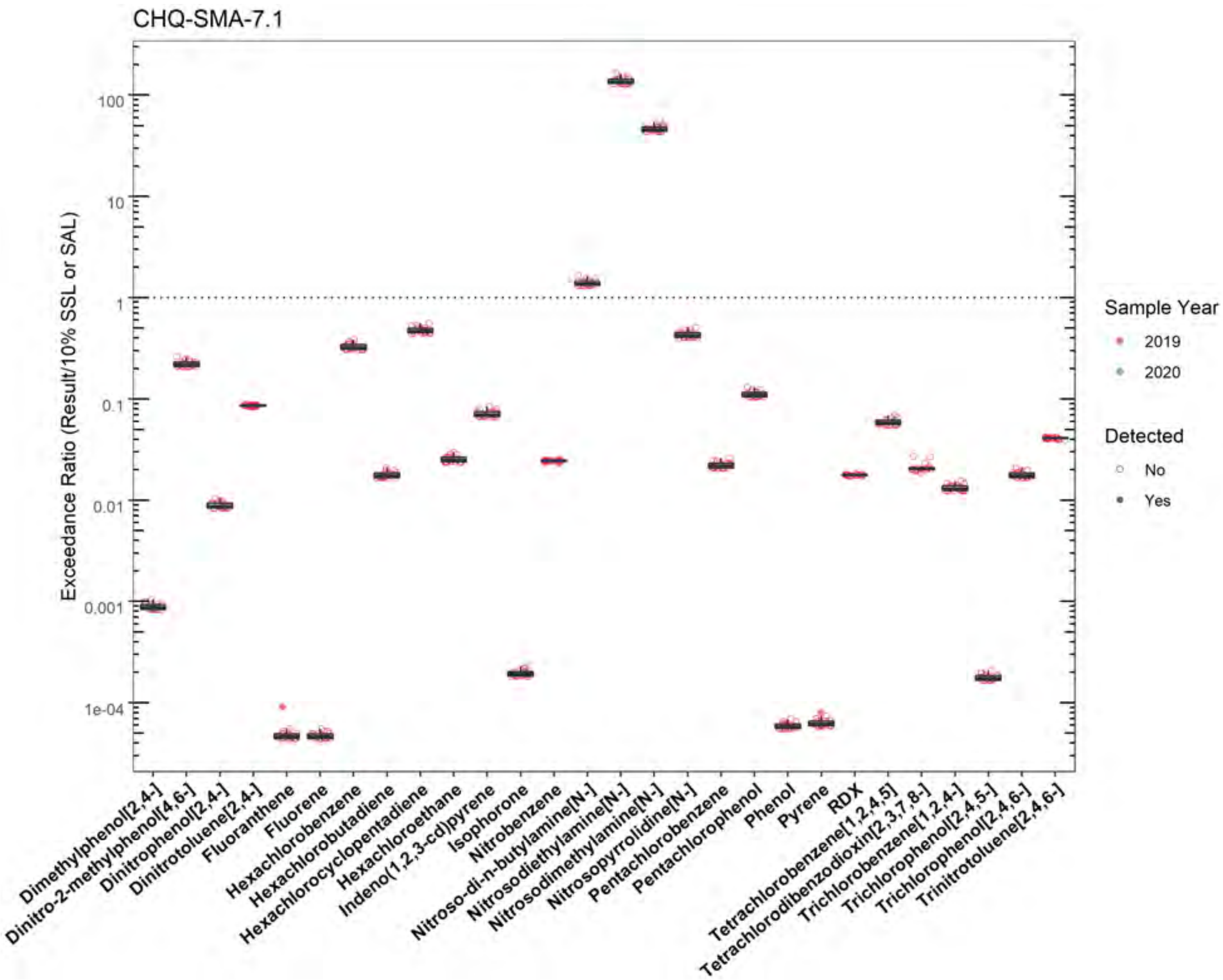


Figure 239.3-3 Organics Analytical Results from Soil Samples Associated with CHQ-SMA-7.1 (Plot 2)

CHQ-SMA-7.1

	SMA	Parameter Code	Detected	Screening Type	Screening Level (mg/kg)	Max Result (mg/kg)	Date of Max Result
Antimony	CHQ-SMA-7.1	Sb	Y	BTV	0.830	1.31	2019-12-02
Copper	CHQ-SMA-7.1	Cu	Y	BTV	14.7	45.1	2019-12-03
Selenium	CHQ-SMA-7.1	Se	Y	BTV	1.52	1.84	2019-11-22

Figure 239.3-4 Screening-Level Exceedances from Soil Samples Associated with CHQ-SMA-7.1

239.4 Stormwater Evaluation

239.4.1 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.

239.4.2 Assessment Unit and Stream Impairments

CHQ-SMA-7.1 drains to Chaquehui Canyon (within LANL), which has an impairment for PCBs. The impairment is not likely to be Site-related, based on Site history.

239.5 Site-Specific Demonstration

239.5.1 Soil Data Summary

Copper exceeded the applicable screening value in soil and the TAL in previous stormwater samplings, so it will be included in the SAP. Antimony and selenium exceeded the applicable screening values in soil data but were previously measured in stormwater data and did not exceed TALs; therefore they will not be added to the SAP. Beryllium and HE, present in the Site History, were measured in soil and did not exceed screening levels.

239.5.2 Stormwater Data Summary

No data for the current monitoring stage have been collected. In the previous monitoring stage, aluminum and gross alpha exceeded TALs but not the BTVs, and copper exceeded the TAL and BTV. Uranium was measured in stormwater and did not exceed the WQS.

239.5.3 2022 Permit Status

The SMA is in active monitoring; no confirmation-monitoring sample has been collected in the current stage.

239.5.4 Sampling and Analysis Plan

Table 239.5-1 is the proposed SAP for CHQ-SMA-7.1.

Table 239.5-1 Proposed SAP, CHQ-SMA-7.1

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