



EMID-701982

# 2021 Update to the Site Discharge Pollution Prevention Plan, Revision 1

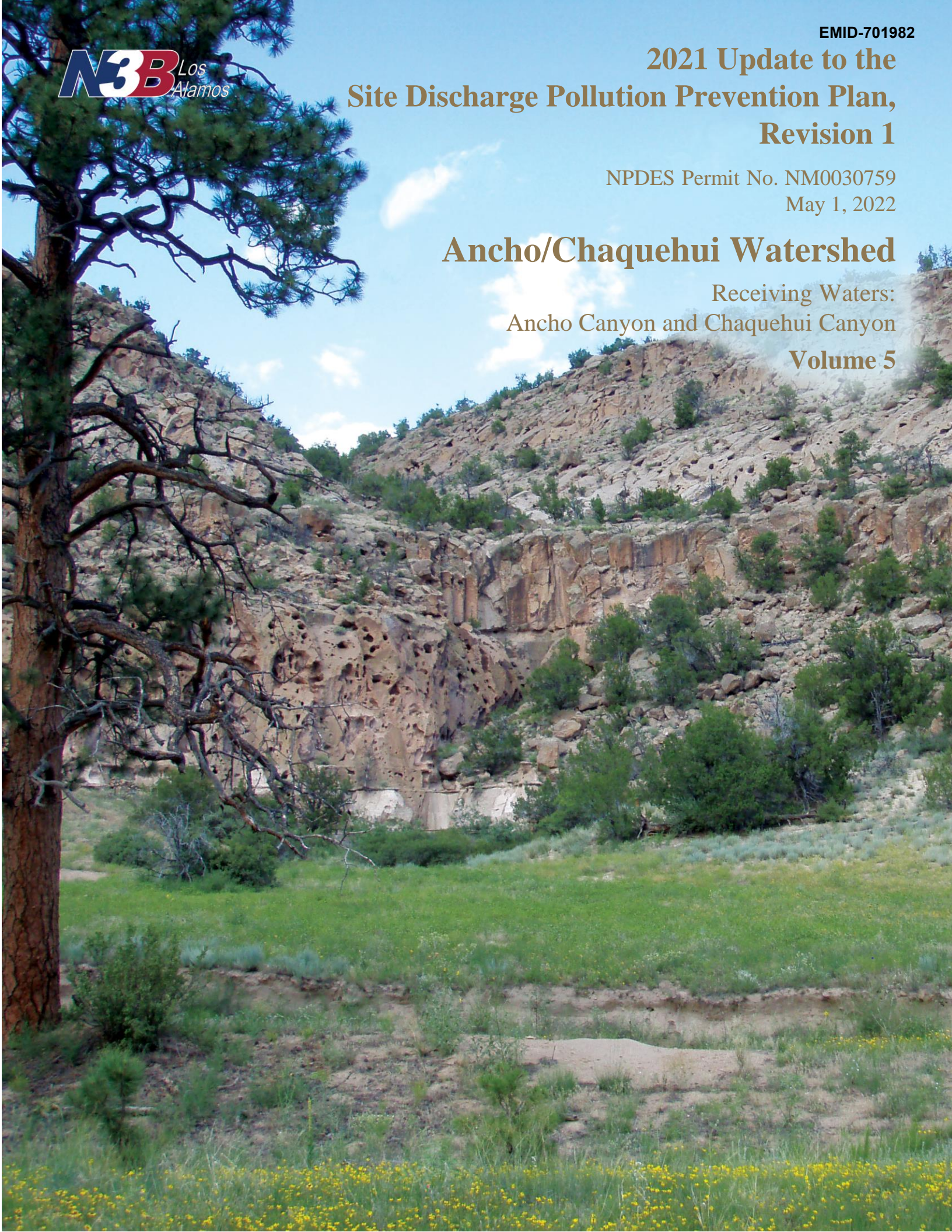
NPDES Permit No. NM0030759

May 1, 2022

## Ancho/Chaquehui Watershed

Receiving Waters:  
Ancho Canyon and Chaquehui Canyon

Volume 5



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## **230.0 A-SMA-1.1: SWMUs 39-004(a) and 39-004(d)**

### **230.1 Site Descriptions**

Two historical industrial activity areas are associated with A001, A-SMA-1.1: Sites 39-004(a) and 39-004(d).

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 so not all the HE is spent, an effort is made to pick up and destroy the unexploded HE. A typical shot carries 10 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. The Site is currently on standby status (i.e., it is not currently being used, but is maintained to allow future use). 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. For the purposes of evaluating the area, SWMUs 39-004(a) and 39-004(d) were sampled as one Site during the 1995 RFI and 2009 Consent Order investigations.

SWMU 39-004(d) is an active firing site (structure 39-57) located along the northern tributary of the upper reach of Ancho Canyon and is situated in the bottom of the canyon between a diverted ephemeral stream and the canyon wall. The firing site was constructed in 1953 and is used for explosives experiments.

Investigations of SWMUs 39-004(a) and 39-004(d) were deferred per Section XI and Appendix A of the Consent Order; therefore, Consent Order nature and extent sampling has not been conducted at the Sites. RFI and Consent Order samples were collected around and downgradient of the Sites to determine the potential contaminants being released at the Sites and whether these contaminants are migrating off-site. The approved Investigation Report for North Ancho Canyon Aggregate Area, Revision 1, concluded the extent of detected inorganic, organic, and radionuclide contaminants is defined in drainages downgradient of the Sites and the drainages meet recreational and residential risk levels; therefore, no immediate corrective action is required until firing site activities cease. Further Consent Order investigations are deferred until the firing sites are no longer active.

The project map (Figure 230-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps>.

### **230.2 Control Measures**

All active control measures are listed in the following table and their locations are shown on the project map (Figure 230-1).

Enhanced controls were installed and certified on December 7, 2021, and submitted to EPA on December 7, 2021, as part of corrective action. Photographs of the enhanced controls are available at <https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications>.

**Table 230-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
A00102040006	Established Vegetation	-	X	X	-	B
A00103010005	Earthen Berm	X	-	-	X	CB
A00104060010	Rip Rap	-	X	-	X	EC
A00106010007	Rock Check Dam	-	X	-	X	EC
A00106010008	Rock Check Dam	-	X	-	X	EC
A00106010009	Rock Check Dam	-	X	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 230.3 Storm Water Monitoring

SWMUs 39-004(a) and 39-004(d) are monitored within A-SMA-1.1. A baseline storm water sample was collected on August 10, 2018 (Figure 230-2). Analytical results from this sample yielded TAL exceedances for aluminum (807 µg/L), gross-alpha activity (333 pCi/L), mercury (1.08 µg/L), and selenium (7.88 µg/L) and are presented in Figure 230-2.

The monitoring location for A-SMA-1.1 has been relocated to a location more likely to collect a corrective action confirmation monitoring sample after installation of enhanced control measures. Sampler coordinates and the SMA drainage area have been updated in Attachment 4.

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

SWMU 39-004(a):

- Aluminum is known to be associated with industrial materials historically managed at 39-004(a). Aluminum results are not available for the shallow (i.e., less than 3 ft bgs) 2009 Consent Order and 1995 RFI samples collected at the Site.
- Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.
- Mercury is known to be associated with industrial materials historically managed at 39-004(a). Mercury was detected above soil and tuff BVs in 16 of 50 shallow (i.e., less than 3 ft bgs) 2009 Consent Order and 1995 RFI samples collected at the Site at a maximum concentration 68 times the soil BV.
- Selenium is not known to be associated with industrial materials historically managed at 39-004(a). Selenium was not detected or detected above soil or tuff BVs in any of the 50 shallow (i.e., less than 3 ft bgs) 2009 Consent Order and 1995 RFI samples collected at the Site.

SWMU 39-004(d):

- Aluminum is known to be associated with industrial materials historically managed at 39-004(d). Aluminum results are not available for the shallow (i.e., less than 3 ft bgs) 2009 Consent Order and 1995 RFI samples collected at the Site.
- Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.
- Mercury is known to be associated with industrial materials historically managed at 39-004(d). Mercury was detected above soil and tuff BVs in 16 of 50 shallow (i.e., less than 3 ft bgs) 2009 Consent Order and 1995 RFI samples collected at the Site at a maximum concentration 68 times the soil BV.
- Selenium is not known to be associated with industrial materials historically managed at 39-004(d). Selenium was not detected or detected above soil or tuff BVs in any of the 50 shallow (i.e., less than 3 ft bgs) 2009 Consent Order and 1995 RFI samples collected at the Site.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff Background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 230-2. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figure 230-2.

Monitoring location A-SMA-1.1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. Metals including aluminum are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Aluminum—The aluminum UTL from developed landscape storm water run-on is 245 µg/L; the aluminum UTL for background storm water containing sediment derived from Bandelier Tuff is 2210 µg/L. The aluminum result from 2018 is between these two values.
- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. The 2018 gross-alpha result is between these two values.
- Mercury—A UTL could not be calculated because of the insufficient number of detections.
- Selenium—A UTL could not be calculated because of the insufficient number of detections.

The analytical results for this sample are reported in the 2018 Annual Report.

#### **230.4 Inspections and Maintenance**

RG267.4 recorded six storm events at A-SMA-1.1 during the 2021 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in the following table.

**Table 230-2 Control Measure Inspections during 2021**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-85953	6-8-2021
Storm Rain Event	BMP-86680	7-9-2021
Storm Rain Event	BMP-88240	8-25-2021
Verification	BMP-87103	8-25-2021
Storm Rain Event	BMP-88607	9-7-2021

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 230-3 Maintenance during 2021**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-88577	Maintained and improved Rock Check Dams A00106010007, A00106010008, and A00106010009 after storm event occurring immediately before verification inspection. Ensured each rock check dam has a minimum 6-in. capacity at spillway, spillway is lined up with centerline of channel, and apron is present to prevent erosion at downstream toe.	9-23-2021	29 day(s)	Maintenance was performed as soon as practicable.

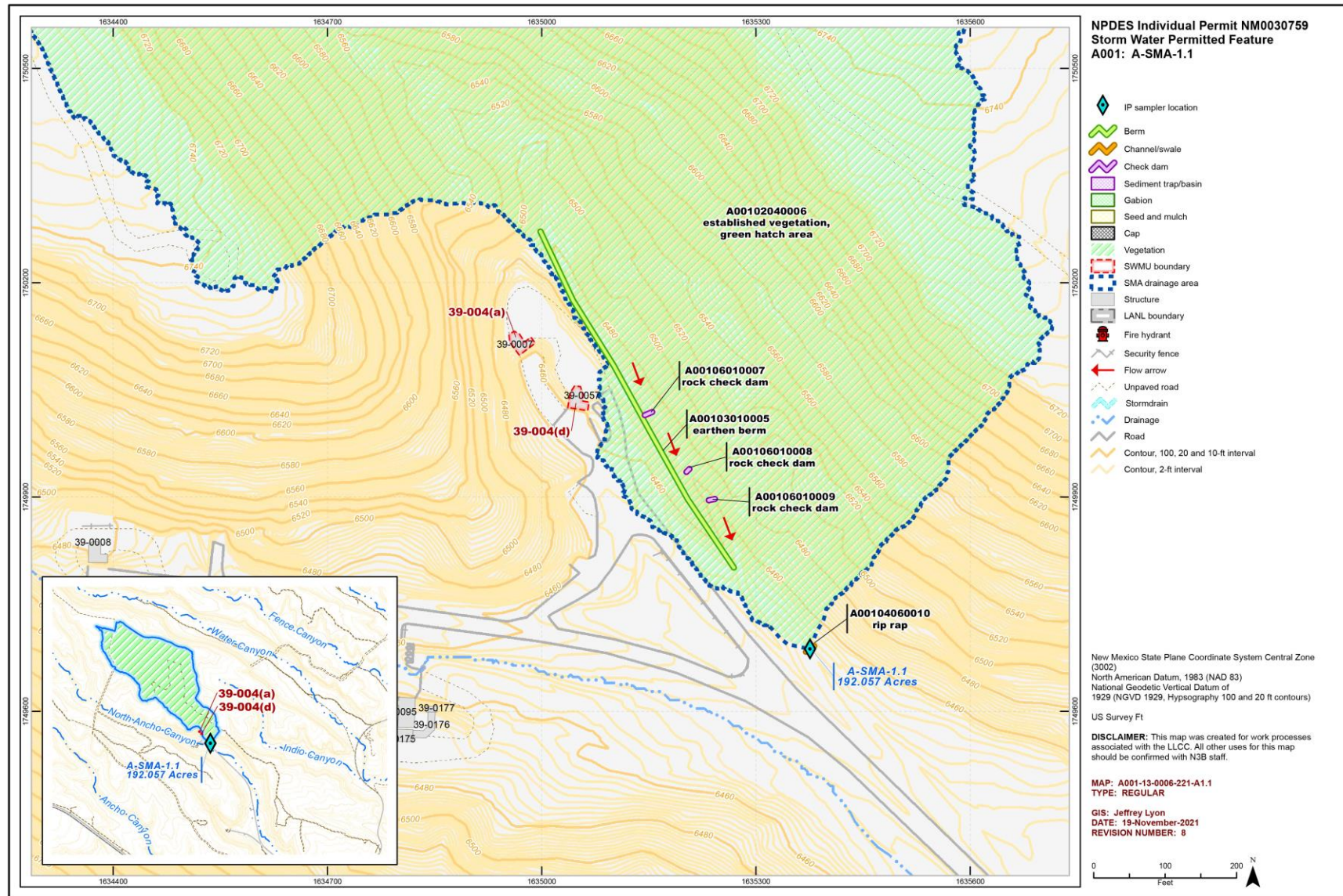
### 230.5 Compliance Status

The Sites associated with A-SMA-1.1 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2021. Table 230-4 presents the 2021 compliance status.

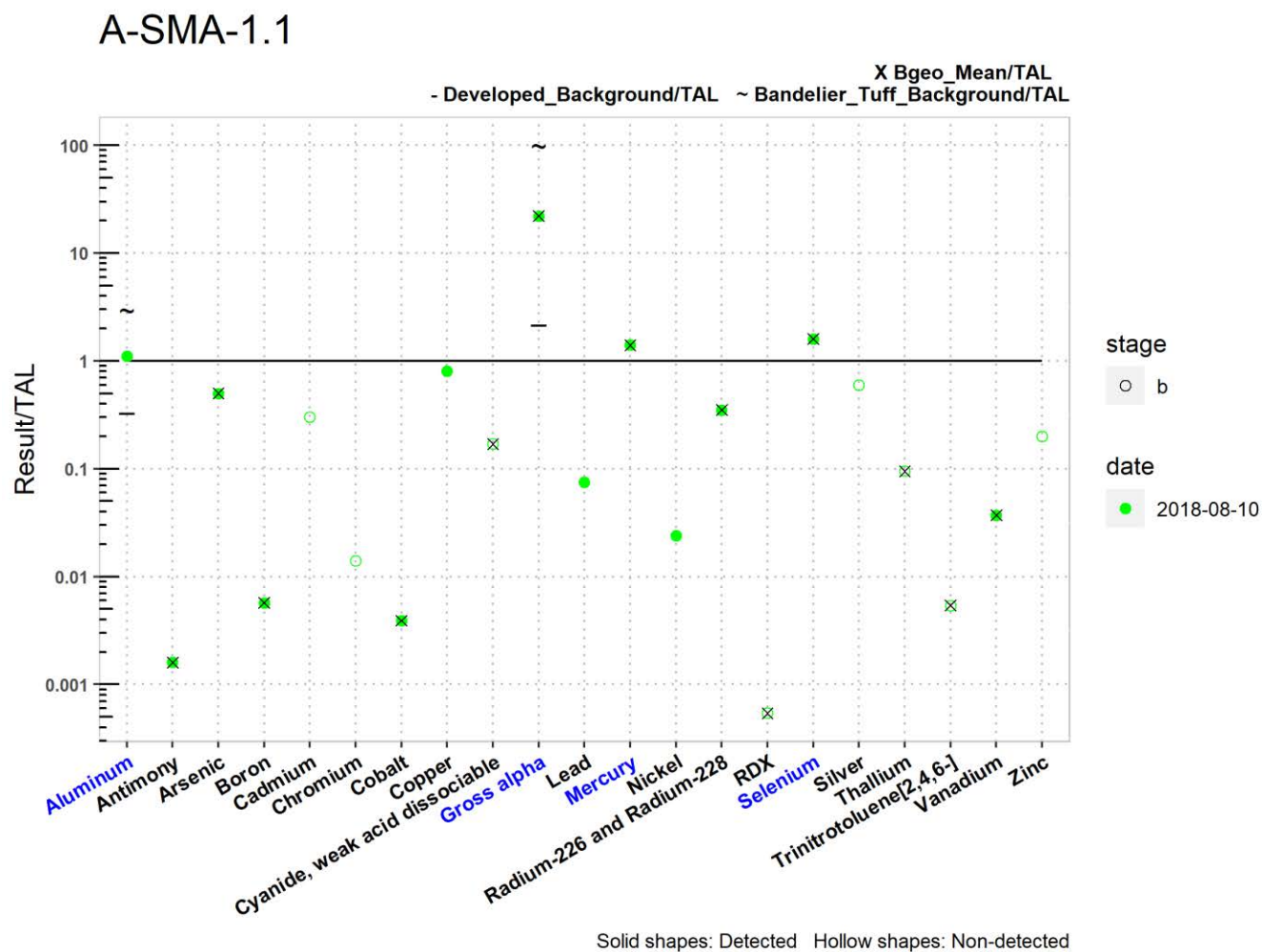
**Table 230-4 Compliance Status during 2021**

Site	Compliance Status on Jan 1, 2021	Compliance Status on Dec 31, 2021	Comments
SWMU 39-004(a)	Building Enhanced Controls	Enhanced Control Corrective Action Monitoring	N3B, December 7, 2021, "Submittal of Certification of Installation of Enhanced Control Measures at A-SMA-1.1 and A-SMA-3."
SWMU 39-004(d)	Building Enhanced Controls	Enhanced Control Corrective Action Monitoring	N3B, December 7, 2021, "Submittal of Certification of Installation of Enhanced Control Measures at A-SMA-1.1 and A-SMA-3."

Further details regarding compliance status and planned activities can be found in Attachment 6 for Sites in this SMA.



**Figure 230-1 A-SMA-1.1 location map**



**Figure 230-2 Analytical results summary for A-SMA-1.1**

**A-SMA-1.1**

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
<i>TAL</i>	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	200	5	0.5	6.3	20	100	42
<i>MQL</i>	2.5	60	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
<i>ATAL</i>	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	200	5	NA	6.3	20	100	NA
<i>MTAL</i>	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	NA	20	0.4	NA	NA	NA	42
<i>unit</i>	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
<i>Bgeo_mean/ATAL</i>	NA	0.0016	0.50	0.0057	NA	NA	0.0039	NA	0.17	<b>22</b>	NA	<b>1.4</b>	NA	0.35	0.00054	<b>1.6</b>	NA	0.095	0.0054	0.037	NA
<i>2018-08-10 d</i>	<b>1.1</b>	0.0016	0.50	0.0057	NA	NA	0.0039	0.80	NA	<b>22</b>	0.075	<b>1.4</b>	0.024	0.35	NA	<b>1.6</b>	NA	NA	NA	0.037	NA
<i>2018-08-10 nd</i>	NA	NA	NA	NA	0.30	0.014	NA	NA	0.17	NA	NA	NA	NA	NA	0.00054	NA	0.60	0.095	0.0054	NA	0.20

Bold font indicate TAL exceedance; d=detected\_result/TAL, nd=nondetected\_result/TAL

**Figure 230-2 (continued)**

**Analytical results summary for A-SMA-1.1**

## **231.0 A-SMA-2: SWMUs 39-004(b) and 39-004(e)**

### **231.1 Site Descriptions**

Two historical industrial activity areas are associated with A002, A-SMA-2: Sites 39-004(b) and 39-004(e).

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. Activities at this Site were discontinued in 1980 because of the constant hazard of falling debris from the nearby cliff.

The completion of Consent Order investigations at SWMU 39-004(b) is deferred because the Site is within the area affected by operations at other active firing sites; however, Consent Order samples were collected from the extended drainages downgradient of the firing site to assess the potential for off-site migration. The approved Investigation Report for North Ancho Canyon Aggregate Area, Revision 1, concluded that all inorganic and radionuclide COPCs from this Site are at or below BVs in the drainage downstream of the Sites and meet residential risk levels; therefore, no corrective action is required until firing site activities cease.

SWMU 39-004(e) is a firing site located (structure 39-88) at TA-39. This Site has been in use since it was constructed in 1978 as a remote test firing facility to test materials. 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. The SWMU 39-004(e) firing site is located in the western tributary of the upper reach of Ancho Canyon on the same tributary as SWMU 39-004(b). This SWMU is within the deposition area of SWMUs 39-004(a,b,d).

The completion of Consent Order investigations at SWMU 39-004(e) is deferred because the Site is within the area affected by operations at other active firing sites; however, Consent Order samples were collected from the extended drainages downgradient of the firing site to assess the potential for off-site migration. The approved Investigation Report for North Ancho Canyon Aggregate Area, Revision 1, concluded that all inorganic and radionuclide COPCs from this Site are at or below BVs in the drainage downstream of the Sites and meet residential risk levels; therefore, no corrective action is required until firing site activities cease.

The project map (Figure 231-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps>.

### **231.2 Control Measures**

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 231-1).

Enhanced controls were installed and certified on August 10, 2015, and submitted to EPA on August 17, 2015, as part of corrective action. Photographs of the enhanced controls are available at <https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications>.

**Table 231-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
A00202040017	Established Vegetation	-	X	X	-	B
A00203010041	Earthen Berm	-	X	-	X	EC
A00203010042	Earthen Berm	X	-	-	X	EC
A00203010043	Earthen Berm	-	X	-	X	EC
A00203020051	Base Course Berm	-	X	-	X	EC
A00203150047	Redi-Rock Berm	X	-	-	X	EC
A00204040046	Culvert	X	-	X	-	EC
A00204040049	Culvert	X	-	X	-	EC
A00204050053	Water Bar	-	X	X	-	EC
A00204060004	Rip Rap	-	X	X	-	CB
A00204080045	TRM-Lined Swale	X	-	X	-	EC
A00204080048	TRM-Lined Swale	X	-	X	-	EC
A00204080052	TRM-Lined Swale	-	X	X	-	EC
A00205020050	Sediment Basin	X	-	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 231.3 Storm Water Monitoring

SWMUs 39-004(b) and 39-004(e) are monitored within A-SMA-2. Following the installation of baseline control measures, a baseline storm water sample was collected on September 12, 2013 (Figure 231-2). In Figure 231-2, cadmium, selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL; the MDLs for these analytes are below their respective TALs. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded TAL exceedances for aluminum (1310 µg/L), copper (23.9 µg/L), and gross-alpha activity (23.7 pCi/L) and are presented in Figure 231-2.

Following installation of enhanced control measures, two corrective action storm water samples were collected on July 25, 2019, and October 4, 2019 (Figure 231-2). Analytical results from these corrective action monitoring samples yielded TAL exceedances for copper (18.1 µg/L and 29.6 µg/L) and gross-alpha activity (67.6 pCi/L and 596 pCi/L) and are presented in Figure 231-2.

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

#### *SWMU 39-004(b):*

- Copper is known to be associated with industrial materials historically managed at SWMU 39-004(b). Copper was detected above BVs in 13 of 31 shallow soil and sediment samples collected during the 1995 RFI conducted at the firing site at a maximum concentration 87.8 times the soil BV.

- Alpha-emitting radionuclides (uranium) are known to be associated with industrial materials historically managed at SWMU 39-004(b). Consent Order and RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for uranium, which contains alpha-emitting isotopes, and were analyzed for isotopic plutonium, thorium, and uranium, which are also alpha emitters. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

*SWMU 39-004(e):*

- Copper is known to be associated with industrial materials historically managed at SWMU 39-004(e). Copper was detected above BVs in 14 of 39 shallow soil and sediment samples collected during the 1995 RFI conducted at the firing site at a maximum concentration 563 times the soil BV. Copper was detected above BVs in two of six shallow soil and sediment Consent Order samples collected at three locations in the drainage adjacent to the firing site at a maximum concentration 4 times the soil BV.
- Alpha-emitting radionuclides (uranium) are known to be associated with industrial materials historically managed at SWMU 39-004(b). Consent Order and RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for total uranium, which contains alpha-emitting isotopes, and were analyzed for isotopic plutonium, thorium, and uranium, which are also alpha emitters. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff Background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 231-2. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figure 231-2.

Monitoring location A-SMA-2 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Copper—The copper UTL from developed landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2013 and 2019 are between these two values.
- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. The 2013 gross-alpha result is less than both of these values. The 2019 gross-alpha results are between these two values.

The analytical results for these samples are reported in the 2013 and 2019 Annual Reports.

## 231.4 Inspections and Maintenance

RG267.4 recorded six storm events at A-SMA-2 during the 2021 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 231-2 Control Measure Inspections during 2021**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-85961	6-8-2021
Storm Rain Event	BMP-86686	7-9-2021
Storm Rain Event	BMP-88246	8-25-2021
Storm Rain Event	BMP-88613	9-7-2021
Verification	BMP-89845	12-22-2021

Maintenance activities conducted at the SMA are summarized in the following table. The facility also conducted maintenance activities at the SMA during November and December of 2021. The Permittees worked in conjunction with the facility during these maintenance and/or upgrading activities of existing controls and plan to certify some as enhanced controls in early 2022.

**Table 231-3 Maintenance during 2021**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-86358	Cleared debris from Culvert A00204040049 and metal and wood debris from TRM-Lined Swale A00204080048. Debris relocated and stabilized on-site.	7-13-2021	35 day(s)	Maintenance was delayed.

## 231.5 Compliance Status

The Sites associated with A-SMA-2 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2021. Table 231-4 presents the 2021 compliance status.

**Table 231-4 Compliance Status during 2021**

Site	Compliance Status on Jan 1, 2021	Compliance Status on Dec 31, 2021	Comments
SWMU 39-004(b)	Building Enhanced Controls	Building Enhanced Controls	Initiated 12-1-2020
SWMU 39-004(e)	Building Enhanced Controls	Building Enhanced Controls	Initiated 12-1-2020

Further details regarding compliance status and planned activities can be found in Attachment 6 for Sites in this SMA.

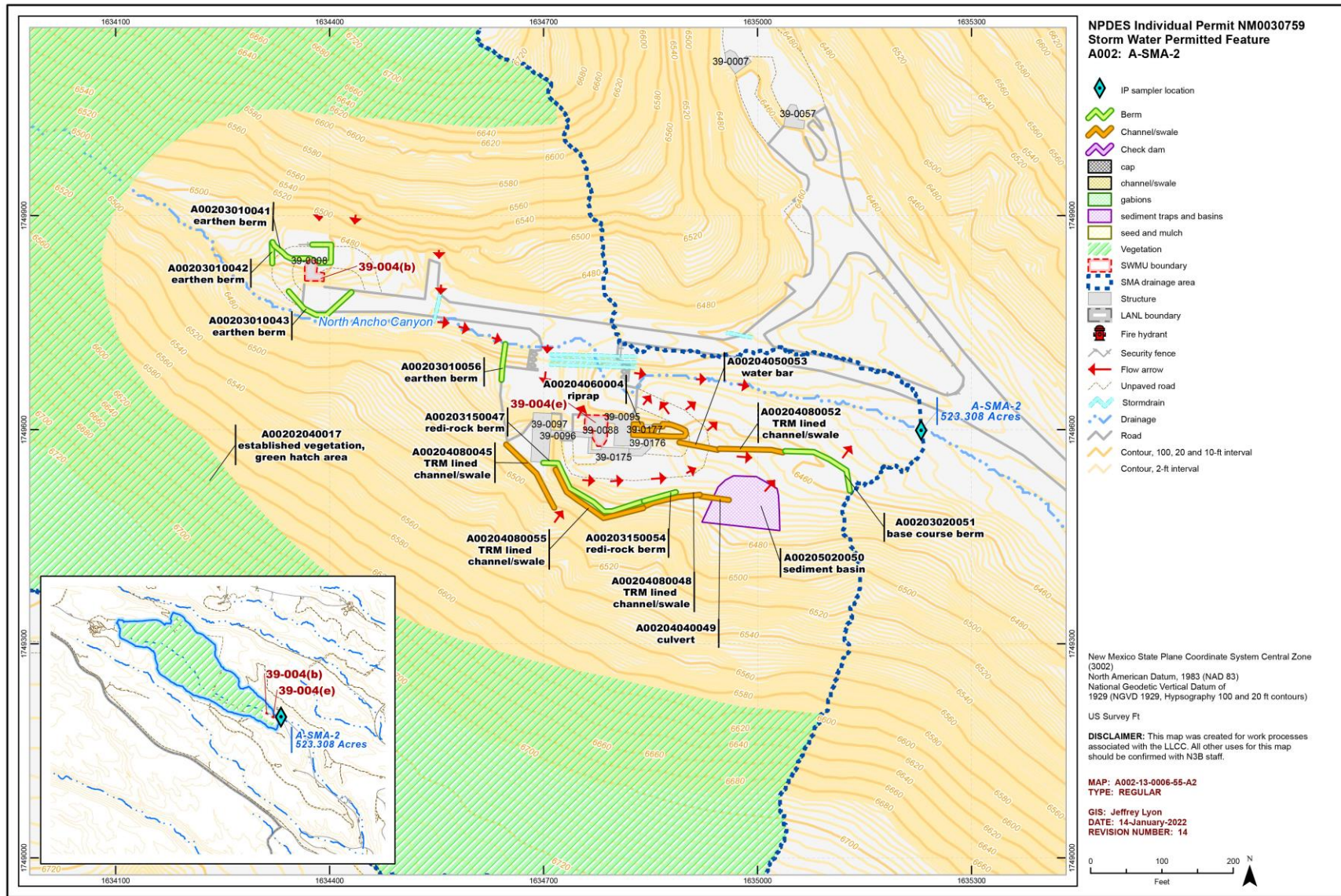


Figure 231-1 A-SMA-2 location map

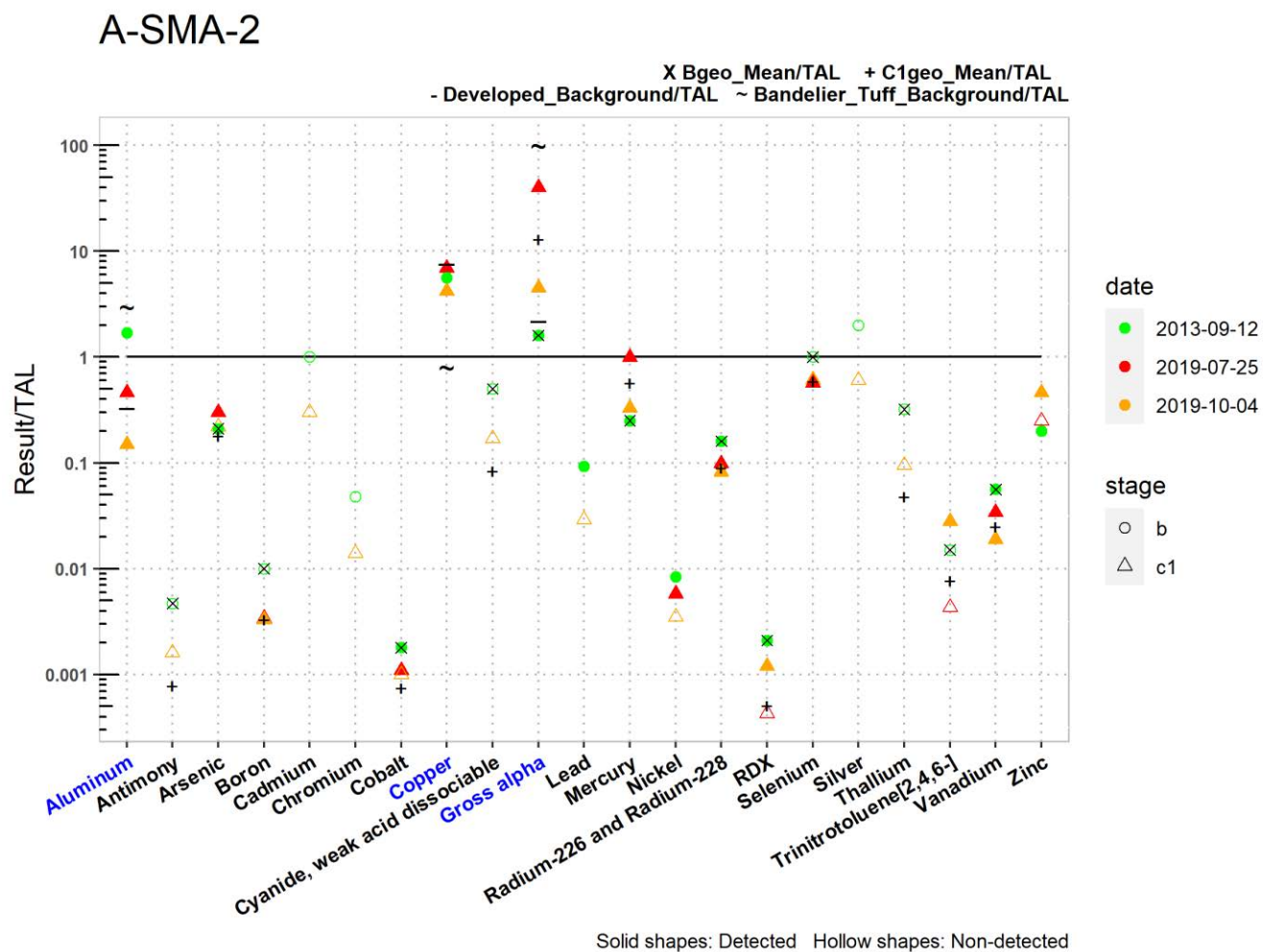


Figure 231-2 Analytical results summary for A-SMA-2

**A-SMA-2**

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
<i>TAL</i>	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	200	5	0.5	6.3	20	100	42
<i>MQL</i>	2.5	60	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
<i>ATAL</i>	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	200	5	NA	6.3	20	100	NA
<i>MTAL</i>	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	NA	20	0.4	NA	NA	NA	42
<i>unit</i>	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
<i>Bgeo_mean/ATAL</i>	NA	0.0047	0.21	0.010	NA	NA	0.0018	NA	0.50	<b>1.6</b>	NA	0.25	NA	0.16	0.0021	1.0	NA	0.32	0.015	0.056	NA
<i>C1geo_mean/ATAL</i>	NA	0.00078	0.18	0.0033	NA	NA	0.00075	NA	0.084	<b>13</b>	NA	0.57	NA	0.090	0.00051	0.59	NA	0.048	0.0077	0.025	NA
<i>2013-09-12 d</i>	<b>1.7</b>	NA	0.21	NA	NA	NA	0.0018	<b>5.6</b>	NA	<b>1.6</b>	0.093	0.25	0.0084	0.16	0.0021	NA	NA	NA	NA	0.056	0.20
<i>2013-09-12 nd</i>	NA	0.0047	NA	0.010	1.0	0.048	NA	NA	0.50	NA	NA	NA	NA	NA	NA	1.0	2.0	0.32	0.015	NA	NA
<i>2019-07-25 d</i>	0.46	NA	0.30	0.0034	NA	NA	0.0011	<b>6.9</b>	NA	<b>40</b>	NA	0.99	0.0058	0.098	NA	0.57	NA	NA	NA	0.034	NA
<i>2019-07-25 nd</i>	NA	0.0016	NA	NA	0.30	0.014	NA	NA	0.17	NA	0.029	NA	NA	NA	0.00043	NA	0.60	0.095	0.0043	NA	0.25
<i>2019-10-04 d</i>	0.15	NA	NA	0.0033	NA	NA	NA	<b>4.2</b>	NA	<b>4.5</b>	NA	0.33	NA	0.082	0.0012	0.61	NA	NA	0.028	0.019	0.46
<i>2019-10-04 nd</i>	NA	0.0016	0.22	NA	0.30	0.014	0.0010	NA	0.17	NA	0.029	NA	0.0035	NA	NA	NA	0.60	0.095	NA	NA	NA

Bold font indicate TAL exceedance; d=detected\_result/TAL, nd=nondetected\_result/TAL

**Figure 231-2 (continued)      Analytical results summary for A-SMA-2**

## 232.0 A-SMA-2.5: SWMU 39-010

### 232.1 Site Descriptions

One historical industrial activity area is associated with A003, A-SMA-2.5: Site 39-010.

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)]. 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<sup>2</sup>, was not identified in the 1990 SWMU report. However, it was noted in both the 1993 RFI work plan and in a 2001 letter notification to NMED designating a new SWMU.

Phase I Consent Order sampling is complete for SWMU 39-010. All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs and SALs, except for two detections of uranium-238. SWMU 39-010 will be recommended for corrective action complete in the Phase II Investigation Report for North Ancho Canyon Aggregate Area.

The project map (Figure 232-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps>.

### 232.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 232-1).

**Table 232-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
A00302040007	Established Vegetation	-	X	X	-	B
A00303010003	Earthen Berm	-	X	-	X	CB
A00303010010	Earthen Berm	X	-	X	-	B
A00303060008	Straw Wattle	X	-	-	X	B
A00303060009	Straw Wattle	X	-	-	X	B
A00304060014	Rip Rap	X	-	X	-	B
A00304080015	TRM-Lined Swale	X	-	X	-	B
A00307010012	Gabion	X	-	-	X	B
A00307010013	Gabion	X	-	X	-	B
A00307020011	Gabion Blanket	X	-	X	-	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

### 232.3 Storm Water Monitoring

Through calendar year 2021, storm water flow has not been sufficient for full-volume sample collection at A-SMA-2.5. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

### 232.4 Inspections and Maintenance

RG265 recorded five storm events at A-SMA-2.5 during the 2021 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 232-2 Control Measure Inspections during 2021**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-86990	7-13-2021
Storm Rain Event	BMP-87834	8-11-2021
Storm Rain Event	BMP-88247	8-25-2021
Storm Rain Event	BMP-88614	9-7-2021

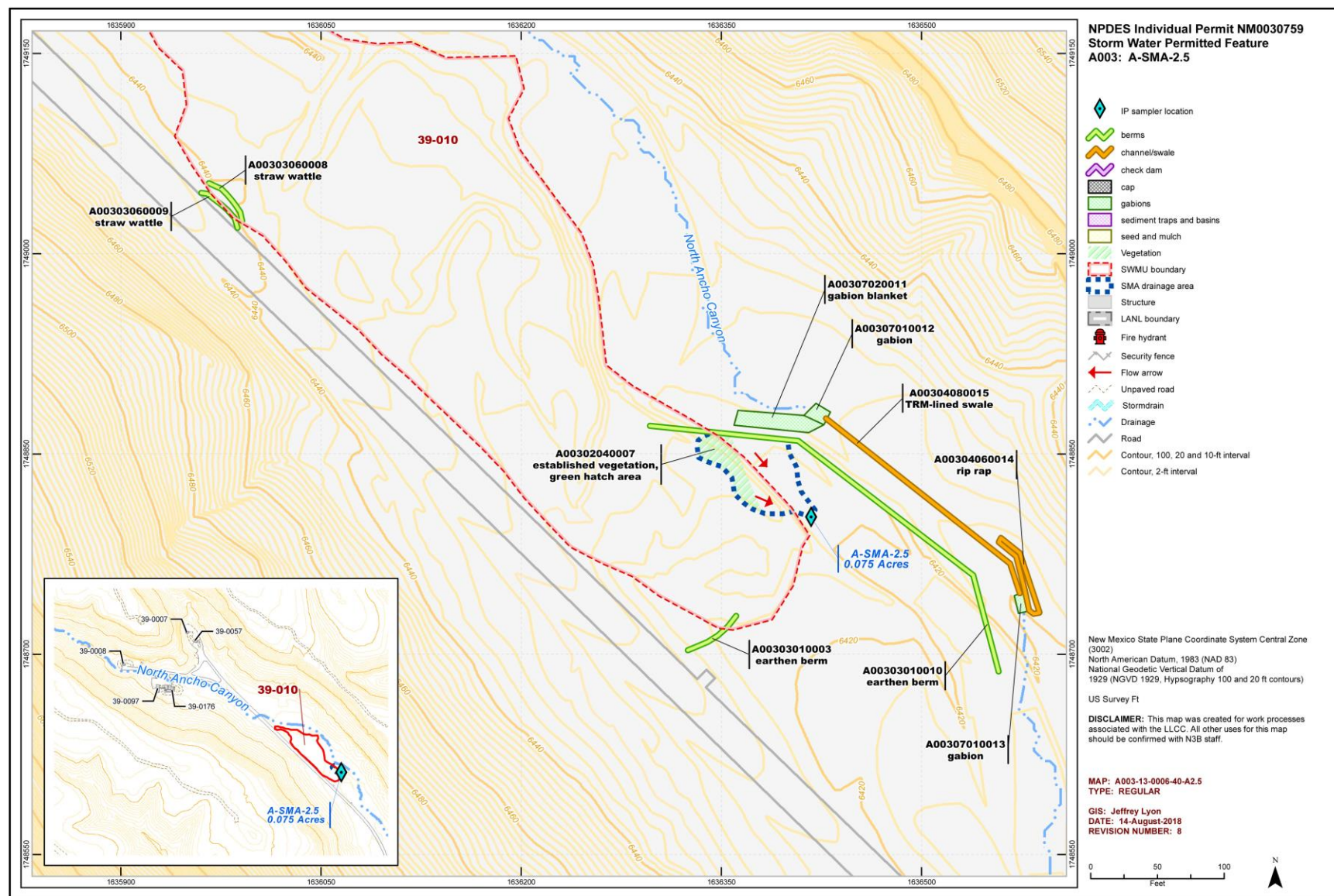
No maintenance activities or facility modifications affecting discharge were conducted at A-SMA-2.5 in 2021.

### 232.5 Compliance Status

The Site associated with A-SMA-2.5 is a Moderate Priority Site. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2021. Table 232-3 presents the 2021 compliance status.

**Table 232-3 Compliance Status during 2021**

Site	Compliance Status on Jan 1, 2021	Compliance Status on Dec 31, 2021	Comments
SWMU 39-010	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. No samples have been collected since initiation of the Permit.



**Figure 232-1 A-SMA-2.5 location map**

## **233.0 A-SMA-2.7: AOC 39-002(c) and SWMU 39-008**

### **233.1 Site Descriptions**

Two historical industrial activity areas are associated with A004, A-SMA-2.7: Sites 39-002(c) and 39-008.

AOC 39-002(c) is the location of a former outdoor SAA on an asphalt-paved area next to the southwest corner of the gas-gun support structure (39-56). Waste paper; solvent-contaminated rags (ethanol, acetone, and trichloroethane); and vacuum grease were stored at this SAA. It is not known if this area was used for storage before it was placed in service as an SAA. This SAA was removed from service in February 1994.

The Consent Order investigation of AOC 39-002(c) is complete. The approved Investigation Report for North Ancho Canyon Aggregate Area, Revision 1, concluded the nature and extent for all detected inorganic and organic contaminants are defined at AOC 39-002(c); no radiological COPCs were detected at the Site. The Site meets residential risk levels; therefore, no further investigation or corrective action is required. NMED issued a COC without controls for AOC 39-002(c) in April 2010.

SWMU 39-008 is an area of potential soil contamination from an active gas-gun firing site.

Building 39-137 houses a single-stage gas gun that is used to fire DU projectiles at targets on a 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 Site activities is scattered over the area just west of building 39-137, but occasionally projectiles and target fragments hit the cliff face, which is located approximately 200 ft west of another building associated with this experimental gun (building 39-56). SWMU 39-008 is impacted by continuing Site operations; therefore, further investigation of the Site under the Consent Order is delayed until operations at the Site cease.

RFI and Consent Order samples were collected at the Site to determine the potential contaminants being released at the Site and whether these contaminants are migrating off the Site. The approved Investigation Report for North Ancho Canyon Aggregate Area, Revision 1, concluded that all detected inorganic and radionuclide contaminants from this Site are at or below BVs and/or FVs, and organic COPCs were detected at or below the EQLs in the drainage downstream of the Site and that contaminants are not migrating off-site; therefore, no immediate corrective action is required.

The project map (Figure 233-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps>.

### **233.2 Control Measures**

All active control measures are listed in Table 233-1, and their locations are shown on the project map (Figure 233-1).

Enhanced controls were installed and certified on August 23, 2012, and submitted to EPA on September 20, 2012, as part of corrective action. Photographs of the enhanced controls are available at <https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications>.

**Table 233-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
A00402040017	Established Vegetation	-	X	X	-	B
A00403010013	Earthen Berm	-	X	-	X	EC
A00403010014	Earthen Berm	-	X	-	X	EC
A00403010015	Earthen Berm	-	X	-	X	EC
A00403010016	Earthen Berm	-	X	-	X	EC

B: Additional baseline control measure.

EC: Enhanced control measure.

### 233.3 Storm Water Monitoring

AOC 39-002(c) and SWMU 39-008 are monitored within A-SMA-2.7. Following the installation of baseline control measures, baseline confirmation samples were collected on July 24, 2011, and September 4, 2011 (Figure 233-2). In Figure 233-2, cadmium and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL; the MDLs for these analytes are below their respective TALs. The values are nondetects and thus not considered TAL exceedances. Analytical results from these samples yielded TAL exceedances for copper (5.4 µg/L and 6.2 µg/L) and gross-alpha activity (25.4 pCi/L and 31.8 pCi/L) and are presented in Figure 233-2.

Following the installation of enhanced control measures at A-SMA-2.7, a corrective action storm water sample was collected on September 13, 2013 (Figure 233-2). Analytical results from this corrective action monitoring sample yielded a TAL exceedance for gross-alpha activity (175 pCi/L) and are presented in Figure 233-2.

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

#### *AOC 39-002(c):*

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at AOC 39-002(c). Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

#### *SWMU 39-008:*

- Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at SWMU 39-008. RFI and Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241, plutonium, thorium, and uranium isotopes, which are alpha-emitting radionuclides, and total uranium, which has alpha-emitting isotopes. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

TAL exceedances were also evaluated against the appropriate storm water BV, that is, “Bandelier Tuff Background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 233-2. UTLs developed for urban settings were derived from

runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figure 233-2.

Most of the A-SMA-2.7 drainage area is located on Bandelier Tuff, and there is no run-on from developed facilities (e.g., buildings, parking lots, and pavement); therefore, the Bandelier Tuff Background UTL was compared with gross-alpha storm water exceedances. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L. The 2011 and 2013 gross-alpha results are all below this value.

The analytical results for these samples are reported in the 2011 and 2013 Annual Reports.

### 233.4 Inspections and Maintenance

RG265 recorded five storm events at A-SMA-2.7 during the 2021 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in Table 233-2.

**Table 233-2 Control Measure Inspections during 2021**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-86991	7-13-2021
Storm Rain Event	BMP-87835	8-11-2021
Storm Rain Event	BMP-88248	8-25-2021
Storm Rain Event	BMP-88615	9-7-2021

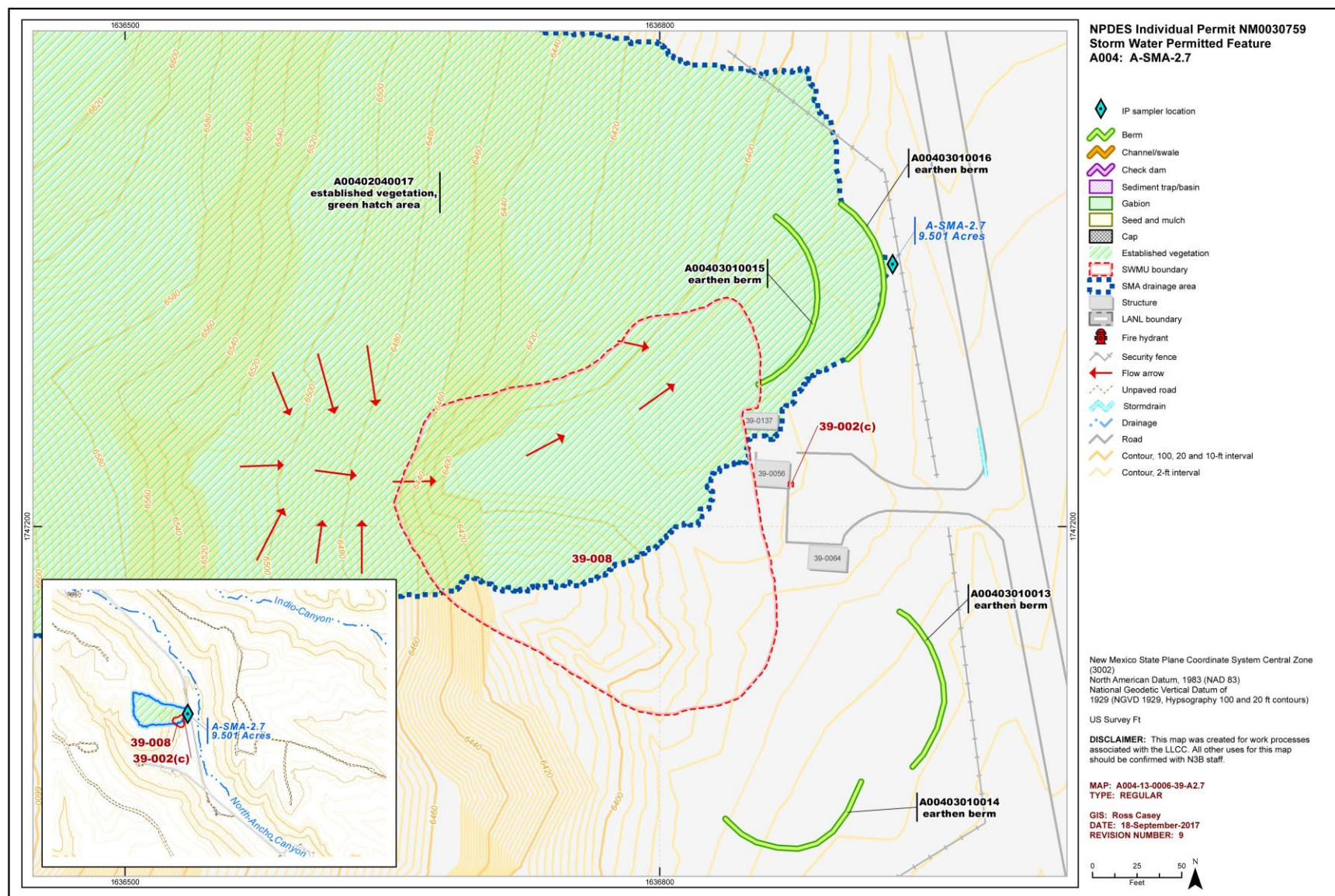
No maintenance activities or facility modifications affecting discharge were conducted at A-SMA-2.7 in 2021.

### 233.5 Compliance Status

The Sites associated with A-SMA-2.7 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2021. Table 233-3 presents the 2021 compliance status.

**Table 233-3 Compliance Status during 2021**

Site	Compliance Status on Jan 1, 2021	Compliance Status on Dec 31, 2021	Comments
AOC 39-002(c)	Corrective Action Complete	Corrective Action Complete	LANL, August 21, 2013, “Resubmittal of Completion of Corrective Action for Twelve Site Monitoring Areas.”
SWMU 39-008	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, September 20, 2012, “Submittal of Certification of Installation of Enhanced Control Measures for Four Site Monitoring Areas.”



**Figure 233-1 A-SMA-2.7 location map**

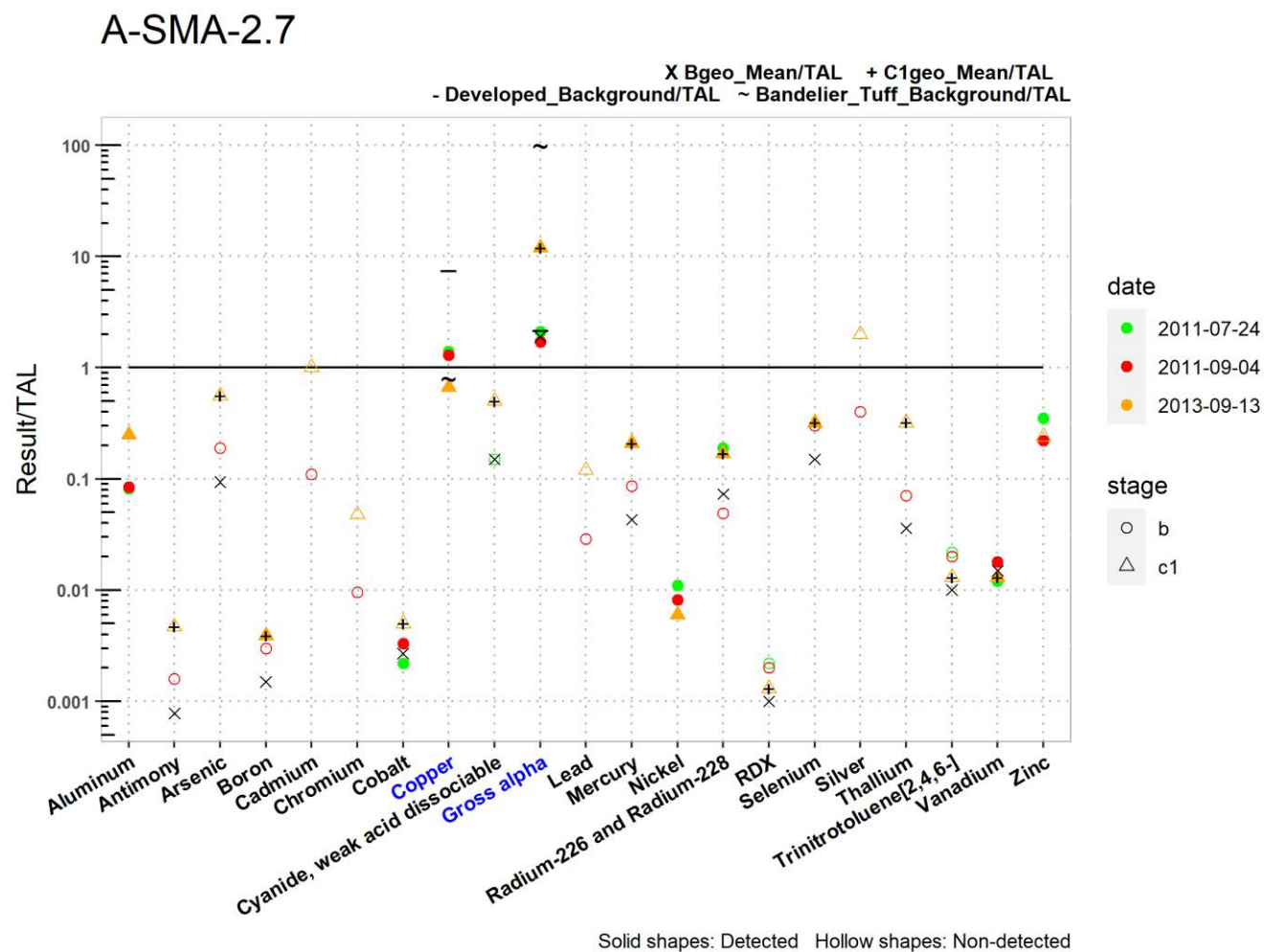


Figure 233-2 Analytical results summary for A-SMA-2.7

**A-SMA-2.7**

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
<i>TAL</i>	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	200	5	0.5	6.3	20	100	42
<i>MQL</i>	2.5	60	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
<i>ATAL</i>	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	200	5	NA	6.3	20	100	NA
<i>MTAL</i>	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	NA	20	0.4	NA	NA	NA	42
<i>unit</i>	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
<i>Bgeo_mean/ATAL</i>	NA	0.00078	0.094	0.0015	NA	NA	0.0027	NA	0.15	<b>1.9</b>	NA	0.043	NA	0.073	0.0010	0.15	NA	0.036	0.010	0.015	NA
<i>C1geo_mean/ATAL</i>	NA	0.0047	0.56	0.0039	NA	NA	0.0050	NA	0.50	<b>12</b>	NA	0.21	NA	0.17	0.0013	0.32	NA	0.32	0.013	0.013	NA
<i>2011-07-24 d</i>	0.082	NA	NA	NA	NA	NA	0.0022	<b>1.4</b>	NA	<b>2.1</b>	NA	NA	0.011	0.19	NA	NA	NA	NA	NA	0.012	0.35
<i>2011-07-24 nd</i>	NA	0.0016	0.19	0.0030	0.11	0.0095	NA	NA	0.15	NA	0.029	0.086	NA	NA	0.0022	0.30	0.40	0.071	0.022	NA	NA
<i>2011-09-04 d</i>	0.084	NA	NA	NA	NA	NA	0.0033	<b>1.3</b>	NA	<b>1.7</b>	NA	NA	0.0082	NA	NA	NA	NA	NA	NA	0.018	0.22
<i>2011-09-04 nd</i>	NA	0.0016	0.19	0.0030	0.11	0.0095	NA	NA	NA	NA	0.029	0.086	NA	0.049	0.0020	0.30	0.40	0.071	0.020	NA	NA
<i>2013-09-13 d</i>	0.25	NA	NA	0.0039	NA	NA	NA	0.67	NA	<b>12</b>	NA	0.21	0.0060	0.17	NA	0.32	NA	NA	NA	0.013	NA
<i>2013-09-13 nd</i>	NA	0.0047	0.56	NA	1.0	0.048	0.0050	NA	0.50	NA	0.12	NA	NA	NA	0.0013	NA	2.0	0.32	0.013	NA	0.24

Bold font indicate TAL exceedance; d=detected\_result/TAL, nd=nondetected\_result/TAL

**Figure 233-2 (continued)**

**Analytical results summary for A-SMA-2.7**

## 234.0 A-SMA-2.8: SWMU 39-001(b)

### 234.1 Site Descriptions

One historical industrial activity area is associated with A005, A-SMA-2.8: Site 39-001(b).

SWMU 39-001(b), also known as MDA Y, consists of three former disposal trenches used to dispose of debris from firing site SWMU 39-008, as well as empty chemical containers and office waste. During the 2009 Consent Order investigation, all wastes at SWMU 39-001(b) were excavated, removed, and disposed of off-site. The final excavation of SWMU 39-001(b) at its maximum dimensions measured 349 × 98 × 16 ft deep, with an average depth of 8.1 ft. SWMU 39-001(b) was backfilled with overburden material and clean fill after confirmatory sampling results determined that concentrations of COPCs at the base and walls of the excavation were below industrial SSLs and SALs.

Consent Order investigation and remediation are complete for SWMU 39-001(b); the Site meets residential risk levels. NMED issued a COC without controls for the Site in April 2010.

ACA activities were conducted in 2017 in accordance with the Phase II investigation work plan approved by NMED in 2011. The ACA was performed to address



debris and contaminated soil excavated from MDA Y in 2009; the debris and soil were stockpiled to allow for characterization and packaging for off-site waste disposal. The ACA completed the extent sampling at the former waste stockpile area at SWMU 39-001(b) and removed soil from this area with PCB concentrations in excess of 1 mg/kg and SVOC concentrations above residential SSLs.

The project map (Figure 234-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps>.

### 234.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 234-1).

**Table 234-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
A00501010004	Seed and Wood Mulch	-	-	X	-	B
A00503010002	Earthen Berm	-	X	-	X	CB
A00508020005	Rock Cap	-	X	X	-	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

### 234.3 Storm Water Monitoring

Through calendar year 2021, storm water flow has not been sufficient for full-volume sample collection at A-SMA-2.8. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

### 234.4 Inspections and Maintenance

RG265 recorded five storm events at A-SMA-2.8 during the 2021 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 234-2 Control Measure Inspections during 2021**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-86992	7-13-2021
Storm Rain Event	BMP-87836	8-11-2021
Storm Rain Event	BMP-88249	8-25-2021
Storm Rain Event	BMP-88616	9-7-2021

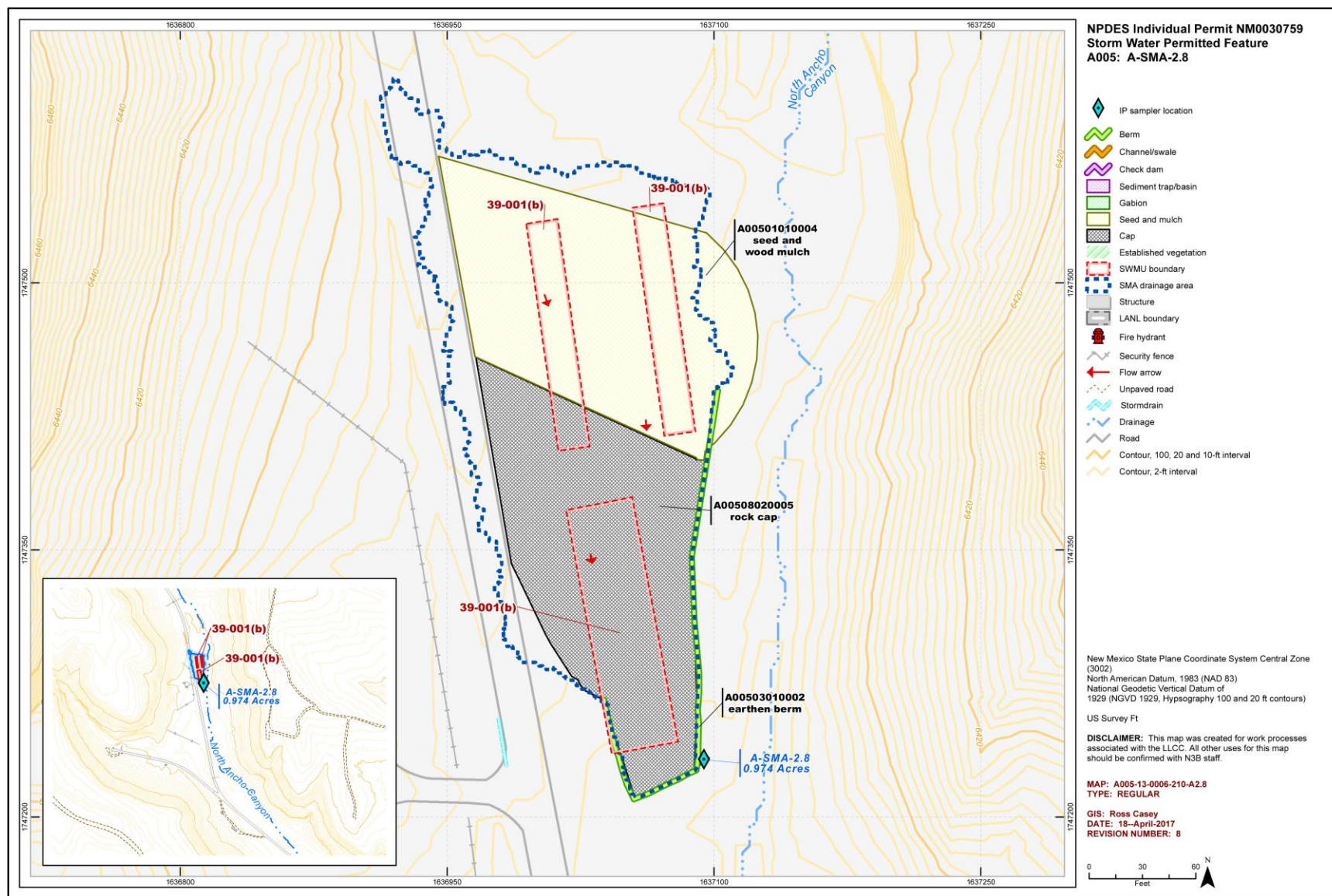
No maintenance activities or facility modifications affecting discharge were conducted at A-SMA-2.8 in 2021.

### 234.5 Compliance Status

The Site associated with A-SMA-2.8 is a Moderate Priority Site. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2021. Table 234-3 presents the 2021 compliance status.

**Table 234-3 Compliance Status during 2021**

Site	Compliance Status on Jan 1, 2021	Compliance Status on Dec 31, 2021	Comments
SWMU 39-001(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. No samples have been collected since initiation of the Permit.



**Figure 234-1 A-SMA-2.8 location map**

## 235.0 A-SMA-3: AOC 39-002(b) and SWMU 39-004(c)

### 235.1 Site Descriptions

Two historical industrial activity areas are associated with A006, A-SMA-3: Sites 39-002(b) and 39-004(c).

AOC 39-002(b) is a former SAA located on a 5 × 5 ft concrete pad next to a firing site support building (structure 39-6) and an active firing site [SWMU 39-004(c)]. AOC 39-002(b) was also used for storage before it became an SAA. AOC 39-002(b) was used to store small quantities of paper contaminated with waste solvents (ethanol, acetone, trichloroethane, copper sulfate); transformer oil; vacuum grease; and Polaroid photographic wastes. There is no evidence, visible or documentary, of spills or leaks at this Site. However, this AOC is within the blast radius of a firing site.

No Consent Order or other investigations have been conducted at AOC 39-002(b).

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 include thallium, cadmium, chromium, and thorium (the latter was 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 likely contained PCBs.

The completion of Consent Order investigations at SWMU 39-004(c) is deferred because the Site is an active firing site. However, 2009 Consent Order samples were collected from the extended drainages downgradient of the firing site to assess the potential for off-site migration. The approved Investigation Report for North Ancho Canyon Aggregate Area, Revision 1, concluded that all inorganic and radionuclide COPCs from this Site are at or below BVs in the drainage downstream of the Sites and meet residential risk levels; therefore, no corrective action is required until firing site activities cease.

The project map (Figure 235-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps>.

### 235.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 235-1).

Enhanced controls were installed and certified on September 4, 2015, and December 7, 2021, and submitted to EPA on September 10, 2015, and December 7, 2021, respectively, as part of corrective action. Photographs of the enhanced controls are available at <https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications>.

**Table 235-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
A00602040018	Established Vegetation	X	-	X	-	B
A00603020023	Base Course Berm	X	-	X	-	EC
A00603120017	Rock Berm	-	X	-	X	B
A00603140037	Coir Log	X	-	X	-	B
A00603150027	Redi-Rock Berm	-	X	-	X	EC
A00603150035	Redi-Rock Berm	X	-	-	X	B
A00604010022	Earthen Channel/Swale	X	-	X	-	EC
A00604030025	Rock Channel/Swale	-	X	X	-	EC
A00604060024	Rip Rap	X	-	X	-	EC
A00606010010	Rock Check Dam	X	-	-	X	CB
A00606010011	Rock Check Dam	X	-	-	X	CB
A00606010019	Rock Check Dam	X	-	-	X	B
A00606010031	Rock Check Dam	X	-	-	X	B
A00606010032	Rock Check Dam	X	-	-	X	B
A00606010033	Rock Check Dam	X	-	-	X	B
A00606010034	Rock Check Dam	X	-	-	X	B
A00606010038	Rock Check Dam	-	X	-	X	EC
A00608020029	Rock Cap	-	-	X	-	EC
A00608020030	Rock Cap	-	X	X	-	B
A00608020036	Rock Cap	X	-	X	-	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 235.3 Storm Water Monitoring

AOC 39-002(b) and SWMU 39-004(c) are monitored within A-SMA-3. Following the installation of baseline control measures, a baseline storm water sample was collected on July 25, 2013 (Figure 235-2). In Figure 235-2, silver is reported as a nondetected result greater than the TAL. This value is reported at the PQL; the MDL for this analyte is below its TAL. The value is a nondetect and thus not considered a TAL exceedance. Analytical results from this sample yielded TAL exceedances for aluminum (997 µg/L), copper (245 µg/L), gross-alpha activity (136 pCi/L), mercury (9.04 µg/L), PCB concentrations (3060 ng/L), and selenium (12.1 µg/L) and are presented in Figure 235-2.

Following the installation of enhanced control measures at A-SMA-3, a corrective action storm water sample was collected on August 10, 2018 (Figure 235-2). Analytical results from this sample yielded TAL exceedances for copper (50.2 µg/L), gross-alpha activity (90.8 pCi/L), and PCB concentrations (3400 ng/L) and are presented in Figure 235-2.

The monitoring location for A-SMA-3 has been relocated to a location more likely to collect a corrective action confirmation monitoring sample after installation of enhanced control measures. Sampler coordinates and the SMA drainage area have been updated in Attachment 4.

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

*AOC 39-002(b):*

- Copper is known to be associated with industrial materials historically managed at this Site.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this Site. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.
- PCBs are known to be associated with industrial materials historically managed at this Site.

*SWMU 39-004(c):*

- Copper is known to be associated with industrial materials historically managed at the Site. Copper was detected above BV in shallow Consent Order and RFI soil samples. Copper was detected above the soil BV in 15 of 45 shallow samples with a maximum concentration 180 times the soil BV.
- Alpha-emitting radionuclides thorium and uranium are known to have been associated with industrial materials historically managed at this Site. RFI and Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for plutonium, thorium, and uranium isotopes, which are alpha-emitting, and total uranium, which has alpha-emitting isotopes. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.
- PCBs are known to have been associated with industrial materials historically managed at this Site. Three PCB mixtures (Aroclor-1248, Aroclor-1254, and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1248 was detected in three of four shallow samples with a maximum concentration 30 times the residential SSL. Aroclor-1254 was detected in one of four shallow samples with a maximum concentration 52% of the residential SSL. Aroclor-1260 was detected in two of four shallow samples with a maximum concentration 3.1 times the residential SSL.

TAL exceedances were also evaluated against the appropriate storm water BV, that is, “Bandelier Tuff Background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 235-2. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figure 235-2.

Most of the A-SMA-3 drainage area is located on Bandelier Tuff, and there is no run-on from developed facilities (e.g., buildings, parking lots, and pavement); therefore, the Bandelier Tuff Background UTL was compared with copper, PCBs, and gross-alpha storm water exceedances. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. Copper is associated with trace minerals in the Bandelier Tuff as well.

- **Copper**—The copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from the storm water confirmation samples in 2013 and 2018 are above this value.
- **Gross alpha**—The gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L; the results from 2013 and 2018 confirmation samples are both below this value.
- **PCBs**—The PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The ATAL exceedances in the storm water confirmation samples in 2013 and 2018 are greater than the storm water baseline UTL.

The analytical results for these samples are reported in the 2013 and 2018 Annual Reports.

#### 235.4 Inspections and Maintenance

RG265 recorded five storm events at A-SMA-3 during the 2021 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 235-2 Control Measure Inspections during 2021**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-86993	7-13-2021
Storm Rain Event	BMP-87837	8-11-2021
Storm Rain Event	BMP-88250	8-25-2021
Verification	BMP-87102	8-25-2021
Storm Rain Event	BMP-88617	9-7-2021

**Table 235-3 Maintenance during 2021**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-88579	Maintained and improved Rock Check Dam A00606010038 after storm event occurring immediately before verification inspection. Added rock at transition of apron of control to natural channel to prevent future erosion and ensured all geotextile fabric is covered. Added and removed rock as needed to ensure side slopes of control are flat.	9-14-2021	20 day(s)	Maintenance was conducted as soon as practicable.

### 235.5 Compliance Status

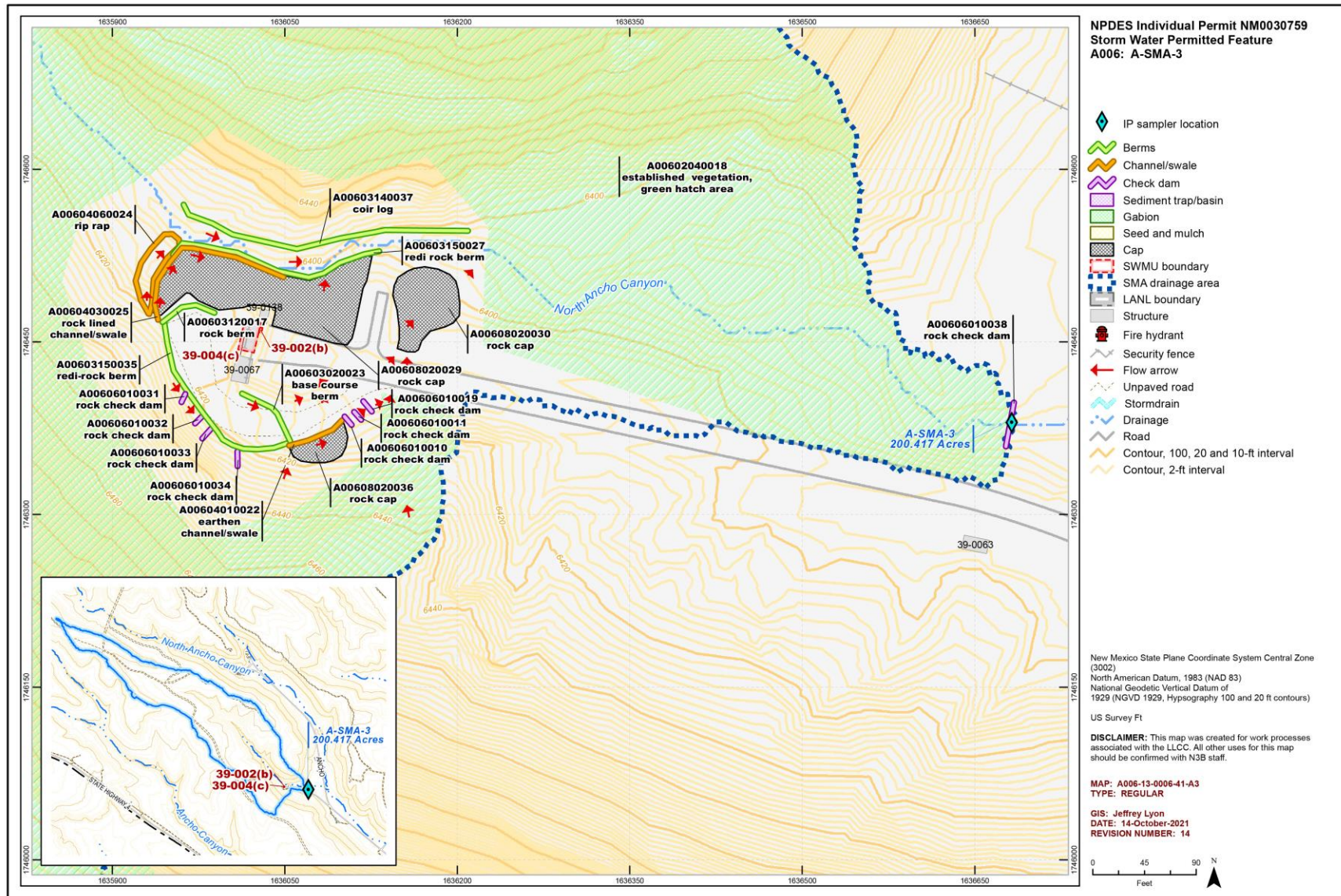
The Sites associated with A-SMA-3 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2021. Table 235-4 presents the 2021 compliance status.

**Table 235-4 Compliance Status during 2021**

Site	Compliance Status on Jan 1, 2021	Compliance Status on Dec 31, 2021	Comments
AOC 39-002(b)	Building Enhanced Controls	Enhanced Control Corrective Action Monitoring	N3B, December 7, 2021, "Submittal of Certification of Installation of Enhanced Control Measures at A-SMA-1.1 and A-SMA-3."
SWMU 39-004(c)	Building Enhanced Controls	Enhanced Control Corrective Action Monitoring	N3B, December 7, 2021, "Submittal of Certification of Installation of Enhanced Control Measures at A-SMA-1.1 and A-SMA-3."

Further details regarding compliance status and planned activities can be found in Attachment 6 for Sites in this SMA.





**Figure 235-1 A-SMA-3 location map**

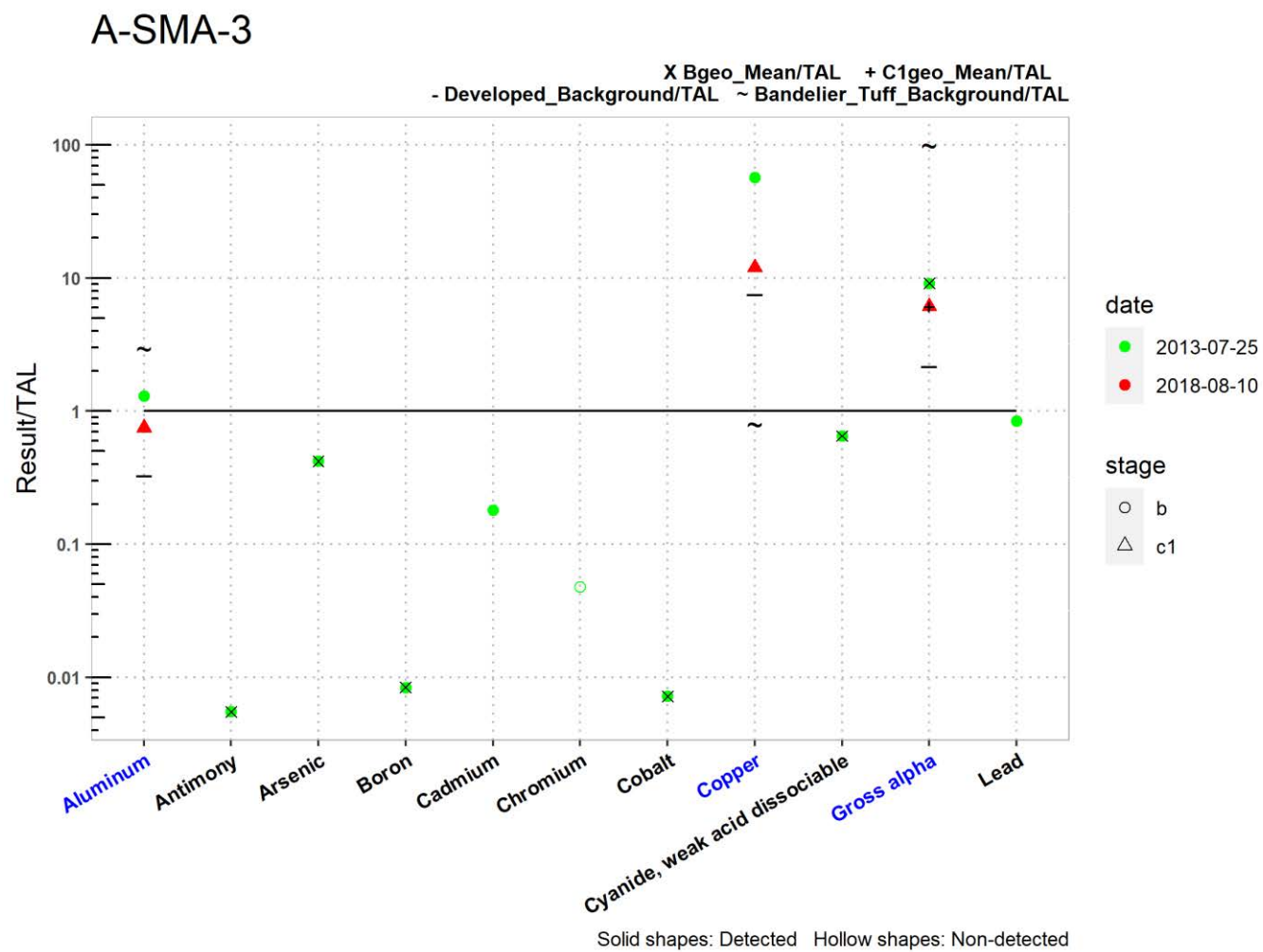


Figure 235-2 Analytical results summary for A-SMA-3

A-SMA-3											
	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L
Bgeo_mean/ATAL	NA	0.0055	0.42	0.0084	NA	NA	0.0072	NA	0.65	<b>9.1</b>	NA
C1geo_mean/ATAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	<b>6.1</b>	NA
2013-07-25 d	<b>1.3</b>	0.0055	0.42	0.0084	0.18	NA	0.0072	<b>57</b>	0.65	<b>9.1</b>	0.84
2013-07-25 nd	NA	NA	NA	NA	NA	0.048	NA	NA	NA	NA	NA
2018-08-10 d	0.75	NA	NA	NA	NA	NA	NA	<b>12</b>	NA	<b>6.1</b>	NA
2018-08-10 nd	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Bold font indicate TAL exceedance;  
d=detected\_result/TAL, nd=nondetected\_result/TAL

Figure 235-2 (continued) Analytical results summary for A-SMA-3

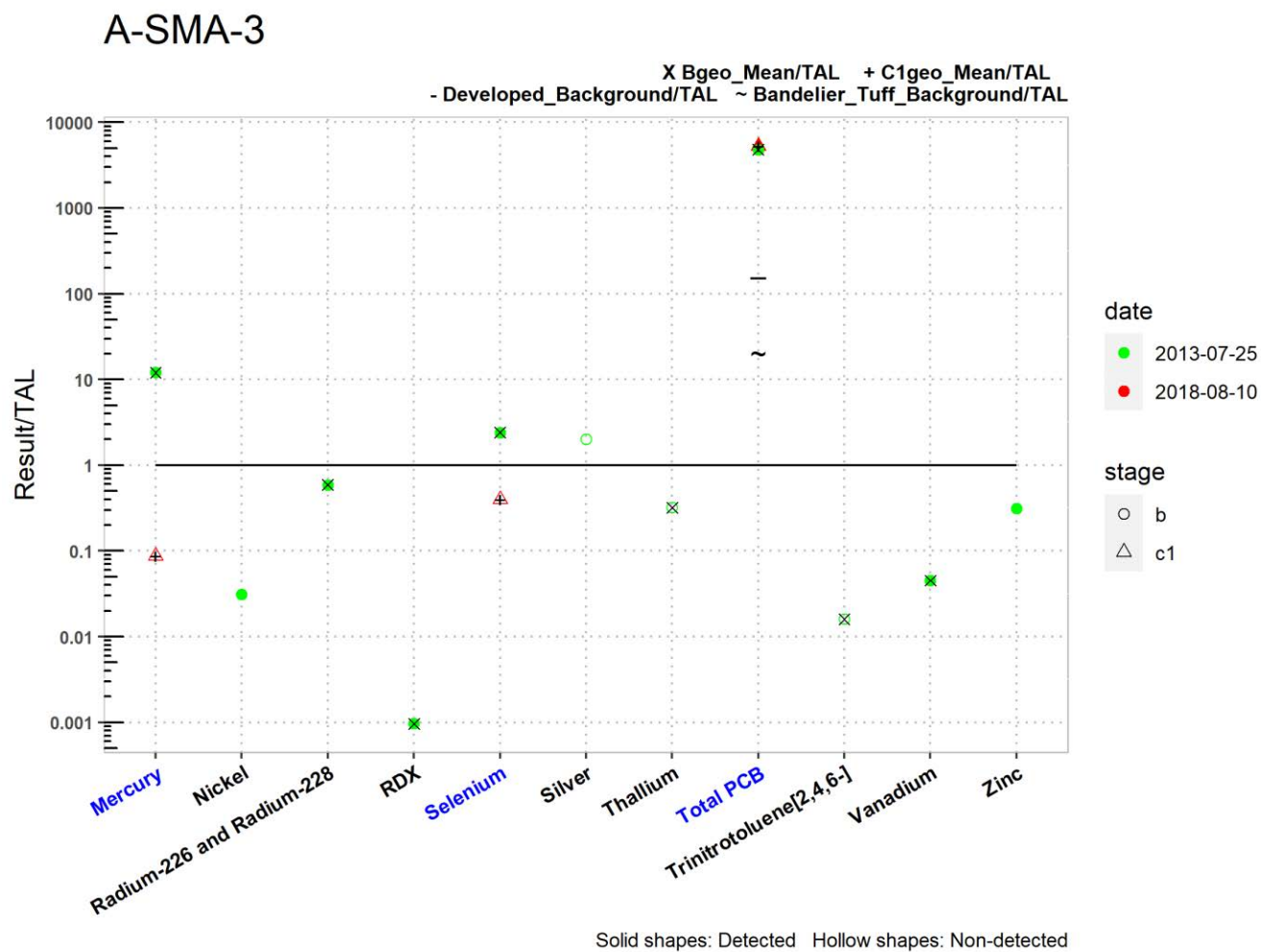


Figure 235-2 (continued)

Analytical results summary for A-SMA-3

A-SMA-3											
	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Total PCB	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	0.77	170	30	200	5	0.5	6.3	0.00064	20	100	42
MQL	0.005	0.5	NA	NA	5	0.5	0.5	NA	NA	50	20
ATAL	0.77	NA	30	200	5	NA	6.3	0.00064	20	100	NA
MTAL	1.4	170	NA	NA	20	0.4	NA	NA	NA	NA	42
unit	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	<b>12</b>	NA	0.59	0.00096	<b>2.4</b>	NA	0.32	<b>4800</b>	0.016	0.045	NA
C1geo_mean/ATAL	0.087	NA	NA	NA	0.40	NA	NA	<b>5300</b>	NA	NA	NA
2013-07-25 d	<b>12</b>	0.031	0.59	0.00096	<b>2.4</b>	NA	NA	<b>4800</b>	NA	0.045	0.31
2013-07-25 nd	NA	NA	NA	NA	NA	2.0	0.32	NA	0.016	NA	NA
2018-08-10 d	NA	NA	NA	NA	NA	NA	NA	<b>5300</b>	NA	NA	NA
2018-08-10 nd	0.087	NA	NA	NA	0.40	NA	NA	NA	NA	NA	NA

Bold font indicate TAL exceedance;  
d=detected\_result/TAL, nd=nondetected\_result/TAL

Figure 235-2 (continued) Analytical results summary for A-SMA-3

## **236.0 A-SMA-3.5: SWMU 39-006(a)**

### **236.1 Site Descriptions**

One historical industrial activity area is associated with A007, A-SMA-3.5: Site 39-006(a).

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, consisting of a septic tank (former structure 39-12) measuring approximately 12 ft × 7 ft × 6 ft, 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 4. The sand filter discharged to an outfall south of NM 4 in North Ancho Canyon. The system received discharges from only building 39-2 as shown in as-constructed drawing ENG-C 42762 and engineering drawing ENG-R 1437. 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 seepage pit handled approximately 75 gal./yr until 1992. 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. A CMP approximately 1 ft in diameter runs vertically through the center of the seepage pit. Additionally, 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 4; use of the original subsurface sand filter and outfall were discontinued at that time. The 1975 Zia Company Drawing for TA-39, as-constructed drawing ENG-C 42762, 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.-diameter 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 4 that continued to serve only former building 39-2. In 1984, the septic tank (former structure 39-12) was abandoned and a new 2400-gal. capacity septic tank (structure 39-104) was installed as part of the existing septic system as shown on engineering drawings ENG-C 44331 and ENG-C 44450. In 1984, the septic tank (former structure 39-12) was abandoned and a new 2400-gal. capacity septic tank (structure 39-104) was installed as part of the existing septic system as shown on engineering drawings ENG-C 44331, ENG-C 45423, the 1993 RFI Work Plan, and the LANL KSL Utility GIS layer. The newly installed septic tank (structure 39-104) 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 4. Septic tank 39-104, the new sand filter south of NM 4, and the still-active drainlines are part of the SWMU 39-006(a) active components. In 1989, the 6-in.-diameter 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.

Consent Order sampling data for the inactive components of SWMU 39-006(a) indicate the Site meets residential risk levels. During the 2009 Consent Order investigation, only the outfall drainage of the active components of SWMU 39-006(a) was sampled to provide initial characterization data. Samples were not collected from the active septic tank and the active sand filter because sampling would disrupt the lines of an active septic system currently in use. All detected inorganic and organic chemical concentrations were below residential SSLs; no radionuclides were detected. Because preliminary investigation results demonstrate that current activities are not contributing to off-site migration, further investigation of the active components of SWMU 39-006(a) is delayed until operations at the Site cease.

The project map (Figure 236-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps>.

### 236.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 236-1).

**Table 236-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
A00702040003	Established Vegetation	-	X	X	-	B
A00703060007	Straw Wattle	X	-	-	X	B
A00703060008	Straw Wattle	-	X	-	X	B

B: Additional baseline control measure.

### 236.3 Storm Water Monitoring

SWMU 39-006(a) is monitored within A-SMA-3.5. Following the installation of baseline control measures, a baseline storm water sample was collected on July 25, 2013 (Figure 236-2). In Figure 236-2, cadmium, selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL; the MDLs for these analytes are below their respective TALs. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded no TAL exceedances. A-SMA-3.5 is currently in continued baseline confirmation monitoring to collect a second sample with all results below the applicable MTAL or ATAL.

### 236.4 Inspections and Maintenance

RG340 recorded five storm events at A-SMA-3.5 during the 2021 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 236-2 Control Measure Inspections during 2021**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-85962	6-8-2021
Storm Rain Event	BMP-87487	8-4-2021
Storm Rain Event	BMP-88618	9-7-2021

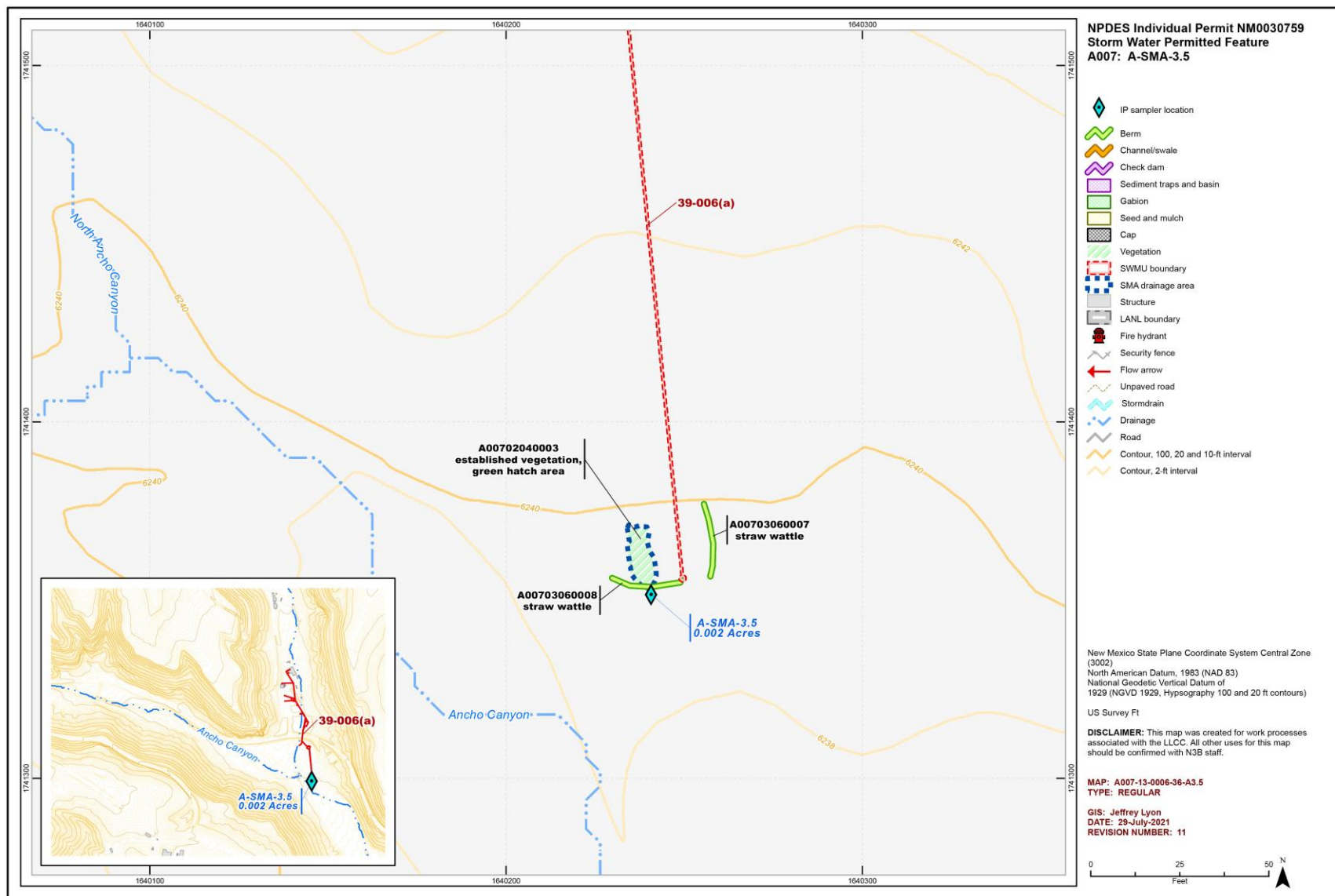
No maintenance activities or facility modifications affecting discharge were conducted at A-SMA-3.5 in 2021.

### 236.5 Compliance Status

The Site associated with A-SMA-3.5 is a Moderate Priority Site. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2021. Table 236-3 presents the 2021 compliance status.

**Table 236-3 Compliance Status during 2021**

Site	Compliance Status on Jan 1, 2021	Compliance Status on Dec 31, 2021	Comments
SWMU 39-006(a)	Baseline Confirmation Extended	Baseline Monitoring Extended	Monitoring re-initiated 4-1-2020



**Figure 236-1 A-SMA-3.5 location map**

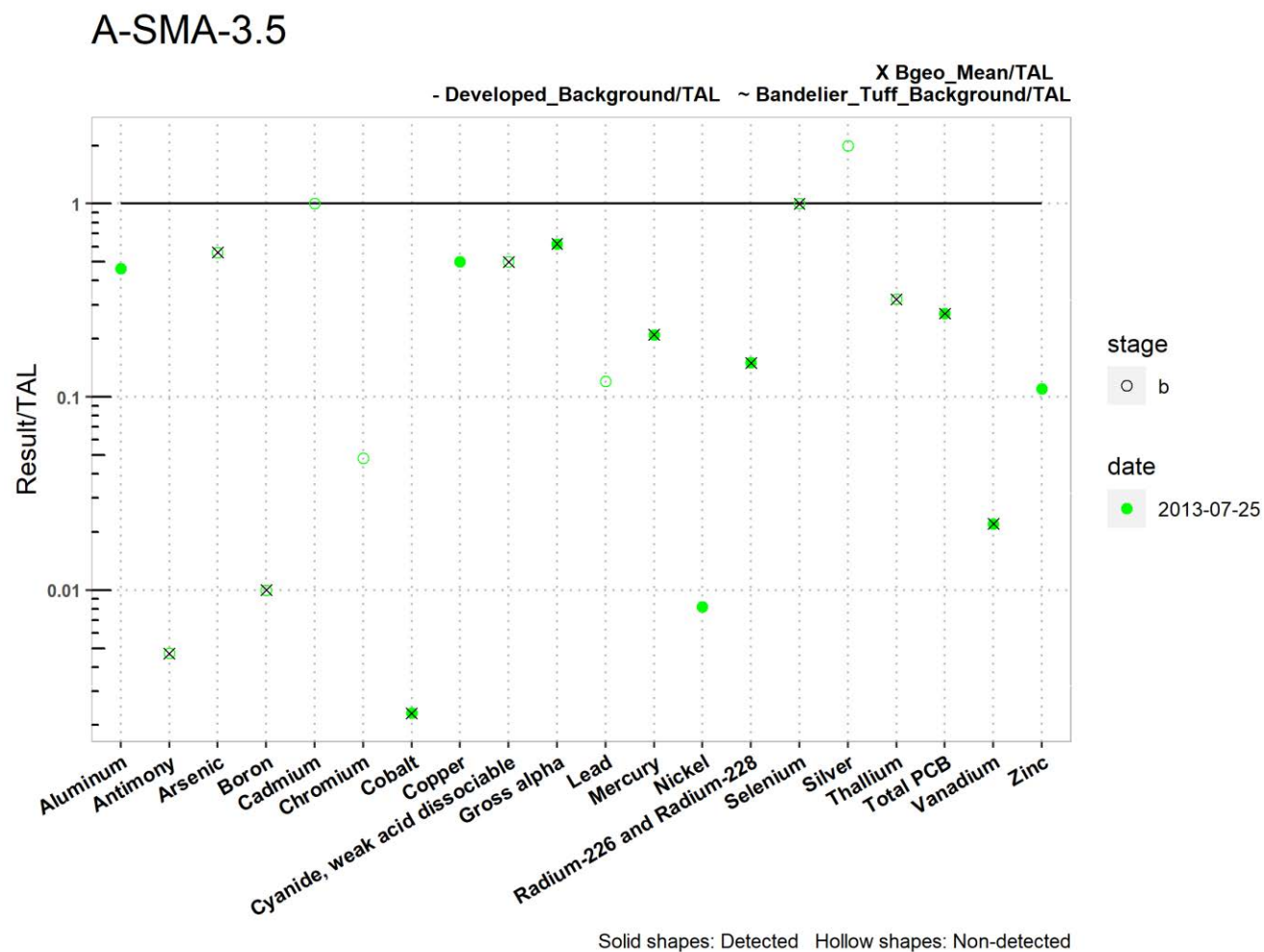


Figure 236-2 Analytical results summary for A-SMA-3.5

		A-SMA-3.5																			
		Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Total PCB	Vanadium	Zinc
	TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	0.00064	100	42
	MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	NA	50	20
	ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	0.00064	100	NA
	MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	NA	42
	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
Bgeo_mean/ATAL		NA	0.0047	0.56	0.010	NA	NA	0.0023	NA	0.50	0.62	NA	0.21	NA	0.15	1.0	NA	0.32	0.27	0.022	NA
	2013-07-25 d	0.46	NA	NA	NA	NA	NA	0.0023	0.50	NA	0.62	NA	0.21	0.0082	0.15	NA	NA	NA	0.27	0.022	0.11
	2013-07-25 nd	NA	0.0047	0.56	0.010	1.0	0.048	NA	NA	0.50	NA	0.12	NA	NA	NA	1.0	2.0	0.32	NA	NA	NA
Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL																					

Bold font indicate TAL exceedance; d=detected\_result/TAL, nd=nondetected\_result/TAL

Figure 236-2 (continued) Analytical results summary for A-SMA-3.5

## 237.0 A-SMA-4: SWMU 33-010(d)

### 237.1 Site Descriptions

One historical industrial activity area is associated with A008, A-SMA-4: Site 33-010(d).

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, but 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. During the 1995 VCA implemented at the Site, 2 yd<sup>3</sup> of nonhazardous/nonradioactive debris and 0.1 yd<sup>3</sup> of radioactive debris were removed from Site.

SWMU 33-010(d) is included in the Consent Order as part of the South Ancho Canyon Aggregate Area and investigations for the aggregate area were conducted in 2020 and 2021. The investigation report for the South Ancho Canyon Aggregate Area, submitted to NMED in September 2021, recommended the Site for corrective action complete without controls.

The project map (Figure 237-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps>.

### 237.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 237-1).

**Table 237-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
A00802040010	Established Vegetation	-	X	X	-	B
A00803010007	Earthen Berm	X	-	-	-	CB
A00803010009	Earthen Berm	-	X	-	X	B
A00806010003	Rock Check Dam	X	-	-	X	CB
A00806010004	Rock Check Dam	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

### 237.3 Storm Water Monitoring

SWMU 33-010(d) is monitored within A-SMA-4. A baseline storm water sample was collected on July 23, 2018 (Figure 237-2). Analytical results from this sample yielded a TAL exceedance for gross-alpha activity (122 pCi/L) and are presented in Figure 237-2.

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

SWMU 33-010(d):

- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff Background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 237-2. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figure 237-2.

Monitoring location A-SMA-4 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. The 2018 gross-alpha result is between both of these values.

The analytical results for this sample are reported in the 2018 Annual Report.

#### 237.4 Inspections and Maintenance

RG340 recorded five storm events at A-SMA-4 during the 2021 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 237-2 Control Measure Inspections during 2021**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-85963	6-9-2021
Storm Rain Event	BMP-87488	8-4-2021
Storm Rain Event	BMP-88619	9-7-2021

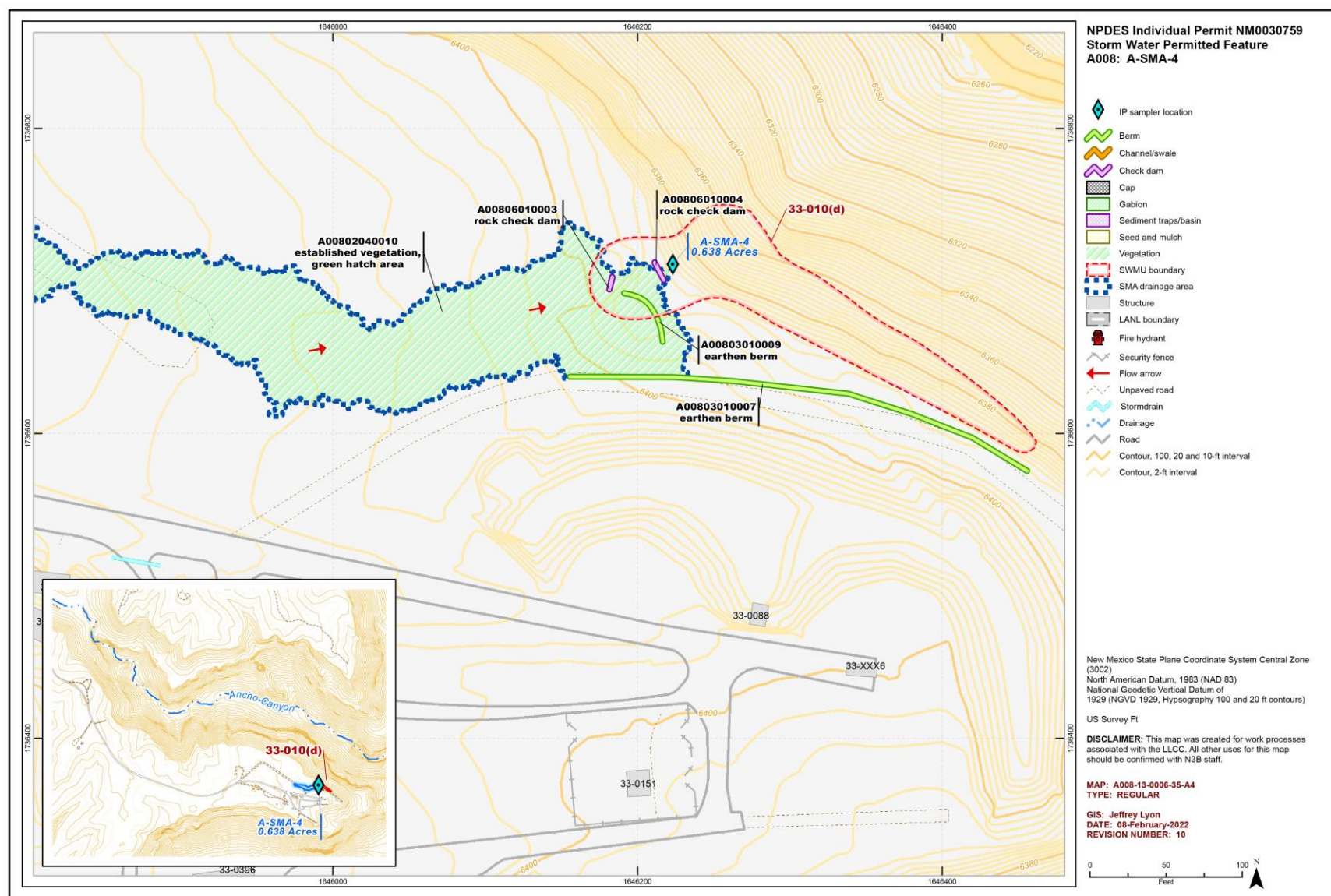
No maintenance activities or facility modifications affecting discharge were conducted at A-SMA-4 in 2021.

#### 237.5 Compliance Status

The Site associated with A-SMA-4 is a Moderate Priority Site. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2021. Table 237-3 presents the 2021 compliance status.

**Table 237-3 Compliance Status during 2021**

Site	Compliance Status on Jan 1, 2021	Compliance Status on Dec 31, 2021	Comments
SWMU 33-010(d)	Alternative Compliance Requested	Alternative Compliance Requested	N3B, October 27, 2020, "NPDES Permit No. NM0030759 – Alternative Compliance Requests for Six Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."



**Figure 237-1 A-SMA-4 location map**

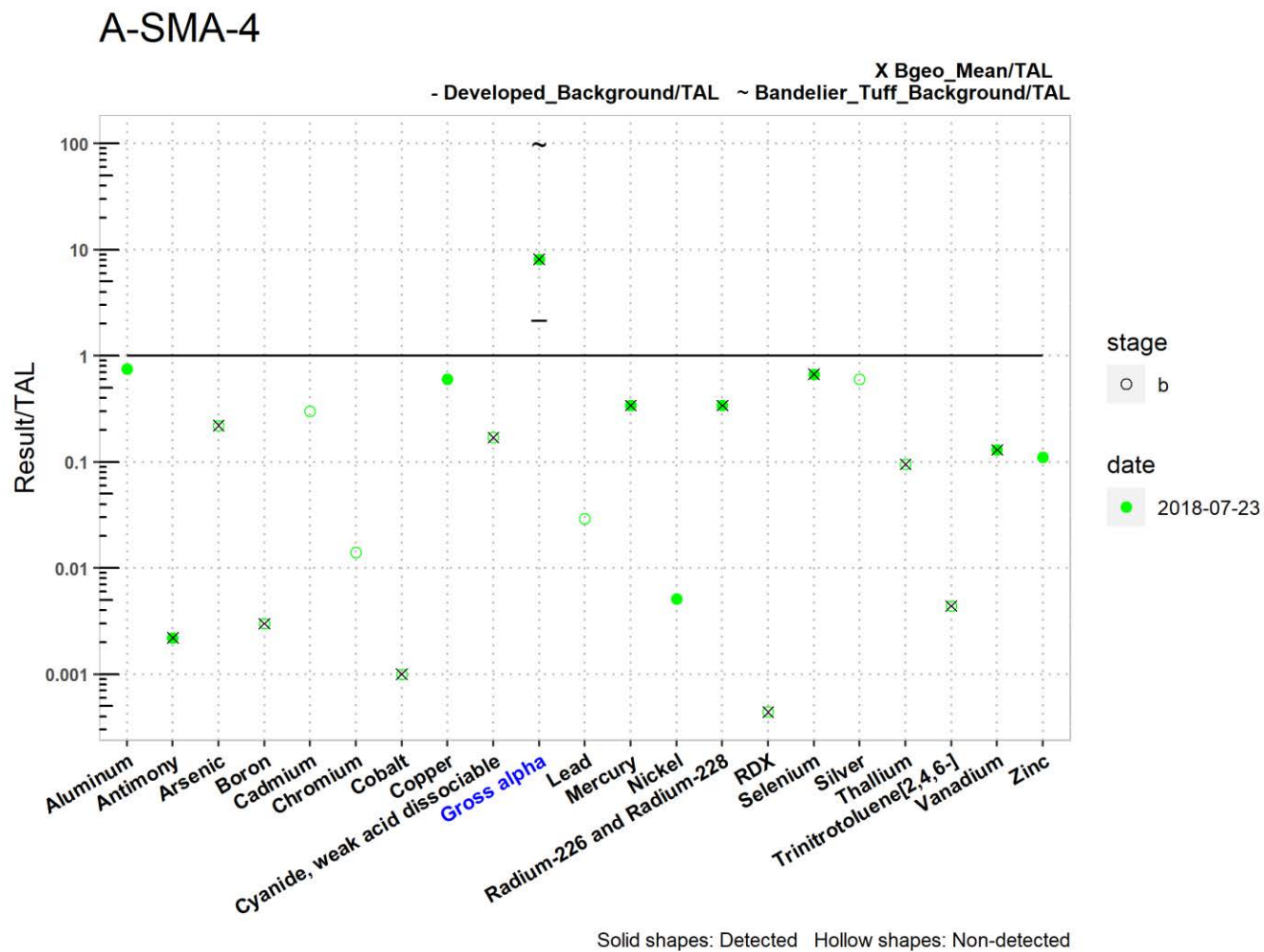


Figure 237-2 Analytical results summary for A-SMA-4

		A-SMA-4																				
		Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
	TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	200	5	0.5	6.3	20	100	42
	MQL	2.5	60	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	10	15	NA	0.77	NA	30	200	5	NA	6.3	20	100	NA
	MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	NA	20	0.4	NA	NA	NA	42
	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
Bgeo_mean/ATAL		NA	0.0022	0.22	0.0030	NA	NA	0.0010	NA	0.17	<b>8.1</b>	NA	0.34	NA	0.34	0.00044	0.67	NA	0.095	0.0044	0.13	NA
	2018-07-23 d	0.75	0.0022	NA	NA	NA	NA	NA	0.60	NA	<b>8.1</b>	NA	0.34	0.0051	0.34	NA	0.67	NA	NA	NA	0.13	0.11
	2018-07-23 nd	NA	NA	0.22	0.0030	0.30	0.014	0.0010	NA	0.17	NA	0.029	NA	NA	NA	0.00044	NA	0.60	0.095	0.0044	NA	NA
Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL																						

Bold font indicate TAL exceedance; d=detected\_result/TAL, nd=nondetected\_result/TAL

Figure 237-2 (continued) Analytical results summary for A-SMA-4

## 238.0 A-SMA-6: SWMUs 33-004(k), 33-007(a), and 33-010(a)

### 238.1 Site Descriptions

Three historical industrial activity areas are associated with A009, A-SMA-6: Sites 33-004(k), 33-007(a), and 33-010(a).

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. The outfall reportedly received discharges from a toilet, sink, floor drains, and an electrical water cooler within the control bunker. Engineering drawing C-3304 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 C34561-00001 from 1967 shows the planned extension of the 8-in CMP to a ditch and outfall southeast of bunker 33-87. 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. 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 building performed in 1996 revealed that no floor drains existed within the structure. The sink and toilet in the building discharged to septic tank 33-96 [SWMU 33-004(c)], located north of the building.

During the 2020–2021 Phase 1 Consent Order investigation activities, septic tank 33-96 [SWMU 33-004(c)] and 100 yd<sup>3</sup> of environmental media were excavated. As part of the excavation, two trenches were excavated on both sides of the access road east of building 33-87 to locate the drainline extending southeast from the south wall of building 33-87. A cast iron drainline was located in the trench excavated on the west side of the access road



A-SMA-6, Rock Check Dam, A00906010016, 17, 18 (photo ID 8537-6)

(Trench 1). A VCP drainline was located in the trench excavated east of the access road (Trench 2). An outfall was not visible within 200 ft east of Trench 2. The cast iron section of drainline exposed in Trench 1 was visibly cut and absent near/within the western edge of the trench and likely does not exist between Trench 1 and the south wall of building 33-87. The trenched areas were restored to original condition after sampling was complete. SWMU 33-004(k) is included in the Consent Order as part of the South Ancho Canyon Aggregate Area and investigations were conducted in 2020 and 2021. The investigation report for the South Ancho Canyon Aggregate Area, submitted to NMED in September 2021, recommended the Site for corrective action complete without controls.

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 at 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 31-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 depleted uranium 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 nonradioactively 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.

SWMU 33-007(a) is included in the Consent Order as part of the South Ancho Canyon Aggregate Area and investigations were conducted in 2020 and 2021. The investigation report for the South Ancho Canyon Aggregate Area, submitted to NMED in September 2021, recommended the Site for corrective action complete without controls.

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. A VCA performed in 1995 removed 8 yd<sup>3</sup> of nonhazardous, nonradioactive debris and 0.2 yd<sup>3</sup> of radioactive debris from the surface of the Site.

SWMU 33-010(a) is included in the Consent Order as part of the South Ancho Canyon Aggregate Area and investigations were conducted in 2020 and 2021. The investigation report for the South Ancho Canyon Aggregate Area, submitted to NMED in September 2021, recommended the Site for corrective action complete without controls.

The project map (Figure 238-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps>.

## 238.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 238-1).

**Table 238-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
A00902040023	Established Vegetation	-	X	X	-	B
A00903010021	Earthen Berm	-	X	-	X	CB
A00904020007	Concrete/Asphalt Channel/Swale	-	X	X	-	CB
A00904060005	Rip Rap	-	X	X	-	CB
A00906010008	Rock Check Dam	-	X	-	X	CB
A00906010009	Rock Check Dam	-	X	-	X	CB
A00906010010	Rock Check Dam	-	X	-	X	CB

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
A00906010011	Rock Check Dam	-	X	-	X	CB
A00906010012	Rock Check Dam	-	X	-	X	CB
A00906010013	Rock Check Dam	X	-	-	X	CB
A00906010014	Rock Check Dam	-	X	-	X	CB
A00906010015	Rock Check Dam	-	X	-	X	CB
A00906010016	Rock Check Dam	-	X	-	X	CB
A00906010017	Rock Check Dam	-	X	-	X	CB
A00906010018	Rock Check Dam	-	X	-	X	CB
A00906010019	Rock Check Dam	-	X	-	X	CB
A00906010020	Rock Check Dam	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

### 238.3 Storm Water Monitoring

SWMUs 33-004(k), 33-007(a), and 33-010(a) are monitored within A-SMA-6. Following the installation of baseline control measures, a baseline storm water sample was collected on August 4, 2013 (Figure 238-2). In Figure 238-2, selenium and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL; the MDLs for these analytes are below their respective TALs. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded TAL exceedances for copper (5.86 µg/L) and gross-alpha activity (29.6 pCi/L) and are presented in Figure 238-2.

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

#### *SWMU 33-004(k):*

- Copper is not known to be associated with industrial materials historically managed at this Site. Copper was detected above soil BV in one of ten shallow Consent Order samples with a concentration of 3 times the soil BV.
- Alpha-emitting radionuclides may have been associated with industrial materials historically managed at the Site. Consent Order samples were analyzed for uranium isotopes, which are alpha-emitters. Uranium isotopes were not detected above soil BV in shallow samples. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

#### *SWMU 33-007(a):*

- Copper is not known to have been associated with industrial materials historically managed at this Site. Copper was detected above soil BV in 2 of 96 shallow Consent Order samples with a maximum concentration of 1.6 times the soil BV.

- Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at the Site. Consent Order samples were analyzed for uranium isotopes. Uranium-234 and uranium-235/236 were not detected above soil BV in 86 shallow samples. Uranium-238 was detected above soil BV in 3 of 86 shallow samples with the maximum activity of 1.4 times the soil BV. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

*SWMU 33-010(a):*

- Copper is not known to have been associated with industrial materials historically managed at this Site. Copper was detected above soil BV in 2 of 52 shallow soil Consent Order samples from 2021 with a maximum concentration of 107 times the soil BV.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff Background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 238-2. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figure 238-2.

Monitoring location A-SMA-6 receives runoff primarily from undeveloped areas, with some contribution from developed landscape. Metals including copper are associated with building materials, parking lots, and automobiles, as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Copper—The copper UTL from developed landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2013 is between these two values.
- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. The 2013 gross-alpha result is less than both of these values.

The analytical results for this sample are reported in the 2013 Annual Report.

#### **238.4 Inspections and Maintenance**

RG340 recorded five storm events at A-SMA-6 during the 2021 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 238-2 Control Measure Inspections during 2021**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-85964	6-9-2021
Storm Rain Event	BMP-87489	8-4-2021
Storm Rain Event	BMP-88620	9-7-2021

No maintenance activities or facility modifications affecting discharge were conducted at A-SMA-6 in 2021.

### 238.5 Compliance Status

The Sites associated with A-SMA-6 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2021. Table 238-3 presents the 2021 compliance status.

**Table 238-3 Compliance Status during 2021**

Site	Compliance Status on Jan 1, 2021	Compliance Status on Dec 31, 2021	Comments
SWMU 33-004(k)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, May 6, 2015, "Alternative Compliance Request for 52 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."
SWMU 33-007(a)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, May 6, 2015, "Alternative Compliance Request for 52 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."
SWMU 33-010(a)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, May 6, 2015, "Alternative Compliance Request for 52 Site Monitoring Area/Site Combinations Exceeding Target Action Levels from Nonpoint Sources."



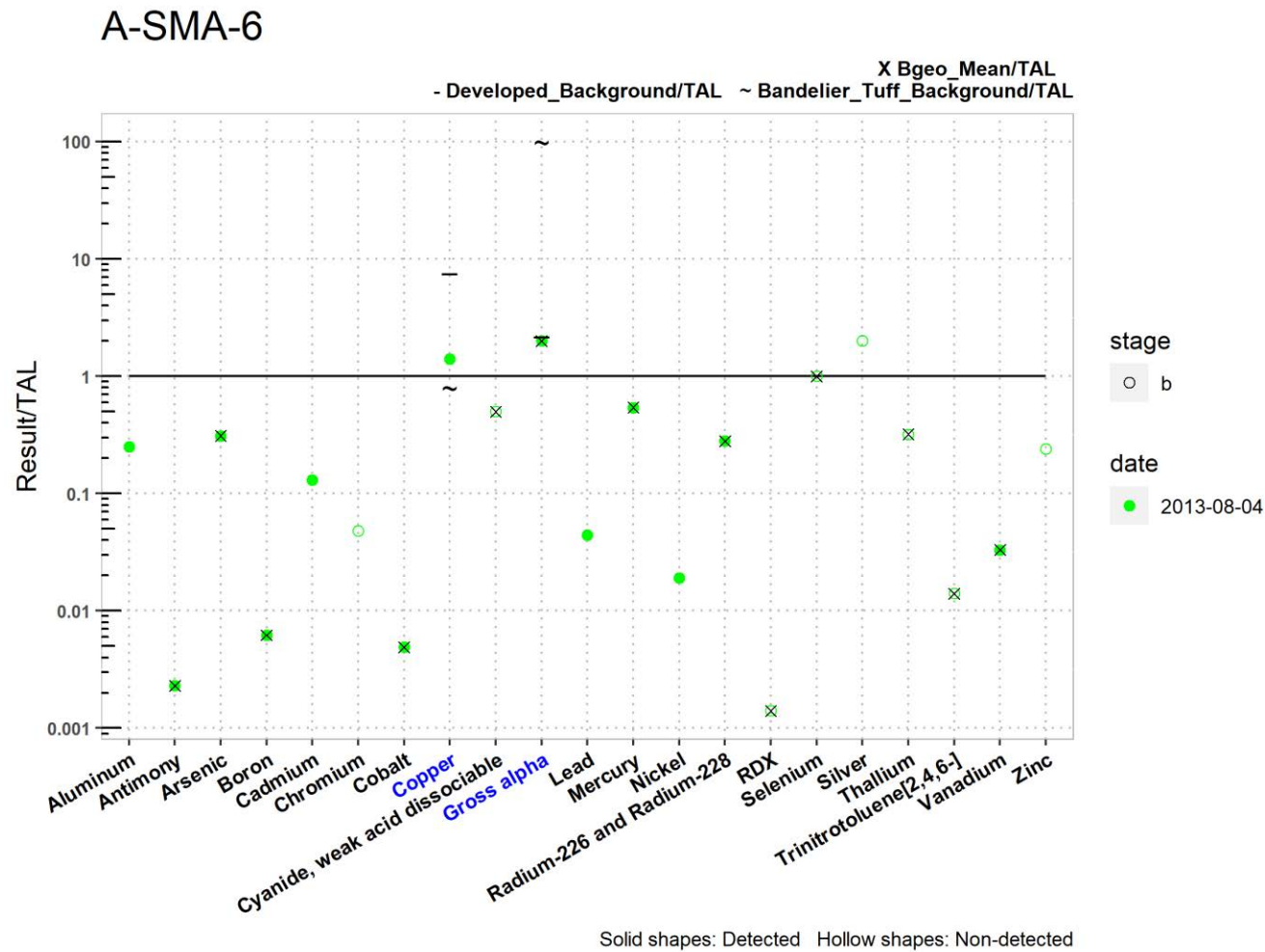


Figure 238-2 Analytical results summary for A-SMA-6

A-SMA-6

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	200	5	0.5	6.3	20	100	42
MQL	2.5	60	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	10	15	NA	0.77	NA	30	200	5	NA	6.3	20	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	NA	20	0.4	NA	NA	NA	42
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
Bgeo_mean/ATAL	NA	0.0023	0.31	0.0062	NA	NA	0.0049	NA	0.50	<b>2.0</b>	NA	0.54	NA	0.28	0.0014	1.0	NA	0.32	0.014	0.033	NA
2013-08-04 d	0.25	0.0023	0.31	0.0062	0.13	NA	0.0049	<b>1.4</b>	NA	<b>2.0</b>	0.044	0.54	0.019	0.28	NA	NA	NA	NA	NA	0.033	NA
2013-08-04 nd	NA	NA	NA	NA	0.048	NA	NA	NA	0.50	NA	NA	NA	NA	NA	0.0014	1.0	2.0	0.32	0.014	NA	0.24

Bold font indicate TAL exceedance; d=detected\_result/TAL, nd=nondetected\_result/TAL

Figure 238-2 (continued) Analytical results summary for A-SMA-6

## **239.0 CHQ-SMA-0.5: SWMUs 33-004(g), 33-007(c), and 33-009**

### **239.1 Site Descriptions**

Three historical industrial activity areas are associated with Q001, CHQ-SMA-0.5: Sites 33-004(g), 33-007(c), and 33-009.

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. The pipe 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 portions 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.-diameter) 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 were reportedly released from a fume hood in the building used to cure epoxy resins. Building 33-16 later was used as a library and storage building and has been empty and unused 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.

SWMU 33-004(g) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.

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). Building 33-16 was completed in 1949 and first 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.– 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 was located immediately west of building 33-16, on which a large bore gun was mounted. 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 building 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 building 33-16 and were approximately 6 × 6 ft, constructed of timber, and filled with soil, wood chips, and vermiculite. Guns (2-in.–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 by using a bulldozer to scrape away the contaminated soil and embankment. A 1954 memorandum describes decontamination of one of the Area 6 gun barrels. The memorandum describes 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, building 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. An aluminum tower (structure 33-192) is used for atmospheric physics monitoring within the excavated portion of the cinder cone.

During the 1995 IA conducted at SWMU 33-007(c), the Site was stabilized to prevent migration of the contamination identified during the RFI. An HDPE cover was placed over the catcher boxes to prevent run-on and runoff of precipitation. Additionally, the culvert west of building 33-16 was dammed with sandbags. In 1996, approximately 200 yd<sup>3</sup> of soil was removed from the catcher boxes and processed as part of a pilot test to verify the effectiveness of processes for remediating uranium-contaminated soil. Sampling results for the processed soil showed mean activities for uranium-234, uranium-235, and uranium-238 of 15.8 pCi/g, 0.515 pCi/g, and 15.7 pCi/g, respectively; the processed soil was returned to the catcher boxes. Fifty-six experimental projectiles totaling 1720 lb were discovered as the soil was screened as part of the pilot test. These projectiles were disposed of off-site.

SWMU 33-007(c) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for additional sampling to define the nature and extent of contamination. SWMU 33-007(c) was included in the “Phase II Investigation Work Plan for Chaquehui Canyon Aggregate Area.” The work plan was submitted to NMED in March 2021 and approved by NMED in July 2021, and investigations were conducted in 2021. The “Phase II Investigation Report for Chaquehui Canyon Aggregate Area,” submitted to NMED in August 2021, recommended the Site for corrective action complete with controls.

SWMU 33-009 consists of an inactive surface disposal area located in Area 6 in the northwest portion of TA-33. The disposal Site measures approximately 100 ft long × 75 ft wide and has been leveled into the side of a natural basaltic cinder cone and includes an area that extends approximately 80 ft down the slope of the cinder cone. The slope continues 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)]. This gun firing site operated from 1949 to 1955. When the firing area became contaminated as a result of firing activities, contaminated soil and

debris were 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 to 1972, the Site served as a storage and disposal area for defective electrical capacitors from the Sherwood Project. These capacitors had an average weight of 300 lb with an approximately 4 ft<sup>3</sup>- 6 ft<sup>3</sup> volume for dielectric fluid. Disposal of the capacitors at this Site ceased in 1972, at which time defective capacitors were sent to Area L at TA-54 for disposal. In December 1974, the Site was partially cleaned up as part of general cleanup activities conducted at TA-33. Several truckloads of material were taken to MDA G at TA-54. Debris removed from the Site included DU pieces, electrical capacitors, metal turnings, old tires, and fluorescent light tubes. A radiation survey was performed after the cleanup. The area was surveyed at intervals of about 10 ft across the slope and 16 ft up and down the slope. Radiation above background was not detected. Not all material was removed in 1974. Broken glass and chunks of metal were still present when the RFI was conducted in 1993. An empty capacitor containing small amounts of PCB-contaminated oil was also discovered partially buried at the Site in 1994 and was removed.

SWMU 33-009 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.

The project map (Figure 239-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps>.

## 239.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 239-1).

Enhanced controls were installed and certified on October 28, 2015, and submitted to EPA on October 30, 2015, as part of corrective action. Photographs of the enhanced controls are available at <https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications>.

**Table 239-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q00102040008	Established Vegetation	-	X	X	-	B
Q00103010010	Earthen Berm	-	X	-	X	EC
Q00103010011	Earthen Berm	-	X	-	X	EC
Q00103140009	Coir Log	-	X	-	X	EC
Q00104050006	Water Bar	X	-	-	X	CB
Q00104050007	Water Bar	X	-	-	X	CB
Q00106010003	Rock Check Dam	X	-	-	X	CB
Q00106010004	Rock Check Dam	X	-	-	X	CB
Q00106010005	Rock Check Dam	X	-	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 239.3 Storm Water Monitoring

SWMUs 33-004(g), 33-007(c), and 33-009 are monitored within CHQ-SMA-0.5. Following the installation of baseline control measures, a baseline storm water sample was collected on July 23, 2014 (Figure 239-2). In Figure 239-2, cadmium, selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL; the MDLs for these analytes are below their respective TALs. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded TAL exceedances for gross-alpha activity (88.3 pCi/L) and PCB concentrations (12 ng/L) and are presented in Figure 239-2.

Following the installation of enhanced control measures, a corrective action storm water sample was collected on August 3, 2021 (Figure 239-2). Analytical results from this sample yielded TAL exceedances for gross-alpha activity (312 pCi/L) and PCB concentration (5.82 ng/L) and are presented in Figure 239-2.

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

#### *SWMU 33-004(g):*

- Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at the Site. Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for uranium, which contains alpha-emitting radionuclides. Uranium-235/236 was not detected above soil BV in shallow samples. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.
- PCBs are not known to be associated with industrial materials historically managed at the Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in eight of ten shallow soil samples with a maximum concentration 1.1 times greater than the residential SSL. Aroclor-1260 was detected in eight of ten shallow soil samples with a maximum concentration 5.5 times less than the residential SSL.

#### *SWMU 33-007(c):*

- Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at the Site. Consent Order samples were analyzed for uranium isotopes (uranium-234, uranium-235/236, and uranium-238). Uranium-234 was detected above soil BV in 9 of 25 shallow soil samples with a maximum activity of 2.6 times greater than the soil BV. Uranium-235/236 was detected above soil BV in 7 of 25 shallow soil samples with a maximum activity of 2.2 times the soil BV. Uranium-238 was detected above soil BV in 10 of 25 shallow soil samples with a maximum activity of 3 times greater than the soil BV. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.
- PCBs are not known to be associated with industrial materials historically managed at the Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in 12 of 19 shallow samples with a maximum concentration 1.04 times greater than the residential SSL. Aroclor-1260 was detected in 10 of 19 shallow soil samples with a maximum concentration 8.3 times less than the residential SSL.

*SWMU 33-009:*

- Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at the Site. Consent Order samples were analyzed for uranium isotopes (uranium-234, uranium-235/236, and uranium-238). Uranium-234 was detected above soil BV in one of 32 shallow samples with an activity of 1.1 times greater than the soil BV. Uranium-235/236 was detected above soil BV in one of 32 shallow soil samples with an activity of 1.4 times greater than the soil BV. Uranium-238 was detected above soil BV in one of 32 shallow soil samples with an activity of 1.8 times greater than the soil BV. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.
- PCBs are known to be associated with industrial materials historically managed at the Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in 14 of 32 shallow soil samples with the maximum concentration 3 times the residential SSL. Aroclor-1260 was detected in 11 of 32 shallow soil samples with the maximum concentration 1.3 times less than the residential SSL.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff Background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 239-2. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figure 239-2.

Monitoring location CHQ-SMA-0.5 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—Gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. The 2014 and 2021 gross-alpha results are between these values.
- PCBs—The PCB UTL from developed landscape storm water run-on is 98 ng/L; the PCB UTL for background storm water containing sediment derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2014 is between these values and the PCB result from 2021 is below both values.

The analytical results for these samples are reported in the 2014 and 2021 Annual Reports.

#### **239.4 Inspections and Maintenance**

RG340 recorded five storm events at CHQ-SMA-0.5 during the 2021 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in the following table.

**Table 239-2 Control Measure Inspections during 2021**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-85986	6-8-2021
Storm Rain Event	BMP-87490	8-3-2021
Storm Rain Event	BMP-87850	8-10-2021
Storm Rain Event	BMP-88646	9-7-2021
TAL Exceedance	COMP-89541	10-29-2021

No maintenance activities or facility modifications affecting discharge were conducted at CHQ-SMA-0.5 in 2021.

### 239.5 Compliance Status

The Sites associated with CHQ-SMA-0.5 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2021. Table 239-3 presents the 2021 compliance status.

**Table 239-3 Compliance Status during 2021**

Site	Compliance Status on Jan 1, 2021	Compliance Status on Dec 31, 2021	Comments
SWMU 33-004(g)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, October 30, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Nine (9) Site Monitoring Areas."
SWMU 33-007(c)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, October 30, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Nine (9) Site Monitoring Areas."
SWMU 33-009	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, October 30, 2015, "NPDES Permit No. NM0030759 - Submittal of Certification of Installation of Enhanced Control Measures for Nine (9) Site Monitoring Areas."

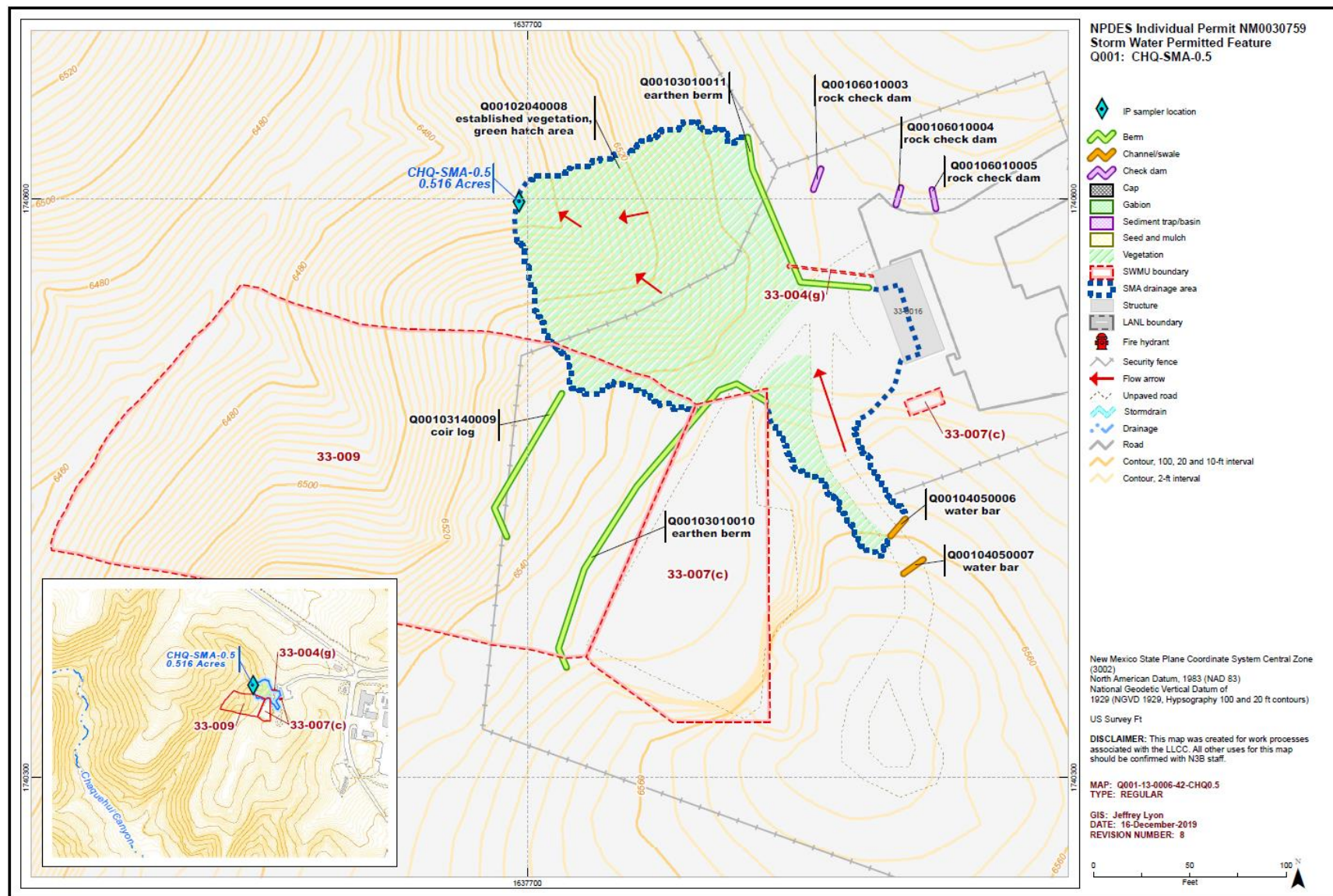


Figure 239-1 CHQ-SMA-0.5 location map

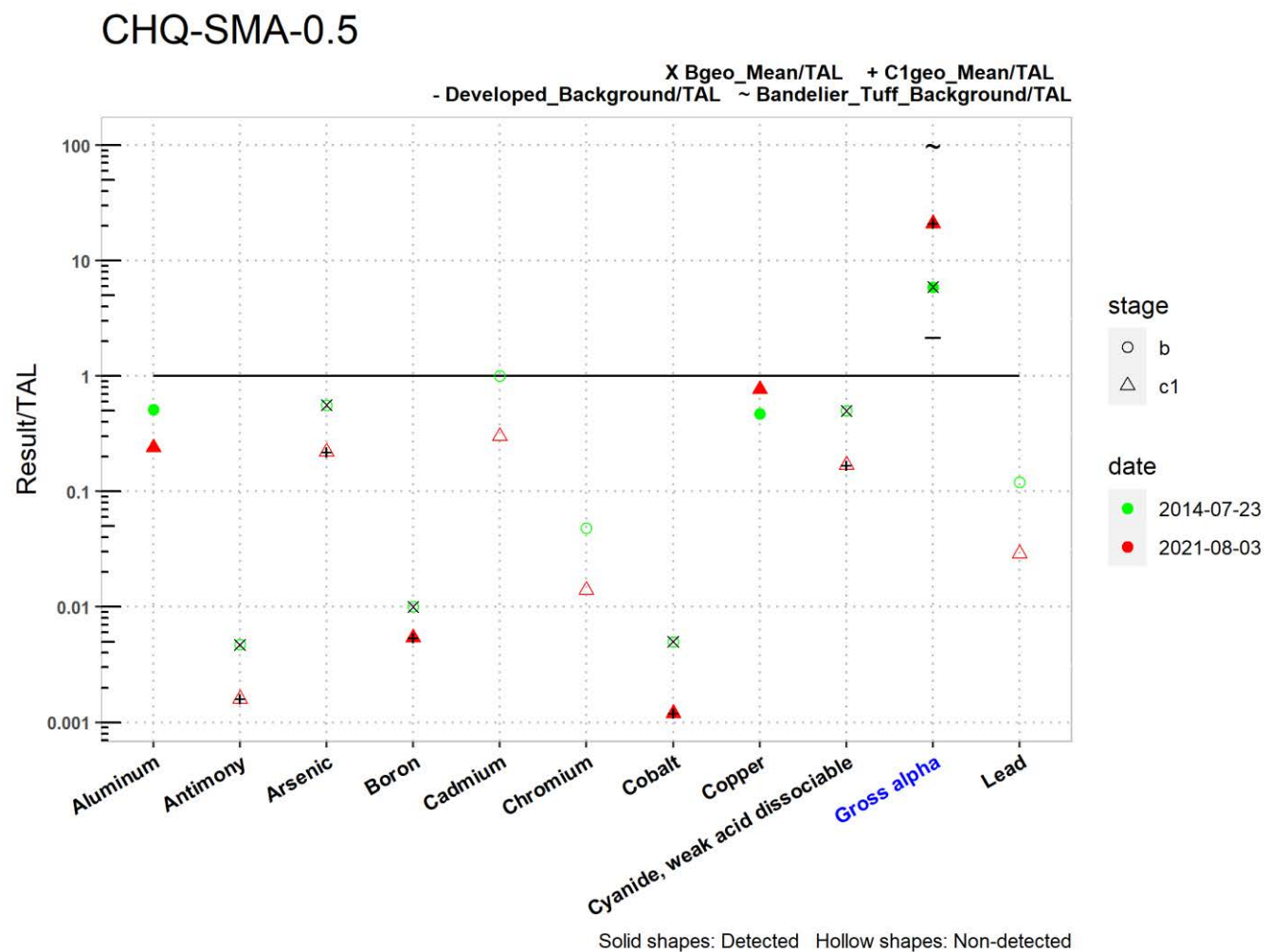


Figure 239-2 Analytical results summary for CHQ-SMA-0.5

CHQ-SMA-0.5											
	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L
Bgeo_mean/ATAL	NA	0.0047	0.56	0.010	NA	NA	0.0050	NA	0.50	<b>5.9</b>	NA
C1geo_mean/ATAL	NA	0.0016	0.22	0.0054	NA	NA	0.0012	NA	0.17	<b>21</b>	NA
2014-07-23 d	0.51	NA	NA	NA	NA	NA	NA	0.47	NA	<b>5.9</b>	NA
2014-07-23 nd	NA	0.0047	0.56	0.010	1.0	0.048	0.0050	NA	0.50	NA	0.12
2021-08-03 d	0.24	NA	NA	0.0054	NA	NA	0.0012	0.77	NA	<b>21</b>	NA
2021-08-03 nd	NA	0.0016	0.22	NA	0.30	0.014	NA	NA	0.17	NA	0.029

Bold font indicate TAL exceedance;  
d=detected\_result/TAL, nd=nondetected\_result/TAL

Figure 239-2 (continued) Analytical results summary for CHQ-SMA-0.5

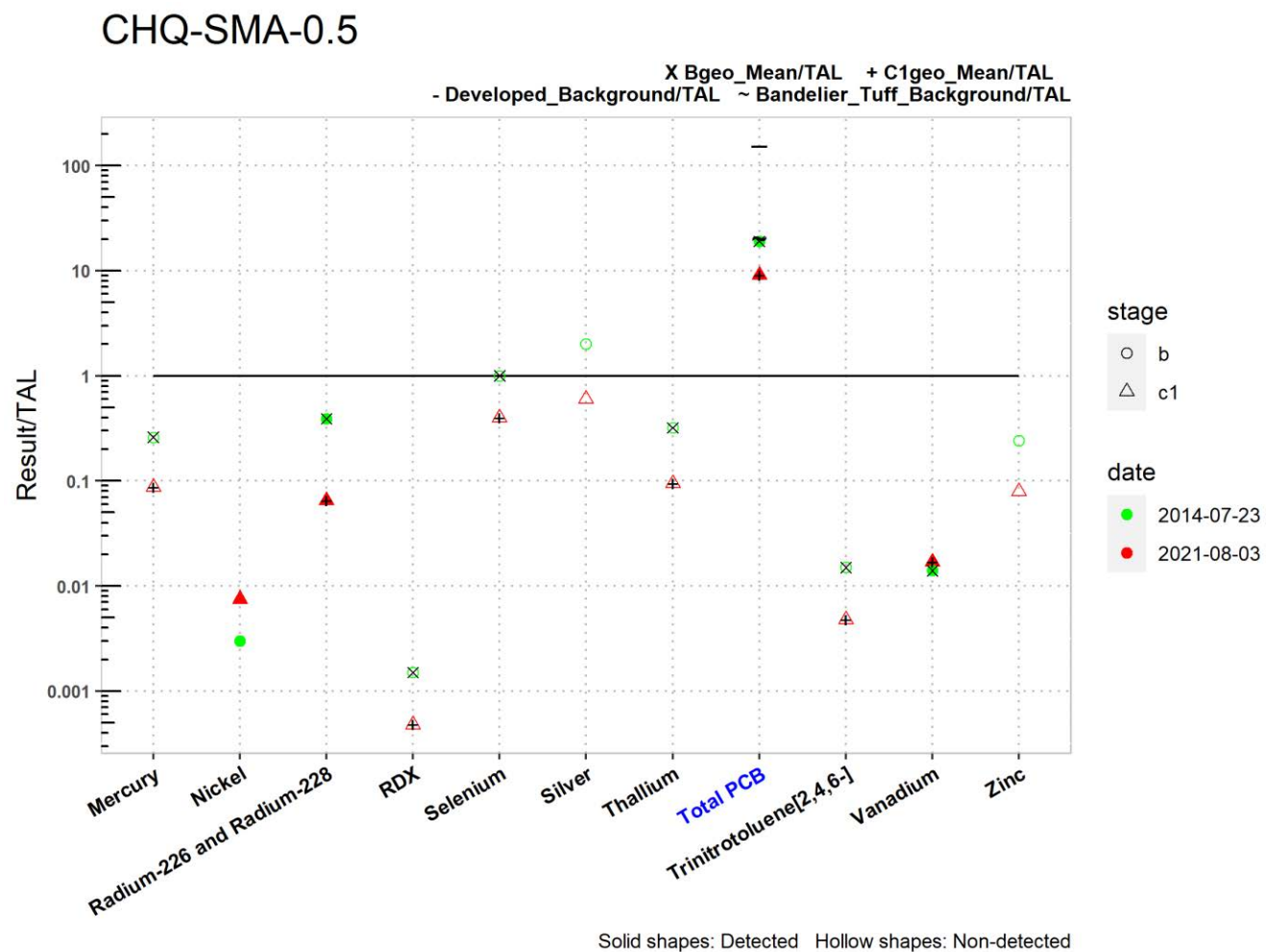


Figure 239-2 (continued)

Analytical results summary for CHQ-SMA-0.5

CHQ-SMA-0.5											
	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Total PCB	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	0.77	170	30	200	5	0.5	6.3	0.00064	20	100	42
MQL	0.005	0.5	NA	NA	5	0.5	0.5	NA	NA	50	20
ATAL	0.77	NA	30	200	5	NA	6.3	0.00064	20	100	NA
MTAL	1.4	170	NA	NA	20	0.4	NA	NA	NA	NA	42
unit	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	0.26	NA	0.39	0.0015	1.0	NA	0.32	<b>19</b>	0.015	0.014	NA
C1geo_mean/ATAL	0.087	NA	0.065	0.00048	0.40	NA	0.095	<b>9.1</b>	0.0048	0.017	NA
2014-07-23 d	NA	0.0030	0.39	NA	NA	NA	NA	<b>19</b>	NA	0.014	NA
2014-07-23 nd	0.26	NA	NA	0.0015	1.0	2.0	0.32	NA	0.015	NA	0.24
2021-08-03 d	NA	0.0075	0.065	NA	NA	NA	NA	<b>9.1</b>	NA	0.017	NA
2021-08-03 nd	0.087	NA	NA	0.00048	0.40	0.60	0.095	NA	0.0048	NA	0.079

Bold font indicate TAL exceedance;  
d=detected\_result/TAL, nd=nondetected\_result/TAL

Figure 239-2 (continued) Analytical results summary for CHQ-SMA-0.5

## 240.0 CHQ-SMA-1.01: SWMU 33-002(d)

### 240.1 Site Descriptions

One historical industrial activity area is associated with Q002, CHQ-SMA-1.01: Site 33-002(d).

SWMU 33-002(d) is a former outfall and associated 90-ft outlet drainline that discharged noncontact cooling water from former building 33-86 at TA-33. This outfall was created when the SWMU 33-002(c) seepage pit was deactivated and disconnected from the building 33-86 inlet drainline 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 former building 33-86. The outfall operated under the LANL NPDES permit until July 11, 1995, when it was removed from the permit following the decommissioning and demolition of the former Tritium Facility (building 33-86). Tritium and metals were potential contaminants in the noncontact cooling water. The 90-ft outlet drainline that discharged to the outfall was removed during the 2005 VCA implemented at the Site. 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 Tritium Facility (building 33-86) and a former surface disposal area. MDA K is located in the southeast area of Main Site at TA-33.

SWMU 33-002(d) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. Decision-level data from this site characterization work were presented in the Chaquehui Canyon Aggregate Area investigation report, submitted to NMED in September 2020. Additional sampling was conducted in 2021 to further define the lateral and vertical extent of subsurface tritium contamination at SWMU 33-002(d) and sampling results were presented in the addendum to the Chaquehui Aggregate Area investigation report, submitted to NMED in October 2021. The addendum recommended additional sampling, and a Phase III investigation work plan is being developed.

The project map (Figure 240-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps>.

### 240.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 240-1).

**Table 240-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q00202040008	Established Vegetation	-	X	X	-	B
Q00203060011	Straw Wattle	X	-	-	X	B
Q00203060012	Straw Wattle	-	X	-	X	B
Q00203060013	Straw Wattle	-	X	-	X	B
Q00203060015	Straw Wattle	X	-	-	X	B
Q00203060016	Straw Wattle	X	-	-	X	B

B: Additional baseline control measure.

### 240.3 Storm Water Monitoring

Through calendar year 2021, storm water flow has not been sufficient for full-volume sample collection at CHQ-SMA-1.01. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

### 240.4 Inspections and Maintenance

RG340 recorded five storm events at CHQ-SMA-1.01 during the 2021 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 240-2 Control Measure Inspections during 2021**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-85991	6-9-2021
Storm Rain Event	BMP-87493	8-5-2021
Storm Rain Event	BMP-88651	9-2-2021

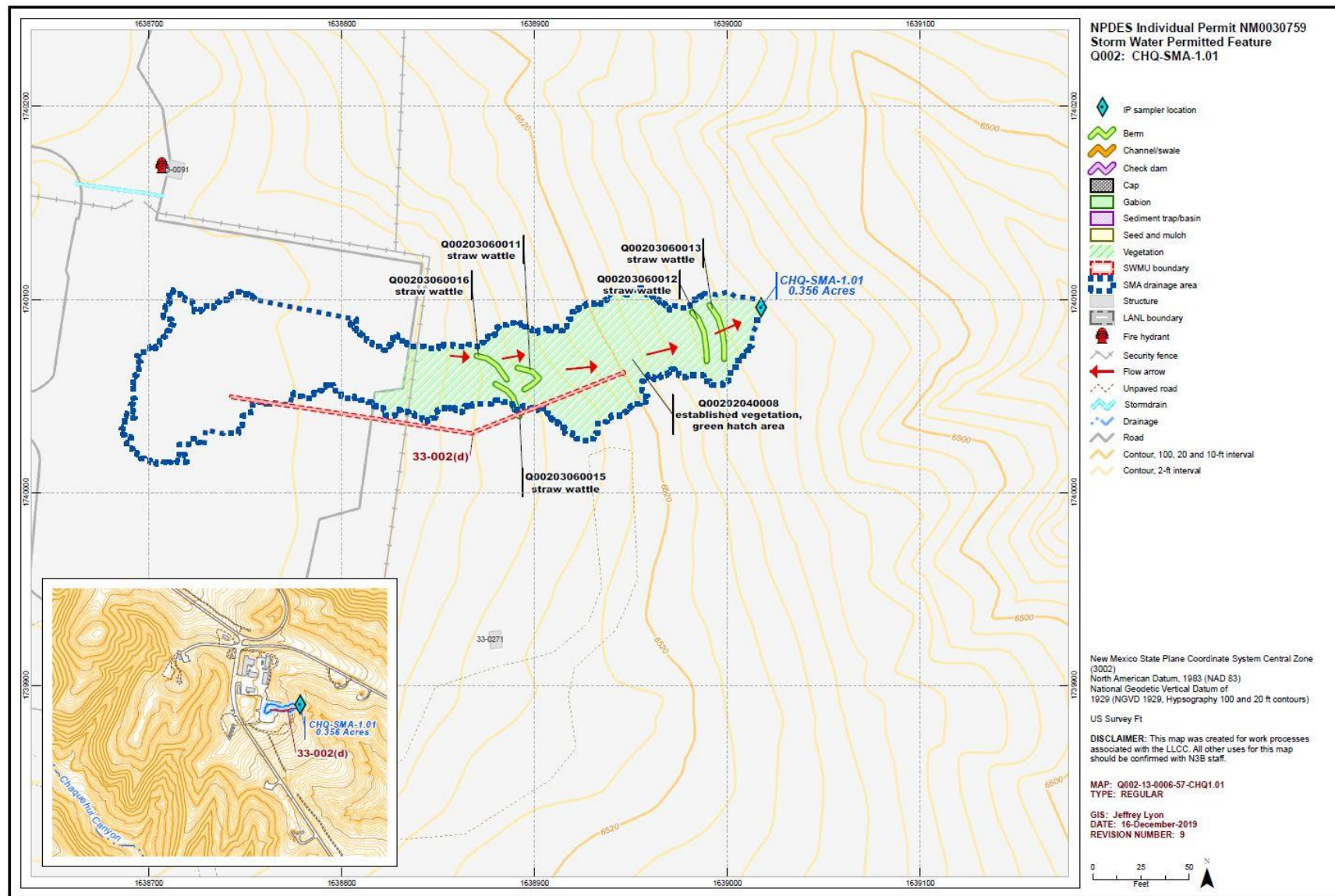
No maintenance activities or facility modifications affecting discharge were conducted at CHQ-SMA-1.01 in 2021.

### 240.5 Compliance Status

The Site associated with CHQ-SMA-1.01 is a Moderate Priority Site. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2021. Table 240-3 presents the 2021 compliance status.

**Table 240-3 Compliance Status during 2021**

Site	Compliance Status on Jan 1, 2021	Compliance Status on Dec 31, 2021	Comments
SWMU 33-002(d)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 4-30-2012. No samples have been collected since initiation of the Permit.



**Figure 240-1 CHQ-SMA-1.01 location map**

## **241.0 CHQ-SMA-1.02: SWMUs 33-004(h), 33-008(c), 33-011(d), and 33-015**

### **241.1 Site Descriptions**

Four historical industrial activity areas are associated with Q002A, CHQ-SMA-1.02: Sites 33-004(h), 33-008(c), 33-011(d), and 33-015.

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 historical engineering drawings show an 8-in.-diameter VCP drain exiting the southeast corner of the building, which reportedly discharged to an outfall. A study of building drains at TA-33 identified two floor drains in building 33-20 but the outfall could not be located. The study also noted there was no source of water in the building. The drainline and outfall were not located during the 2020 Phase I Consent Order investigation implemented at the Site.

SWMU 33-004(h) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete with controls.

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 in the northern portion of 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 an area of surface debris situated north of the culvert. The culvert receives storm water 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 cleanup activity was performed and all visible debris was removed from the surface disposal area and from the watercourse. Two sediment catchments were constructed within the drainage below the culvert to prevent migration of contaminated sediments. The first catchment was constructed 15 ft below the culvert and the second was constructed 200 ft below the culvert. During the 2020 investigation, residual debris was removed from SWMU 33-008(c).

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.

SWMU 33-008(c) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for additional sampling to define the nature and extent of contamination. SWMU 33-008(c) was included in the “Phase II Investigation Work Plan for Chaquehui Canyon Aggregate Area.” The work plan was submitted to NMED in March 2021 and approved by NMED in July 2021, and investigations were completed in 2021. During 2021 investigations, approximately 67 yd<sup>3</sup> of contaminated soil and 4 yd<sup>3</sup> of buried landfill debris were removed. Each excavation area was backfilled with clean fill material and topped with base course to restore the area to the approximate original grade. The “Phase II Investigation Report for

Chaquehui Canyon Aggregate Area,” submitted to NMED in August 2021, recommended further sampling and remediation at the Site to define nature and extent for potential contaminants of concern. A Phase III investigation work plan is being prepared.

SWMU 33-011(d) consists of a former a 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.

SWMU 33-011(d) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for additional sampling to define the nature and extent of contamination. SWMU 33-011(d) was included in the “Phase II Investigation Work Plan for Chaquehui Canyon Aggregate Area.” The work plan was submitted to NMED in March 2021 and approved by NMED in July 2021, and investigations were completed in 2021. The “Phase II Investigation Report for Chaquehui Canyon Aggregate Area,” submitted to NMED in August 2021, recommended the Site for corrective action complete with controls.

SWMU 33-015 is the location of an inactive incinerator (former structure 33-110) located approximately 50 ft southeast of building 33-39 on the 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 × 4 × 6 ft high and was mounted on a concrete base. The incinerator was first used in 1955 to burn uncontaminated office trash. The date it ceased to be used is not known; however, it was no longer in use during the 1993 RFI. The incinerator (former structure 33-110) and the associated concrete base were removed during the 2019–2020 investigation.

SWMU 33-015 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete with controls.

The project map (Figure 241-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps>.

## **241.2 Control Measures**

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 241-1).

Enhanced controls were installed and certified on October 24, 2012, September 9, 2015, and April 20, 2021, and submitted to EPA on October 25, 2012, September 10, 2015, and April 21, 2021, respectively, as part of corrective action. Photographs of the enhanced controls are available at <https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications>.

**Table 241-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q002A02040018	Established Vegetation	-	X	X	-	B
Q002A03010010	Earthen Berm	-	X	-	X	EC
Q002A03010011	Earthen Berm	-	X	-	X	EC
Q002A03010012	Earthen Berm	-	X	-	X	EC
Q002A03010013	Earthen Berm	X	-	-	X	EC
Q002A03150014	Redi-Rock Berm	-	X	-	X	EC
Q002A06010002	Rock Check Dam	-	X	-	X	CB
Q002A06010003	Rock Check Dam	-	X	-	X	CB
Q002A06010007	Rock Check Dam	X	-	-	X	CB
Q002A06010009	Rock Check Dam	-	X	-	X	CB
Q002A06010015	Rock Check Dam	-	X	-	X	EC
Q002A06010016	Rock Check Dam	-	X	-	X	EC
Q002A06010017	Rock Check Dam	-	X	-	X	EC
Q002A08030004	Concrete/Asphalt Cap	-	-	X	-	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 241.3 Storm Water Monitoring

SWMUs 33-004(h), 33-011(d), and 33-015 and AOC 33-008(c) are monitored within CHQ-SMA-1.02. Following the installation of baseline control measures, a baseline storm water sample was collected on August 21, 2011 (Figure 241-2). Analytical results from this sample yielded TAL exceedances for copper (8 µg/L) and PCB concentrations (9.22 ng/L) and are presented in Figure 241-2.

Following the 2012 installation of enhanced control measures at CHQ-SMA-1.02, corrective action storm water samples were collected on July 25, 2013, and September 15, 2013 (Figure 241-2). Analytical results from this corrective action monitoring sample yielded TAL exceedances for copper (4.46 µg/L) and PCB concentrations (7 ng/L and 16 ng/L) and are presented in Figure 241-2.

Following the 2015 installation of enhanced control measures, corrective action storm water samples were collected on July 23, 2018, and August 10, 2018 (Figure 241-2). Analytical results from these corrective action monitoring samples yielded a TAL exceedance for copper (6.79 µg/L) and are presented in Figure 241-2.

The monitoring location for CHQ-SMA-1.02 has been relocated to a location more likely to collect a corrective action confirmation monitoring sample after installation of enhanced control measures. Sampler coordinates and the SMA drainage area have been updated in Attachment 4.

Following the 2021 installation of enhanced control measures, corrective action storm water samples were collected on May 31, 2021, and August 3, 2021 (Figure 241-2). Analytical results from these corrective action monitoring samples yielded TAL exceedances for copper (5.2 µg/L and 8.5 µg/L), gross-alpha concentrations (24.8 pCi/L and 50.2 pCi/L) and PCB concentrations (14.3 ng/L and 19.4 ng/L) and are presented in Figure 241-2.

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

*SWMU 33-004(h):*

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in one of six shallow soil Consent Order samples with a concentration of 1.01% above soil BV.
- Alpha-emitting radionuclides (uranium isotopes) are known to have been associated with industrial materials historically managed at the Site. Consent Order samples were analyzed for uranium isotopes, but were not detected above soil BV in six shallow samples. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.
- PCBs are not known to be associated with industrial materials historically managed at the Site. PCBs were not detected in one of one shallow Consent Order sample collected at the Site.

*SWMU 33-008(c):*

- Copper is likely associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 32 of 47 shallow Consent Order samples with a maximum concentration of 388 times soil BV.
- Alpha-emitting radionuclides (uranium isotopes) may have been associated with industrial materials historically managed at the Site. Consent Order samples were analyzed for plutonium and uranium isotopes. Plutonium was not detected in samples. Uranium-234, uranium-235/236, and uranium-238 were not detected above soil BV in 10 shallow samples. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.
- PCBs are not known to have been associated with industrial materials historically managed at the Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in three of three shallow samples with a maximum concentration approximately 43 times less than the residential SSL. Aroclor-1260 was detected in three of three shallow samples with a maximum concentration 100 times less than the residential SSL.

*SWMU 33-011(d):*

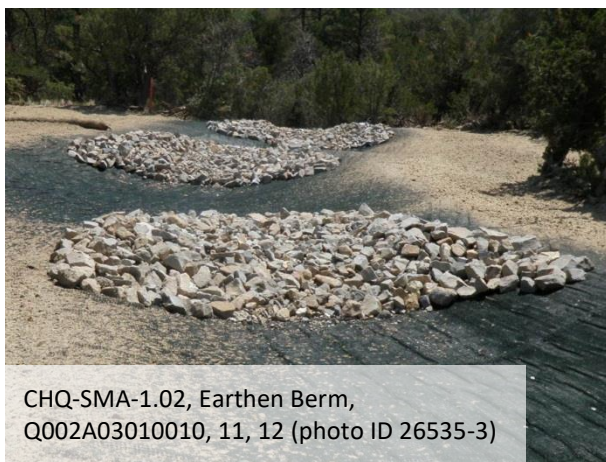
- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was not detected above soil BV in Consent Order samples.
- Alpha-emitting radionuclides (uranium isotopes) are known to have been associated with industrial materials historically managed at the Site. Consent Order samples were analyzed for plutonium and uranium isotopes. Plutonium was not detected in samples. Uranium isotopes were not detected above soil BV in 18 shallow samples.
- PCBs are not known to be associated with industrial materials historically managed at the Site. PCBs were not detected in five shallow Consent Order samples collected at the Site.

**SWMU 33-015:**

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 4 of 10 shallow Consent Order samples with a maximum concentration of 7.3 times the soil BV.
- Alpha-emitting radionuclides (uranium isotopes) may have been associated with industrial materials historically managed at the Site. Consent Order samples were not analyzed for radionuclides. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.
- PCBs are not known to be associated with industrial materials historically managed at the Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in one of three shallow soil samples with a concentration 67 times less than the residential SSL. Aroclor-1260 was detected in two of three shallow soil samples with a maximum concentration 350 times less than the residential SSL.

TAL exceedances were also evaluated against the appropriate storm water BV, that is, “Bandelier Tuff Background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 241-2. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figure 241-2.

Monitoring location CHQ-SMA-1.02 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings as well as landscape consisting of sediments derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.



CHQ-SMA-1.02, Earthen Berm,  
Q002A03010010, 11, 12 (photo ID 26535-3)

- Copper—The copper UTL from developed landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper result from the storm water confirmation samples in 2011, 2013, 2018, and 2021 are all between these two values.
- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. One of the 2021 gross-alpha results is between these values and the second result is below both values.

- PCBs—The PCB UTL from developed landscape storm water run-on is 98 ng/L; the PCB UTL for background storm water containing sediment derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2011 and one result from 2013 are less than both these values. The second PCB result from 2013 and both results from 2021 are between both values.

The analytical results for these samples are reported in the 2011, 2013, 2018, and 2021 Annual Reports.

#### 241.4 Inspections and Maintenance

RG340 recorded five storm events at CHQ-SMA-1.02 during the 2021 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 241-2 Control Measure Inspections during 2021**

Inspection Type	Inspection Reference	Inspection Date
Verification	BMP-83986	3-23-2021
Storm Rain Event and Annual Erosion Evaluation	BMP-85992	6-9-2021
Storm Rain Event	BMP-87494	8-5-2021
Storm Rain Event	BMP-88652	9-2-2021
TAL Exceedance	COMP-88940	9-17-2021

**Table 241-3 Maintenance during 2021**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-87657	Removed loose soil from Rock Check Dam Q002A06010002 and stabilized upstream of control. Added rock to Rock Check Dams Q002A06010015, Q002A06010016, and Q002A06010017 to maintain sediment storage capacity in controls.	9-13-2021	47 day(s)	Maintenance was delayed.

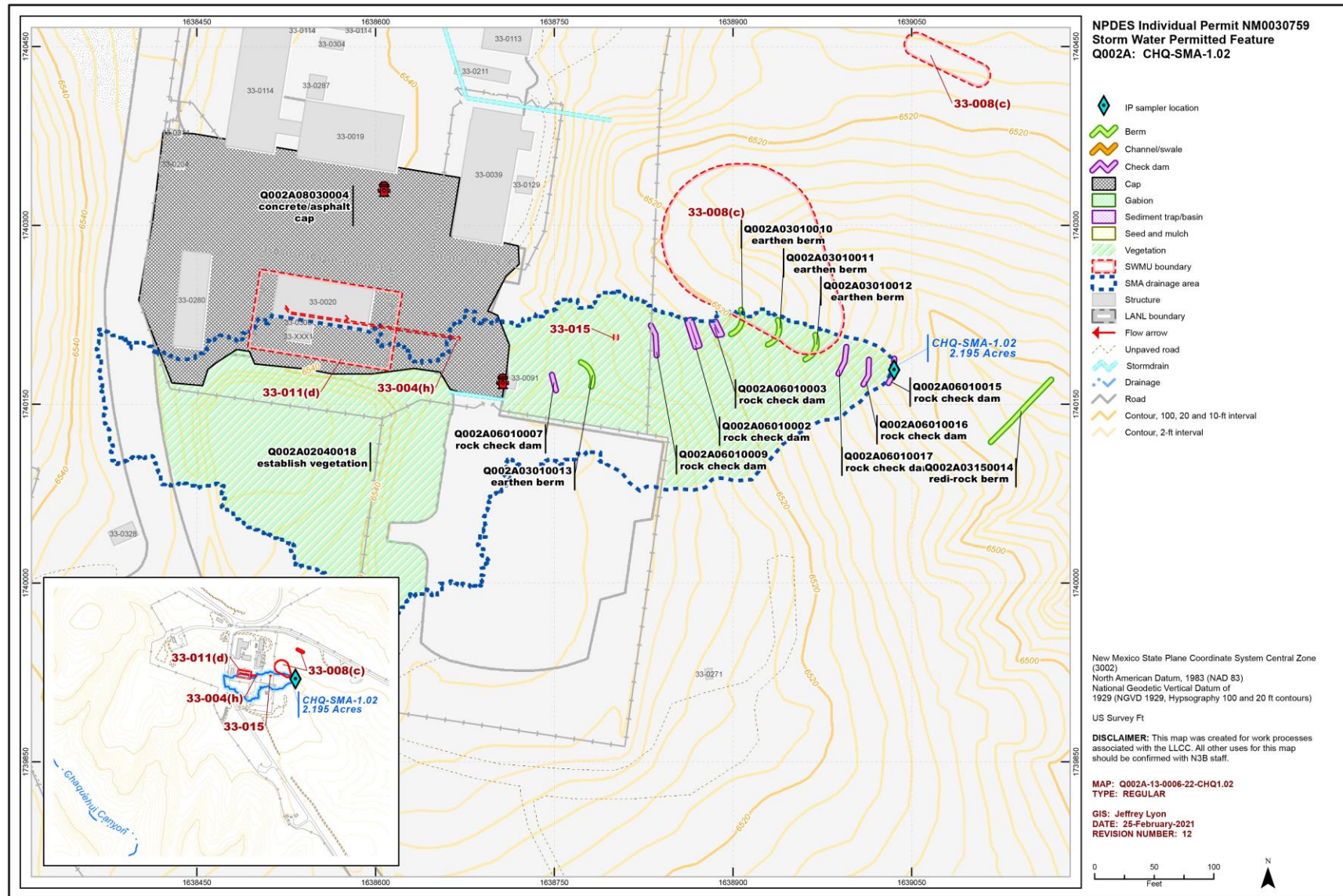
#### 241.5 Compliance Status

The Sites associated with CHQ-SMA-1.02 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP is currently under administrative compliance at the end of 2021. Table 241-4 presents the 2021 compliance status.

**Table 241-4 Compliance Status during 2021**

Site	Compliance Status on Jan 1, 2021	Compliance Status on Dec 31, 2021	Comments
SWMU 33-004(h)	Building Enhanced Controls	This SMA is being evaluated for a corrective action recommendation.	Initiated 8-3-2021. N3B, April 21, 2021, "Submittal of Certification of Installation of Enhanced Control Measures for CHQ-SMA-1.02, CHQ-SMA-2, and CHQ-SMA-7.1."
SWMU 33-008(c)	Building Enhanced Controls	This SMA is being evaluated for a corrective action recommendation.	Initiated 8-3-2021. N3B, April 21, 2021, "Submittal of Certification of Installation of Enhanced Control Measures for CHQ-SMA-1.02, CHQ-SMA-2, and CHQ-SMA-7.1."
SWMU 33-011(d)	Building Enhanced Controls	This SMA is being evaluated for a corrective action recommendation.	Initiated 8-3-2021. N3B, April 21, 2021, "Submittal of Certification of Installation of Enhanced Control Measures for CHQ-SMA-1.02, CHQ-SMA-2, and CHQ-SMA-7.1."
SWMU 33-015	Building Enhanced Controls	This SMA is being evaluated for a corrective action recommendation.	Initiated 8-3-2021. N3B, April 21, 2021, "Submittal of Certification of Installation of Enhanced Control Measures for CHQ-SMA-1.02, CHQ-SMA-2, and CHQ-SMA-7.1."

Further details regarding compliance status and planned activities can be found in Attachment 6 for Sites in this SMA.



**Figure 241-1 CHQ-SMA-1.02 location map**

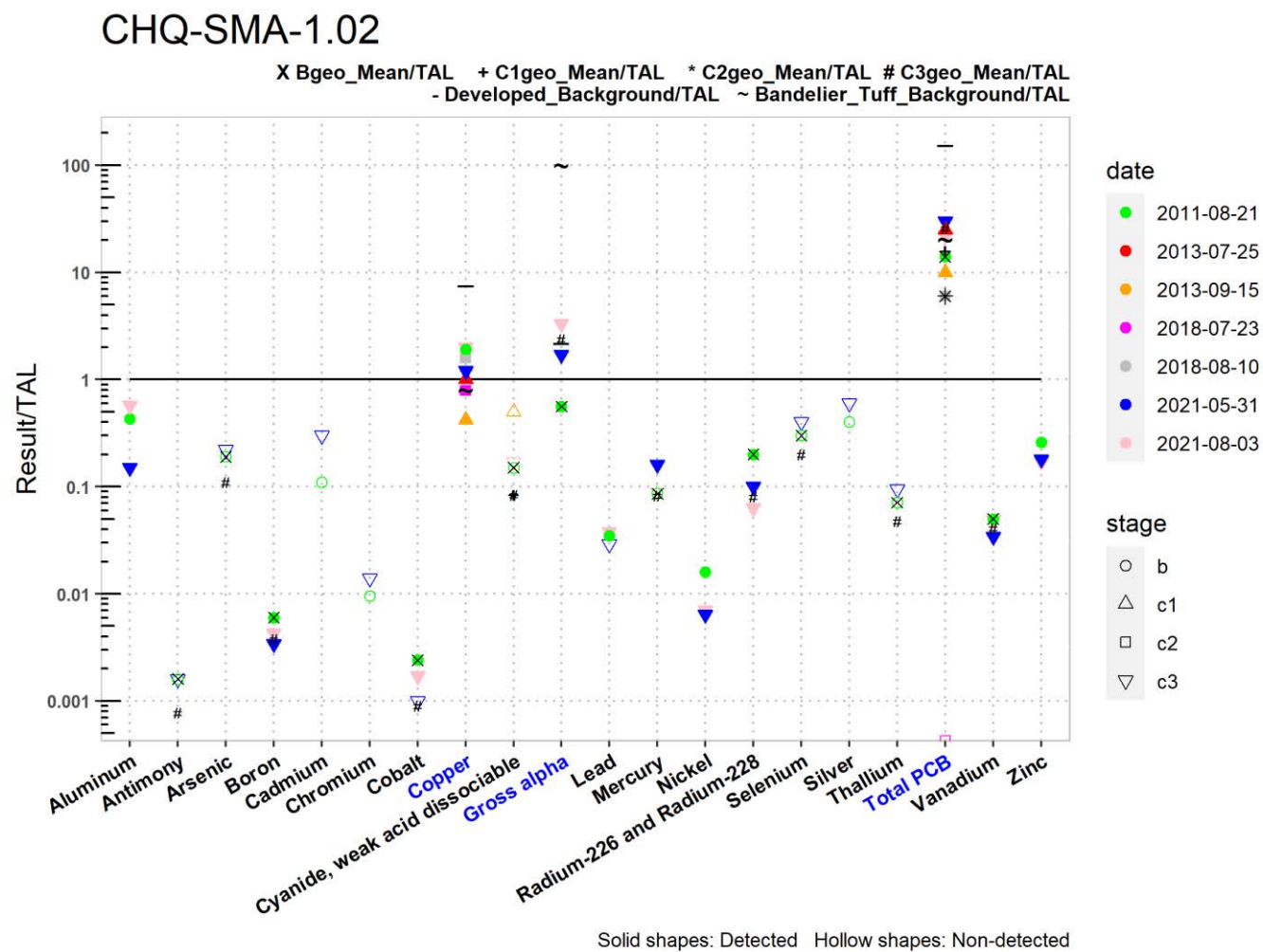


Figure 241-2 Analytical results summary for CHQ-SMA-1.02

CHQ-SMA-1.02

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Total PCB	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	0.00064	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	0.00064	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	NA	42
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
Bgeo_mean/ATAL	NA	0.0016	0.19	0.0060	NA	NA	0.0024	NA	0.15	0.56	NA	0.086	NA	0.20	0.30	NA	0.071	<b>14</b>	0.050	NA
C1geo_mean/ATAL	NA	NA	NA	NA	NA	NA	NA	NA	0.084	NA	NA	NA	NA	NA	NA	NA	NA	<b>16</b>	NA	NA
C2geo_mean/ATAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<b>6.0</b>	NA	NA
C3geo_mean/ATAL	NA	0.00078	0.11	0.0038	NA	NA	0.00091	NA	0.084	<b>2.4</b>	NA	0.083	NA	0.081	0.20	NA	0.048	<b>26</b>	0.041	NA
2011-08-21 d	0.43	NA	NA	0.0060	NA	NA	0.0024	<b>1.9</b>	NA	0.56	0.035	NA	0.016	0.20	NA	NA	NA	<b>14</b>	0.050	0.26
2011-08-21 nd	NA	0.0016	0.19	NA	0.11	0.0095	NA	NA	0.15	NA	NA	0.086	NA	NA	0.30	0.40	0.071	NA	NA	NA
2013-07-25 d	NA	NA	NA	NA	NA	NA	NA	1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	<b>25</b>	NA	NA
2013-07-25 nd	NA	NA	NA	NA	NA	NA	NA	NA	0.50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2013-09-15 d	NA	NA	NA	NA	NA	NA	NA	0.42	NA	NA	NA	NA	NA	NA	NA	NA	NA	<b>10</b>	NA	NA
2013-09-15 nd	NA	NA	NA	NA	NA	NA	NA	NA	0.50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2018-07-23 d	NA	NA	NA	NA	NA	NA	NA	0.79	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2018-07-23 nd	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	NA	NA
2018-08-10 d	NA	NA	NA	NA	NA	NA	NA	<b>1.6</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	<b>6.0</b>	NA	NA
2018-08-10 nd	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2021-05-31 d	0.15	NA	NA	0.0034	NA	NA	NA	<b>1.2</b>	NA	<b>1.7</b>	NA	0.16	0.0064	0.10	NA	NA	NA	<b>30</b>	0.034	0.18
2021-05-31 nd	NA	0.0016	0.22	NA	0.30	0.014	0.0010	NA	0.17	NA	0.029	NA	NA	NA	0.40	0.60	0.095	NA	NA	NA
2021-08-03 d	0.57	NA	NA	0.0043	NA	NA	0.0017	<b>2.0</b>	NA	<b>3.3</b>	0.038	NA	0.0070	0.063	NA	NA	NA	<b>22</b>	0.049	0.17
2021-08-03 nd	NA	0.0016	0.22	NA	0.30	0.014	NA	NA	0.17	NA	0.087	NA	NA	NA	0.40	0.60	0.095	NA	NA	NA

Bold font indicate TAL exceedance; d=detected\_result/TAL, nd=nondetected\_result/TAL

Figure 241-2 (continued) Analytical results summary for CHQ-SMA-1.02

## **242.0 CHQ-SMA-1.03: SWMUs 33-008(c), 33-012(a), and 33-017 and AOCs C-33-001 and C-33-003**

### **242.1 Site Descriptions**

Five historical industrial activity areas are associated with Q002B, CHQ-SMA-1.03: 33-008(c), 33-012(a), 33-017, C-33-001, and C-33-003.

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 in the northern portion of 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 an area of surface debris situated north of the culvert. The culvert receives storm water 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 and all visible debris was removed from the surface disposal area and the watercourse. Two sediment catchments were constructed within the drainage below the culvert to prevent migration of contaminated sediments. The first catchment was constructed 15 ft below the culvert and the second was constructed 200 ft below the culvert. During the 2020 investigation, residual debris was removed from SWMU 33-008(c).

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.

SWMU 33-008(c) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for additional sampling to define the nature and extent of contamination. SWMU 33-008(c) was included in the “Phase II Investigation Work Plan for Chaquehui Canyon Aggregate Area.” The work plan was submitted to NMED in March 2021 and approved by NMED in July 2021, and investigations were completed in 2021. During 2021 investigations, approximately 67 yd<sup>3</sup> of contaminated soil and 4 yd<sup>3</sup> of buried landfill debris were removed. Each excavation area was backfilled with clean fill material and topped with base course to restore the area to the approximate original grade. The “Phase II Investigation Report for Chaquehui Canyon Aggregate Area,” submitted to NMED in August 2021, recommended further sampling and remediation at the Site to define nature and extent for potential contaminants of concern. A Phase III investigation work plan is being prepared.

SWMU 33-012(a) is a former SAA for a former machine shop in building 33-39 at Main Site in TA-33. This SAA was located on an asphalt pad on the east side of building 33-39, between the building and a storage shed. The asphalt pad is approximately 20 ft wide × 20 ft long. The area was used to accumulate spent solvents and solvent-contaminated oil in one 55-gal. drum at a time in accordance with the RCRA requirement (40 CFS 262, “Standards Applicable to Generators of Hazardous Waste”). Each drum was placed on a pallet or directly on the asphalt pad. The 1990 SWMU report notes the presence of multiple oil stains at this Site. The 1992 RFI work plan, however, states no evidence of oil staining was found at the Site. The SAA was established in the mid-1980s, had been deactivated by 1992, and was moved to the interior of building 33-39.

SWMU 33-012(a) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for additional sampling to determine nature and extent of contamination. SWMU 33-012(a) was included in the “Phase II Investigation Work Plan for Chaquehui Canyon Aggregate Area.” The work plan was submitted to NMED in March 2021 and approved by NMED in July 2021, and investigations were completed in 2021. During 2021 investigations, approximately 2.2 yd<sup>3</sup> of contaminated soil debris was removed. Each excavation area was backfilled with clean fill material and topped with base course to restore the area to the approximate original grade. The “Phase II Investigation Report for Chaquehui Canyon Aggregate Area,” submitted to NMED in August 2021, recommended further remediation at the Site to define nature and extent for potential contaminants of concern. A Phase III investigation work plan is being prepared.

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 ft to 600 ft wide. The Site generally slopes downward to the east and is 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 TA-33 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 included 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 most continued until 1972. When these operations ceased, some of the facilities were converted for use as offices and electronics laboratories and remain active.

SWMU 33-017 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for remediation. SWMU 33-017 was included in the “Phase II Investigation Work Plan for Chaquehui Canyon Aggregate Area.” The work plan was submitted to NMED in March 2021 and approved by NMED in July 2021, and investigations were completed in 2021. During 2021 investigations, approximately 17.25 yd<sup>3</sup> of contaminated soil and 4 yd<sup>3</sup> of buried landfill debris were removed. Each excavation area was backfilled with clean fill material and topped with base course to restore the area to the approximate original grade. The “Phase II Investigation Report for Chaquehui Canyon Aggregate Area,” submitted to NMED in August 2021, recommended further sampling at the Site to define nature and extent for potential contaminants of concern. A Phase III investigation work plan is being prepared.

AOC C-33-001 consists of a former PCB transformer (former structure 33-124) in the northern portion of Main Site at TA-33. The transformer was mounted on a 15 × 50 ft 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 U.S. 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. A BMP implemented in 1999 consisted of vacuuming PCB-contaminated soil and sediment present on the asphalt between buildings 33-113 and 33-114. In addition, the field team vacuumed a low-grade slope from building 33-114 east between buildings 33-0113 and 33-39. A total volume of 55 gal. of material was collected.

AOC C-33-001 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for remediation. AOC C-33-001 was included in the “Phase II Investigation Work Plan for Chaquehui Canyon Aggregate Area.” The work plan was submitted to NMED in March 2021 and approved by NMED in July 2021, and investigations were completed in 2021. During 2021 investigations, approximately 0.01 yd<sup>3</sup> of contaminated soil was removed. The excavation area was backfilled with clean fill material to restore the area to the approximate original grade and an asphalt patch was also placed on top of the fill. The “Phase II Investigation Report for Chaquehui Canyon Aggregate Area,” submitted to NMED in August 2021, recommended further sampling and remediation at the Site to define nature and extent for potential contaminants of concern. A Phase III investigation work plan is being prepared.

AOC C-33-003 consists of two fill areas located at 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 filled area to accommodate trailer 33-169 is approximately 100 × 100 × 4 ft deep. The other trailer (former structure 33-170) was installed north of building 33-114. The filled area to accommodate trailer 33-170 is approximately 70 × 90 × 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, which was 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)].

During a 1999 VCA, fill material was excavated until native soil or tuff was encountered. A total of 408.5 yd<sup>3</sup> of fill material was excavated. Radiation surveys of the excavated areas showed no readings greater than 2 times BV. Confirmation samples verified that cleanup levels were achieved. The excavated material was transported to a Segmented Gate System treatment plant, where radioactive materials were separated from the fill and disposed of. A total of 1.45 yd<sup>3</sup> of contaminated fill was separated and disposed of as LLW. Treated fill samples verified that cleanup levels were achieved. The decontaminated fill was returned to the Site, and the Site was restored and revegetated.

AOC C-33-003 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.



CHQ-SMA-1.03, Rip Rap,  
 Q002B04060010, 11, 12 (photo ID 37973-4)

The project map (Figure 242-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps>.

## 242.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 242-1).

An enhanced control was installed and certified on May 13, 2014, and submitted to EPA on May 30, 2014, as part of corrective action. Photographs of the enhanced control are available at <https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications>.

**Table 242-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q002B02040012	Established Vegetation	-	X	X	-	B
Q002B03150013	Redi-Rock Berm	-	X	-	X	EC
Q002B04060006	Rip Rap	X	-	X	-	CB
Q002B04060007	Rip Rap	-	X	X	-	CB
Q002B04060010	Rip Rap	-	X	X	-	CB
Q002B06010004	Rock Check Dam	-	X	-	X	CB
Q002B06010008	Rock Check Dam	-	X	-	X	CB
Q002B06010011	Rock Check Dam	-	X	-	X	CB
Q002B08030003	Concrete/Asphalt Cap	-	X	X	-	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

## 242.3 Storm Water Monitoring

SWMUs 33-008(c), 33-012(a), and 33-017 and AOCs C-33-001 and C-33-003 are monitored within CHQ-SMA-1.03. Following the installation of baseline control measures, a baseline storm water sample was collected on July 4, 2012 (Figure 242-2). In Figure 242-2, selenium and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL; the MDLs for these analytes are below their respective TALs. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded TAL exceedances for copper (14.4 µg/L), gross-alpha activity (63.5 pCi/L), and PCB concentrations (16 ng/L) and are presented in Figure 242-2.

Following the installation of enhanced control measures at CHQ-SMA-1.03, a corrective action storm water sample was collected on August 10, 2018 (Figure 242-2). Analytical results from this corrective action monitoring sample yielded TAL exceedances for copper (4.6 µg/L), gross-alpha activity (16.2 pCi/L), and PCB concentrations (0.86 ng/L) and are presented in Figure 242-2.

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

*SWMU 33-008(c):*

- Copper is likely associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 32 of 47 shallow Phase II Consent Order samples with a maximum concentration of 388 times soil BV.
- Alpha-emitting radionuclides (uranium isotopes) may have been associated with industrial materials historically managed at the Site. Consent Order samples were analyzed for plutonium and uranium isotopes. Plutonium was not detected in samples. Uranium-234, uranium-235/236, and uranium-238 were not detected above soil BV in 10 shallow samples. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.
- PCBs are not known to have been associated with industrial materials historically managed at the Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Phase II Consent Order samples. Aroclor-1254 was detected in three of three shallow samples with a maximum concentration approximately 43 times less than the residential SSL. Aroclor-1260 was detected in three of three shallow samples with a maximum concentration 100 times less than the residential SSL.

*SWMU 33-012(a):*

- Copper may have been associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 7 of 22 shallow Consent Order samples with the maximum concentration 26.7 times the soil BV.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.
- PCBs may have been associated with industrial materials historically managed at the Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in 48 of 58 shallow samples with a maximum concentration 15 times greater than the residential SSL. Aroclor-1260 was detected in 49 of 58 shallow samples with a maximum concentration 2 times greater than the residential SSL.

*SWMU 33-017:*

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 15 of 63 shallow Consent Order samples with the maximum concentration 9.5 times greater than the soil BV.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.
- PCBs are not known to have been associated with industrial materials historically managed at the Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in 31 of 43 shallow samples with a maximum concentration 1.4 times greater than the residential SSL. Aroclor-1260 was detected in 31 of 43 shallow samples with a maximum concentration 1.5 times greater than the residential SSL.

**AOC C-33-001:**

- Copper is not known to be associated with industrial materials historically managed at the Site. Consent Order samples from 2020 were not analyzed for copper.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at AOC C-33-001. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.
- PCBs are known to have been associated with industrial materials historically managed at the Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in 1 of 25 shallow samples with a concentration of 1.7 times greater than the residential SSL. Aroclor-1260 was detected in 19 of 25 shallow samples with a maximum concentration 96 times greater than the residential SSL.

**AOC C-33-003:**

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 16 of 77 shallow Consent Order samples with a maximum concentration 4 times greater than the soil BV.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.
- PCBs are not known to have been associated with industrial materials historically managed at the Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in 1 of 10 shallow samples with a maximum concentration 170 times less than the residential SSL. Aroclor-1260 was detected in 6 of 10 shallow samples with a maximum concentration 1.3 times less than the residential SSL.

TAL exceedances were also evaluated against the appropriate storm water BV, that is, “Bandelier Tuff Background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 243-2. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features and are labeled “Developed Background” in Figure 243-2.

Monitoring location CHQ-SMA-1.03 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of sediments derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.

- Copper—The copper UTL for storm water containing sediments derived from Bandelier Tuff storm water is 3.43 µg/L, and the copper storm water UTL for run-on from a developed landscape is 32.3 µg/L. The 2012 and 2018 copper result is between these two values.
- Gross alpha—The gross-alpha background UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. The 2012 gross-alpha result is between these two values. The 2018 gross-alpha result is below these two values.

- PCBs—The PCB baseline storm water UTL for storm water containing sediments derived Bandelier Tuff is 11.7 ng/L, and the PCB UTL for run-on from a developed landscape is 98 ng/L. The 2012 PCB result is between these values. The 2018 PCB result is below these two values.

The analytical results for these samples are reported in the 2012 and 2018 Annual Reports.

#### 242.4 Inspections and Maintenance

RG340 recorded five storm events at CHQ-SMA-1.03 during the 2021 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 242-2 Control Measure Inspections during 2021**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-85993	6-9-2021
FTL Assessment	BMP-87168	7-28-2021
Storm Rain Event	BMP-87495	8-5-2021
Storm Rain Event	BMP-88653	9-2-2021

No maintenance activities or facility modifications affecting discharge were conducted at CHQ-SMA-1.03 in 2021.

#### 242.5 Compliance Status

The Sites associated with CHQ-SMA-1.03 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2021. Table 242-3 presents the 2021 compliance status.

**Table 242-3 Compliance Status during 2021**

Site	Compliance Status on Jan 1, 2021	Compliance Status on Dec 31, 2021	Comments
SWMU 33-008(c)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, May 30, 2014, "Submittal of Certification of Installation of Enhanced Control Measures for Four Site Monitoring Areas (CDV-SMA-1.4, CHQ-SMA-1.03, Pratt-SMA-1.05, T-SMA-1)."
SWMU 33-012(a)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, May 30, 2014, "Submittal of Certification of Installation of Enhanced Control Measures for Four Site Monitoring Areas (CDV-SMA-1.4, CHQ-SMA-1.03, Pratt-SMA-1.05, T-SMA-1)."
SWMU 33-017	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, May 30, 2014, "Submittal of Certification of Installation of Enhanced Control Measures for Four Site Monitoring Areas (CDV-SMA-1.4, CHQ-SMA-1.03, Pratt-SMA-1.05, T-SMA-1)."

Site	Compliance Status on Jan 1, 2021	Compliance Status on Dec 31, 2021	Comments
AOC C-33-001	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, May 30, 2014, "Submittal of Certification of Installation of Enhanced Control Measures for Four Site Monitoring Areas (CDV-SMA-1.4, CHQ-SMA-1.03, Pratt-SMA-1.05, T-SMA-1)."
AOC C-33-003	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	LANL, May 30, 2014, "Submittal of Certification of Installation of Enhanced Control Measures for Four Site Monitoring Areas (CDV-SMA-1.4, CHQ-SMA-1.03, Pratt-SMA-1.05, T-SMA-1)."

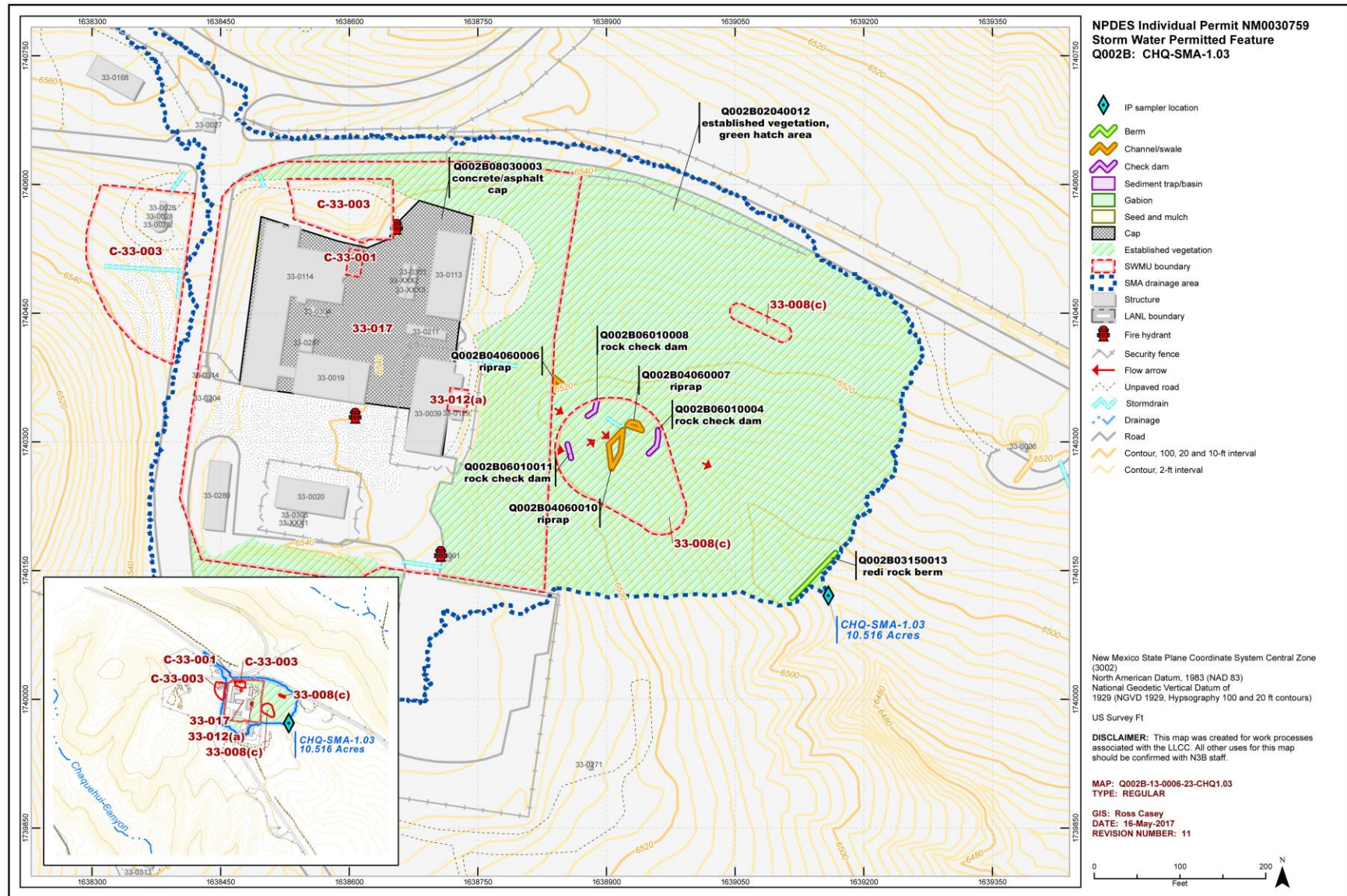


Figure 242-1 CHQ-SMA-1.03 location map

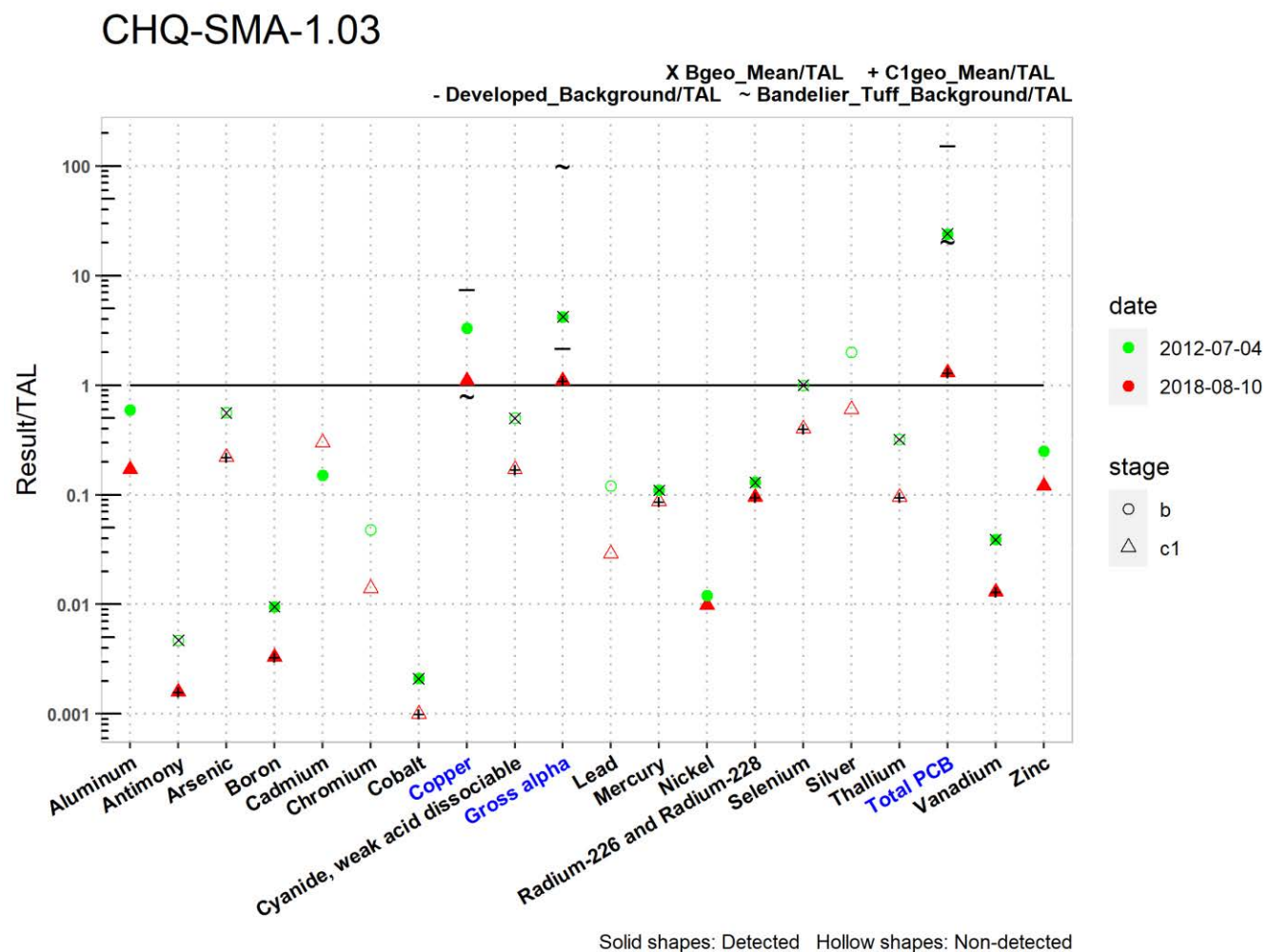


Figure 242-2 Analytical results summary for CHQ-SMA-1.03

CHQ-SMA-1.03

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Total PCB	Vanadium	Zinc
<i>TAL</i>	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	0.00064	100	42
<i>MQL</i>	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	NA	50	20
<i>ATAL</i>	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	0.00064	100	NA
<i>MTAL</i>	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	NA	42
<i>unit</i>	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
<i>Bgeo_mean/ATAL</i>	NA	0.0047	0.56	0.0095	NA	NA	0.0021	NA	0.50	<b>4.2</b>	NA	0.11	NA	0.13	1.0	NA	0.32	<b>24</b>	0.039	NA
<i>C1geo_mean/ATAL</i>	NA	0.0016	0.22	0.0033	NA	NA	0.0010	NA	0.17	<b>1.1</b>	NA	0.087	NA	0.095	0.40	NA	0.095	<b>1.3</b>	0.013	NA
<i>2012-07-04 d</i>	0.59	NA	NA	0.0095	0.15	NA	0.0021	<b>3.3</b>	NA	<b>4.2</b>	NA	0.11	0.012	0.13	NA	NA	NA	<b>24</b>	0.039	0.25
<i>2012-07-04 nd</i>	NA	0.0047	0.56	NA	NA	0.048	NA	NA	0.50	NA	0.12	NA	NA	NA	1.0	2.0	0.32	NA	NA	NA
<i>2018-08-10 d</i>	0.17	0.0016	NA	0.0033	NA	NA	NA	<b>1.1</b>	NA	<b>1.1</b>	NA	NA	0.0098	0.095	NA	NA	NA	<b>1.3</b>	0.013	0.12
<i>2018-08-10 nd</i>	NA	NA	0.22	NA	0.30	0.014	0.0010	NA	0.17	NA	0.029	0.087	NA	NA	0.40	0.60	0.095	NA	NA	NA

Bold font indicate TAL exceedance: d=detected result/TAL. nd=nondetected result/TAL

Figure 242-2 (continued) Analytical results summary for CHQ-SMA-1.03

## **243.0 CHQ-SMA-2: SWMUs 33-004(d) and 33-007(c) and AOC C-33-003**

### **243.1 Site Descriptions**

Three historical industrial activity areas are associated with Q003, CHQ-SMA-2: Sites 33-004(d), 33-007(c), and C-33-003.

SWMU 33-004(d) is an abandoned septic system consisting of a former 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 was located approximately 100 ft east of building 33-16 in the northwest portion of TA-33. The septic tank was constructed of corrugated iron and has a capacity of 500 gal. Septic tank 33-121 received wastewater from a toilet and sink in a 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. The 1995 RFI report describes the septic tank as a 500-gal. corrugated iron tank (structure 33-121) located 50 ft southeast of building 33-01, 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 5 ft belowgrade, which would be the outfall. 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.

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 identified the only discharges to the septic system were from a lavatory, toilet, and sink drain.

The septic tank (former structure 33-121) was removed during the 2019–2020 investigation. The inlet and outlet drains were plugged but the drainlines and seepage pit remain in place.

SWMU 33-004(d) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.

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). Building 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 6ft × 6ft 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 was located immediately west of building 33-16, on which a large bore gun was mounted. 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 building 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 building 33-16 and were approximately 6 ft × 6 ft, constructed of timber, and filled with soil, wood chips, and vermiculite. Guns (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 by using a bulldozer to scrape away the contaminated soil and embankment. A 1954 memorandum describes decontamination of one of the Area 6 gun barrels. The memorandum describes 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, building 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. An aluminum tower (structure 33-192) is used for atmospheric physics monitoring within the excavated portion of the cinder cone.

During the 1995 IA conducted at SWMU 33-007(c), the Site was stabilized to prevent migration of the contamination identified during the RFI. An HDPE cover was placed over the catcher boxes to prevent run-on and runoff of precipitation. Additionally, the culvert west of building 33-16 was dammed with sandbags. In 1996, approximately 200 yd<sup>3</sup> of soil was removed from the catcher boxes and processed as part of a pilot test to verify the effectiveness of processes for remediating uranium-contaminated soil. Sampling results for the processed soil showed mean activities for uranium-234, uranium-235, and uranium-238 of 15.8 pCi/g, 0.515 pCi/g, and 15.7 pCi/g, respectively; the processed soil was returned to the catcher boxes. Fifty-six experimental projectiles totaling 1720 lb were discovered as the soil was screened as part of the pilot test. These projectiles were disposed of off-site.

SWMU 33-007(c) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for additional sampling to define the nature and extent of contamination. SWMU 33-007(c) was included in the “Phase II Investigation Work Plan for Chaquehui Canyon Aggregate Area.” The work plan was submitted to NMED in March 2021 and approved by NMED in July 2021, and investigations were completed in 2021. The “Phase II Investigation Report for Chaquehui Canyon Aggregate Area,” submitted to NMED in August 2021, recommended the Site for corrective action complete with controls.



CHQ-SMA-2 Rock Check Dam  
 Q00306010041 (photo id. 50559-17)

AOC C-33-003 consists of two fill areas located at 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 filled area to accommodate trailer 33-169 is approximately 100 × 100 × 4 ft deep. The other trailer (former structure 33-170) was installed north of building 33-114. The filled area to accommodate trailer 33-170 is approximately 70 × 90 × 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, which was obtained from the cinder cone located in Area 6, just west of Main Site. Historically, projectiles were fired into the base of the cinder cone during experiments conducted at the Area 6 firing area [SWMU 33-007(c)].

During a 1999 VCA, fill material was excavated until native soil or tuff was encountered. A total of 408.5 yd<sup>3</sup> of fill material was excavated. Radiation surveys of the excavated areas showed no readings greater than 2 times soil background. Confirmation samples verified that cleanup levels were achieved. The excavated material was transported to a Segmented Gate System treatment plant, where radioactive materials were separated from the fill and disposed of. A total of 1.45 yd<sup>3</sup> of contaminated fill was separated and disposed of as LLW. Treated fill samples verified cleanup levels were achieved. The decontaminated fill was returned to the Site and the Site was restored and revegetated.

AOC C-33-003 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.

The project map (Figure 243-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps>.

## 243.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 243-1).

Enhanced controls were installed and certified on October 28, 2015 and April 21, 2021, and submitted to EPA on October 30, 2015 and April 21, 2021, respectively, as part of corrective action. Photographs of the enhanced controls are available at <https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications>.

**Table 243-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q00302040023	Established Vegetation	-	X	X	-	B
Q00303010030	Earthen Berm	X	-	-	X	EC
Q00303020028	Base Course Berm	-	X	-	X	EC
Q00303020029	Base Course Berm	-	X	-	X	EC
Q00303020053	Base Course Berm	X	-	-	X	EC
Q00303020054	Base Course Berm	X	-	-	X	EC
Q00303040015	Asphalt Berm	X	-	-	X	CB
Q00303060060	Straw Wattle	-	X	-	X	EC
Q00303060060	Straw Wattle	-	X	-	X	EC
Q00303140059	Coir Log	-	X	-	X	EC
Q00306010035	Rock Check Dam	X	-	-	X	EC
Q00306010036	Rock Check Dam	-	X	-	X	EC
Q00306010037	Rock Check Dam	-	X	-	X	EC
Q00306010038	Rock Check Dam	-	X	-	X	EC
Q00306010039	Rock Check Dam	-	X	-	X	EC
Q00306010040	Rock Check Dam	-	X	-	X	EC
Q00306010041	Rock Check Dam	-	X	-	X	EC
Q00306010042	Rock Check Dam	-	X	-	X	EC
Q00306010043	Rock Check Dam	-	X	-	X	EC
Q00306010044	Rock Check Dam	-	X	-	X	EC
Q00306010045	Rock Check Dam	-	X	-	X	EC
Q00306010046	Rock Check Dam	-	X	-	X	EC
Q00306010047	Rock Check Dam	-	X	-	X	EC
Q00306010048	Rock Check Dam	-	X	-	X	EC
Q00306010049	Rock Check Dam	-	X	-	X	B
Q00306010050	Rock Check Dam	-	X	-	X	EC
Q00306010051	Rock Check Dam	-	X	-	X	EC
Q00306010052	Rock Check Dam	-	X	-	X	EC
Q00306010055	Rock Check Dam	-	X	-	X	B
Q00306010056	Rock Check Dam	-	X	-	X	B
Q00306010057	Rock Check Dam	-	X	-	X	EC
Q00306010058	Rock Check Dam	-	X	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 243.3 Storm Water Monitoring

SWMUs 33-004(d) and 33-007(c) and AOC C-33-003 are monitored within CHQ-SMA-2. Following the installation of baseline control measures, a baseline storm water sample was collected on July 4, 2012 (Figure 243-2). In Figure 243-2, cadmium and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL; the MDLs for these analytes are below their respective TALs. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded TAL exceedances for aluminum (967 µg/L), copper (6.75 µg/L), and gross-alpha activity (91.2 pCi/L) and are presented in Figure 243-2.

Two corrective action storm water samples were collected on July 23, 2018, and on August 15, 2018 (Figure 243-2). Analytical results from the corrective action monitoring samples yielded TAL exceedances for copper (4.82 µg/L), and gross-alpha activity (36.8 and 99.7 pCi/L) and are presented in Figure 243-2.

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

#### *SWMU 33-004(d):*

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 2 of 18 shallow Consent Order samples with a maximum concentration of 3.7 times the soil BV.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

#### *SWMU 33-007(c):*

- Copper is known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 15 of 25 shallow Consent Order samples with a maximum concentration 2.2 times the soil BV.
- Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at the Site. Consent Order samples were analyzed for uranium isotopes (uranium-234, uranium-235/236, and uranium-238). Uranium-234 was detected above soil BV in 9 of 25 shallow soil samples with a maximum activity of 2.6 times greater than the soil BV. Uranium-235/236 was detected above soil BV in 7 of 25 shallow soil samples with a maximum activity of 2.2 times greater than the soil BV. Uranium-238 was detected above soil BV in 10 of 25 shallow soil samples with a maximum activity of 3 times greater than the soil BV. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

#### *AOC C-33-003:*

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 16 of 77 shallow Consent Order samples with a maximum concentration 4 times greater than the soil BV.
- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

TAL exceedances were also evaluated against the appropriate storm water BV, that is, “Bandelier Tuff Background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 243-2. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features and are labeled “Developed Background” in Figure 243-2.

Most of the CHQ-SMA-2 drainage area is located on Bandelier Tuff, and minimal run-on occurs from developed facilities (i.e., buildings, pavement, and parking lots); therefore, calculated storm water UTLs from samples containing sediment derived from Bandelier Tuff were compared with copper and gross-alpha storm water exceedances. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. Copper is associated with trace minerals in the Bandelier Tuff as well.

- Copper—The copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L; the results from 2012 and 2018 are greater than this value.
- Gross alpha—The gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L; the results from 2012 and 2018 are less than this value.

The analytical results for these samples are reported in the 2012 and 2018 Annual Reports.

#### 243.4 Inspections and Maintenance

RG340 recorded five storm events at CHQ-SMA-2 during the 2021 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in the following table.

**Table 243-2 Control Measure Inspections during 2021**

Inspection Type	Inspection Reference	Inspection Date
Verification	BMP-83985	3-23-2021
Storm Rain Event and Annual Erosion Evaluation	BMP-85989	6-8-2021
Storm Rain Event	BMP-87491	8-3-2021
Storm Rain Event	BMP-87851	8-10-2021
Storm Rain Event	BMP-8849	9-1-2021

No maintenance activities or facility modifications affecting discharge were conducted at CHQ-SMA-2 in 2021.

#### 243.5 Compliance Status

The Sites associated with CHQ-SMA-2 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2021. Table 243-3 presents the 2021 compliance status.

**Table 243-3 Compliance Status during 2021**

Site	Compliance Status on Jan 1, 2021	Compliance Status on Dec 31, 2021	Comments
SWMU 33-004(d)	Alternative Compliance Requested	Enhanced Control Corrective Action Monitoring	N3B, April 21, 2021, "Submittal of Certification of Installation of Enhanced Control Measures for CHQ-SMA-1.02, CHQ-SMA-2, and CHQ-SMA-7.1."
SWMU 33-007(c)	Building Enhanced Controls	Enhanced Control Corrective Action Monitoring	N3B, April 21, 2021, "Submittal of Certification of Installation of Enhanced Control Measures for CHQ-SMA-1.02, CHQ-SMA-2, and CHQ-SMA-7.1."
AOC C-33-003	Alternative Compliance Requested	Enhanced Control Corrective Action Monitoring	N3B, April 21, 2021, "Submittal of Certification of Installation of Enhanced Control Measures for CHQ-SMA-1.02, CHQ-SMA-2, and CHQ-SMA-7.1."

Further details regarding compliance status and planned activities can be found in Attachment 6 for Sites in this SMA.



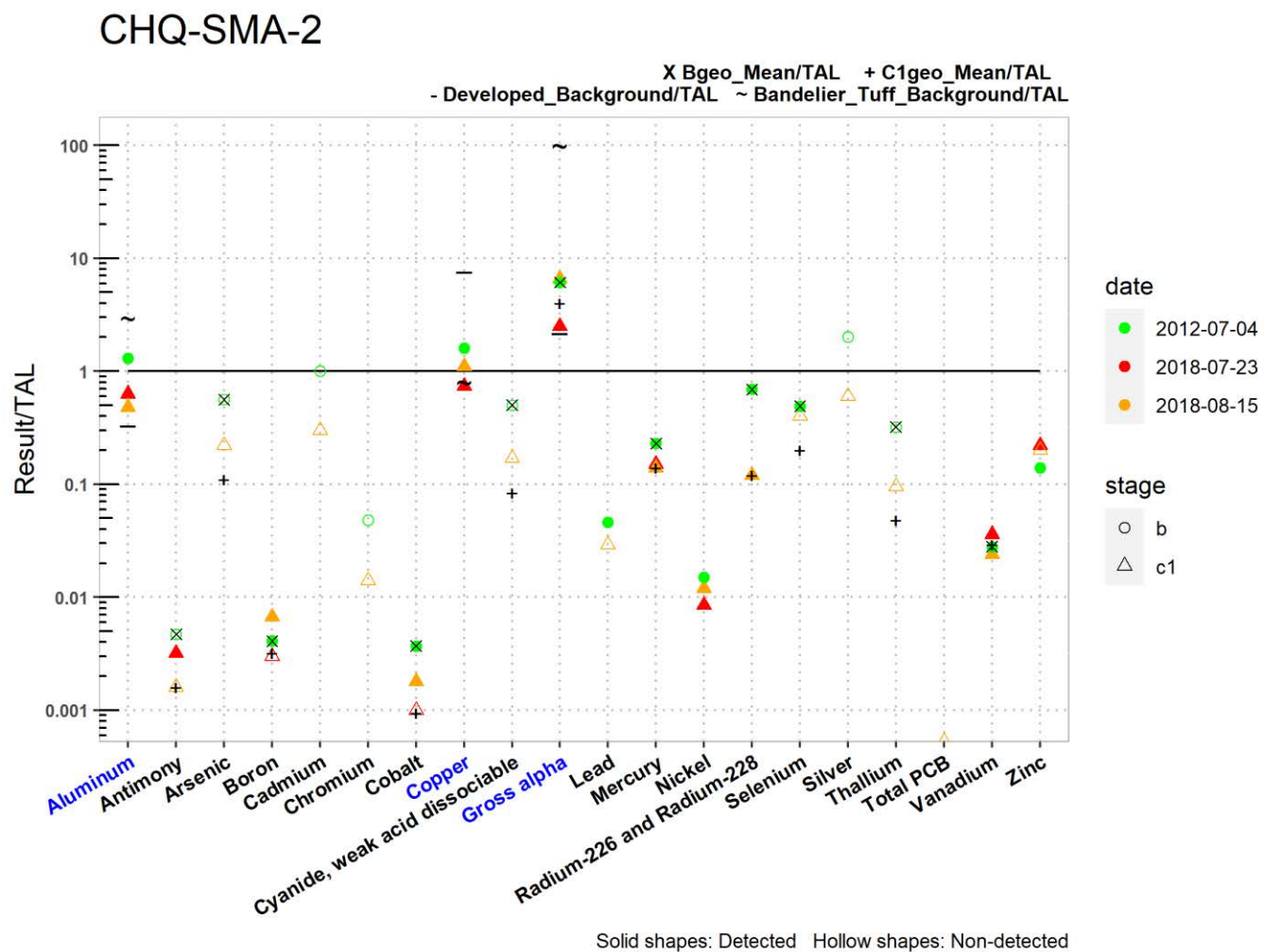


Figure 243-2 Analytical results summary for CHQ-SMA-2

		CHQ-SMA-2																			
		Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Total PCB	Vanadium	Zinc
TAL		750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	0.00064	100	42
MQL		2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	NA	50	20
ATAL		NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	0.00064	100	NA
MTAL		750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	NA	42
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
Bgeo_mean/ATAL		NA	0.0047	0.56	0.0041	NA	NA	0.0037	NA	0.50	<b>6.1</b>	NA	0.23	NA	0.69	0.49	NA	0.32	NA	0.028	NA
C1geo_mean/ATAL		NA	0.0016	0.11	0.0032	NA	NA	0.00094	NA	0.084	<b>4.0</b>	NA	0.14	NA	0.12	0.20	NA	0.048	NA	0.029	NA
2012-07-04 d		<b>1.3</b>	NA	NA	0.0041	NA	NA	0.0037	<b>1.6</b>	NA	<b>6.1</b>	0.046	0.23	0.015	0.69	0.49	NA	NA	NA	0.028	0.14
2012-07-04 nd		NA	0.0047	0.56	NA	1.0	0.048	NA	NA	0.50	NA	NA	NA	NA	NA	NA	2.0	0.32	NA	NA	NA
2018-07-23 d		0.63	0.0032	NA	NA	NA	NA	NA	0.74	NA	<b>2.5</b>	NA	0.15	0.0085	0.12	NA	NA	NA	NA	0.036	0.22
2018-07-23 nd		NA	NA	0.22	0.0030	0.30	0.014	0.0010	NA	0.17	NA	0.029	NA	NA	NA	0.40	0.60	0.095	0	NA	NA
2018-08-15 d		0.48	NA	NA	0.0067	NA	NA	0.0018	<b>1.1</b>	NA	<b>6.6</b>	NA	0.14	0.012	0.12	NA	NA	NA	NA	0.024	NA
2018-08-15 nd		NA	0.0016	0.22	NA	0.30	0.014	NA	NA	0.17	NA	0.029	NA	NA	NA	0.40	0.60	0.095	0	NA	0.20

Bold font indicate TAL exceedance; d=detected\_result/TAL, nd=nondetected\_result/TAL

Figure 243-2 (continued) Analytical results summary for CHQ-SMA-2

## 244.0 CHQ-SMA-3.05: SWMU 33-010(f)

### 244.1 Site Descriptions

One historical industrial activity area is associated with Q004, CHQ-SMA-3.05: Site 33-010(f).

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 the SWMU was identified during a 1987 reconnaissance conducted by the former ER Project and describes it 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<sup>2</sup> 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 implemented at SWMUs 33-002(a–e), directly northwest of SWMU 33-010(f), only small piles of soil and a few pieces of concrete were observed to be present at the Site. 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 the former Tritium Facility (former building 33-86), and a former surface disposal area. MDA K is in the southeast area of Main Site at TA-33. During the 2020 investigation, all remaining residual debris (approximately 6.25 yd<sup>3</sup>) was removed from SWMU 33-010(f).

SWMU 33-010(f) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls. SWMU 33-010(f) was included in the addendum to the Chaquehui Aggregate Area investigation report that was submitted to NMED in October 2021. The addendum recommended additional sampling and a Phase III investigation work plan is being developed.

The project map (Figure 244-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps>.

### 244.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 244-1).

Enhanced controls were installed and certified on August 10, 2015, and submitted to EPA on August 17, 2015, as part of corrective action. Photographs of the enhanced controls are available at <https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications>.

**Table 244-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q00402040009	Established Vegetation	-	X	X	-	B
Q00403010015	Earthen Berm	-	X	-	X	EC
Q00403060002	Straw Wattle	X	-	-	X	CB
Q00403120014	Rock Berm	-	X	-	X	EC
Q00403140010	Coir Log	X	-	-	X	EC
Q00403140011	Coir Log	-	X	-	X	EC
Q00403140012	Coir Log	X	-	-	X	EC
Q00403140013	Coir Log	-	X	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 244.3 Storm Water Monitoring

SWMU 33-010(f) is monitored within CHQ-SMA-3.05. Following the installation of baseline control measures, a baseline storm water sample was collected on September 10, 2013 (Figure 244-2). In Figure 244-2, cadmium, selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL; the MDLs for these analytes are below their respective TALs. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded TAL exceedances for gross-alpha activity (60.3 pCi/L) and PCB concentrations (0.9 ng/L) and are presented in Figure 244-2.

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

*SWMU 33-010(f):*

- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at this Site. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.
- PCBs are not known to have been associated with industrial materials historically managed at this Site. One PCB mixture (Aroclor-1254) was detected in shallow Consent Order samples. Aroclor-1254 was detected in two of three shallow soil samples with the residential SSL being approximately 338 times the maximum concentration of the detection.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff Background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 244-2. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figure 244-2.

Monitoring location CHQ-SMA-3.05 is located on Bandelier Tuff, and there is no run-on from developed facilities (e.g., buildings, parking lots, and pavement); therefore, the Bandelier Tuff Background UTL was compared with gross-alpha and PCB storm water exceedances. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L. The 2013 gross-alpha result is less than this value.
- PCBs—The PCB UTL from background storm water containing sediment derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2013 is less than this value.

The analytical results for this sample are reported in the 2013 Annual Report.

#### 244.4 Inspections and Maintenance

RG340 recorded five storm events at CHQ-SMA-3.05 during the 2021 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in the following table.

**Table 244-2 Control Measure Inspections during 2021**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-85994	6-9-2021
Storm Rain Event	BMP-87496	8-5-2021
Storm Rain Event	BMP-88654	9-2-2021

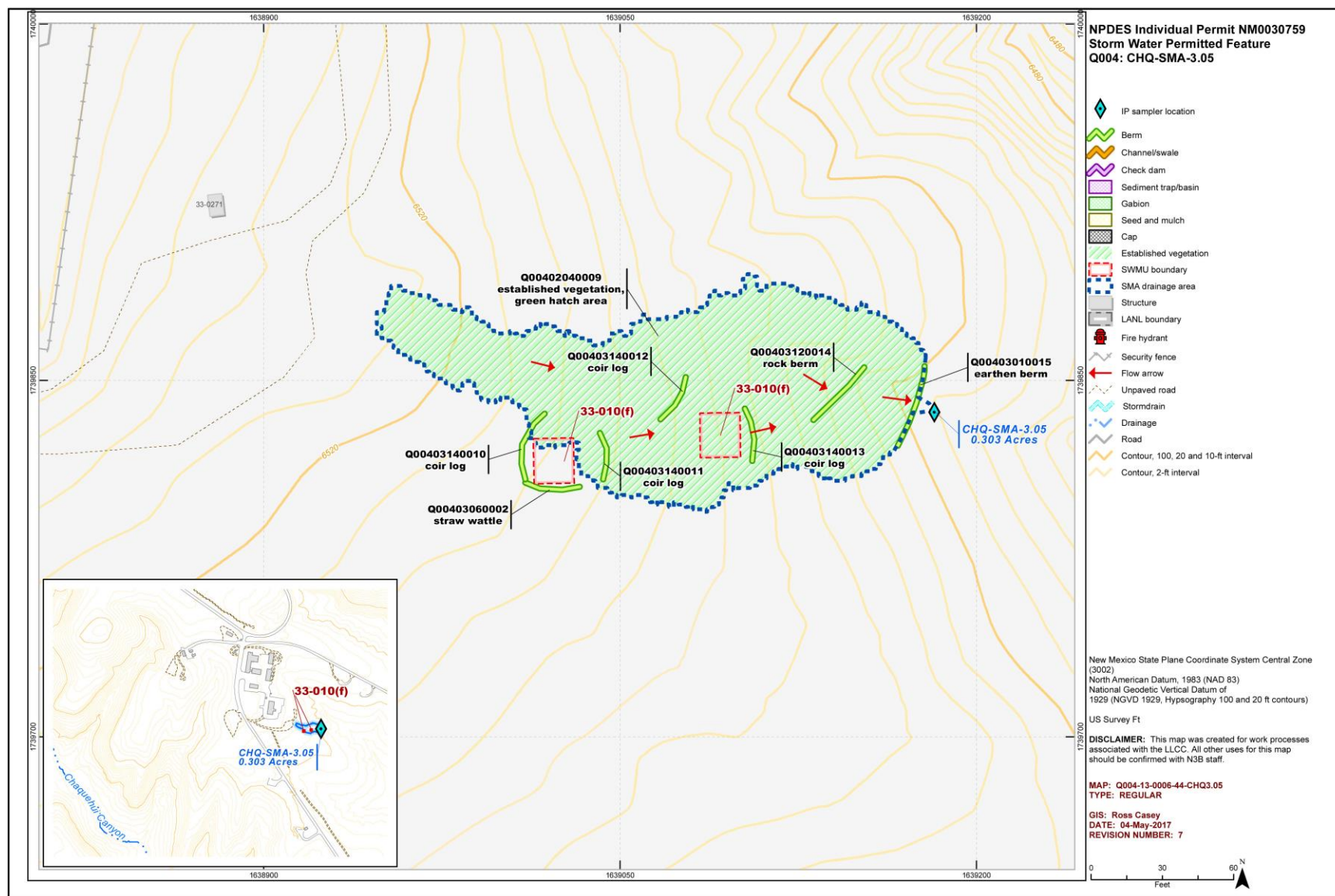
No maintenance activities or facility modifications affecting discharge were conducted at CHQ-SMA-3.05 in 2021.

#### 244.5 Compliance Status

The Site associated with CHQ-SMA-3.05 is a Moderate Priority Site. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative compliance at the end of 2021. Table 244-3 presents the 2021 compliance status.

**Table 244-3 Compliance Status during 2021**

Site	Compliance Status on Jan 1, 2021	Compliance Status on Dec 31, 2021	Comments
SWMU 33-010(f)	Enhanced Controls Corrective Action Monitoring	Enhanced Controls Corrective Action Monitoring	LANL, August 17, 2015, "NPDES Permit No. NM0030759-Submittal of Certification of Installation of Enhanced Control Measures for Eight Site Monitoring Areas."



**Figure 244-1 CHQ-SMA-3.05 location map**

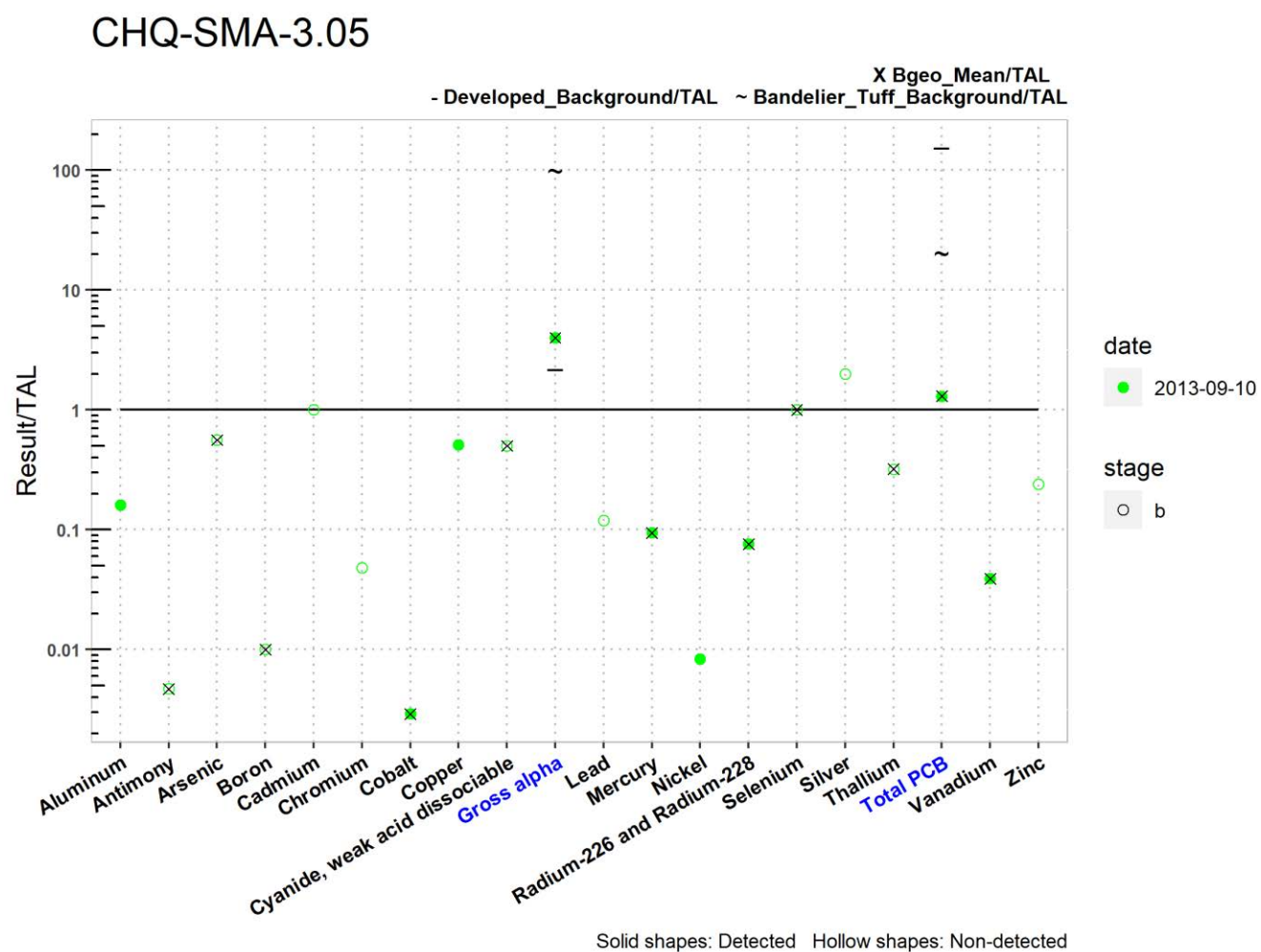


Figure 244-2 Analytical results summary for CHQ-SMA-3.05

CHQ-SMA-3.05																				
	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Total PCB	Vanadium	Zinc
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	0.00064	100	42
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	NA	50	20
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	0.00064	100	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	NA	42
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
Bgeo_mean/ATAL	NA	0.0047	0.56	0.010	NA	NA	0.0029	NA	0.50	<b>4.0</b>	NA	0.094	NA	0.076	1.0	NA	0.32	<b>1.3</b>	0.039	NA
2013-09-10 d	0.16	NA	NA	NA	NA	NA	0.0029	0.51	NA	<b>4.0</b>	NA	0.094	0.0084	0.076	NA	NA	NA	<b>1.3</b>	0.039	NA
2013-09-10 nd	NA	0.0047	0.56	0.010	1.0	0.048	NA	NA	0.50	NA	0.12	NA	NA	NA	1.0	2.0	0.32	NA	NA	0.24

Bold font indicate TAL exceedance; d=detected\_result/TAL, nd=nondetected\_result/TAL

Figure 244-2 (continued) Analytical results summary for CHQ-SMA-3.05

## 245.0 CHQ-SMA-4: SWMU 33-011(e)

### 245.1 Site Descriptions

One historical industrial activity area is associated with Q005, CHQ-SMA-4: Site 33-011(e).

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 in this area. The date the materials were first stored at this Site is not known. At the time the OU 1122 RFI work plan was prepared in 1992, all drums had been removed from the Site; however, stained soil was observed in the former storage area. The Site is currently inactive.

SWMU 33-011(e) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.

The project map (Figure 245-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps>.



### 245.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 245-1).

Enhanced controls were installed and certified on October 4, 2021, and submitted to EPA on October 12, 2021, as part of corrective action. Photographs of the enhanced controls are available at <https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications>.

**Table 245-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q00502040019	Established Vegetation	-	X	X	-	B
Q00503010020	Earthen Berm	-	X	-	X	B
Q00503010023	Earthen Berm	X	-	-	X	EC
Q00503010024	Earthen Berm	-	X	-	X	EC
Q00504060025	Rip Rap	-	X	X	-	EC

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q00506010003	Rock Check Dam	-	X	-	X	CB
Q00506010004	Rock Check Dam	-	X	-	X	CB
Q00506010005	Rock Check Dam	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 245.3 Storm Water Monitoring

SWMU 33-011(e) is monitored within CHQ-SMA-4. A baseline storm water sample was collected on July 23, 2018 (Figure 245-2). Analytical results from this sample yielded TAL exceedances for gross-alpha activity (978 pCi/L), PCB concentrations (635 ng/L), and selenium (16 µg/L) and are presented in Figure 245-2.

The monitoring location for CHQ-SMA-4 has been relocated to a location more likely to collect a corrective action confirmation monitoring sample after installation of enhanced control measures. Sampler coordinates and the SMA drainage area have been updated in Attachment 4.

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

*SWMU 33-011(e):*

- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.
- PCBs are not known to be associated with industrial materials historically managed at the Site. Consent Order samples from 2020 were analyzed for PCB mixtures; there were no PCB detections in shallow soil samples.
- Selenium is not known to be associated with industrial materials historically managed at the Site. Selenium was detected above soil BV in 11 of 56 shallow 2020 Consent Order samples with a maximum concentration 1.4 times greater than soil BV.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff Background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 245-2. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figure 245-2.

The 2021 corrective action monitoring location for CHQ-SMA-4 updated the drainage area to be located on Bandelier Tuff, with minimal to no run-on occurring from developed facilities. In baseline monitoring CHQ-SMA-4 received storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff; therefore, calculated storm water UTLs for developed areas were compared with gross-alpha and PCB storm water exceedances. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. The 2018 gross-alpha result is between these two values.
- PCBs—The PCB UTL from background storm water containing sediment derived from Bandelier Tuff is 11.7 ng/L, and the PCB UTL for run-on from a developed landscape is 98 ng/L. The PCB result from 2018 is greater than both values.
- Selenium—A UTL could not be calculated because of the insufficient number of detections.

The analytical results for this sample are reported in the 2018 Annual Report.

#### **245.4 Inspections and Maintenance**

RG340 recorded five storm events at CHQ-SMA-4 during the 2021 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in the following table.

**Table 245-2 Control Measure Inspections during 2021**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-85990	6-9-2021
Verification	BMP-87106	7-27-2021
Storm Rain Event	BMP-87492	8-3-2021
Storm Rain Event	BMP-87852	8-10-2021
Storm Rain Event	BMP-88650	8-30-2021

**Table 245-3 Maintenance during 2021**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-88581	Maintained and repaired Earthen Berm Q00503010024 after storm event occurring immediately before verification inspection. Base course was placed and compacted as needed to repair berm voids. A defined spillway shoulder with a depth of 6 in. was re-formed and compacted. TRM was replaced as needed on berm, and rip rap apron of berm was extended to protect toe of berm from potential future erosion.	9-15-2021	50 day(s)	Maintenance was delayed.
BMP-89314	Rip rap on berm Q00503010024 was extended approximately 12 ft to the southeast to match apron to berm spillway after maintenance conducted on 9-15-2021	10-28-2021	43 day(s)	Maintenance was delayed.

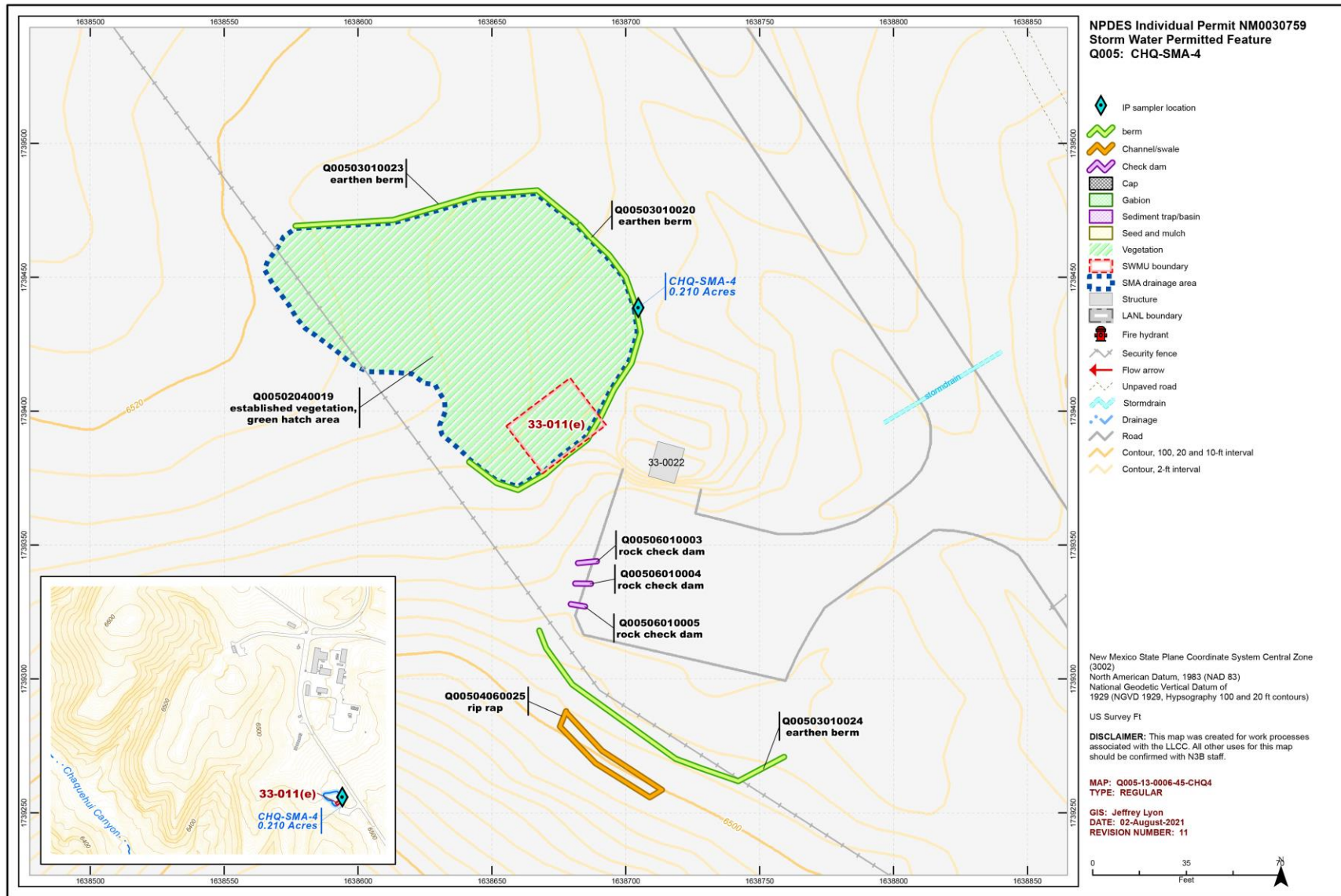
### 245.5 Compliance Status

The Site associated with CHQ-SMA-4 is a Moderate Priority Site. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2021. Table 245-4 presents the 2021 compliance status.

**Table 245-4 Compliance Status during 2021**

Site	Compliance Status on Jan 1, 2021	Compliance Status on Dec 31, 2021	Comments
SWMU 33-011(e)	Building Enhanced Controls	Enhanced Control Corrective Action Monitoring	N3B, October 12, 2021, "Submittal of Certification of Installation of Enhanced Control Measures for CHQ-SMA-4."

Further details regarding compliance status and planned activities can be found in Attachment 6 for Sites in this SMA.



**Figure 245-1 CHQ-SMA-4 location map**

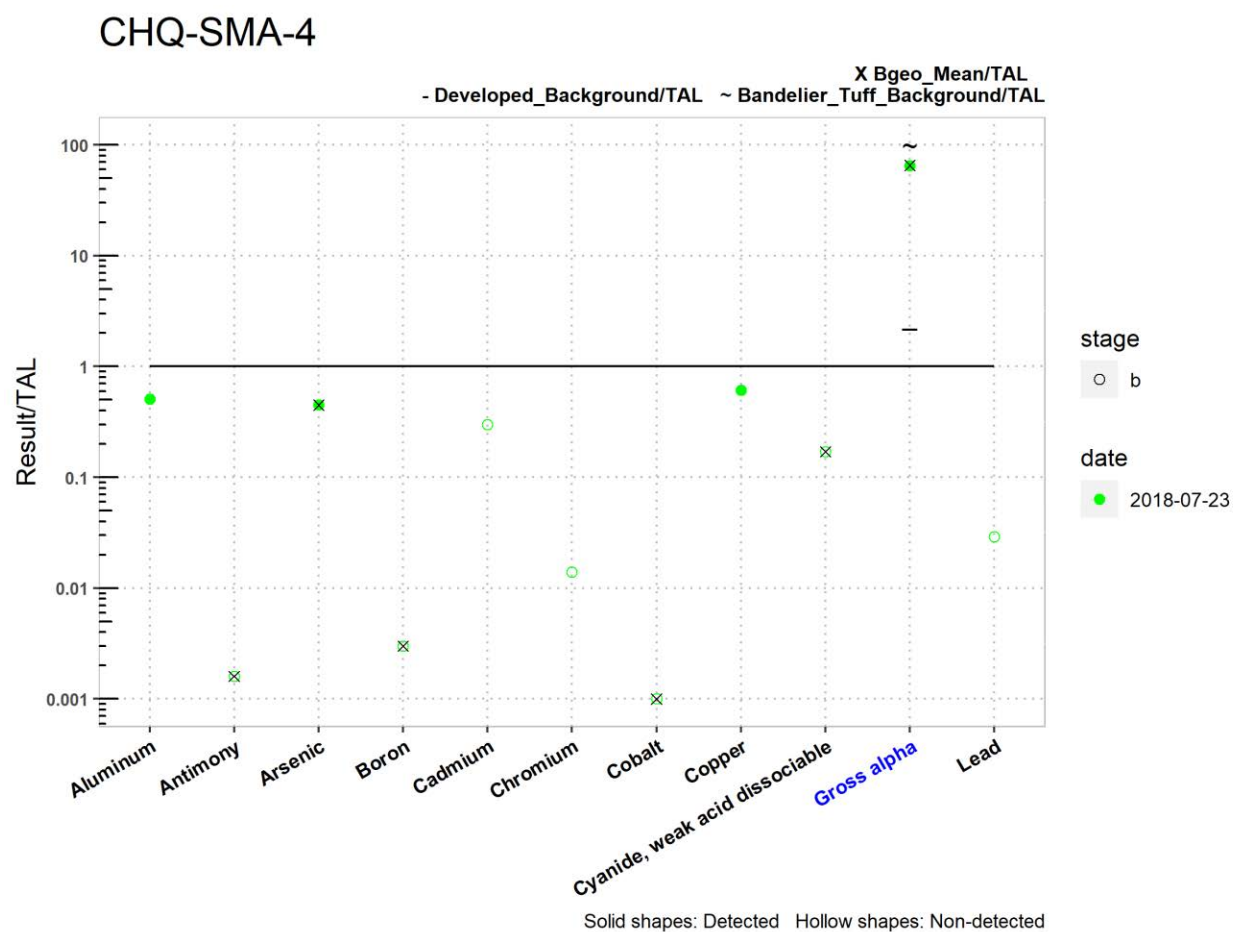


Figure 245-2 Analytical results summary for CHQ-SMA-4

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L
Bgeo_mean/ATAL	NA	0.0016	0.45	0.0030	NA	NA	0.0010	NA	0.17	<b>65</b>	NA
2018-07-23 d	0.51	NA	0.45	NA	NA	NA	NA	0.61	NA	<b>65</b>	NA
2018-07-23 nd	NA	0.0016	NA	0.0030	0.30	0.014	0.0010	NA	0.17	NA	0.029

Bold font indicate TAL exceedance;  
d=detected\_result/TAL, nd=nondetected\_result/TAL

Figure 245-2 (continued) Analytical results summary for CHQ-SMA-4

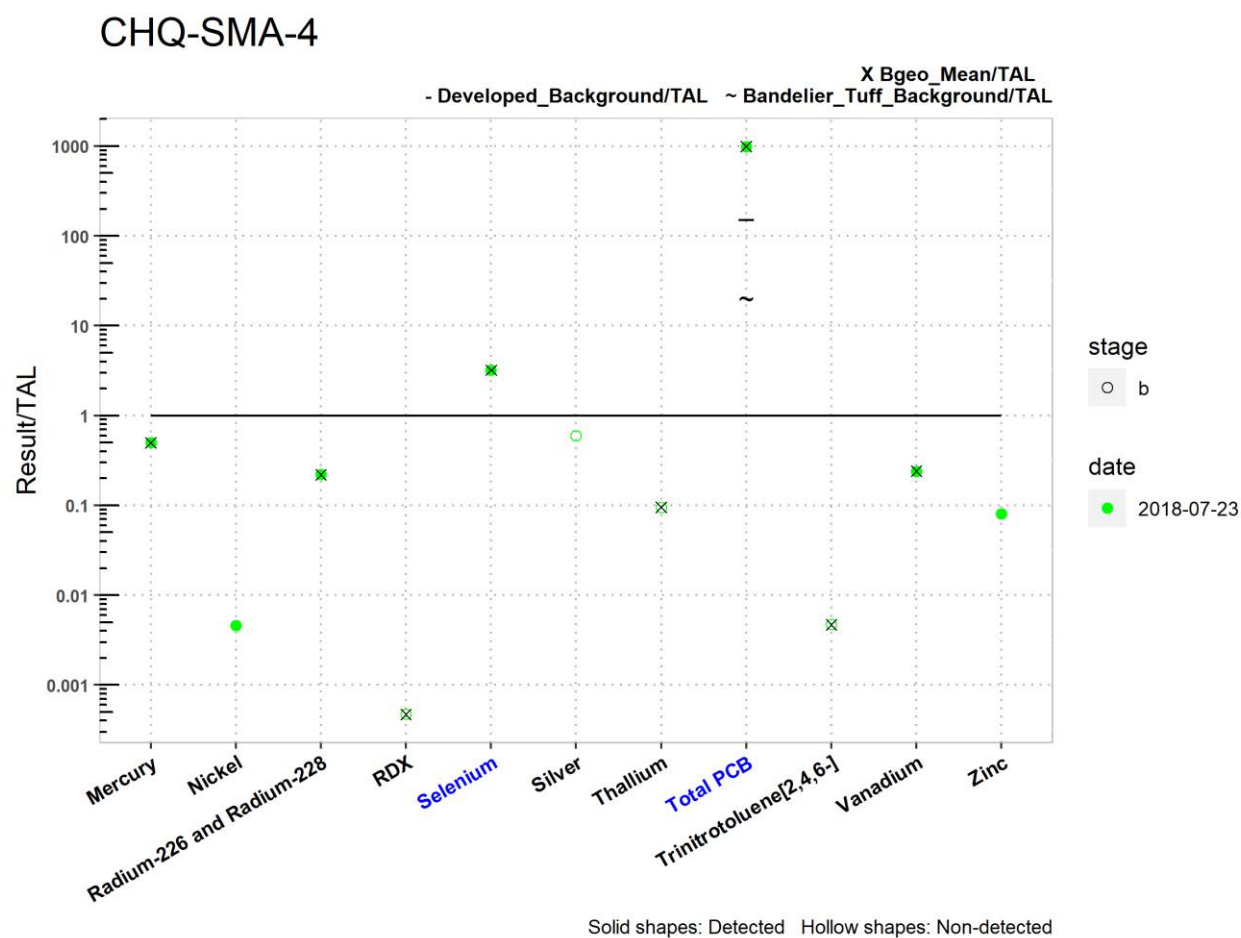


Figure 245-2 (continued)

Analytical results summary for CHQ-SMA-4

	CHQ-SMA-4										
	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Total PCB	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
TAL	0.77	170	30	200	5	0.5	6.3	0.00064	20	100	42
MQL	0.005	0.5	NA	NA	5	0.5	0.5	NA	NA	50	20
ATAL	0.77	NA	30	200	5	NA	6.3	0.00064	20	100	NA
MTAL	1.4	170	NA	NA	20	0.4	NA	NA	NA	NA	42
unit	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Bgeo_mean/ATAL	0.50	NA	0.22	0.00047	<b>3.2</b>	NA	0.095	<b>990</b>	0.0047	0.24	NA
2018-07-23 d	0.50	0.0046	0.22	NA	<b>3.2</b>	NA	NA	<b>990</b>	NA	0.24	0.080
2018-07-23 nd	NA	NA	NA	0.00047	NA	0.60	0.095	NA	0.0047	NA	NA

Bold font indicate TAL exceedance;

d=detected\_result/TAL, nd=nondetected\_result/TAL

Figure 245-2 (continued) Analytical results summary for CHQ-SMA-4

## 246.0 CHQ-SMA-4.1: SWMU 33-016

### 246.1 Site Descriptions

One historical industrial activity area is associated with Q006, CHQ-SMA-4.1: Site 33-016.

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 × 2 ft × 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 for Field Unit 23, OU 1122, 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. An engineering drawing 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 small side canyon to 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 VCA implemented at SWMU 33-016 in 1995 involved removing the sump contents, filling the sump with approximately 3 yd<sup>3</sup> of sand and gravel, and capping the sump with 1 ft of concrete.

SWMU 33-016 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.

The project map (Figure 246-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps>.

### 246.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 246-1).

**Table 246-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q00602040008	Established Vegetation	-	X	X	-	B
Q00603060009	Straw Wattle	X	-	-	X	B
Q00603060010	Straw Wattle	X	-	-	X	B
Q00606010002	Rock Check Dam	-	X	-	X	CB
Q00606010003	Rock Check Dam	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

### 246.3 Storm Water Monitoring

SWMU 33-016 is monitored within CHQ-SMA-4.1. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 246-2). In Figure 246-2, cadmium, selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL; the MDLs for these analytes are below their respective TALs. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded a TAL exceedance for gross-alpha activity (34.5 pCi/L) and are presented in Figure 246-2.

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

*SWMU 33-016:*

- Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff Background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 246-2. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figure 246-2.

Monitoring location CHQ-SMA-4.1 drainage area is located on Bandelier Tuff, and there is no run-on from developed facilities (e.g., buildings, parking lots, and pavement); therefore, the Bandelier Tuff Background UTL was compared with the gross-alpha storm water exceedances. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L. The 2013 gross-alpha result is less than this value.

The analytical results for this sample are reported in the 2013 Annual Report.

### 246.4 Inspections and Maintenance

RG340 recorded five storm events at CHQ-SMA-4.1 during the 2021 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 246-2 Control Measure Inspections during 2021**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-85995	6-9-2021
Storm Rain Event	BMP-87497	8-3-2021
Storm Rain Event	BMP-87863	8-10-2021
Storm Rain Event	BMP-88656	8-30-2021

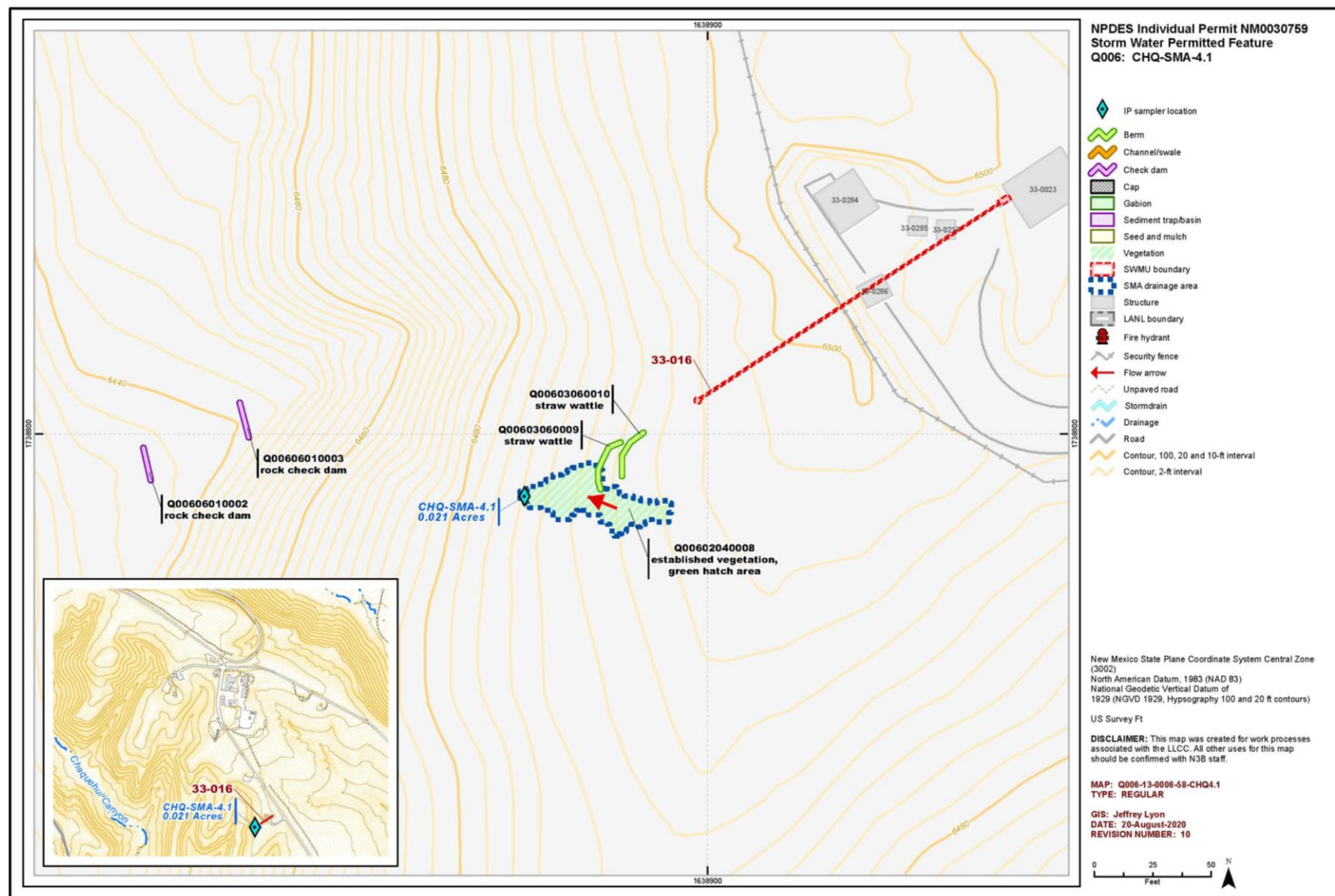
No maintenance activities or facility modifications affecting discharge were conducted at CHQ-SMA-4.1 in 2021.

### 246.5 Compliance Status

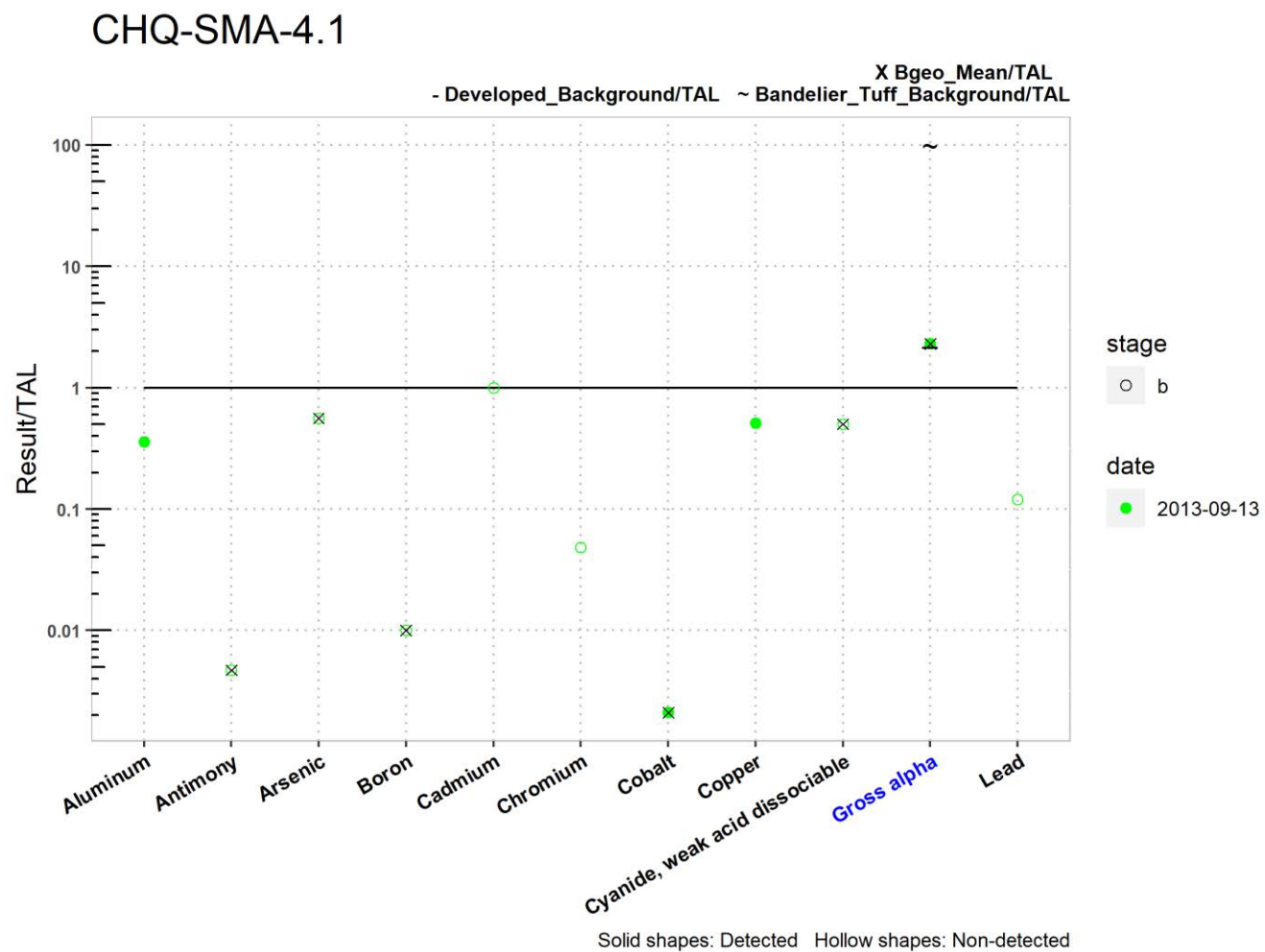
The Site associated with CHQ-SMA-4.1 is a Moderate Priority Site. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2021. Table 246-3 presents the 2021 compliance status.

**Table 246-3 Compliance Status during 2021**

Site	Compliance Status on Jan 1, 2021	Compliance Status on Dec 31, 2021	Comments
SWMU 33-016	Alternative Compliance Requested	Alternative Compliance Requested	LANL, May 6, 2015, "Alternative Compliance Request for 19 Site Monitoring Area/Site Combinations Exceeding Target Action Levels for Gross-Alpha Radioactivity."



**Figure 246-1 CHQ-SMA-4.1 location map**



**Figure 246-2 Analytical results summary for CHQ-SMA-4.1**

CHQ-SMA-4.1											
	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17
MQL	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5
ATAL	NA	640	9	5000	NA	NA	1000	NA	10	15	NA
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L	ug/L
Bgeo_mean/ATAL	NA	0.0047	0.56	0.010	NA	NA	0.0021	NA	0.50	<b>2.3</b>	NA
2013-09-13 d	0.36	NA	NA	NA	NA	NA	0.0021	0.51	NA	<b>2.3</b>	NA
2013-09-13 nd	NA	0.0047	0.56	0.010	1.0	0.048	NA	NA	0.50	NA	0.12

Bold font indicate TAL exceedance;  
d=detected\_result/TAL, nd=nondetected\_result/TAL

Figure 246-2 (continued) Analytical results summary for CHQ-SMA-4.1

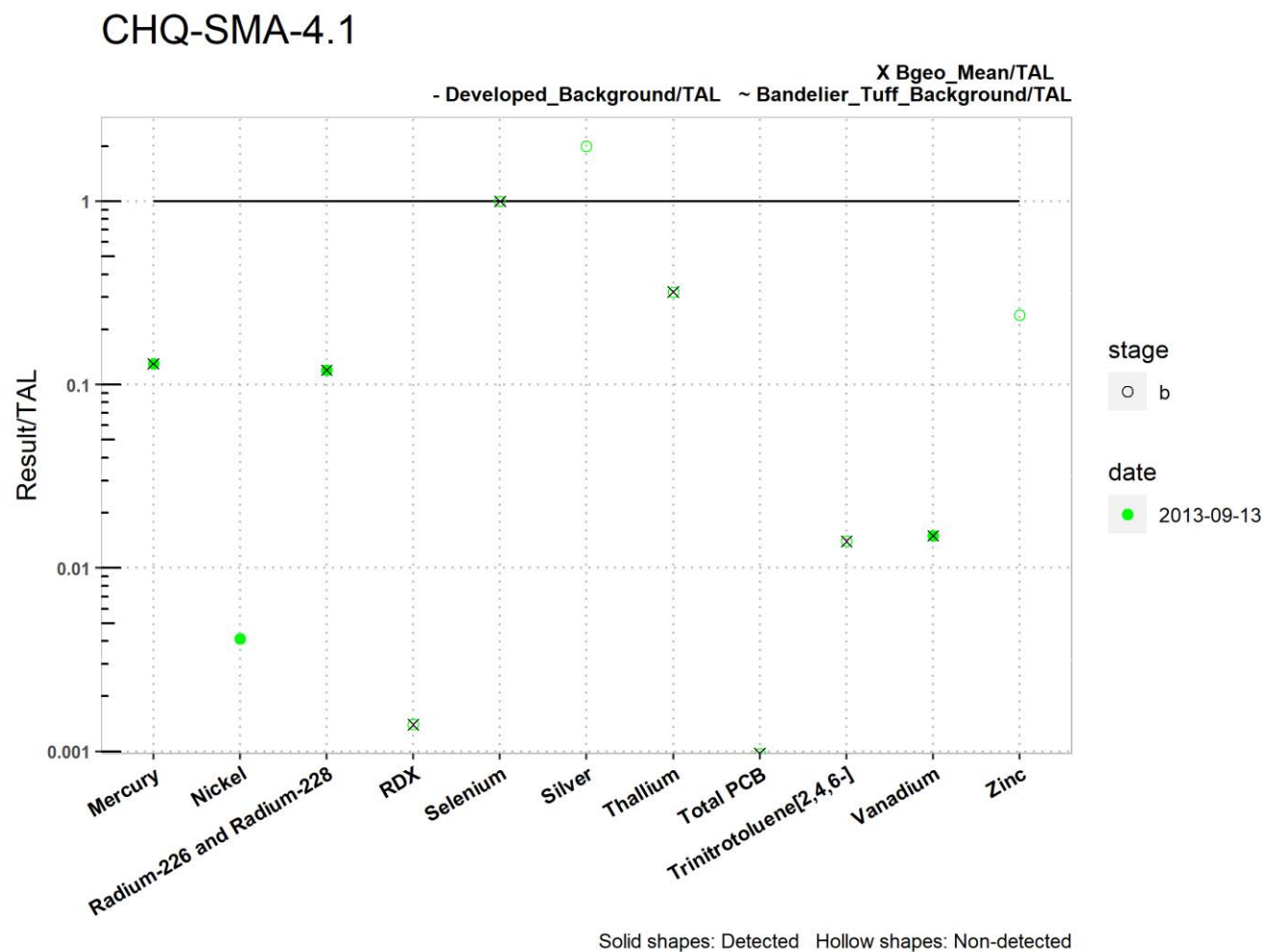


Figure 246-2 (continued) Analytical results summary for CHQ-SMA-4.1

	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Total PCB	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
<b>TAL</b>	0.77	170	30	200	5	0.5	6.3	0.00064	20	100	42
<b>MQL</b>	0.005	0.5	NA	NA	5	0.5	0.5	NA	NA	50	20
<b>ATAL</b>	0.77	NA	30	200	5	NA	6.3	0.00064	20	100	NA
<b>MTAL</b>	1.4	170	NA	NA	20	0.4	NA	NA	NA	NA	42
<b>unit</b>	ug/L	ug/L	pCi/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
<b>Bgeo_mean/ATAL</b>	0.13	NA	0.12	0.0014	1.0	NA	0.32	0	0.014	0.015	NA
<b>2013-09-13 d</b>	0.13	0.0041	0.12	NA	NA	NA	NA	NA	NA	0.015	NA
<b>2013-09-13 nd</b>	NA	NA	NA	0.0014	1.0	2.0	0.32	0	0.014	NA	0.24

Bold font indicate TAL exceedance;  
d=detected\_result/TAL, nd=nondetected\_result/TAL

Figure 246-2 (continued) Analytical results summary for CHQ-SMA-4.1

## 247.0 CHQ-SMA-4.5: AOC 33-011(b)

### 247.1 Site Descriptions

One historical industrial activity area is associated with Q007, CHQ-SMA-4.5: Site 33-011(b).

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 x 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 in 1984, and most of the materials and debris were removed at that time, although some debris consisting of scrap iron and a large, insulated tank remained on-site. Approximately 75% of the area was scraped and leveled to or near the tuff bedrock. During the 1996 VCA, all remaining surface debris was removed from the Site. A total of 2 yd<sup>3</sup> of nonhazardous/nonradioactive debris and 0.5 ft<sup>3</sup> of radioactive debris was removed. No confirmation samples were collected during the VCA because no soil was removed.

AOC 33-011(b) has been referred to as SWMU 33-011(b) in historical documents.

AOC 33-011(b) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.

The project map (Figure 247-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps>.

### 247.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 247-1).

**Table 247-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q00702040010	Established Vegetation	-	X	X	-	B
Q00703010009	Earthen Berm	-	X	-	X	B
Q00703060022	Straw Wattle	-	X	-	X	B
Q00703140018	Coir Log	-	X	-	X	B
Q00703140020	Coir Log	-	X	-	X	B
Q00703140021	Coir Log	-	X	-	X	B
Q00706010002	Rock Check Dam	-	X	-	X	CB
Q00706010003	Rock Check Dam	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

### 247.3 Storm Water Monitoring

AOE 33-011(b) is monitored within CHQ-SMA-4.5. Following the installation of baseline control measures, a baseline storm water sample was collected on July 25, 2013 (Figure 247-2). In Figure 247-2, cadmium and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL; the MDLs for these analytes are below their respective TALs. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded a TAL exceedance for gross-alpha activity (103 pCi/L) and are presented in Figure 247-2.

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

*AOE 33-011(b):*

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site.. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff Background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 247-2. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figure 247-2.

Monitoring location CHQ-SMA-4.5 receives storm water run-on from landscapes containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L. The 2013 gross-alpha result is less than this value.

The analytical results for this sample are reported in the 2013 Annual Report.

### 247.4 Inspections and Maintenance

RG340 recorded five storm events at CHQ-SMA-4.5 during the 2021 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in the following table.

**Table 247-2 Control Measure Inspections during 2021**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-85996	6-9-2021
Storm Rain Event	BMP-87498	8-5-2021
Storm Rain Event	BMP-87129	9-7-2021

No maintenance activities or facility modifications affecting discharge were conducted at CHQ-SMA-4.5 in 2021.

## 247.5 Compliance Status

The Site associated with CHQ-SMA-4.5 is a Moderate Priority Site. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2021. Table 247-3 presents the 2021 compliance status.

**Table 247-3 Compliance Status during 2021**

Site	Compliance Status on Jan 1, 2021	Compliance Status on Dec 31, 2021	Comments
AOC 33-011(b)	Alternative Compliance Requested	Alternative Compliance Requested	LANL, May 6, 2015, "Alternative Compliance Request for 19 Site Monitoring Area/Site Combinations Exceeding Target Action Levels for Gross-Alpha Radioactivity."

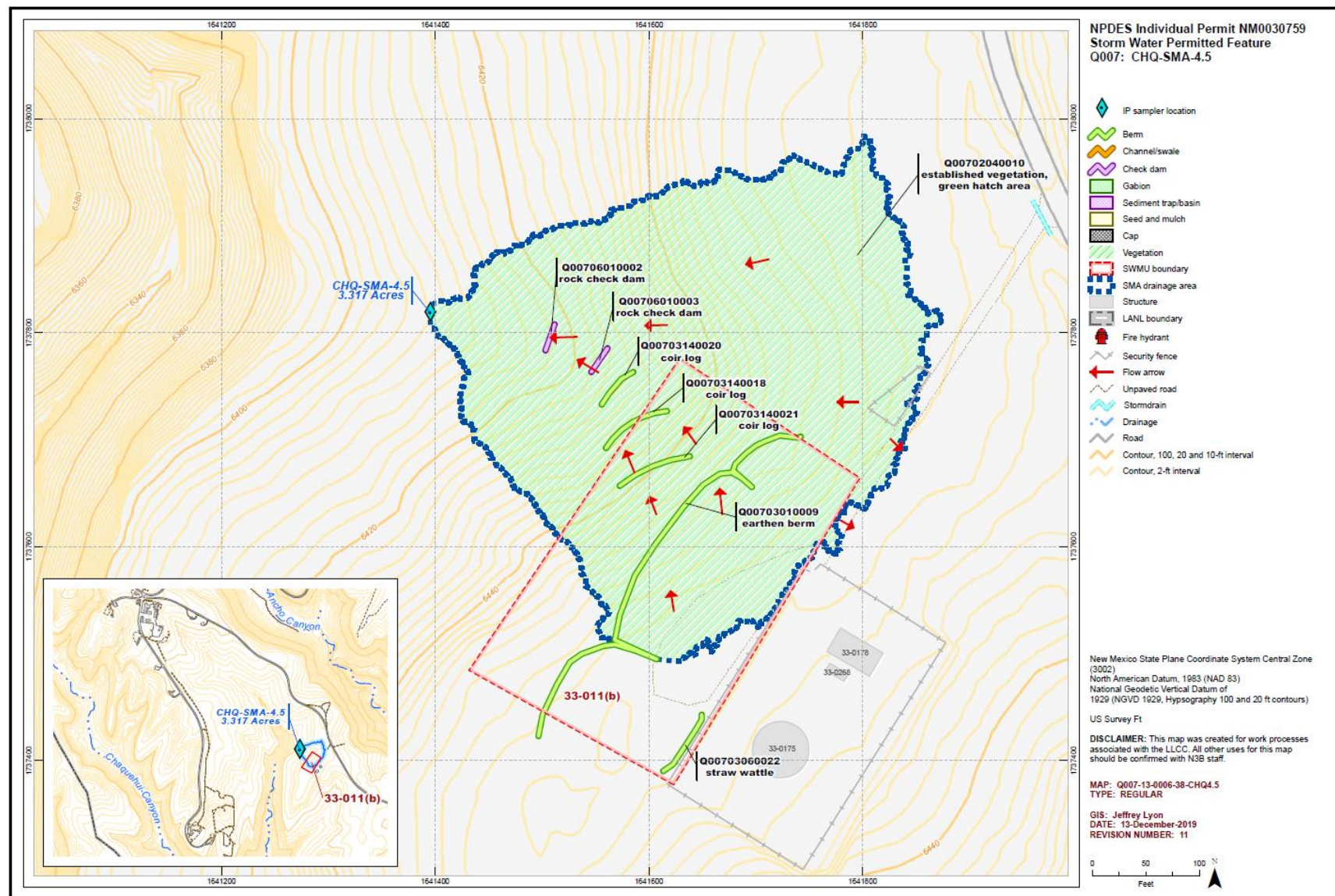


Figure 247-1 CHQ-SMA-4.5 location map

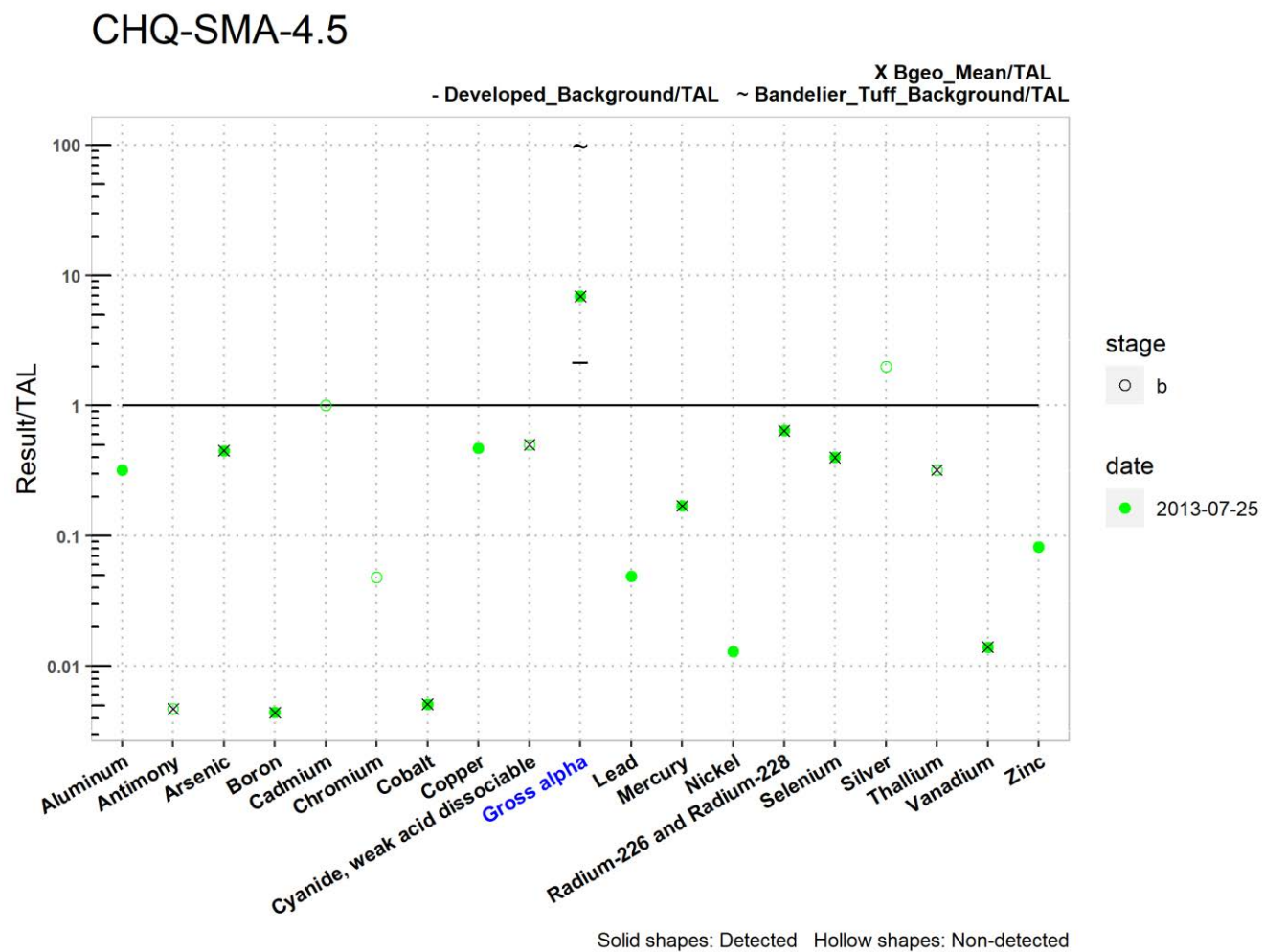


Figure 247-2 Analytical results summary for CHQ-SMA-4.5

	CHQ-SMA-4.5																		
	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	Selenium	Silver	Thallium	Vanadium	Zinc
<i>TAL</i>	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	5	0.5	6.3	100	42
<i>MQL</i>	2.5	60	0.5	100	1	10	50	0.5	10	NA	0.5	0.005	0.5	NA	5	0.5	0.5	50	20
<i>ATAL</i>	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	5	NA	6.3	100	NA
<i>MTAL</i>	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	20	0.4	NA	NA	42
<i>unit</i>	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
<i>Bgeo_mean/ATAL</i>	NA	0.0047	0.45	0.0044	NA	NA	0.0051	NA	0.50	<b>6.9</b>	NA	0.17	NA	0.64	0.40	NA	0.32	0.014	NA
<i>2013-07-25 d</i>	0.32	NA	0.45	0.0044	NA	NA	0.0051	0.47	NA	<b>6.9</b>	0.049	0.17	0.013	0.64	0.40	NA	NA	0.014	0.082
<i>2013-07-25 nd</i>	NA	0.0047	NA	NA	1.0	0.048	NA	NA	0.50	NA	NA	NA	NA	NA	NA	2.0	0.32	NA	NA

Bold font indicate TAL exceedance; d=detected\_result/TAL, nd=nondetected\_result/TAL

Figure 247-2 (continued)      Analytical results summary for CHQ-SMA-4.5

## 248.0 CHQ-SMA-5.05: SWMU 33-007(b)

### 248.1 Site Descriptions

One historical industrial activity area is associated with Q008, CHQ-SMA-5.05: Site 33-007(b).

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 and northern gun firing site consisted of a 6 × 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. The concrete pad and gun mount were constructed in June 1952. This area was used to test free-recoil weapons. Tests 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 and 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 and a 1958 aerial photograph of the site. Firing site activities at SWMU 33-007(b) were discontinued in the late 1950s. This area was used to support atmospheric physics measurements in the late 1980s and early 1990s. 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.

A VCA was performed in 1999, during which berm 33-63 was removed. Treated soil was returned back to the location of the former berm, and the Site was graded and compacted. 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.

SWMU 33-007(b) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.

The project map (Figure 248-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps>.

### 248.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 248-1).

**Table 248-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q00802040008	Established Vegetation	-	X	X	-	B
Q00803020006	Base Course Berm	-	X	-	X	CB
Q00804060002	Rip Rap	-	X	X	-	CB
Q00804060005	Rip Rap	X	-	X	-	CB
Q00804060007	Rip Rap	-	X	X	-	CB
Q00806010003	Rock Check Dam	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

### 248.3 Storm Water Monitoring

Through calendar year 2021, storm water flow has not been sufficient for full-volume sample collection at CHQ-SMA-5.05. Baseline monitoring will be extended until one confirmation sample is collected from this SMA.

### 248.4 Inspections and Maintenance

RG340 recorded five storm events at CHQ-SMA-5.05 during the 2021 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized in the following table.

**Table 248-2 Control Measure Inspections during 2021**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-85999	6-9-2021
Storm Rain Event	BMP-87501	8-3-2021
Storm Rain Event	BMP-87871	8-10-2021
Storm Rain Event	BMP-88661	8-30-2021

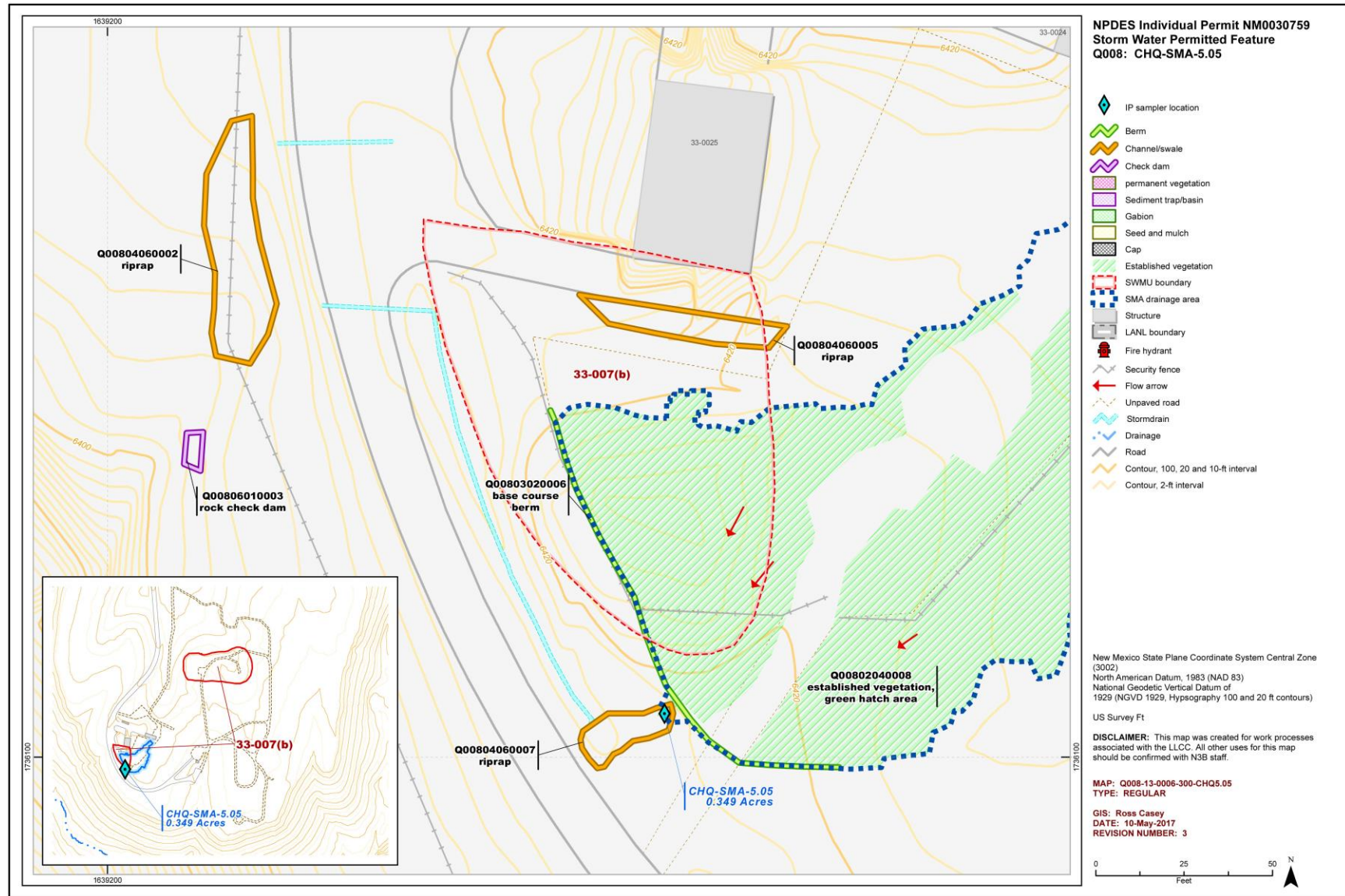
No maintenance activities or facility modifications affecting discharge were conducted at CHQ-SMA-5.05 in 2021.

### 248.5 Compliance Status

The Sites associated with CHQ-SMA-5.05 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP (i.e., November 2015). The IP was under administrative continuance at the end of 2021. Table 248-3 presents the 2021 compliance status.

**Table 248-3 Compliance Status during 2021**

Site	Compliance Status on Jan 1, 2021	Compliance Status on Dec 31, 2021	Comments
SWMU 33-007(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	Initiated 10-31-2011. No samples have been collected since initiation of the Permit.



**Figure 248-1 CHQ-SMA-5.05 location map**

## **249.0 CHQ-SMA-6: SWMUs 33-004(j), 33-006(a), 33-007(b), 33-010(c), 33-010(g), 33-010(h), and 33-014**

### **249.1 Site Descriptions**

Seven historical industrial activity areas are associated with Q009, CHQ-SMA-6: Sites 33-004(j), 33-006(a), 33-007(b), 33-010(c), 33-010(g), 33-010(h), and 33-014.

SWMU 33-004(j) consists of a 4-in. steel storm water 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 that empties into Chaquehui Canyon. A storm water 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. The outfall system includes an outlet drainline coming off the east side of structure 33-26, a channel cut into the tuff, a culvert, and an arroyo draining into Chaquehui Canyon. However, review of engineering drawings and a 1958 aerial photograph of South Site confirmed 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 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 the associated support building known as an x-unit vault (structure 33-26) was constructed in 1950. Use of the site ceased in 1956 and structure 33-26 has remained vacant since then. The shots conducted at the SWMU 33-006(a) shot pad spread debris over much of South Site including the drainage channel below the SWMU 33-004(j) outfall.

SWMU 33-004(j) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.

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 is a 50-ft-diameter circular area located immediately north of and next to the roof of structure 33-26, and the x-unit chamber (i.e., a control chamber that housed a firing voltage distribution system used for remote detonation of test firing). The SWMU 33-006(a) shot pad was built in 1948, and the associated support building, known as an x-unit vault (structure 33-26), was constructed in 1950. Implosion tests performed at the shot pad contained up to 5000 lb of HE. Before detonations, wooden boxes covered the assemblages. Use of the site ceased in 1956 and structure 33-26 has remained vacant since then. The detonations conducted at the SWMU 33-006(a) shot pad scattered debris, shrapnel, and wood fragments over the mesa top of South Site and into Chaquehui Canyon. Shrapnel has been found at distances up to a mile away from the shot pad. The shot pad has not been used since 1955 when implosion testing was discontinued at TA-33. Residual debris was removed from SWMU 33-006(a) during the 2019–2020 Consent Order investigation, and a total of 38 pieces of firing site debris was removed and characterized for disposal. During 2021 investigations, approximately 4.28 yd<sup>3</sup> of contaminated soil was removed to address potential HE, copper, and organic contamination. Each excavation was backfilled with clean fill material and topped with base course to

restore the area to the approximate original grade. SWMU 33-006(a) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted from 2019 to 2021. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended further remediation SWMU 33-006(a) was included in the “Phase II Investigation Work Plan for Chaquehui Canyon Aggregate Area.” The work plan was submitted to NMED in March 2021 and approved by NMED in July 2021, and investigations were completed in 2021. During 2021 investigations, approximately 4.28 yd<sup>3</sup> of contaminated soil was removed to address potential HE, copper, and organic contamination. The “Phase II Investigation Report for Chaquehui Canyon Aggregate Area,” submitted to NMED in August 2021, recommended further sampling at the Site to define nature and extent for copper. A Phase III investigation work plan is being prepared.

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 and 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. 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 into the berm and the catcher box. Projectiles fired from the guns contained uranium, beryllium, titanium, and tritium housed inside steel casings. The second and 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 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 in the late 1980s and early 1990s. 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.

A VCA was performed in 1999, during which berm 33-63 was removed. Treated soil was returned back to the location of the former berm, and the Site was graded and compacted. 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.

SWMU 33-007(b) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.

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 wide × 30 ft long × 2-4 ft 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



CHQ-SMA-6, Redi-Rock Berm,  
Q00903150043, (Photo ID 46213-26)

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 bulldozed over the canyon edge and onto the hillside below. During the VCA performed at the Site in 1999, all visible debris was removed from the site. During the 2020 investigation, residual debris was removed from SWMU 33-010(c). SWMU 33-010(c) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted from 2019 to 2021. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for additional sampling to define the nature and extent of contamination. SWMU 33-010(c) was included in the “Phase II Investigation Work Plan for Chaquehui Canyon Aggregate Area.” The work plan was submitted to NMED in March 2021 and approved by NMED in July 2021, and investigations were completed in 2021. During 2021 investigations, excavation of contaminated environmental media was conducted at SWMU 33-010(c). Approximately 1 yd<sup>3</sup> of soil with elevated copper, lead, and zinc concentrations was removed to address potential unacceptable ecological risk. The excavation area was backfilled with clean fill material and topped with base course from an off-site source to restore the area to the approximate original grade. The “Phase II Investigation Report for Chaquehui Canyon Aggregate Area,” submitted to NMED in August 2021, recommended the Site for corrective action complete without controls.

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 present at the Site, 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. A VCA conducted in 1995 resulted in the removal of 4 yd<sup>3</sup> of nonhazardous, nonradioactive debris and 2 ft<sup>2</sup> of radioactive debris from the Site. During the 2020 investigation, residual debris was removed from SWMU 33-010(g).

SWMU 33-010(g) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete with controls. 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 is scattered on the soil surface. The debris includes metal, wood, cable, and shrapnel. The area is approximately 100 × 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. During the 1994 Phase I RFI, a geophysical survey was conducted to determine the presence of subsurface anomalies; none were identified. A backhoe was used to excavate a 42-ft-long trench (0.5–2 ft deep) through the center of the Site. Debris was not observed during the trenching activities. No shallow surface samples were collected during the RFI. During the 2020 investigation, residual debris was removed from SWMU 33-010(h).

SWMU 33-010(h) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.

SWMU 33-014 is the former location of an open burn area 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 was 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. SWMU 33-014 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete with controls.

The project map (Figure 249-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps>.

## 249.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 249-1).

Enhanced controls were installed and certified on August 10, 2015, and submitted to EPA on August 17, 2015, as part of corrective action. Photographs of the enhanced controls are available at <https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications>.

**Table 249-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q00902040036	Established Vegetation	-	X	X	-	B
Q00903010017	Earthen Berm	-	X	-	X	CB
Q00903010041	Earthen Berm	-	X	-	X	EC
Q00903060045	Straw Wattle	-	X	-	X	B
Q00903060046	Straw Wattle	-	X	-	X	B
Q00903120030	Rock Berm	X	-	-	X	B
Q00903120031	Rock Berm	X	-	-	X	B
Q00903120032	Rock Berm	X	-	-	X	B
Q00903150043	Redi-Rock Berm	X	-	-	X	EC
Q00906010001	Rock Check Dam	-	X	-	X	CB
Q00906010007	Rock Check Dam	-	X	-	X	CB
Q00906010008	Rock Check Dam	-	X	-	X	CB
Q00906010011	Rock Check Dam	X	-	-	X	CB
Q00906010018	Rock Check Dam	X	-	-	X	CB

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q00906010021	Rock Check Dam	-	X	-	X	CB
Q00906010022	Rock Check Dam	-	X	-	X	CB
Q00906010023	Rock Check Dam	-	X	-	X	CB
Q00906010024	Rock Check Dam	X	-	-	X	CB
Q00906010025	Rock Check Dam	X	-	-	X	CB
Q00906010026	Rock Check Dam	X	-	-	X	CB
Q00906010027	Rock Check Dam	X	-	-	X	CB
Q00906010037	Rock Check Dam	X	-	-	X	B
Q00906010038	Rock Check Dam	X	-	-	X	B
Q00906010039	Rock Check Dam	X	-	-	X	B
Q00906010042	Rock Check Dam	X	-	-	X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 249.3 Storm Water Monitoring

SWMUs 33-004(j), 33-006(a), 33-007(b), 33-010(c), 33-010(g), 33-010(h), and 33-014 are monitored within CHQ-SMA-6. Following the installation of baseline control measures, a baseline storm water sample was collected on July 25, 2013 (Figure 249-2). In Figure 249-2, cadmium and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL; the MDLs for these analytes are below their respective TALs. The values are nondetects and thus not considered TAL exceedances. Analytical results from this sample yielded TAL exceedances for copper (87.6 µg/L) and gross-alpha activity (157 pCi/L) and are presented in Figure 249-2.

Following the installation of enhanced control measures, corrective action storm water samples were collected on May 31, 2021, and July 25, 2021. Analytical results from these samples yielded TAL exceedances for copper (38.9 µg/L and 39.5 µg/L) and gross-alpha activity (15.9 pCi/L and 30.1 pCi/L) and are presented in Figure 249-2.

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

#### *SWMU 33-004(j):*

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 8 of 14 shallow Consent Order samples with a maximum concentration 62 times greater than soil BV.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

*SWMU 33-006(a):*

- Copper is known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 46 of 88 shallow Consent Order samples with a maximum concentration 181 times greater than soil BV.
- Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Plutonium and uranium isotopes were sampled in Consent Order sampling. Plutonium isotopes were not detected in shallow samples. Uranium-234 was detected above soil BV in 7 of 30 shallow samples with a maximum activity of 19 times greater than the soil BV. Uranium-235/236 was detected above soil BV in 8 of 30 shallow soil samples with a maximum activity of 19 times greater than the soil BV. Uranium-238 was detected above soil BV in 10 of 30 shallow samples with a maximum activity of 23 times greater than the soil BV. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

*SWMU 33-007(b):*

- Copper is known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 5 of 28 shallow soil Consent Order samples with a maximum concentration 6.6 times greater than soil BV.
- Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Plutonium and uranium isotopes were sampled in Consent Order sampling. Plutonium-239/240 was not detected in 19 shallow samples. Uranium-234 was detected above soil BV in six of 25 shallow samples with a maximum activity of 6 times greater than the soil BV. Uranium-235/236 was detected above soil BV in four of 25 shallow samples with a maximum activity of 5 times greater than the soil BV. Uranium-238 was detected above soil BV in seven of 25 shallow samples with a maximum activity of 7 times greater than the soil BV. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

*SWMU 33-010(c):*

- Copper is known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 15 of 21 shallow Consent Order samples with a maximum concentration 140 times the soil BV.
- Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Plutonium and uranium isotopes were sampled in Consent Order sampling. Plutonium isotopes were not detected in soil samples. Uranium-234 was detected above soil BV in 10 of 12 shallow samples with a maximum activity of 6 times greater than the soil BV. Uranium-235/236 was detected above soil BV in 10 of 12 shallow soil samples with a maximum activity of 4 times greater than the soil BV. Uranium-238 was detected above soil BV in 10 of 12 shallow samples with a maximum activity of 7.5 times greater than the soil BV. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

*SWMU 33-010(g):*

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 3 of 30 shallow soil Consent Order samples with a maximum concentration 2.3 times greater than the soil BV.
- Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Plutonium and uranium isotopes were sampled in the 2020 Consent Order sampling. Plutonium isotopes were not detected above soil BV in samples. Uranium-234 was detected above soil BV in one of 30 shallow samples with an activity of 1.1 times greater than the soil BV. Uranium-235/236 was detected above soil BV in one of 30 shallow samples with an activity of 1.3 times greater than the soil BV. Uranium-238 was detected above soil BV in one of 30 shallow samples with an activity of 1.2 times greater than the soil BV. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

*SWMU 33-010(h):*

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in one of six shallow Consent Order samples with a concentration 2.6 times greater than soil BV.
- Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Plutonium and uranium isotopes were sampled in Consent Order sampling. Plutonium isotopes were not detected in soil samples. Uranium-234 was detected above soil BV in one of six shallow samples with an activity of 1.2 times greater than the soil BV. Uranium-235/236 was detected above soil BV in one of six shallow samples with an activity of 1.2 times greater than the soil BV. Uranium-238 was detected above soil BV in one of six shallow samples with an activity of 1.4 times greater than the soil BV. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

*SWMU 33-014:*

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 6 of 16 shallow Consent Order samples with a maximum concentration 3 times greater than the soil BV.
- Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Uranium isotopes were sampled in Consent Order sampling. Uranium-234 was detected above soil BV in three of 16 shallow samples with a maximum activity of 1.5 time greater than the soil BV. Uranium-235/236 was detected above soil BV in one of 16 shallow samples with an activity of 1.3 times greater than the soil BV. Uranium-238 was detected above soil BV in six of 16 shallow samples with a maximum activity of 1.9 times greater than the soil BV. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff Background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 249-2. UTLs developed for urban settings were derived from

runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figure 249-2.

Monitoring location CHQ-SMA-6 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff. Metals including copper are associated with building materials, parking lots, and automobiles and can be detected at low concentrations in Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- **Copper**—The copper UTL from developed landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2013 and 2021 are greater than both these values.
- **Gross alpha**—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. The 2013 gross-alpha result is between these two values. The 2021 gross-alpha results are below both values.

The analytical results for these samples are reported in the 2013 and 2021 Annual Reports.

#### 249.4 Inspections and Maintenance

RG340 recorded four storm events at CHQ-SMA-6 during the 2021 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 249-2 Control Measure Inspections during 2021**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-85997	6-9-2021
TAL Exceedance	COMP-87042	7-27-2021
Storm Rain Event	BMP-87499	8-3-2021
Storm Rain Event	BMP-87867	8-10-2021
Storm Rain Event	BMP-88659	9-1-2021

**Table 249-3 Maintenance during 2021**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-86380	Straw Wattles Q00903060045 and Q00903060046 were installed as replacements for Straw Wattles Q00903060035 and Q00903060040.	7-14-2021	35 day(s)	Maintenance was delayed.

#### 249.5 Compliance Status

The Sites associated with CHQ-SMA-6 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2021. Table 249-4 presents the 2021 compliance status.

**Table 249-4 Compliance Status during 2021**

Site	Compliance Status on Jan 1, 2021	Compliance Status on Dec 31, 2021	Comments
SWMU 33-004(j)	Enhanced Control Corrective Action Monitoring	The SMA is being evaluated for a corrective action recommendation.	Initiated 8-25-2021.
SWMU 33-006(a)	Enhanced Control Corrective Action Monitoring	The SMA is being evaluated for a corrective action recommendation.	Initiated 8-25-2021.
SWMU 33-007(b)	Enhanced Control Corrective Action Monitoring	The SMA is being evaluated for a corrective action recommendation.	Initiated 8-25-2021.
SWMU 33-010(c)	Enhanced Control Corrective Action Monitoring	The SMA is being evaluated for a corrective action recommendation.	Initiated 8-25-2021.
SWMU 33-010(g)	Enhanced Control Corrective Action Monitoring	The SMA is being evaluated for a corrective action recommendation.	Initiated 8-25-2021.
SWMU 33-010(h)	Enhanced Control Corrective Action Monitoring	The SMA is being evaluated for a corrective action recommendation.	Initiated 8-25-2021.
SWMU 33-014	Enhanced Control Corrective Action Monitoring	The SMA is being evaluated for a corrective action recommendation.	Initiated 8-25-2021.

Further details regarding compliance status and planned activities can be found in Attachment 6 for Sites in this SMA.



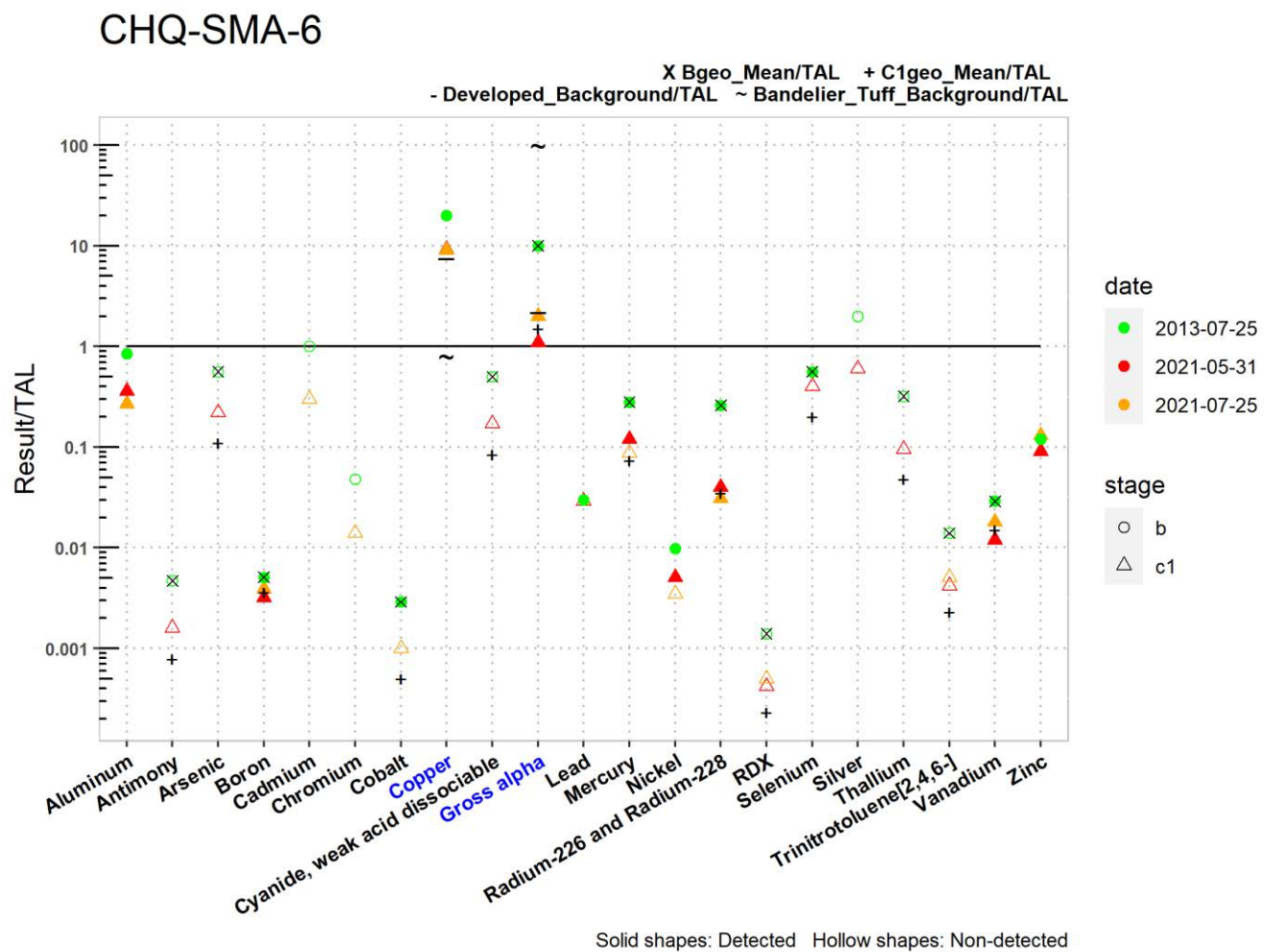


Figure 249-2 Analytical results summary for CHQ-SMA-6

CHQ-SMA-6

	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc
<i>TAL</i>	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	200	5	0.5	6.3	20	100	42
<i>MQL</i>	2.5	60	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
<i>ATAL</i>	NA	640	9	5000	NA	NA	1000	NA	10	15	NA	0.77	NA	30	200	5	NA	6.3	20	100	NA
<i>MTAL</i>	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	NA	20	0.4	NA	NA	NA	42
<i>unit</i>	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
<i>Bgeo_mean/ATAL</i>	NA	0.0047	0.56	0.0051	NA	NA	0.0029	NA	0.50	<b>10</b>	NA	0.28	NA	0.26	0.0014	0.56	NA	0.32	0.014	0.029	NA
<i>C1geo_mean/ATAL</i>	NA	0.00078	0.11	0.0036	NA	NA	0.00050	NA	0.084	<b>1.5</b>	NA	0.074	NA	0.035	0.00023	0.20	NA	0.048	0.0023	0.015	NA
<i>2013-07-25 d</i>	0.85	NA	NA	0.0051	NA	NA	0.0029	<b>20</b>	NA	<b>10</b>	0.030	0.28	0.0098	0.26	NA	0.56	NA	NA	NA	0.029	0.12
<i>2013-07-25 nd</i>	NA	0.0047	0.56	NA	1.0	0.048	NA	NA	0.50	NA	NA	NA	NA	NA	0.0014	NA	2.0	0.32	0.014	NA	NA
<i>2021-05-31 d</i>	0.36	NA	NA	0.0032	NA	NA	NA	<b>9.2</b>	NA	<b>1.1</b>	NA	0.12	0.0051	0.040	NA	NA	NA	NA	NA	0.012	0.091
<i>2021-05-31 nd</i>	NA	0.0016	0.22	NA	0.30	0.014	0.0010	NA	0.17	NA	0.029	NA	NA	NA	0.00042	0.40	0.60	0.095	0.0042	NA	NA
<i>2021-07-25 d</i>	0.27	NA	NA	0.0039	NA	NA	NA	<b>9.0</b>	NA	<b>2.0</b>	NA	NA	NA	0.031	NA	NA	NA	NA	NA	0.018	0.13
<i>2021-07-25 nd</i>	NA	0.0016	0.22	NA	0.30	0.014	0.0010	NA	0.17	NA	0.029	0.087	0.0035	NA	0.00050	0.40	0.60	0.095	0.0051	NA	NA

Bold font indicate TAL exceedance; d=detected\_result/TAL, nd=nondetected\_result/TAL

Figure 249-2 (continued) Analytical results summary for CHQ-SMA-6

## 250.0 CHQ-SMA-7.1: SWMU 33-010(g)

### 250.1 Site Descriptions

One historical industrial activity area is associated with Q010, CHQ-SMA-7.1: Site 33-010(g).

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 present at the Site, 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. A VCA conducted in 1995 resulted in the removal of 4 yd<sup>3</sup> of nonhazardous, nonradioactive debris and 2 ft<sup>2</sup> of radioactive debris from the Site. During the 2020 investigation, residual debris was removed from SWMU 33-010(g).

SWMU 33-010(g) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete with controls.

The project map (Figure 250-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <https://ext.em-la.doe.gov/ips/Home/SiteMonitoringAreaMaps>.

### 250.2 Control Measures

All active control measures are listed in the following table, and their locations are shown on the project map (Figure 250-1).

Enhanced controls were installed and certified on April 21, 2021, and submitted to EPA on April 21, 2021, as part of corrective action. Photographs of the enhanced controls are available at <https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications>.

**Table 250-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
Q01002040012	Established Vegetation	-	X	X	-	B
Q01003010010	Earthen Berm	X	-	-	X	B
Q01003010011	Earthen Berm	X	-	-	X	B
Q01003140013	Coir Log	-	X	-	X	EC
Q01003140014	Coir Log	-	X	-	X	EC
Q01006010003	Rock Check Dam	-	X	-	X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 250.3 Storm Water Monitoring

SWMU 33-010(g) is monitored within CHQ-SMA-7.1. A baseline storm water sample was collected on July 23, 2018 (Figure 250-2). Analytical results from this sample yielded TAL exceedances for aluminum (944 µg/L), copper (8.25 µg/L), and gross-alpha activity (75.1 pCi/L) and are presented in Figure 250-2.

Site history and shallow (i.e., less than 3 ft bgs) soil sampling data (where available) are used to determine whether the TAL exceedance constituent(s) may be related to historical industrial activities. The discussion is organized by Site and TAL exceedance constituent.

#### *SWMU 33-010(g):*

- Aluminum may have been associated with industrial materials historically managed at the Site. Aluminum was not detected above soil BV in 2020 Consent Order sampling.
- Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Plutonium and uranium isotopes were sampled in the 2020 Consent Order sampling. Plutonium isotopes were not detected above soil BV in samples. Uranium-234 was detected above soil BV in one of 30 shallow samples with an activity of 1.1 times greater than the soil BV. Uranium-235/236 was detected above soil BV in one of 30 shallow samples with an activity of 1.3 times greater than the soil BV. Uranium-238 was detected above soil BV in one of 30 shallow samples with an activity of 1.2 times greater than the soil BV. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.
- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 3 of 30 shallow soil Consent Order samples with a maximum concentration 2.3 times greater than the soil BV.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff Background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 250-2. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figure 250-2.

Monitoring location CHQ-SMA-7.1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings as well as landscapes containing sediment derived from Bandelier Tuff. Metals including aluminum and copper are associated with building materials, parking lots, and automobiles as well as low concentrations in Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Aluminum—The aluminum UTL from developed landscape storm water run-on is 245 µg/L; the aluminum UTL for background storm water containing sediment derived from Bandelier Tuff is 2210 µg/L. The aluminum result from 2018 is between these two values.
- Copper—The copper UTL from developed landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2018 is between both of these values.

- Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. The 2018 gross-alpha result is between these two values.

The analytical results for this sample are reported in the 2018 Annual Report.

#### 250.4 Inspections and Maintenance

RG340 recorded five storm events at CHQ-SMA-7.1 during the 2021 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 250-2 Control Measure Inspections during 2021**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event and Annual Erosion Evaluation	BMP-85998	6/9/2021
Storm Rain Event	BMP-87500	8/3/2021
Storm Rain Event	BMP-87869	8/10/2021
Storm Rain Event	BMP-88660	9/1/2021

No maintenance activities or facility modifications affecting discharge were conducted at CHQ-SMA-7.1 in 2021.

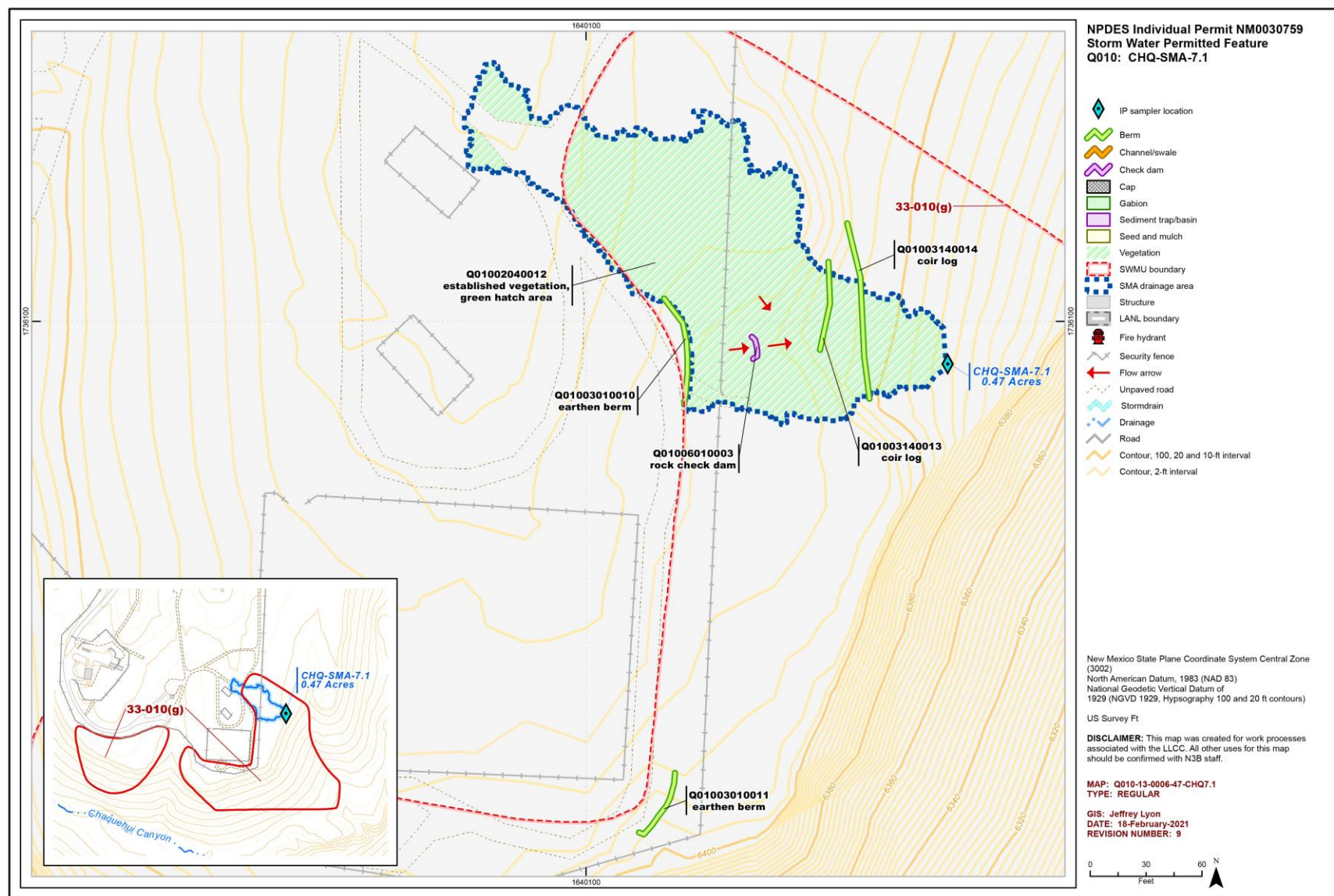
#### 250.5 Compliance Status

The Sites associated with CHQ-SMA-7.1 are Moderate Priority Sites. Corrective action should be certified complete within 5 yr of the effective date of the IP. The IP was under administrative continuance at the end of 2021. Table 250-3 presents the 2021 compliance status.

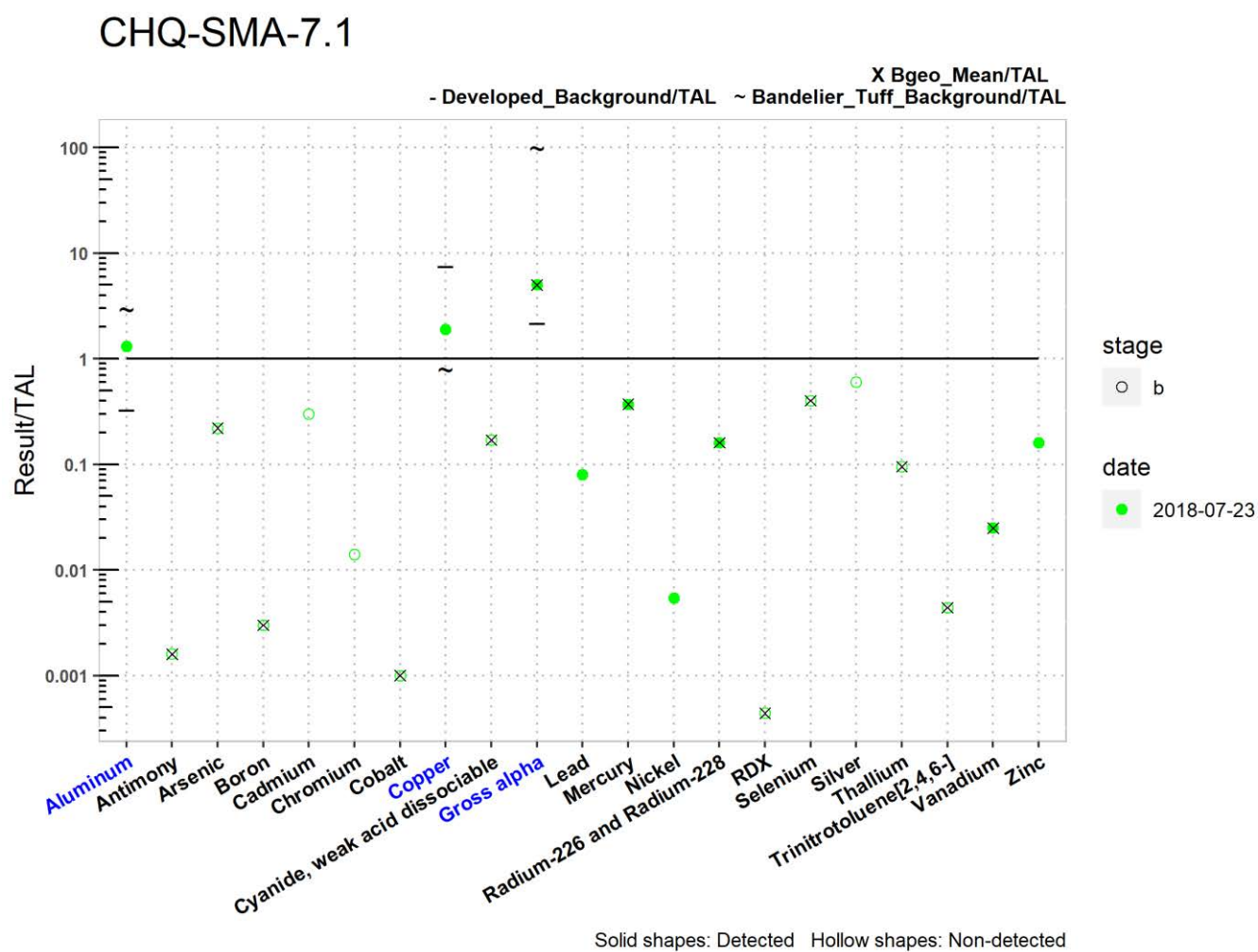
**Table 250-3 Compliance Status during 2021**

Site	Compliance Status on Jan 1, 2021	Compliance Status on Dec 31, 2021	Comments
SWMU 33-010(g)	Building Enhanced Controls	Enhanced Control Corrective Action Monitoring	N3B, April 21, 2021, "Submittal of Certification of Installation of Enhanced Control Measures for CHQ-SMA-1.02, CHQ-SMA-2, and CHQ-SMA-7.1."

Further details regarding compliance status and planned activities can be found in Attachment 6 for Sites in this SMA.



**Figure 250-1 CHQ-SMA-7.1 location map**



**Figure 250-2 Analytical results summary for CHQ-SMA-7.1**

CHQ-SMA-7.1																						
	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide, weak acid dissociable	Gross alpha	Lead	Mercury	Nickel	Radium-226 and Radium-228	RDX	Selenium	Silver	Thallium	Trinitrotoluene [2,4,6-]	Vanadium	Zinc	
TAL	750	640	9	5000	1	210	1000	4.3	10	15	17	0.77	170	30	200	5	0.5	6.3	20	100	42	
MQL	2.5	60	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	10	15	NA	0.77	NA	30	200	5	NA	6.3	20	100	NA	
MTAL	750	NA	340	NA	0.6	210	NA	4.3	22	NA	17	1.4	170	NA	NA	20	0.4	NA	NA	NA	42	
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	
Bgeo_mean/ATAL	NA	0.0016	0.22	0.0030	NA	NA	0.0010	NA	0.17	<b>5.0</b>	NA	0.37	NA	0.16	0.00044	0.40	NA	0.095	0.0044	0.025	NA	
2018-07-23 d	<b>1.3</b>	NA	NA	NA	NA	NA	NA	<b>1.9</b>	NA	<b>5.0</b>	0.080	0.37	0.0054	0.16	NA	NA	NA	NA	NA	0.025	0.16	
2018-07-23 nd	NA	0.0016	0.22	0.0030	0.30	0.014	0.0010	NA	0.17	NA	NA	NA	NA	NA	0.00044	0.40	0.60	0.095	0.0044	NA	NA	
Bold font indicate TAL exceedance; d=detected_result/TAL, nd=nondetected_result/TAL																						

Bold font indicate TAL exceedance; d=detected\_result/TAL, nd=nondetected\_result/TAL

**Figure 250-2 (continued)      Analytical results summary for CHQ-SMA-7.1 con**

## Attachment 1 Amendments

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1118	2/18/2021	239.1	<p>Change to Site Description- SWMU 33-004(g) is <del>reportedly an outfall and associated drainline</del> 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. The pipe 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 portions 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.-diameter) 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 were reportedly released from a fume hood in the building used to cure epoxy resins. Building 33-16 later was used as a library and storage building and has been empty and unused 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.</p> <p>The In 1992-Santa Fe Engineering, a study of drains and discharges at TA-33 was conducted to identify all sources of discharges from <del>TA-33 buildings</del> buildings throughout TA-33. This study identified no discharges from building 33-16 at that time. Thus, the source of the reported discharges from the SWMU-33-004(g) outfall is not knownany potential discharge to the SWMU-33-004(g) outfall during previous use is not known.</p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1118 (cont.)	2/18/2021	239.1	<p><del>The In 1992-Santa Fe Engineering, a study of drains and discharges at TA-33 was conducted to identify all sources of discharges from TA-33 buildings throughout TA-33. This study identified no discharges from building 33-16-at that time. Thus, the source of the reported discharges from the SWMU-33-004(g) outfall is not knownany potential discharge to the SWMU 33-004(g) outfall during previous use is not known.</del></p> <p>SWMU 33-004(g) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area.<del>Consent Order and investigations for this aggregate area began in the fall of 2019 and were completed in 2020 as described in the investigation work plan for Chaquehui Canyon Aggregate Area that was approved in March 2011were conducted in 2019 and 2020.</del> The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.</p>	T	
V.5 1119	2/18/2021	239.1	<p>Change to Site Description- SWMU 33-009 <del>is a former</del>consists of an inactive surface disposal area located in Area 6, <del>west of the TA-33 Main Site in the northwest portion of TA-33.</del> The disposal Site <del>includes an area approximately</del>measures approximately 100 ft long x 75 ft wide <del>that and</del> has been leveled into the side of a natural basaltic cinder cone <del>as well as</del> <del>and includes an</del> area that extends approximately 80 ft down the slope of the cinder cone. The slope continues 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 <del>former gun-gun</del>-firing site [SWMU 33-007(c)]. This <del>gun-gun</del>-firing site operated from 1949 to 1955. When the firing area became contaminated as a result of firing activities, contaminated soil and debris were bulldozed over the edge of the canyon. SWMU 33-009 also received <del>various types of</del> 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 to 1972, the Site served as a storage and disposal area for defective electrical capacitors from the Sherwood Project. These capacitors had an average weight of 300 lb <del>and were about</del>with an approximately 4 ft<sup>3</sup> to 6 ft<sup>3</sup> <del>in</del>-volume for dielectric fluid.</p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1119 (cont.)	2/18/2021	239.1	<p>Disposal of the capacitors at this Site ceased in 1972, at which time defective capacitors were sent <del>off-site to</del> <b>Area L at TA-54</b> for disposal. In December 1974, the Site was partially cleaned up as part of general cleanup activities conducted at TA-33. Several truckloads of material were taken to MDA G <del>for disposal at</del> <b>TA-54</b>. <del>Material Debris</del> removed from the Site included DU pieces, electrical capacitors, metal turnings, old tires, and fluorescent light tubes. A radiation survey was performed after the cleanup. The area was surveyed at intervals of about 10 ft across the slope and 16 ft up and down the slope. Radiation above background was not detected. Not all material was removed in 1974. Broken glass and chunks of metal were still present when the RFI was conducted in 1993. An empty capacitor containing small amounts of PCB contaminated oil was also discovered partially buried at the Site in 1994 and was removed.</p> <p>SWMU 33-009 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area <del>and investigations were conducted in 2019 and 2020. Consent Order investigations for this aggregate area were initiated in the fall of 2019 and completed in 2020.</del> The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.</p>	T	
V.5 1120	2/18/2021	241.1	<p>Change to Site Description- 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 <del>in the northern portion of</del> <b>TA-33</b>. 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 historical engineering drawings show an 8-in.-diameter VCP drain exiting the southeast corner of the building, which reportedly discharged to an outfall. A study of building drains at TA-33 identified two floor drains in building 33-20 but the outfall could not be located. The study also noted there was no source of water in the building. The drainline and outfall were not located during the 2020 Phase I Consent Order investigation implemented at the Site.</p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1120 (cont.)	2/18/2021	241.1	SWMU 33-004(h) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. <del>Consent Order</del> and investigations <del>for this aggregate area</del> were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete with controls	T	
V.5 1121	2/18/2021	241.1	Change to Site Description- SWMU 33-015 <del>consists of the former location of a small</del> is the location of an inactive incinerator (former structure 33 110) located approximately 50 ft southeast of building 33-39 on <del>a the</del> hillside that slopes to a <del>tributary-side wash</del> of Chaquehui Canyon <del>in the southeast corner of Main Site at TA-33</del> . The incinerator measured approximately 4 × 4 × 6 ft high and was mounted on a concrete base. The incinerator was first used in 1955 to burn uncontaminated office trash. The date it ceased to be used is not known; however, it was no longer in use during the 1993 RFI. The incinerator (former structure 33-110) and the associated concrete base were removed during the 2019–2020 investigation.  SWMU 33-015 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area <del>and investigations were conducted in 2019 and 2020. Consent Order</del> <del>investigations for this aggregate area were conducted in 2020.</del> The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete with controls.	T	
V.5 1122	2/18/2021	242.1	Change to Site Description- AOC C-33-003 consists of two <del>former</del> fill areas located at Main Site <del>area at the northern end of in</del> TA-33. <del>Fill was placed in these areas to provide level sites for portable trailers</del> This fill was used to level sites for two portable trailers. One of the trailers ( <del>former</del> structure 33-169) was installed next to the Main Site water tower. The filled area to accommodate trailer 33-169 is approximately 100 × 100 × 4 ft deep. The other trailer ( <del>former</del> structure 33-170) was installed north of building 33-114. The filled area to accommodate trailer 33-170 is approximately 70 × 90 × 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 <del>at</del> <del>in</del> the fill area <del>near next to</del> the water tower during brush-clearing activities conducted during the spring of 1996.	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1122 (cont.)	2/18/2021	242.1	<p>The source of these projectiles appears to have been the fill material, which was obtained from the cinder cone located in Area 6, just west of Main Site. Projectiles historically were fired into <del>catcher boxes at</del> the base of the cinder cone during experiments conducted at the Area 6 firing area [SWMU 33-007(c)].</p> <p>During a 1999 VCA, fill material was excavated until native soil or tuff was encountered. A total of 408.5 yd<sup>3</sup> of fill material was excavated. Radiation surveys of the excavated areas showed no readings greater than 2 times BV. Confirmation samples verified <del>that</del> cleanup levels were achieved. The excavated material was transported to a Segmented Gate System treatment plant, where radioactive materials were separated from the fill and disposed of. A total of 1.45 yd<sup>3</sup> of contaminated fill was separated and disposed of as LLW. Treated fill samples verified <del>that</del> cleanup levels were achieved. The decontaminated fill was returned to the Site, and the Site was restored and revegetated.</p> <p>AOC C-33-003 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area <del>and investigations were conducted in 2019 and 2020. Consent Order investigations for this aggregate area were conducted in 2020.</del> The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.</p>	T	
V.5 1123	2/18/2021	243.1	<p>Change to Site Description- SWMU 33-004(d) is <del>a former</del> an abandoned septic system consisting of a <del>former</del> septic tank (<del>former</del> structure 33-121), <del>inlet and outlet and associated drainlines and drain field located in TA-33, Area 6, an outfall, and an associated tile drain field located at Area 6 in TA-33.</del> Septic tank 33-121 was located approximately 100 ft east of building 33 16 in the northwest portion of TA-33. The septic tank was constructed of corrugated iron and <del>had</del> has a capacity of 500 gal. Septic tank 33-121 received wastewater from a toilet and sink in a former laboratory building (<del>building</del> 33-01) <del>through a 4 in. PVC drainline.</del> Building 33-01 and an associated machine shop (former building 33-02) were constructed on skids and moved on-site in 1946 or 1947. <del>Use of building 33-01 was discontinued in 1991 and the building was removed in 1994; the septic system was abandoned in place.</del></p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1123 (cont.)	2/18/2021	243.1	<p><del>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. Although use of building 33-01 was discontinued in 1991 and the building was removed in 1994, as part of the 2020 investigation activities, the septic tank (former structure 33-121) was removed and the inlet and outlet drains were plugged and left in place. While building 33-01 was occupied, effluent was discharged from the septic tank through a 4 in. PVC outlet drainline to a drain field located approximately 20 ft east of the tank. The drain field is constructed of a single row of vitrified clay tiles installed in gravel approximately 5 ft belowgrade, the end of which is the outfall. The 1995 RFI report describes the septic tank as a 500-gal. corrugated iron tank (structure 33-121) located 50 ft southeast of building 33-01, 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 5 ft belowgrade, which would be the outfall. 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.</del></p> <p>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 identified the only discharges to the septic system were from a lavatory, toilet, and sink drain. <del>Although use of building 33-01 was discontinued in 1991 and the building was removed in 1994, as part of the 2020 investigation activities, the</del>The septic tank (former structure 33-121) was removed during the 2019-2020 investigation. The <del>and the</del> inlet and outlet drains were plugged and left in placebut the drainlines and seepage pit remain in place.</p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1123 (cont.)	2/18/2021	243.1	SWMU 33-004(d) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. <del>Consent Order and investigations for this aggregate area</del> were conducted in 2019 and 2020. The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.	T	
V.5 1124	2/18/2021	243.1	<p>Change to Site Description-            AOC C-33-003 consists of two <del>former</del> fill areas located at Main Site <del>area at the northern end of in</del> TA-33. <del>Fill was placed in these areas to provide level sites for portable trailers</del> This fill was used to level sites for two portable trailers. One of the trailers (<del>former</del> structure 33-169) was installed next to the Main Site water tower. The filled area to accommodate trailer 33-169 is approximately 100 × 100 × 4 ft deep. The other trailer (<del>former</del> structure 33-170) was installed north of building 33-114. The filled area to accommodate trailer 33-170 is approximately 70 × 90 × 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 <del>at</del> in the fill area <del>near next to</del> 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, which was obtained from the cinder cone located in Area 6, just west of Main Site. Projectiles historically were fired into <del>catcher boxes at</del> the base of the cinder cone during experiments conducted at the Area 6 firing area [SWMU 33-007(c)].</p> <p>During a 1999 VCA, fill material was excavated until native soil or tuff was encountered. A total of 408.5 yd<sup>3</sup> of fill material was excavated. Radiation surveys of the excavated areas showed no readings greater than 2 times BV. Confirmation samples verified <del>that</del> cleanup levels were achieved. The excavated material was transported to a Segmented Gate System treatment plant, where radioactive materials were separated from the fill and disposed of. A total of 1.45 yd<sup>3</sup> of contaminated fill was separated and disposed of as LLW. Treated fill samples verified cleanup levels were achieved. The decontaminated fill was returned to the Site, and the Site was restored and revegetated.</p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1124 (cont.)	2/18/2021	243.1	AOC C-33-003 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area <del>and investigations were conducted in 2019 and 2020. Consent Order investigations for this aggregate area were conducted in 2020.</del> The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.	T	
V.5 1125	2/18/2021	245.1	Change to Site Description- SWMU 33-011(e) is a former drum-storage area located <del>at the south end of TA-33 Main Site,</del> south of Main Site at TA-33. The storage area was reportedly a 20 ft x 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 <del>on the ground</del> in this area. The date the materials were first stored at this Site is not known. At the time the OU 1122 RFI work plan was prepared in 1992, all drums had been removed from the Site <del>and the area had been cleared;</del> however, stained soil was observed in the former storage area. The Site <del>has not been used since that time</del> is currently inactive. SWMU 33-011(e) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area <del>and investigations were conducted in 2019 and 2020. Consent Order investigations for this site were initiated in the fall of 2019 and completed in 2020.</del> The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.	T	
V.5 1126	2/18/2021	246.1	Change to Site Description- SWMU 33-016 <del>consists of an inactive HE sump, 150-ft outlet drainline, and outfall at an inactive process bunker (structure 33-23) located approximately 1000 ft south of Main Site at TA-33</del> 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 <del>incorrectly described the</del> describes SWMU 33-016 as a sump with approximate dimensions <del>as of</del> measuring 3 ft x 2 ft x 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 for Field Unit 23, OU 1122, correctly identified the concrete sump dimensions as 5 ft long x 2.5 ft wide x 7 ft deep; <del>these dimensions were confirmed during the 2020 Chaquehui Aggregate Area investigation.</del>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1126 (cont.)	2/18/2021	246.1	<p>An engineering drawing shows the sump located adjacent to the western outside wall of building 33-23 and the outlet drainline extending directly from the sump. <del>The sump is located next to the northwest corner of the bunker's exterior wall, near the door. The outlet drainline from the sump discharges</del> to an outfall approximately 150 ft southwest of the <del>buildingsump</del> to a small side canyon to 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 VCA implemented at SWMU 33-016 in 1995 involved removing the sump contents, filling the sump with approximately 3 yd<sup>3</sup> of sand and gravel, and capping the sump with 1 ft of concrete.</p> <p>SWMU 33-016 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area <del>and investigations were conducted in 2019 and 2020. Consent Order investigations for this aggregate area were conducted in 2020.</del> The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.</p>	T	
V.5 1127	2/18/2021	247.1	<p>Change to Site Description- AOC 33-011(b) <del>consists of</del> is a former storage area located <del>directly west just outside the northwest corner</del> of the National Radio Astronomy Observatory site <del>in the eastern portion of</del> at TA-33. This storage area was approximately 300 ft wide × 600 ft long. <del>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 preset at the Site. Beginning in the 1950s, the Site served as a storage area for equipment and materials such as tungsten, uranium, and beryllium. Equipment used at the TA-33 firing sites was also stored at the Site.</del> The storage area was cleaned in 1984, and most of the materials and debris were removed at that time, although some debris consisting of scrap iron and a large, insulated tank remained on-site.</p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1127 (cont.)	2/18/2021	247.1	<p>Approximately 75% of the area was scraped and leveled to or near the tuff bedrock. During the 1996 VCA, all remaining surface debris was removed from the Site. A total of 2 yd<sup>3</sup> of nonhazardous/nonradioactive debris and 0.5 ft<sup>3</sup> of radioactive debris was removed. No confirmation samples were collected during the VCA because no soil was removed.</p> <p><b>AOC 33-011(b) has been referred to as SWMU 33-011(b) in historical documents.</b> AOC 33-011(b) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. <del>Consent Order investigations for this aggregate area were conducted in 2020 and investigations were conducted in 2019 and 2020.</del> The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.</p>	T	
V.5 1128	2/18/2021	248.1	<p>Change to Site Description- SWMU 33-007(b) consists of two former gun-firing sites <b>located within what was known as the tower area at South Site at the southern end of TA-33. The first and northern gun firing site consisted of a 6 × 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.</b> <del>gun firing site is located approximately 600 ft north of structure 33-26 [SWMU 33-006(a)] and consisted of a 6-ft × 6-ft concrete pad and gun mount (former structure 33-85), a u-shaped soil berm (structure 33-43) measuring approximately 50 ft wide by 10 ft high with an inner diameter of approximately 125 ft, and a former catcher box that was located in the soil embankment northeast of the gun mount.</del> The berm and catcher box were constructed in August 1950. The concrete pad and gun mount were constructed in June 1952. This area was used to test free-recoil weapons. Tests 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. <b>The second and 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.</b></p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1128 (cont.)	2/18/2021	248.1	<p>The projectiles used at this site contained uranium, beryllium, and tungsten. Components of both former gun sites are shown in engineering drawings and a 1958 photograph of the site. <del>South Site</del>Firing site activities at SWMU 33-007(b) were discontinued in the late 1950s. This area was used to support atmospheric physics measurements in the late 1980s and early 1990s. 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.</p> <p><del>Also, in the tower area was a second gun firing site located approximately 400 ft northwest of structure 33-26, which included a gun building (structure 33-25) and a soil barricade (structure 33-63). Both structures were built in 1950. The gun building housed 2 to 4 in. bore guns that were used to fire projectiles into the structure 33-63 berm. The projectiles used at this Site contained uranium, beryllium, and tungsten.</del></p> <p>A VCA was performed in 1999, during which berm 33-63 was removed. Treated soil was returned back to the location of the former berm, and the Site was graded and compacted. 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.</p> <p>SWMU 33-007(b) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. <del>Consent Order investigations for this aggregate area were initiated in the fall of 2019 and completed in 2020.</del> The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.</p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1129	2/18/2021	249.1	<p>Change to Site Description- SWMU 33-004(j) consists of a 4-in. steel storm water 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 that empties into Chaquehui Canyon. A storm water 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. <del>The upper portion of the drainage channel where both the SWMU 33-004(j) storm drainline and the culvert discharge has been cut into the tuff.</del> 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. The outfall system includes an outlet drainline coming off the east side of structure 33-26, a channel cut into the tuff, a culvert, and an arroyo draining into Chaquehui Canyon. However, review of engineering drawings and a 1958 aerial photograph of South Site confirmed 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.</p> <p>Structure 33-26 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 the associated support building known as an x-unit vault (structure 33-26) was constructed in 1950. Use of the site ceased in 1956 and structure 33-26 has remained vacant since then. The shots conducted at the SWMU 33-006(a) shot pad spread debris over much of South Site including the drainage channel below the SWMU 33-004(j) outfall.</p> <p>SWMU 33-004(j) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area <del>and investigations were conducted in 2019 and 2020. Consent Order investigations for this aggregate area were conducted in the fall of 2019 and completed in 2020.</del> The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.</p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1130	2/18/2021	249.1	<p>Change to Site Description- 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 and northern gun-firing site consisted of a 6 x 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. <del>gun firing site is located approximately 600 ft north of structure 33-26 [SWMU 33-006(a)] and consisted of a 6 ft x 6 ft concrete pad and gun mount (former structure 33-85), a u-shaped soil berm (structure 33-43) measuring approximately 50 ft wide by 10 ft high with an inner diameter of approximately 125 ft, and a former catcher box that was located in the soil embankment northeast of the gun mount.</del> The berm and catcher box were constructed in August 1950. The concrete pad and gun mount were constructed in June 1952. This <del>are a</del>gun site was used to test free-recoil weapons. Tests 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 and 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 and a 1958 aerial photograph of the site. <del>South Site</del>Firing site activities at SWMU 33-007(b) were discontinued in the late 1950s. <del>The</del>This area was used to support atmospheric physics measurements in the late 1980s and early 1990s. 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.</p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1130 (cont.)	2/18/2021	249.1	<p><del>Also, in the tower area was a second gun firing site located approximately 400 ft northwest of structure 33-26, which included a gun building (structure 33-25) and a soil barricade (structure 33-63). Both structures were built in 1950. The gun building housed 2- to 4 in. bore guns that were used to fire projectiles into the structure 33-63 berm. The projectiles used at this Site contained uranium, beryllium, and tungsten.</del></p> <p>A VCA was performed in 1999, during which berm 33-63 was removed. Treated soil was returned back to the location of the former berm, and the Site was graded and compacted. 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.</p> <p>SWMU 33-007(b) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area <del>and investigations were conducted in 2019 and 2020. Consent Order investigations for this aggregate area were initiated in the fall of 2019 and completed in 2020.</del> The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.</p>	T	
V.5 1131	2/18/2021	249.1	<p>Change to Site Description-</p> <p><del>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-consists-of-a former disposal area that was located on the south side of TA-33 South Site at the edge of Chaquehui Canyon.</del> 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. <del>This former disposal area is located within the boundaries impacted by former activities at the SWMU 33-006(a) gun firing site. The firing pad for SWMU 33-006(a) is located approximately 500 ft northwest of the SWMU 33-010(g) disposal area.</del> Some debris present at SWMU 33-010(g) (such as dead tree trunks, rocks, and scraped earth) <del>reportedly resulted</del> appears to have originated from the initial clearing of South Site in the 1940s. <del>Other debris included chunks of metal, including shrapnel, cables, and burnt wood present at the Site, likely originated from shot pad and gun firing activities.</del></p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1131 (cont.)	2/18/2021	249.1	<p>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. A VCA conducted in 1995 resulted in the removal of 4 yd3 of nonhazardous, nonradioactive debris and 2 ft2 of radioactive debris from the Site. During the 2020 investigation, residual debris was removed from SWMU 33-010(g).</p> <p>SWMU 33-010(g) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area <del>and investigations were conducted in 2019 and 2020. Consent Order investigations for this aggregate area were initiated in 2019 and completed in 2020.</del></p> <p>The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete with controls.</p>	T	
V.5 1132	2/18/2021	249.1	<p>Change to Site Description- SWMU 33-010(h) <del>consists of</del> a surface disposal area located approximately 450 ft northeast of structure 33-26 [SWMU 33-006(a)] and immediately south of berm 33-0043 [SWMU 33-007(b)] <del>in the northeast portion of South Site at the southern end of TA-33.</del> The disposal area <del>consists of</del> a mound of dirt, and firing-site debris is scattered on the soil surface. The debris includes metal, wood, cable, and shrapnel. The area is approximately 100 × 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. During the 1994 Phase I RFI, a geophysical survey was conducted to determine the presence of subsurface anomalies; none were identified. A backhoe was used to excavate a 42-ft-long trench (0.5–2 ft deep) through the center of the Site. Debris was not observed during the trenching activities. No shallow surface samples were collected during the RFI. During the 2020 investigation, residual debris was removed from SWMU 33-010(h).</p> <p>SWMU 33-010(h) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area <del>and investigations were conducted in 2019 and 2020. Consent Order investigations for this aggregate area were initiated in the fall of 2019 and completed in 2020.</del> The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls.</p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1133	2/18/2021	249.1	<p>Change to Site Description- SWMU 33-014 <del>consists of</del> is the former location of an open burn area 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 was 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 <del>may have</del> included construction debris, timber, and sawdust used in <del>catcher boxes, and black powder</del> 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. <del>The soil at the burn site was scraped to bedrock, and some bedrock is blackened from burning.</del></p> <p>SWMU 33-014 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. <del>Consent Order investigations for this aggregate area were initiated in the fall of 2019 and were completed in 2020.</del> The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete with controls.</p>	T	
V.5 1134	2/18/2021	250.1	<p>Change to Site Description- 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 <del>consists of a former disposal area that was located on the south side of TA-33 South Site at the edge of Chaquehui Canyon.</del> 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. <del>This former disposal area is located within the boundaries impacted by former activities at the SWMU 33-006(a) gun firing site. The firing pad for SWMU 33-006(a) is located approximately 500 ft northwest of the SWMU 33-010(g) disposal area.</del> Some debris present at SWMU 33-010(g) (such as dead tree trunks, rocks, and scraped earth) <del>reportedly resulted</del> appears to have originated from the initial clearing of South Site in the 1940s.</p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1134 (cont.)	2/18/2021	250.1	Other debris <del>included chunks of metal,</del> including shrapnel, cables, and burnt wood present at the Site 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. A VCA conducted in 1995 resulted in the removal of 4 yd3 of nonhazardous, nonradioactive debris and 2 ft2 of radioactive debris from the Site. During the 2020 investigation, residual debris was removed from SWMU 33-010(g). SWMU 33-010(g) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area <del>and investigations were conducted in 2019 and 2020. Consent Order investigations for this aggregate area were initiated in 2019 and completed in 2020.</del> The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete with controls.	T	
V.5 1135	2/25/2021	CHQ-SMA-2	Per control measure verification BMP-83985 conducted 2/4/2021, please update as necessary to: <ul style="list-style-type: none"> <li>• Add rock check dam Q00306010057 installed as an enhanced runoff and sediment control. Install date 2/4/2021.</li> <li>• Add rock check dam Q00306010058 installed as an enhanced runoff and sediment control. Install date 2/4/2021.</li> <li>• Add coir log Q00303140059 installed as an enhanced runoff and sediment control. Install date 2/4/2021.</li> <li>• Add straw wattles Q00303060060 and Q00303060061 installed as an enhanced runoff and sediment control. Install date 2/4/2021.</li> <li>• Retire coir logs 31, 32, 33, 34.</li> </ul>	T	CCN-84605
V.5 1136	2/25/2021	CHQ-SMA-2	Map Revision - (14)	T	CCN-84605
V.5 1137	2/25/2021	CHQ-SMA-2	Retire Control - Damaged and/or Replaced-Control ID: Q00303140031-Coir Log	T	CCN-84605
V.5 1138	2/25/2021	CHQ-SMA-2	Retire Control - Damaged and/or Replaced-Control ID: Q00303140032-Coir Log	T	CCN-84605
V.5 1139	2/25/2021	CHQ-SMA-2	Retire Control - Damaged and/or Replaced-Control ID: Q00303140033-Coir Log	T	CCN-84605
V.5 1140	2/25/2021	CHQ-SMA-2	Retire Control - Damaged and/or Replaced-Control ID: Q00303140034-Coir Log	T	CCN-84605
V.5 1141	2/25/2021	CHQ-SMA-2	New Control - Corrective Action Control-Control ID: Q00306010057-Rock Check Dam	T	CCN-84605
V.5 1142	2/25/2021	CHQ-SMA-2	New Control - Corrective Action Control-Control ID: Q00306010058-Rock Check Dam	T	CCN-84605

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1143	2/25/2021	CHQ-SMA-2	New Control - Corrective Action Control-Control ID: Q00303140059-Coir Log	T	CCN-84605
V.5 1144	2/25/2021	CHQ-SMA-2	New Control - Corrective Action Control-Control ID: Q00303060060-Straw Wattle	T	CCN-84605
V.5 1145	2/25/2021	CHQ-SMA-2	New Control - Corrective Action Control-Control ID: Q00303060061-Straw Wattle	T	CCN-84605
V.5 1146	2/25/2021	CHQ-SMA-7.1	Per control measure verification BMP-83987 conducted 2/4/2021, please update as necessary to: <ul style="list-style-type: none"> <li>• Add coir log Q01003140013 installed as an enhanced runoff and sediment control. Install date 2/4/2021.</li> <li>• Add coir log Q01003140014 installed as an enhanced runoff and sediment control. Install date 2/4/2021.</li> </ul>	T	CCN-84606
V.5 1147	2/25/2021	CHQ-SMA-7.1	Map Revision - (9)	T	CCN-84606
V.5 1148	2/25/2021	CHQ-SMA-7.1	New Control - Corrective Action Control-Control ID: Q01003140013-Coir Log	T	CCN-84606
V.5 1149	2/25/2021	CHQ-SMA-7.1	New Control - Corrective Action Control-Control ID: Q01003140014-Coir Log	T	CCN-84606
V.5 1150	3/18/2021	CHQ-SMA-1.02	Per control measure verification BMP-83986 conducted 2/9/2021, please update as necessary to: <ul style="list-style-type: none"> <li>• Add rock check dams Q002A06010015, Q002A06010016, and Q002A06010017 installed as an enhanced runoff and sediment control. Install date 2/9/2021.</li> <li>• Modify shape of rock check dam Q002A06010009 per map markup.</li> <li>• Add established vegetation Q002A02040018. This control was under CHQ-SMA-1.03 but also needs to be under CHQ-SMA-1.02.</li> </ul>	T	CCN-84650
V.5 1151	3/18/2021	CHQ-SMA-1.02	Map Revision - (12)	T	CCN-84650
V.5 1152	3/18/2021	CHQ-SMA-1.02	New Control - Augmenting Existing/Baseline Control-Control ID: Q002A02040018-Established Vegetation	T	CCN-84650
V.5 1153	3/18/2021	CHQ-SMA-1.02	New Control - Corrective Action Control-Control ID: Q002A06010015-Rock Check Dam	T	CCN-84650
V.5 1154	3/18/2021	CHQ-SMA-1.02	New Control - Corrective Action Control-Control ID: Q002A06010016-Rock Check Dam	T	CCN-84650
V.5 1155	3/18/2021	CHQ-SMA-1.02	New Control - Corrective Action Control-Control ID: Q002A06010017-Rock Check Dam	T	CCN-84650
V.5 1156	3/18/2021	CHQ-SMA-1.02	Miscellaneous Edit - Modify shape of Rock Check Dam Q002A06010009 per map markup	T	CCN-84650

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1157	3/18/2021	CHQ-SMA-1.02	Per enhanced control measure validation BMP-83986 conducted 2/9/2021 please update as necessary to: <ul style="list-style-type: none"> <li>• delineate new SMA drainage area resulting from enhanced control measure installations at CHQ-SMA-1.02 (See CCN-84650).</li> <li>• move sampler to just outside the middle of rock check dam 15.</li> </ul>	T	CCN-84739
V.5 1158	3/18/2021	CHQ-SMA-1.02	Minor Sampler Adjustments, Updated Coordinates in Attach D.	T	CCN-84739
V.5 1159	3/18/2021	CHQ-SMA-1.02	SMA Boundary Modification, Updated Area in Attach D.	T	CCN-84739
V.5 1160	5/19/2021	A-SMA-6	Per spatial PRS Database Change request CR2021-1983, approved 4/28/2021: Generate new map revision showing updated spatial presentation of Site 33-004(k).	T	CCN-85222
V.5 1161	5/19/2021	A-SMA-6	Map Revision - (9)	T	CCN-85222
V.5 1162	5/19/2021	A-SMA-6	Site Boundary Modification, 33-004(k)	T	CCN-85222
V.5 1163	5/21/2021	Volume 5	Change to SDPPP- Per verification of enhanced control measure installation at CDV-SMA-2.42 and in preparation for future installations of control type, Update MainConn and SDE as needed to: <ul style="list-style-type: none"> <li>• Add new classification for HDPE cap. This is a subclass of the Cap poly feature classification and will be Identified in MainConn and SDE as 0805, HDPE cap. Any active controls using this ID should be produced on IP project maps using the current cap class symbology. This control class will have a life cycle of 10 years (120 months), and generally installed as an erosion control, and can also be implemented as a run-on or runoff control in site specific conditions.</li> </ul>	T	CCN-82640
V.5 1164	8/5/2021	A-SMA-3.5	Per spatial PRS Database Change request CR2021-2078: Generate new map revision showing updated spatial presentation of Site 39-006(a).	T	CCN-87630
V.5 1165	8/5/2021	A-SMA-3.5	Map Revision - (11)	T	CCN-87630
V.5 1166	8/5/2021	A-SMA-3.5	Site Boundary Modification, 39-006(a)	T	CCN-87630

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1167	8/5/2021	CHQ-SMA-4	Per control measure verification BMP-87106 conducted 7/27/2021, please update as necessary to: <ul style="list-style-type: none"> <li>• Retire Straw Wattle Q00503060006. Retire date 7/27/2021.</li> <li>• Retire Coir Log Q00503140021. Retire date 7/27/2021.</li> <li>• Retire Coir Log Q00503140022. Retire date 7/27/2021.</li> <li>• Add Earthen Berm Q00503010023 installed as an enhanced run-on and sediment control. Install date 7/27/2021.</li> <li>• Add Earthen Berm Q00503010024 installed as an enhanced runoff and sediment control. Install date 7/27/2021.</li> <li>• Add Rip Rap Q00504060025 installed as an enhanced runoff and erosion control. Install date 7/27/2021.</li> <li>• Move sampler location to: X: 1638704.570 Y: 1739438.676</li> </ul>	T	CCN-87632
V.5 1168	8/5/2021	CHQ-SMA-4	Map Revision - (11)	T	CCN-87632
V.5 1169	8/5/2021	CHQ-SMA-4	Retire Control - Damaged and/or Replaced-Control ID: Q00503060006-Straw Wattle	T	CCN-87632
V.5 1170	8/5/2021	CHQ-SMA-4	Retire Control - Damaged and/or Replaced-Control ID: Q00503140021-Coir Log	T	CCN-87632
V.5 1171	8/5/2021	CHQ-SMA-4	Retire Control - Damaged and/or Replaced-Control ID: Q00503140022-Coir Log	T	CCN-87632
V.5 1172	8/5/2021	CHQ-SMA-4	New Control - Corrective Action Control-Control ID: Q00503010023-Earthen Berm	T	CCN-87632
V.5 1173	8/5/2021	CHQ-SMA-4	New Control - Corrective Action Control-Control ID: Q00503010024-Earthen Berm	T	CCN-87632
V.5 1174	8/5/2021	CHQ-SMA-4	New Control - Corrective Action Control-Control ID: Q00504060025-Rip Rap	T	CCN-87632
V.5 1175	8/5/2021	CHQ-SMA-4	Per enhanced control measure validation BMP-87106 conducted 7/27/2021 please update as necessary to: <ul style="list-style-type: none"> <li>• delineate new SMA drainage area resulting from enhanced control measure installations at CHQ-SMA-4 (See CCN-87632).</li> </ul> Move sampler location to: <ul style="list-style-type: none"> <li>• X: 1638704.570 Y: 1739438.676</li> </ul>	T	CCN-87634
V.5 1176	8/5/2021	CHQ-SMA-4	Minor Sampler Adjustments, Updated Coordinates in Attach D.	T	CCN-87634
V.5 1177	8/5/2021	CHQ-SMA-4	SMA Boundary Modification, Updated Area in Attach D.	T	CCN-87634

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1178	8/7/2021	239.1	<p>Change to Site Description- SWMU 33-007(c) consists of two abandoned <del>gun-gun</del>-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). Building 33-16 was completed in 1949 and <del>first</del> housed an air gun, and then electronic equipment, to measure neutron production in “gun-type” initiators containing beryllium and polonium-210. <del>Guns with bore sizes</del><del>Gun sizes with bore diameters</del> 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 was located immediately west of building 33-16, on which a large bore gun was mounted. 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 building 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 building 33-16 and were approximately 6 × 6 ft, constructed of timber, and filled with soil, wood chips, and vermiculite. Guns (2-in. to 5-in. bore <del>diameter</del>) 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 <del>the leak</del><del>a release</del> of radioactive material from a projectile. The Site was cleaned up by using a bulldozer to scrape away the contaminated soil and embankment. A 1954 memorandum describes decontamination of one of the Area 6 gun barrels.</p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1178 (cont.)	8/7/2021	239.1	<p>The memorandum describes removing loose material and leaving impregnated spots as high as 1 million cpm. Contaminated surface <del>dirt-soil</del> was bulldozed from the shot area into the adjacent canyon. Shots were discontinued at Area 6 by 1955. In 1956, building 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. An aluminum tower (structure 33-<del>102192</del>) is used for atmospheric physics monitoring within the excavated portion of the cinder cone.</p> <p>During the 1995 IA conducted at SWMU 33-007(c), the Site was stabilized to prevent migration of the contamination identified during the RFI. An HDPE cover was placed over the catcher boxes to prevent run-on and runoff of precipitation. Additionally, the culvert west of building 33-16 was dammed with sandbags. In 1996, approximately 200 yd3 of soil was removed from the catcher boxes and processed as part of a pilot test to verify the effectiveness of processes for remediating uranium-contaminated soil. Sampling results for the processed soil showed mean activities for uranium-234, uranium-235, and uranium-238 of 15.8 pCi/g, 0.515 pCi/g, and 15.7 pCi/g, respectively; the processed soil was returned to the catcher boxes. Fifty-six experimental projectiles totaling 1720 lb were discovered as the soil was screened as part of the pilot test. These projectiles were disposed of off-site.</p> <p>SWMU 33-007(c) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area <del>and investigations were conducted in 2019 and 2020. Consent Order investigations for this aggregate area were completed in 2020.</del> The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for additional sampling to define the nature and extent of contamination. <del>SWMU 33-007(c) was included in the "Phase II Investigation Work Plan for Chaquehui Canyon Aggregate Area."</del> The work plan was submitted to NMED in March 2021 and approved by NMED in July 2021, and investigations were conducted in 2021. <del>The "Phase II Investigation Report for Chaquehui Canyon Aggregate Area," submitted to NMED in August 2021, recommended the Site for corrective action complete with controls. A Phase II work plan is being developed to conduct this sampling.</del></p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1179	8/17/2021	241.1	<p>Change to Site Description- 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 in the northern portion of TA-33. This former disposal site consists of two areas: one near a <del>stormwater</del> culvert outfall directly east of building 33-39 where glass bottles and other debris were discovered and the other an area of surface debris situated north of the culvert. The culvert receives storm water runoff from Main Site and is located in a drainage channel that <del>discharges leads</del> to a tributary of Chaquehui Canyon. Debris observed <del>at the site</del> 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 <del>and a partially full bottle was present on the ground surface</del>. In 1999, a cleanup activity was performed and all visible debris was removed from the <del>surface disposal area and from the watercourse</del>. <del>Two sediment catchments were constructed within the drainage below the culvert to prevent migration of contaminated sediments. The first catchment was constructed 15 ft below the culvert and the second was constructed 200 ft below the culvert</del>. During the 2020 investigation, residual debris was removed from SWMU 33-008(c).</p> <p><del>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.</del></p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1179 (cont.)	8/17/2021	241.1	<p>SWMU 33-008(c) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area <del>and investigations were conducted in 2019 and 2020. Consent Order investigations for this site were initiated in the fall of 2019 and completed in 2020.</del></p> <p>The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for additional sampling to define the nature and extent of contamination. <del>SWMU 33-008(c) was included in the “Phase II Investigation Work Plan for Chaquehui Canyon Aggregate Area.” The work plan was submitted to NMED in March 2021 and approved by NMED in July 2021, and investigations were completed in 2021. During 2021 investigations, approximately 67 yd<sup>3</sup> of contaminated soil and 4 yd<sup>3</sup> of buried landfill debris were removed. Each excavation area was backfilled with clean fill material and topped with base course to restore the area to the approximate original grade. The “Phase II Investigation Report for Chaquehui Canyon Aggregate Area,” submitted to NMED in August 2021, recommended further sampling and remediation at the Site to define nature and extent for potential contaminants of concern. A Phase III investigation work plan is being prepared. A Phase II work plan is being developed to conduct this sampling.</del></p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1180	8/17/2021	241.1	<p>Change to Site Description- SWMU 33-011(d) consists of a former a storage area <del>located on the asphalt next to a that was located on an asphalt pad around a</del> warehouse (building 33-20) <del>near the south side of TA-33 Main Site</del> in the southwest corner of Main Site at TA-33. Beryllium and uranium were stored <del>around in and outside of</del> building 33-20 from 1950 <del>to</del> until 1972. In addition, recovered scrap from shots containing uranium, beryllium, and tungsten was stored on the asphalt south of building 33-20. <del>The amount of uranium stored at this site is reported to have been tons.</del> 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.</p> <p>SWMU 33-011(d) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area <del>and investigations were conducted in 2019 and 2020. Consent Order investigations for this aggregate area were conducted in 2020.</del> The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for additional sampling to define the nature and extent of contamination. <del>SWMU 33-011(d) was included in the "Phase II Investigation Work Plan for Chaquehui Canyon Aggregate Area."</del> The work plan was submitted to NMED in March 2021 and approved by NMED in July 2021, and investigations were completed in 2021. <del>The "Phase II Investigation Report for Chaquehui Canyon Aggregate Area," submitted to NMED in August 2021, recommended the Site for corrective action complete with controls. A Phase II investigation work plan is being prepared.</del></p>	T	
V.5 1181	8/17/2021	242.1	<p>Change to Site Description- 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 in the northern portion of TA-33. This former disposal site consists of two areas: one near a <del>stormwater</del> culvert outfall directly east of building 33-39 where glass bottles and other debris were discovered and the other an area of surface debris situated north of the culvert. The culvert receives storm water runoff from Main Site and is located in a drainage channel that <del>discharges leads</del> to a tributary of Chaquehui Canyon. Debris observed <del>at the site</del> 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.</p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1181 (cont.)	8/17/2021	242.1	<p>A small asphalt pad is located at the west end of the northern area <b>and a partially full bottle was present on the ground surface</b>. In 1999, a cleanup activity was performed and all visible debris was removed from the <b>surface disposal area and from the watercourse</b>. <b>Two sediment catchments were constructed within the drainage below the culvert to prevent migration of contaminated sediments</b>. The first catchment was constructed 15 ft below the culvert and the second was <b>constructed 200 ft below the culvert</b>. During the 2020 investigation, residual debris was removed from SWMU 33-008(c).</p> <p>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.</p> <p>SWMU 33-008(c) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area <b>and investigations were conducted in 2019 and 2020</b>. <del>Consent Order investigations for this site were initiated in the fall of 2019 and completed in 2020.</del></p> <p>The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for additional sampling to define the nature and extent of contamination. <b>SWMU 33-008(c) was included in the "Phase II Investigation Work Plan for Chaquehui Canyon Aggregate Area."</b> The work plan was submitted to NMED in March 2021 and approved by NMED in July 2021, and investigations were completed in 2021. During 2021 investigations, approximately 67 yd<sup>3</sup> of contaminated soil and 4 yd<sup>3</sup> of buried landfill debris were removed. Each excavation area was backfilled with clean fill material and topped with base course to restore the area to the approximate original grade. The "Phase II Investigation Report for Chaquehui Canyon Aggregate Area," submitted to NMED in August 2021, recommended further sampling and remediation at the Site to define nature and extent for potential contaminants of concern. A Phase III investigation work plan is being prepared. <del>A Phase II work plan is being developed to conduct this sampling.</del></p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1182	8/17/2021	242.1	<p>Change to Site Description- SWMU 33-012(a) is a former <del>the location of a former drum storage area</del>SAA for a former machine shop in (building 33-39) at Main Site in TA-33. This <del>storage area</del>SAA was located on an asphalt pad on the east side of building 33-39, between the building and a storage shed. The asphalt pad is approximately 20 ft wide × 20 ft long. The area was used to accumulate <del>spent solvents and solvent-contaminated oil in one 55-gal. drum at a time in accordance with the RCRA requirement (40 CFS 262, "Standards Applicable to Generators of Hazardous Waste") drums of solvents and solvent-contaminated oil that may have been contaminated with PCBs and unknown metals. The drums were</del>Each drum was placed on a pallets or directly on the asphalt pad. The 1990 SWMU report notes the presence of multiple oil stains at this Site. The 1992 RFI work plan, however, states no evidence of oil staining was found at the Site. <del>The asphalt pad is level, and the ground surface east of building 33-09 slopes to the east. The beginning date of operation of the storage area is not known; however, building 33-39 was constructed in 1951. The storage area was deactivated in 1992 or 1993. SWMU 33-012(a) lies within the boundary of former SWMU 33-017, which includes areas impacted by operational releases from TA-33 Main Site. The SAA was established in the mid-1980s, had been deactivated by 1992, and was moved to the interior of building 33-39.</del></p> <p>SWMU 33-012(a) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area <del>and investigations were conducted in 2019 and 2020. Consent Order investigations for this aggregate area were conducted in 2020.</del>The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for additional sampling to determine nature and extent of contamination. SWMU 33-012(a) was included in the "Phase II Investigation Work Plan for Chaquehui Canyon Aggregate Area." The work plan was submitted to NMED in March 2021 and approved by NMED in July 2021, and investigations were completed in 2021. During 2021 investigations, approximately 2.2 yd<sup>3</sup> of contaminated soil debris was removed. Each excavation area was backfilled with clean fill material and topped with base course to restore the area to the approximate original grade. The "Phase II Investigation Report for Chaquehui Canyon Aggregate Area," submitted to NMED in August 2021, recommended further remediation at the Site to define nature and extent for potential contaminants of concern. A Phase III investigation work plan is being prepared. <del>A Phase II investigation work plan is being prepared.</del></p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1183	8/17/2021	242.1	<p>Change to Site Description- 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 ft to 600 ft wide. The Site generally slopes downward to the east and is at the head of a small drainage tributary of Chaquehui Canyon. <del>The 1990 SWMU report describes SWMU 33-017 as releases from building operations and deposition from uncontrolled stack emissions from former buildings 33-21, 33-40, and 33-86. The SWMU report describes several significant one-time spills cited in the CEARP without identifying specific spill locations.</del> SWMU 33-017 is potentially impacted by runoff from the paved areas of the TA 33 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 <del>previously</del> used for vehicle maintenance. Operations conducted within Main Site included uranium processing and machining, cadmium and silver welding and soldering, lead melting and casting, cadmium and beryllium machining, and tritium processing and decontamination. <del>Additional materials handled at Main Site facilities included mercury and organic solvents. These operations</del> Operations at Main Site began in 1949 and most continued until 1972. When these operations ceased, some of the facilities were converted for use as offices and electronics laboratories and remain active.</p> <p>SWMU 33-017 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area <del>and investigations were conducted in 2019 and 2020. Consent Order investigations for this aggregate area were conducted in 2020.</del> The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for remediation. <del>SWMU 33-017 was included in the “Phase II Investigation Work Plan for Chaquehui Canyon Aggregate Area.” The work plan was submitted to NMED in March 2021 and approved by NMED in July 2021, and investigations were completed in 2021. During 2021 investigations, approximately 17.25 yd<sup>3</sup> of contaminated soil and 4 yd<sup>3</sup> of buried landfill debris were removed. Each excavation area was backfilled with clean fill material and topped with base course to restore the area to the approximate original grade. The “Phase II Investigation Report for Chaquehui Canyon Aggregate Area,” submitted to NMED in August 2021, recommended further sampling at the Site to define nature and extent for potential contaminants of concern. A Phase III investigation work plan is being prepared. A Phase II investigation work plan is being prepared.</del></p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1184	8/17/2021	242.1	<p>Change to Site Description- AOC C-33-001 consists of a former <del>power</del> PCB transformer (former structure 33-124) <del>at TA-33 Main Site</del> in the northern portion of Main Site at TA-33. The transformer was mounted on a 15 x 50 ft 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. <del>Because this transformer was placed into service in the 1950s, the oil in the transformer may have contained PCBs</del> The transformer (former structure 33-124) was placed into service in the 1950s, and the mineral oil in the transformer contained PCBs. <del>The pad reportedly had oil stains, but active leaks from the transformer were not observed during inspections conducted in</del> 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 <del>replaced as part of activities conducted under TSCA</del> removed and replaced with a non-PCB transformer as part of the U.S. 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. A BMP implemented in 1999 consisted of vacuuming PCB contaminated soil and sediment present on the asphalt between buildings 33-113 and 33 114. In addition, the field team vacuumed a low-grade slope from building 33 114 east between buildings 33 0113 and 33-39. A total volume of 55 gal. of material was collected.</p> <p>AOC C-33-001 is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area <del>and investigations were conducted in 2019 and 2020. Consent Order investigations for this aggregate area were conducted in 2020.</del> The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for remediation.</p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1184 (cont.)	8/17/2021	242.1	AOC C 33-001 was included in the “Phase II Investigation Work Plan for Chaquehui Canyon Aggregate Area.” The work plan was submitted to NMED in March 2021 and approved by NMED in July 2021, and investigations were completed in 2021. During 2021 investigations, approximately 0.01 yd <sup>3</sup> of contaminated soil was removed. The excavation area was backfilled with clean fill material to restore the area to the approximate original grade and an asphalt patch was also placed on top of the fill. The “Phase II Investigation Report for Chaquehui Canyon Aggregate Area,” submitted to NMED in August 2021, recommended further sampling and remediation at the Site to define nature and extent for potential contaminants of concern. A Phase III investigation work plan is being prepared. <del>A Phase II investigation work plan is being prepared.</del>	T	
V.5 1185	8/17/2021	243.1	Change to Site Description- SWMU 33-007(c) consists of two abandoned <del>gun-gun</del> -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). Building 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. <del>Gun sizes with bore diameters</del> <del>Guns with bore sizes</del> 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 was located immediately west of building 33-16, on which a large bore gun was mounted. 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 building 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.	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1185 (cont.)	8/17/2021	243.1	<p>The two catcher boxes were located approximately 20 ft south of building 33-16 and were approximately 6 × 6 ft, constructed of timber, and filled with soil, wood chips, and vermiculite. Guns (2-in. to 5-in. bore <del>diameter</del>) 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 <del>the leak</del> release of radioactive material from a projectile. The Site was cleaned up by using a bulldozer to scrape away the contaminated soil and embankment. A 1954 memorandum describes decontamination of one of the Area 6 gun barrels. The memorandum describes removing loose material and leaving impregnated spots as high as 1 million cpm. Contaminated surface <del>dirt</del> soil was bulldozed from the shot area into the adjacent canyon. Shots were discontinued at Area 6 by 1955. In 1956, building 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. An aluminum tower (structure 33-<del>102</del>192) is used for atmospheric physics monitoring within the excavated portion of the cinder cone.</p> <p>During the 1995 IA conducted at SWMU 33-007(c), the Site was stabilized to prevent migration of the contamination identified during the RFI. An HDPE cover was placed over the catcher boxes to prevent run-on and runoff of precipitation. Additionally, the culvert west of building 33-16 was dammed with sandbags. In 1996, approximately 200 yd<sup>3</sup> of soil was removed from the catcher boxes and processed as part of a pilot test to verify the effectiveness of processes for remediating uranium-contaminated soil. Sampling results for the processed soil showed mean activities for uranium-234, uranium-235, and uranium-238 of 15.8 pCi/g, 0.515 pCi/g, and 15.7 pCi/g, respectively; the processed soil was returned to the catcher boxes. Fifty-six experimental projectiles totaling 1720 lb were discovered as the soil was screened as part of the pilot test. These projectiles were disposed of off-site.</p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1185 (cont.)	8/17/2021	243.1	SWMU 33-007(c) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area <del>and investigations were conducted in 2019 and 2020. Consent Order investigations for this aggregate area were completed in 2020.</del> The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for additional sampling to define the nature and extent of contamination. <del>SWMU 33-007(c) was included in the “Phase II Investigation Work Plan for Chaquehui Canyon Aggregate Area.” The work plan was submitted to NMED in March 2021 and approved by NMED in July 2021, and investigations were completed in 2021. The “Phase II Investigation Report for Chaquehui Canyon Aggregate Area,” submitted to NMED in August 2021, recommended the Site for corrective action complete with controls. A Phase II work plan is being developed to conduct this sampling.</del>	T	
V.5 1186	8/17/2021	249.1	Change to Site Description- SWMU 33-006(a) <del>is an inactive shot pad at South Site where implosion tests were conducted at the southern end of TA-33. The shot pad is a 50-ft-diameter circular area located immediately north of and next to the roof of structure 33-26, and the x-unit chamber (i.e., a control chamber that housed a firing voltage distribution system used for remote detonation of test firing). The SWMU 33-006(a) shot pad was built in 1948, and the associated support building, known as an x-unit vault (structure 33-26), was constructed in 1950. Implosion tests performed at the shot pad contained up to 5000 lb of HE. Before detonations, wooden boxes covered the assemblages. Use of the site ceased in 1956 and structure 33 26 has remained vacant since then. The detonations conducted at the SWMU 33-006(a) shot pad scattered debris, shrapnel, and wood fragments over the mesa top of South Site and into Chaquehui Canyon. Shrapnel has been found at distances up to a mile away from the shot pad. The shot pad has not been used since 1955 when implosion testing was discontinued at TA-33.</del>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1186 (cont.)	8/17/2021	249.1	Currently, the pad is covered with up to a foot or more of sand and firing site debris. <del>consists of an inactive shot pad at TA 33 South Site and the surrounding area that potentially was impacted by shrapnel and debris from implosion tests conducted at the pad. This area extends to a radius of approximately 1.1 mi around the shot pad. Operations at South Site began in June 1950 and continued until 1955. The shot pad has been inactive since that time. The shot pad is approximately 40 ft in diameter and encompasses building 33-26, which housed electronic equipment associated with the tests. The tests conducted at SWMU 33-006(a) involved initiator devices placed inside uranium shells and imploded with HE. The amount of HE used in each test ranged from 275 to 5000 lb. Before detonations, the assemblies were placed in copper cans for electrical shielding and covered with wooden boxes. The detonations spread shrapnel, including copper and uranium, throughout the South Site valley. Reportedly, two to three shots were made per week. Runoff from the firing pad flows to an arroyo, which drains south to Chaquehui Canyon. Residual debris was removed from SWMU 33-006(a) during the 2019-2020 Consent Order investigation, and a total of 38 pieces of firing site debris was removed and characterized for disposal. During 2021 investigations, approximately 4.28 yd<sup>3</sup> of contaminated soil was removed to address potential HE, copper, and organic contamination. Each excavation was backfilled with clean fill material and topped with base course to restore the area to the approximate original grade.</del>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1186 (cont.)	8/17/2021	249.1	<p>An IA was performed at SWMU 33-006(a) in 1996 to remove contaminated debris within a half mile radius from the shot pad and to prevent the off-site migration into Chaquehui Canyon. 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. Since 1996, the entire area south of building 33-25 [SWMU 33-007(b)] has been significantly disturbed by the installation of new utilities during the complete renovation of building 33-25. Currently, the pad is covered with up to a foot or more of sand and firing-site debris.</p> <p>SWMU 33-006(a) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted in 2019 and 2020. <del>Consent Order investigations for this site were initiated in the fall of 2019 and completed in 2020.</del> The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended further remediation, <del>and a Phase II investigation work plan is being prepared.</del> SWMU 33-006(a) was included in the "Phase II Investigation Work Plan for Chaquehui Canyon Aggregate Area." The work plan was submitted to NMED in March 2021 and approved by NMED in July 2021, and investigations were completed in 2021. During 2021 investigations, approximately 4.28 yd<sup>3</sup> of contaminated soil was removed to address potential HE, copper, and organic contamination. The "Phase II Investigation Report for Chaquehui Canyon Aggregate Area," submitted to NMED in August 2021, recommended further sampling at the Site to define nature and extent for copper. A Phase III investigation work plan is being prepared.</p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1187	8/17/2021	249.1	<p>Change to Site Description- 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 x 30 ft x 2-4 ft 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. <del>consists of a former surface disposal area located at South Site on the northern rim of Chaquehui Canyon, approximately 230 ft south of structure 33-0026. The disposal area dimensions were approximately 50 x 30 x 2 ft to 4 ft deep. The area is located along the western edge of the main South Site drainage channel.</del> 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 <del>includes</del> 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 <del>deposited at SWMU 33-010(c)</del> bulldozed over the canyon edge and onto the hillside below. During the VCA performed at the Site in 1999, all visible debris was removed from the site. During the 2020 investigation, residual debris was removed from SWMU 33-010(c).</p> <p>SWMU 33-010(c) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area and investigations were conducted from 2019 to 2021. <del>Consent Order investigations for this site were initiated in the fall of 2019 and completed in 2020.</del> The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for additional sampling to define the nature and extent of contamination. SWMU 33-010(c) was included in the "Phase II Investigation Work Plan for Chaquehui Canyon Aggregate Area." The work plan was submitted to NMED in March 2021 and approved by NMED in July 2021, and investigations were completed in 2021. During 2021 investigations, excavation of contaminated environmental media was conducted at SWMU 33 010(c). Approximately 1 yd<sup>3</sup> of soil with elevated copper, lead, and zinc concentrations was removed to address potential unacceptable ecological risk. The excavation area was backfilled with clean fill material and topped with base course from an off-site source to restore the area to the approximate original grade. The "Phase II Investigation Report for Chaquehui Canyon Aggregate Area," submitted to NMED in August 2021, recommended the Site for corrective action complete without controls. <del>A Phase II work plan is being developed to conduct this sampling.</del></p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1188	8/25/2021	CHQ-SMA-6	CHQ-SMA-6 Corrective Action Initiation. CAM Sample 1 collected 5/31/21, CAM Sample 2 collected 8/3/2021. Exceedances for Total PCB (0.0194 ug/L), gross alpha (50.2 pCi/L), and copper (8.5 ug/L).	T	CCN-88938
V.5 1189	9/7/2021	CHQ-SMA-1.02	CHQ-SMA-1.02 Corrective Action Initiation. CAM Sample 1 collected 5/31/21, CAM Sample 2 collected 7/25/2021	T	CCN-88939
V.5 1190	10/19/2021	A-SMA-1.1	Per control measure verification BMP-87103 conducted 8/25/2021 and follow-up BMP-88577 conducted 9/22/2021, please update as necessary to: <ul style="list-style-type: none"> <li>• Add three rock check dams A00106010007, A00106010008, and A00106010009 installed as an enhanced runoff and sediment controls. Install date 8/25/2021.</li> <li>• Add rip rap A00104060010 installed as an enhanced runoff and sediment control. Install date 8/25/2021.</li> </ul>	T	CCN-89319
V.5 1191	10/19/2021	A-SMA-1.1	Map Revision - (7)	T	CCN-89319
V.5 1192	10/19/2021	A-SMA-1.1	New Control - Corrective Action Control-Control ID: A00106010007-Rock Check Dam	T	CCN-89319
V.5 1193	10/19/2021	A-SMA-1.1	New Control - Corrective Action Control-Control ID: A00106010008-Rock Check Dam	T	CCN-89319
V.5 1194	10/19/2021	A-SMA-1.1	New Control - Corrective Action Control-Control ID: A00106010009-Rock Check Dam	T	CCN-89319
V.5 1195	10/19/2021	A-SMA-1.1	New Control - Corrective Action Control-Control ID: A00104060010-Rip Rap	T	CCN-89319
V.5 1196	10/19/2021	A-SMA-1.1	Per control measure verification BMP-87103 conducted 8/25/2021, please update as necessary to: <ul style="list-style-type: none"> <li>• Move sampler to location shown on markup.</li> </ul>	T	CCN-89332
V.5 1197	10/19/2021	A-SMA-1.1	Minor Sampler Adjustments, Updated Coordinates in Attach D.	T	CCN-89332
V.5 1198	10/19/2021	A-SMA-1.1	SMA Boundary Modification, Updated Area in Attach D.	T	CCN-89332
V.5 1199	10/19/2021	A-SMA-3	Per control measure verification BMP-87102 conducted 8/25/2021 and follow-up BMP-88579 conducted 9/14/2021, please update as necessary to: <ul style="list-style-type: none"> <li>• Add one Rock Check Dam A00606010038 installed as an enhanced runoff and sediment control. Install date 8/25/2021.</li> </ul>	T	CCN-89322
V.5 1200	10/19/2021	A-SMA-3	Map Revision - (14)	T	CCN-89322
V.5 1201	10/19/2021	A-SMA-3	New Control - Corrective Action Control-Control ID: A00606010038-Rock Check Dam	T	CCN-89322
V.5 1202	10/19/2021	A-SMA-3	Per control measure verification BMP-87102 conducted 8/25/2021: <ul style="list-style-type: none"> <li>• Move sampler to middle of new RCD spillway. 1636681.055, 1746380.685</li> </ul>	T	CCN-89331

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1203	10/19/2021	A-SMA-3	Minor Sampler Adjustments, Updated Coordinates in Attach D.	T	CCN-89331
V.5 1204	10/19/2021	A-SMA-3	SMA Boundary Modification, Updated Area in Attach D.	T	CCN-89331
V.5 1205	11/9/2021	CHQ-SMA-2	Per MainConn data QA/QC for preparation for IP Annual and SDPPP deliverables, please update as necessary to: <ul style="list-style-type: none"> <li>• Remove extra "coir log" Assets 0314-179 and 0314-0180 and 'straw wattle' Asset 0306-973. These were incorrectly added to the MainConn asset heirarchy during processing of CCN-84605 and do not represent installed BMPs. No map changes needed, these Asset IDs are not included on Map Revision produced on CCN-84605.</li> </ul>	E	CCN-89904
V.5 1206	11/9/2021	CHQ-SMA-6	Per maintenance/installation WO BMP-86380, conducted 07/14/2021, please update as necessary to: <ul style="list-style-type: none"> <li>• Retire straw wattles Q00903060035 and Q00903060040. Replaced by new controls. Retire date 7/14/2021.</li> <li>• Add 2 straw wattles installed directly upstream of Q00903060035 and Q00903060040 as a replacement runoff/sediment controls. Install date 7/14/2021.</li> </ul>	T	CCN-89989
V.5 1207	11/9/2021	CHQ-SMA-6	Map Revision - (17)	T	CCN-89989
V.5 1208	11/9/2021	CHQ-SMA-6	Retire Control - Damaged and/or Replaced-Control ID: Q00903060035-Straw Wattle	T	CCN-89989
V.5 1209	11/9/2021	CHQ-SMA-6	Retire Control - Damaged and/or Replaced-Control ID: Q00903060040-Straw Wattle	T	CCN-89989
V.5 1210	11/9/2021	CHQ-SMA-6	New Control - Routine/Replacement-Control ID: Q00903060045-Straw Wattle	T	CCN-89989
V.5 1211	11/9/2021	CHQ-SMA-6	New Control - Routine/Replacement-Control ID: Q00903060046-Straw Wattle	T	CCN-89989
V.5 1212	11/22/2021	A-SMA-1.1	Per DOE comments, remove the northernmost flow arrow and the two easternmost flow arrows.	T	CCN-90105
V.5 1213	11/22/2021	A-SMA-1.1	Map Revision - (8)	T	CCN-90105

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1214	12/21/2021	236.1	Change to Site Description- 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, consisting of a septic tank (former structure 39-12) measuring approximately 12 ft x 7 ft x 6 ft, 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 4. The sand filter discharged to an outfall south of NM 4 in North Ancho Canyon. The system received discharges from only building 39-2 as shown in as-constructed drawing ENG-C 42762 and engineering drawing ENG-R 1437. 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 seepage pit handled approximately 75 gal./yr until 1992. 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. A CMP approximately 1 ft in diameter runs vertically through the center of the seepage pit. Additionally, 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 4; use of the original subsurface sand filter and outfall were discontinued at that time. The 1975 Zia Company Drawing for TA-39, as-constructed drawing ENG-C 42762, 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.-diameter 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 4 that continued to serve only former building 39-2.	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1214 (cont.)	12/21/2021	236.1	In 1984, the septic tank (former structure 39-12) was abandoned and a new 2400-gal. capacity septic tank (structure 39-104) was installed as part of the existing septic system as shown on engineering drawings ENG-C 44331 and ENG-C 44450. In 1984, the septic tank (former structure 39-12) was abandoned and a new 2,400-gal. capacity septic tank (structure 39-104) was installed as part of the existing septic system as shown on engineering drawings ENG-C 44331, ENG C 45423, the 1993 RFI Work Plan, and the LANL KSL Utility GIS layer. The newly installed septic tank (structure 39-104) 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 4. Septic tank 39-104, the new sand filter south of NM 4, and the still-active drainlines are part of the SWMU 39-006(a) active components. In 1989, the 6-in.-diameter 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 building 39-2 at TA-39.	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1214 (cont.)	12/21/2021	236.1	<del>The inactive portion of the septic system was constructed in 1953 and received discharges from building 39-2. The inactive portion of the septic system included an 1800-gal. septic tank (former structure 39-12), sections of drainlines, a subsurface sand filter, a chemical seepage pit, and an outfall. The septic tank was located 100 ft east of building 39-2 and was connected to a sand filter north of NM 4. The sand filter discharged to an outfall south of NM 4 in North Ancho Canyon. In 1973, the septic tank was enlarged, a new subsurface sand filter was installed on the south side of NM 4, and use of the old sand filter was discontinued. Septic tank 39-104, the new sand filter south of NM 4, and the still active drainlines are part of the SWMU 39-006(a) active components. In 1989, the outlet from the new sand filter was plugged, eliminating the discharge to the outfall. Photographic processing chemicals from building 39-2 were routinely discharged to former septic tank 39-12, eventually causing the septic tank to malfunction. To correct the problem, a seepage pit was installed in 1973 directly north of former septic tank 39-12 to manage the photographic processing chemicals. The seepage pit handled approximately 75 gal./yr until 1992. The chemical seepage pit consisted of an open pit approximately 12 ft deep and filled with cobble. A CMP approximately 1 ft in diameter runs vertically through the center of the seepage pit. The inactive septic tank (former structure 39-12), inactive chemical seepage pit, and the original sand filter were removed during 2009 field activities.</del>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1216	12/21/2021	238.1	<p>Change to Site Description- 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. The outfall reportedly received discharges from a toilet, sink, floor drains, and an electrical water cooler within the control bunker. <del>consists of a suspected outfall from building 33-87 located at East Site at TA-33. Building 33-87 was constructed in 1955 to support firing site experiments at East Site. The firing tests that structure 33-87 supported were conducted until the early 1970s. The outfall reportedly received discharge from a toilet, sink, floor drains, and an electrical water cooler within the building. Structure 33-87 was used to house electronic equipment, and there is no recorded use of radioactive materials in this building. The RFI work plan indicated that photoprocessing may have occurred.</del> Engineering drawing C 3304 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 C34561-00001 from 1967 shows the planned extension of the 8-in CMP to a ditch and outfall southeast of bunker 33-87. 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. There is no documented use of hazardous or radioactive materials within control bunker 33-87. <del>shows a cast iron drainpipe exiting the south wall of the building and extending approximately 125 ft southeast of the building where it terminates at the outfall. The engineering drawing describes the drainline as consisting of 54 ft of 8 in. diameter cast iron pipe and 71 ft of 8 in. diameter VCP.</del> Attempts to locate the drainline and outfall in 1994 and 1995 using geophysics and test trenches were unsuccessful. An inspection of the building performed in 1996 revealed that no floor drains existed <del>in the building within the structure.</del> The sink and toilet in the building discharged to septic tank 33-96 [SWMU 33-004(c)], located north of the building. <del>Therefore, the drainline and outfall likely never existed.</del></p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1216 (cont.)	12/21/2021	238.1	<p>During the 2020-2021 Phase 1 Consent Order investigation activities, septic tank 33-96 [SWMU 33-004(c)] and 100 yd<sup>3</sup> of environmental media were excavated. As part of the excavation, two trenches were excavated on both sides of the access road east of building 33-87 to locate the drainline extending southeast from the south wall of building 33-87. A cast iron drainline was located in the trench excavated on the west side of the access road (Trench 1). A VCP drainline was located in the trench excavated east of the access road (Trench 2). An outfall was not visible within 200 ft east of Trench 2. The cast iron section of drainline exposed in Trench 1 was visibly cut and absent near/within the western edge of the trench and likely does not exist between Trench 1 and the south wall of building 33-87. The trenched areas were restored to original condition after sampling was complete. SWMU 33-004(k) is included in the Consent Order as part of the South Ancho Canyon Aggregate Area. <del>Consent Order investigations for this aggregate area were and investigations were initiated in 2020 and experienced delays because of COVID 19 precautions conducted in 2020 and 2021. During 2020 investigation activities, septic tank 33-96 [SWMU 33-004(c)] and 100 yd<sup>3</sup> of environmental media were excavated. As part of the excavation, two trenches were excavated along the purported location of the drainline. Trench 1 was excavated and evidence of the drainline was found. A stop work order was initiated on March 18, 2020, because of the discovery of buried fiber optic communication cables. The investigation report for the South Ancho Canyon Aggregate Area, submitted to NMED in September 2021, recommended the Site for corrective action complete without controls and is still in effect. Once the stop work order has been lifted, investigation activities will resume at SWMU 33-004(k). Results will be presented in a future Aggregate Area Report. No decision level data are available for SWMU 33-004(k).</del></p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1217	12/21/2021	238.1	<p>Change to Site Description- SWMU 33-007(a) is a former gun firing site <del>located at East Site at TA-33. The firing site consisted of three gun mounts (structures 33-116, 33-117, and 33-135) and two former catcher boxes (structures 33-118 and 33-136).</del> 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 at the center of the site, and 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 31-SWMU 33-007(a) are concrete pads 33-116 and 33-135. Firing site activities began at East Site in the <del>mid</del>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 <del>of the firing site activities</del> 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 depleted uranium in the projectile were never recovered. Firing site activities ceased in 1972. <del>In 1984, the catcher boxes and their contents were removed and disposed of in a landfill [SWMU 33-008(b)] located at East Site. A narrow asphalt road runs the length of the Site, as does an asphalt drainage ditch. During the 1984 cleanup of selected portions of East Site, radioactively contaminated material was transported to TA-54 for disposal and nonradioactively 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.</del></p> <p>SWMU 33-007(a) is included in the Consent Order as part of the South Ancho Canyon Aggregate Area. <del>Consent Order investigations for this aggregate area and investigations were initiated in 2020 and experienced delays because of COVID-19 precautions. During 2020, initial field sampling activities for SWMU 33-007(a) conducted in 2020 and 2021. The investigation report for the South Ancho Canyon Aggregate Area, submitted to NMED in September 2021, recommended the Site for corrective action complete without controls. were completed and results will be presented in a future Aggregate Area report. No decision level data are available for SWMU 33-007(a).</del></p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1218	12/21/2021	238.1	<p>Change to Site Description- SWMU 33-010(a) is <del>a former surface disposal area located on a cliff ledge above Ancho Canyon at 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 the canyon and within 15 ft below the rim, 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. A VCA performed in 1995 removed 8 yd<sup>3</sup> of nonhazardous, nonradioactive debris and 0.2 yd<sup>3</sup> of radioactive debris from the surface of the Site. No confirmation samples were collected.</del></p> <p>SWMU 33-010(a) is included in the Consent Order as part of the South Ancho Canyon Aggregate Area. <del>Consent Order investigations and investigations for this aggregate area were have not yet begun</del> conducted in 2020 and 2021. The investigation report for the South Ancho Canyon Aggregate Area, submitted to NMED in September 2021, recommended the Site for corrective action complete without controls. <del>The proposed investigation for this Site is presented in the South Ancho Canyon Aggregate Area investigation work plan, submitted to NMED in August 2015.</del></p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1219	12/21/2021	240.1	<p>Change to Site Description- SWMU 33-002(d) is a former outfall and associated 90-ft <b>outlet</b> drainline that discharged noncontact cooling water from former building 33 86 <del>at Main Site</del> at TA-33. This outfall was created when the SWMU 33 002(c) seepage pit was deactivated and disconnected from the building 33-86 inlet drainline 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 former building 33-86. The outfall operated under the LANL NPDES permit until July 11, 1995, when it was removed from the permit <b>following the decommissioning and demolition of the former Tritium Facility (building 33-86)</b>. Tritium and metals were <del>the</del> potential contaminants in the noncontact cooling water. The <b>90-ft outlet</b> drainline that discharged to <del>this</del> the outfall was removed during the 2005 VCA implemented at the Site. <b>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 Tritium Facility (building 33-86) and a former surface disposal area. MDA K is located in the southeast area of Main Site at TA-33.</b></p> <p>SWMU 33-002(d) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. <del>Consent Order and investigations for this aggregate area</del> were conducted in 2019 and 2020. Decision-level data from this site characterization work were presented in the Chaquehui Canyon Aggregate Area investigation report, submitted to NMED in September 2020. Additional sampling <b>was conducted in 2021 is needed</b> to further define the lateral and vertical extent of subsurface tritium contamination at SWMU 33-002(ed) <b>and sampling results were presented in the addendum to the Chaquehui Aggregate Area investigation report, submitted to NMED in October 2021. The addendum recommended additional sampling and a Phase III investigation work plan is being developed.</b></p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1220	12/21/2021	244.1	<p>Change to Site Description- SWMU 33-010(f) <del>consists of a reported</del> surface disposal area <del>consisting of two small surface disposal areas located 300 ft southeast of former building 33-86 and approximately 50 ft apart at Main Site</del> at TA-33. The history of the Site and the origins of the wastes are not known. The 1990 SWMU report states the SWMU was <del>observed-identified</del> during a 1987 reconnaissance conducted by the former ER Project and describes it as concrete, cans, and metal pieces that littered the area east of former <del>Tritium Facility (former building 33-86)</del>. 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<sup>2</sup> and the other as approximately <del>200 ft<sup>2</sup></del> 10 ft x 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 <del>miscellaneous construction</del> debris. Although the source of these materials is not known, some <del>materials were</del> believed to be associated with roadwork activities. During the 2005 VCA implemented at SWMUs 33-002(a-<del>ee</del>), directly northwest of SWMU 33-010(f), <del>no debris was visible at this SWMU or anywhere around the SWMU</del> only small piles of soil and a few pieces of concrete were observed to be present at the Site. 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 the former Tritium Facility (former building 33-86), and a former surface disposal area. MDA K is in the southeast area of Main Site at TA-33. During the 2020 investigation, all remaining residual debris (approximately 6.25 yd<sup>3</sup>) was removed from SMWU 33-010(f).</p> <p>SWMU 33-010(f) is included in the Consent Order as part of the Chaquehui Canyon Aggregate Area. <del>Consent Order and investigations for this aggregate area were conducted in 2019 and 2020.</del> The investigation report for the Chaquehui Canyon Aggregate Area, submitted to NMED in September 2020, recommended the Site for corrective action complete without controls. <del>SMWU 33-010(f) was included in the addendum to the Chaquehui Aggregate Area investigation report that was submitted to NMED in October 2021.</del> The addendum recommended additional sampling and a Phase III investigation work plan is being developed.</p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1221	12/23/2021	230.2	Change to SDPPP- Enhanced controls were installed and certified on December 7, 2021, and submitted to EPA on December 7, 2021, as part of corrective action. Photographs of the enhanced controls are available at <a href="https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications">https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications</a> .	T	
V.5 1222	12/23/2021	230.3	Change to SDPPP- The monitoring location for A-SMA-1.1 has been relocated to a location more likely to collect a corrective action confirmation monitoring sample after installation of enhanced control measures. Sampler coordinates and the SMA drainage area have been updated in Attachment 4.	T	
V.5 1223	12/23/2021	230.3	Change to SDPPP- • Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run on from a developed landscape is 32.5 pCi/L. The 2018 gross-alpha result is <del>less than both of these</del> <b>between these two</b> values.	T	
V.5 1224	12/23/2021	230.4	Added Maintenance table	T	
V.5 1225	12/23/2021	230.5	Change to SDPPP – Compliance status table updated	T	
V.5 1226	12/23/2021	A-SMA-1.1	Updated Figure 230-2	T	
V.5 1227	12/23/2021	231.3	Change to SDPPP- • Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. The 2013 <del>and 2019</del> gross-alpha results <del>are</del> <b>is</b> less than both of these values. <b>The 2019 gross-alpha results are between these two values.</b>	T	
V.5 1228	12/23/2021	231.4	Change to SDPPP- Maintenance activities conducted at the SMA are summarized in the following table. <b>The facility also conducted maintenance activities at the SMA during November and December of 2021. The Permittees worked in conjunction with the facility during these maintenance and/or upgrading activities of existing controls and plan to certify some as enhanced controls in early 2022.</b>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1229	12/23/2021	231.4	Updated Maintenance Table	T	
V.5 1230	12/23/2021	231.5	Change to SDPPP – Compliance status table updated	T	
V.5 1231	12/23/2021	A-SMA-2	Updated Figure 231-2	T	
V.5 1232	12/23/2021	233.4	<p>Change to SDPPP -            Most of the A-SMA-2.7 drainage area is located on Bandelier Tuff, and there is no run-on from developed facilities (e.g., buildings, parking lots, and pavement); therefore, the Bandelier Tuff background UTL was compared with gross-alpha storm water exceedances. <b>Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.</b></p> <p>• Gross alpha— <b>The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L. The 2011 and 2013 gross-alpha results are all below this value. The gross-alpha activity is associated with naturally occurring radioactive uranium- and thorium-bearing minerals in Bandelier Tuff. The gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L; the results from 2011 confirmation samples are below this value. The gross-alpha geometric mean of 28.4 pCi/L is approximately 50 times lower than the background storm water UTL.</b></p>	T	
V.5 1233	12/23/2021	A-SMA-2.7	Updated Figure 233-2	T	
V.5 1234	12/23/2021	235.2	<p>Change to SDPPP-            Enhanced controls were installed and certified on September 4, 2015 <b>and December 7, 2021</b>, and submitted to EPA on September 10, 2015 <b>and December 7, 2021, respectively</b>, as part of corrective action. Photographs of the enhanced controls are available at <a href="https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications">https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications</a>.</p>	T	
V.5 1235	12/23/2021	235.3	<p>Change to SDPPP-  <b>The monitoring location for A-SMA-3 has been relocated to a location more likely to collect a corrective action confirmation monitoring sample after installation of enhanced control measures. Sampler coordinates and the SMA drainage area have been updated in Attachment 4.</b></p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1236	12/23/2021	235.3	<p>Change to SDPPP- Most of the A-SMA-3 drainage area is located on Bandelier Tuff, and there is no run-on from developed facilities (e.g., buildings, parking lots, and pavement); therefore, the Bandelier Tuff background UTL was compared with copper, PCBs, and gross-alpha storm water exceedances. <b>Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. Copper is associated with trace minerals in the Bandelier Tuff as well.</b></p> <ul style="list-style-type: none"> <li>• Copper—<del>Copper is associated with trace minerals in Bandelier Tuff.</del> The copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from the storm water confirmation samples in 2013 and 2018 are above this value.</li> <li>• Gross alpha—The gross-alpha activity is associated with naturally occurring radioactive uranium- and thorium-bearing minerals in Bandelier Tuff. The gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L; the results from 2013 and 2018 confirmation samples are both below this value.</li> </ul>	T	
V.5 1237	12/23/2021	235.4	Added Maintenance table	T	
V.5 1238	12/23/2021	235.5	Change to SDPPP – Compliance status table updated	T	
V.5 1239	12/23/2021	A-SMA-3	Updated Figure 235-2	T	
V.5 1240	12/23/2021	236.4	Removed Maintenance Table	T	
V.5 1241	12/23/2021	236.5	Change to SDPPP – Compliance status table updated	T	
V.5 1242	12/23/2021	236.5	<p>Change to SDPPP- <del>Further details regarding compliance status and planned activities can be found in Attachment 6 for Sites in this SMA.</del></p>	T	
V.5 1243	12/23/2021	A-SMA-3.5	Updated Figure 236-2	T	
V.5 1244	12/23/2021	237.3	<p>Change to SDPPP- SWMU 33-010(d):</p> <ul style="list-style-type: none"> <li>• <b>Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. Consent Order samples from 2021 were analyzed for uranium isotopes.</b> Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> </ul>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1245	12/23/2021	237.5	Change to SDPPP – Compliance status table updated	T	
V.5 1246	12/23/2021	237.5	Change to SDPPP- <del>Further details regarding compliance status and planned activities can be found in Attachment 6 for Sites in this SMA.</del>	T	
V.5 1247	12/23/2021	A-SMA-4	Updated Figure 237-2	T	
V.5 1248	12/23/2021	238.1	Change to SDPPP- SWMU 33-004(k): <ul style="list-style-type: none"> <li>• Copper is not known to be associated with industrial materials historically managed at this Site. <del>Copper was not detected above soil BV in 10 shallow soil Consent Order samples from 2021.</del></li> <li>• <del>Gross alpha radioactivity is not known to be associated with industrial materials historically managed at this Site.</del> Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. Consent Order samples from 2021 were analyzed for uranium isotopes. Uranium isotopes were not detected in shallow soil samples. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> </ul>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1249	12/23/2021	238.1	<p>Change to SDPPP-SWMU 33-007(a):</p> <ul style="list-style-type: none"> <li>• Copper is not known to have been associated with industrial materials historically managed at this Site. <del>Copper was detected above soil BV in 3 of 84 shallow soil Consent Order samples from 2021 with a maximum concentration of 1.6 times the soil BV. Copper was not detected above BV in 35 shallow (i.e., less than 3 ft bgs) soil and sediment samples collected during the 1994 RFI at the Site.</del></li> <li>• Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at the Site. Consent Order samples from 2021 were analyzed for uranium isotopes. Uranium-234 was detected above soil BV in 2 of 18 shallow soil samples with a maximum concentration 118 times less than the residential SAL. Uranium-235/236 was detected above soil BV in 10 of 18 shallow soil samples with a maximum concentration 308 times less than the residential SAL. Uranium-238 was detected above soil BV in 4 of 18 shallow soil samples with a maximum concentration 48 times less than the residential SAL. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> <li>• Gross alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at this Site. RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for uranium, which has alpha-emitting isotopes. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> </ul>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1250	12/23/2021	238.1	<p>Change to SDPPP-SWMU 33-010(a):</p> <ul style="list-style-type: none"> <li>• Copper is not known to have been associated with industrial materials historically managed at this Site. <del>Copper was detected above soil BV in 6 of 52 shallow soil Consent Order samples from 2021 with a maximum concentration of 106 times the soil BV. Copper was not detected above BVs in eight shallow screening level soil samples collected during the 1994 RFI at the Site.</del></li> <li>• Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. Consent Order samples from 2021 were analyzed for uranium isotopes. Uranium-235/236 was not detected above soil BV in nine shallow soil samples. Uranium-238 was detected above soil BV in one of nine shallow soil samples with a maximum concentration 48 times less than the residential SAL. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> <li><del>• Gross alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at this site. RFI samples were not analyzed for gross alpha radioactivity but were analyzed for uranium, which has alpha-emitting isotopes. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross alpha radioactivity.</del></li> </ul>	T	
V.5 1251	12/23/2021	238.3	<p>Change to SDPPP-Monitoring location A-SMA-6 receives runoff primarily from undeveloped areas, with some contribution from developed landscape. <del>Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff.</del> Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.</p>	T	
V.5 1252	12/23/2021	A-SMA-6	Updated Figure 238-2	T	
V.5 1253	12/23/2021	239.3	<p>Change to SDPPP-Following the installation of enhanced control measures, a corrective action storm water sample was collected on August 3, 2021 (Figure 239-2). Analytical results from this sample yielded a TAL exceedances for gross-alpha activity (312 pCi/L) and PCB concentration (5.82 ng/L) and are presented in Figure 239-2.</p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1254	12/23/2021	239.3	Change to SDPPP- <ul style="list-style-type: none"> <li>Gross alpha—Gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. The 2014 <del>and 2021</del> gross-alpha results <del>is-are</del> between these values.</li> <li>PCBs—The PCB UTL from developed landscape storm water run-on is 98 ng/L; the PCB UTL for background storm water containing sediment derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2014 is between these values <del>and the PCB result from 2021 is below both values.</del></li> </ul> The analytical results for <del>this-these</del> samples are reported in the 2014 <del>and 2021</del> Annual Reports.	T	
V.5 1255	12/23/2021	CHQ-SMA-0.5	Updated Figure 239-2	T	
V.5 1256	12/23/2021	CHQ-SMA-1.01	Updated Figure 240-2	T	
V.5 1257	12/23/2021	241.2	Change to SDPPP- Enhanced controls were installed and certified on October 24, 2012, <del>and</del> September 9, 2015, <del>and April 20, 2021,</del> and submitted to EPA on October 25, 2012, <del>and</del> September 10, 2015, <del>and April 21, 2021, respectively,</del> as part of corrective action. Photographs of the enhanced controls are available at <a href="https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications">https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications</a> .	T	
V.5 1258	12/23/2021	241.3	Change to SDPPP- The monitoring location for CHQ-SMA-1.02 has been relocated to a location more likely to collect a corrective action confirmation monitoring sample after installation of enhanced control measures. Sampler coordinates and the SMA drainage area have been updated in Attachment 4. Following the 2021 installation of enhanced control measures, corrective action storm water samples were collected on May 31, 2021, and August 3, 2021 (Figure 241-2). Analytical results from these corrective action monitoring samples yielded TAL exceedances for copper (5.2 µg/L and 8.5 µg/L), gross alpha concentrations (24.8 pCi/L and 50.2 pCi/L) and PCB concentrations (14.3 ng/L and 19.4 ng/L) and are presented in Figure 241-2.	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1259	12/23/2021	241.3	<p>Change to SDPPP-SWMU 33-004(h):</p> <ul style="list-style-type: none"> <li>• Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in one of six shallow soil Consent Order samples <del>from 2020</del> with a concentration of 1.01% above soil BV.</li> <li>• Alpha-emitting radionuclides (uranium isotopes) are <del>not</del> known to have been associated with industrial materials historically managed at the Site. Consent Order samples <del>from 2020</del> were analyzed for uranium isotopes, but were not detected above soil BV in six shallow samples. <del>Uranium isotopes were not detected in shallow soil samples.</del></li> <li>• PCBs are not known to be associated with industrial materials historically managed at the Site. PCBs were not detected in one of one shallow <del>2020</del> Consent Order <del>soil</del> samples collected at the Site.</li> </ul>	T	
V.5 1260	12/23/2021	241.3	<p>Change to SDPPP-SWMU 33-008(c):</p> <ul style="list-style-type: none"> <li>• Copper is likely associated with industrial materials historically managed at the Site. Copper was detected above soil BV in <del>22-32</del> of <del>33</del> <del>47</del> shallow <del>soil</del> Consent Order samples <del>from 2020</del> with a maximum concentration of <del>1714-388</del> times soil BV.</li> <li>• Alpha-emitting radionuclides (uranium isotopes) may have been associated with industrial materials historically managed at the Site. Consent Order samples were analyzed for plutonium and uranium isotopes. Plutonium was not detected in samples. Uranium-234, uranium-235/236, and uranium-238 were not detected above soil BV in 10 shallow samples. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> <li>• PCBs are not known to have been associated with industrial materials historically managed at the Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in three of three shallow samples with a maximum concentration approximately 43 times less than the residential SSL. Aroclor-1260 was detected in three of three shallow samples with a maximum concentration 100 times less than the residential SSL.</li> </ul>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1261	12/23/2021	241.3	<p>Change to SDPPP-SWMU 33-011(d):</p> <ul style="list-style-type: none"> <li>• Copper is not known to be associated with industrial materials historically managed at the Site. Copper was not detected above soil BV in <del>2020</del>-Consent Order samples.</li> <li>• Alpha-emitting radionuclides (<del>uranium isotopes</del>) are <del>not</del>-known to have been associated with industrial materials historically managed at the Site. Consent Order samples <del>from 2020</del> were analyzed for plutonium and uranium isotopes. <del>Plutonium and Uranium isotopes were not detected in shallow soil samples.</del> Plutonium was not detected in samples. Uranium isotopes were not detected above soil BV in 18 shallow soil samples.</li> <li>• PCBs are not known to be associated with industrial materials historically managed at the Site. PCBs were not detected in five shallow <del>2020</del>-Consent Order soil samples collected at the Site.</li> </ul>	T	
V.5 1262	12/23/2021	241.3	<p>Change to SDPPP-SWMU 33-015:</p> <ul style="list-style-type: none"> <li>• Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 4 of 10 shallow <del>soil</del> Consent Order samples from 2020 with a maximum concentration of 7.3 times the soil BV.</li> <li>• Alpha-emitting radionuclides (uranium isotopes) may have been associated with industrial materials historically managed at the Site. Consent Order samples from 2020 were not analyzed for radionuclides. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity. <del>Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. Consent Order samples from 2020 were not analyzed for radionuclides.</del></li> <li>• PCBs are not known to be associated with industrial materials historically managed at the Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in one of three shallow soil samples with a maximum concentration 67 times less than the residential SSL. Aroclor-1260 was detected in two of three shallow soil samples with a maximum concentration 350 times less than the residential SSL.</li> </ul>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1263	12/23/2021	241.3	<p>Change to SDPPP- Monitoring location CHQ-SMA-1.02 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings as well as landscape consisting of sediments derived from Bandelier Tuff. <b>Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.</b></p> <ul style="list-style-type: none"> <li>• Copper—<del>Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff.</del> The copper UTL from developed landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper result from the storm water confirmation samples in 2011, 2013, <del>and</del> 2018, <del>and 2021</del> are all <b>between</b> these two values.</li> <li>• Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. One of the 2021 gross-alpha results is between these values and the second result is below both values.</li> <li>• PCBs—The PCB UTL from developed landscape storm water run-on is 98 ng/L; the PCB UTL for background storm water containing sediment derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2011 and one result from 2013 are less than both these values. The second PCB result from 2013 and both results from 2021 are <b>between both values</b>.</li> </ul> <p>The analytical results for these samples are reported in the 2011, 2013, <del>and</del> 2018, <del>and 2021</del> Annual Reports.</p>	T	
V.5 1264	12/23/2021	241.4	Added Maintenance table	T	
V.5 1265	12/23/2021	241.5	Updated Compliance Status Table	T	
V.5 1266	12/23/2021	CHQ-SMA-1.02	Updated Figure 241-2	T	
V.5 1267	12/23/2021	CHQ-SMA-1.03	Updated Figure 242-2	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1268	12/23/2021	243.2	Change to SDPPP- Enhanced controls were installed and certified on October 28, 2015 and April 21, 2021, and submitted to EPA on October 30, 2015 and April 21, 2021, respectively, as part of corrective action. Photographs of the enhanced controls are available at <a href="https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications">https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications</a> .	T	
V.5 1269	12/23/2021	243.3	Change to SDPPP- Most of the CHQ-SMA-2 drainage area is located on Bandelier Tuff, and minimal run-on occurs from developed facilities (i.e., buildings, pavement, and parking lots); therefore, calculated storm water UTLs from samples containing sediment derived from Bandelier Tuff were compared with copper and gross-alpha <del>MTAL and ATAL</del> storm water exceedances. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. Copper is associated with trace minerals in the Bandelier Tuff as well.	T	
V.5 1270	12/23/2021	243.5	Updated Compliance Status Table	T	
V.5 1271	12/23/2021	CHQ-SMA-2	Updated Figure 243-2	T	
V.5 1272	12/23/2021	244.3	Change to SDPPP- Monitoring location CHQ-SMA-3.05 is located on Bandelier Tuff, and there is no run-on from developed facilities (e.g., buildings, parking lots, and pavement); therefore, the Bandelier Tuff background UTL was compared with gross-alpha and PCB storm water exceedances. <del>receives storm water run-on from landscapes containing sediment derived from Bandelier Tuff.</del> Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.	T	
V.5 1273	12/23/2021	CHQ-SMA-3.05	Updated Figure 244-2	T	
V.5 1274	12/23/2021	245.2	Change to SDPPP- Enhanced controls were installed and certified on October 4, 2021, and submitted to EPA on October 12, 2021, as part of corrective action. Photographs of the enhanced controls are available at <a href="https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications">https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications</a> .	T	
V.5 1275	12/23/2021	245.3	Change to SDPPP- The monitoring location for CHQ-SMA-4 has been relocated to a location more likely to collect a corrective action confirmation monitoring sample after installation of enhanced control measures. Sampler coordinates and the SMA drainage area have been updated in Attachment 4.	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1276	12/23/2021	245.3	<p>Change to SDPPP-</p> <p>The 2021 corrective action monitoring location for CHQ-SMA-4 updated the drainage area to be located on Bandelier Tuff, with minimal to no run-on occurring from developed facilities. In baseline monitoring <del>Monitoring location CHQ-SMA-4 receives</del> received storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as landscapes containing sediment derived from Bandelier Tuff; therefore, calculated storm water UTLs for developed areas were compared with gross-alpha and PCB storm water exceedances. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. <del>storm water run-on from landscapes containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.</del></p> <ul style="list-style-type: none"> <li>• Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. The 2018 gross-alpha result is <del>less than this</del> between these two values.</li> <li>• PCBs—The PCB UTL from background storm water containing sediment derived from Bandelier Tuff is 11.7 ng/L, and the PCB UTL for run-on from a developed landscape is 98 ng/L. The PCB result from 2018 is greater than <del>this</del> both values.</li> </ul>	T	
V.5 1277	12/23/2021	245.4	Added Maintenance table	T	
V.5 1278	12/23/2021	245.5	Updated Compliance Status Table	T	
V.5 1279	12/23/2021	CHQ-SMA-4	Updated Figure 245-2	T	
V.5 1280	12/23/2021	246.3	<p>Change to SDPPP-</p> <p>Monitoring location CHQ-SMA-4.1 drainage area is located on Bandelier Tuff, and there is no run-on from developed facilities (e.g., buildings, parking lots, and pavement); therefore, the Bandelier Tuff background UTL was compared with the gross-alpha storm water exceedances. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. <del>receives storm water run-on from landscapes containing sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.</del></p>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1281	12/23/2021	CHQ-SMA-4.1	Updated Figure 246-2	T	
V.5 1282	12/23/2021	CHQ-SMA-4.5	Updated Figure 247-2	T	
V.5 1283	12/23/2021	CHQ-SMA-5.05	Updated Figure 248-2	T	
V.5 1284	12/23/2021	249.3	Change to SDPPP- Following the installation of enhanced control measures, corrective action storm water samples were collected on May 31, 2021 and July 25, 2021. Analytical results from these samples yielded TAL exceedances for copper (38.9 µg/L and 39.5 µg/L) and gross-alpha activity (15.9 pCi/L and 30.1 pCi/L) and are presented in Figure 249-2.	T	
V.5 1285	12/23/2021	249.3	Change to SDPPP- • Copper—The copper UTL from developed landscape storm water run-on is 32.3 µg/L; the copper UTL for background storm water containing sediment derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2013 and 2021 <del>is</del> are greater than both these values. • Gross alpha—The gross-alpha UTL for background storm water containing sediment derived from Bandelier Tuff is 1490 pCi/L, and the gross-alpha background storm water UTL for storm water run-on from a developed landscape is 32.5 pCi/L. The 2013 gross-alpha result is between these two values. The 2021 gross-alpha results are below both values. The analytical results for <del>this</del> these samples are reported in the 2013 and 2021 Annual Reports.	T	
V.5 1286	12/23/2021	249.4	Added Maintenance table	T	
V.5 1287	12/23/2021	249.5	Updated Compliance Status Table	T	
V.5 1288	12/23/2021	249.5	Change to SDPPP- Further details regarding compliance status and planned activities can be found in Attachment 6 for Sites in this SMA.	T	
V.5 1289	12/23/2021	CHQ-SMA-6	Updated Figure 249-2	T	
V.5 1290	12/23/2021	250.2	Change to SDPPP- Enhanced controls were installed and certified on April 21, 2021, and submitted to EPA on April 21, 2021, as part of corrective action. Photographs of the enhanced controls are available at <a href="https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications">https://ext.em-la.doe.gov/IPS/Home/ConstructionCertifications</a> .	T	

### Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1291	12/23/2021	250.3	Change to SDPPP- Monitoring location CHQ-SMA-7.1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings as well as landscapes containing sediment derived from Bandelier Tuff. Metals including <del>aluminum and</del> copper are associated with building materials, parking lots, and automobiles <del>and can be detected at as well as</del> low concentrations in Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.	T	
V.5 1292	12/23/2021	250.5	Updated Compliance Status Table	T	
V.5 1293	12/23/2021	CHQ-SMA-7.1	Updated Figure 250-2	T	
V.5 1294	1/14/2022	231.3	Change to SDPPP- In Figure 231-2, cadmium, selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL; the MDLs for these analytes are below their <b>respective TALs</b> .	T	
V.5 1295	1/14/2022	233.3	Change to SDPPP- In Figure 233-2, cadmium and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL; the MDLs for these analytes are below their <b>respective TALs</b> .	T	
V.5 1296	1/14/2022	236.3	Change to SDPPP- In Figure 236-2, cadmium, selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL; the MDLs for these analytes are below their <b>respective TALs</b> .	T	
V.5 1297	1/14/2022	239.3	Change to SDPPP- In Figure 239-2, cadmium, selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL; the MDLs for these analytes are below their <b>respective TALs</b> .	T	
V.5 1298	1/14/2022	244.3	Change to SDPPP- In Figure 244-2, cadmium , selenium, and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL; the MDLs for these analytes are below their <b>respective TALs</b> .	T	
V.5 1299	1/14/2022	247.3	Change to SDPPP- In Figure 247-2, cadmium and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL; the MDLs for these analytes are below their <b>respective TALs</b> .	T	
V.5 1300	1/14/2022	249.3	Change to SDPPP- In Figure 249-2, cadmium and silver are reported as nondetected results greater than their respective TALs. These values are reported at the PQL; the MDLs for these analytes are below their <b>respective TALs</b> .	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1301	1/21/2022	A-SMA-2	Per control measure verification BMP-89845 conducted 12/22/2021 with controls accepted 1/3/2022, please update as necessary to: <ul style="list-style-type: none"> <li>• Add Redi-Rock Berm A00203150054 installed as an enhanced erosion and runoff control. Install date 1/3/2022.</li> <li>• Add TRM-Lined Swale A00204080055 installed as an enhanced erosion and runoff control. Install date 1/3/2022.</li> <li>• Add Earthen Berm A00203010056 installed as an enhanced erosion and runoff control. Install date 1/3/2022.</li> <li>• Remove Culvert A00204040046. Control has been removed. Retire date 1/3/2022.</li> <li>• Review northern end of watershed. W-SMA-11.7 should not be included in this SMA.</li> </ul>	T	CCN-90588
V.5 1302	1/21/2022	A-SMA-2	New Control - Corrective Action Control-Control ID: A00203150054-Redi Rock Berm	T	CCN-90588
V.5 1303	1/21/2022	A-SMA-2	New Control - Corrective Action Control-Control ID: A00204080055-TRM-Lined Swale	T	CCN-90588
V.5 1304	1/21/2022	A-SMA-2	New Control - Corrective Action Control-Control ID: A00203010056-Earthen Berm	T	CCN-90588
V.5 1305	1/21/2022	A-SMA-2	Retire Control - Damaged and/or Replaced-Control ID: A00204040046-Culvert	T	CCN-90588
V.5 1306	1/21/2022	A-SMA-2	Map Revision - (14)	T	CCN-90588
V.5 1307	1/21/2022	A-SMA-2	Evaluate the northern edge of the A-SMA-2 boundary.	T	CCN-90626
V.5 1308	1/21/2022	A-SMA-2	SMA Boundary Modification, Updated Area in Attach D. Map Revision produced on CCN-90588.	T	CCN-90626
V.5 1309	2/8/2022	A-SMA-4	Per 2021 SDPPP Revision 1 Update peer review comment resolution, please update as necessary to: <ul style="list-style-type: none"> <li>• Produce new map revision without unknown border drawn in inset or primary map. This is not a LANL boundary, DOE boundary, or TA boundary and its origin is unknown. It may have been added to maps for site specific purposes related to control measure installations but is not relevant to the SDPPP project map context.</li> </ul>	E	CCN-91066
V.5 1310	2/8/2022	A-SMA-4	Map Revision - (10)	E	CCN-91066

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1311	2/24/2022	233.3	Change to SDPPP- AOC 39-002(c): <ul style="list-style-type: none"> <li>Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at AOC 39-002(c). <del>Consent Order samples were not analyzed for gross alpha radioactivity or alpha-emitting radionuclides because alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site.</del> Alpha emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> </ul>	T	
V.5 1312	2/24/2022	235.3	Change to SDPPP- In Figure 235-2, silver are reported as nondetected results greater than the TAL. These values are reported at the PQL; <del>the MDL for this analyte are</del> below <del>the</del> TAL.	T	
V.5 1313	2/24/2022	238.3	Change to SDPPP-SWMU 33-004(k): <ul style="list-style-type: none"> <li>Copper is not known to be associated with industrial materials historically managed at this Site. <del>Copper was detected above soil BV in one of ten shallow Consent Order samples with a concentration of 3 times the soil BV.</del></li> <li><del>Gross alpha radioactivity is not known to be associated with industrial materials historically managed at this Site.</del> Alpha-emitting radionuclides may have been associated with industrial materials historically managed at the Site. Consent Order samples were analyzed for uranium isotopes, which are alpha-emitters. Uranium isotopes were not detected above soil BV in shallow samples. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> </ul>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1314	2/24/2022	238.3	<p>Change to SDPPP- SWMU 33-007(a):</p> <ul style="list-style-type: none"> <li>• Copper is not known to have been associated with industrial materials historically managed at this Site. <del>Copper was detected above soil BV in 2 of 96 shallow Consent Order samples with a maximum concentration of 1.6 times the soil BV. Copper was not detected above BV in 35 shallow (i.e., less than 3 ft bgs) soil and sediment samples collected during the 1994 RFI at the Site.</del></li> <li>• Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at the Site. Consent Order samples were analyzed for uranium isotopes. Uranium-234 and uranium-235/236 were not detected above soil BV in 86 shallow samples. Uranium-238 was detected above soil BV in 3 of 86 shallow samples with the maximum activity of 1.4 times the soil BV. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> <li><del>• Gross alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at this Site. RFI samples were not analyzed for gross alpha radioactivity but were analyzed for uranium, which has alpha-emitting isotopes. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</del></li> </ul>	T	
V.5 1315	2/24/2022	238.3	<p>Change to SDPPP- SWMU 33-010(a):</p> <ul style="list-style-type: none"> <li>• Copper is not known to have been associated with industrial materials historically managed at this Site. <del>Copper was detected above soil BV in 2 of 52 shallow soil Consent Order samples from 2021 with a maximum concentration of 107 times the soil BV. Copper was not detected above BVs in eight shallow screening-level soil samples collected during the 1994 RFI at the Site.</del></li> <li>• Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> <li><del>• Gross alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at this site. RFI samples were not analyzed for gross alpha radioactivity but were analyzed for uranium, which has alpha-emitting isotopes. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</del></li> </ul>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1316	2/24/2022	239.3	<p>Change to SDPPP- SWMU 33-004(g):</p> <ul style="list-style-type: none"> <li>Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at the Site. Consent Order samples <del>from 2020</del> were not analyzed for gross-alpha radioactivity but were analyzed for uranium, which contains alpha-emitting radionuclides. Uranium-235/236 was <del>detected in one of three samples. The residential SAL was approximately 344 times the maximum detected concentration.</del> not detected above soil BV in shallow samples. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross alpha radioactivity.</li> <li>PCBs are not known to be associated with industrial materials historically managed at the Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in eight of <del>eight</del> ten shallow soil samples with a maximum concentration 1.1 times greater than the residential SSL. Aroclor-1260 was detected in eight of <del>eight</del> ten shallow soil samples with a maximum concentration <del>309</del> 5.5 times less than the residential SSL.</li> </ul>	T	
V.5 1317	2/24/2022	239.3	<p>Change to SDPPP- SWMU 33-007(c):</p> <ul style="list-style-type: none"> <li>Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at the Site. Consent Order samples <del>from 2020</del> were analyzed for uranium isotopes (uranium-234, uranium-235/236, and uranium-238). Uranium-234 was detected above soil BV in 9 of <del>13</del> 25 shallow soil samples with a maximum <del>concentration activity 43 times less than the residential SAL</del> of 2.6 times greater than the soil BV. Uranium 235/236 was detected above soil BV in 7 of <del>14</del> 25 shallow soil samples with a maximum <del>concentration activity of 2.2 times less than the residential SAL</del> the soil BV. Uranium-238 was detected above soil BV in 10 of <del>14</del> 25 shallow soil samples with a maximum <del>concentration activity 22 times less than the residential SAL</del> of 3 times greater than the soil BV. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> <li>PCBs are not known to be associated with industrial materials historically managed at the Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in <del>10</del> 12 of <del>11</del> 19 shallow <del>soil</del> samples with a maximum concentration 1.04 times greater than the residential SSL. Aroclor-1260 was detected in <del>9</del> 10 of <del>11</del> 19 shallow soil samples with a maximum concentration 8.3 times less than the residential SSL.</li> </ul>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1318	2/24/2022	239.3	<p>Change to SDPPP-SWMU 33-009:</p> <ul style="list-style-type: none"> <li>Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at the Site. Consent Order samples <del>from 2020</del> were analyzed for uranium isotopes (uranium-234, uranium-235/236, and uranium-238). Uranium-234 was detected above soil BV in one of <del>two</del> 32 shallow <del>soil</del> samples with an <del>maximum concentration activity 100 times less than the residential SAL of</del> 1.1 times greater than the soil BV. Uranium-235/236 was detected above soil BV in one of <del>two</del> 32 shallow soil samples with an <del>maximum concentration activity of</del> 1.4 times <del>146 less than the residential SAL</del> greater than the soil BV. Uranium-238 was detected above soil BV in one of <del>two</del> 32 shallow soil samples with an <del>maximum concentration 37 times less than the residential SAL activity of</del> 1.8 times greater than the soil BV. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> <li>PCBs are known to be associated with industrial materials historically managed at the Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in 14 of <del>3224</del> shallow soil samples with the maximum concentration 3 times the residential SSL. Aroclor-1260 was detected in 11 of <del>21</del> 32 shallow soil samples with the maximum concentration 1.3 times <del>less than</del> the residential SSL.</li> </ul>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1319	2/24/2022	242.3	<p>Change to SDPPP-SWMU 33-008(c):</p> <ul style="list-style-type: none"> <li>• Copper is likely associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 32 of 47 shallow Phase II Consent Order samples with a maximum concentration of 388 times soil BV.</li> <li><del>• Copper is likely associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 22 of 33 shallow soil Consent Order samples from 2020 with a maximum concentration of 1714 times soil BV.</del></li> <li>• Alpha-emitting radionuclides (uranium isotopes) may have been associated with industrial materials historically managed at the Site. Consent Order samples were analyzed for plutonium and uranium isotopes. Plutonium was not detected in samples. Uranium-234, uranium-235/236, and uranium-238 were not detected above soil BV in 10 shallow samples. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> <li><del>• Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. Consent Order samples from 2020 were analyzed for plutonium and uranium isotopes. Plutonium isotopes were not detected in soil samples. Uranium-234 was detected above soil BV in two of five shallow soil samples with a maximum concentration 57 times less than the residential SAL. Uranium-235/236 was detected above soil BV in three of five shallow soil samples with a maximum concentration 111 times less than the residential SAL. Uranium-238 was detected above soil BV in five of five shallow soil samples with a maximum concentration 13 times less than the residential SAL. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</del></li> <li>• PCBs are not known to have been associated with industrial materials historically managed at the Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Phase II Consent Order samples. Aroclor-1254 was detected in <del>seven-three</del> of <del>seven-three</del> shallow <del>soil</del>-samples with a maximum concentration approximately <del>equal to</del> 43 times less than the residential SSL. Aroclor-1260 was detected in <del>seven-three</del> of <del>seventhree</del> shallow <del>soil</del>-samples with a maximum concentration <del>4-100</del> times less than the residential SSL.</li> </ul>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1320	2/24/2022	242.3	<p>Change to SDPPP-SWMU 33-012(a):</p> <ul style="list-style-type: none"> <li>• Copper may have been associated with industrial materials historically managed at the Site. Copper was detected above soil BV in <del>8-7</del> of <del>20-22</del> shallow <del>soil</del> Consent Order samples <del>from 2020</del> with the maximum concentration <del>26.7</del> times <del>less than the residential SSL</del> the soil BV.</li> <li>• Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. <del>Consent Order samples from 2020 were analyzed for uranium isotopes, which are alpha-emitters. There were no detections above BVs for radionuclides.</del> Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> <li>• PCBs may have been associated with industrial materials historically managed at the Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in <del>17-48</del> of <del>22</del> <del>58</del> shallow <del>soil</del> samples with a maximum concentration <del>7-15</del> times greater than the residential SSL. Aroclor-1260 was detected in <del>17-49</del> of <del>22</del> <del>58</del> shallow <del>soil</del> samples with a maximum concentration <del>0.82</del> times <del>less than</del> <del>greater than</del> the residential SSL.</li> </ul>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1321	2/24/2022	242.3	<p>Change to SDPPP-SWMU 33-017:</p> <ul style="list-style-type: none"> <li>• Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 15 of <del>37-63</del> shallow <del>soil</del> Consent Order samples <del>from 2020</del> with the maximum concentration <del>being 0.74 times less than the residential SSL</del> 9.5 times greater than the soil BV.</li> <li>• Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. <del>Plutonium and uranium isotopes were sampled in the 2020 Consent Order sampling. Plutonium 239/240 was detected above soil BV in 1 of 12 shallow soil samples with a maximum concentration 1411 times less than the residential SAL. Uranium-234 was detected above soil BV in 1 of 12 shallow soil samples with a maximum concentration 98 times less than the residential SAL. Uranium-235/236 was not detected above soil BV in the 12 shallow soil samples. Uranium-238 was detected above soil BV in 4 of 12 shallow soil samples with a maximum concentration 43 times less than the residential SAL.</del> Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross alpha radioactivity.</li> <li>• PCBs are not known to have been associated with industrial materials historically managed at the Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in <del>36-31</del> of <del>49-43</del> shallow <del>soil</del> samples with a maximum concentration 1.4 times greater than the residential SSL. Aroclor-1260 was detected in <del>37-31</del> of <del>49-43</del> shallow <del>soil</del> samples with a maximum concentration <del>2-1.5</del> times greater than the residential SSL.</li> </ul>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1322	2/24/2022	242.3	<p>Change to SDPPP-AOC C-33-001:</p> <ul style="list-style-type: none"> <li>• Copper is not known to be associated with industrial materials historically managed at the Site. Consent Order samples from 2020 were not analyzed for copper.</li> <li>• Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at AOC C-33-001. <del>Consent Order samples from 2020 were not analyzed for radionuclides.</del> Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> <li>• PCBs are known to have been associated with industrial materials historically managed at the Site. <del>One-Two</del> PCB mixtures (Aroclor-1254 and Aroclor-1260) <del>was</del> were detected in shallow Consent Order samples. Aroclor-1254 was detected in 1 of 25 shallow samples with a concentration of 1.7 times greater than the residential SSL. Aroclor 1260 was detected in 13-19 of 13-25 shallow <del>soil</del> samples with a maximum concentration <del>328-96</del> times greater than the residential SSL.</li> </ul>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1323	2/24/2022	242.3	<p>Change to SDPPP-AOC C-33-003:</p> <ul style="list-style-type: none"> <li>• Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 16 of <del>17-77</del> shallow <del>soil</del> Consent Order samples <del>from 2020</del> with a maximum concentration <del>52 times less than the residential SSL</del> 4 times greater than the soil BV.</li> <li>• Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. <del>Uranium isotopes were sampled in the 2020 Consent Order sampling. Uranium-234 was detected above soil BV in four of eight shallow soil samples with a maximum concentration 62 times less than the residential SAL. Uranium-235/236 was not detected above soil BV in the eight shallow soil samples. Uranium-238 was detected above soil BV in five of eight shallow soil samples with a maximum concentration 31 times less than the residential SAL.</del> Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> <li>• PCBs are not known to have been associated with industrial materials historically managed at the Site. Two PCB mixtures (Aroclor-1254 and Aroclor-1260) were detected in shallow Consent Order samples. Aroclor-1254 was detected in 1 of 10 shallow <del>soil</del> samples with a maximum concentration 170 times less than the residential SSL. Aroclor-1260 was detected in <del>1-6</del> of 10 shallow <del>soil</del> samples with a maximum concentration 1.3 times less than the residential SSL.</li> </ul>	T	
V.5 1324	2/24/2022	243.3	<p>Change to SDPPP-SWMU 33-004(d):</p> <ul style="list-style-type: none"> <li>• Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 2 of 18 shallow <del>soil</del> Consent Order samples <del>from 2020</del> with a maximum concentration of 3.7 times the soil BV.</li> <li>• Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. <del>Uranium isotopes were sampled in the 2020 Consent Order sampling. Uranium-235/236 was not detected in the three shallow soil samples.</del> Alpha emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> </ul>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1325	2/24/2022	243.3	<p>Change to SDPPP-SWMU 33-007(c):</p> <ul style="list-style-type: none"> <li>• Copper is known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 15 of 25 shallow <del>soil</del> Consent Order samples <del>from 2020</del> with a maximum concentration <del>96 times less than the residential SAL</del> 2.2 times the soil BV.</li> <li>• Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at the Site. Consent Order samples were analyzed for uranium isotopes (uranium-234, uranium-235/236, and uranium-238). Uranium-234 was detected above soil BV in 9 of 25 shallow soil samples with a maximum activity of 2.6 times greater than the soil BV. Uranium 235/236 was detected above soil BV in 7 of 25 shallow soil samples with a maximum activity of 2.2 times greater than the soil BV. Uranium-238 was detected above soil BV in 10 of 25 shallow soil samples with a maximum activity of 3 times greater than the soil BV. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> <li><del>• Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at the Site. Consent Order samples from 2020 were analyzed for uranium isotopes (uranium-234, uranium-235/236, and uranium-238). Uranium-234 was detected above soil BV in 9 of 13 shallow soil samples with a maximum concentration 43 times less than the residential SAL. Uranium-235/236 was detected above soil BV in 7 of 14 shallow soil samples with a maximum concentration 96 times less than the residential SAL. Uranium-238 was detected above soil BV in 10 of 14 shallow soil samples with a maximum concentration 22 times less than the residential SAL. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</del></li> </ul>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1326	2/24/2022	243.3	<p>Change to SDPPP-AOC C-33-003:</p> <ul style="list-style-type: none"> <li>• Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 16 of 77 shallow Consent Order samples with a maximum concentration 4 times greater than the soil BV.</li> <li>• <del>Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 16 of 17 shallow soil Consent Order samples from 2020 with a maximum concentration 52 times less than the residential SSL.</del></li> <li>• Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. <del>Consent Order samples from 2020 were analyzed for cesium and uranium isotopes. Cesium-137 was not detected above soil BV in eight shallow soil samples. Uranium-234 was detected above soil BV in four of eight shallow soil samples with a maximum concentration 62 times less than the residential SAL. Uranium-235/236 was not detected above soil BV in the eight shallow soil samples. Uranium-238 was detected above soil BV in five of eight shallow soil samples with a maximum concentration 31 times less than the residential SAL.</del> Alpha emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> </ul>	T	
V.5 1327	2/24/2022	244.3	<p>Change to SDPPP-SWMU 33-010(f):</p> <ul style="list-style-type: none"> <li>• Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at this Site. <del>Consent Order samples from 2020 were not analyzed for gross alpha radioactivity but were analyzed for radionuclides. Radionuclides were not detected.</del> Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> <li>• PCBs are not known to have been associated with industrial materials historically managed at this Site. One PCB mixture (Aroclor-1254) was detected in shallow Consent Order samples. Aroclor-1254 was detected in two of <del>two</del> three shallow soil samples with the residential SSL being approximately 338 times the maximum concentration of the detection.</li> </ul>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1328	2/24/2022	245.3	<p>Change to SDPPP-SWMU 33-011(e):</p> <ul style="list-style-type: none"> <li>Alpha-emitting radionuclides are not known to have been associated with industrial materials historically managed at the Site. <del>Consent Order samples from 2020 were analyzed for cesium, tritium, and uranium isotopes. Cesium-137 was detected in 1 of 12 shallow soil samples with the maximum concentration 77 times less than the residential SSL. Tritium was not detected in the 12 shallow soil samples. Uranium-235/236 was detected above soil BV in 11 of 12 shallow soil samples with a maximum concentration 174 times less than the residential SAL.</del> Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> <li>PCBs are not known to be associated with industrial materials historically managed at the Site. Consent Order samples from 2020 were analyzed for PCB mixtures; there were no PCB detections in shallow soil samples.</li> <li>Selenium is not known to be associated with industrial materials historically managed at the Site. Selenium was detected above soil BV in 11 of 56 shallow <del>soil</del> 2020 Consent Order samples with a maximum concentration <del>138 times less than the residential SSL</del> 1.4 times greater than soil BV.</li> </ul>	T	
V.5 1329	2/24/2022	247.3	<p>Change to SDPPP-AOC 33-011(b):</p> <ul style="list-style-type: none"> <li>Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. <del>Plutonium and uranium isotopes were sampled in the 2020 Consent Order sampling. Plutonium-239/240 was detected above soil BV in one of three shallow soil samples with a maximum concentration 1463 times less than the residential SAL. Uranium-235/236 was not detected above soil BV in the three shallow soil samples.</del> Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> </ul>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1330	2/24/2022	249.3	<p>Change to SDPPP-SWMU 33-004(j):</p> <ul style="list-style-type: none"> <li>• Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 8 of 14 shallow soil Consent Order samples <del>from 2020</del> with a maximum concentration <del>3.4 times less than the residential SSL62 times greater than soil BV.</del></li> <li>• Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. <del>Plutonium and uranium isotopes were sampled in the 2020 Consent Order sampling. Plutonium isotopes were not detected in soil samples. Uranium 234 was detected above soil BV in five of seven shallow soil samples with a maximum concentration 16 times less than the residential SAL. Uranium 235/236 was detected above soil BV in six of seven shallow soil samples with a maximum concentration 51 times less than the residential SAL. Uranium 238 was detected above soil BV in seven of seven shallow soil samples with a maximum concentration 8 times less than the residential SAL.</del> Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> </ul>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1331	2/24/2022	249.3	<p>Change to SDPPP-SWMU 33-006(a):</p> <ul style="list-style-type: none"> <li>• Copper is known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in <del>12-46</del> of <del>20-88</del> shallow <del>soil</del> Consent Order samples <del>from 2020</del> with a maximum concentration <del>3-181</del> times <del>less than the residential SAL</del> greater than soil BV.</li> <li>• Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Plutonium and uranium isotopes were sampled in <del>the 2020</del> Consent Order sampling. Plutonium isotopes were not detected in <del>soil</del> shallow samples. Uranium-234 was detected above soil BV in <del>12-7</del> of <del>17-30</del> shallow <del>soil</del> samples with a maximum <del>concentration</del> activity of <del>5.9 times less than the residential SAL</del> 19 times greater than the soil BV. Uranium-235/236 was detected above soil BV in <del>13-8</del> of <del>17-30</del> shallow <del>soil</del> samples with a maximum <del>concentration</del> activity of 19 times greater than the soil BV <del>9.6 times less than the residential SAL</del>. Uranium-238 was detected above soil BV in <del>13-10</del> of <del>17-30</del> shallow <del>soil</del> samples with a maximum <del>concentration</del> <del>2.9 times less than the residential SAL</del> activity of 23 times greater than the soil BV. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> </ul>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1332	2/24/2022	249.3	<p>Change to SDPPP-SWMU 33-007(b):</p> <ul style="list-style-type: none"> <li>• Copper is known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 5 of <del>25-28</del> shallow soil Consent Order samples <del>from 2020</del> with a maximum concentration <del>32 times less than the residential SAL</del> <del>6.6 times greater than soil BV</del>.</li> <li>• Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Plutonium and uranium isotopes were sampled in <del>the 2020</del> Consent Order sampling. Plutonium-239/240 was not detected in <del>19 soil</del> shallow samples. Uranium-234 was detected above soil BV in six of <del>nine-25</del> shallow <del>soil</del> samples with a maximum <del>concentration 18 times less than the residential SAL</del> <del>activity of 6 times greater than the soil BV</del>. Uranium-235/236 was detected above soil BV in four of nine 25 shallow soil samples with a maximum concentration activity 43 times less than the residential SAL of 5 times greater than the soil BV. Uranium-238 was detected above soil BV in seven of <del>nine-25</del> shallow <del>soil</del> samples with a maximum <del>concentration 9 times less than the residential SAL</del> <del>activity of 7 times greater than the soil BV</del>. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross alpha radioactivity.</li> </ul>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1333	2/24/2022	249.3	<p>Change to SDPPP-SWMU 33-010(c):</p> <ul style="list-style-type: none"> <li>• Copper is known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in <del>11-15</del> of <del>12-21</del> shallow <del>soil</del> Consent Order samples <del>from 2020</del> with a maximum concentration <del>5.4</del>140 times <del>less than the residential SAL</del>the soil BV.</li> <li>• Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Plutonium and uranium isotopes were sampled in <del>the 2020</del> Consent Order sampling. Plutonium <del>239/240</del> <del>was isotopes were</del> not detected in soil samples. Uranium-234 was detected above soil BV in <del>11-10</del> of <del>11-12</del> shallow <del>soil</del> samples with a maximum <del>concentration of 18 times less than the residential SAL</del> activity 6 times greater than the soil BV. Uranium-235/236 was detected above soil BV in <del>11-10</del> of <del>11-12</del> shallow <del>soil</del> samples with a maximum <del>concentration 53 times less than the residential SAL</del> activity of 4 times greater than the soil BV. Uranium-238 was detected above soil BV in <del>11-10</del> of <del>11-12</del> shallow <del>soil</del> samples with a maximum <del>concentration 8.7 times less than the residential SAL</del> activity of 7.5 times greater than the soil BV. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> </ul>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1334	2/24/2022	249.3	<p>Change to SDPPP-SWMU 33-010(g):</p> <ul style="list-style-type: none"> <li>• Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in <del>2-3</del> of <del>16-30</del> shallow <del>soil</del> Consent Order samples <del>from 2020</del> with a maximum concentration <del>93 times less than the residential SSL</del> 2.3 times greater than the soil BV.</li> <li>• Alpha-emitting radionuclides are <del>not</del> known to be associated with industrial materials historically managed at the Site. Plutonium and uranium isotopes were sampled in the 2020 Consent Order sampling. Plutonium isotopes were not detected <del>in soil above soil BV in</del> samples. Uranium-234 was detected above soil BV in one of 30 shallow <del>soil</del> samples with an <del>maximum concentration 124 times less than the residential SAL</del> activity of 1.1 times greater than the soil BV. Uranium-235/236 was detected above soil BV in one of 30 shallow <del>soil</del> samples with an <del>maximum concentration 365 times less than the residential SAL</del> activity of 1.3 times greater than the soil BV. Uranium-238 was detected above soil BV in one of 30 shallow <del>soil</del> samples with an <del>maximum concentration 65 times less than the residential SAL</del> activity of 1.2 times greater than the soil BV. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> </ul>	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1335	2/24/2022	249.3	<p>Change to SDPPP-SWMU 33-010(h):</p> <ul style="list-style-type: none"> <li>• Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in one of six shallow <del>soil</del> Consent Order samples <del>from 2020</del> with a <del>maximum</del> concentration <del>81 times less than the residential SAL</del> 2.6 times greater than soil BV.</li> <li>• Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Plutonium and uranium isotopes were sampled in <del>the 2020</del> Consent Order sampling. Plutonium isotopes were not detected in soil samples. Uranium-234 was detected above soil BV in one of six shallow <del>soil</del> samples with an <del>maximum concentration 90 times less than the residential SAL</del> activity of 1.2 times greater than the soil BV. Uranium-235/236 was detected above soil BV in one of six shallow <del>soil</del> samples with a <del>maximum concentration 144 times less than the residential SAL</del> an activity of 1.2 times greater than the soil BV. Uranium-238 was detected above soil BV in one of six shallow <del>soil</del> samples with a <del>maximum concentration 46 times less than the residential SAL</del> an activity of 1.4 times greater than the soil BV. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> </ul>	T	

**Attachment 1, Amendments (continued)**

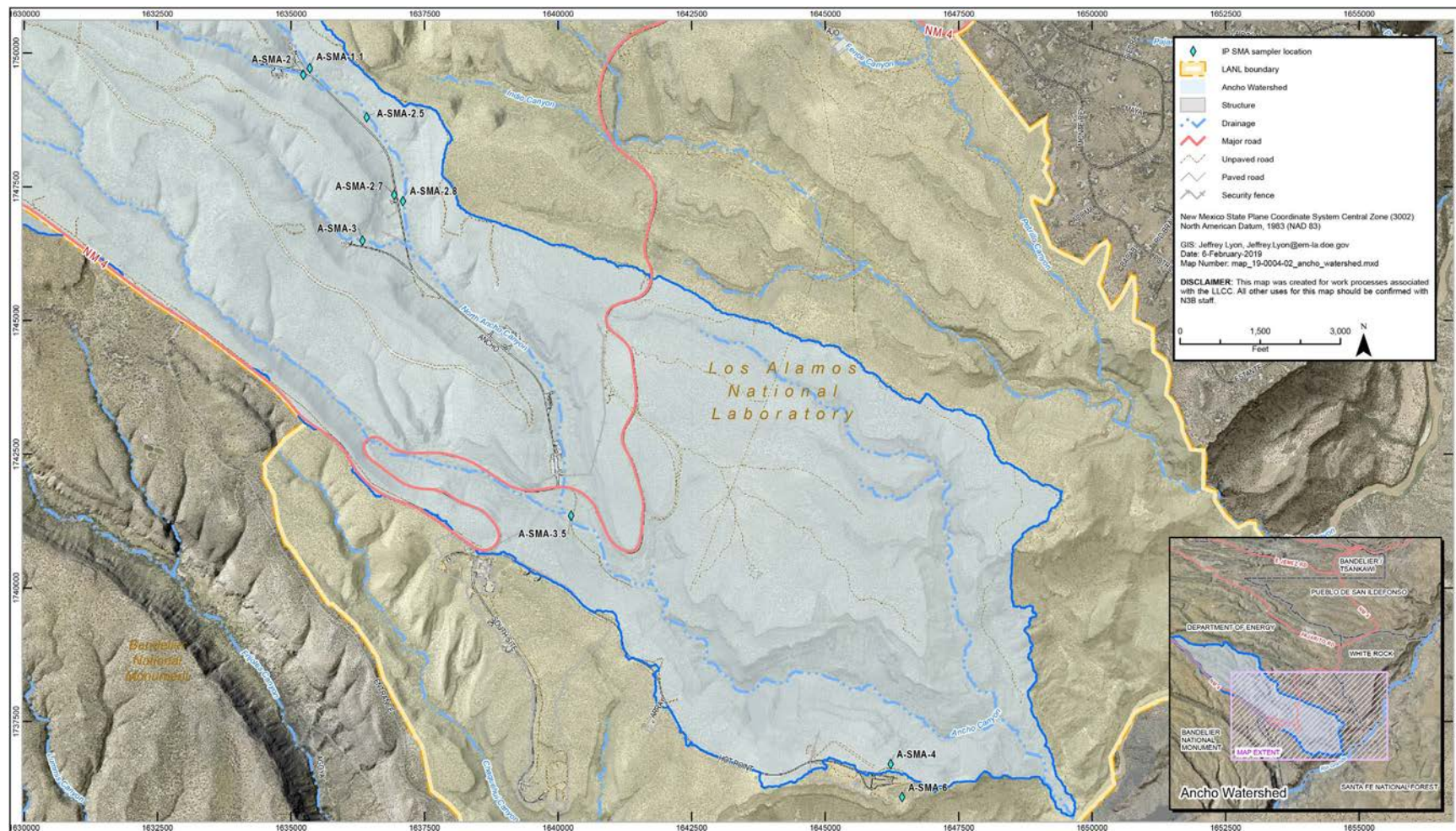
Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1336	2/24/2022	249.3	<p>Change to SDPPP-SWMU 33-014:</p> <ul style="list-style-type: none"> <li>• Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 6 of 16 shallow <del>soil</del> Consent Order samples <del>from 2020</del> with a maximum concentration <del>69 times less than the residential SSL</del> 3 times greater than the soil BV.</li> <li>• Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Uranium isotopes were sampled in <del>the 2020</del> Consent Order sampling. Uranium-234 was detected above soil BV in three of <del>seven</del> 16 shallow <del>soil</del> samples with a maximum <del>concentration 75 times less than the residential SAL</del> activity of 1.5 time greater than the soil BV. Uranium-235/236 was detected above soil BV in <del>two one</del> of <del>seven</del> 16 shallow <del>soil</del> samples with a <del>maximum concentration 168 times less than the residential SAL</del> activity of 1.3 times greater than the soil BV. Uranium-238 was detected above soil BV in six of <del>seven</del> 16 shallow <del>soil</del> samples with a maximum <del>concentration 35 times less than the residential SAL</del> activity of 1.9 times greater than the soil BV. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> </ul>	T	

**Attachment 1, Amendments (continued)**

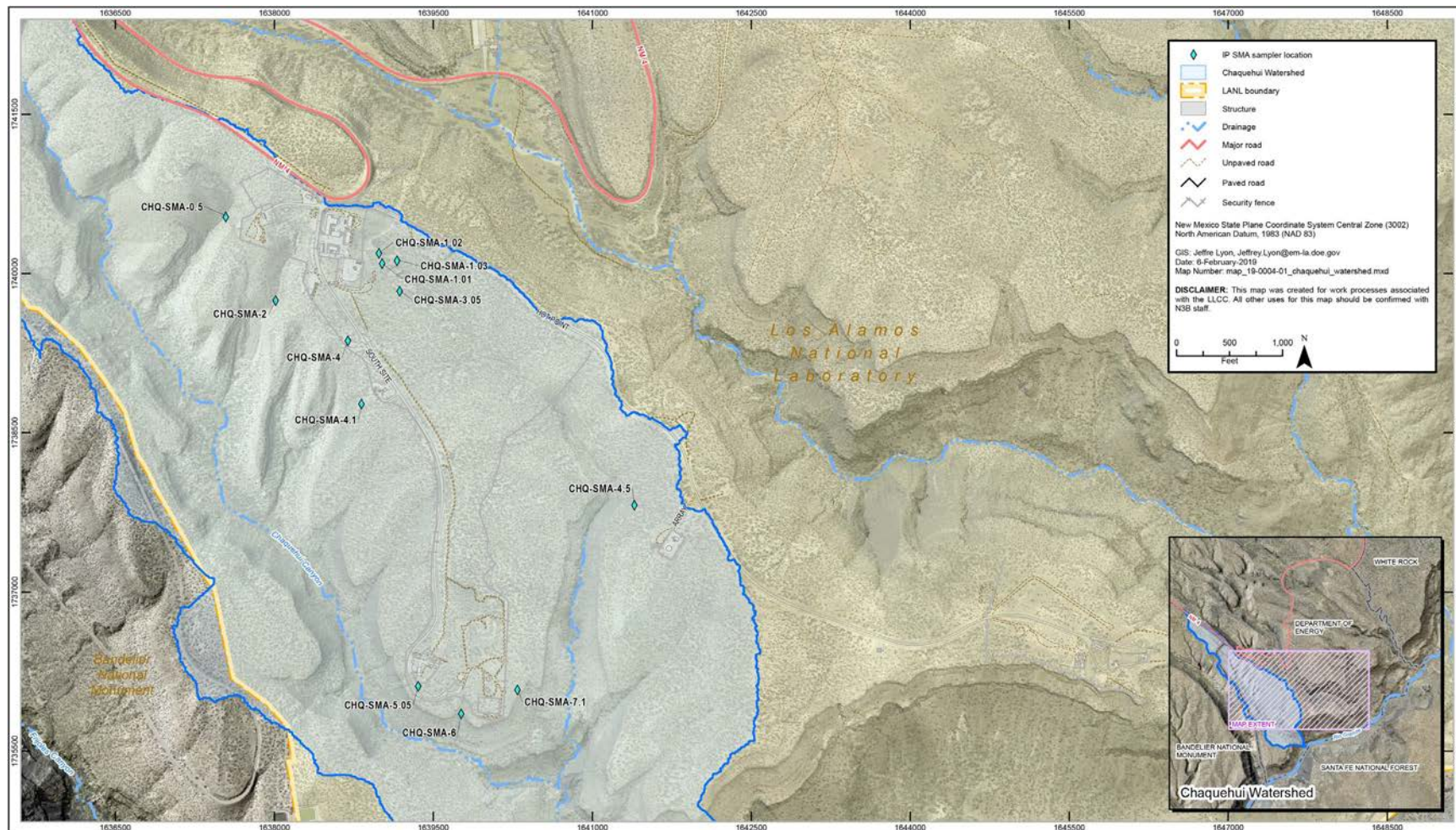
Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change*	Reference
V.5 1337	2/24/2022	250.3	<p>Change to SDPPP-SWMU 33-010(g):</p> <ul style="list-style-type: none"> <li>Aluminum may have been associated with industrial materials historically managed at the Site. Aluminum was not detected above soil BV in 2020 Consent Order sampling.</li> <li><del>Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 2 of 16 shallow soil Consent Order samples from 2020 with a maximum concentration 93 times less than the residential SSL.</del></li> <li>Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Plutonium and uranium isotopes were sampled in the 2020 Consent Order sampling. Plutonium isotopes were not detected above soil BV in samples. Uranium-234 was detected above soil BV in one of 30 shallow samples with an activity of 1.1 times greater than the soil BV. Uranium-235/236 was detected above soil BV in one of 30 shallow samples with an activity of 1.3 times greater than the soil BV. Uranium-238 was detected above soil BV in one of 30 shallow samples with an activity of 1.2 times greater than the soil BV. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</li> <li><del>Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at the Site. Plutonium and uranium isotopes were sampled in the 2020 Consent Order sampling. Plutonium isotopes were not detected in soil samples. Uranium-234 was detected above soil BV in one shallow soil sample with a maximum concentration 124 times less than the residential SAL. Uranium-235/236 was detected above soil BV in one shallow soil sample with a maximum concentration 365 times less than the residential SAL. Uranium-238 was detected above soil BV in one shallow soil sample with a maximum concentration 65 times less than the residential SAL. Alpha-emitting radionuclides are exempt from regulation under the CWA and are excluded from the definition of adjusted gross-alpha radioactivity.</del></li> <li>Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil BV in 3 of 30 shallow soil Consent Order samples with a maximum concentration 2.3 times greater than the soil BV.</li> </ul>	T	

\*T = Technical, E = Errata.

## Attachment 2 Vicinity Map



**Attachment 2, Vicinity Map (continued)**



## Attachment 3 Precipitation Network

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG265	04-23-2021	0.02	0.02	4.8
RG265	05-03-2021	0.1	0.06	39.6
RG265	05-07-2021	0.03	0.02	15.0
RG265	05-17-2021	0.02	0.01	9.6
RG265	05-18-2021	0.02	0.01	9.6
RG265	05-19-2021	0.01	0.01	4.8
RG265	05-22-2021	0.07	0.07	19.8
RG265	05-30-2021	0.02	0.02	4.8
RG265	05-31-2021	0.57	0.2	124.8
RG265	06-02-2021	0.01	0.01	4.8
RG265	06-06-2021	0.14	0.11	39.6
RG265	06-17-2021	0.06	0.06	15.0
RG265	06-24-2021	0.22	0.11	39.6
RG265	06-25-2021	0.01	0.01	4.8
RG265	06-26-2021	0.22	0.14	64.8
RG265	06-27-2021	0.64	0.17	219.6
RG265	06-28-2021	0.03	0.02	15.0
RG265	06-29-2021	0.18	0.03	90.0
RG265	06-30-2021	0.11	0.04	54.6
RG265	07-01-2021	0.01	0.01	4.8
RG265	07-02-2021	0.03	0.03	9.6
RG265	07-04-2021	0.7	0.5	84.6
RG265	07-06-2021	0.03	0.03	9.6
RG265	07-14-2021	0.07	0.03	34.8
RG265	07-20-2021	0.03	0.03	15.0
RG265	07-24-2021	0.04	0.02	19.8
RG265	07-30-2021	0.01	0.01	4.8
RG265	08-02-2021	0.02	0.01	9.6
RG265	08-03-2021	0.28	0.27	24.6
RG265	08-04-2021	0.01	0.01	4.8
RG265	08-15-2021	0.5	0.4	69.6
RG265	08-22-2021	0.51	0.32	64.8
RG265	08-26-2021	0.72	0.62	54.6
RG265	08-28-2021	0.03	0.03	9.6
RG265	09-01-2021	0.3	0.12	99.6

**Attachment 3, Precipitation Network (continued)**

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG265	09-18-2021	0.02	0.01	9.6
RG265	09-19-2021	0.01	0.01	4.8
RG265	09-30-2021	0.99	0.13	279.6
RG265	10-26-2021	0.04	0.04	19.8
RG267.4	04-17-2021	0.01	0.01	4.8
RG267.4	04-23-2021	0.02	0.02	9.6
RG267.4	05-03-2021	0.01	0.01	4.8
RG267.4	05-07-2021	0.05	0.03	24.6
RG267.4	05-17-2021	0.05	0.04	24.6
RG267.4	05-18-2021	0.03	0.01	15.0
RG267.4	05-22-2021	0.01	0.01	4.8
RG267.4	05-28-2021	0.05	0.05	15.0
RG267.4	05-30-2021	0.24	0.11	75.0
RG267.4	05-31-2021	0.56	0.41	79.8
RG267.4	06-02-2021	0.11	0.09	34.8
RG267.4	06-06-2021	0.17	0.17	19.8
RG267.4	06-17-2021	0.19	0.19	19.8
RG267.4	06-24-2021	0.14	0.09	49.8
RG267.4	06-26-2021	0.5	0.34	84.6
RG267.4	06-27-2021	0.41	0.09	165.0
RG267.4	06-28-2021	0.02	0.01	9.6
RG267.4	06-29-2021	0.18	0.03	90.0
RG267.4	06-30-2021	0.13	0.04	64.8
RG267.4	07-02-2021	0.01	0.01	4.8
RG267.4	07-04-2021	0.39	0.38	34.8
RG267.4	07-05-2021	0.01	0.01	4.8
RG267.4	07-06-2021	0.02	0.02	9.6
RG267.4	07-11-2021	0.01	0.01	4.8
RG267.4	07-14-2021	0.11	0.07	39.6
RG267.4	07-17-2021	0.01	0.01	4.8
RG267.4	07-20-2021	0.01	0.01	4.8
RG267.4	07-21-2021	0.01	0.01	4.8
RG267.4	07-22-2021	0.01	0.01	4.8
RG267.4	07-23-2021	0.01	0.01	4.8
RG267.4	07-24-2021	0.02	0.02	9.6
RG267.4	07-27-2021	0.25	0.24	30.0
RG267.4	08-02-2021	0.1	0.1	19.8
RG267.4	08-03-2021	0.18	0.18	19.8

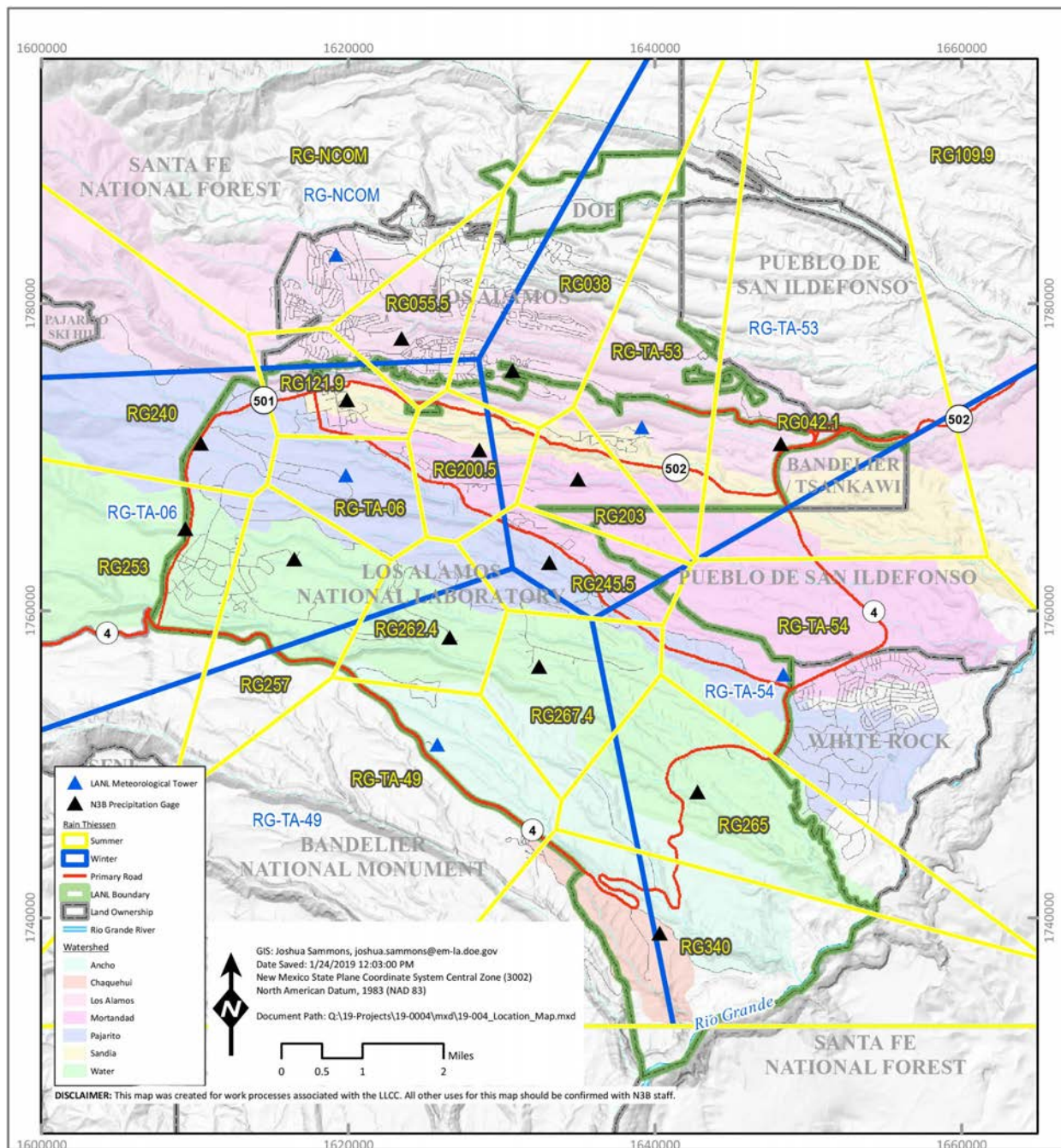
**Attachment 3, Precipitation Network (continued)**

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG267.4	08-04-2021	0.15	0.15	15.0
RG267.4	08-15-2021	0.49	0.38	75.0
RG267.4	08-22-2021	0.7	0.47	84.6
RG267.4	08-26-2021	1.25	0.98	94.8
RG267.4	08-27-2021	0.04	0.02	19.8
RG267.4	09-01-2021	0.24	0.11	79.8
RG267.4	09-03-2021	0.14	0.13	30.0
RG267.4	09-18-2021	0.02	0.02	9.6
RG267.4	09-19-2021	0.03	0.02	15.0
RG267.4	09-28-2021	0.19	0.18	34.8
RG267.4	09-30-2021	1.16	0.15	339.6
RG267.4	10-26-2021	0.04	0.03	15.0
RG340	04-28-2021	0.01	0.01	4.8
RG340	05-03-2021	0.14	0.07	49.8
RG340	05-07-2021	0.01	0.01	4.8
RG340	05-17-2021	0.03	0.02	15.0
RG340	05-19-2021	0.07	0.06	24.6
RG340	05-22-2021	0.03	0.03	15.0
RG340	05-31-2021	1.86	0.96	180.0
RG340	06-01-2021	0.01	0.01	4.8
RG340	06-02-2021	0.01	0.01	4.8
RG340	06-06-2021	0.5	0.47	45.0
RG340	06-24-2021	0.14	0.12	39.6
RG340	06-26-2021	0.08	0.07	30.0
RG340	06-27-2021	0.6	0.15	199.8
RG340	06-28-2021	0.03	0.02	15.0
RG340	06-29-2021	0.21	0.03	105.0
RG340	06-30-2021	0.09	0.05	45.0
RG340	07-02-2021	0.02	0.02	9.6
RG340	07-04-2021	0.18	0.11	49.8
RG340	07-14-2021	0.22	0.13	54.6
RG340	07-20-2021	0.01	0.01	4.8
RG340	07-21-2021	0.02	0.02	9.6
RG340	07-23-2021	0.02	0.01	9.6
RG340	07-24-2021	0.08	0.05	39.6
RG340	07-25-2021	0.27	0.25	39.6
RG340	07-30-2021	0.02	0.02	9.6
RG340	08-02-2021	0.01	0.01	4.8

***Attachment 3, Precipitation Network (continued)***

<b>Rain Gage</b>	<b>Date</b>	<b>Total (in.)</b>	<b>Intensity (in./30 min)</b>	<b>Duration (min)</b>
RG340	08-03-2021	1.37	0.86	64.8
RG340	08-04-2021	0.08	0.08	9.6
RG340	08-15-2021	0.2	0.12	64.8
RG340	08-22-2021	0.02	0.01	9.6
RG340	08-26-2021	0.47	0.43	49.8
RG340	08-27-2021	0.02	0.01	9.6
RG340	08-28-2021	0.01	0.01	4.8
RG340	09-01-2021	0.3	0.1	94.8
RG340	09-18-2021	0.01	0.01	4.8
RG340	09-19-2021	0.01	0.01	4.8
RG340	09-30-2021	1.14	0.18	285.0
RG340	10-25-2021	0.02	0.02	4.8
RG340	10-26-2021	0.04	0.04	15.0

**Attachment 3, Precipitation Network (continued)**



## Attachment 4 Physical Characteristics

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate (Latitude)	Sampler Y Coordinate (Longitude)	SMA Drainage Area (ft <sup>2</sup> )	Site Number	Site Drainage Area (ft <sup>2</sup> )
Ancho	A001	A-SMA-1.1	1635375 (35.808851)	1749687 (-106.267002)	8,365,964.91	39-004(a) 39-004(d)	0.00 0.00
Ancho	A002	A-SMA-2	1635229 (35.808608)	1749599 (-106.267495)	22,795,296.48	39-004(b) 39-004(e)	589.79 1,074.60
Ancho	A003	A-SMA-2.5	1636417 (35.806421)	1748803 (-106.263489)	3,278.71	39-010	1,618.89
Ancho	A004	A-SMA-2.7	1636976.6 (35.802422)	1747175.3 (-106.261756)	413,865.09	39-002(c) 39-008	0.00 21,506.34
Ancho	A005	A-SMA-2.8	1637078 (35.802117)	1747235 (-106.261267)	42,446.94	39-001(b)	9,801.41
Ancho	A006	A-SMA-3	1636681 (35.799765)	1746380 (-106.262594)	8,730,147.51	39-002(b) 39-004(c)	10.14 374.92
Ancho	A007	A-SMA-3.5	1640239 (35.78595)	1741352 (-106.2506)	103.23	39-006(a)	0.00
Ancho	A008	A-SMA-4	1646223 (35.7732)	1736711 (-106.230433)	27,693.41	33-010(d)	1,567.89
Ancho	A009	A-SMA-6	1646439 (35.7715)	1736091 (-106.2297)	276,527.05	33-004(k) 33-007(a) 33-010(a)	111.31 3,959.78 14,648.17
Chaquehui	Q001	CHQ-SMA-0.5	1637696 (35.783883)	1740598 (-106.259167)	22,466.99	33-004(g) 33-007(c) 33-009	5.27 48.39 776.11
Chaquehui	Q002	CHQ-SMA-1.01	1639017 (35.7825)	1740096 (-106.254717)	15,519.67	33-002(d)	89.88
Chaquehui	Q002A	CHQ-SMA-1.02	1639035(35.780695)	1740179 (-106.2557724)	95,641.40	33-004(h) 33-008(c) 33-011(d) 33-015	17.84 1,500.77 3,426.59 15.27
Chaquehui	Q002B	CHQ-SMA-1.03	1639159 (35.782570)	1740121 (-106.254241)	458,089.82	33-008(c) 33-012(a) 33-017 C-33-001 C-33-003	18,133.54 591.94 198,699.46 518.51 7,614.62

**Attachment 4, Physical Characteristics (continued)**

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate (Latitude)	Sampler Y Coordinate (Longitude)	SMA Drainage Area (ft <sup>2</sup> )	Site Number	Site Drainage Area (ft <sup>2</sup> )
Chaquehui	Q003	CHQ-SMA-2	1638015 (35.78155)	1739747 (-106.2581)	596,725.73	33-004(d) 33-007(c) C-33-003	510.74 165.25 19,037.52
Chaquehui	Q004	CHQ-SMA-3.05	1639182 (35.781789)	1739837 (-106.254162)	13,214.90	33-010(f)	367.15
Chaquehui	Q005	CHQ-SMA-4	1638704 (35.780695)	1739438 (-106.255772)	9,156.41	33-011(e)	617.50
Chaquehui	Q006	CHQ-SMA-4.1	1638823 (35.7788686)	1738774 (-106.2553743)	901.00	33-016	0.00
Chaquehui	Q007	CHQ-SMA-4.5	1641395 (35.77625)	1737819 (-106.2467)	144,485.27	33-011(b)	45,800.12
Chaquehui	Q008	CHQ-SMA-5.05	1639356 (35.77155)	1736112 (-106.253567)	15,197.86	33-007(b)	3114.46
Chaquehui	Q009	CHQ-SMA-6	1639763 (35.77085)	1735852 (-106.2522)	490,803.11	33-004(j) 33-006(a) 33-007(b) 33-010(c) 33-010(g) 33-010(h) 33-014	51.44 1,955.75 52,320.52 1,954.17 17,521.70 4,525.26 3,841.00
Chaquehui	Q010	CHQ-SMA-7.1	1640295 (35.7715)	1736091 (-106.250417)	20,487.09	33-010(g)	17,923.50

## Attachment 5 Sampling Requirements and Plan

### Sampling and Analysis Requirements

Sampling Conditions	Analytical Suite										
	Gross Alpha	Ra-226/ Ra-228	Cyanide	Dissolved Metals	Total Metals	Aluminum	Copper	Mercury	PCBs	High Explosives	Pesticides
Analytical method	EPA 900.0	EPA 903.0 EPA 904.1	SM 4500 CN-I	EPA:200.7 EPA:200.8	EPA:200.7 EPA:200.8 EPA:245.2	EPA:200.8	EPA:200.8	EPA 245.2	EPA 1668A	SW-846:8330	EPA 608
Field prep code	UF	UF	UF	F	UF	F	F	UF	UF	UF	UF
Preservation	HNO3	HNO3	NaOH, Ice	HNO3	HNO3	HNO3	HNO3	HNO3	Ice	Ice	Ice, store some analytes in dark
Holding time (days)	180	180	14	180	180	180	180	28	365	7	7
Preferred volume (L)	2	2	1	0.5	0.5	0.5	0.5	0.5	3	2.5	3
Minimum volume required (L)	1	2	0.5	0.25	0.25	0.25	0.25	0.25	1	0.77	1
Shipping container	Poly	Poly	Poly	Poly	Poly	Poly	Poly	Poly	Glass	Glass	Amber glass

UF = Unfiltered.

F = Filtered.

## Attachment 5, Sampling Requirements and Plan (continued)

### Sampling and Analysis Plan

Permit SMA Number	SDPPP Section	Station Name	Stage	Gross Alpha	Ra-226/Ra-228	Cyanide	Dissolved Metals	Total Metals	Aluminum (Filtered)	Arsenic (Filtered)	Copper (Filtered)	Mercury (Unfiltered)	Zinc (Filtered)	PCBs	High Explosives	Dioxins/Furans	Pesticides	SVOCs
A-SMA-1.1	230	SS210215	CAM5	X	X	X	X	X							X			
A-SMA-2	231	SS140212	BEC															
A-SMA-2.5	232	SS180213	MEx	X	X	X	X	X										
A-SMA-2.7	233	SS120211	CAM5	X	X	X	X	X							X			
A-SMA-2.8	234	SS090206	MEx	X	X	X	X	X										
A-SMA-3	235	SS210214	CAM5-2	X	X	X	X	X						X	X			
A-SMA-3.5	236	SS090208	MEx <sup>a</sup>	X	X	X	X	X						X				
A-SMA-4	237	SS276	AltComR															
A-SMA-6	238	SS310	AltCompR															
CHQ-SMA-0.5	239	SS090601	CAM5	X	X	X	X	X						X	X			
CHQ-SMA-1.01	240	SS090612	MEx	X	X	X	X	X						X				
CHQ-SMA-1.02	241	SS210621	S7															
CHQ-SMA-1.03	242	SS140619	CAM5	X	X	X	X	X						X				
CHQ-SMA-2	243	SS3374	CAM5-2	X	X	X	X	X						X				
CHQ-SMA-3.05	244	SS150620	CAM5	X	X	X	X	X						X			X	
CHQ-SMA-4	245	SS210622	CAM5	X	X	X	X	X						X	X			
CHQ-SMA-4.1	246	SS100617	AltCompR															
CHQ-SMA-4.5	247	SS341	AltCompR															

## Attachment 5, Sampling Requirements and Plan (continued)

### Sampling and Analysis Plan (continued)

Permit SMA Number	SDPPP Section	Station Name	Stage	Gross Alpha	Ra-226/Ra-228	Cyanide	Dissolved Metals	Total Metals	Aluminum (Filtered)	Arsenic (Filtered)	Copper (Filtered)	Mercury (Unfiltered)	Zinc (Filtered)	PCBs	High Explosives	Dioxins/Furans	Pesticides	SVOCs
CHQ-SMA-5.05	248	SS090616	MEx	X	X	X	X	X										
CHQ-SMA-6	249	SS3377	S7															
CHQ-SMA-7.1	250	SS100618	CAM5	X	X	X	X	X							X			

<sup>a</sup> 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.

AltCompR = Alternative Compliance Requested.

BEC = Building Enhanced Controls.

CAM5 = Corrective Action Enhanced Control Monitoring: Two confirmation monitoring samples are collected following completion of corrective action control measures at moderate priority sites within 5 yr of effective date of the Permit.

CAM5-2 = Corrective Action Enhanced Control Monitoring: Two confirmation monitoring samples are collected following completion of corrective action control measures at moderate priority sites within 5 yr of effective date of the Permit. Corrective action enhanced controls were installed twice at this Site. This is the second round of sampling.

MEx = Extended Baseline Monitoring: One confirmation monitoring sample is collected to determine if corrective action is required.

S7 = Permittees are preparing an analysis of alternatives to complete corrective action.

## Attachment 6

### Additional Compliance Status Details for SMAs/Sites in Corrective Action

SMA	Site List	Additional Compliance Status Details
A-SMA-1.1	39-004(a) and 39-004(d)	In 2018, a sample was collected with TAL exceedances. Enhanced control measures were installed as a corrective action in 2021 and the certification of installation was submitted to EPA on December 7, 2021. Because certification was done during winter conditions, permittees will initiate corrective action monitoring in 2022 to attempt to collect confirmation samples per IP Part I.E.1(a).
A-SMA-2	39-004(b) and 39-004(e)	In 2019, samples were collected with TAL exceedances. The owning facility performed control measure maintenance/upgrades in the fall and winter of 2021 and the Permittees will certify some of these changes at enhanced control installations in early 2022.
A-SMA-3	39-002(b) and 39-004(c)	In 2018, a sample was collected with TAL exceedances. Enhanced control measures were installed as a corrective action in 2021 and the certification of installation was submitted to EPA on December 7, 2021. Because certification was done during winter conditions, permittees will initiate corrective action monitoring in 2022 to attempt to collect confirmation samples per IP Part I.E.1(a).
CHQ-SMA-0.5	33-004(g) 33-007(c) 33-009	A sample was collected with TAL exceedances on August 3, 2021. As this was the first sample collected after enhanced certification, the Analytical results for this sample were submitted to EPA on October 8, 2021 per Permit Part I.E.1(c). Enhanced control corrective action monitoring is ongoing until collection of a second sample is achieved.
CHQ-SMA-1.02	33-004(h), 33-008(c), 33-011(d), and 33-015	In 2018, samples were collected with TAL exceedances. Enhanced control measures were installed as a corrective action in 2021 and the certification of installation was submitted to EPA on April 21, 2021. Permittees initiated corrective action monitoring as part of certification to attempt to collect confirmation samples per IP Part I.E.1(a). In 2021, samples were collected with TAL exceedances. Permittees are preparing an analysis of alternatives to complete corrective actions at this Site.
CHQ-SMA-2	33-007(c)	In 2018, samples were collected with TAL exceedances. Enhanced control measures were installed as a corrective action in 2021 and the certification of installation was submitted to EPA on April 21, 2021. Permittees initiated corrective action monitoring as part of certification to attempt to collect confirmation samples per IP Part I.E.1(a).
CHQ-SMA-4	33-011(e)	In 2018, samples were collected with TAL exceedances. Enhanced control measures were installed as a corrective action in 2021 and the certification of installation was submitted to EPA on October 12, 2021. Permittees initiated corrective action monitoring as part of certification to attempt to collect confirmation samples per IP Part I.E.1(a).

**Attachment 6, Additional Compliance Status Details for SMAs/Sites in Corrective Action (continued)**

SMA	Site List	Additional Compliance Status Details
CHQ-SMA-6	33-004(j) 33-006(a) 33-007(b) 33-010(g) 33-010(h) 33-014	In 2021, samples were collected with TAL exceedances. Permittees are preparing an analysis of alternatives to complete corrective actions at this SMA.
CHQ-SMA-7.1	33-010(g)	In 2018, a sample was collected with TAL exceedances. Enhanced control measures were installed as a corrective action in 2021 and the certification of installation was submitted to EPA on April 21, 2021. Permittees initiated corrective action monitoring as part of certification to attempt to collect confirmation samples per IP Part I.E.1(a).