ERID-255575

2013 Update to the Site Discharge Pollution Prevention Plan, Revision 1

Los Alamos National Laboratory
NPDES Permit No. NM0030759
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Water/Cañon de Valle Watershed

Receiving Waters:
Cañon de Valle, Potrillo Canyon, Water Canyon, and Fence Canyon

Volume 4

CONTENTS

Attachments

180.0 CDV-SMA-1.2: SWMUs 16-017(b)-99 and 16-029(k)

180.1 Site Descriptions

Two historical industrial activity areas are associated with V001, CDV-SMA-1.2: Sites 16-017(b)-99 and 16-029(k).

SWMU 16-017(b)-99 is a former HE machining building (former structure 16-93) that was located at TA-16. Constructed in 1950, the wooden building measured 20 ft wide × 60 ft long × 11 ft high and was surrounded by an earthen berm that was packed against steel pilings. The building was originally used for HE machining and later was used as an electroplating facility. By 1970, the building was used only for storage. Building 16-93 was removed in 1996.

Consent Order sampling has not yet been conducted at SWMU 16-017(b)-99; the Site will be sampled during the future Cañon de Valle Aggregate Area investigation. No investigations were conducted at the Site before the Consent Order went into effect in 2005.

SWMU 16-029(k) consists of two former HE sumps that served former electroplating building 16-93 at TA-16. Constructed in 1950, the 5-ft-wide × 15-ft-long × 5-ft-deep concrete sumps were situated on the northeast and southeast corners of the building. Two VCP drainlines extended north from each sump and eventually merged into a single drainline that continued for approximately 500 ft to an outfall located north of the K-Site Road. In the 1960s, the sumps were filled with gravel. The building, sumps, and drainlines were removed during D&D operations in 1996.

SWMU 16-029(k) along with numerous other SWMUs and AOCs is part of Consolidated Unit 16-008(a)-99, the former 90s Line, and was investigated and remediated under the Consent Order as a single Site. Consent Order investigations are complete for SWMU 16-029(k). The Site meets residential risk levels and was recommended for corrective action complete without controls.

The project map (Figure 180-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

180.2 Control Measures

Potential run-on to this Permitted Feature originates from the south in natural areas, and there are minor contributions from an unpaved access road. Existing storm water controls serve to mitigate these minor run-on sources. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 180-1).

Table 180-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V00102040012	Established Vegetation		X	X		B
V00103020008	Base Course Berm		X		X	CB
V00103060009	Straw Wattles	X			X	B
V00103060010	Straw Wattles	X			X	B
V00103060011	Straw Wattles	X			X	B
V00104060001	Rip Rap		X	X		CB
V00106010007	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

180.3 Storm Water Monitoring

SWMUs 16-017(b)-99 and 16-029(k) are monitored within CDV-SMA-1.2. Following the installation of baseline control measures, a baseline storm water sample was collected on September 12, 2013 (Figures 180-2 and 180-3). Analytical results from this sample yielded no TAL exceedances. Baseline confirmation is complete for CDV-SMA-1.2 and the associated SWMUs 16-017(b)-99 and 16-029(k) because all applicable sampling results are below the applicable MTAL or ATAL. No further sampling is required for CDV-SMA-1.2 for the duration of the IP.

180.4 Inspections and Maintenance

RG253 recorded seven storm events at CDV-SMA-1.2 during the 2013 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 180-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30707	5-3-2013
Storm Rain Event	BMP-33645	7-16-2013
Storm Rain Event	BMP-34284	8-7-2013
Storm Rain Event	BMP-35599	9-20-2013
Annual Erosion Evaluation	COMP-36646	11-1-2013

No maintenance activities were conducted at CDV-SMA-1.2 in 2013.

180.5 Compliance Status

The Sites associated with CDV-SMA-1.2 are Moderate Priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 180-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 16-017(b)-99	Baseline Monitoring Extended	Baseline Confirmation Complete	No Comment
SWMU 16-029(k)	Baseline Monitoring Extended	Baseline Confirmation Complete	No Comment

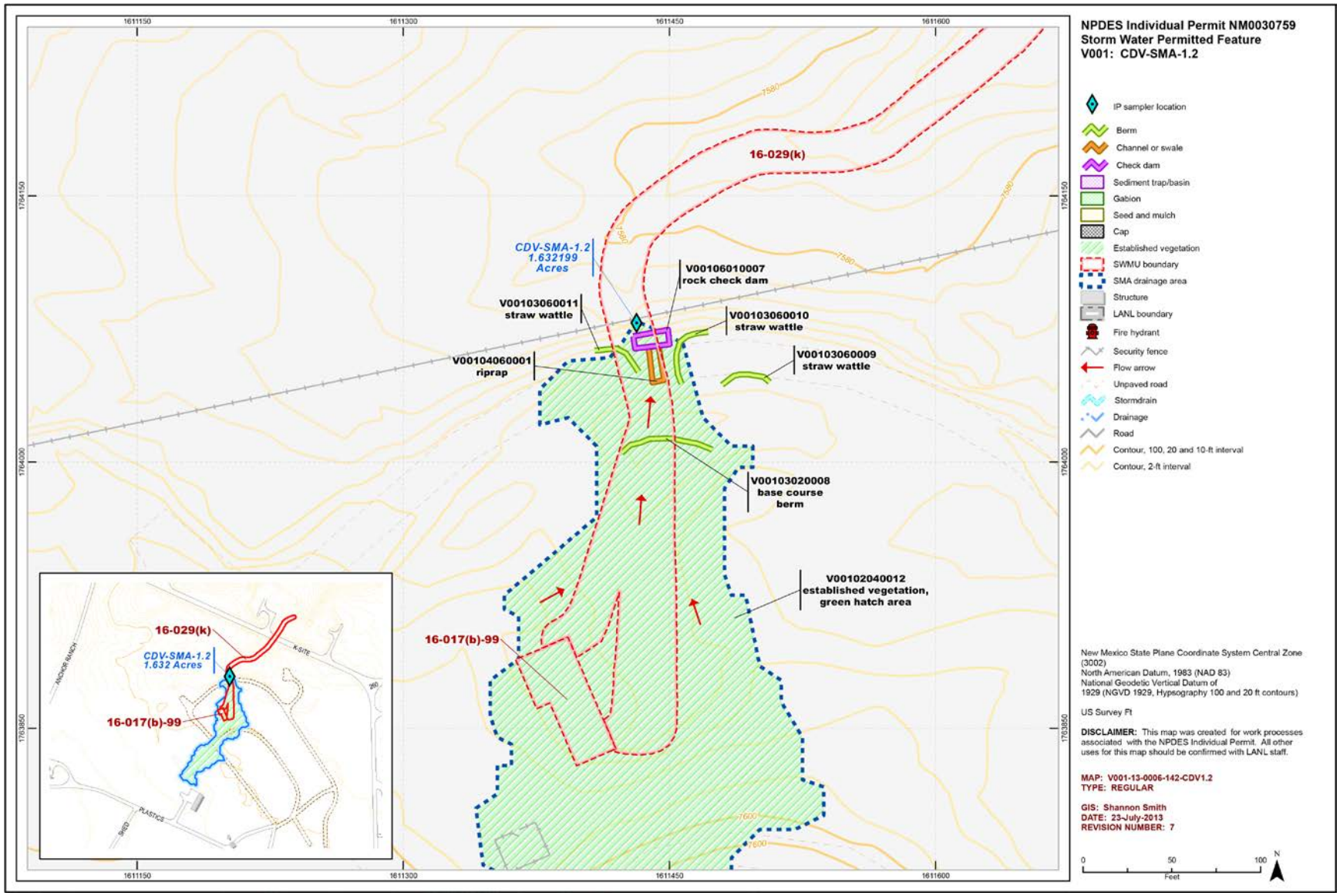
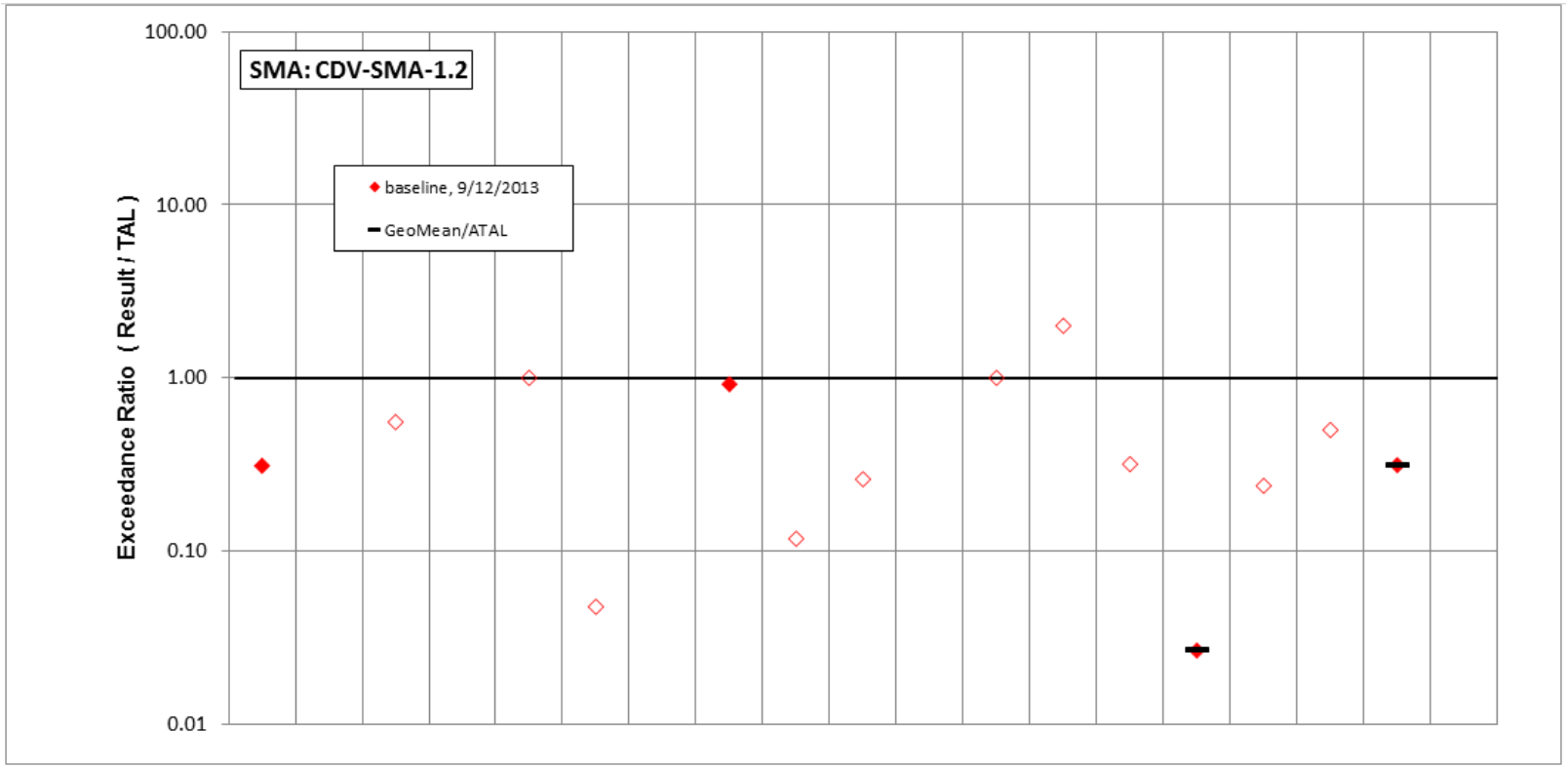


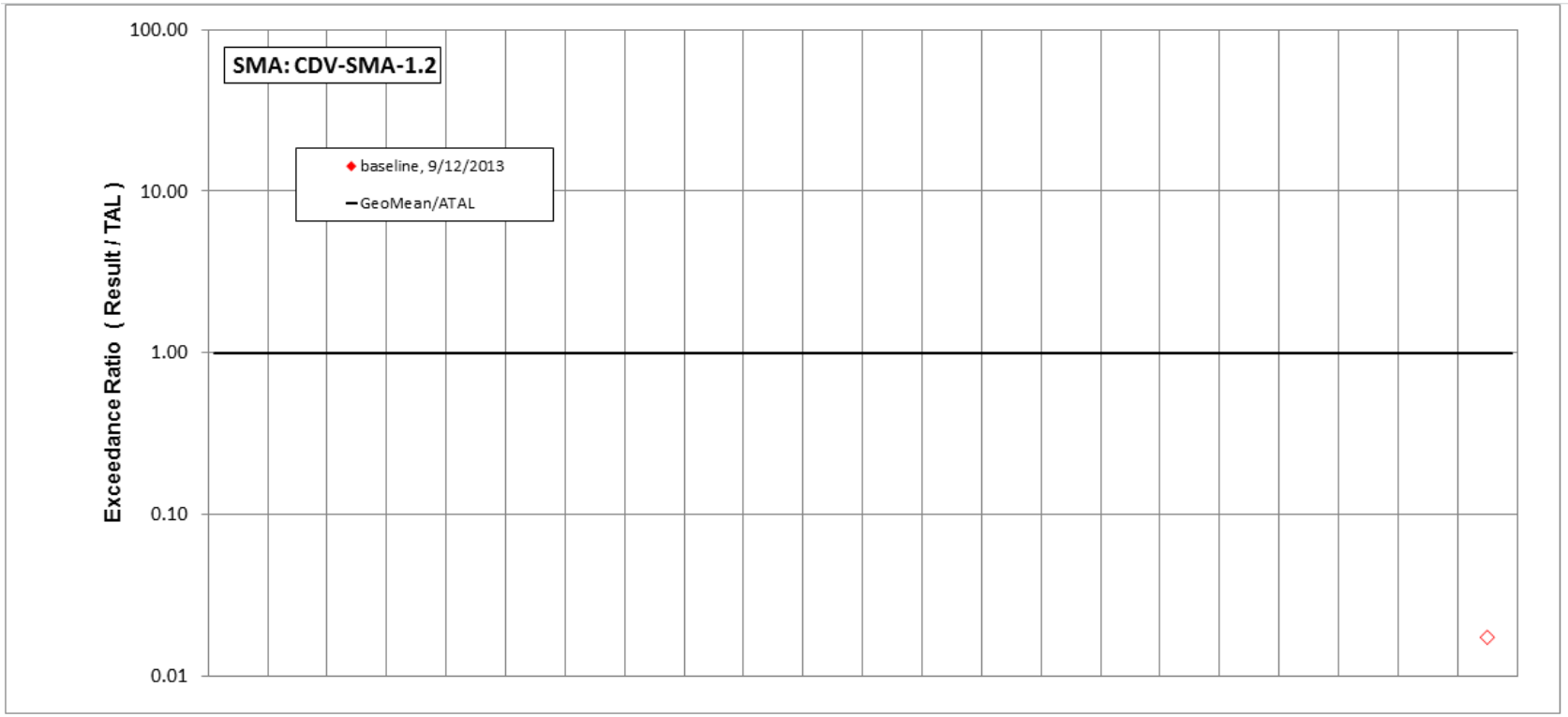
Figure 180-1 CDV-SMA-1.2 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	**Silver**	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/12/2013 result	233	*3*	*5*	29.2	*1*	*10*	1.68	3.95	*2*	*0.2*	1.35	*5*	***1***	*2*	2.66	*10*	*0.005*	4.7	*0.236*
result / TAL	0.31	*0.005*	*0.56*	0.0058	*1*	*0.048*	0.0017	0.92	*0.12*	*0.26*	0.0079	*1*	***2***	*0.32*	0.027	*0.24*	*0.5*	0.31	*0.008*

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 180-2 Inorganic analytical results summary plot for CDV-SMA-1.2



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-	-	ATAL
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	-	-	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
9/12/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.153	-	-	-	*0.347*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8E-04	-	-	-	*0.017*

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 180-3 Organic analytical results summary plot for CDV-SMA-1.2

181.0 CDV-SMA-1.3: SWMUs 16-017(a)-99 and 16-026(m)

181.1 Site Descriptions

Two historical industrial activity areas are associated with V002, CDV-SMA-1.3: Sites 16-017(a)-99 and 16-026(m).

Site 16-017(a)-99 consists of a former HE machining building (structure 16-92) that was located at TA-16. Constructed in 1950, the wooden building measured 20 ft wide × 60 ft long × 11 ft high and was surrounded by an earthen berm that was packed against steel pilings. The building was originally used for HE machining and was later used to clean and refurbish HE-contaminated equipment. By 1970 the building was used entirely for storage. The building was removed in 1996. This Site was originally a component of SWMU 16-017, which consisted of a group of 24 structures within TA-16. During the 1999 Annual Unit Audit, SWMU 16-017 was split into 24 separate SWMUs to facilitate investigation. Structure 16-92 was given the individual SWMU identification of SWMU 16-017(a)-99 at that time.

SWMUs 16-017(a)-99 and 16-026(m) along with numerous other SWMUs and AOCs are part of Consolidated Unit 16-008(a)-99, the former 90s Line, and were investigated under the Consent Order as a single Site. The same surface sampling data set applies to both Sites.

SWMU 16-026(m) consists of two outfalls from two sumps [SWMU 16-029(l)], located near the 90s Line Pond area at TA-16, that served former HE machining building 16-92. The sumps were located on the east and west sides of building 16-92. The eastern sump discharged to a VCP drainline that extended north and west to its discharge point approximately 260 ft north of the building. The western sump discharged to a VCP that extended north and then west of the building where it discharged to an open drainage channel. Constructed in 1950, the building was used for machining HE until 1955. Subsequently, the building was used for cleaning and refurbishing HE-contaminated equipment. The sumps were filled with gravel during the mid-1960s, and by 1970 the building was devoted entirely to storage. The building, its sumps and drainlines were all removed in 1996. SWMUs 16-017(a)-99 and 16-026(m) along with numerous other SWMUs and AOCs are part of Consolidated Unit 16-008(a)-99, the former 90s Line, and were investigated under the Consent Order as a single Site. The same surface sampling data set applies to both Sites.

The project map (Figure 181-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

181.2 Control Measures

There are no run-on contributions to this Permitted Feature and minimal runoff. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 181-1).

Table 181-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V00202040003	Established Vegetation		X	X		B
V00203020002	Base Course Berm		X		X	CB

CB: Certified baseline control measure.
B: Additional baseline control measure.
EC: Enhanced control measure.

181.3 Storm Water Monitoring

SWMUs 16-017(a)-99 and 16-026(m) are monitored within CDV-SMA-1.3. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figures 181-2 and 181-3). Analytical results from this sample yielded one TAL exceedance:

- Gross-alpha activity of 34.7 pCi/L (ATAL is 15 pCi/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 16-017(a)-99:

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Shallow (i.e., less than 3 ft bgs) 1996 VCA and 2006 Consent Order soil samples were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides because these constituents are not associated with historical Site activities.

SWMU 16-026(m):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Shallow (i.e., less than 3 ft bgs) 1996 VCA and 2006 Consent Order soil samples were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides because these constituents are not associated with historical Site activities.

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 Figures 181-2 and 181-3. 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 Figures 181-2 and 181-3.

Monitoring location CDV-SMA-1.3 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 urban landscape is 32.5 pCi/L. The 2013 gross-alpha result is between these values.

All the analytical results for these samples are reported in the 2013 Annual Report.

181.4 Inspections and Maintenance

RG253 recorded seven storm events at CDV-SMA-1.3 during the 2013 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 181-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30708	5-3-2013
Storm Rain Event	BMP-33646	7-16-2013
Storm Rain Event	BMP-34285	8-7-2013
Storm Rain Event	BMP-35600	9-20-2013
Annual Erosion Evaluation	COMP-36647	11-1-2013
TAL Exceedance	COMP-36877	11-1-2013

No maintenance activities were conducted at CDV-SMA-1.3 in 2013.

181.5 Compliance Status

The Sites associated with CDV-SMA-1.3 are Moderate Priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 181-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 16-017(a)-99	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-25-13
SWMU 16-026(m)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-25-13

CDV-SMA-1.3, Base Course Berm, V00203020002 (photo ID 8521-1r)

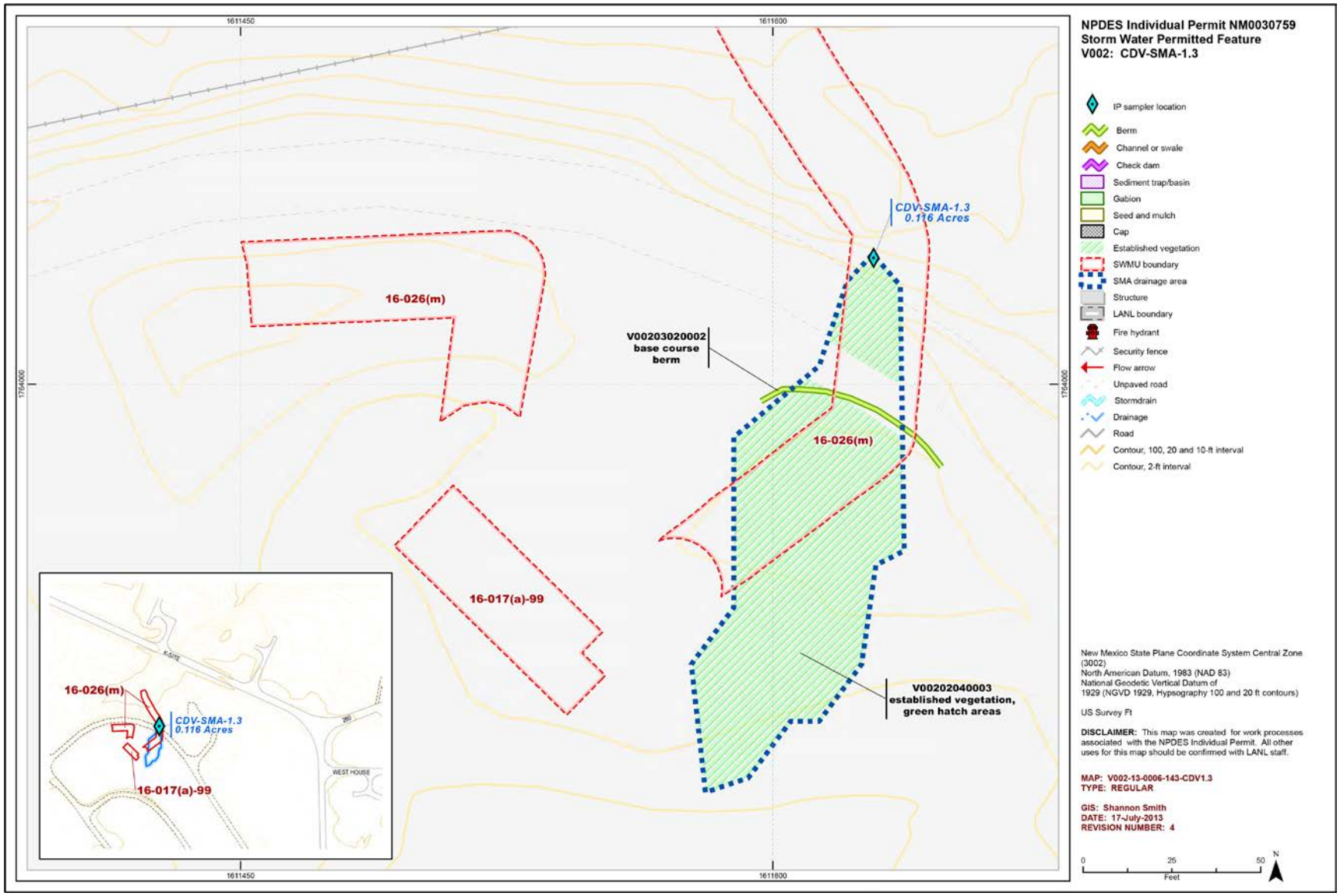
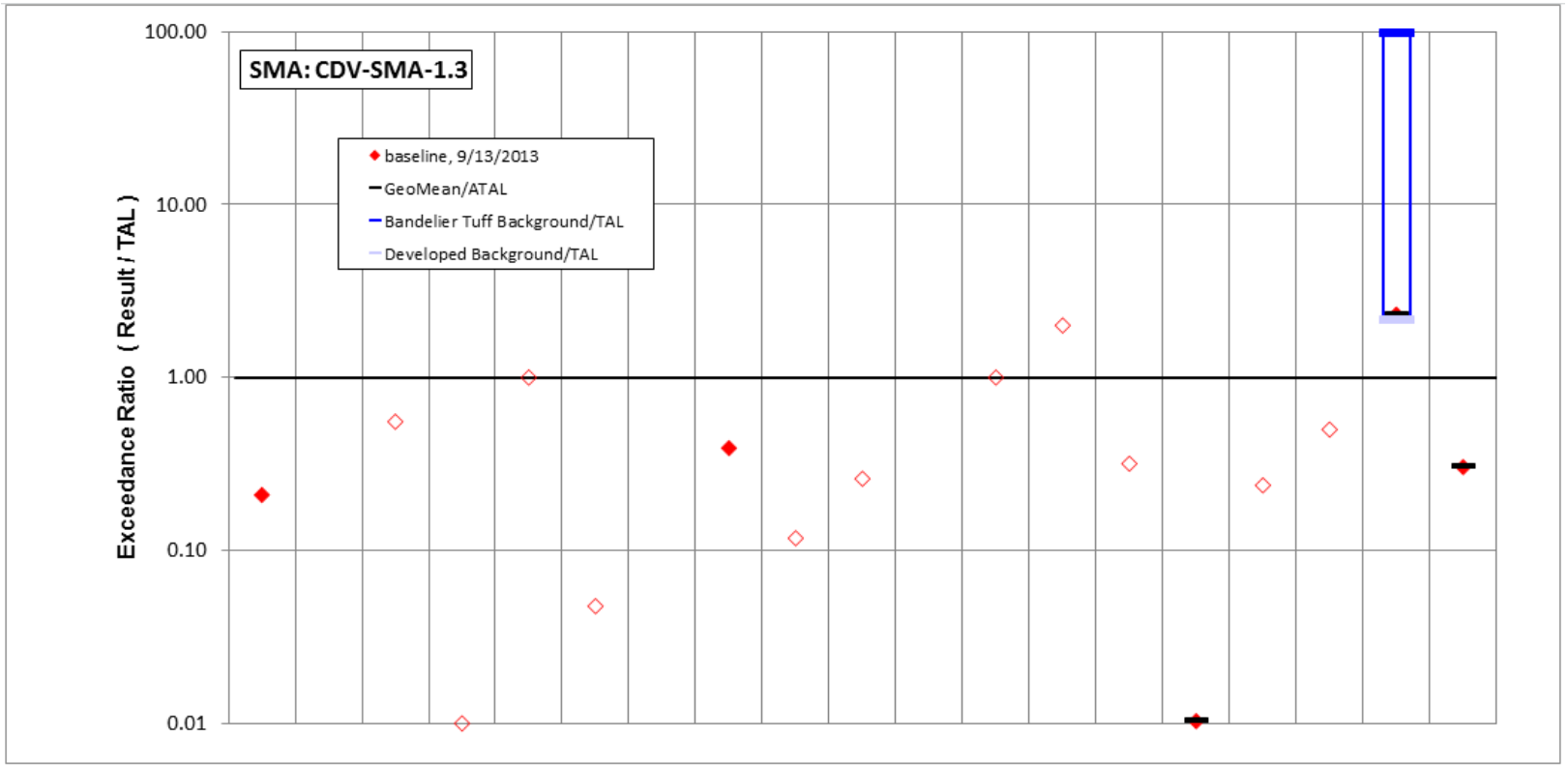


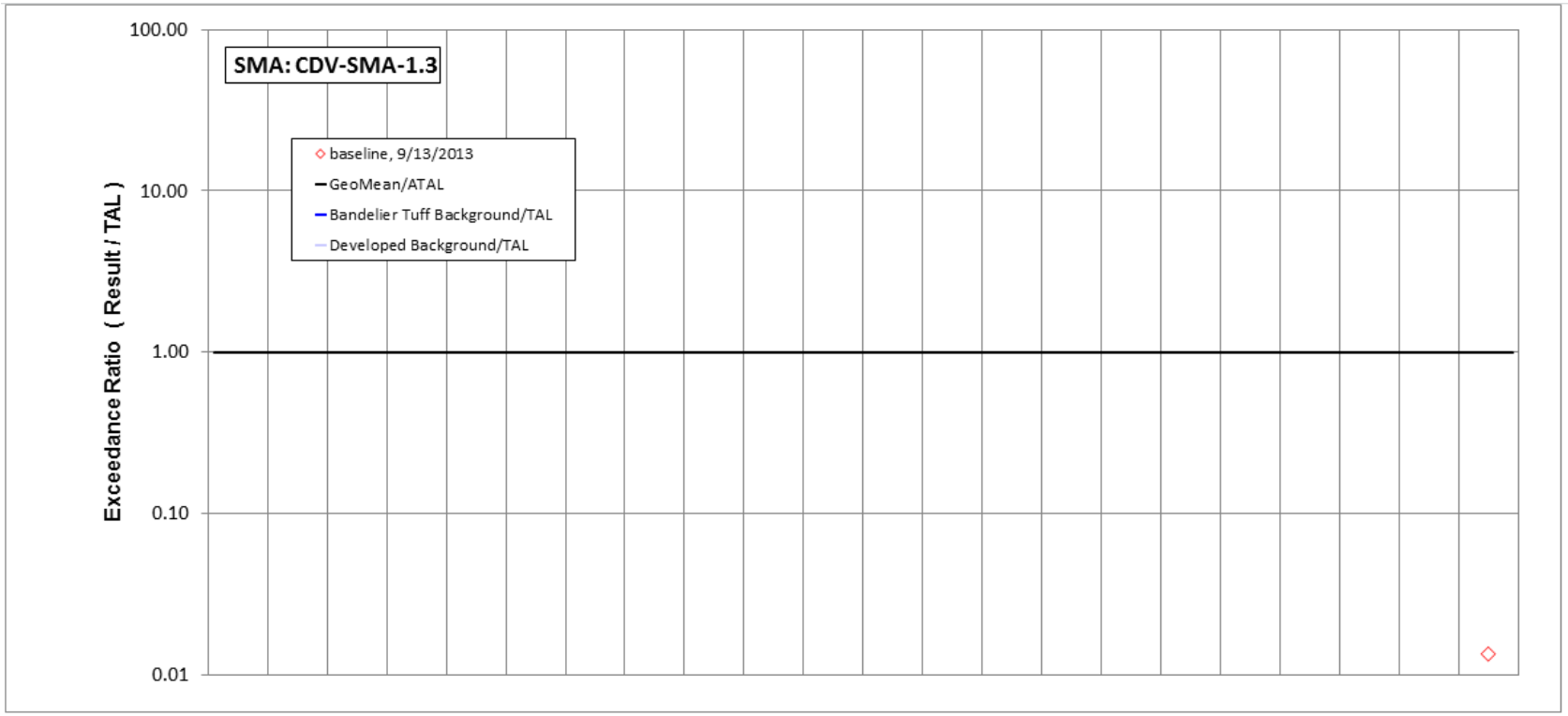
Figure 181-1 CDV-SMA-1.3 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	**Silver**	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/13/2013 result	157	1.21	*5*	*50*	*1*	*10*	1.51	1.68	*2*	*0.2*	0.665	*5*	***1***	*2*	1.03	*10*	*0.005*	**34.7**	9.1
result / TAL	0.21	0.0019	*0.56*	*0.01*	*1*	*0.048*	0.0015	0.39	*0.12*	*0.26*	0.0039	*1*	***2***	*0.32*	0.01	*0.24*	*0.5*	**2.3**	0.3

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 181-2 Inorganic analytical results summary plot for CDV-SMA-1.3



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-	-	ATAL
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	-	-	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
9/13/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.269*	-	-	-	*0.269*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.001*	-	-	-	*0.013*

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 181-3 Organic analytical results summary plot for CDV-SMA-1.3

182.0 CDV-SMA-1.4: SWMUs 16-020, 16-026(l), 16-028(c), and 16-030(c)

182.1 Site Descriptions

Four historical industrial activity areas are associated with V003, CDV-SMA-1.4: Sites 16-020, 16-026(l), 16-028(c), and 16-030(c).

SWMU 16-020 is a formerly permitted outfall (EPA 06A037) located 300 ft south of former building 16-222 in the northern portion of TA-16. From 1951 to 1979, the outfall received untreated effluent from the sink and floor drains in photoprocessing building 16-222 and discharged to a drainage channel that empties into Cañon de Valle. In 1979, a silver recovery unit was installed to treat the photoprocessing solutions before discharge. Discharges to the outfall ceased when building 16-222 was decommissioned in 1995. In 2000, approximately 200 yd^3 of soil was removed from the outfall area as part of an IM. After soil removal, the outfall and a portion of the drainage channel were stabilized with rock pavements, check dams, and straw wattles. Building 16-222 underwent D&D in 2003. The outfall drainline is still in place.

Consent Order investigations have not yet begun for this Site; however, decision-level data are available from confirmation samples collected following the 2000 IM conducted at SWMU 16-020.

SWMU 16-026(l) consists of two former outfalls that were located on the east side of former x-ray building 16-220 in the northern portion of TA-16. Both outfalls received storm water discharges from separate roof drains. Engineering records state that neither the drainline nor the outfall could be located in the field. building 16-220 underwent D&D in 2003.

Consent Order investigations have not yet begun for this Site; no decision-level data are available for SWMU 16-026(l).

SWMU 16-028(c) is a former NPDES-permitted outfall (04A070) and drainline that received discharges from eight floor drains in former building 16-220. Wastewater included noncontact cooling water, chiller condensate, periodic discharges from an HE vacuum pump, and wash water from cleaning building floors. The 6-in. VCP drainline discharged to an outfall located in a rocky ditch southeast of the building and flowed to a flat grassy field. The floor drains in former building 16-220 were plugged in 1991, and the outfall was removed from the Laboratory's NPDES permit on September 19, 1997. Building 16-220 underwent D&D in 2003. The outfall drainline is likely still in place.

Consent Order investigations have not yet begun for this Site; no decision-level data are available for SWMU 16-028(c).

SWMU 16-030(c) consists of three former outfalls from four roof drains at a former rest house (former structure 16-222) at TA-16. The 1990 SWMU report describes SWMU 16-030(c) as consisting of two outfalls originating from roof drains located on the northwest and northeast corners of building 16-222. Engineering drawings show that building 16-222 had four roof drains located at each roof corner that discharged to three outfalls. The roof drain on the northeast corner of the building discharged via a 6-in. VCP to an outfall located approximately 65 ft southeast of building 16-222. The northwest corner roof drain discharged via a 6-in. VCP to an outfall located approximately 20 ft west of building 16-222. The southeast and southwest corner roof drains were connected to a 6-in. VCP that discharged to an outfall located approximately 15 ft southwest of building 16-222. Building 16-222 was constructed in 1953 and underwent D&D in 2003. All surface and subsurface structures were removed in 2003.

Consent Order investigations were not conducted at SWMU 16-030(c). NMED issued a COC without controls for SWMU 16-030(c) in January 2008.

The project map (Figure 182-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

182.2 Control Measures

There are rock check dams in the channel and existing vegetation throughout the area that control run-on at this SMA. Existing rock check dams, riprap, and vegetation in the main channel control runoff from the area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 182-1).

Table 182-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V00302040069	Established Vegetation		X	X		B
V00303010066	Earthen Berm	X			X	B
V00303010070	Earthen Berm	X			X	EC
V00303010071	Earthen Berm		X		X	EC
V00303010072	Earthen Berm		X		X	EC
V00303020017	Base Course Berm	X			X	CB
V00303060077	Straw Wattles	X			X	B
V00303060078	Straw Wattles	X			X	B
V00303060079	Straw Wattles	X			X	B
V00303060080	Straw Wattles	X			X	B
V00303060081	Straw Wattles	X			X	B
V00305020068	Sediment Basin	X			X	B
V00305020073	Sediment Basin	X			X	EC
V00305020074	Sediment Basin	X			X	EC
V00305020075	Sediment Basin	X			X	EC
V00305020076	Sediment Basin	X			X	EC
V00306010012	Rock Check Dam		X		X	CB
V00306010039	Rock Check Dam		X		X	B
V00306010040	Rock Check Dam		X		X	B
V00306010043	Rock Check Dam	X			X	B
V00306010057	Rock Check Dam	X			X	B
V00306010058	Rock Check Dam		X		X	B
V00306010059	Rock Check Dam		X		X	B
V00306010060	Rock Check Dam		X		X	B
V00306010061	Rock Check Dam		X		X	B
V00306010062	Rock Check Dam		X		X	B
V00306010063	Rock Check Dam		X		X	B

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V00306010064	Rock Check Dam		X		X	B
V00306010065	Rock Check Dam	X			X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced controls installation and/or certification are planned for 2014 as part of corrective action.

182.3 Storm Water Monitoring

SWMUs 16-020, 16-026(l), 16-028(c), and 16-030(c) are monitored within CDV-SMA-1.4. Following the installation of baseline control measures, a baseline storm water sample was collected on September 10, 2012 (Figure 182-2). Analytical results from this sample yielded one TAL exceedance:

- Silver concentration of 7.86 µg/L (MTAL is 0.5 µg/L).

In addition, weak acid dissociable cyanide analysis was not performed on the September 10, 2012, sample. The sample bottle preserved for cyanide was not received at the analytical laboratory, and the cyanide test was cancelled. Future storm water samples collected at CDV-SMA-1.4 will be analyzed for weak acid dissociable cyanide.

This exceedance was evaluated by comparing the results from soil samples collected at each Site during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 16-020:

- Silver is known to be associated industrial materials historically managed at the Site. Silver was detected above BVs in 20 of 20 shallow IM confirmation samples at a maximum concentration 720 times the soil BV.

SWMU 16-026(l):

- Silver is not known to be associated industrial materials historically managed at the Site. Decision-level data are not available for SWMU 16-026(l). However, a likely source of the cyanide TAL exceedance in SWMU 16-020 a former outfall located 300 ft south of former building 16-222 that received untreated effluent from the sink and floor drains in photoprocessing building 16-222 and discharged to a drainage channel that empties into Cañon de Valle. The SWMU 16-020 outfall is downstream of SWMU 16-026(l) and directly upstream of the SMA sampler.

SWMU 16-028(c):

- Silver is not known to be associated industrial materials historically managed at the Site. Decision-level data are not available for SWMU 16-028(c). However, a likely source of the cyanide TAL exceedance in SWMU 16-020 a former outfall located 300 ft south of former building 16-222 that received untreated effluent from the sink and floor drains in photoprocessing building 16-222 and discharged to a drainage channel that empties into Cañon de Valle. The SWMU 16-020 outfall is downstream of SWMU 16-028(c) and directly upstream of the SMA sampler.

SWMU 16-030(c):

- Silver is not known to be associated industrial materials historically managed at the Site. Decision-level data are not available for SWMU 16-030(c).

The TAL exceedance was 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.

- Silver—The silver UTLs from developed urban landscape storm water run-on and from locations with sediment derived from Bandelier Tuff were not calculated because the number of detected values was not sufficient to allow calculation of a UTL value in the baseline metals concentration study. Therefore, a comparison with background silver UTLs could not be made.

All of the analytical results for these samples are reported in the 2012 Annual Report.

The monitoring station for CDV-SMA-1.4 has been relocated. The new location of the sampler is positioned below all controls and will provide a more representative sample of storm water discharge from the SMA. Sampler coordinates and the SMA drainage area are updated in Attachment 4.

182.4 Inspections and Maintenance

RG253 recorded seven storm events at CDV-SMA-1.4 during the 2013 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 182-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30709	5-3-2013
Construction	COMP-33884	7-17-2013
Storm Rain Event	BMP-33647	7-24-2013
Construction	COMP-34031	7-24-2013
Construction	COMP-34499	7-31-2013
Construction	COMP-34634	8-7-2013
Storm Rain Event	BMP-34286	8-7-2013
Construction	COMP-34959	8-14-2013
Construction	COMP-34960	8-21-2013
Enhanced Control Measure Verifications	BMP-35020	8-27-2013
Storm Rain Event	BMP-35601	9-24-2013
Annual Erosion Evaluation	COMP-36648	10-31-2013

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

Table 182-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-36951	Install at least 4 wattles in area indicated on map. Apply seed between wattles.	11-14-2013	51 day(s)	Maintenance conducted as soon as practicable.

182.5 Compliance Status

The Sites associated with CDV-SMA-1.4 are Moderate Priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 182-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 16-020	Baseline Monitoring	Corrective Action Initiated	Initiated 10-18-2012
SWMU 16-026(l)	Baseline Monitoring	Corrective Action Initiated	Initiated 10-18-2012
SWMU 16-028(c)	Baseline Monitoring	Corrective Action Initiated	Initiated 10-18-2012
SWMU 16-030(c)	Baseline Monitoring	Corrective Action Complete	NMED, January 23, 2008, "Approval of Los Alamos National Laboratory Proposal for No Further Action"

CDV-SMA-1.4, Earthen Berm, V00303010066, (photo ID 35020-4)

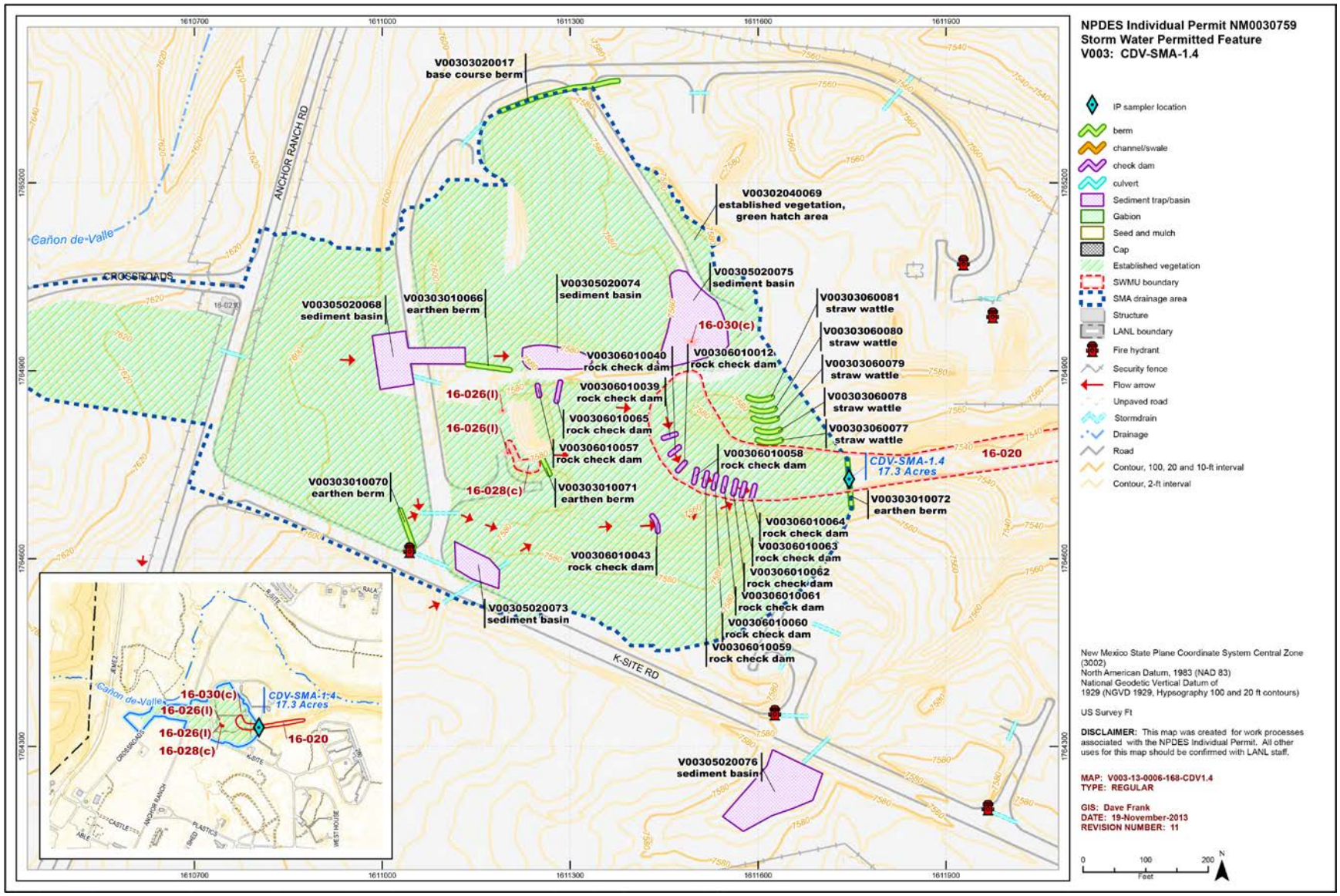
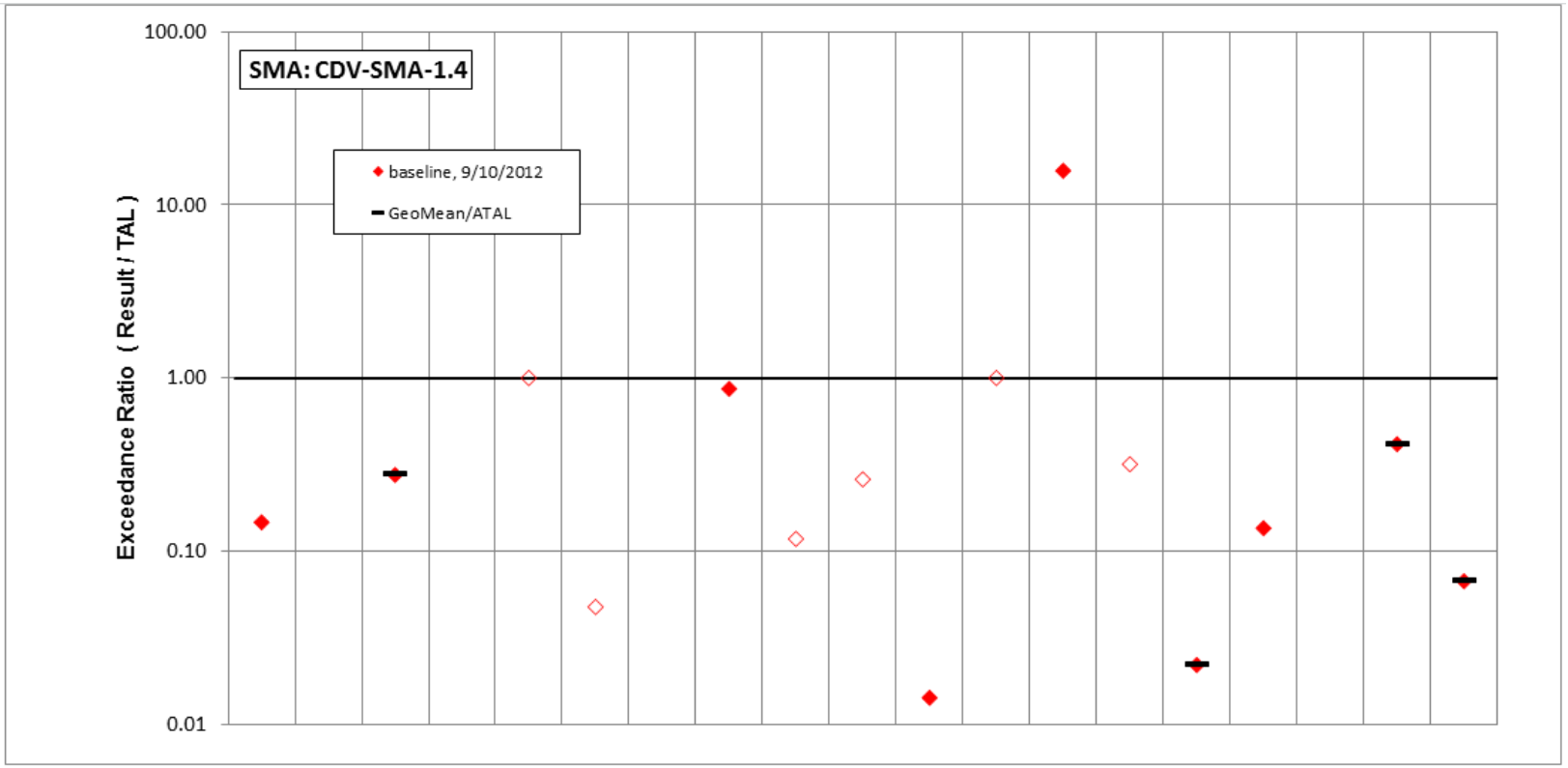


Figure 182-1 CDV-SMA-1.4 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	**Silver**	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	-	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	-	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/10/2012 result	110	*3*	2.48	46.3	*1*	*10*	3.46	3.72	*2*	*0.2*	2.42	*5*	**7.86**	*2*	2.2	5.7	-	6.22	2.01
result / TAL	0.15	*0.005*	0.28	0.0093	*1*	*0.048*	0.0035	0.87	*0.12*	*0.26*	0.014	*1*	**16**	*0.32*	0.022	0.14	-	0.41	0.067

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 182-2 Inorganic analytical results summary plot for CDV-SMA-1.4

183.0 CDV-SMA-1.45: SWMU 16-026(i)

183.1 Site Descriptions

One historical industrial activity area is associated with V004, CDV-SMA-1.45: Site 16-026(i).

SWMU 16-026(i) consists of a former outfall and drainline from former x-ray building 16-224 at TA-16. Finished packaged HE components were x-rayed in building 16-224 and returned to adjacent resthouses for storage; in some cases, HE components were unwrapped before they were x-rayed. Reportedly, HE dust and small chips would periodically break off unpackaged components during the x-ray process and could have entered the floor drains. Floor drains in building 16-224 discharged to an outfall northeast of former building 16-224; the discharges consisted of small volumes of washdown water discharged onto a gradual, grass-covered slope. The floor drains in building 16-224 were plugged in 1991; building 16-224 underwent D&D in 2003.

Consent Order investigations have not yet begun; no decision-level data are available for SWMU 16-026(i).

The project map (Figure 183-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

183.2 Control Measures

There are no run-on contributions to this Permitted Feature. The area is gently sloping and vegetated. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 183-1).

Enhanced controls were installed and certified on July 15, 2012, and submitted to EPA on July 25, 2012, as part of corrective action. Photographs of the enhanced controls are available at http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 183-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V00402040005	Established Vegetation		X	X		B
V00403010004	Earthen Berm		X		X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

183.3 Storm Water Monitoring

SWMU 16-026(i) is monitored within CDV-SMA-1.45. Following the installation of baseline control measures, a baseline confirmation sample was collected on August 21, 2011 (Figure 183-2). Inorganic analytical results from this baseline sample yielded one TAL exceedance:

- Gross-alpha activity of 17.8 pCi/L (ATAL is 15 pCi/L).

Exceedances are typically evaluated by comparing the results from soil samples collected at the Site during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities.

SWMU 16-026(i):

- Alpha-emitting radionuclides are not known to be associated industrial materials historically managed at the Site. No decision-level data are available for SWMU 16-026(i). Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

The TAL exceedance was 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 183-2. 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 183-2.

Monitoring location CDV-SMA-1.45 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as locations with 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 background UTL for locations with 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 urban landscape is 32.5 pCi/L. The 2012 gross-alpha result is below both of these values.

All the analytical results for these samples are reported in the 2012 Annual Report.

183.4 Inspections and Maintenance

RG253 recorded seven storm events at CDV-SMA-1.45 during the 2013 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 183-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30710	5-3-2013
Storm Rain Event	BMP-33648	7-16-2013
Storm Rain Event	BMP-34287	8-7-2013
Storm Rain Event	BMP-35602	9-19-2013
Annual Erosion Evaluation	COMP-36649	10-31-2013

No maintenance activities were conducted at CDV-SMA-1.45 in 2013.

183.5 Compliance Status

The Site associated with CDV-SMA-1.45 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 183-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 16-026(i)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 07-18-2012

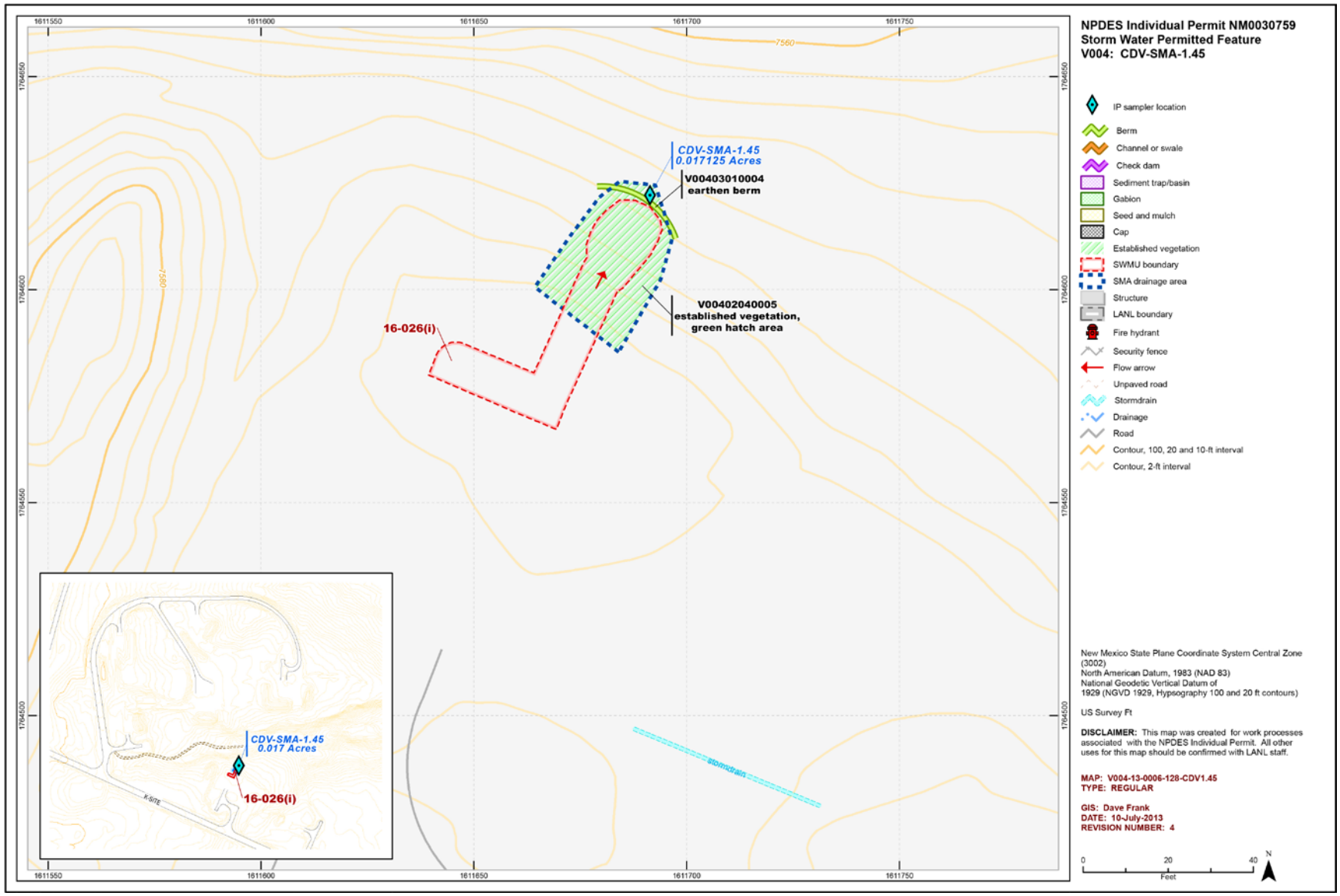
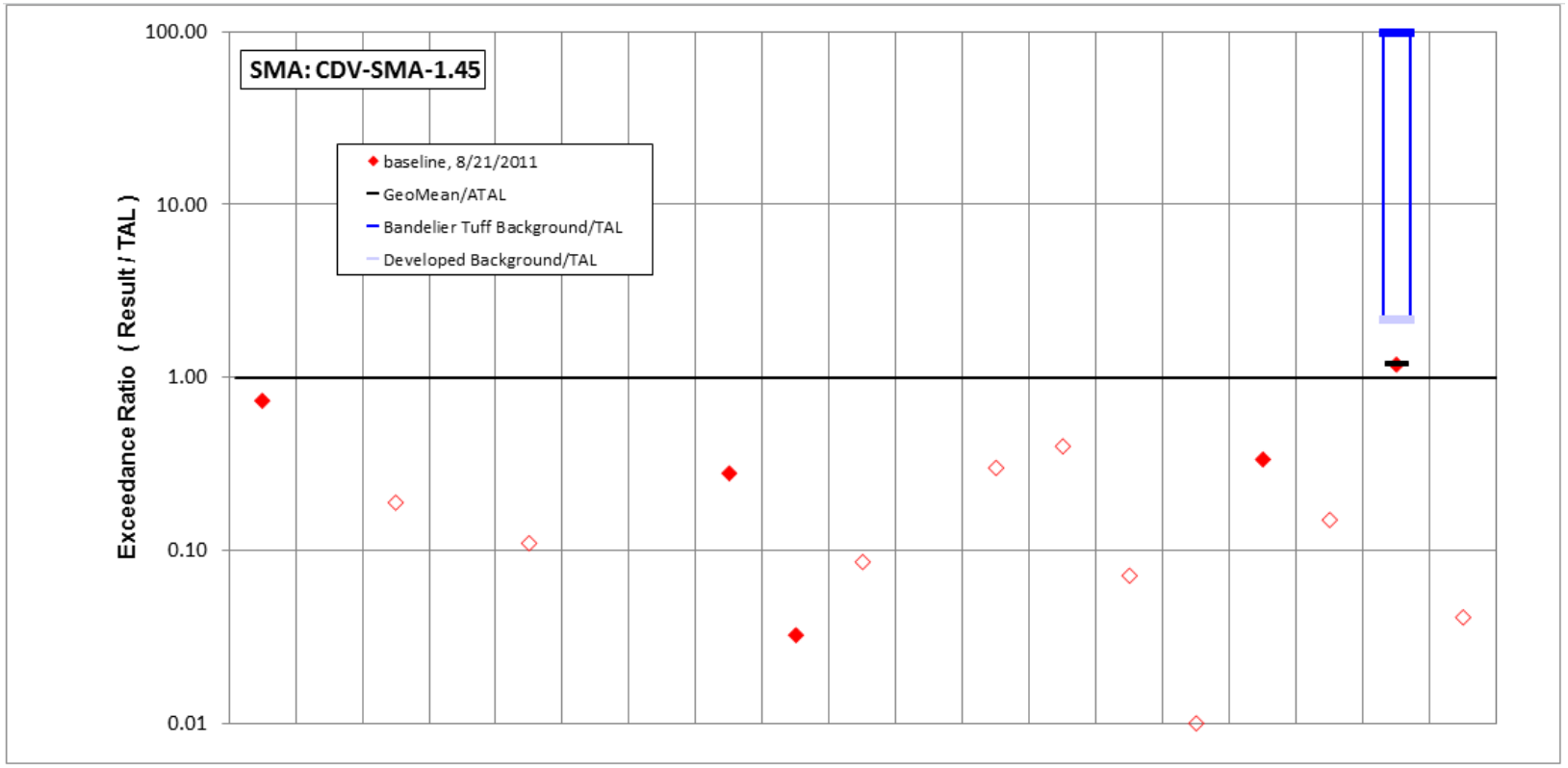


Figure 183-1 CDV-SMA-1.45 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
8/21/2011 result	550	*1*	*1.7*	*15*	*0.11*	*2*	2	1.2	0.55	*0.066*	*0.5*	*1.5*	*0.2*	*0.45*	*1*	14.1	*0.002*	**17.8**	*1.23*
result / TAL	0.73	*0.002*	*0.19*	*0.003*	*0.11*	*0.01*	0.002	0.28	0.032	*0.086*	*0.003*	*0.3*	*0.4*	*0.071*	*0.01*	0.34	*0.15*	**1.2**	*0.041*

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 183-2 Inorganic analytical results summary plot for CDV-SMA-1.45

184.0 CDV-SMA-1.7: SWMU 16-019

184.1 Site Descriptions

One historical industrial activity area is associated with V005, CDV-SMA-1.7: Site 16-019.

SWMU 16-019, MDA R, consists of the original World War II S-Site Burning Ground and associated inactive waste disposal site. Located at TA-16 north of building 16-260 and south of Cañon de Valle, the MDA was used to burn HE wastes and began operating in the mid-1940s. Initially, the HE wastes were burned directly on the ground surface in an area cleared of grass and shrubs. By 1949, burning operations were conducted in three adjacent shallow burn pits, each approximately 75 ft^2, constructed in the eastern portion of the MDA, approximately 150 ft from the edge of the canyon.

Burning operations at MDA R ceased in the early 1950s when the buildings comprising the 260-Line were constructed. During the construction of the 260-Line, the burn pits were backfilled with material from the associated berms and the entire area was leveled. In May 2000, the Cerro Grande fire burned over MDA R and continued to burn underground within the MDA for several weeks. As part of emergency response and fire suppression efforts, portions of the MDA were excavated and stabilized and erosion-control measures were installed. The area is currently covered with grasses, small trees, and shrubs.

The project map (Figure 184-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

184.2 Control Measures

The SMA is sloping and well vegetated. Existing controls address minor run-on from the paved access road and manage runoff. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 184-1).

Table 184-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V00501010004	Seed and Wood Mulch		X	X		CB
V00502040016	Established Vegetation		X	X		B
V00504060015	Rip Rap			X		CB
V00506010005	Rock Check Dam		X		X	CB
V00506010006	Rock Check Dam		X		X	CB
V00506010007	Rock Check Dam		X		X	CB
V00506010008	Rock Check Dam	X			X	CB
V00506010009	Rock Check Dam	X			X	CB
V00506010010	Rock Check Dam	X			X	CB
V00506010011	Rock Check Dam		X		X	CB
V00506010012	Rock Check Dam		X		X	CB
V00506010013	Rock Check Dam	X			X	CB
V00506010014	Rock Check Dam	X			X	CB

CB: Certified baseline control measure.
B: Additional baseline control measure.
EC: Enhanced control measure.

Enhanced controls installation and certification are being planned for the end of 2014 or early in 2015 as part of corrective action.

184.3 Storm Water Monitoring

SWMU 16-019 is monitored within CDV-SMA-1.7. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figures 184-2 and 184-3). Analytical results from this sample yielded four TAL exceedances:

- Copper concentrations of 11 µg/L (MTAL is 4.3 µg/L),
- Cyanide, weak acid dissociable concentration of 0.0175 mg/L (MTAL is 0.01 mg/L),
- Gross-alpha activity of 36.9 pCi/L (ATAL is 15 pCi/L).
- RDX concentration of 908 µg/L (ATAL is 200 µg/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 16-019:

- Copper is potentially associated with industrial materials historically managed at the Site. Copper was detected above BVs in 6 the 44 shallow (i.e., less than 3 ft bgs) 1998 and 2000 RFI soil samples collected at the Site at a maximum concentration 1563 times the soil BV.
- Cyanide is not known to be associated with industrial materials historically managed at the Site. None of the 44 shallow 1998 and 2000 RFI samples were analyzed for cyanide.
- RDX is known to be associated with industrial materials historically managed at the Site. RDX was detected in 16 of 44 shallow soil samples at a maximum concentration 2577% of the residential SSL.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. None of the 44 shallow 1998 and 2000 RFI samples were analyzed for alpha-emitting radionuclides.

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 Figures 184-2 and 184-3. 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 Figures 184-2 and 184-3.

Monitoring location CDV-SMA-1.7 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 urban 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.

- Cyanide, weak acid dissociable—The cyanide, weak acid dissociable, UTL from undisturbed Bandelier Tuff storm water run-on was not calculated. The cyanide, weak acid dissociable, UTL from developed urban landscape background storm water is 0.004 mg/L. The cyanide, weak acid dissociable, result from 2013 is greater than the developed urban landscape value.
- 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 urban landscape is 32.5 pCi/L. The 2013 gross-alpha result is between these two values.
- RDX—The RDX UTL from undisturbed Bandelier Tuff and from developed urban landscape background storm water run-on were not calculated. Therefore, no comparison to RDX background values in storm water could be made.

All the analytical results for these samples are reported in the 2013 Annual Report.

184.4 Inspections and Maintenance

RG253 recorded seven storm events at CDV-SMA-1.7 during the 2013 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 184-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30711	5-16-2013
Storm Rain Event	BMP-33649	7-16-2013
Storm Rain Event	BMP-34288	8-7-2013
Storm Rain Event	BMP-35603	9-24-2013
Annual Erosion Evaluation	COMP-36650	11-1-2013
TAL Exceedance	COMP-36878	11-1-2013

No maintenance activities were conducted at CDV-SMA-1.7 in 2013.

184.5 Compliance Status

The Site associated with CDV-SMA-1.7 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 184-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 16-019	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-25-13

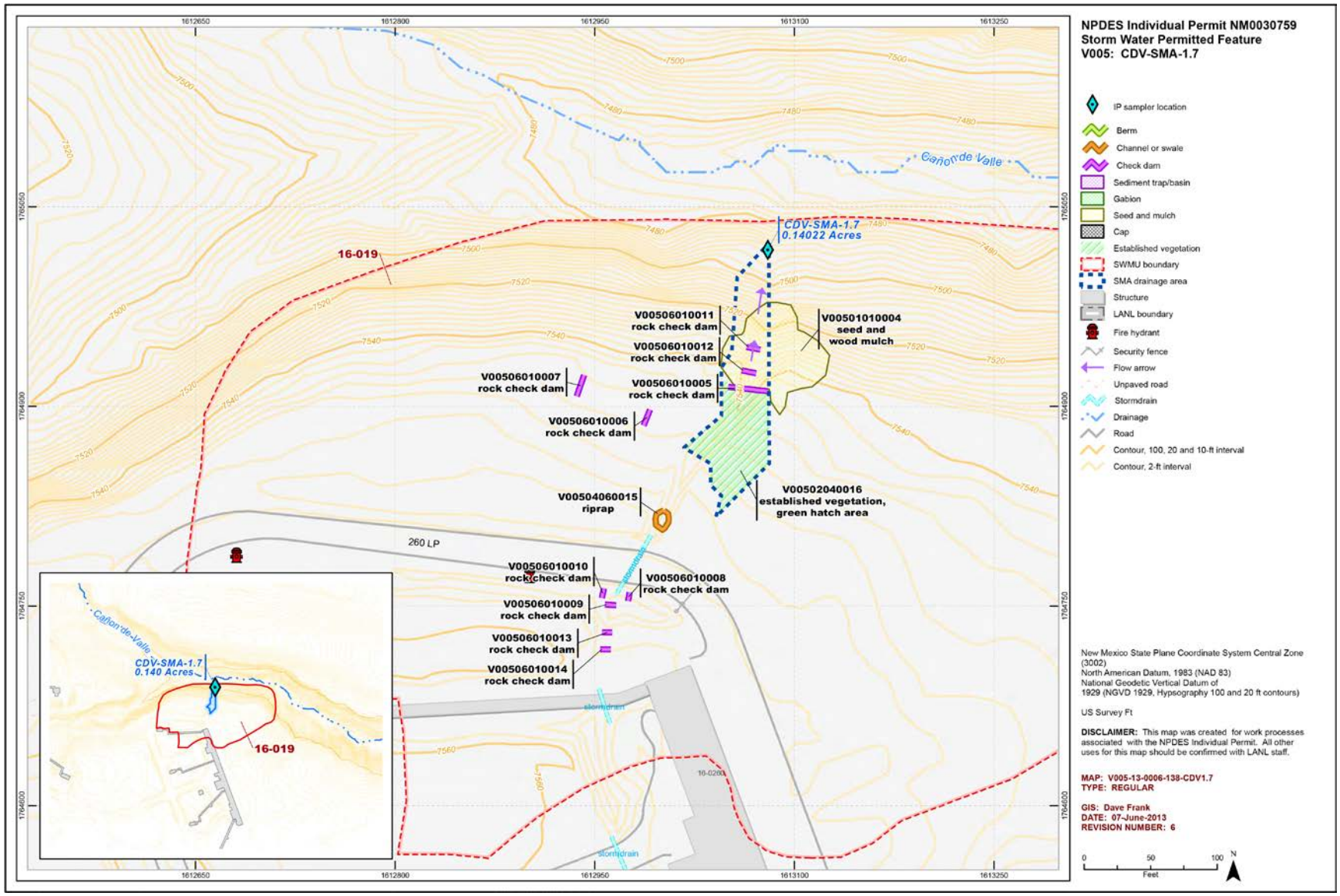
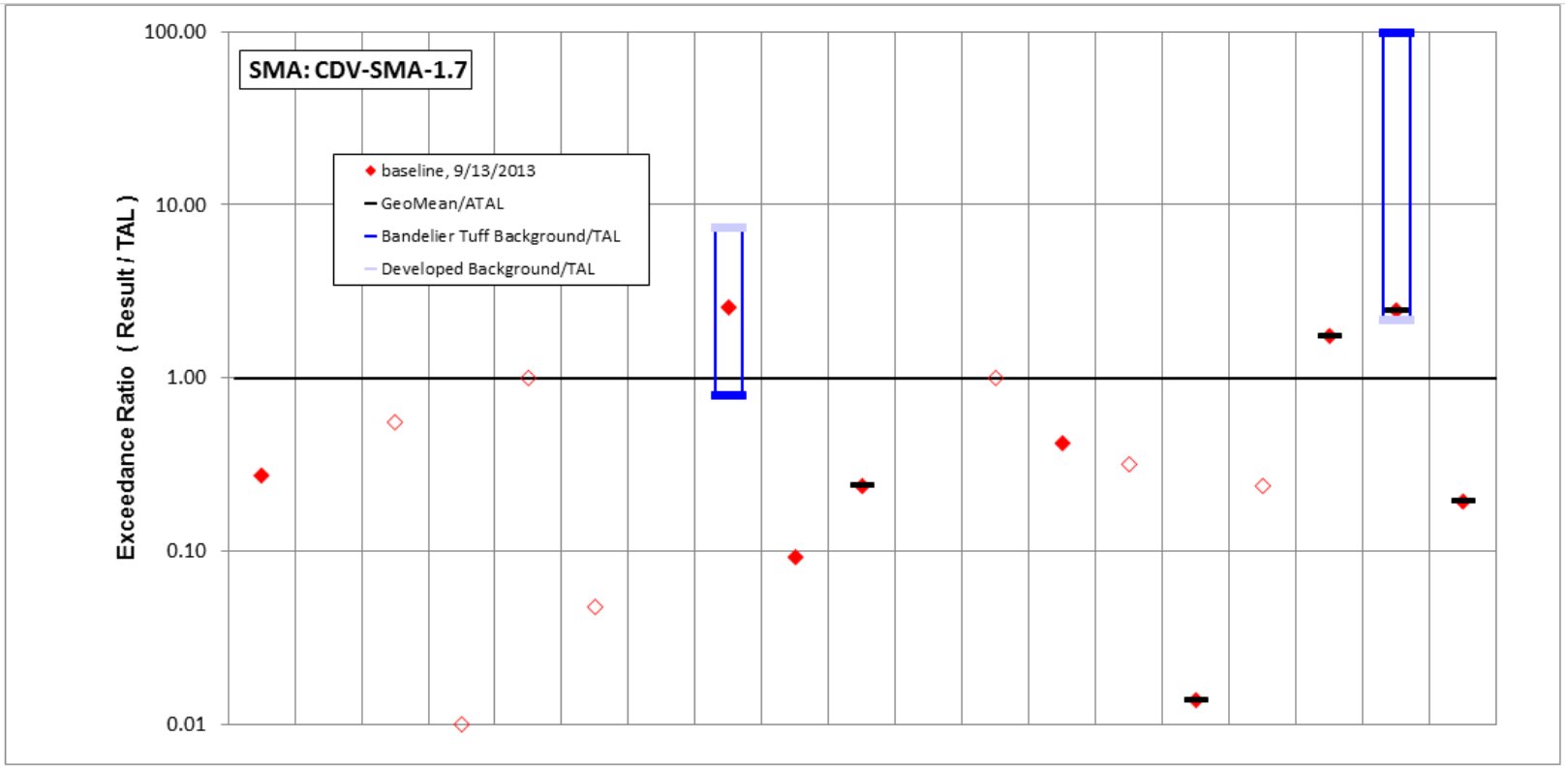


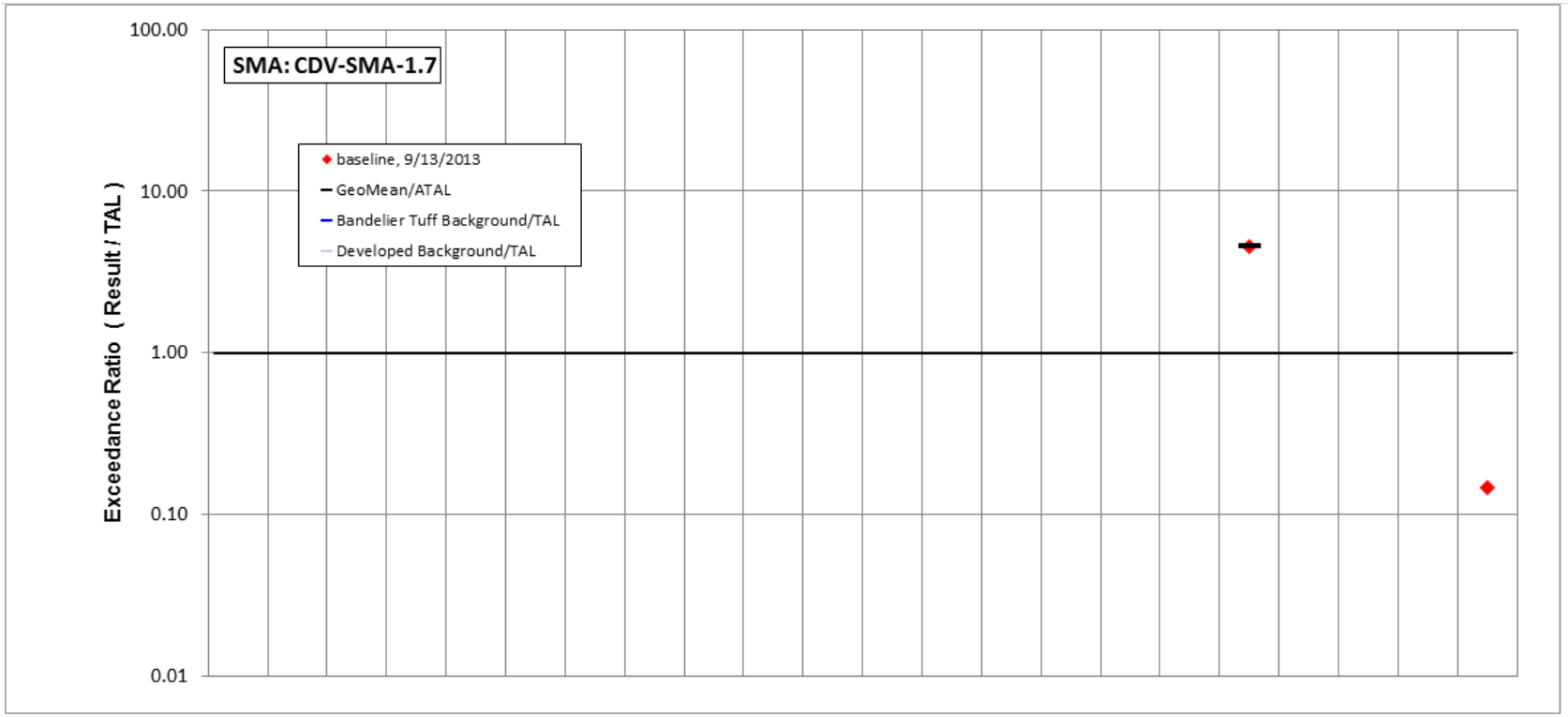
Figure 184-1 CDV-SMA-1.7 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	**Cyanide, weak acid dissociable**	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/13/2013 result	205	*3*	*5*	*50*	*1*	*10*	*5*	**11**	1.57	0.183	0.659	*5*	0.21	*2*	1.38	*10*	**0.0175**	**36.9**	5.8
result / TAL	0.27	*0.005*	*0.56*	*0.01*	*1*	*0.048*	*0.005*	**2.6**	0.092	0.24	0.0039	*1*	0.42	*0.32*	0.014	*0.24*	**1.8**	**2.5**	0.19

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 184-2 Inorganic analytical results summary plot for CDV-SMA-1.7



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-	-	ATAL
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	-	-	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
9/13/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**908**	-	-	-	2.93
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**4.5**	-	-	-	0.15

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 184-3 Organic analytical results summary plot for CDV-SMA-1.7

185.0 CDV-SMA-2: SWMU 16-021(c)

185.1 Site Descriptions

One historical industrial activity area is associated with V006, CDV-SMA-2: Site 16-021(c).

SWMU 16-021(c) consists of a formerly NPDES-permitted outfall (the 260 Outfall) for 13 HE sumps [SWMU 16-003(k)] that served HE machining building 16-260 at TA-16. Wastewater from the sumps flowed through a concrete trough to the outfall, located approximately 200 ft east of the building. Discharge from the outfall flowed to a settling pond that was approximately 50 ft long and 20 ft wide and that was located approximately 45 ft below the outfall. The drainage channel continued approximately 600 ft northeast from the outfall to the bottom of Cañon de Valle. A 15-ft near-vertical cliff is located approximately 400 ft from the outfall and marks the break between the upper and lower drainage channels. Building 16-260 was constructed in 1951 to process and machine HE. Wastewater from machining operations contained dissolved HE and entrained HE cuttings. Wastewater treatment consisted of routing the water to 13 settling sumps to recover entrained HE cuttings. In 1994, outfall discharge volumes were measured at several million gallons per year. The discharge volumes were likely higher during the 1950s when HE production output from building 16-260 was substantially greater than it was in the 1990s. In the past, barium had been a constituent of certain HE formulations, and thus barium was also present in the outfall wastewater from building 16-260. Discharge to the outfall continued until 1996 when the sumps were plugged. The outfall was removed from the permit in January 1998.

During an IM conducted in 2000 and 2001, more than 1300 yd^3 of contaminated soil was removed from the former settling pond and drainage channel. A low-permeability cap consisting of a 20-in.-thick crushed tuff/bentonite mixture was installed on top of the former settling pond during the IM. A CMI conducted in 2009 and 2010 included the removal of soil and tuff contaminated with HE and other constituents in the former 260 Outfall channel and in the alluvial systems of Cañon de Valle and Martin Spring Canyon, confirmation sampling, and installation of four HE treatment systems. Risk-assessment results for the 260 Outfall drainage channel indicate the Site meets residential risk levels. Groundwater contamination continues to be assessed, monitored, and treated.

Consent Order soil investigations for the SWMU 16-021(c) drainage channel are complete.

The project map (Figure 185-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

185.2 Control Measures

The run-on sources for this Permitted Feature are associated with structure 16-0260. The roof and paved area on the west side of the SMA contribute minimally to run-on at the SMA. This run-on is controlled by existing curbing. There is minimal run-on from the access road at the northeast corner of the SMA. New run-on and runoff controls have been installed to provide additional runoff controls and to fortify the natural drainage channel. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 185-1).

Table 185-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V00602040013	Established Vegetation		X	X		B
V00603010006	Earthen Berm		X		X	CB
V00603010007	Earthen Berm	X			X	CB
V00603010008	Earthen Berm	X			X	CB
V00603010009	Earthen Berm	X			X	CB
V00603010010	Earthen Berm	X			X	CB
V00603090001	Curbing	X			X	CB
V00604060003	Rip Rap		X	X		CB
V00606010002	Rock Check Dam		X		X	CB
V00608020012	Rock Cap		X	X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

185.3 Storm Water Monitoring

SWMU 16-021(c) is monitored within CDV-SMA-2. Following the installation of baseline control measures, a baseline storm water sample was collected on July 12, 2013 (Figures 185-2 and 185-3). Analytical results from this sample yielded one TAL exceedance:

- Gross-alpha activity of 18.2 pCi/L (ATAL is 15 pCi/L).

This exceedance was evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 16-021(c):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. None of the Consent Order soil samples were analyzed for alpha-emitting radionuclides.

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 Figures 185-2 and 185-3. 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 Figures 185-2 and 185-3.

Monitoring location CDV-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. 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 urban landscape is 32.5 pCi/L. The 2013 gross-alpha result is less than both of these values.

All the analytical results for these samples are reported in the 2013 Annual Report.

185.4 Inspections and Maintenance

RG257 recorded eight storm events at CDV-SMA-2 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 185-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30712	5-16-2013
Storm Rain Event	BMP-33022	7-3-2013
Storm Rain Event	BMP-33442	7-16-2013
Storm Rain Event	BMP-33942	8-2-2013
Storm Rain Event	BMP-34586	8-16-2013
Storm Rain Event	BMP-35607	9-24-2013
Annual Erosion Evaluation	COMP-36651	11-1-2013
TAL Exceedance	COMP-35287	9-5-2013

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

Table 185-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-31275	Re-seed and mat berm Asset ID V00603010006	7-30-2013	75 day(s)	Maintenance conducted as soon as practicable.

185.5 Compliance Status

The Site associated with CDV-SMA-2 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 185-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 16-021(c)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 8-20-13

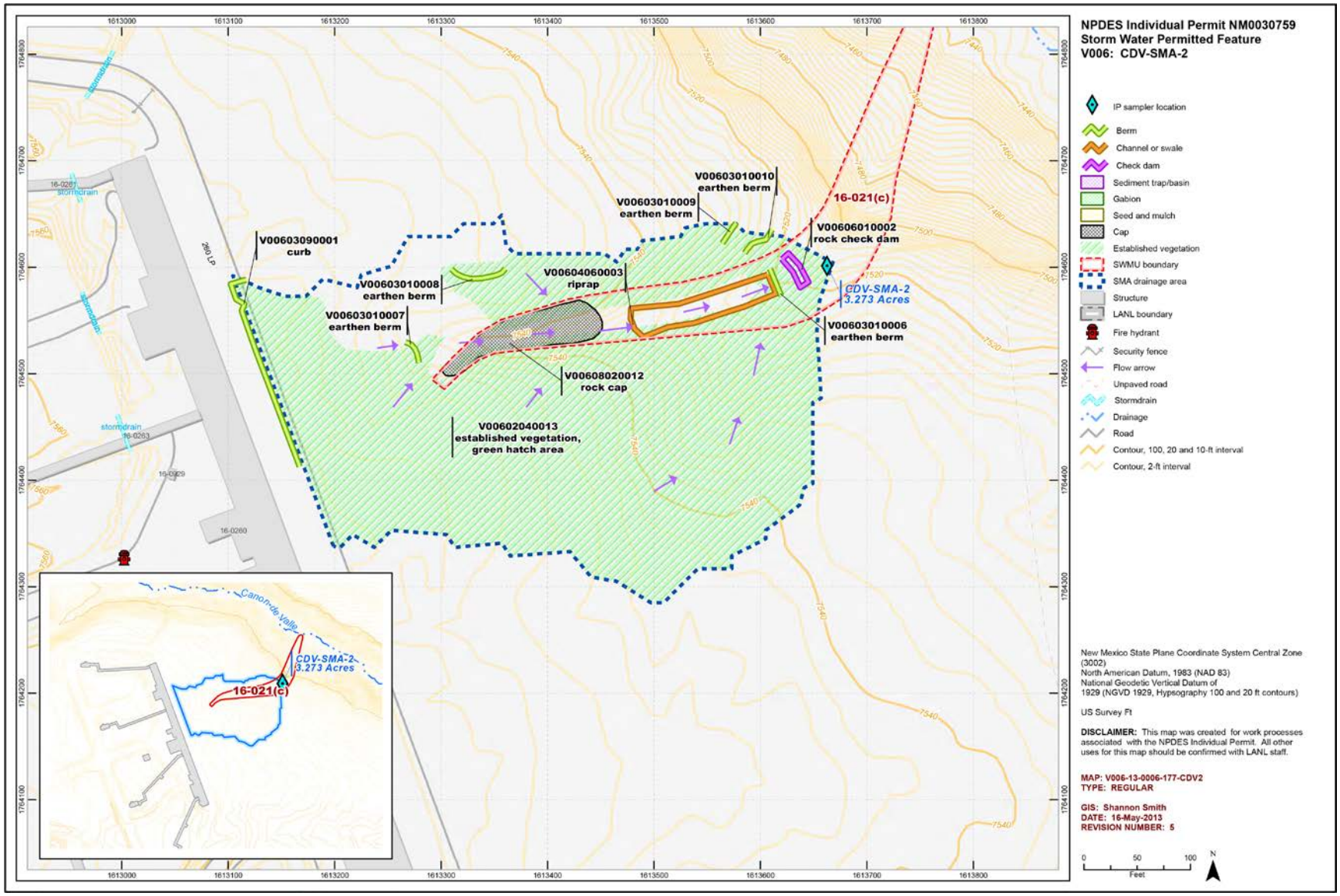
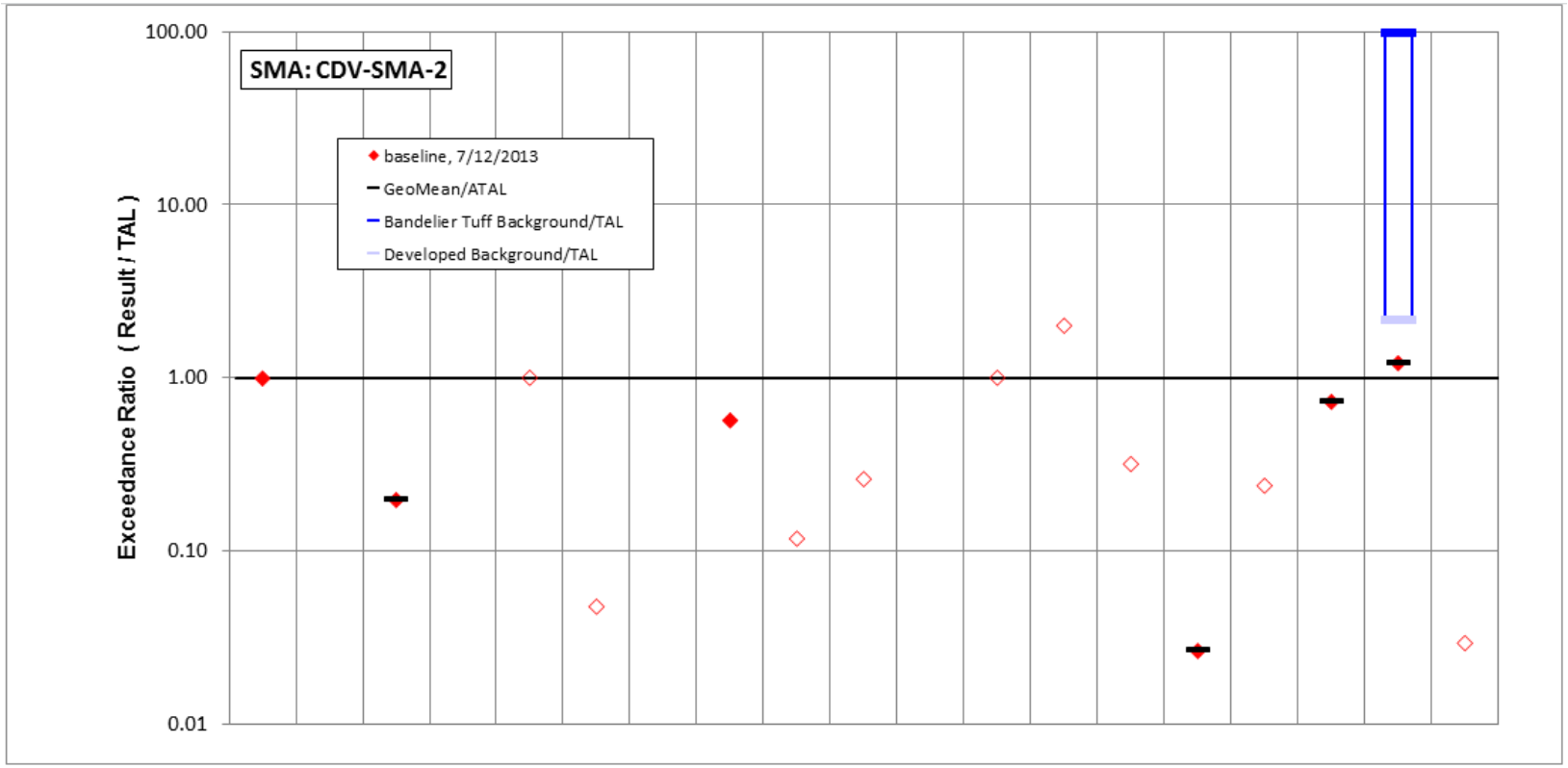


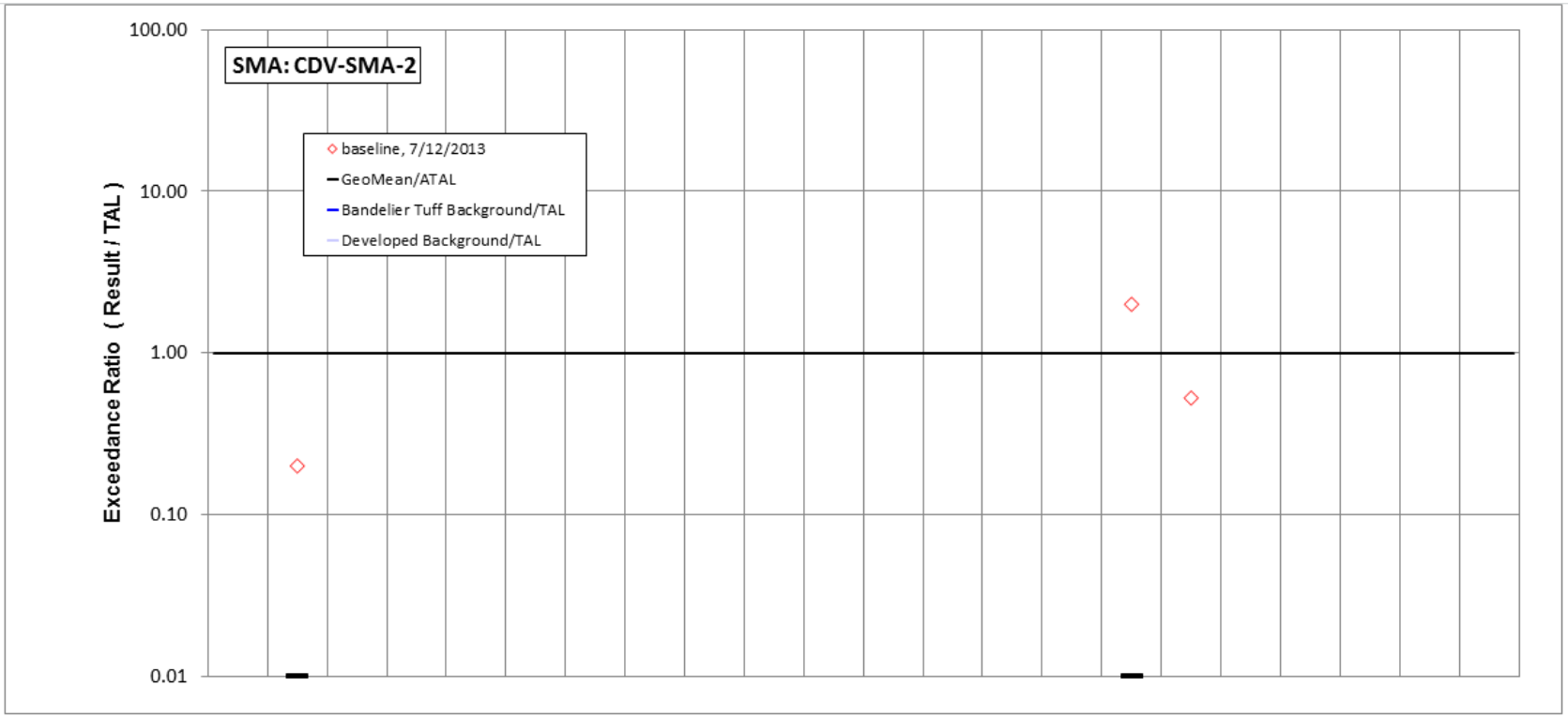
Figure 185-1 CDV-SMA-2 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	**Silver**	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
7/12/2013 result	743	*3*	1.77	33.7	*1*	*10*	*5.1*	2.44	*2*	*0.2*	1.52	*5*	***1***	*2*	2.64	*10*	0.0073	**18.2**	*0.879*
result / TAL	0.99	*0.005*	0.2	0.0067	*1*	*0.048*	*0.005*	0.57	*0.12*	*0.26*	0.0089	*1*	***2***	*0.32*	0.026	*0.24*	0.73	**1.2**	*0.029*

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 185-2 Inorganic analytical results summary plot for CDV-SMA-2



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	**Hexachlorobenzene**	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	ATAL	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	MTAL	-	-	-	-	-
std value	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5	19	-	-	-	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
7/12/2013 result	-	*1*	-	-	-	-	-	-	-	-	-	-	-	-	-	***10***	*10*	-	-	-	-	-
result / TAL	-	*0.2*	-	-	-	-	-	-	-	-	-	-	-	-	-	***2***	*0.53*	-	-	-	-	-

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 185-3 Organic analytical results summary plot for CDV-SMA-2

186.0 CDV-SMA-2.3: SWMUs 13-001, 13-002, 16-003(n), 16-003(o), 16-029(h), and 16-031(h)

186.1 Site Descriptions

Six historical industrial activity areas are associated with V007, CDV-SMA-2.3: Sites 13-001, 13-002, 16-003(n), 16-003(o), 16-029(h), and 16-031(h).

SWMU 13-001 is an inactive firing site located east of former building 16-340. The firing site is associated with firing activities conducted at P-Site (former TA-13). The area contains shrapnel and debris, including firing cables, lead balls, and chunks of steel and copper.

Phase I Consent Order sampling is complete for SWMU 13-001. All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs, except for two detections of arsenic in two subsurface tuff samples. SWMU 13-001 will be recommended for corrective action complete in the supplemental investigation report for S-Site Aggregate Area, to be submitted to NMED in 2015. SWMU 13-001 will be eligible for a COC upon approval of the report by NMED.

SWMU 13-002 is an inactive surface disposal area located east of former building 16-340. The disposal area contains debris and shrapnel associated with firing activities conducted at P-Site (former TA-13). A portion of the TA-16 WWTP [Consolidated Unit 16-004(a)-99] is located above the southern tip of the surface disposal area.

Phase I Consent Order sampling is complete for SWMU 13-002. All detected inorganic and organic chemical concentrations from Consent Order samples were below residential SSLs. SWMU 13-002 will be recommended for corrective action complete in the supplemental investigation report for S-Site Aggregate Area, to be submitted to NMED in 2015. SWMU 13-002 will be eligible for a COC upon approval of the report by NMED.

SWMU 16-003(n) consists of a former sump that was located on the exterior northeast wall of former building 16-342 at TA-16. Installed in the early 1950s, the sump was constructed of reinforced concrete and measured approximately 3.5 ft wide × 6.5 ft long × 3 ft deep. The sump received effluent from building 16-342, an HE-processing building, and discharged to a former NPDES-permitted outfall (EPA 05A062) located in Fishladder Canyon, a tributary of Cañon de Valle. The outfall was removed from the Laboratory's NPDES permit effective July 31, 1996. Building 16-342, the sump, and drainlines were decommissioned in 1999 and underwent D&D in 2004 and 2005.

Phase I Consent Order sampling is complete for SWMU 16-003(n). SWMU 16-003(n) meets industrial risk levels. A request for corrective action complete with controls was submitted to NMED for SWMU 16-003(n) in September 2008; however, no response has yet been received.

SWMU 16-003(o) consists of the six former HE sumps and an outfall associated with the former explosives synthesis building (structure 16-340) at TA-16. The sumps were connected to the former NPDES-permitted outfall via a 10-in. VCP, which originally discharged to a hill slope east of building 16-340. Building 16-340 was used to produce the plastics explosive, PBX. VOCs were used in this preparation, but most VOCs were distilled during the processing. The remaining solvents historically were discharged with the wastewater to the sumps. In the late 1980s a trough functioning as an air stripper was installed at the outfall and was designed to trap and volatilize residual solvents in the wastewater. The air stripper resembled a fish ladder, and it discharged approximately 250 ft east of the sumps into Fishladder Canyon, a tributary of Cañon de Valle. The outfall was removed from the

Laboratory's NPDES permit on July 20, 1998. Building 16-340, the sumps, and drainlines were decommissioned in 1999 and underwent D&D in 2004 and 2005, when all aboveground and subsurface structures and contaminated soil were removed. Approximately 100 yd^3 of soil was removed from SWMU 16-003(o).

Phase I Consent Order sampling is complete for SWMU 16-003(o). SWMU 16-003(o) meets industrial risk levels. Alluvial wells downgradient of SWMU 16-003(o) continue to be monitored.

SWMU 16-029(h) consists of an inactive outfall and two inactive/former drainlines (one known and one suspected) from the HE sump [AOC 16-003(p)], located on the south side of former building 16-478. The known drainline exits the southeast corner of the sump and extends 80 ft east of the sump to the rim of Cañon de Valle. This drainline discharged directly into Cañon de Valle before it was plugged in 1987. A second drainline is suspected to be present. The second drainline is reportedly a French drain that extends south of the sump. Former building 16-478 was used as a bunker, utility room, control room, and high-speed machining room for tests on experimental HE. When the building was removed in 2005, the sump was left in place. During the investigation activities conducted in 2009–2010, no evidence of the French drain was found.

Phase I Consent Order sampling is complete for SWMU 16-029(h). All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs, except for two detections of arsenic in two subsurface tuff samples. SWMU 16-029(h) will be recommended for corrective action complete in the supplemental investigation report for S-Site Aggregate Area, to be submitted to NMED in 2015. SWMU 16-029(h) will be eligible for a COC upon approval of the report by NMED.

SWMU 16-031(h) consists of a former NPDES-permitted outfall (EPA04A134) located approximately 300 ft northeast of former building 16-340. The outfall received discharges only from the sink and floor drain of a utility room (engineering drawing ENG-C-14851) within former structure 16-478. The outfall only received discharges from the former utility room. Structure 16-478 (formerly structure 13-4) was used for photographing explosives tests and was later modified for testing the effects of machining HE remotely. In July 1995, building 16-478 was decommissioned and subsequently underwent D&D in 2005.

Phase I Consent Order sampling is complete for SWMU 16-031(h). All detected inorganic and organic chemical concentrations from Consent Order samples were below residential SSLs. SWMU 16-031(h) will be recommended for corrective action complete in the supplemental investigation report for S-Site Aggregate Area, to be submitted to NMED in 2015. SWMU 16-031(h) will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 186-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

186.2 Control Measures

The paved areas to the east of the SMA contribute some run-on; however, there is no run-on from the paved road. There is the potential of run-on to the SMA from a culvert discharging west of the area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 186-1).

Table 186-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V00702040021	Established Vegetation		X	X		B
V00703060009	Straw Wattles		X		X	CB
V00703060010	Straw Wattles		X		X	CB
V00703060022	Straw Wattles	X			X	B
V00703060023	Straw Wattles		X		X	B
V00706010016	Rock Check Dam		X		X	B
V00706010019	Rock Check Dam	X			X	B
V00706010020	Rock Check Dam	X			X	B
V00707010002	Gabions		X		X	CB

CB: Certified baseline control measure.
B: Additional baseline control measure.
EC: Enhanced control measure.

186.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at CDV-SMA-2.3. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

186.4 Inspections and Maintenance

RG257 recorded eight storm events at CDV-SMA-2.3 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 186-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30713	5-3-2013
Storm Rain Event	BMP-33023	7-11-2013
Storm Rain Event	BMP-33443	7-16-2013
Storm Rain Event	BMP-33943	8-1-2013
Storm Rain Event	BMP-34587	8-20-2013
Storm Rain Event	BMP-35608	9-19-2013
Annual Erosion Evaluation	COMP-36652	11-18-2013

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

Table 186-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-36997	Contact ExSO Sandy Powell for HE review prior to work. As per EXID 'No excavation (including staking) without prior notification and walk-through of...16-003(O), 16-003(N) ... The ExSO may, at his or her discretion, require HE soil sampling to take place prior to excavation. Repair rock check dam V00706010016.	11-18-2013	60 day(s)	Maintenance conducted as soon as practicable.
BMP-36898	Repair washed out area on west side of rip rap by removing rip rap. Fill in gully w/ clean fill and compact. Apply non-woven geotextile fabric to area of repair to water bar and cover with angular rock. Add angular rock to check dam to increase height and extend both ends approx. 2 ft.	11-13-2013	55 day(s)	Maintenance conducted as soon as practicable.
BMP-37001	Contact ExSO Sandy Powell for HE review prior to work. As per EXID 'No excavation (including staking) without prior notification and walk-through of...16-003(O), 16-003(N), ... The ExSO may, at his or her discretion, require HE soil sampling to take place prior to excavation. Install new straw wattle directly behind existing wattle -0007. Wattle -0007 will be retired when work is completed.	11-13-2013	55 day(s)	Maintenance conducted as soon as practicable.
BMP-37055	Contact ExSO Sandy Powell for HE review prior to work. As per EXID 'No excavation (including staking) without prior notification and walk-through of...16-003(O), 16-003(N) ... The ExSO may, at his or her discretion, require HE soil sampling to take place prior to excavation. Reposition and restake wattle.	11-13-2013	55 day(s)	Maintenance conducted as soon as practicable.
BMP-37056	Reposition and restake wattle. Contact ExSO Sandy Powell for HE review prior to work. As per EXID 'No excavation (including staking) without prior notification and walk-through of...16-003(O), 16-003(N) ... The ExSO may, at his or her discretion, require HE soil sampling to take place prior to excavation. V00703060010	11-13-2013	55 day(s)	Maintenance conducted as soon as practicable.
BMP-37058	Reposition juniper bale check dam in channel south of pond (see attached map). Contact Sam Loftin for specific location.	11-13-2013	55 day(s)	Maintenance conducted as soon as practicable.

186.5 Compliance Status

The Sites associated with CDV-SMA-2.3 are Moderate Priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 186-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 13-001	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 13-002	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 16-003(n)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 16-003(o)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 16-029(h)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 16-031(h)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

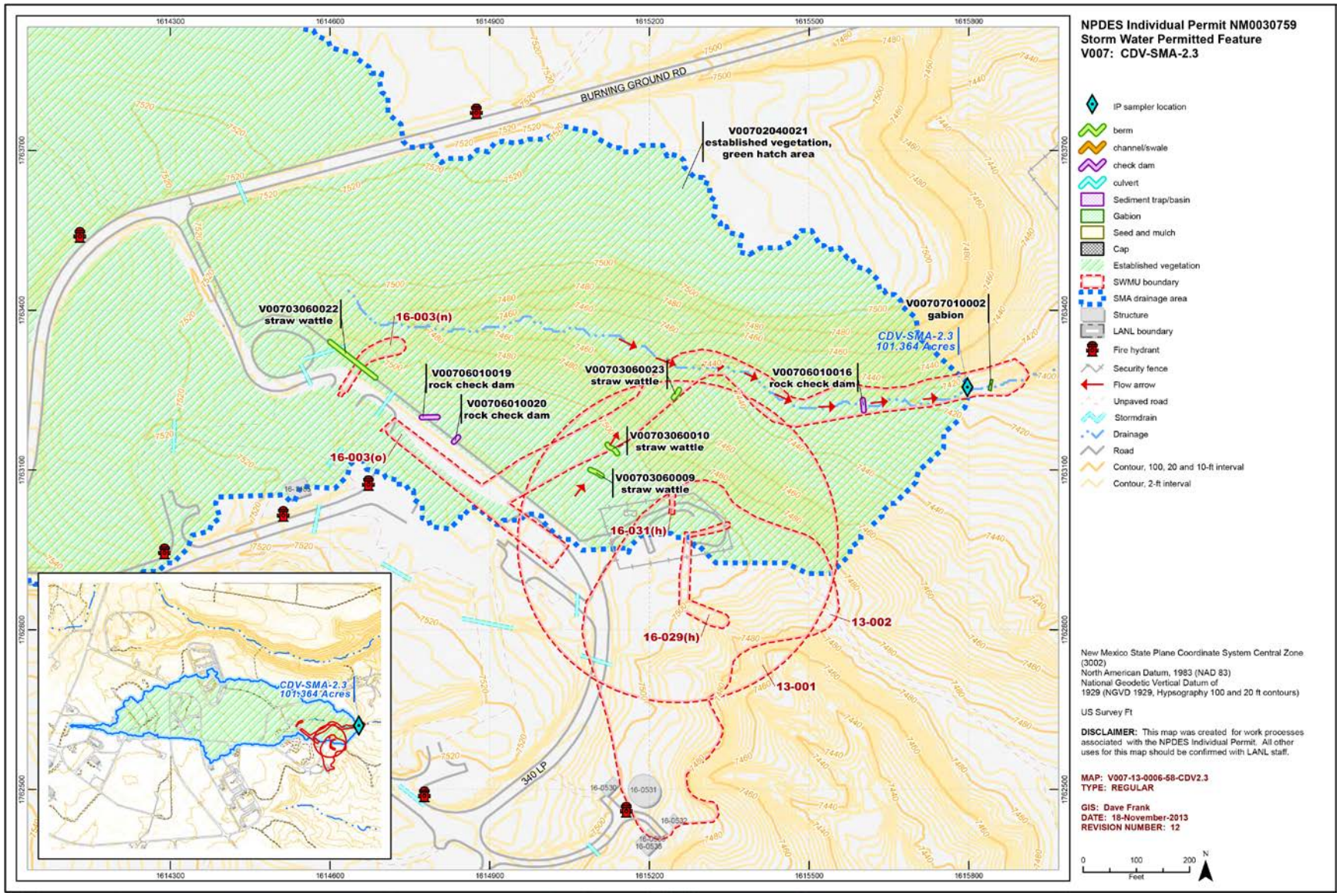


Figure 186-1 CDV-SMA-2.3 location map

187.0 CDV-SMA-2.41: SWMU 16-018

187.1 Site Descriptions

One historical industrial activity area is associated with V008, CDV-SMA-2.41: Site 16-018.

SWMU 16-018 is the former location of MDA P, north of the TA-16 Burning Ground near the south rim of Cañon de Valle. MDA P operated from 1950 to 1984 as a disposal site for debris remaining from burning HE and HE-contaminated material at TA-16. Concrete and construction debris was deposited directly on the slopes leading down into the canyon. Other materials were burned at one of the nearby open-burn units, and the resulting debris or residue was pushed over the mesa rim into the canyon. The western area of MDA P primarily received construction debris from the demolition of World War II buildings; the eastern area received debris and residue from the open-burn units. MDA P underwent RCRA closure between 1999 and 2005. During closure, approximately 55,000 yd^3 of soil, rock, metal, and concrete debris was excavated from MDA P. Of this quantity, 21,506 yd^3 of soil was disposed of as hazardous waste. The remainder of this quantity consisted of industrial waste soils, concrete and metal debris that was recycled or managed as industrial waste, and rock that was decontaminated and then used as riprap within TA-16. Other excavated waste included 3947 lb of asbestos-containing material; 888 containers of unknown content; 95 miscellaneous metal objects; 3240 lb of LLW; 5389 lb of mixed waste; and various smaller quantities of HE, HE-contaminated debris, and residuals from treating HE. Scrap metal and concrete were shipped to recycling facilities. Contaminated soils and industrial wastes were shipped to off-site solid waste landfills. Solid, nonhazardous wastes were disposed of at MDA J.

Consent Order sampling has not been conducted at SWMU 16-018; however, decision-level data are available from confirmation samples collected during the RCRA closure of MDA P Site. The Site was segregated into zones (biological and exposed tuff) for cleanup and confirmation sampling purposes and a 30- × 30-ft sampling grid was placed over the entire Site.

The approved 2005 MDA P Site closure certification report concluded the nature and extent had been defined for chemicals and radionuclides detected at SWMU 16-018. The Site meets residential risk levels. NMED approved the SWMU 16-018 RCRA closure report in 2005. SWMU 16-018 was a formerly dual-regulated corrective action unit, and was removed from the Laboratory's Hazardous Waste Facility Permit in 2010; therefore, this unit is no longer subject to the Consent Order.

The project map (Figure 187-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

187.2 Control Measures

The paved road south of the SMA does not contribute run-on. Run-on from the unpaved access road southwest of the area is controlled by the culvert and riprap located on the southwest SMA boundary. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 187-1).

Table 187-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V00802040015	Established Vegetation		X	X		B
V00803010013	Earthen Berm		X		X	EC
V00804010014	Earthen Channel/Swale	X		X		EC
V00804040011	Culvert	X		X		CB
V00804060010	Rip Rap	X		X		CB
V00806010012	Rock Check Dam		X		X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced controls installation and/or certification are planned for 2014 as part of corrective action.

187.3 Storm Water Monitoring

SWMU 16-018 is monitored within CDV-SMA-2.41. Following the installation of baseline control measures, a baseline confirmation sample was collected on August 21, 2011 (Figures 187-2 and 187-3). Analytical results from this baseline sample yielded two TAL exceedances:

- Gross-alpha activity of 231 pCi/L (ATAL is 15 pCi/L).
- PCB concentration of 20 ng/L (ATAL is 0.6 ng/L).

Exceedances are typically evaluated by comparing the results from soil samples collected at the Site during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities.

SWMU 16-018:

- PCBs were potentially associated with industrial materials historically managed at SWMU 16-018. The PCB mixture (Aroclor-1260) was detected in one of seven shallow soil confirmation samples collected at a concentration 2.8% of the residential SSL.
- Alpha-emitting radionuclides are not known to be associated industrial materials historically managed at the Site. Confirmation samples were not analyzed for gross-alpha radioactivity but were analyzed for gamma spectroscopy, which is capable of detecting americium-241 and uranium-235, and for uranium isotopes, which are alpha emitters. Alpha-emitting radionuclides were not detected above BVs or FVs in any of the confirmation samples collected at SWMU 16-018. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

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 Figures 187-2 and 187-3. 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 Figures 187-2 and 187-3.

Monitoring location CDV-SMA-2.41 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as locations with sediment derived from 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.

CDV-SMA-2.41, Rip Rap, V00804060010 (photo ID 8793-4r)

- Gross alpha—The gross-alpha background UTL for locations with 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 urban landscape is 32.5 pCi/L. The 2011 gross-alpha result is between these two values.
- PCB—The PCB baseline storm water UTL for locations with sediment derived from Bandelier Tuff is 11.7 ng/L and baseline PCB UTL for run-on from a developed urban landscape is 98 ng/L. The 2011 PCB result is between these two values.

All the analytical results for these samples are reported in the 2011 Annual Report.

187.4 Inspections and Maintenance

RG257 recorded eight storm events at CDV-SMA-2.41 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 187-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Enhanced Control Measure Verifications	BMP-30546	2-20-2013
Annual Erosion Evaluation	COMP-30714	5-3-2013
Storm Rain Event	BMP-33024	7-11-2013
Storm Rain Event	BMP-33444	7-17-2013
Storm Rain Event	BMP-33944	8-2-2013
Storm Rain Event	BMP-34588	8-20-2013
Storm Rain Event	BMP-35609	9-20-2013
Annual Erosion Evaluation	COMP-36653	11-18-2013

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

Table 187-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-33933	Remove existing rebar from control measures on site. Replace with wooden stakes as necessary.	8-2-2013	11 day(s)	Maintenance conducted in timely manner.

187.5 Compliance Status

The Site associated with CDV-SMA-2.41 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 187-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 16-018	Corrective Action Initiated	Corrective Action Initiated	Initiated 05-01-2012

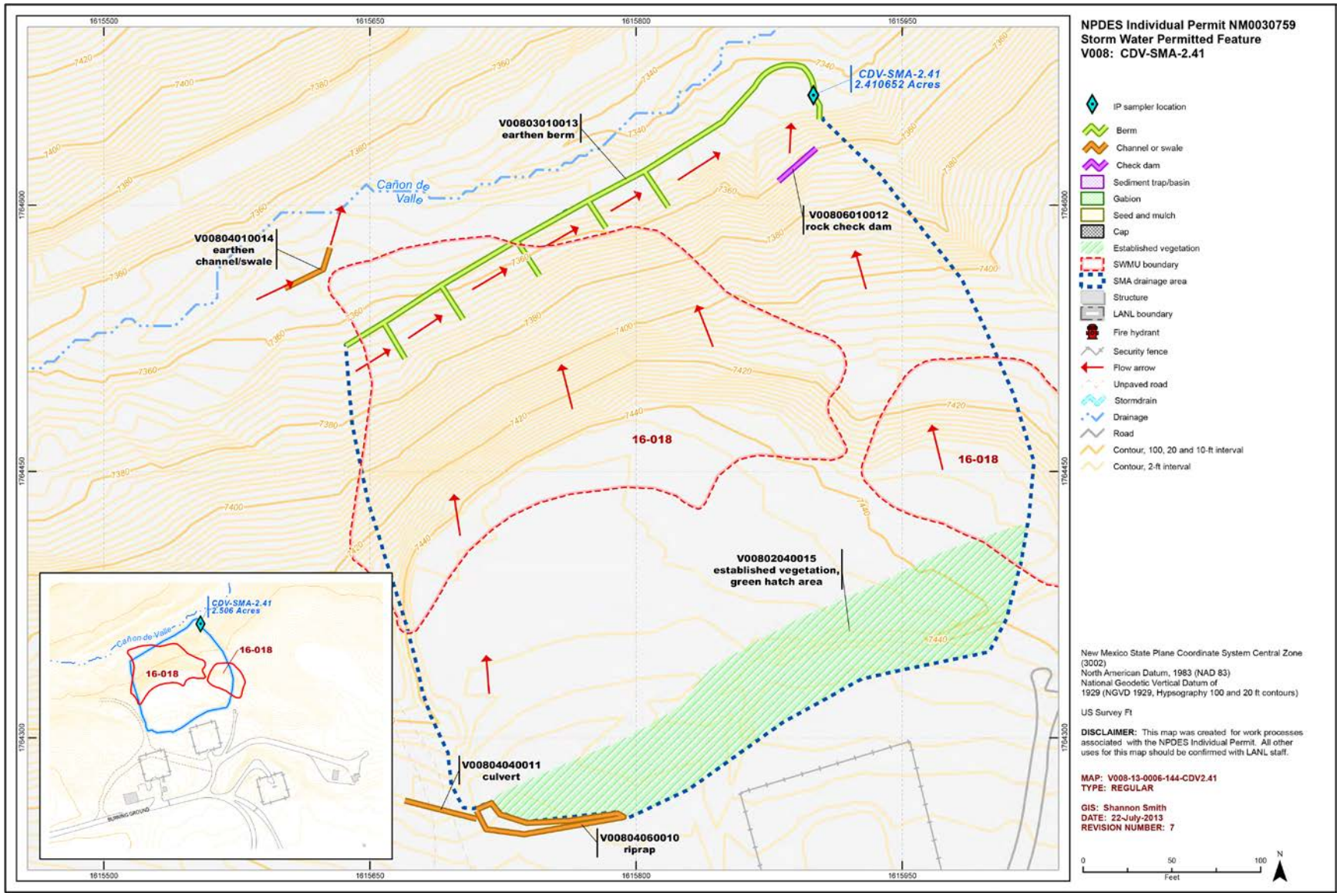
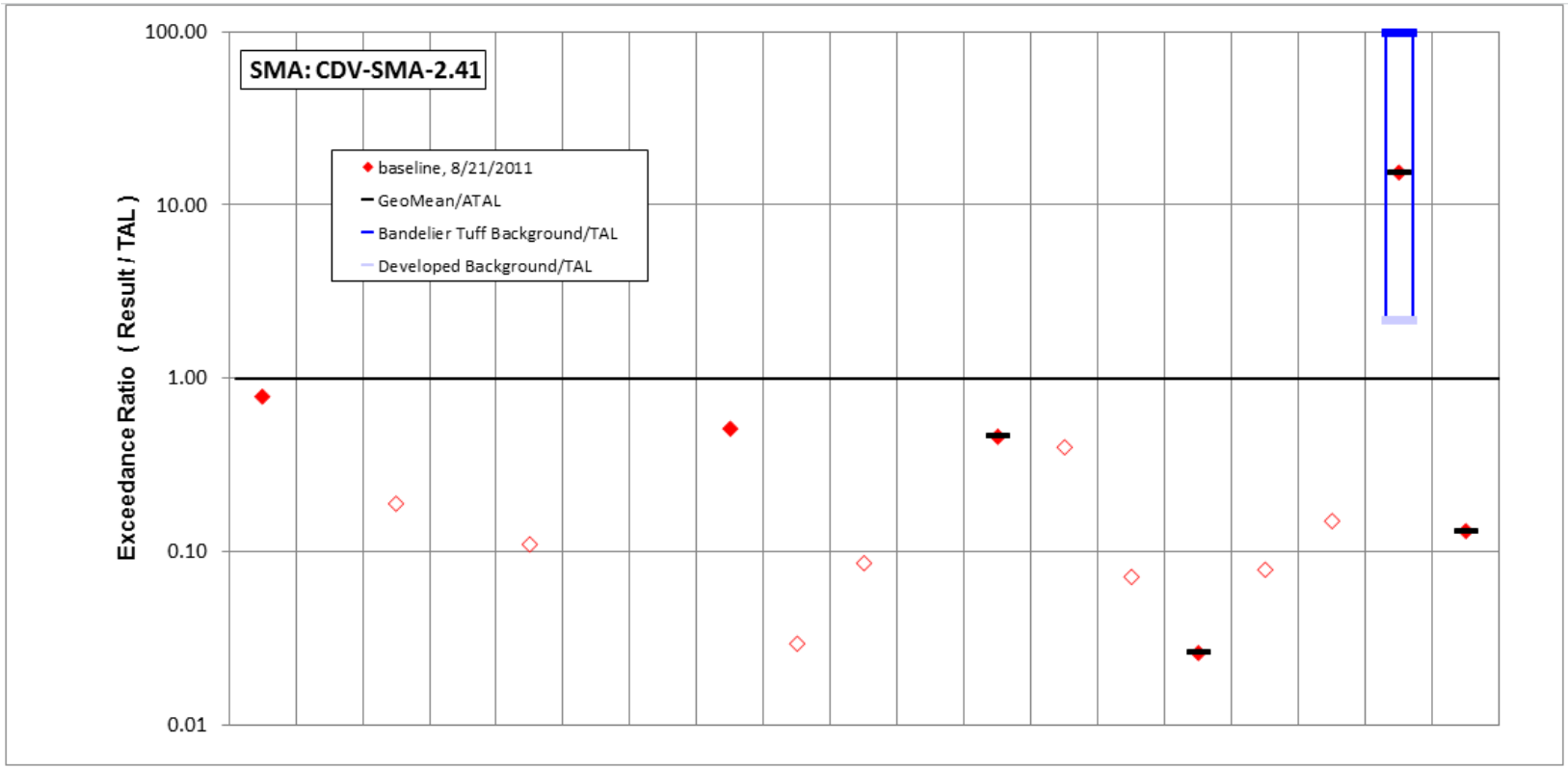


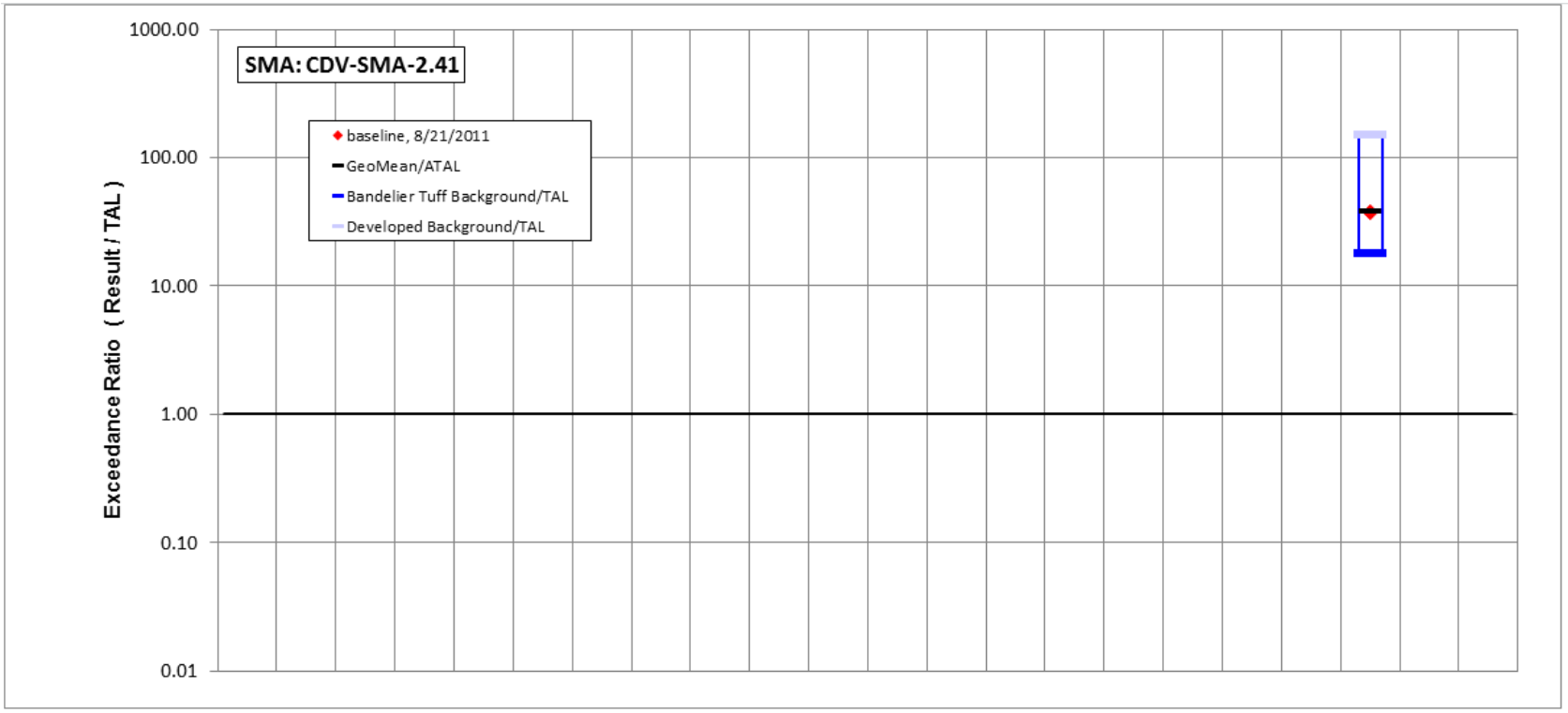
Figure 187-1 CDV-SMA-2.41 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
8/21/2011 result	588	*1*	*1.7*	34.1	*0.11*	*2*	*3.8*	2.2	*0.5*	*0.066*	*0.84*	2.3	*0.2*	*0.45*	2.6	*3.3*	*0.002*	**231**	3.94
result / TAL	0.78	*0.002*	*0.19*	0.0068	*0.11*	*0.01*	*0.004*	0.51	*0.029*	*0.086*	*0.005*	0.46	*0.4*	*0.071*	0.026	*0.079*	*0.15*	**15**	0.13

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 187-2 Inorganic analytical results summary plot for CDV-SMA-2.41



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	**Total PCB**	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
8/21/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.024**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**38**	-	-

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 187-3 Organic analytical results summary plot for CDV-SMA-2.41

188.0 CDV-SMA-2.42: SWMU 16-010(b)

188.1 Site Descriptions

One historical industrial activity area is associated with V008A, CDV-SMA-2.42: Site 16-010(b).

SWMU 16-010(b) consists of a former flash pad (structure 16-387) that was located at the TA-16 Burning Ground. The flash pad was enclosed within a 100- × 100-ft fenced area and consisted of a layer of sand several inches thick over a soil base. The pad was built in 1951 and was used to flash-burn solid and scrap HE, HE-contaminated equipment and debris, and HE-contaminated combustible material. Sands and residues from flash pad operations were disposed of at MDA P (SWMU 16-019). The flash pad operated as a hazardous waste treatment unit under RCRA interim status and underwent RCRA closure between 1999 and 2005. Closure activities included removal of the flash pad and associated debris and removal of soil and bedrock below and adjacent to the former pad. The former flash pad and MDA P were closed and remediated together along with adjacent SWMUs, known as Consolidated Unit 16-016(c)-99; for cleanup and closure purposes, the Sites were referred to as MDA P Site. Confirmation samples were collected as part of the closure of MDA P Site and included SWMU 16-010(b). The Site Closure Certification Report was approved by NMED on November 10, 2005. SWMU 16-010(b) is a formerly dual-regulated corrective action unit and has been removed from the list of corrective action units in the Laboratory's Hazardous Waste Facility Permit; therefore, this unit is no longer subject to the Consent Order.

The project map (Figure 188-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

188.2 Control Measures

There is some potential for run-on to enter the area from the paved access road located along the southeastern perimeter of the Site. The western road does not contribute to run-on. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 188-1).

Table 188-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V008A02040020	Established Vegetation		X	X		B
V008A03010006	Earthen Berm		X		X	CB
V008A03010016	Earthen Berm		X		X	CB
V008A04060002	Rip Rap		X	X		CB
V008A04060005	Rip Rap		X	X		CB
V008A04060018	Rip Rap	X		X		B
V008A04060019	Rip Rap		X	X		B
V008A06010004	Rock Check Dam		X		X	CB
V008A06010017	Rock Check Dam	X			X	B
V008A07010003	Gabions		X		X	CB

CB: Certified baseline control measure.
B: Additional baseline control measure.
EC: Enhanced control measure.

188.3 Storm Water Monitoring

SWMU 16-010(b) is monitored within CDV-SMA-2.42. Following the installation of baseline control measures, a baseline storm water sample was collected on July 12, 2013 (Figures 188-2 and 188-3). Analytical results from this sample yielded three TAL exceedances:

- Copper concentrations of 4.37 µg/L (MTAL is 4.3 µg/L),
- Gross-alpha activity of 89.3 pCi/L (ATAL is 15 pCi/L), and
- PCB concentration of 33 ng/L (ATAL is 0.6 ng/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 16-010(b):

- Based on site history and RCRA closure confirmation sampling, the Site is unlikely a source of the TAL exceedances for copper, PCBs, and 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 Figures 188-2 and 188-3. 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 Figures 188-2 and 188-3.

Monitoring location CDV-SMA-2.42 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 urban 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 urban landscape is 32.5 pCi/L. The 2013 gross-alpha result is between these two values.
- PCBs—The PCB UTL from developed urban 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 2013 is between these values.

All the analytical results for these samples are reported in the 2013 Annual Report.

188.4 Inspections and Maintenance

RG257 recorded eight storm events at CDV-SMA-2.42 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 188-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30715	5-3-2013
Storm Rain Event	BMP-33028	7-3-2013
Storm Rain Event	BMP-33448	7-17-2013
Storm Rain Event	BMP-33948	8-1-2013
Storm Rain Event	BMP-34592	8-20-2013
Storm Rain Event	BMP-35613	9-20-2013
Annual Erosion Evaluation	COMP-36654	11-18-2013
TAL Exceedance	COMP-35288	9-11-2013

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

Table 188-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-35447	Repair berm by first removing rock and matting from berm. Add clean fill to breach and any other damaged/low areas of berm. Compact all new fill. Reconstruct spillway. Install a layer of non-woven geotextile fabric on spillway and cover with a layer of TRM. Apply angular rock to breach repair area. Install seed and coconut matting on berm. Compact existing berm. Add fill to berm to breach; to extend west end of berm as shown on attached map; and increase berm height. Compact all new fill. Adjust spillway height as recommended by B. Schilling. Install a layer of non-woven geotextile fabric on spillway and cover with a layer of TRM. Install seed and coconut matting to berm. Install seed and mulch to all areas disturbed by maintenance activities (e.g. skid steer tracks).	11-18-2013	68 day(s)	Maintenance conducted as soon as practicable.

188.5 Compliance Status

The Site associated with CDV-SMA-2.42 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 188-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 16-010(b)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 8-26-13

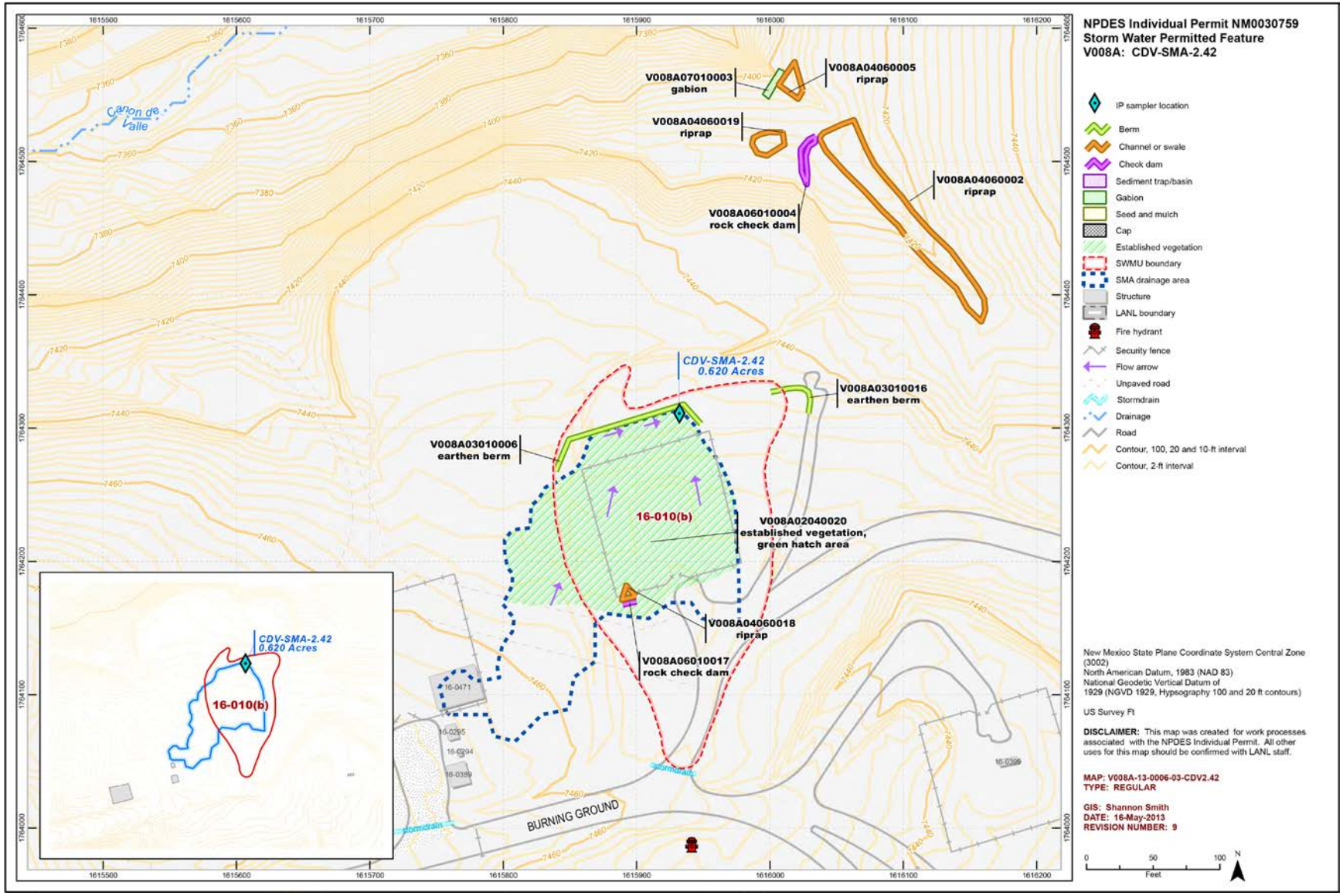
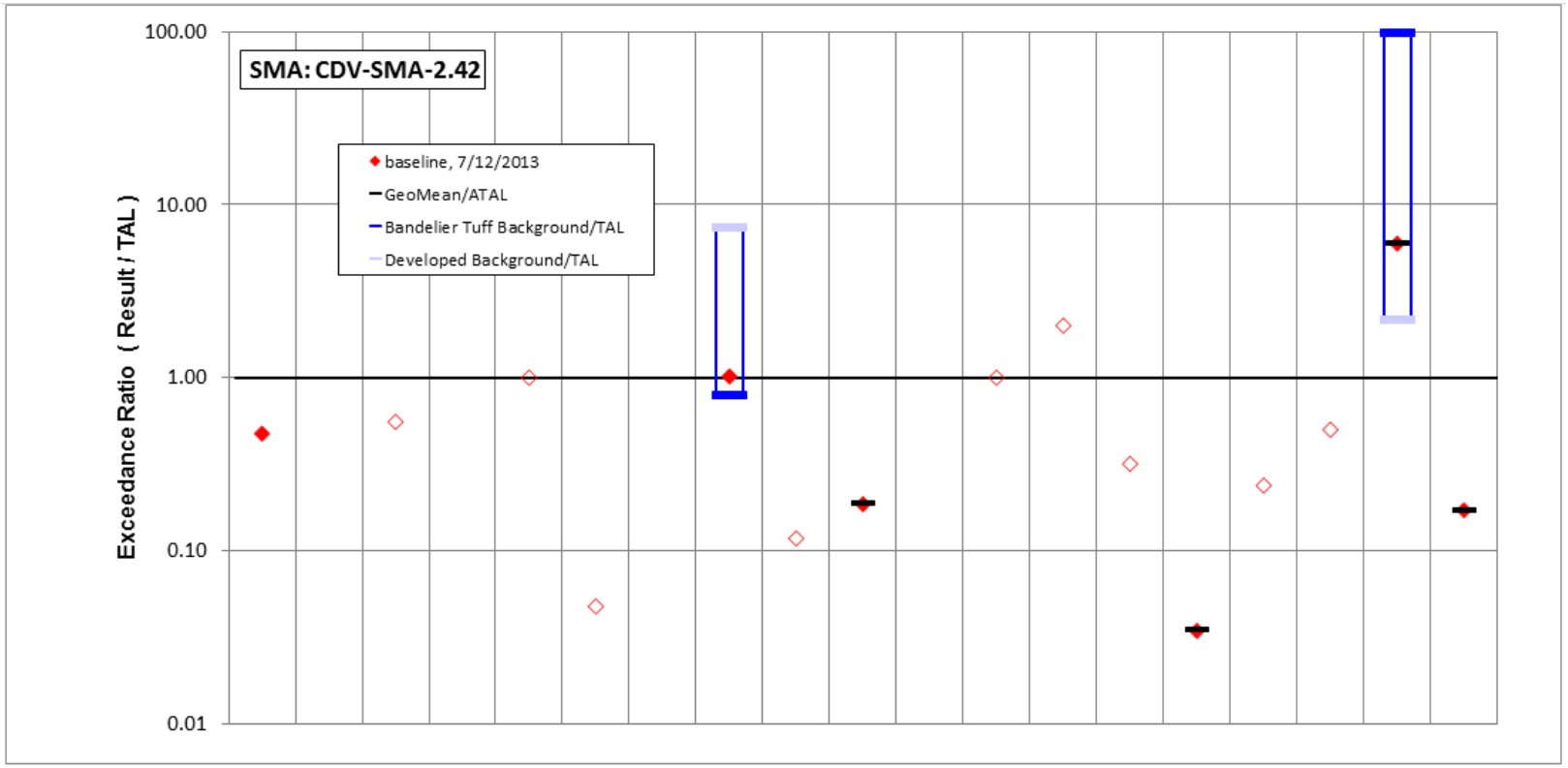


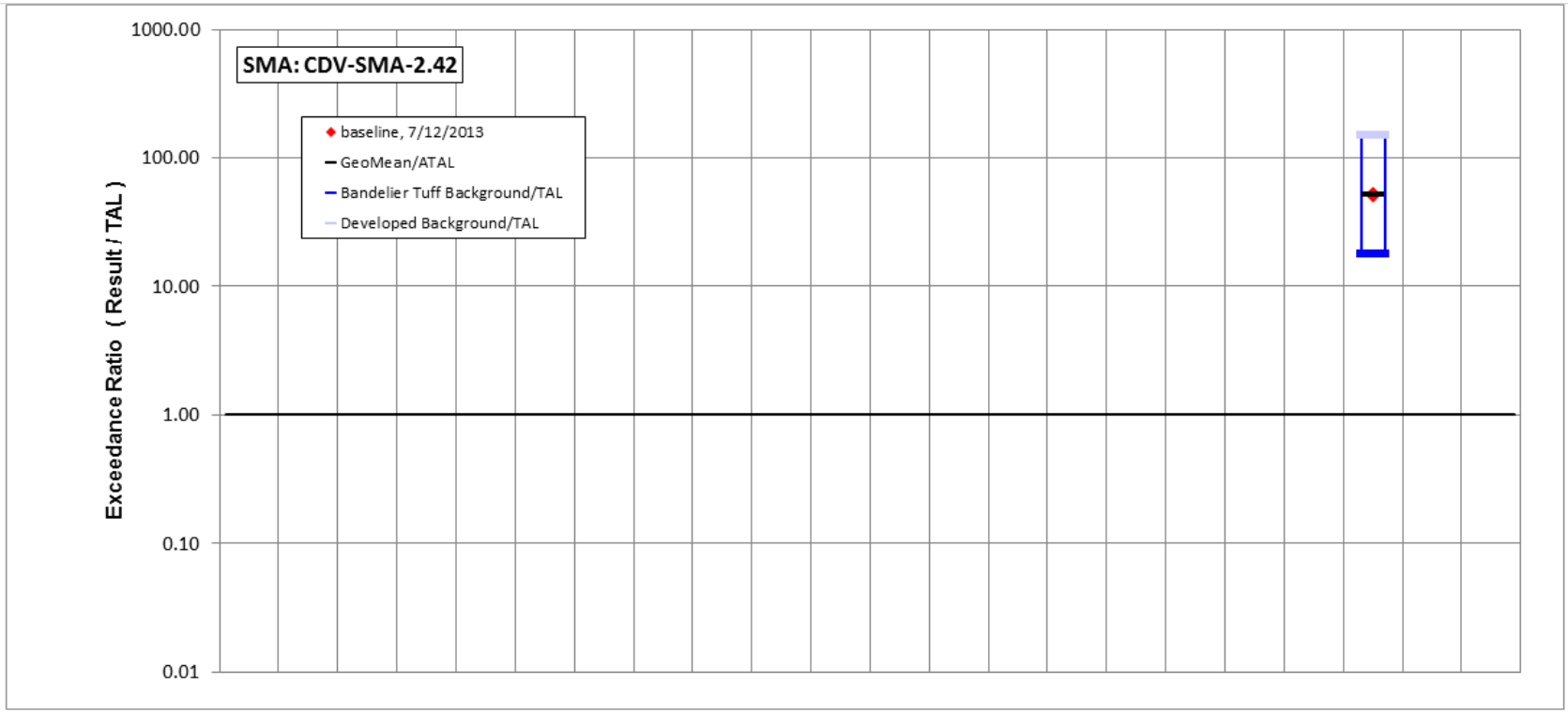
Figure 188-1 CDV-SMA-2.42 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	Lead	Mercury	Nickel	Selenium	**Silver**	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
7/12/2013 result	356	2.61	*5*	17.5	*1*	*10*	2.95	**4.37**	*2*	0.143	0.816	*5*	***1***	*2*	3.44	*10*	*0.005*	**89.3**	5.14
result / TAL	0.47	0.0041	*0.56*	0.0035	*1*	*0.048*	0.003	**1**	*0.12*	0.19	0.0048	*1*	***2***	*0.32*	0.034	*0.24*	*0.5*	**6**	0.17

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 188-2 Inorganic analytical results summary plot for CDV-SMA-2.42



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	**Total PCB**	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
7/12/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.033**	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**52**	-	-

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 188-3 Organic analytical results summary plot for CDV-SMA-2.42

189.0 CDV-SMA-2.5: SWMUs 16-010(c), 16-010(d), and 16-028(a)

189.1 Site Descriptions

Three historical industrial activity areas are associated with V009, CDV-SMA-2.5: Sites 16-010(c), 16-010(d), and 16-028(a).

SWMU 16-010(c) is a former burn table that was converted to a flash pad/burn tray (structure 16-388) located at the TA-16 Burning Ground. The burn table was used to treat HE scrap. The 100- × 100-ft enclosed area consisted of a concrete pad that was used to unload explosives and a 16- × 4-ft metal tray that was approximately 2 ft above the ground surface. Scrap HE was placed on the tray and burned. The current flash pad consists of a 22- × 22-ft concrete pad set on a secondary containment area and surrounded on three sides by a concrete wall. Before treatment, the HE-contaminated wastes are placed on steel pallets or steel trays. Propane burners are used as heat sources to treat the wastes at the flash pad, which can be covered with a movable steel roof when the pad is not in use. The current burn tray consists of a stainless-steel kettle that is 30 in. in diameter and 24 in. high. Propane burners are used to treat HE-contaminated liquid wastes at the burn tray. The entire assembly, which can be covered with a retractable cover, is provided with secondary containment.

No investigations have been conducted at this Site. SWMU 16-010(c) is a formerly dual-regulated corrective action unit that was removed from the list of corrective action units in the Laboratory's Hazardous Waste Facility Permit in November 2010; therefore, this unit is no longer subject to the Consent Order.

SWMU 16-010(d) is a former burn table that was converted to a burn tray (structure 16-399) located at the TA-16 Burning Ground. The 100-ft^2 enclosed area consists of a concrete pad, a burn table that is approximately 2 ft above the ground surface, and a 16- × 4-ft metal tray situated on the table. Scrap HE is placed on the tray and burned. A metal-covered rain guard can be rolled back to expose the tray.

No investigations have been conducted at this Site. SWMU 16-010(d) is a formerly dual-regulated corrective action unit that was removed from the list of corrective action units in the Laboratory's Hazardous Waste Facility Permit in November 2010; therefore, this unit is no longer subject to the Consent Order.

SWMU 16-028(a) is the south drainage channel located at the TA-16 Burning Ground. The drainage channel is located south of the Burning Ground road and east of a water treatment shed (structure 16-363). The drainage receives runoff from the entire Burning Ground and flows into a tributary of Cañon de Valle.

Consent Order investigations have not yet begun for this Site; however, decision-level data from 1995 and 1997 RFIs are available for SWMU 16-028(a). Several inorganic chemicals were detected above BVs in shallow RFI samples, and PAHs and HE were detected at concentrations below residential SSLs.

The project map (Figure 189-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

189.2 Control Measures

Multiple paved areas in and around this SMA have the potential to contribute to run-on to the SWMUs. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 189-1).

Table 189-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V00902040036	Established Vegetation		X	X		B
V00903010011	Earthen Berm		X		X	CB
V00903120034	Rock Berm		X		X	B
V00903120035	Rock Berm		X		X	B
V00904060005	Rip Rap	X		X		CB
V00904060006	Rip Rap		X	X		CB
V00904060007	Rip Rap	X		X		CB
V00904060009	Rip Rap	X		X		CB
V00906010015	Rock Check Dam	X			X	CB
V00906010016	Rock Check Dam	X			X	CB
V00906010017	Rock Check Dam	X			X	CB
V00906010018	Rock Check Dam	X			X	CB
V00906010022	Rock Check Dam	X			X	CB
V00906010028	Rock Check Dam	X			X	B
V00906010029	Rock Check Dam	X			X	B
V00906010030	Rock Check Dam	X			X	B
V00906010031	Rock Check Dam	X			X	B
V00906010033	Rock Check Dam	X			X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

189.3 Storm Water Monitoring

SWMUs 16-010(c), 16-010(d), and 16-028(a) are monitored within CDV-SMA-2.5. Following the installation of baseline control measures, baseline confirmation samples were collected on September 1, 2011, October 12, 2012, and July 26, 2013 (Figures 189-2 and 189-3). Inorganic and organic analytical results from these baseline samples yielded no TAL exceedances. Baseline confirmation is complete for CDV-SMA-2.5 and the associated SWMUs 16-010(c), 16-010(d), and 16-028(a) because all applicable sampling results are below the applicable MTAL or ATAL. No further sampling is required for CDV-SMA-2.5 for the duration of the IP.

189.4 Inspections and Maintenance

RG257 recorded eight storm events at CDV-SMA-2.5 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 189-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30716	5-3-2013
Storm Rain Event	BMP-33025	7-3-2013
Storm Rain Event	BMP-33445	7-18-2013
Storm Rain Event	BMP-33945	8-1-2013
Storm Rain Event	BMP-34589	8-20-2013
Storm Rain Event	BMP-35610	9-24-2013
Annual Erosion Evaluation	COMP-36655	11-18-2013

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

Table 189-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-33937	Install new straw wattles directly above existing wattles -0019. Wattles -0019 will be retired when work is completed. Install new straw wattles directly above existing wattles -0024. Wattles -0024 will be retired when work is completed. Install new straw wattles directly above existing wattles -0025. Wattles -0025 will be retired when work is completed. Install new straw wattles directly above existing wattles -0026. Wattles -0026 will be retired when work is completed. Install new straw wattles directly above existing wattles -0027. Wattles -0027 will be retired when work is completed.	8-2-2013	15 day(s)	Maintenance conducted in timely manner.
BMP-34539	No excavation (including staking) within PRSs 16-010(c), 16-010(d), or 16-028(a) per excavation permit 13X-0017. All work requested on this work order will remain outside the PRS boundaries (as indicated on attached map in red dashed lines). Repair rock check dam -0032 by adding rock to build up height and extend both ends.	11-18-2013	108 day(s)	Maintenance conducted as soon as practicable.

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-34703	Apply additional clean fill to 1) rebuild berm at the location flagged in the field 2) match the elevations and endpoints staked in the field. Apply seed and TRM to the berm. Compact existing fill. Compact new fill. Line spillway with non-woven geotextile fabric and cover with a layer of TRM. No excavation (including staking) within PRSs 16-010(c), 16-010(d), or 16-028(a) per excavation permit 13X-0017. All work requested on this work order will remain outside the PRS boundaries (as indicated on attached map in red dashed lines). Relocate gravel bags from the current locations to the locations flagged in the field. Repair berm V00903010011 by removing rock from spillway and matting. Reshape spillway.	11-18-2013	123 day(s)	Maintenance conducted as soon as practicable.
BMP-36479	No excavation (including staking) within PRSs 16-010(c), 16-010(d), or 16-028(a) per excavation permit 13X-0017. All work requested on this work order will remain outside the PRS boundaries (as indicated on attached map in red dashed lines). Install rock berm as marked in the field. Wattle - 0024 will be retired when work is completed.	11-18-2013	55 day(s)	Maintenance conducted as soon as practicable.

189.5 Compliance Status

The Sites associated with CDV-SMA-2.5 are Moderate Priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 189-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 16-010(c)	Baseline Monitoring Extended	Baseline Confirmation Complete	No Comment
SWMU 16-010(d)	Baseline Monitoring Extended	Baseline Confirmation Complete	No Comment
SWMU 16-028(a)	Baseline Monitoring Extended	Baseline Confirmation Complete	No Comment

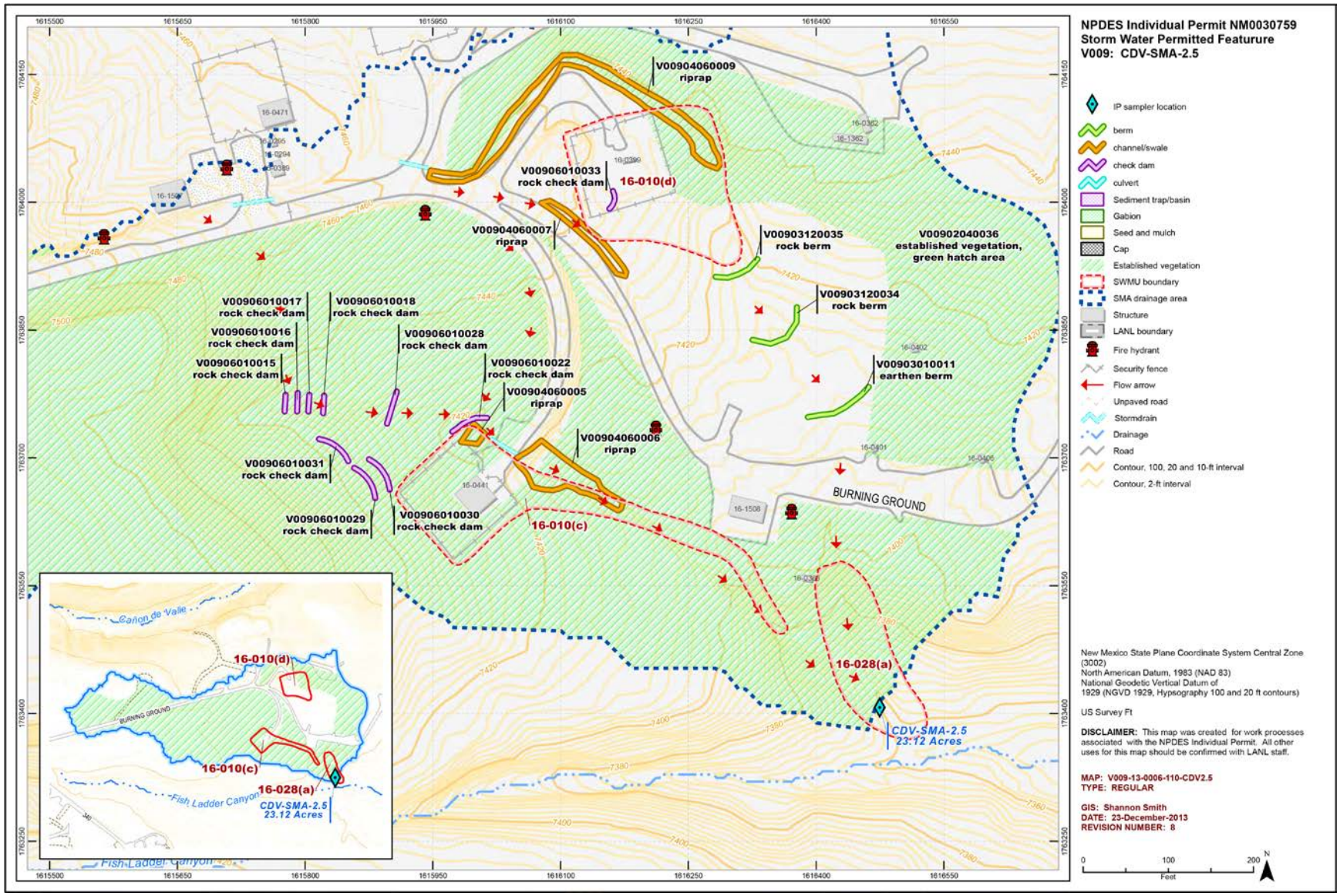
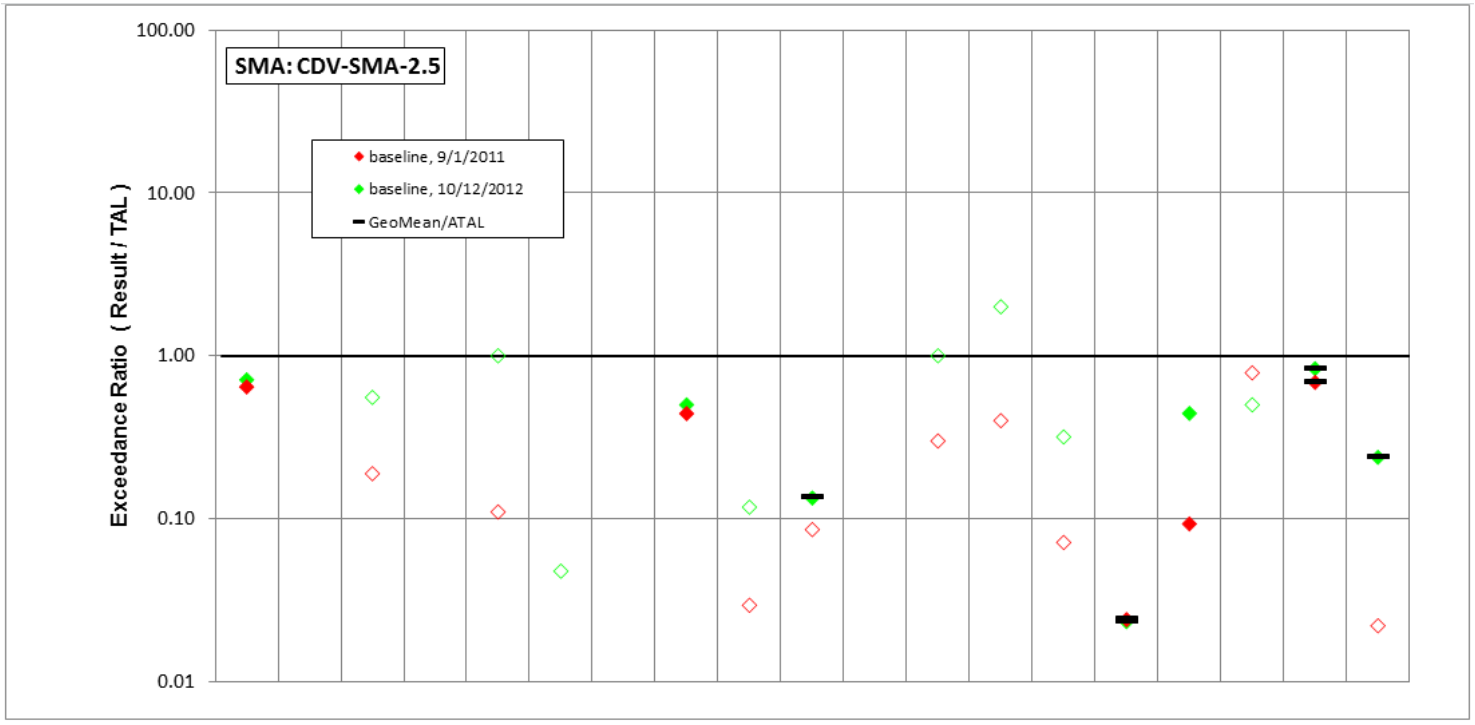


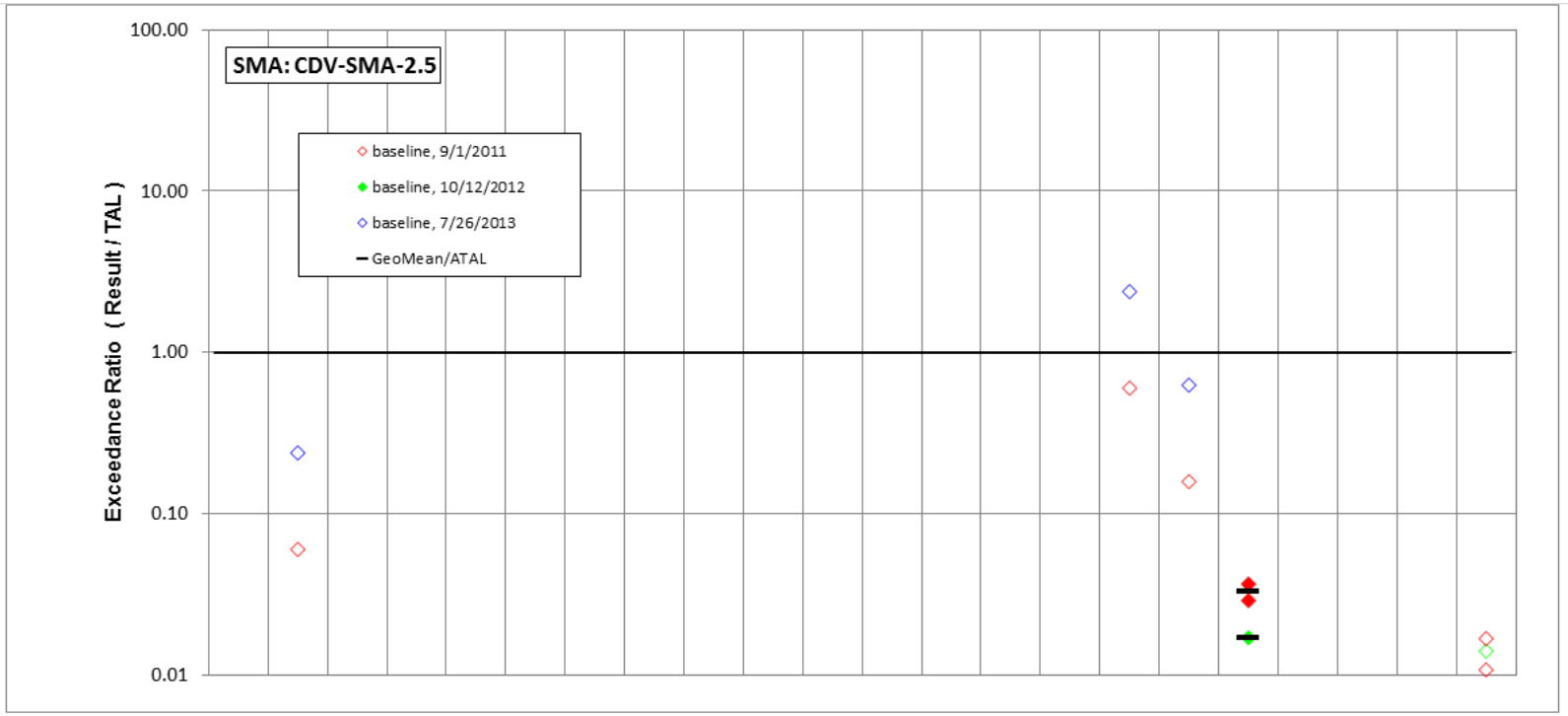
Figure 189-1 CDV-SMA-2.5 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	**Silver**	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
7/26/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/12/2012 result	534	*3*	*5*	17.4	*1*	*10*	1.94	2.15	*2*	0.103	1.04	*5*	***1***	*2*	2.33	18.6	*0.005*	12.5	7.14
result / TAL	0.71	*0.005*	*0.56*	0.0035	*1*	*0.048*	0.0019	0.5	*0.12*	0.13	0.0061	*1*	***2***	*0.32*	0.023	0.44	*0.5*	0.83	0.24
9/1/2011 result	483	*1*	*1.7*	18.4	*0.11*	*2*	2.8	1.9	*0.5*	*0.066*	1	*1.5*	*0.2*	*0.45*	2.4	3.9	*0.008*	10.3	*0.66*
result / TAL	0.64	*0.002*	*0.19*	0.0037	*0.11*	*0.01*	0.0028	0.44	*0.029*	*0.086*	0.0059	*0.3*	*0.4*	*0.071*	0.024	0.093	*0.79*	0.69	*0.022*

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 189-2 Inorganic analytical results summary plot for CDV-SMA-2.5



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	**Hexachlorobenzene**	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	ATAL	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	MTAL	ATAL	-	-	-	ATAL
std value	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5	19	200	-	-	-	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
7/26/2013 result	-	*1.19*	-	-	-	-	-	-	-	-	-	-	-	-	-	***11.9***	*11.9*	-	-	-	-	-
result / TAL	-	*0.24*	-	-	-	-	-	-	-	-	-	-	-	-	-	***2.4***	*0.63*	-	-	-	-	-
10/12/2012 resul	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4	-	-	-	*0.281*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.017	-	-	-	*0.014*
9/1/2011 result	-	*0.3*	-	-	-	-	-	-	-	-	-	-	-	-	-	*3*	*3*	5.79	-	-	-	*0.336*
result / TAL	-	*0.06*	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.6*	*0.16*	0.029	-	-	-	*0.017*

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 189-3 Organic analytical results summary plot for CDV-SMA-2.5

190.0 CDV-SMA-2.51: SWMU 16-010(i)

190.1 Site Descriptions

One historical industrial activity area is associated with V009A, CDV-SMA-2.51: Site 16-010(i).

SWMU 16-010(i) is structure 16-392, an inactive burn pad that previously was a filter bed that received wash water from the basket-wash facility. The wash water was received through a trough (structure 16-1136). Filtered wash water from the basket-wash facility collected within perforated piping along the bottom of the filter bed and drained via gravity through a pipe to an adjacent outfall southeast of the filter bed. The filter bed was modified to a burn pad to burn suspected uranium-contaminated objects. The basket-wash facility and discharge trough were removed in 2003; the filter bed is still in place. SWMU 16-010(i), along with numerous other SWMUs and AOCs, is a component of Consolidated Unit 16-010(h)-99, the Burning Ground structures.

Consent Order sampling has not been conducted at SWMU 16-010(i); however, decision-level data are available from soil samples collected under the 1995 RFI.

The project map (Figure 190-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

190.2 Control Measures

The paved access road east of the SMA has the potential to contribute to run-on onto the Site. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 190-1).

Table 190-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V009A02040029	Established Vegetation		X	X		B
V009A03020005	Base Course Berm	X			X	CB
V009A03020012	Base Course Berm	X			X	CB
V009A03060030	Straw Wattles	X			X	B
V009A03060031	Straw Wattles	X			X	B
V009A06010003	Rock Check Dam		X		X	CB
V009A06010004	Rock Check Dam		X		X	CB
V009A06010006	Rock Check Dam	X			X	CB
V009A06010013	Rock Check Dam		X		X	CB
V009A06010014	Rock Check Dam		X		X	CB
V009A06010015	Rock Check Dam		X		X	CB
V009A06010016	Rock Check Dam	X			X	CB
V009A06030017	Juniper Bales	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

190.3 Storm Water Monitoring

SWMU 16-010(i) is monitored within CDV-SMA-2.51. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figures 190-2 and 190-3). Analytical results from this sample yielded one TAL exceedance:

- Gross-alpha activity of 16.4 pCi/L (ATAL is 15 pCi/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 16-010(i):

- Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Shallow (i.e., less than 3 ft bgs) 1995 RFI samples collected at the Site were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides. However, samples were analyzed for total uranium, which has alpha-emitting isotopes. This radionuclide is exempt from regulation under the CWA. Although this radionuclide may be associated with the gross-alpha radioactivity detected in the IP sample, it is excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

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 Figures 190-2 and 190-3. 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 Figures 190-2 and 190-3.

Monitoring location CDV-SMA-2.51 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 urban landscape is 32.5 pCi/L. The 2013 gross-alpha result is less than both these values.

All the analytical results for these samples are reported in the 2013 Annual Report.

190.4 Inspections and Maintenance

RG257 recorded eight storm events at CDV-SMA-2.51 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 190-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30717	5-3-2013
Storm Rain Event	BMP-33029	7-3-2013
Storm Rain Event	BMP-33449	7-16-2013
Storm Rain Event	BMP-33949	8-1-2013
Storm Rain Event	BMP-34593	8-20-2013
Storm Rain Event	BMP-35614	9-24-2013
Annual Erosion Evaluation	COMP-36656	11-18-2013
TAL Exceedance	COMP-36879	11-18-2013

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

Table 190-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-37004	All work must stay outside the boundary of PRS 16-10(l) (see site map). Repair rock check dam -0006 by adding angular rock to build up height.	12-10-2013	77 day(s)	Maintenance conducted as soon as practicable.
BMP-37005	All work must stay outside boundary of PRS 16-10(l) (see site map). DE 10 Install new straw wattles upgradient of existing wattles -0018. Wattles -0018 will be retired when work is completed.	11-25-2013	62 day(s)	Maintenance conducted as soon as practicable.
BMP-37322	Install new straw wattle directly upgradient of existing wattle -0028. Wattle -0028 will be retired when work is completed.	11-25-2013	7 day(s)	Maintenance conducted in timely manner.

190.5 Compliance Status

The Site associated with CDV-SMA-2.51 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 190-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 16-010(i)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-25-13

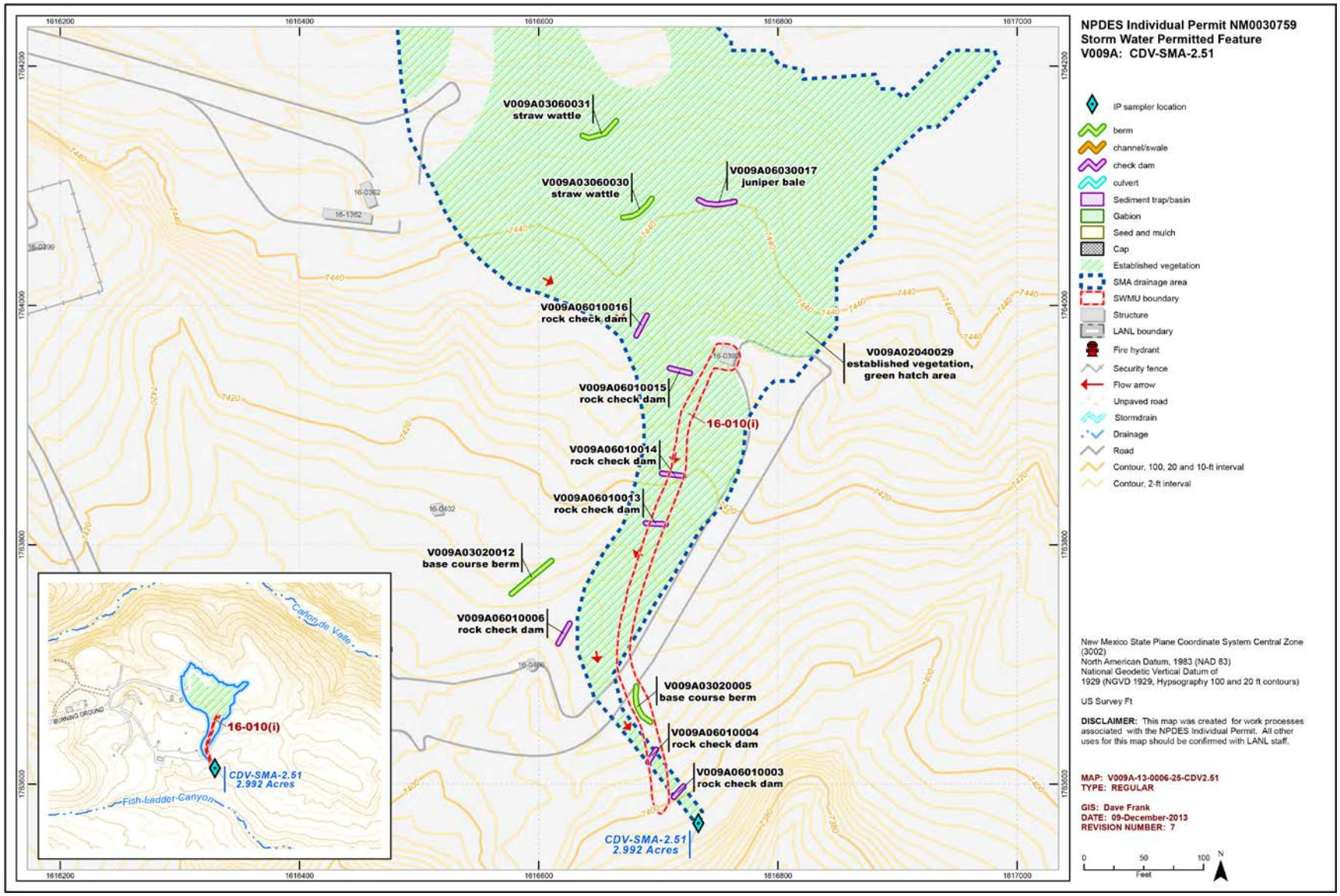
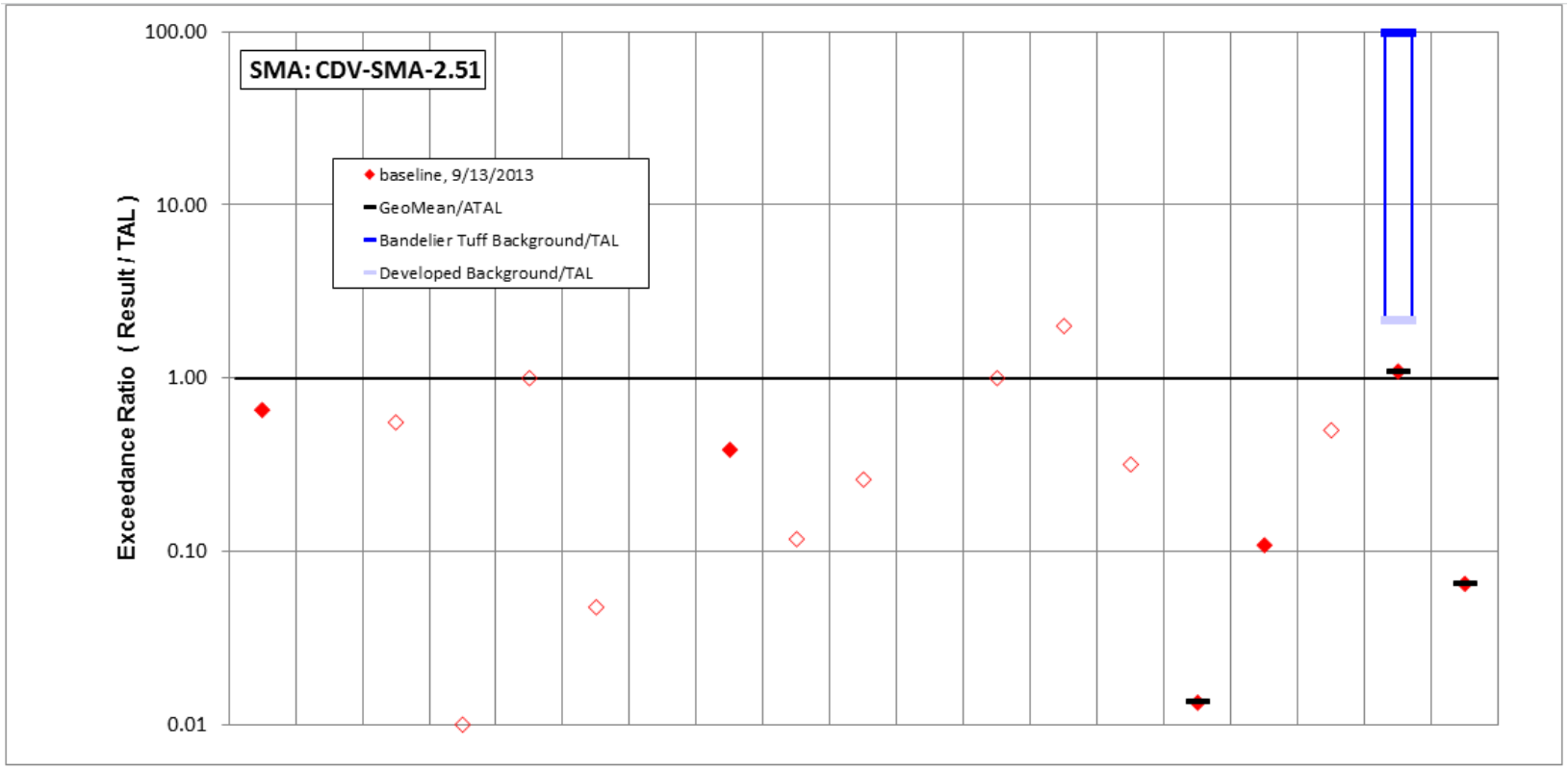


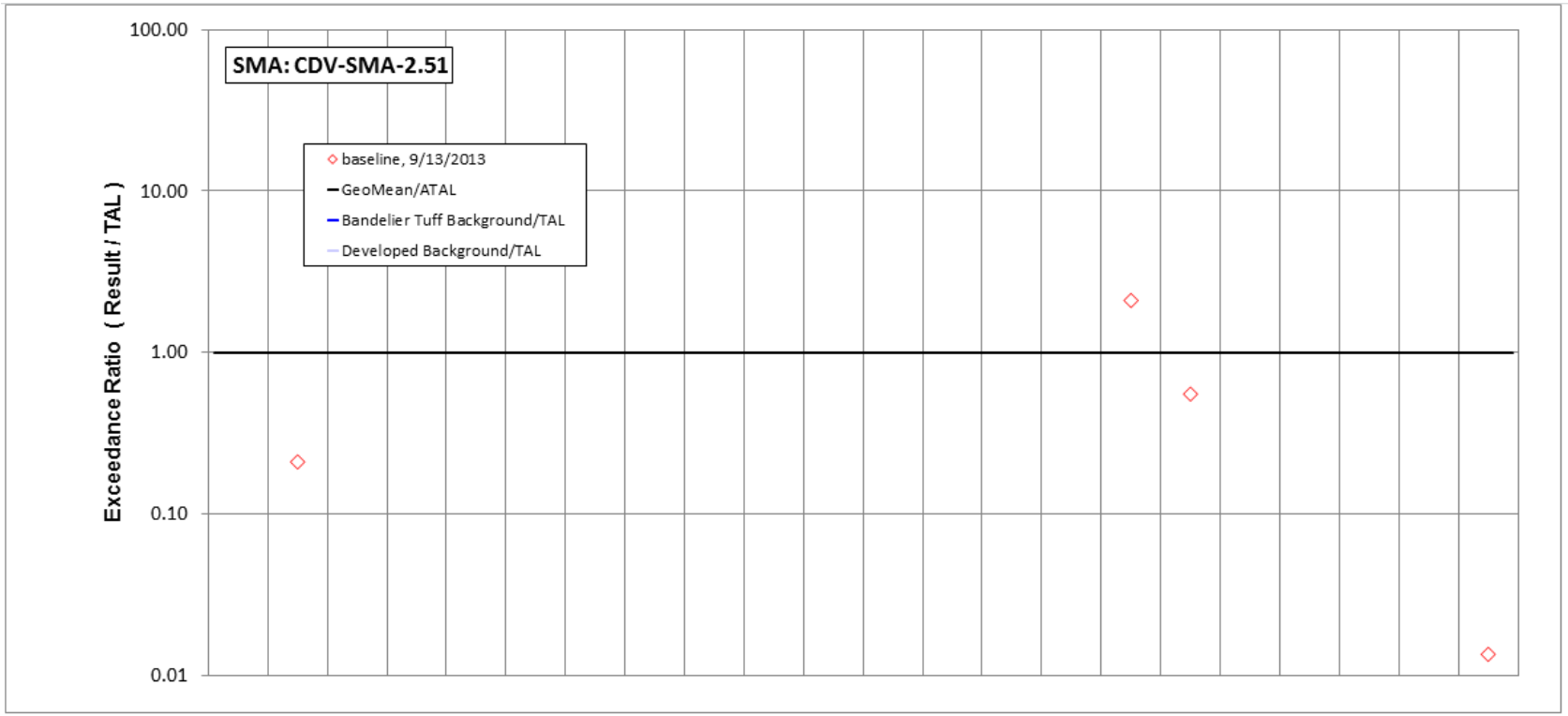
Figure 190-1 CDV-SMA-2.51 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	**Silver**	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/13/2013 result	491	*3*	*5*	*50*	*1*	*10*	*5*	1.66	*2*	*0.2*	0.736	*5*	***1***	*2*	1.34	4.56	*0.005*	**16.4**	1.95
result / TAL	0.65	*0.005*	*0.56*	*0.01*	*1*	*0.048*	*0.005*	0.39	*0.12*	*0.26*	0.0043	*1*	***2***	*0.32*	0.013	0.11	*0.5*	**1.1**	0.065

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 190-2 Inorganic analytical results summary plot for CDV-SMA-2.51



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	**Hexachlorobenzene**	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	ATAL	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	MTAL	ATAL	-	-	-	ATAL
std value	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5	19	200	-	-	-	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
9/13/2013 result	-	*1.05*	-	-	-	-	-	-	-	-	-	-	-	-	-	***10.5***	*10.5*	0.277	-	-	-	*0.27*
result / TAL	-	*0.21*	-	-	-	-	-	-	-	-	-	-	-	-	-	***2.1***	*0.55*	0.001	-	-	-	*0.014*

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 190-3 Organic analytical results summary plot for CDV-SMA-2.51

191.0 CDV-SMA-3: SWMU 14-009

191.1 Site Descriptions

One historical industrial activity area is associated with V010, CDV-SMA-3: Site 14-009.

SWMU 14-009 is a surface disposal area located south and west of building 14-43 at TA-14. The disposal area measures approximately 30 × 140 ft and consists of sand and ruptured sandbags used during explosives tests performed at nearby firing sites [SWMUs 14-002(a) and 14-002(b)].

Phase I Consent Order investigation is complete for SWMU 14-009, and the Site is expected to be eligible for a COC under the Consent Order after submittal and approval of the supplemental investigation report for Cañon de Valle Aggregate Area.

The project map (Figure 191-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

191.2 Control Measures

The primary source of run-on for this Permitted Feature originates on the paved areas to the north and west of the SMA. Additional run-on from roof drains on building 14-0043 also impacts the SMA via the same flow patterns. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 191-1).

Enhanced controls were installed and certified on July 18, 2012, and submitted to EPA on July 25, 2012, as part of corrective action. Photographs of the enhanced controls are available at http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 191-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V01001010012	Seed and Wood Mulch			X		EC
V01002040013	Established Vegetation		X	X		B
V01003010010	Earthen Berm		X		X	EC
V01003010011	Earthen Berm		X		X	EC
V01003120005	Rock Berm	X			X	CB
V01003120009	Rock Berm		X		X	CB
V01004060007	Rip Rap	X		X		CB
V01006010004	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

191.3 Storm Water Monitoring

SWMU 14-009 is monitored within CDV-SMA-3. Following the installation of baseline control measures, a baseline confirmation sample was collected on August 21, 2011 (Figure 191-2 and 191-3). Inorganic analytical results from this baseline sample yielded one TAL exceedance:

- Gross-alpha activity of 33.4 pCi/L (ATAL is 15 pCi/L).

This exceedance was evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities.

SWMU 14-009:

- Alpha-emitting radionuclides are known to be associated industrial materials historically managed at the Site. Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed using gamma spectroscopy, which is capable of detecting americium-241 and uranium-235, and for uranium isotopes, all of which are alpha-emitting radionuclides. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.


CDV-SMA-3, Earthen Berm, V01003010010 (photo ID 23501-2)

The TAL exceedance was 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 Figures 191-2 and 191-3. 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 Figures 191-2 and 191-3.

Monitoring location CDV-SMA-3 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as locations with 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 background UTL for locations with 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 urban landscape is 32.5 pCi/L. The 2011 gross-alpha result is between these two values.

All the analytical results for these samples are reported in the 2011 Annual Report.

191.4 Inspections and Maintenance

RG257 recorded eight storm events at CDV-SMA-3 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 191-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30890	4-29-2013
Storm Rain Event	BMP-33026	7-2-2013
Storm Rain Event	BMP-33446	7-15-2013
Storm Rain Event	BMP-33946	7-24-2013
Storm Rain Event	BMP-34590	8-15-2013
Storm Rain Event	BMP-35611	9-24-2013
Annual Erosion Evaluation	COMP-36829	11-4-2013

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

Table 191-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-37004	Modify earthen berm V01003120009 by extending north end approximately 50 ft. (see attached map for location). Build additional earthen berm section to 2 ft in height. Stabilize berm with seed and matting. Stabilize all disturbed areas with seed and mulch (preferably green waste mulch). Fill out this work order form completely. Mark new berm section on a clean copy of Site map. Return this work order form to Shannon Smith as soon as work is completed.	9-9-2013	133 day(s)	Maintenance conducted as soon as practicable.

191.5 Compliance Status

The Site associated with CDV-SMA-3 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 191-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 14-009	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 07-18-2012

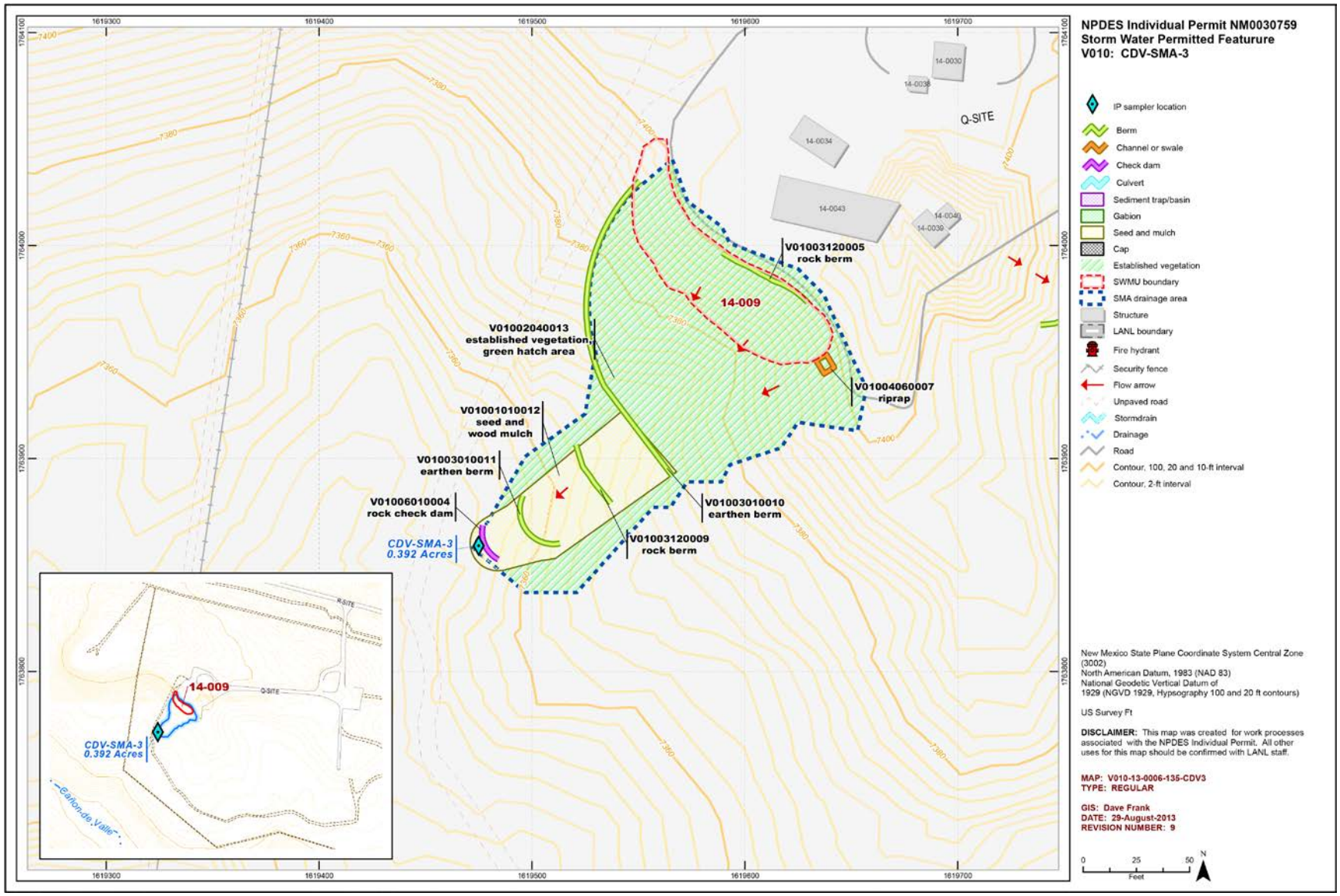
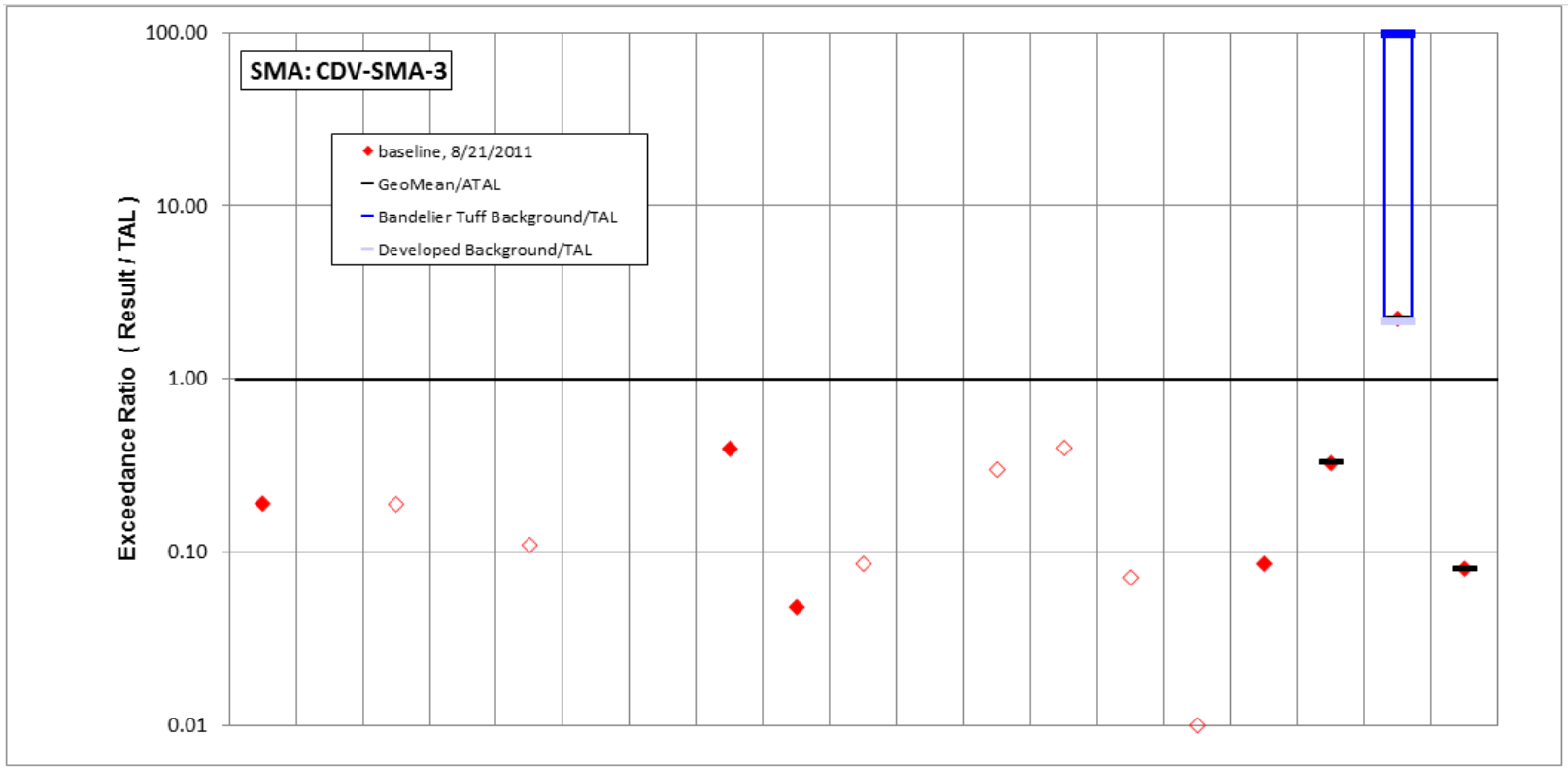


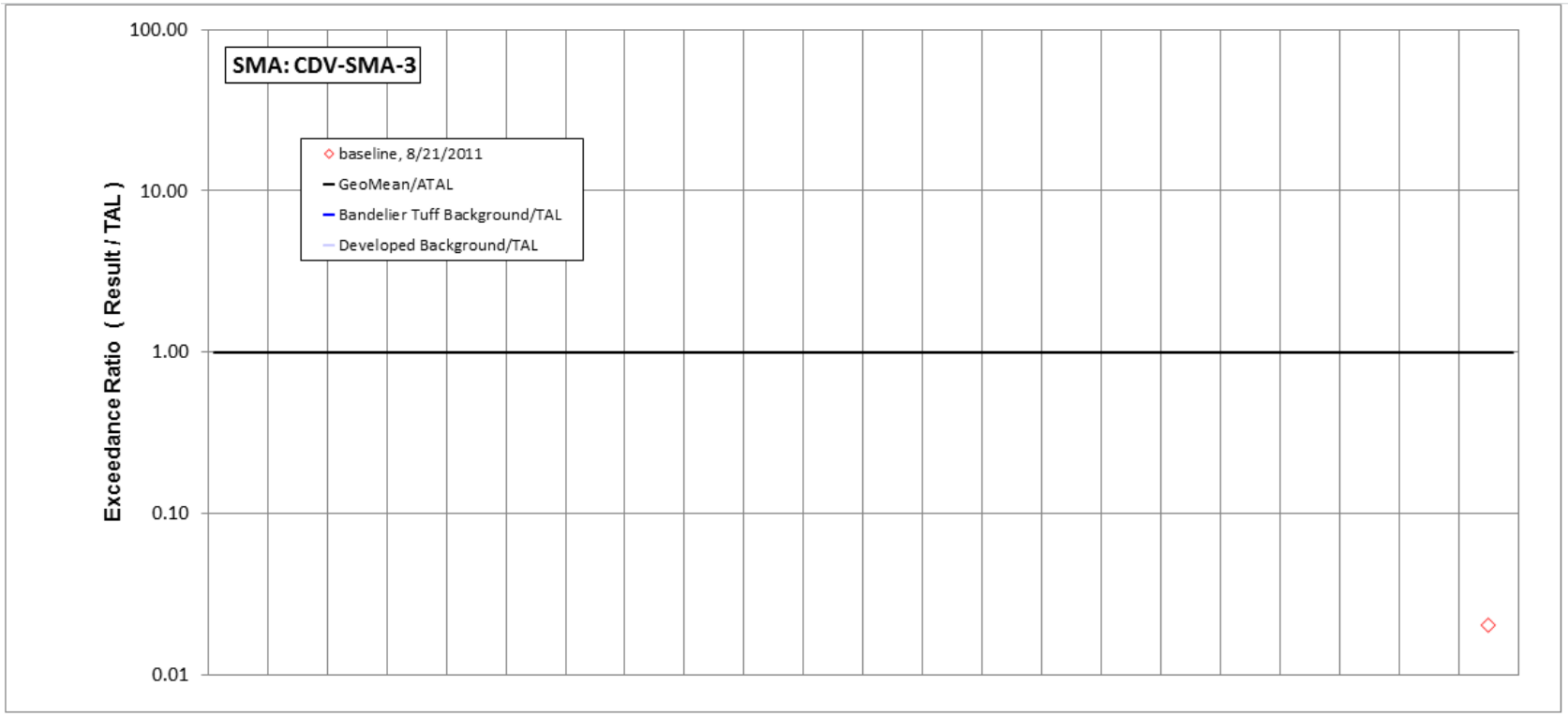
Figure 191-1 CDV-SMA-3 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
8/21/2011 result	143	*1*	*1.7*	15.3	*0.11*	*2*	1.9	1.7	0.82	*0.066*	1.3	*1.5*	*0.2*	*0.45*	*1*	3.6	0.0033	**33.4**	2.41
result / TAL	0.19	*0.002*	*0.19*	0.0031	*0.11*	*0.01*	0.0019	0.4	0.048	*0.086*	0.0076	*0.3*	*0.4*	*0.071*	*0.01*	0.086	0.33	**2.2**	0.08

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 191-2 Inorganic analytical results summary plot for CDV-SMA-3



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-	-	ATAL
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	-	-	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
8/21/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.406*	-	-	-	*0.406*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.002*	-	-	-	*0.02*

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 191-3 Organic analytical results summary plot for CDV-SMA-3

192.0 CDV-SMA-4: SWMU 14-010

192.1 Site Descriptions

One historical industrial activity area is associated with V011, CDV-SMA-4: Site 14-010.

SWMU 14-010 is a former HE sump that was located on the exterior south wall of a former firing chamber [structure 14-2, SWMU 14-002(a)]. The sump received wastewater from a floor drain in firing chamber 14-2 and discharged to an outfall located approximately 24 ft southeast of the sump. In 1973, contaminated portions of structure 14-2 were removed and disposed of at TA-54; the remainder of the building was demolished and burned, and the sump and most of the drainline were removed. During the 1997 VCA conducted at the Site, contaminated surface soil and sediment in the drainage area below the former outfall were excavated and removed.

Phase I Consent Order sampling is complete for SWMU 14-010. All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs. SWMU 14-010 will be recommended for corrective action complete in the supplemental investigation report for Cañon de Valle Aggregate Area, to be submitted to NMED in 2015. SWMU 14-010 will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 192-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

192.2 Control Measures

There is run-on to the SWMU from the paved area above the SMA. Existing controls address this potential run-on source. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 192-1).

Table 192-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V01103010008	Earthen Berm		X		X	B
V01104060007	Rip Rap	X		X		B
V01106010009	Rock Check Dam		X		X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

192.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at CDV-SMA-4. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

The monitoring station for CDV-SMA-4 has been relocated. The new location of the sampler is positioned below all controls and will provide a more representative sample of storm water discharge from the SMA. Sampler coordinates and the SMA drainage area are updated in Attachment 4.

192.4 Inspections and Maintenance

RG257 recorded eight storm events at CDV-SMA-4 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 192-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30891	4-29-2013
Storm Rain Event	BMP-33027	7-2-2013
Storm Rain Event	BMP-33447	7-15-2013
Storm Rain Event	BMP-33947	7-24-2013
Storm Rain Event	BMP-34591	8-15-2013
Storm Rain Event	BMP-35612	9-24-2013
Annual Erosion Evaluation	COMP-36830	11-4-2013

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

Table 192-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-31696	Install earthen berm #1 approximately 40ft length and 2 ft height (see attached map for location). Install earthen berm #2 approximately 40ft length and 2 ft height. Stabilize both berms with seed and matting. Stabilize all disturbed areas with seed and mulch (preferably green waste mulch) Fill out this work order form completely. Mark location of new berms on a clean copy of Site map. Return this work order form to Shannon Smith as soon as work is completed.	8-27-2013	120 day(s)	Maintenance conducted as soon as practicable.

192.5 Compliance Status

The Site associated with CDV-SMA-4 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 192-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 14-010	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

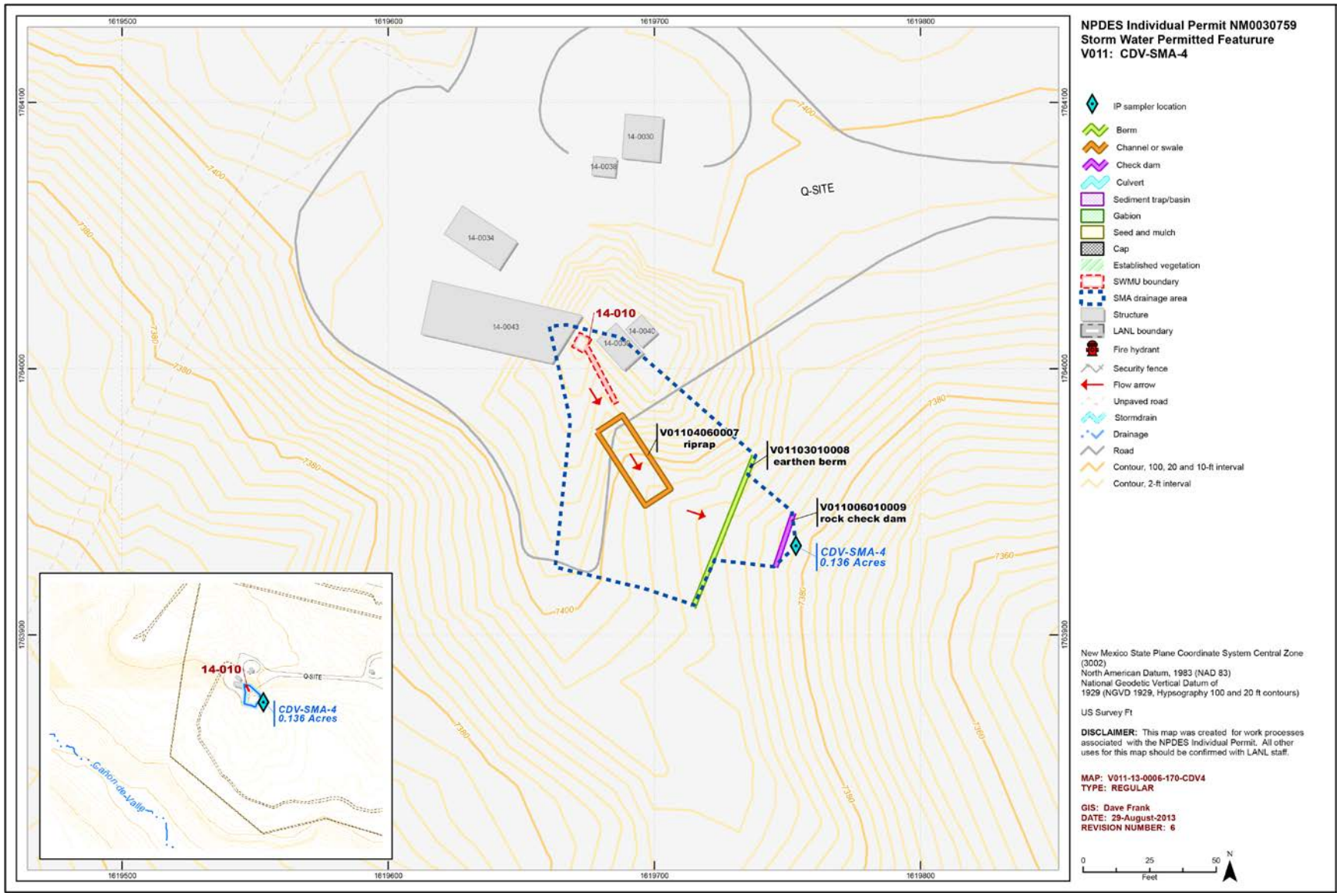


Figure 192-1 CDV-SMA-4 location map

193.0 CDV-SMA-6.01: SWMU 14-006 and AOC 14-001(g)

193.1 Site Descriptions

Two historical industrial activity areas are associated with V012, CDV-SMA-6.01: Sites 14-006 and 14-001(g).

SWMU 14-006 is a decommissioned HE sump (structure 14-31), associated drainline, and outfall located at TA-14 approximately 45 ft east of control building 14-23. Installed in 1952, the steel-lined sump is constructed of reinforced concrete and measures approximately 4.5 ft wide × 8 ft long × 5 ft deep. The sump received discharges from sink and floor drains in building 14-23 and discharged to an outfall approximately 55 ft southeast of the sump. The sump has been filled with concrete and its outlet is plugged (date not known). Currently, the outfall receives only storm water.

Phase I Consent Order sampling is complete for SWMU 14-006. All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs, except for one detection of uranium-238, which was below the industrial SSL. SWMU 14-006 will be recommended for corrective action complete in the supplemental investigation report for Cañon de Valle Aggregate Area, to be submitted to NMED in 2015. SWMU 14-006 will be eligible for a COC upon approval of the report by NMED.

AOC 14-001(g) is an active firing pad (structure 14-35) located south of control building 14-23 at TA-14. Installed in 1964, the reinforced concrete pad is 5 ft^2 × 2 ft thick and surrounded on three sides with a blast shield. At the base, the shield is a 6-ft^2 × 2-ft-thick concrete pad overlain by a neoprene shock pad, a 4.5-in.-thick steel plate, and several inches of sand. The shield directs the force of detonations away from nearby control building 14-23. The AOC 14-001(g) firing pad is used to conduct test shot experiments.

Since AOC 14-001(g) is an active firing point, Consent Order samples were collected in sediment catchment areas in the drainage downgradient of the Site to determine if contaminants are migrating from the Site. Consent Order sampling data indicate all detected inorganic and organic chemical concentrations and radionuclide activities are below residential SSLs and confirmed that contaminants are not migrating from the Site. Consent Order investigations will not be conducted at AOC 14-001(g) until firing point activities cease.

The project map (Figure 193-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

193.2 Control Measures

There are potential run-on contributions from the paved areas around building 14-023. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 193-1).

Table 193-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V01202040013	Established Vegetation		X	X		B
V01203010006	Earthen Berm	X			X	CB
V01203010016	Earthen Berm		X		X	B
V01203020003	Base Course Berm		X		X	CB
V01203060015	Straw Wattles	X			X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

193.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at CDV-SMA-6.01. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

193.4 Inspections and Maintenance

RG257 recorded eight storm events at CDV-SMA-6.01 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 193-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30892	4-29-2013
Storm Rain Event	BMP-33031	7-2-2013
Storm Rain Event	BMP-33451	7-18-2013
Storm Rain Event	BMP-33951	7-24-2013
Storm Rain Event	BMP-34595	8-15-2013
Storm Rain Event	BMP-35616	9-24-2013
Annual Erosion Evaluation	COMP-36831	11-4-2013

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

Table 193-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-31698	Install earthen berm approximately 75 ft in length and 2 ft in height (see map for location) Stabilize berm with seed and matting. Install seed and mulch (preferably greenwaste mulch) in 2 areas (see map for location). Stabilize any disturbed areas with seed and mulch (preferably greenwaste mulch). Fill out this work order form completely. Mark new location of berm and seed/mulch applications on a clean copy of Site map. Controls -0004 and -0005 will be retired when work in completed.	9-9-2013	133 day(s)	Maintenance conducted as soon as practicable.
BMP-34082	Install new straw wattle above existing wattle -0011. Wattle -0011 will be retired when work is completed. Install new straw wattle above existing wattle -0012. Wattle -0012 will be retired when work is completed.	8-8-2013	15 day(s)	Maintenance conducted in timely manner.
BMP-34961	Modify straw wattles V01203060015 by adding one new wattle to the south end of existing wattles to address rilling originating from end of concrete curb.	8-27-2013	12 day(s)	Maintenance conducted in timely manner.
BMP-35112	Modify straw wattles V01203060015 by adding one new wattle to the south end of existing wattles -0015 to address rilling originating from end of concrete curb. Wattles -0015 are located north of PRS 14-006 between wattles -0014 and berm -0006. See attached map for location.	8-29-2013	2day(s)	Maintenance conducted in timely manner.

193.5 Compliance Status

The Sites associated with CDV-SMA-6.01 are Moderate Priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 193-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 14-006	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
AOC 14-001(g)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

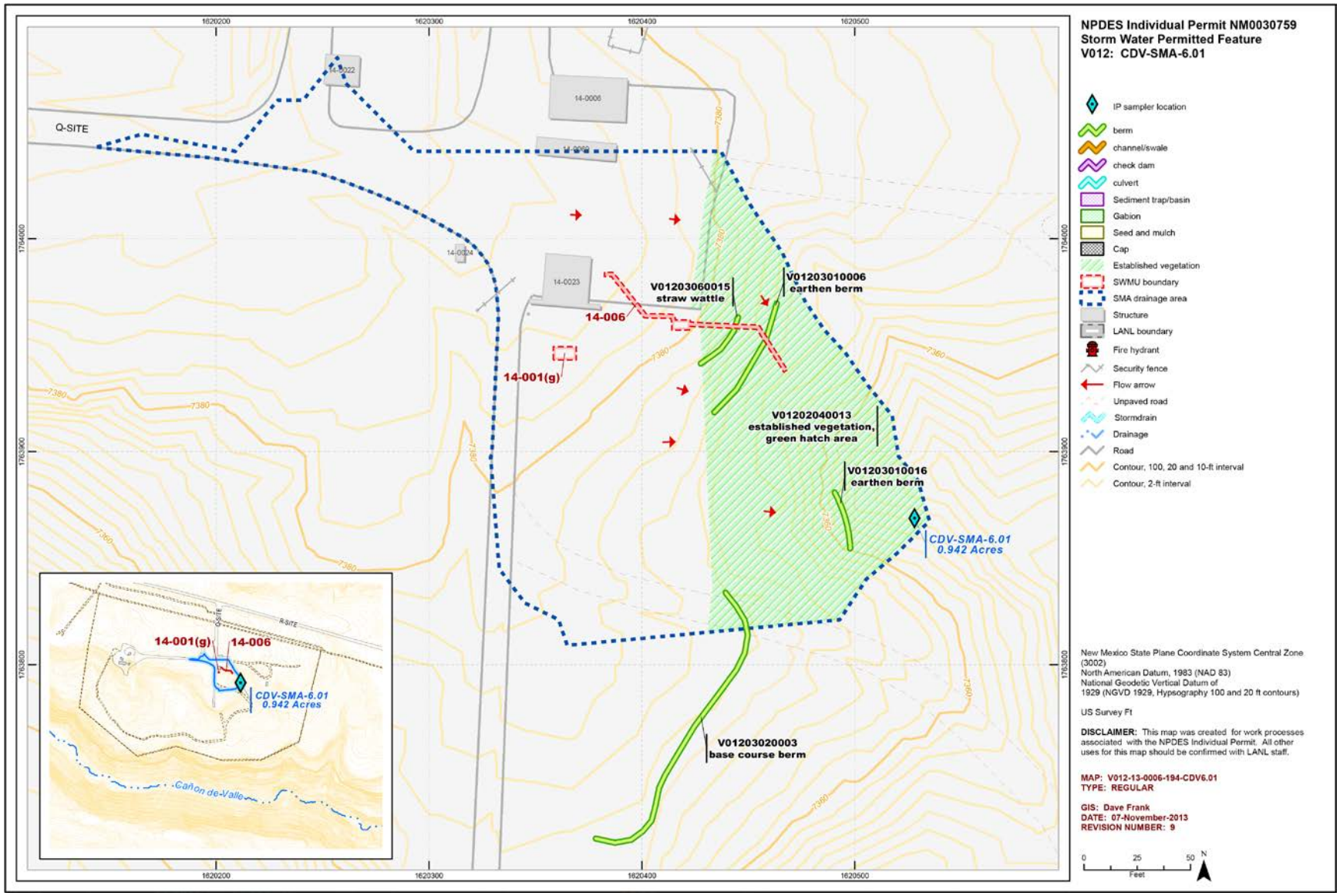


Figure 193-1 CDV-SMA-6.01 location map

194.0 CDV-SMA-6.02: SWMU 14-002(c)

194.1 Site Descriptions

One historical industrial activity area is associated with V012A, CDV-SMA-6.02: Sites 14-002(c).

SWMU 14-002(c) is a decommissioned firing site (structure 14-5) located in the southeastern portion of TA-14. Structure 14-5 consisted of a control building and firing pad. Constructed in 1944, the wood-framed control building measured 11 ft wide × 18 ft long × 10 ft high and was surrounded on three sides by an earthen berm. A 10-ft^2 × 8-ft-high concrete firing pad faced with a 0.5-in. steel plate was attached to the exterior south wall of the control building. The firing site was used to conduct small-scale explosive tests until the mid-1950s. The control building was converted to a storage site in 1961 and used to store cyanogen gas from 1965 to the 1970s. In 1980, a 5-ft-diameter metal sphere was installed on the firing pad at the south side of building 14-5. The sphere was used to conduct slow-combustion experiments, which continued until 1985, when building operations ceased. The firing pad was removed at an unknown date. The control building was partially destroyed by the Cerro Grande fire in 2000; only the concrete portions of the roof and walls remain.

Phase I Consent Order investigation is complete for SWMU 14-002(c). Consent Order sampling data indicate all detected inorganic and organic chemical concentrations are below residential SSLs. SWMU 14-002(c) is expected to be eligible for a COC under the Consent Order after the supplemental investigation report for Cañon de Valle Aggregate Area for TA-14 is submitted to and approved by NMED.

The project map (Figure 194-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

194.2 Control Measures

There are potential run-on contributions from the paved access road north of the Permitted Feature. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 194-1).

Enhanced controls were installed and certified on July 18, 2012, and submitted to EPA on July 25, 2012, as part of corrective action. Photographs of the enhanced controls are available at http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 194-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V012A01010005	Seed and Wood Mulch			X		EC
V012A03010004	Earthen Berm		X		X	EC
V012A03010006	Earthen Berm		X		X	EC
V012A03060007	Straw Wattles		X		X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

194.3 Storm Water Monitoring

SWMU 14-002(c) is monitored within CDV-SMA-6.02. Following the installation of baseline control measures, baseline confirmation samples were collected on August 13, 2011, and September 1, 2011 (Figures 194-2 and 194-3). Inorganic analytical results from these two baseline samples yielded the same TAL exceedances:

- Copper concentrations of 28.1 µg/L and 29.3 µg/L (MTAL is 4.3 µg/L),
- Mercury concentrations of 1.6 µg/L and 0.95 µg/L (MTAL is 0.77 µg/L), and
- Gross-alpha activities of 147 pCi/L and 199 pCi/L (ATAL is 15 pCi/L).

Following the installation of enhanced control measures at CDV-SMA-6.02, a corrective action storm water sample was collected on September 13, 2013 (Figures 194-2 and 194-3). Analytical results from this corrective action monitoring sample yielded no TAL exceedances.

Corrective action has resulted in a decrease in copper and mercury concentrations and gross-alpha activity detected in storm water samples collected at CDV-SMA-6.02.

These exceedances are typically evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The following discussion is organized by Site and analyte.

SWMU 14-002(c):

- Copper is not known to be associated with industrial materials historically managed at this Site. Copper was not detected above BVs in any of the five shallow RFI samples collected at this Site.
- Mercury is not known to be associated with industrial materials historically managed at this Site. Mercury was not detected or was not detected above BVs in any of the five shallow RFI samples collected at this Site.
- Alpha-emitting radionuclides are not known to be associated industrial materials historically managed at the Site. RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for total uranium, which contains alpha-emitting radionuclides, and for uranium isotopes, which are alpha-emitting radionuclides. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

Site history and Consent Order sampling data indicate the Site is unlikely a source of the TAL exceedances. The Site is impacted by active firing site operations.

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

CDV-SMA-6.02, Seed and Wood Mulch, V012A01010005 (photo ID 23502-1)

containing entrained sediments derived from Bandelier Tuff and are labeled "Bandelier Tuff Background" in Figures 194-2 and 194-3. 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 Figures 194-2 and 194-3.

Monitoring location CDV-SMA-6.02 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well locations with 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 urban landscape storm water run-on is 32.3 µg/L; copper background storm water UTL from locations with sediment derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 are between these values.
- Mercury—The mercury UTLs from developed urban landscape storm water run-on and from locations with sediment derived from Bandelier Tuff were not calculated because the number of detected values was not sufficient to allow calculation of a UTL value in the baseline metals concentration study. Therefore, a comparison with background mercury UTLs could not be made.
- Gross alpha—The gross-alpha background UTL for locations with 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 urban landscape is 32.5 pCi/L. The 2011 gross-alpha results are between these two values.

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

The monitoring station for CDV-SMA-6.02 has been relocated. The new location of the sampler is positioned below all controls and will provide a more representative sample of storm water discharge from the SMA. Sampler coordinates and the SMA drainage area are updated in Attachment 4.

194.4 Inspections and Maintenance

RG257 recorded eight storm events at CDV-SMA-6.02 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 194-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30893	4-29-2013
Storm Rain Event	BMP-33032	7-2-2013
Storm Rain Event	BMP-33452	7-15-2013
Storm Rain Event	BMP-33952	7-24-2013
Storm Rain Event	BMP-34596	8-15-2013
Storm Rain Event	BMP-35617	9-24-2013
Annual Erosion Evaluation	COMP-36832	11-4-2013

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

Table 194-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-31695	Install straw wattle(s) as marked on attached map.	7-18-2013	80day(s)	Maintenance conducted as soon as practicable.

194.5 Compliance Status

The Sites associated with CDV-SMA-6.02 are Moderate Priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 194-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 14-002(d)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 7-18-2012
SWMU 14-002(e)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 7-18-2012

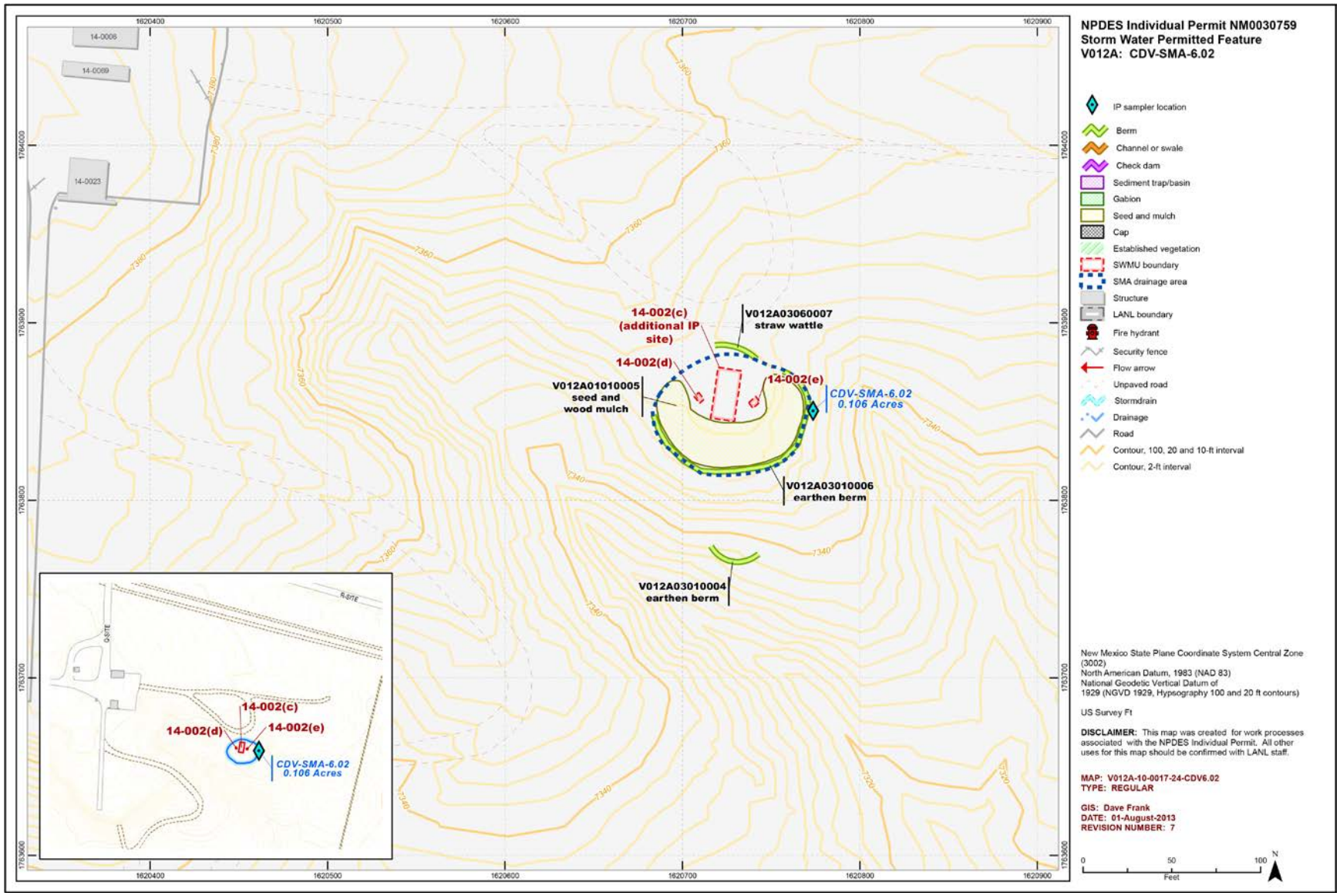
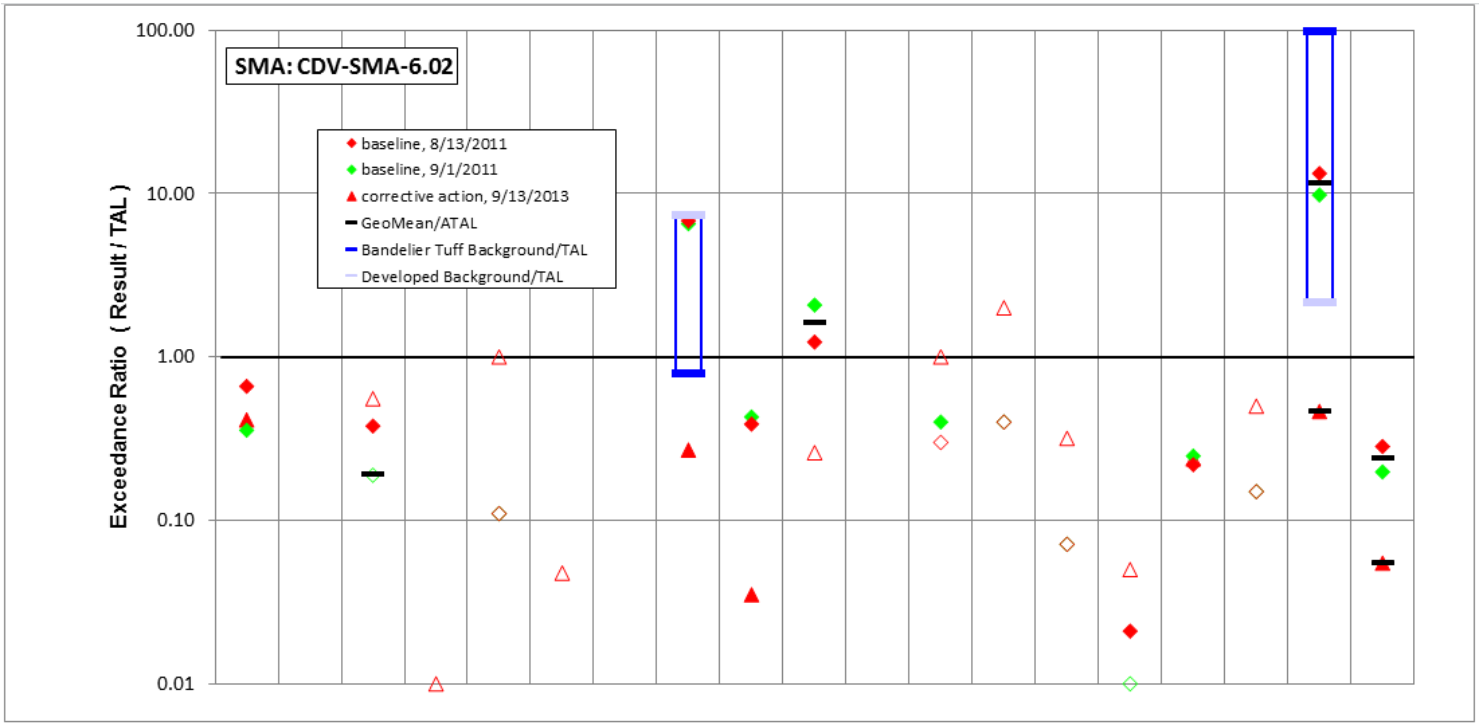


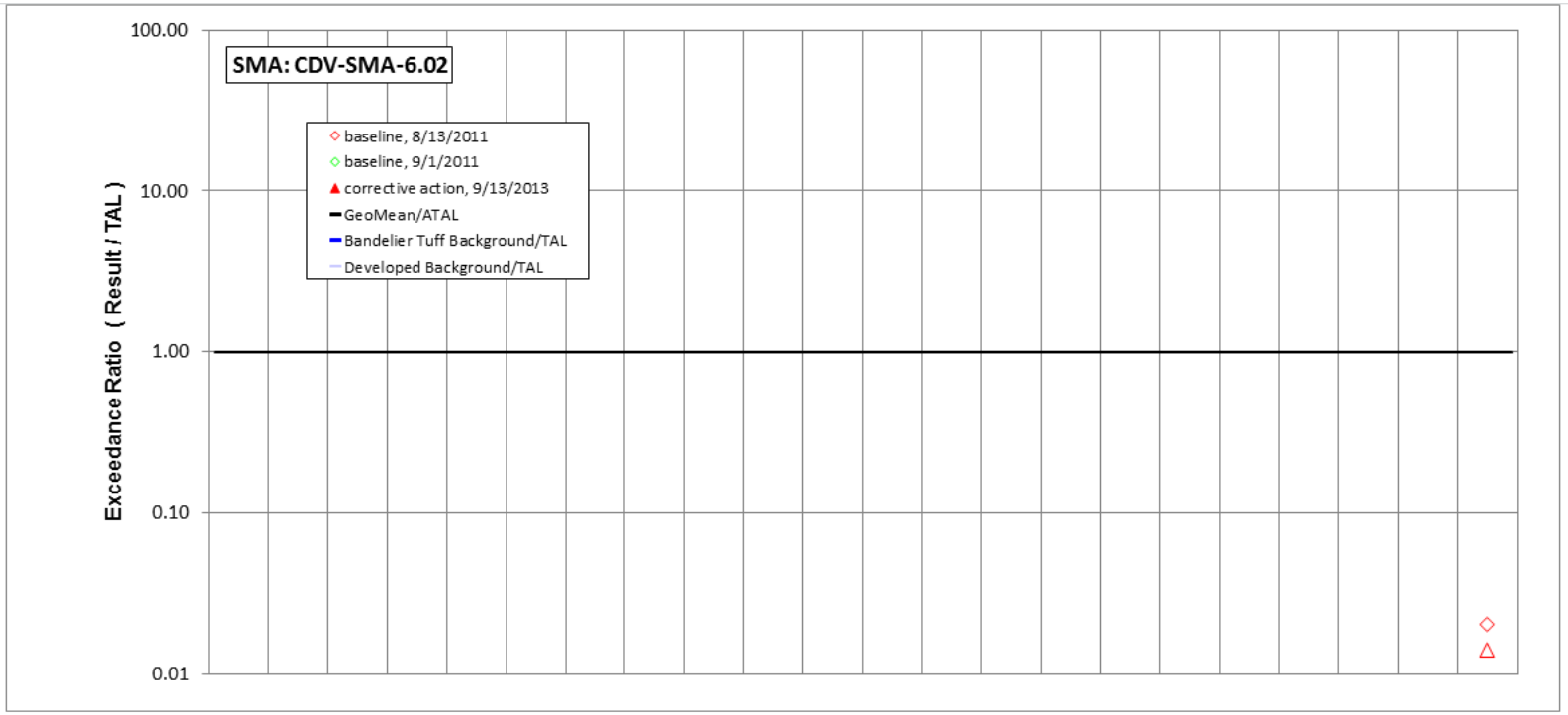
Figure 194-1 CDV-SMA-6.02 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	Lead	**Mercury**	Nickel	Selenium	**Silver**	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/13/2013 result	309	*3*	*5*	*50*	*1*	*10*	1.54	1.16	0.596	*0.2*	0.621	*5*	***1***	*2*	*5*	*10*	*0.005*	6.97	1.64
result / TAL	0.41	*0.005*	*0.56*	*0.01*	*1*	*0.048*	0.0015	0.27	0.035	*0.26*	0.0037	*1*	***2***	*0.32*	*0.05*	*0.24*	*0.5*	0.46	0.055
9/1/2011 result	267	*1*	*1.7*	28.1	*0.11*	*2*	3.2	**28.1**	7.3	**1.6**	1.3	2	*0.2*	*0.45*	*1*	10.4	*0.002*	**147**	5.94
result / TAL	0.36	*0.002*	*0.19*	0.0056	*0.11*	*0.01*	0.0032	**6.5**	0.43	**2.1**	0.0076	0.4	*0.4*	*0.071*	*0.01*	0.25	*0.15*	**9.8**	0.2
8/13/2011 result	496	*1*	3.4	22.4	*0.11*	*2*	1.8	**29.3**	6.6	**0.95**	1.2	*1.5*	*0.2*	*0.45*	2.1	9.2	*0.002*	**199**	8.5
result / TAL	0.66	*0.002*	0.38	0.0045	*0.11*	*0.01*	0.0018	**6.8**	0.39	**1.2**	0.0071	*0.3*	*0.4*	*0.071*	0.021	0.22	*0.15*	**13**	0.28

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 194-2 Inorganic analytical results summary plot for CDV-SMA-6.02



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-	-	ATAL
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	-	-	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
9/13/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.368	-	-	-	*0.282*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	-	-	-	*0.014*
9/1/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.391*	-	-	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.002*	-	-	-	-
8/13/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.406*	-	-	-	*0.406*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.002*	-	-	-	*0.02*

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 194-3 Organic analytical results summary plot for CDV-SMA-6.02

195.0 CDV-SMA-7: SWMU 15-008(d)

195.1 Site Descriptions

One historical industrial activity area is associated with V013, CDV-SMA-7: Site 15-008(d).

SWMU 15-008(d) is an inactive surface disposal area located south of former storage building 15-22 on the west side of TA-15. The disposal area consists of a small pile of building debris. The source of the building debris and the date it was placed at this location is not known.

Consent Order sampling has not been conducted at SWMU 15-008(d); no historical investigations were conducted before the Consent Order went into effect in 2005.

The project map (Figure 195-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

195.2 Control Measures

Potential run-on to this Permitted Feature primarily originates on the paved access road and natural areas around the SMA. Another source of run-on is from the concrete slab remaining from a former building north and west of the SMA. Run-on from the road is diverted to the west and south away from the Site by a natural drainage channel. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 195-1).

Table 195-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V01302040008	Established Vegetation		X	X		B
V01303010006	Earthen Berm	X			X	CB
V01303010007	Earthen Berm		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

195.3 Storm Water Monitoring

SWMU 15-008(d) is monitored within CDV-SMA-7. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 195-2). Analytical results from this sample yielded TAL exceedances:

- Aluminum concentration of 956 µg/L (MTAL is 750 µg/L),
- Selenium concentration of 5.33 µg/L (ATAL is 5 µg/L), and
- Gross-alpha activity of 191 pCi/L (ATAL is 15 pCi/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 15-008(d):

- Based on the site history, the Site is unlikely a source of the aluminum, selenium, and 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 195-2. 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 195-2.

Monitoring location CDV-SMA-7 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 urban 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 2013 is between these two values.
- Selenium—The selenium UTLs from undisturbed Bandelier Tuff and from developed urban landscape background storm water run-on were not calculated because the number of detected values was not sufficient to permit calculation of the UTL values in the baseline metals background study. Therefore, no comparison to selenium background values in storm water could be made.
- 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 urban landscape is 32.5 pCi/L. The 2013 gross-alpha result is between these two values.

All the analytical results for these samples are reported in the 2013 Annual Report.

195.4 Inspections and Maintenance

RG257 recorded eight storm events at CDV-SMA-7 during the 2013 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 195-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30718	5-7-2013
Storm Rain Event	BMP-33030	7-15-2013
Storm Rain Event	BMP-33950	7-30-2013
Storm Rain Event	BMP-34594	8-14-2013
Storm Rain Event	BMP-35615	9-23-2013
Annual Erosion Evaluation	COMP-36657	11-4-2013
TAL Exceedance	COMP-37062	11-4-2013

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

Table 195-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-31881	Maintain berm V01303010007 by installing new matting over existing matting.	7-31-2013	84 day(s)	Maintenance conducted as soon as practicable.
BMP-31882	Maintain berm V01303010006 by installing new matting over existing matting.	7-30-2013	84 day(s)	Maintenance conducted as soon as practicable.

195.5 Compliance Status

The Site associated with CDV-SMA-7 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 195-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 15-008(d)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-30-13

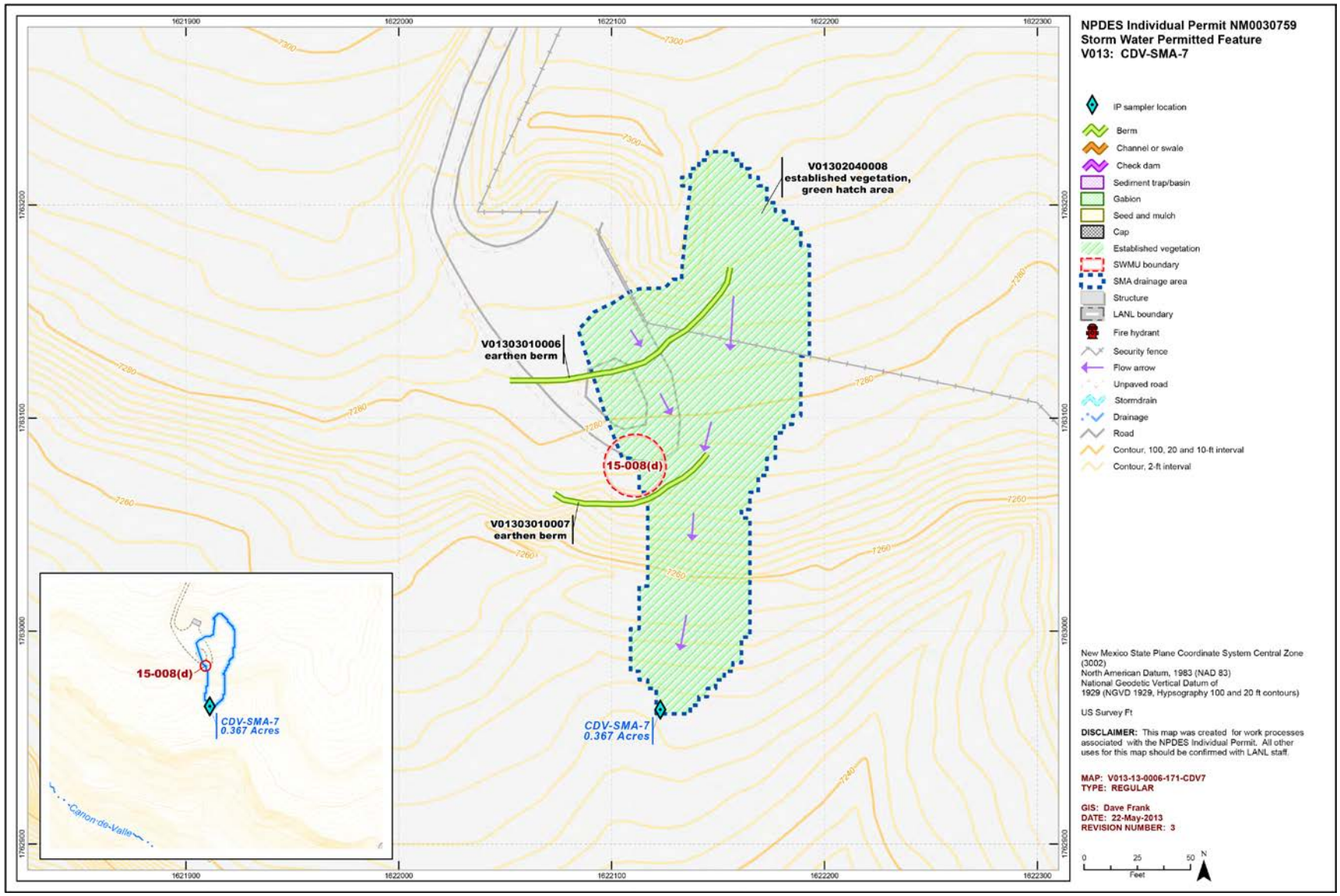
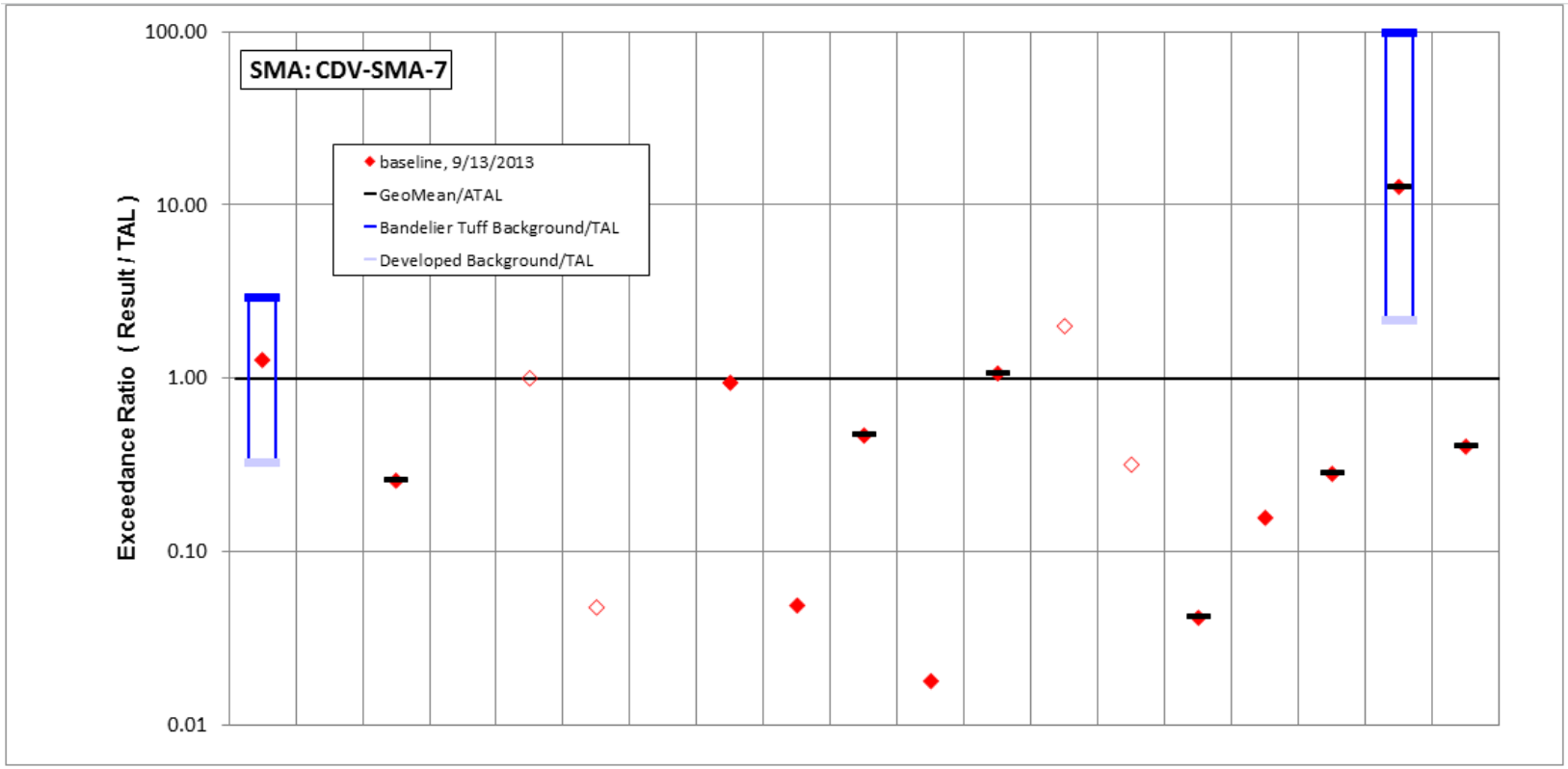


Figure 195-1 CDV-SMA-7 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	**Selenium**	**Silver**	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/13/2013 result	**956**	1.23	2.31	30.9	*1*	*10*	6.28	4.05	0.831	0.36	3.04	**5.33**	***1***	*2*	4.15	6.58	0.0028	**191**	12.1
result / TAL	**1.3**	0.0019	0.26	0.0062	*1*	*0.048*	0.0063	0.94	0.049	0.47	0.018	**1.1**	***2***	*0.32*	0.042	0.16	0.28	**13**	0.4

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 195-2 Inorganic analytical results summary plot for CDV-SMA-7

196.0 CDV-SMA-8: SWMU 15-011(c)

196.1 Site Descriptions

One historical industrial activity area is associated with V014, CDV-SMA-8: Site 15-011(c).

SWMU 15-011(c) is a purported dry well located west of the former electron gun building (15-194) near the edge of Cañon de Valle. Engineering drawing C-19082 depicts the dry well design and location; however, the drawing is not an as-built, and it is likely the dry well was never constructed. The OU 1086 RFI work plan states that no evidence of the dry well was found at the time the work plan was prepared and concludes that effluent from the building was discharged directly to the canyon via the drainage located north and west of the former Hollow buildings. This conclusion is consistent with the CEARP report and the SWMU report.

This effluent consisted of the discharge from two acid-cleaning sinks within former building 15-50. The sinks were removed before 1986. Building 15-194 and 15-50 were decommissioned in the mid-1990s, sustained severe damage in the 2000 Cero Grande fire, and were subsequently demolished in 2004. The 1996 RFI report for Sites within TA-15 describes the SWMU as the drainage located (north and) west of the buildings located at the Hollow; however, the drainage north and west of the former buildings 15-194 and 15-50 is SWMU 15-014(g).

Consent Order investigations have not yet begun; decision-level data are not available for SWMU 15-011(c).

The project map (Figure 196-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

196.2 Control Measures

There is run-on potential from the paved areas northeast of the sampler. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 196-1).

Table 196-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V01402040009	Established Vegetation		X	X		B
V01403010008	Earthen Berm	X			X	B
V01403010012	Earthen Berm	X			X	B
V01406010003	Rock Check Dam	X			X	CB
V01406010004	Rock Check Dam	X			X	CB
V01406010010	Rock Check Dam	X			X	B
V01406010011	Rock Check Dam	X			X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

196.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at CDV-SMA-8. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

196.4 Inspections and Maintenance

RG262.4 recorded eight storm events at CDV-SMA-8 during the 2013 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 196-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30719	5-8-2013
Storm Rain Event	BMP-33175	7-15-2013
Storm Rain Event	BMP-34187	8-6-2013
Storm Rain Event	BMP-35638	9-24-2013
Annual Erosion Evaluation	COMP-36658	11-4-2013

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

Table 196-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-37199	Repair rock check dam -0003 by removing debris and adding angular rock to build up height and extended both ends.	12-17-2013	84 day(s)	Maintenance conducted as soon as practicable.
BMP-37200	Install new rock check dam directly upgradient of existing rock check dam -0005. Rock check dam -0005 will be retired when work is completed.	12-17-2013	84 day(s)	Maintenance conducted as soon as practicable.
BMP-37201	Install new rock check dam directly upgradient of existing rock check dam -0006. Rock check dam -0006 will be retired when work is completed.	12-11-2013	78 day(s)	Maintenance conducted as soon as practicable.
BMP-37202	Repair earthen berm V01403010008 by removing matting from damaged areas and both ends. Add clean fill to damaged areas; to raise compacted height by approx. 8 in.; and to extend both ends approx. 4 ft. Compact fill. Contour a spillway in area where berm breached. Apply non-woven geotextile fabric to spillway. Apply seed and mating to berm. Add angular rock to spillway. Apply seed and mulch to any area disturbed by maintenance activities.	12-12-2013	79 day(s)	Maintenance conducted as soon as practicable.

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-37203	Install new earthen berm in same location as previously existing berm -0007. Berm -0007 will be retired when work is completed. Add clean fill and compact to construct an approx. 30 ft long berm to the same height as original berm. Contour a spillway in berm. Apply non-woven geotextile fabric to spillway. Apply seed and matting to berm. Add rock to spillway. Apply seed and mulch to any area disturbed by maintenance activities.	12-17-2013	84 day(s)	Maintenance conducted as soon as practicable.
BMP-37204	Remove downed trees from channel downgradient of earthen berm -0007 to re-establish flow path.	12-11-2013	78 day(s)	Maintenance conducted as soon as practicable.

196.5 Compliance Status

The Site associated with CDV-SMA-8 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 196-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 15-011(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

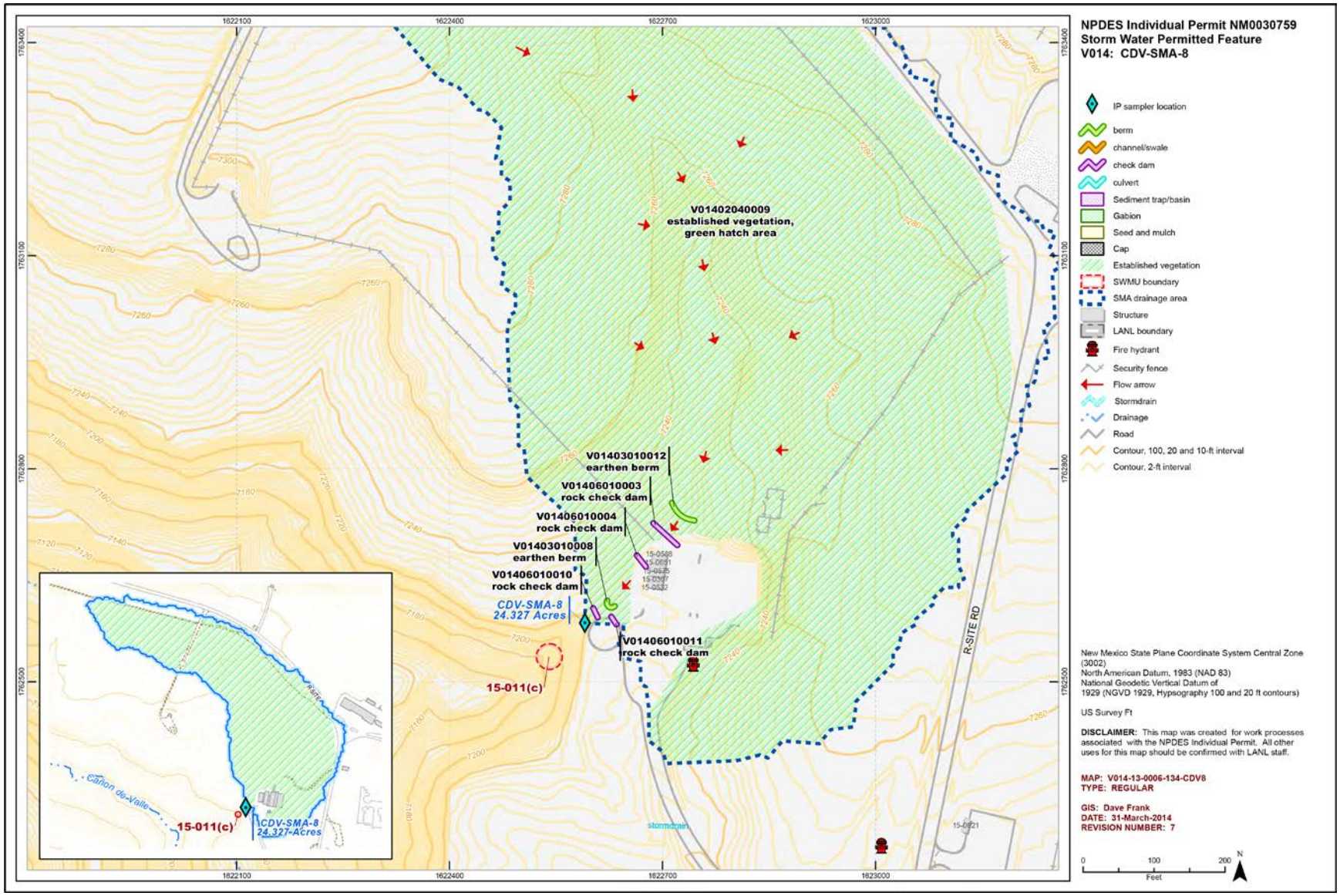


Figure 196-1 CDV-SMA-8 location map

197.0 CDV-SMA-8.5: SWMU 15-014(a)

197.1 Site Descriptions

One historical industrial activity area is associated with V015, CDV-SMA-8.5: Site 15-014(a).

SWMU 15-014(a) is an inactive drainline and outfall associated with former building 15-183. The drainline received effluent from former photoprocessing operations in building 15-183 and discharged to a former NPDES-permitted outfall (EPA 06A123), located approximately 130 ft from the edge of Cañon de Valle. The drainline and outfall began receiving effluent in 1961 when building 15-183 was first constructed. The drainline and the outfall discharge point were plugged in 1997 when the drainline was tied into the TA-16 sanitary sewer system. The outfall was removed from the NPDES permit as of January 14, 1998. Building 15-183 is currently used as a general nonnuclear laboratory.

Consent Order investigations have not yet begun; decision-level data are not available for SWMU 15-014(a).

The project map (Figure 197-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

197.2 Control Measures

Run-on is a result of flow off the paved area at the north corner of building 16-0313 and the associated roof drainage. Potential run-on from both the paved area and roof drains are captured by a culvert and diverted southwest of the area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 197-1).

Table 197-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V01502040006	Established Vegetation		X	X		B
V01503010004	Earthen Berm		X		X	CB
V01503010005	Earthen Berm	X			X	CB

CB: Certified baseline control measure.
B: Additional baseline control measure.
EC: Enhanced control measure.

197.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at CDV-SMA-8.5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

197.4 Inspections and Maintenance

RG262.4 recorded eight storm events at CDV-SMA-8.5 during the 2012 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 197-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30720	4-3-2013
Storm Rain Event	BMP-33176	7-9-2013
Storm Rain Event	BMP-33685	7-24-2013
Storm Rain Event	BMP-34188	8-6-2013
Storm Rain Event	BMP-35639	9-25-2013
Annual Erosion Evaluation	COMP-36659	11-4-2013

No maintenance activities were conducted at CDV-SMA-8.5 in 2013.

197.5 Compliance Status

The Site associated with CDV-SMA-8.5 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 197-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 15-014(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

CDV-SMA-8.5, Earthen Berm, V01503010005 (photo ID 8536-1r)

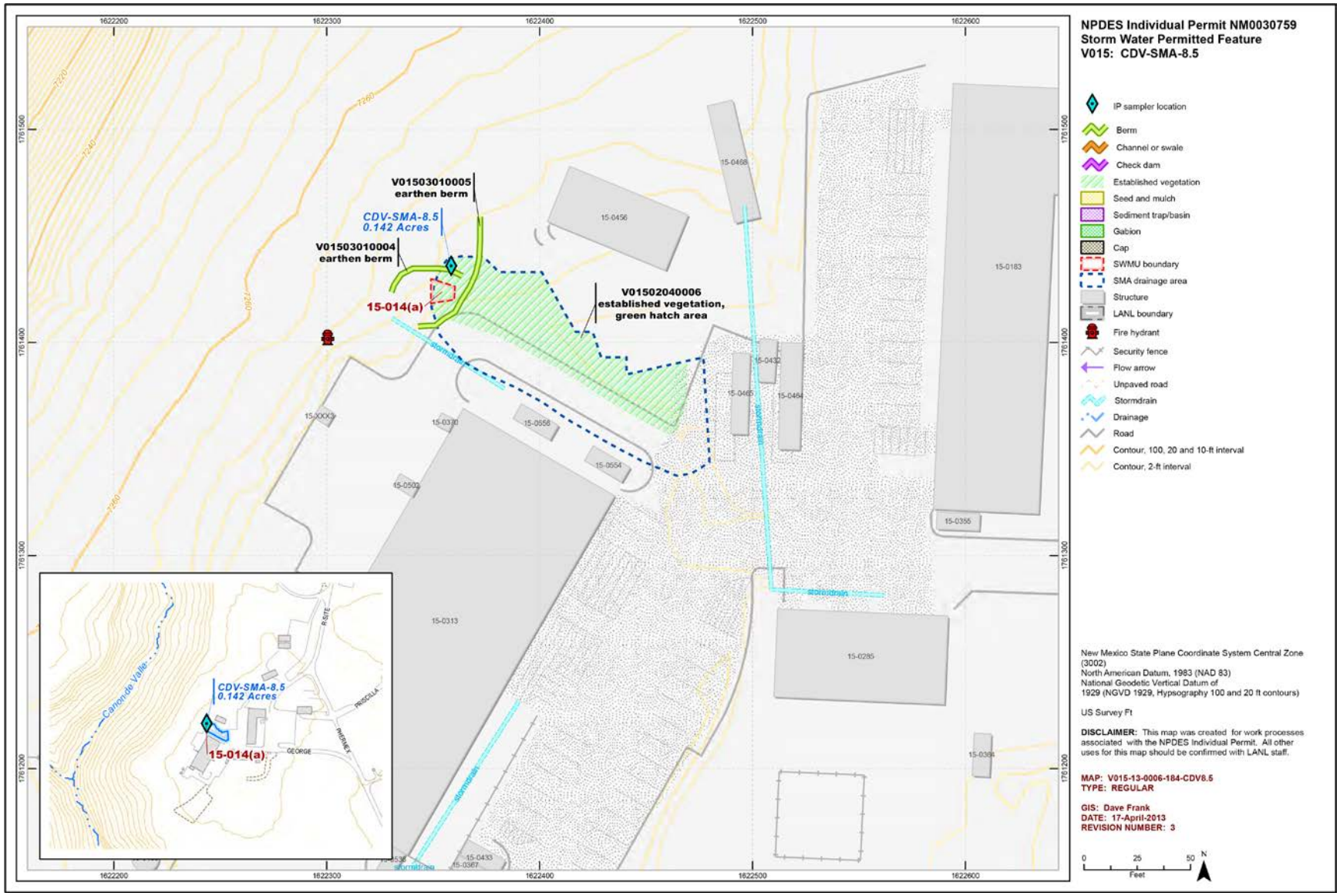


Figure 197-1 CDV-SMA-8.5 location map

198.0 CDV-SMA-9.05: SWMU 15-007(b)

198.1 Site Descriptions

One historical industrial activity area is associated with V016, CDV-SMA-9.05: Site 15-007(b).

SWMU 15-007(b) is a surface disposal area known as MDA Z that is located northwest of Firing Site G [SWMU 15-004(g)] in the south-central portion of TA-15 on the south side of the road leading to building 15-233. A geophysical survey conducted during the 1995 RFI yielded the following: MDA Z is roughly triangular and approximately 225 ft long × 50 ft wide with a surface area of approximately 11,250 ft^2; the volume of MDA Z measures approximately 2000 yd^3. Beginning in 1965, MDA Z received construction and shot debris from PHERMEX consisting of used sandbags filled with concrete and steel blast matting. Disposal activities at MDA Z ceased in the 1980s. When the Site was surveyed after the 2000 Cerro Grande fire, only minor burning of groundcover was noted. The presence of DU in surface soils at the Site was noted during the RFI and during a site visit in 2010.

Consent Order investigations have not yet begun; decision-level data are not available for SWMU 15-007(b).

The project map (Figure 198-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

198.2 Control Measures

There is no evidence of significant run-on from the asphalt drive above the Permitted Feature. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 198-1).

Table 198-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
V01602040005	Established Vegetation		X	X		B
V01603010002	Earthen Berm		X		X	CB
V01603010003	Earthen Berm		X		X	CB
V01603010004	Earthen Berm	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

198.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at CDV-SMA-9.05. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

198.4 Inspections and Maintenance

RG262.4 recorded eight storm events at CDV-SMA-9.05 during the 2013 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 198-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30721	4-3-2013
Storm Rain Event	BMP-33177	7-9-2013
Storm Rain Event	BMP-33686	7-22-2013
Storm Rain Event	BMP-34189	8-5-2013
Storm Rain Event	BMP-35640	9-25-2013
Annual Erosion Evaluation	COMP-36660	11-18-2013

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

Table 198-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-33489	Place more seed and new matting on berm V01603010002 as needed. Do not remove existing matting. New materials can be placed directly on top of existing material.	7-22-2013	13 day(s)	Maintenance conducted in timely manner.
BMP-33490	Place more seed and new matting on berm V01603010003 as needed. Do not remove existing matting. New materials can be placed directly on top of existing material.	7-22-2013	13 day(s)	Maintenance conducted in timely manner.

198.5 Compliance Status

The Site associated with CDV-SMA-9.05 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 198-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 15-007(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

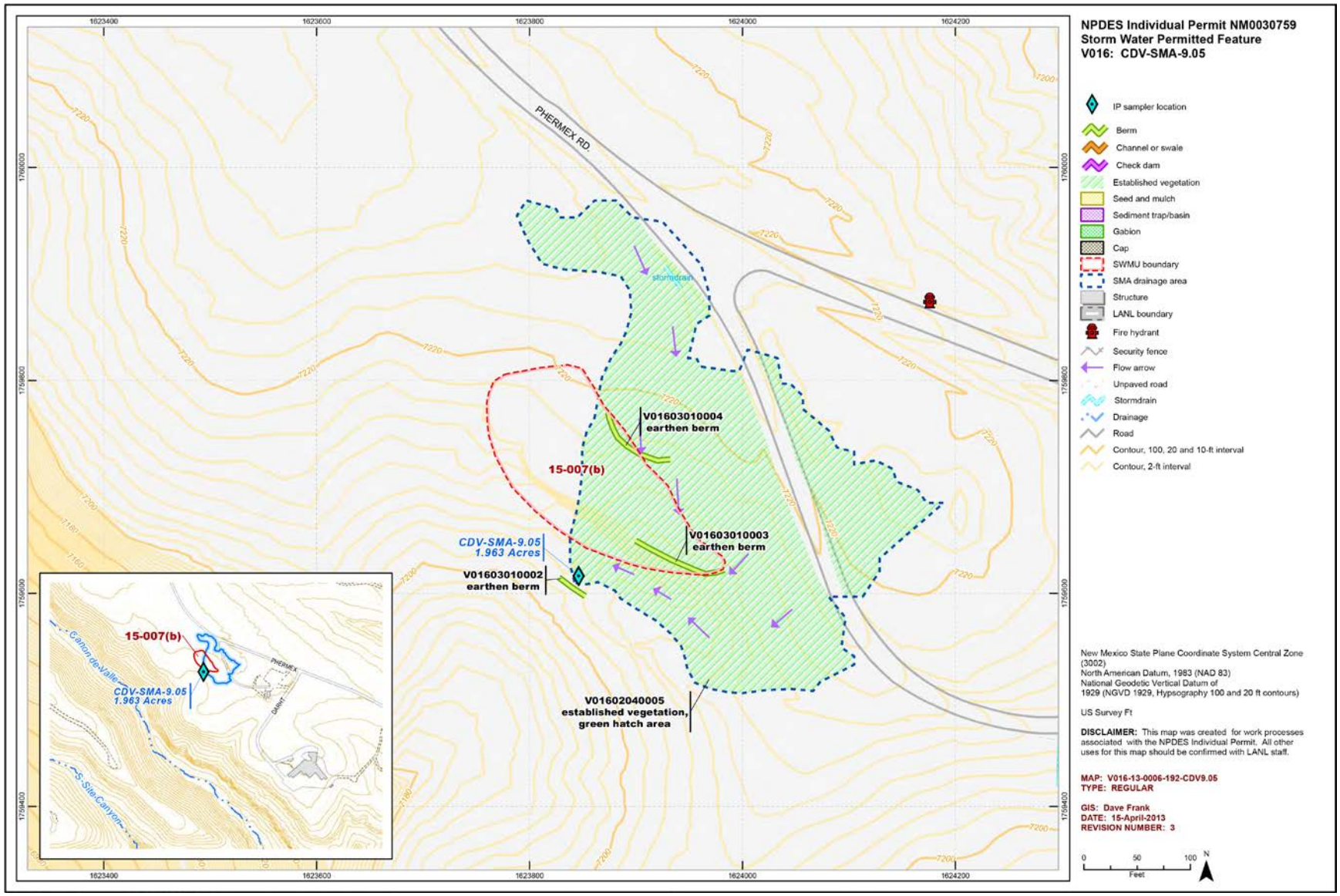


Figure 198-1 CDV-SMA-9.05 location map

199.0 F-SMA-2: AOC 36-004(c)

199.1 Site Descriptions

One historical industrial activity area is associated with F001, F-SMA-2: Site 36-004(c).

AOC 36-004(c) consists of an active firing site, known as Minie Firing Site, located at TA-36 near the head of Fence Canyon, approximately 800 ft south of the Meenie Firing Site [AOC 36-004(b)]. Facilities associated with the Minie Firing Site include a control bunker (building 36-8), a make-up building (building 36-7), a firing platform, and an x-ray house. Construction of the Minie Firing Site was completed in 1950. The Site has been used extensively to conduct armor-piercing experiments in which penetrator jets are directed at targets at the canyon wall to the west of the site. Metal plates are placed behind the targets to stop the penetrators. The Minie Firing Site has also been used for OD of scrap HE. In addition, emergency detonation of leaking gas cylinders has also been performed, but on a very infrequent basis.

Consent Order sampling was not conducted at AOC 36-004(c) because the Site is an active RCRA-regulated OD unit. However, Consent Order samples were collected in sediment catchment areas in the drainage channel downgradient of the Site to determine if contaminants are migrating from the Site. The migration of potential contaminants from AOC 36-004(c) is limited to the drainage downgradient of the Site for all constituents and does not extend beyond Fence Canyon Reach F-3.

The project map (Figure 199-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

199.2 Control Measures

Run-on at this Permitted Feature is controlled by a diversion channel, drop inlet, and culvert. The diversion channel discharges into a flat grassy area where flow infiltrates. Most of the potential run-on at this SMA originates on the natural slope on the northern side. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 199-1).

Enhanced controls were installed and verified on May 16, 2012, as part of corrective action.

Table 199-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
F00102040018	Established Vegetation		X	X		B
F00103010010	Earthen Berm		X		X	EC
F00103010011	Earthen Berm		X		X	EC
F00103010012	Earthen Berm		X		X	EC
F00103010013	Earthen Berm		X		X	EC
F00103010014	Earthen Berm		X		X	EC
F00103010015	Earthen Berm		X		X	EC
F00103010017	Earthen Berm		X		X	B
F00104010001	Earthen Channel/Swale	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

199.3 Storm Water Monitoring

AOC 36-004(c) is monitored within F-SMA-2. Following the installation of baseline control measures, a baseline storm water sample was collected on August 15, 2011 (Figures 199-2 and 199-3). Analytical results from this sample yielded three TAL exceedances:

- Aluminum concentration of 866 µg/L (MTAL is 750 µg/L),
- Copper concentration of 72.5 µg/L (MTAL is 4.3 µg/L), and
- Gross-alpha activity of 140 pCi/L (ATAL is 15 pCi/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Site during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities.

AOC 36-004(c):

- Aluminum was likely associated with industrial materials historically managed at this Site. Aluminum was not detected above BVs in any of the 14 samples collected in the drainage downgradient of AOC 36-004(c).
- Copper was likely associated with industrial materials historically managed at this Site. Copper was detected in 5 of 14 samples at maximum concentration 2.9 times the sediment BV.
- Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at AOC 36-004(c). Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed using gamma spectroscopy, which is capable of detecting americium-241 and uranium-235, and for uranium isotopes all of which are alpha-emitting radionuclides. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

F-SMA-2, Earthen Berm, F00103010015 (photo ID 23503-5)

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 Figures 199-2 and 199-3. 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 Figures 199-2 and 199-3.

Monitoring location F-SMA-2 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as locations with sediment derived from Bandelier Tuff. Metals including copper and 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 urban landscape storm water run-on is 245 µg/L; aluminum background storm water UTL from locations with sediment derived from Bandelier Tuff is 2210 µg/L. The aluminum result from 2011 is between these values.
- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; copper background storm water UTL from locations with sediment derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2011 is greater than both of these values.
- Gross alpha—The gross-alpha background UTL for locations with 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 urban landscape is 32.5 pCi/L. The 2011 gross-alpha result is between these two values.

All the analytical results for these samples are reported in the 2011 Annual Report.

199.4 Inspections and Maintenance

RG267.4 recorded seven storm events at F-SMA-2 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 199-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30742	5-8-2013
Storm Rain Event	BMP-33189	7-10-2013
Storm Rain Event	BMP-33698	7-22-2013
Storm Rain Event	BMP-34205	8-5-2013
Storm Rain Event	BMP-35656	9-19-2013
Storm Rain Event	BMP-37136	11-12-2013
Annual Erosion Evaluation	COMP-36681	11-12-2013

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

Table 199-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-34647	Install wattles at areas of erosion as a temporary measure until Facility constructs sediment trap. F00103010014]. Install wattles at areas of erosion as a temporary measure until Facility constructs sediment trap. F00103010015]	8-14-2013	9 day(s)	Maintenance conducted in timely manner.
BMP-36248	Install temporary straw wattle BMPs at damage location(s) on berm F00103010015.	11-12-2013	54 day(s)	Maintenance conducted as soon as practicable.
BMP-36250	Install temporary straw wattle BMPs at damage location(s) on berm F00103010014.	11-12-2013	54 day(s)	Maintenance conducted as soon as practicable.
BMP-36251	Install temporary straw wattle BMPs at damage location(s) on berm F00103010013	11-12-2013	54 day(s)	Maintenance conducted as soon as practicable.
BMP-36253	Install temporary straw wattle BMPs at damage location(s) on berm F00103010013	11-12-2013	54 day(s)	Maintenance conducted as soon as practicable.
BMP-36254	Install temporary straw wattle BMPs at damage location(s) on berm F00103010011	11-12-2013	54 day(s)	Maintenance conducted as soon as practicable.

199.5 Compliance Status

The Site associated with F-SMA-2 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 199-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 36-004(c)	Corrective Action Initiated	Corrective Action Initiated	Initiated 05-01-2012

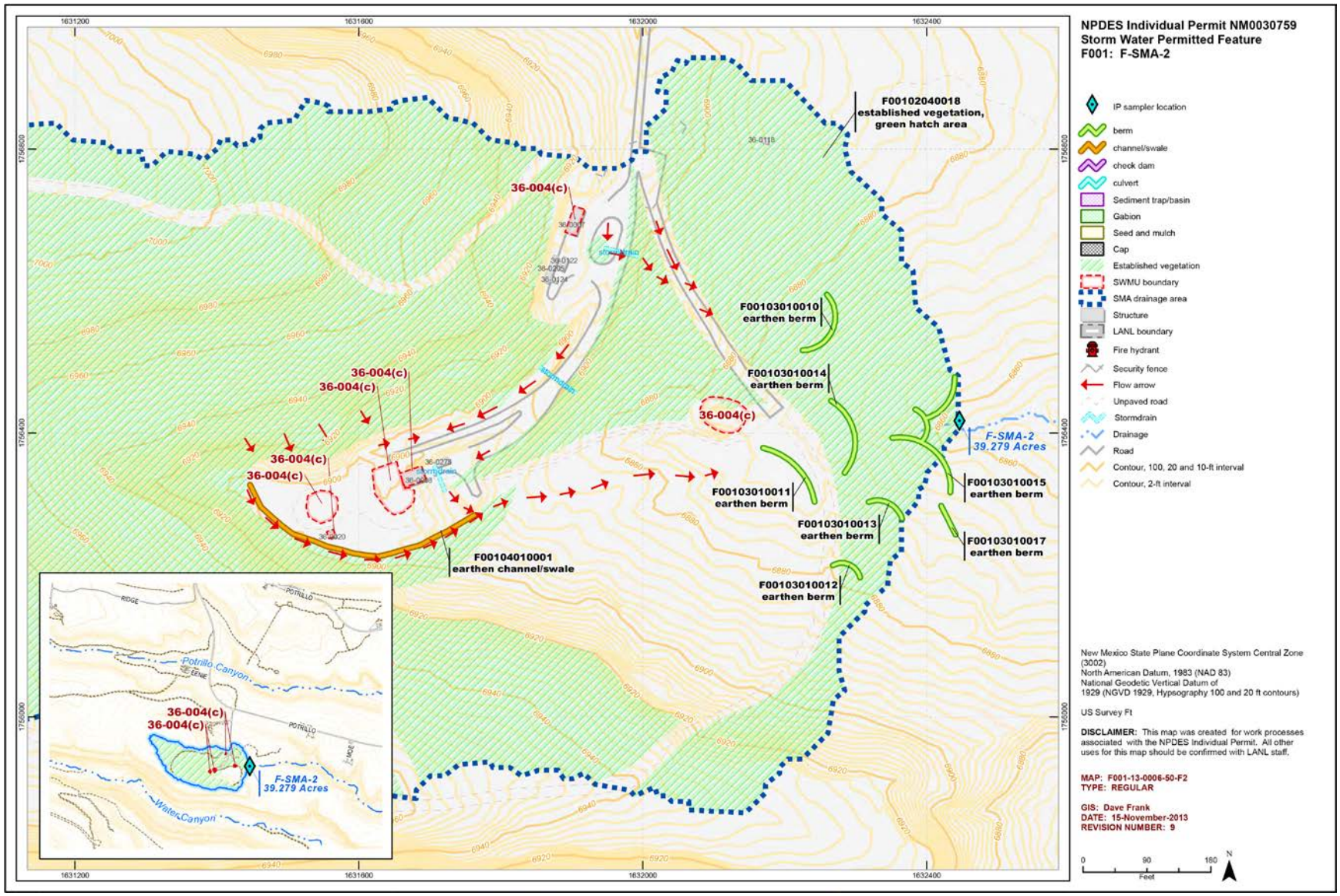
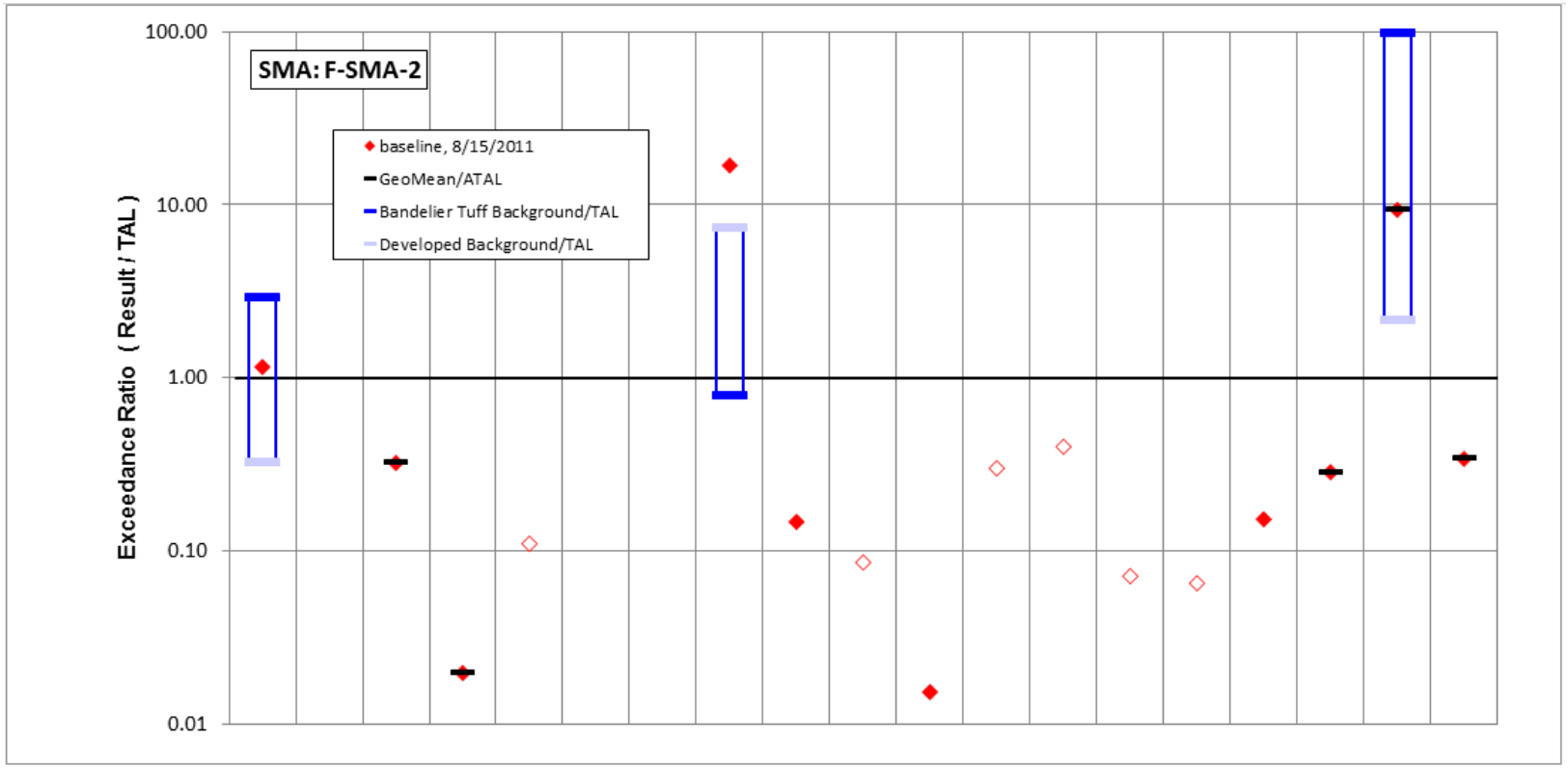


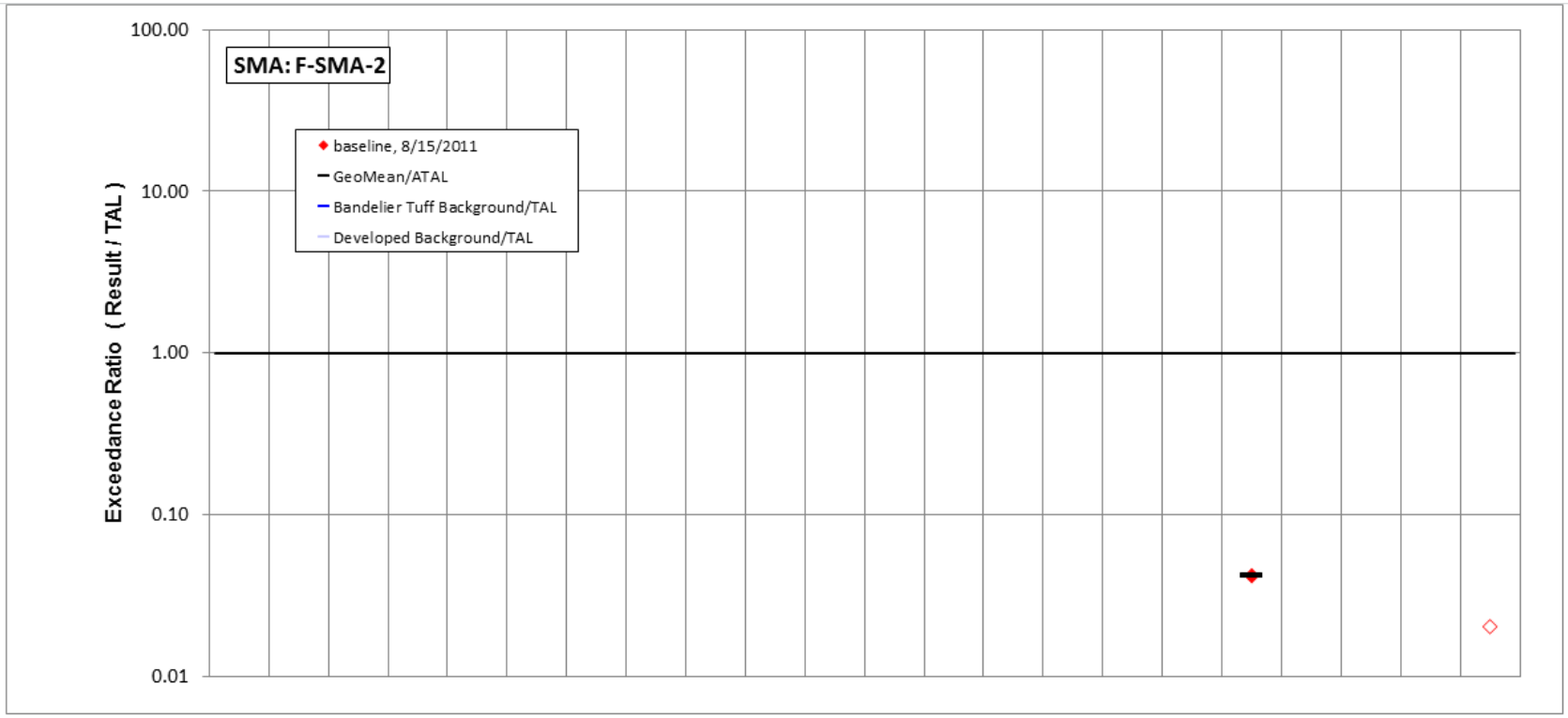
Figure 199-1 F-SMA-2 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
8/15/2011 result	**866**	3.4	2.9	98.5	*0.11*	*2*	3.8	**72.5**	2.5	*0.066*	2.6	*1.5*	*0.2*	*0.45*	*6.5*	6.4	0.0029	**140**	10.2
result / TAL	**1.2**	0.0053	0.32	0.02	*0.11*	*0.01*	0.0038	**17**	0.15	*0.086*	0.015	*0.3*	*0.4*	*0.071*	*0.065*	0.15	0.29	**9.3**	0.34

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 199-2 Inorganic analytical results summary plot for F-SMA-2



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-	-	ATAL
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	-	-	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
8/15/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.38	-	-	-	*0.406*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.042	-	-	-	*0.02*

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 199-3 Organic analytical results summary plot for F-SMA-2

200.0 PT-SMA-0.5: SWMU 15-009(e) and AOC C-15-004

200.1 Site Descriptions

Two historical industrial activity areas are associated with I001, PT-SMA-0.5: Sites 15-009(e) and C-15-004.

SWMU 15-009(e) is a decommissioned 1500-gal. septic tank (structure 15-72) at E-F Firing Site [SWMU 15-004(f)] at TA-15. The septic tank was constructed in 1947 and received sanitary waste from the E-F Firing Site control building (15-27), located approximately 175 ft northeast of the tank. The drainline goes around structure 15-463, a transportable used for storage. The septic tank is constructed of 4- to 6-in. reinforced concrete and measures 5 ft long × 9 ft deep × 7 ft wide. The septic tank was used until 1981 when E-F Firing Site last operated. Discharges from the septic tank flowed through a VCP to an outfall located approximately 30 ft from the tank at the edge of Potrillo Canyon. During the 1997 VCA conducted at SWMU 15-009(e), the contents of the septic tank were removed, the interior of septic tank was pressure-washed, concrete-chip samples were collected from the tank interior to demonstrate the adequacy of the corrective action, and the tank and drainlines were filled and plugged with expandable concrete and left in place.

Phase I Consent Order sampling is complete for SWMU 15-009(e). All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order and VCA confirmation samples were below residential SSLs. SWMU 15-009(e) will be recommended for corrective action complete in the supplemental investigation report for Potrillo and Fence Canyons Aggregate Area, to be submitted to NMED in 2015. SWMU 15-009(e) will be eligible for a COC upon approval of the report by NMED.

AOC C-15-004 is a former transformer station (former structure 15-56) that was located approximately 30 ft southwest of the former E-F Firing Site control room (building 15-27) at TA-15. Two transformers (18-gal. and 30-gal. capacity) were located on a 5-ft-long wooden platform 10 ft above the ground. Each transformer contained mineral oil with PCBs of unknown concentration. The date the transformers were installed is not known, but they were removed from the Site in 1989. No evidence was found of a release on the wooden platform or on the soil beneath the platform.

Phase I Consent Order sampling is complete for AOC C-15-004. All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs and SALs. AOC C-15-004 will be recommended for corrective action complete in the supplemental investigation report for Water Canyon Aggregate Area, to be submitted to NMED in 2015. AOC C-15-004 will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 200-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

200.2 Control Measures

The culvert and drainage along the north and south of the access road contribute minor run-on. Existing controls address the minimal run-on contribution associated with this access road. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 200-1).

Enhanced controls were installed and certified on November 27, 2012, and submitted to EPA on December 13, 2012, as part of corrective action. Photographs of the enhanced controls are available at http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 200-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
I00102040009	Established Vegetation		X	X		B
I00103010007	Earthen Berm		X		X	EC
I00103010008	Earthen Berm	X			X	EC
I00103140010	Coir Log		X		X	B
I00103140011	Coir Log		X		X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

200.3 Storm Water Monitoring

SWMU 15-009(e) and AOC C-15-004 are monitored within PT-SMA-0.5. Following the installation of baseline control measures, a baseline storm water sample was collected on September 1, 2011 (Figures 200-2 and 200-3). Analytical results from this sample yielded three TAL exceedances:

- Aluminum concentration of 1380 µg/L (MTAL is 750 µg/L),
- Copper concentration of 6.5 µg/L (MTAL is 4.3 µg/L), and
- Gross-alpha activity of 79.5 pCi/L (ATAL is 15 pCi/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 15-009(e):

- Aluminum is not known to be associated with industrial materials historically managed at this Site. Aluminum was not detected above BVs in any of the 13 shallow Consent Order and VCA confirmation samples collected at SWMU 15-009(e).
- Copper is not known to be associated with industrial materials historically managed at this Site. Copper was detected above the BV in 1 of 13 shallow Consent Order and VCA confirmation samples collected at SWMU 15-009(e) at a concentration equivalent to the soil BV.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at SWMU 15-009(e); however, they are associated with industrial materials managed at adjacent E-F Firing Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for uranium isotopes, which are alpha-emitting radionuclides. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha

radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

Based on the Site history and Consent Order sampling data, the Site in unlikely a source of the TAL exceedances. The SMA receives runoff from industrially developed (E-F Firing Site) areas and undeveloped areas.

AOC C-15-004:

- Aluminum is not known to be associated with industrial materials historically managed at this Site. Aluminum was not detected above BVs in any of the four shallow Consent Order samples collected at AOC C-15-004.
- Copper is not known to be associated with industrial materials historically managed at this Site. Copper was detected above the BV in three of four shallow Consent Order samples collected at AOC C-15-004 at a maximum concentration 3.3 times the soil BV.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at AOC C-15-004; however, they are associated with industrial materials managed at adjacent E-F Firing Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for uranium isotopes, which are alpha-emitting radionuclides. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

Based on the Site history and Consent Order sampling data, the Site in unlikely a source of the TAL exceedances. The SMA receives runoff from industrially developed (E-F Firing Site) areas and undeveloped areas.

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 Figures 200-2 and 200-3. 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 Figures 200-2 and 200-3.

PT-SMA-0.5 is located on Bandelier Tuff and no run-on occurs from developed facilities (i.e., buildings, pavement, and parking lots); therefore, calculated storm water UTLs from locations containing sediments derived from Bandelier Tuff were compared with aluminum, copper and gross-alpha MTAL and ATAL exceedances. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. Copper and aluminum are associated with minerals in the Bandelier Tuff as well.

- Aluminum—The aluminum UTL for storm water containing sediments derived from Bandelier Tuff is 2210 µg/L; the result from 2011 is less than this value.
- Copper—The copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L; the result from 2011 is greater than this value.
- Gross alpha—The gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L; the result from 2011 is less than this value.

All the analytical results for these samples are reported in the 2011 Annual Report.

200.4 Inspections and Maintenance

RG262.4 recorded eight storm events at PT-SMA-0.5 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 200-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30914	5-8-2013
Storm Rain Event	BMP-33178	7-9-2013
Storm Rain Event	BMP-33687	7-22-2013
Storm Rain Event	BMP-34190	7-29-2013
Storm Rain Event	BMP-34514	8-14-2013
Storm Rain Event	BMP-35641	9-19-2013
Annual Erosion Evaluation	COMP-36853	11-12-2013

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

Table 200-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-37039	Install at least 4 wattles and seed in areas indicated on attached map.	11-20-2013	62 day(s)	Maintenance conducted as soon as practicable.
BMP-37040	Install coir log directly upgradient of existing berm -0002. Berm -0002 will be retired when work is completed.	11-20-2013	62 day(s)	Maintenance conducted as soon as practicable.
BMP-37041	Install coir log directly upgradient of existing berm -0006. Berm -0006 will be retired when work is completed.	11-20-2013	62 day(s)	Maintenance conducted as soon as practicable.

200.5 Compliance Status

The Sites associated with PT-SMA-0.5 are Moderate Priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 200-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 15-009(e)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 11-27-2012
AOC C-15-004	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 11-27-2012

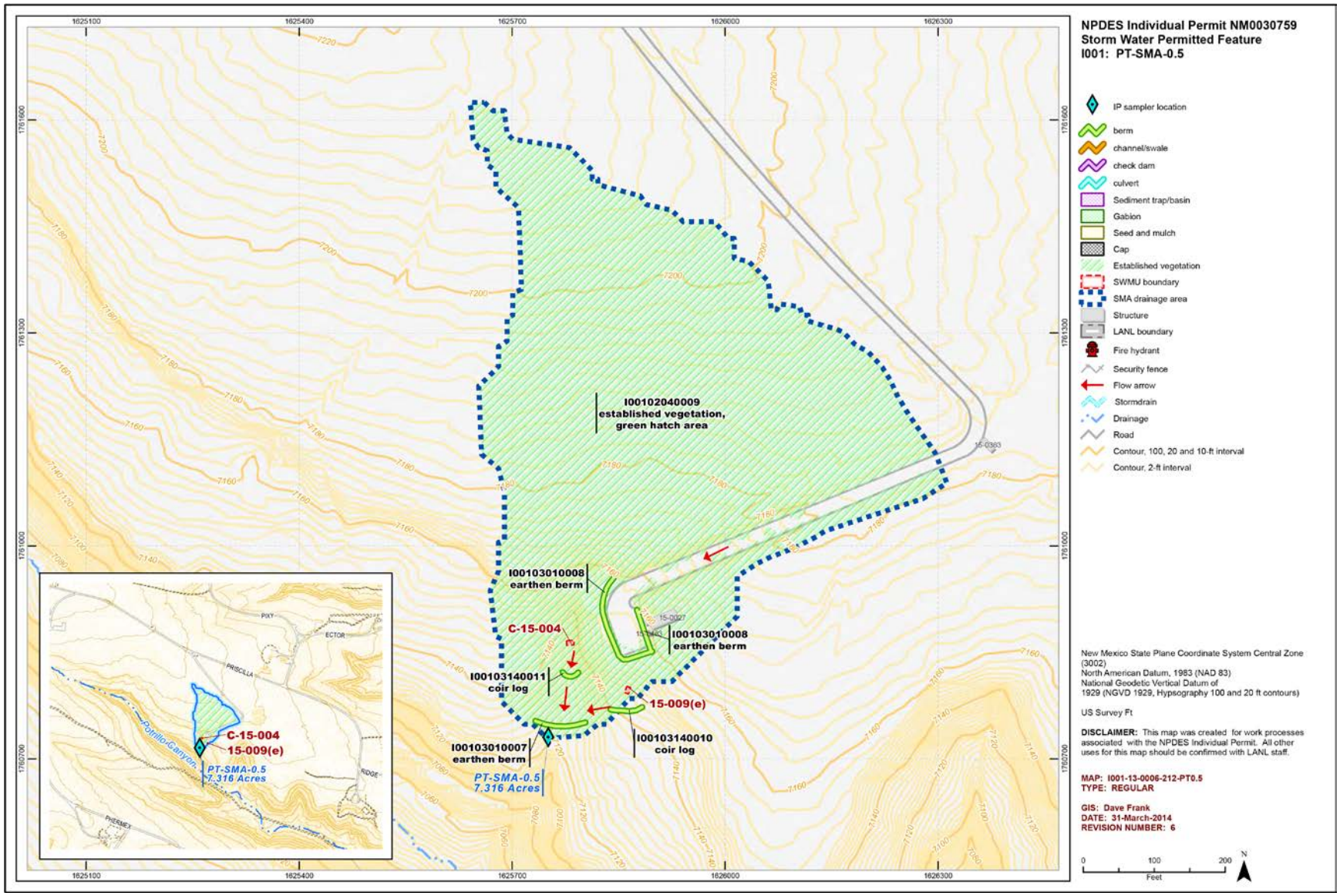
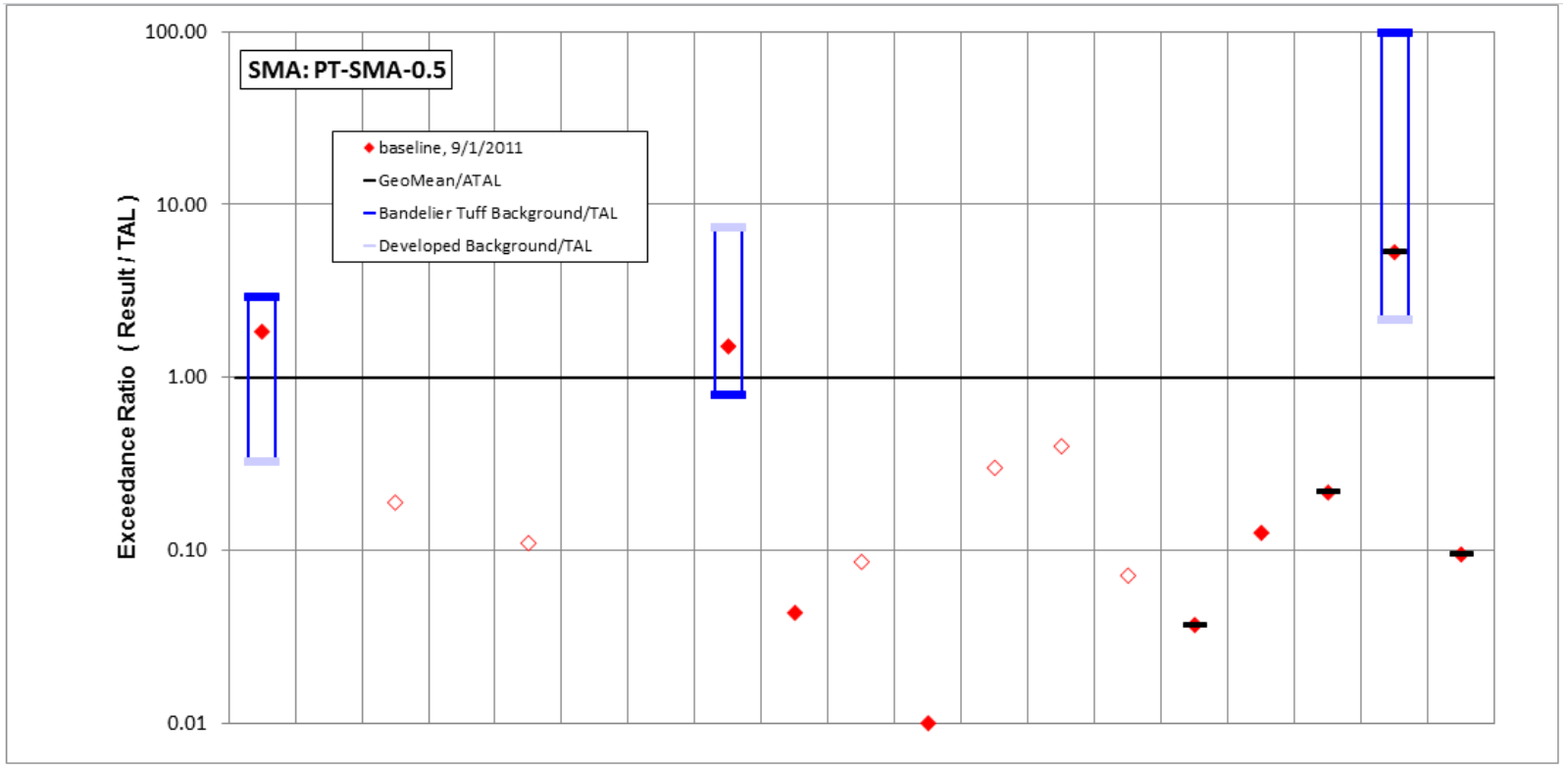


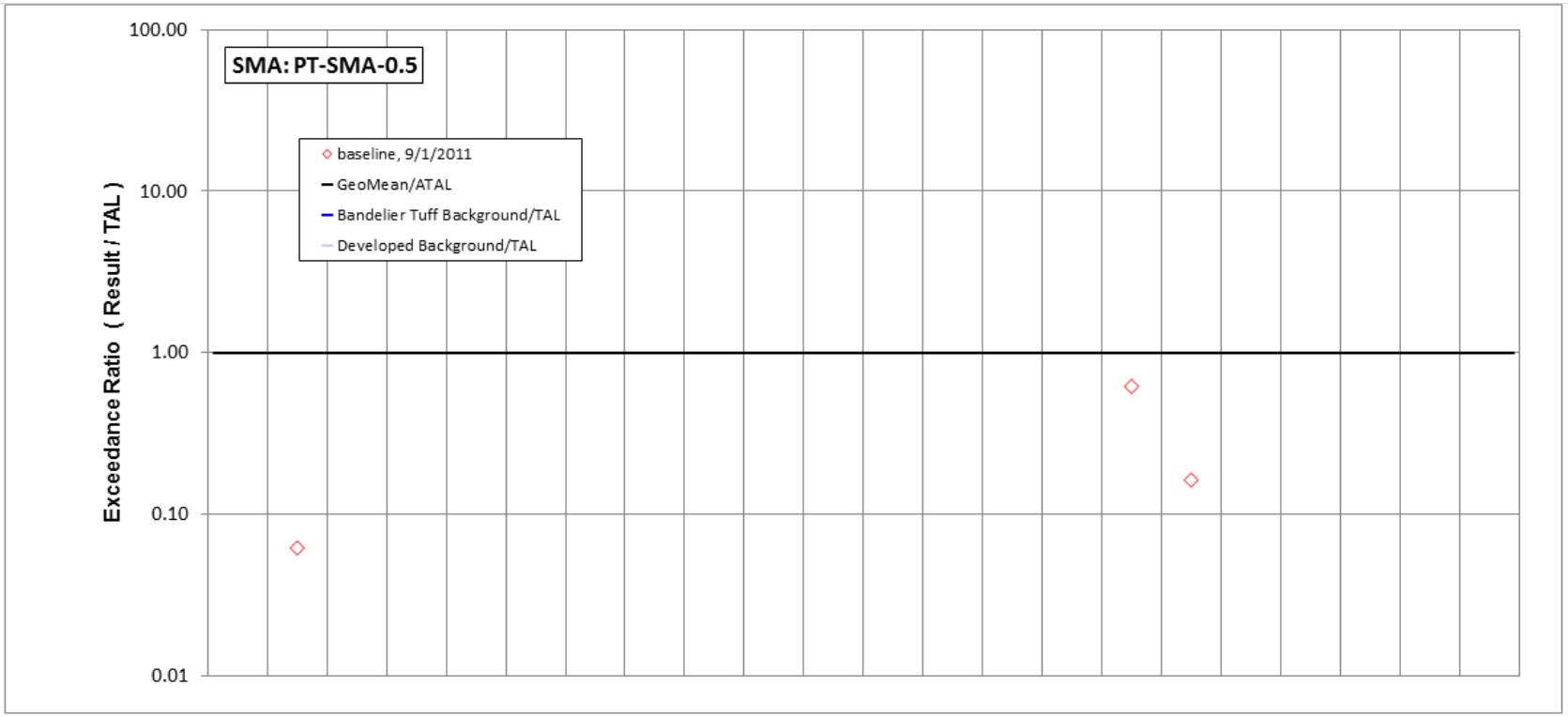
Figure 200-1 PT-SMA-0.5 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/1/2011 result	**1380**	*1*	*1.7*	30.3	*0.11*	*2*	*1*	**6.5**	0.74	*0.066*	1.7	*1.5*	*0.2*	*0.45*	3.7	5.3	0.0022	**79.5**	2.84
result / TAL	**1.8**	*0.002*	*0.19*	0.0061	*0.11*	*0.01*	*0.001*	**1.5**	0.044	*0.086*	0.01	*0.3*	*0.4*	*0.071*	0.037	0.13	0.22	**5.3**	0.095

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 200-2 Inorganic analytical results summary plot for PT-SMA-0.5



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	ATAL	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	MTAL	-	-	ATAL	-	-
std value	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5	19	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
9/1/2011 result	-	*0.309*	-	-	-	-	-	-	-	-	-	-	-	-	-	*3.09*	*3.09*	-	-	-	-	-
result / TAL	-	*0.062*	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.62*	*0.16*	-	-	-	-	-

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 200-3 Organic analytical results summary plot for PT-SMA-0.5

201.0 PT-SMA-1: SWMUs 15-004(f) and 15-008(a)

201.1 Site Descriptions

Two historical industrial activity areas are associated with I002, PT-SMA-1: Sites 15-004(f), and 15-008(a).

SWMU 15-004(f) is an inactive firing site, E-F Firing Site, that consists of three inactive firing points (D, E, and F) covering a total area of approximately 60 acres at TA-15. E-F Firing Site began operating in 1946 and was last used in 1981. It was operated extensively from 1947 to 1973 and was the largest firing site at the Laboratory. Originally, E-F Firing Site consisted of a single firing point (D) that was built in 1946 and that ceased to operate in 1949. In 1947, the firing area was expanded to include Firing Point E, which was used for large-scale shots containing up to 2500 lb of HE, and Firing Point F, which was used for smaller-scale shots. Firing Points E and F were approximately 650 ft apart and were wired to an underground control bunker (structure 15-27). Tests at the two firing points were conducted on the ground and created depressions in the ground. After test shots, the firing points were either regraded or backfilled with gravel to fill in the depressions. Eventually, nearby soil was mounded on the north and south sides of Firing Point E to protect TA-15 structures from shrapnel. Tests at E-F Firing Site involved HE, uranium (metal and depleted), beryllium, lead, and mercury.

Phase I Consent Order sampling is complete for SWMU 15-004(f). The objective of the investigation was to identify areas and depths of soil requiring corrective action and determine if contaminants are migrating from the Site. Although several constituents were detected above industrial SSLs/SALs, the Site does not pose a current risk because of the administrative controls that are in place. Additional samples will be collected during the Phase II investigation to verify the distribution of potential contamination; subsequently, potential corrective actions for the Site will be identified and evaluated. Although several constituents were detected above industrial SSLs/SALs, the Site does not pose a current risk because of the administrative controls that are in place. The migration of potential contaminants from SWMU 15-004(f) is limited to the drainage downgradient of the Site for most constituents and does not extend beyond Potrillo Canyon Reach PO-3.

SWMU 15-008(a) is the former location of two small surface disposal areas that were located on the edge of Potrillo Canyon, south and east of E-F Firing Site [SWMU 15-004(f)], at TA-15. The disposal areas were located within approximately 350 ft of each other, with each disposal area having dimensions of approximately 8 ft in diameter × 2 ft high. Both areas were used to dispose of debris from tests conducted at E-F Firing Site, including soil, rock, pebbles, metal fragments, plastic, electrical cable, and electrical accessories. The exact period of operation of the surface disposal areas is not known but probably falls within the period of operation for E-F Firing Site (1946 to 1981). All debris and soil were removed from both surface disposal areas during the 2010 Consent Order investigation.

Phase I Consent Order sampling is complete for SWMU 15-008(a). The Site meets industrial and construction worker risk levels. SWMU 15-008(a) is located within the boundary of E-F Firing Site [SWMU 15-004(f)], and will likely not be eligible for a COC until additional investigation and corrective actions are complete for E-F Firing Site.

The project map (Figure 201-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

201.2 Control Measures

Road run-on impacts the SMA at the 90-degree bend. This is the primary source of run-on to the Permitted Feature. Planned controls are to address this run-on source and to further stabilize bare areas. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 201-1).

Enhanced controls were installed and certified on August 3, 2012, and submitted to EPA on August 27, 2012, as part of corrective action. Photographs of the enhanced controls are available at http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 201-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
I00201010022	Seed and Wood Mulch			X		CB
I00202040034	Established Vegetation		X	X		B
I00203010018	Earthen Berm		X		X	CB
I00203010019	Earthen Berm		X		X	CB
I00203010020	Earthen Berm		X		X	CB
I00203010021	Earthen Berm		X		X	CB
I00203010023	Earthen Berm		X		X	EC
I00203010024	Earthen Berm		X		X	EC
I00203010025	Earthen Berm		X		X	EC
I00203010026	Earthen Berm		X		X	EC
I00203010027	Earthen Berm		X		X	EC
I00203010028	Earthen Berm		X		X	EC
I00203010029	Earthen Berm		X		X	EC
I00203010030	Earthen Berm		X		X	EC
I00203060033	Straw Wattles		X		X	EC
I00203120012	Rock Berm	X			X	CB
I00203120013	Rock Berm	X			X	CB
I00206010031	Rock Check Dam		X		X	EC
I00206010032	Rock Check Dam		X		X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

201.3 Storm Water Monitoring

SWMUs 15-004(f) and 15-008(a) are monitored within PT-SMA-1. Following the installation of baseline control measures, a baseline storm water sample was collected on September 1, 2011 (Figures 201-2 and 201-3). Analytical results from this sample yielded four TAL exceedances:

- Aluminum concentration of 1380 µg/L (MTAL is 750 µg/L),
- Copper concentration of 6.5 µg/L (MTAL is 4.3 µg/L),
- Zinc concentration of 75.9 µg/L (MTAL is 42 µg/L), and
- Gross-alpha activity of 79.5 pCi/L (ATAL is 15 pCi/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 15-004(f):

- Aluminum is not known to be associated with industrial materials historically managed at this Site. Aluminum was detected above BVs in 7 of 69 shallow Consent Order and RFI samples at a maximum concentration 1.6 times the tuff BV.
- Copper was likely associated with industrial materials historically managed at this Site. Copper was detected above BVs in 38 of 69 shallow Consent Order and RFI samples at a maximum concentration 561 times the soil BV.
- Zinc may have been associated with industrial materials historically managed at this Site. Zinc was detected above BVs in 14 of 69 shallow Consent Order and RFI samples at a maximum concentration 14.7 times the soil BV.
- Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at this Site. Shallow RFI and Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for uranium isotopes, which are alpha-emitting radionuclides. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

SWMU 15-008(a):

- Aluminum is not known to be associated with industrial materials historically managed at this Site. Aluminum was detected above BVs in 4 of 22 shallow Consent Order samples at a maximum concentration 2.1 times the tuff BV.
- Copper was likely associated with industrial materials historically managed at this Site. Copper was detected above BVs in 15 of 22 shallow Consent Order samples at a maximum concentration 525 times the soil BV.
- Zinc may have been associated with industrial materials historically managed at this Site. Zinc was detected above BVs in 5 of 22 shallow Consent Order samples at a maximum concentration 3.3 times the soil BV.

- Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at this Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for uranium isotopes, which are alpha-emitting radionuclides. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.


PT-SMA-1, Rock Berm, I00203120013 (photo ID 23587-1)

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 UTL) 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 Figures 201-2 and 201-3. 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 Figures 201-2 and 201-3.

PT-SMA-1 is located on Bandelier Tuff and no run-on occurs from developed facilities (i.e., buildings, pavement, and parking lots); therefore, calculated storm water UTLs from locations containing sediments derived from Bandelier Tuff were compared with aluminum, copper, zinc, and gross-alpha MTAL and ATAL exceedances. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. Aluminum, copper, and zinc are associated with minerals in the Bandelier Tuff as well.

- Aluminum—The aluminum UTL for storm water containing sediments derived from Bandelier Tuff is 2210 µg/L; the result from 2011 is less than this value.
- Copper—The copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L; the result from 2011 is greater than this value.
- Zinc—The zinc UTL for storm water containing sediments derived from Bandelier Tuff is 109 µg/L; the result from 2011 is less than this value.
- Gross alpha—The gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L; the result from 2011 is less than this value.

All the analytical results for these samples are reported in the 2011 Annual Report.

201.4 Inspections and Maintenance

RG262.4 recorded eight storm events at PT-SMA-1 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 201-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30915	5-8-2013
Storm Rain Event	BMP-33179	7-9-2013
Storm Rain Event	BMP-33688	7-22-2013
Storm Rain Event	BMP-34191	7-30-2013
Storm Rain Event	BMP-34515	8-14-2013
Storm Rain Event	BMP-35642	9-18-2013
Annual Erosion Evaluation	COMP-36854	11-12-2013

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

Table 201-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-33979	Modify rock berm Asset ID I00203120012 by adding rock to the east end of berm.	7-30-2013	8 day (s)	Maintenance conducted in timely manner.
BMP-33980	Modify rock berm -0013 by adding rock to the east end of berm.	7-30-2013	8 day (s)	Maintenance conducted in timely manner.
BMP-34965	Repair berm by applying seed and matting. [I00203010018, I00203010019, 00203010020]	8-21-2013	7 day (s)	Maintenance conducted in timely manner.

201.5 Compliance Status

The Sites associated with PT-SMA-1 are Moderate Priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 201-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 15-004(f)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 08-03-2012
SWMU 15-008(a)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 08-03-2012

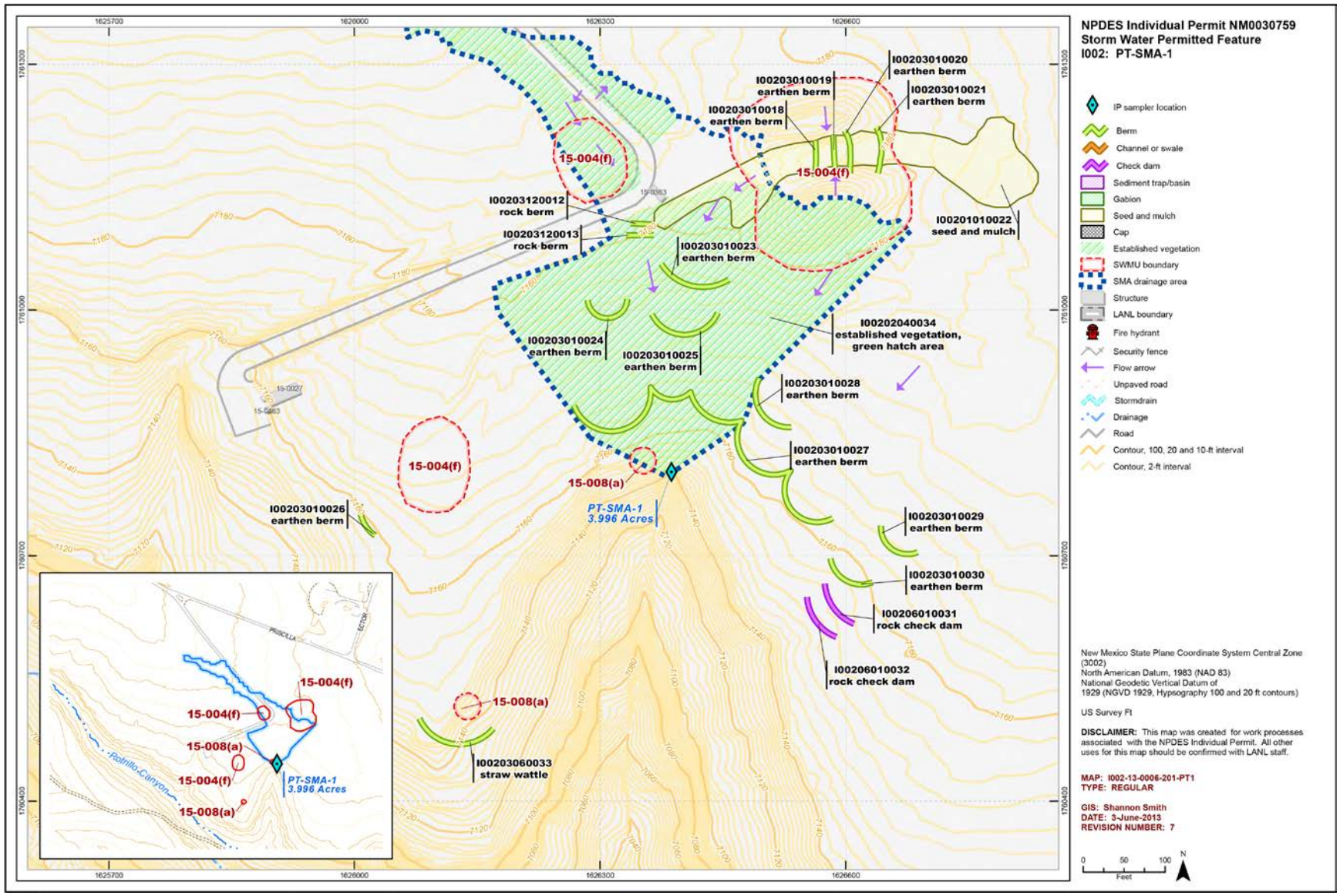
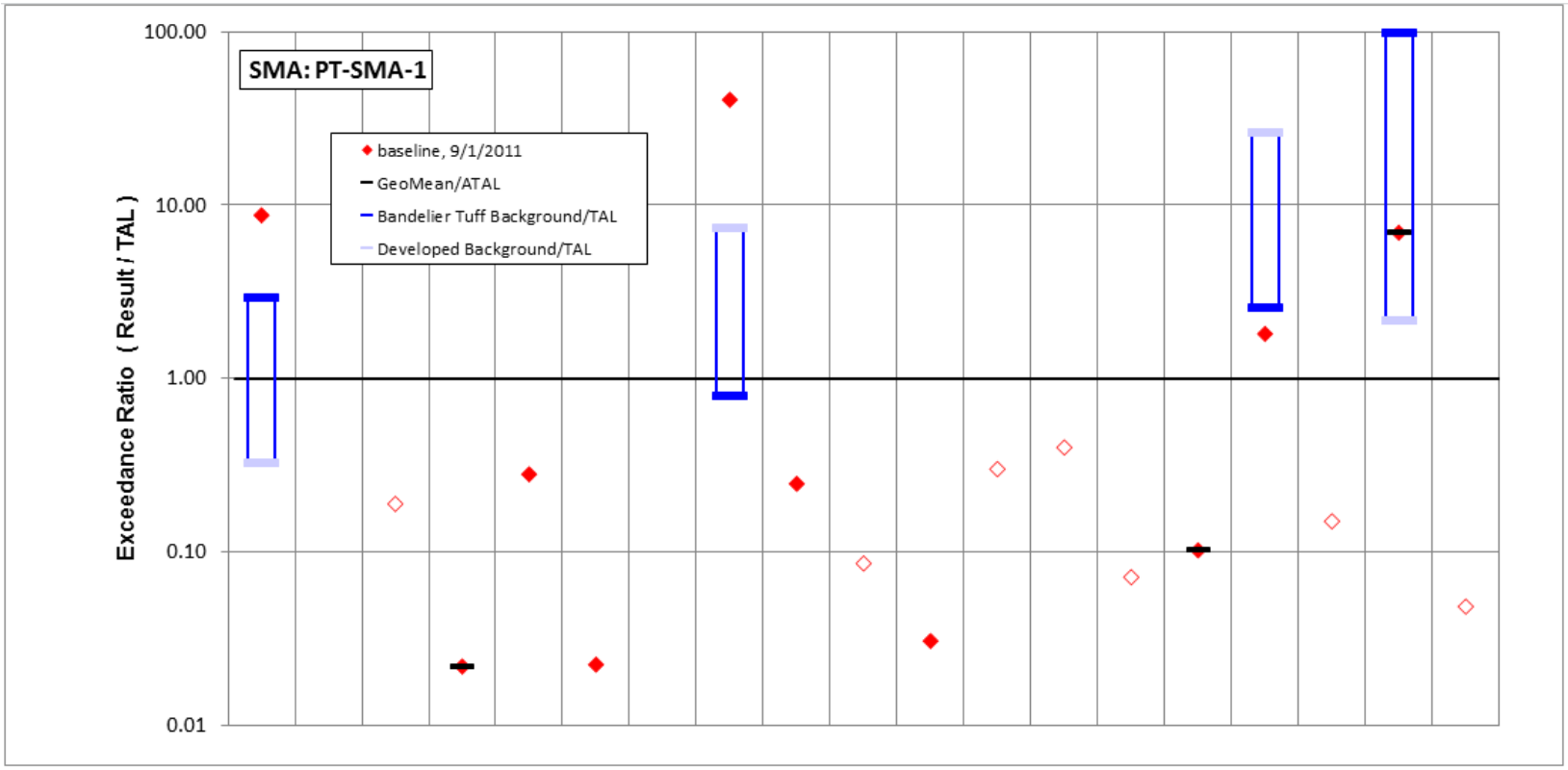


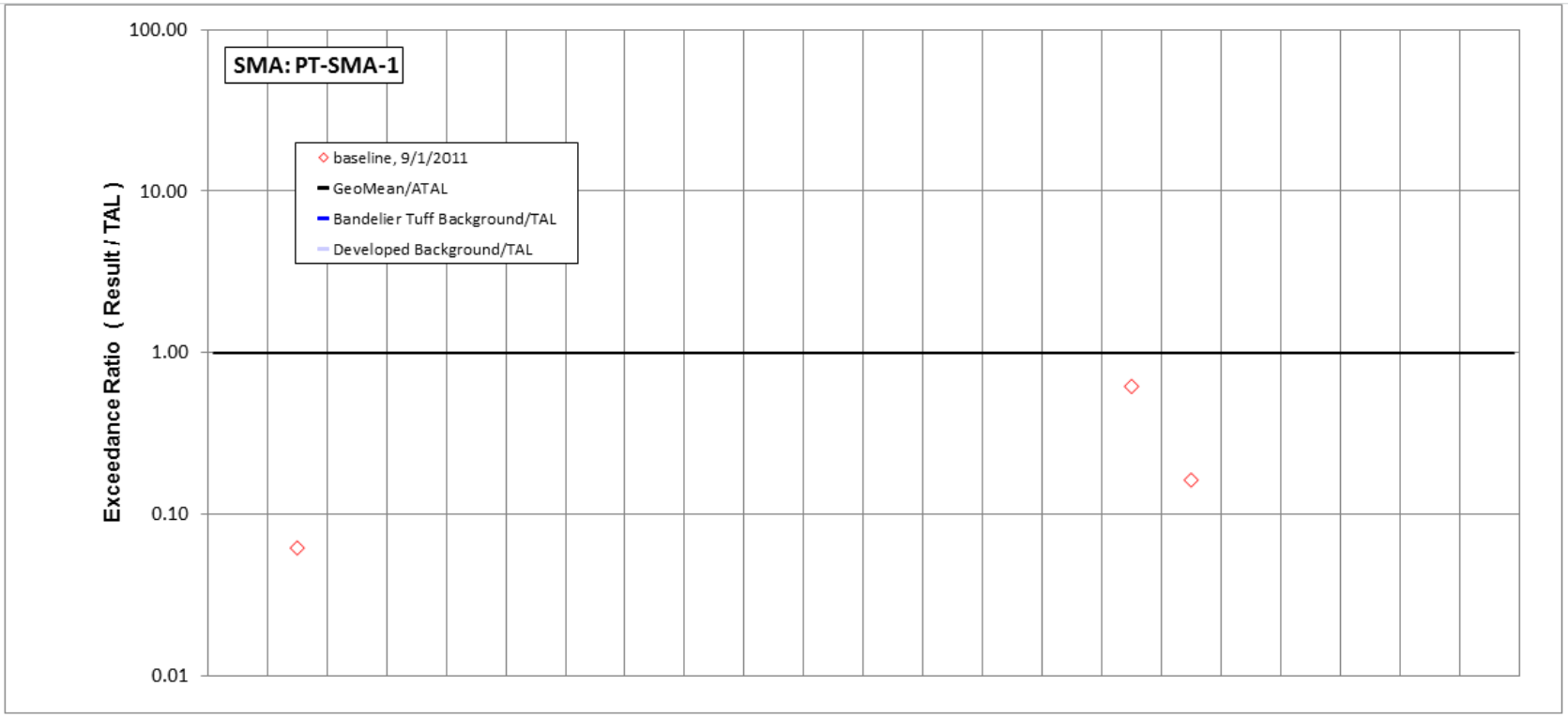
Figure 201-1 PT-SMA-1 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	**Zinc**	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/1/2011 result	**6550**	1.2	*1.7*	109	0.28	4.7	4.9	**174**	4.2	*0.066*	5.2	*1.5*	*0.2*	*0.45*	10.2	**75.9**	*0.002*	**104**	*1.45*
result / TAL	**8.7**	0.0019	*0.19*	0.022	0.28	0.022	0.0049	**40**	0.25	*0.086*	0.031	*0.3*	*0.4*	*0.071*	0.1	**1.8**	*0.15*	**6.9**	*0.048*

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 201-2 Inorganic analytical results summary plot for PT-SMA-1



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	ATAL	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	MTAL	-	-	-	-	-
std value	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5	19	-	-	-	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
9/1/2011 result	-	*0.309*	-	-	-	-	-	-	-	-	-	-	-	-	-	*3.09*	*3.09*	-	-	-	-	-
result / TAL	-	*0.062*	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.62*	*0.16*	-	-	-	-	-

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 201-3 Organic analytical results summary plot for PT-SMA-1

202.0 PT-SMA-1.7: SWMU 15-006(a)

202.1 Site Descriptions

One historical industrial activity area is associated with I003, PT-SMA-1.7: Site 15-006(a).

SWMU 15-006(a) is the PHERMEX firing site at TA-15 that consists of a firing chamber (structure 15-184) and related equipment. The PHERMEX firing site and associated facilities were built in the early 1960s. Past environmental surveys at the PHERMEX firing site include an aerial radiological survey conducted in 1982 that identified elevated levels of uranium-238. A 1991 surface radiation survey identified elevated contact exposure rates believed to be associated with chunks of DU at the PHERMEX firing site.

SWMU 15-006(a) is deferred per Table IV-2 of the Consent Order; therefore, Consent Order sampling has not been conducted at the Site. However, Consent Order samples were collected in sediment catchment areas in the drainage downgradient of the Site to determine if contaminants are migrating from the Site. The migration of potential contaminants from SWMU 15-006(a) is limited to the drainage downgradient of the site for most constituents and does not extend beyond Potrillo Canyon Reach PO-4. Detected concentrations of inorganic and organic chemicals and radionuclides in Consent Order drainage samples were all below residential SSLs, except the single detection of arsenic, which was well below industrial SSL.

The project map (Figure 202-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

202.2 Control Measures

There is a potential for run-on from the impervious areas in the western portion of the SMA. The U-shaped mound in the center portion of the Permitted Feature controls runoff from the area. This configuration is part of the construction of the firing area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 202-1).

Table 202-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
I00302040017	Established Vegetation		X	X		B
I00303010018	Earthen Berm		X		X	EC
I00305040019	Gravel Infiltration Strip		X		X	EC
I00306010020	Rock Check Dam		X		X	EC
I00306010021	Rock Check Dam		X		X	EC
I00306010022	Rock Check Dam		X		X	EC
I00306010023	Rock Check Dam		X		X	EC
I00306010024	Rock Check Dam		X		X	EC
I00306010025	Rock Check Dam		X		X	EC

CB: Certified baseline control measure.
B: Additional baseline control measure.
EC: Enhanced control measure.

Enhanced controls installation and/or certification are planned for 2014 as part of corrective action.

202.3 Storm Water Monitoring

SWMU 15-006(a) is monitored within PT-SMA-1.7. Following the installation of baseline control measures, a baseline confirmation sample was collected on September 10, 2012 (Figures 202-2 and 202-3). Inorganic analytical results from this baseline sample yielded one TAL exceedance:

- Gross-alpha activity of 92.6 pCi/L (ATAL is 15 pCi/L).

This exceedance was evaluated by comparing the results from soil samples collected at the Site during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 15-006(a):

- Alpha-emitting radionuclides are known to be associated with industrial materials historically managed at this Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for plutonium and uranium isotopes, which are alpha-emitting radionuclides. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

PT-SMA-1.7, Established Vegetation, I00302040017 (photo ID 32227-9)

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 Figures 202-2 and 202-3. 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 Figures 202-2 and 202-3.

Monitoring location PT-SMA-1.7 receives storm water run-on from industrially developed locations (PHERMEX firing site) areas as well as locations with 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 background UTL for locations with 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 urban landscape is 32.5 pCi/L. The 2012 gross-alpha result is between these two values.

All the analytical results for these samples are reported in the 2012 Annual Report.

The monitoring station for PT-SMA-1.7 has been relocated. The new location of the sampler is positioned below all controls and will provide a more representative sample of storm water discharge from the SMA. Sampler coordinates and the SMA drainage area are updated in Attachment 4.

202.4 Inspections and Maintenance

RG262.4 recorded eight storm events at PT-SMA-1.7 during the 2013 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 202-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30916	4-3-2013
Construction	COMP-31791	4-29-2013
Construction	COMP-31800	5-6-2013
Construction	COMP-32022	5-13-2013
Enhanced Control Measure Verifications	BMP-32227	5-22-2013
Storm Rain Event	BMP-33180	7-10-2013
Storm Rain Event	BMP-33689	7-22-2013
Storm Rain Event	BMP-34192	8-8-2013
Storm Rain Event	BMP-35643	9-24-2013
Annual Erosion Evaluation	COMP-36855	11-4-2013

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

Table 202-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-33779	Modify rock check dam I00306010023 as necessary.	7-22-2013	12 day(s)	Maintenance conducted in timely manner.
BMP-33780	Modify rock check dam Asset ID I00306010024 as necessary.	7-22-2013	12 day(s)	Maintenance conducted in timely manner.
BMP-33781	Modify rock check dam I00306010025 as necessary.	7-22-2013	12 day(s)	Maintenance conducted in timely manner.

202.5 Compliance Status

The Site associated with PT-SMA-1.7 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 202-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 15-006(a)	Corrective Action Initiated	Corrective Action Initiated	Initiated 10-18-2012

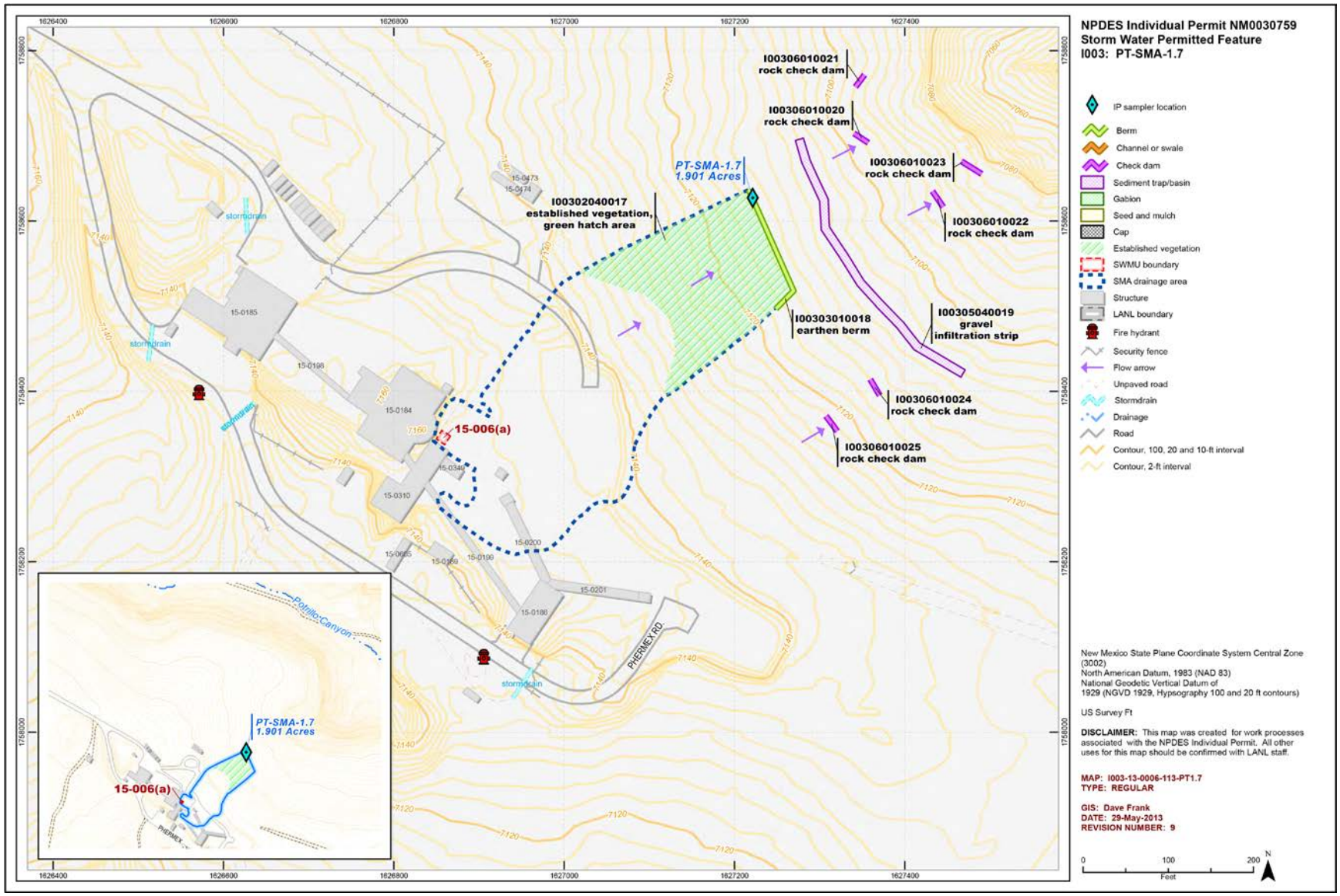
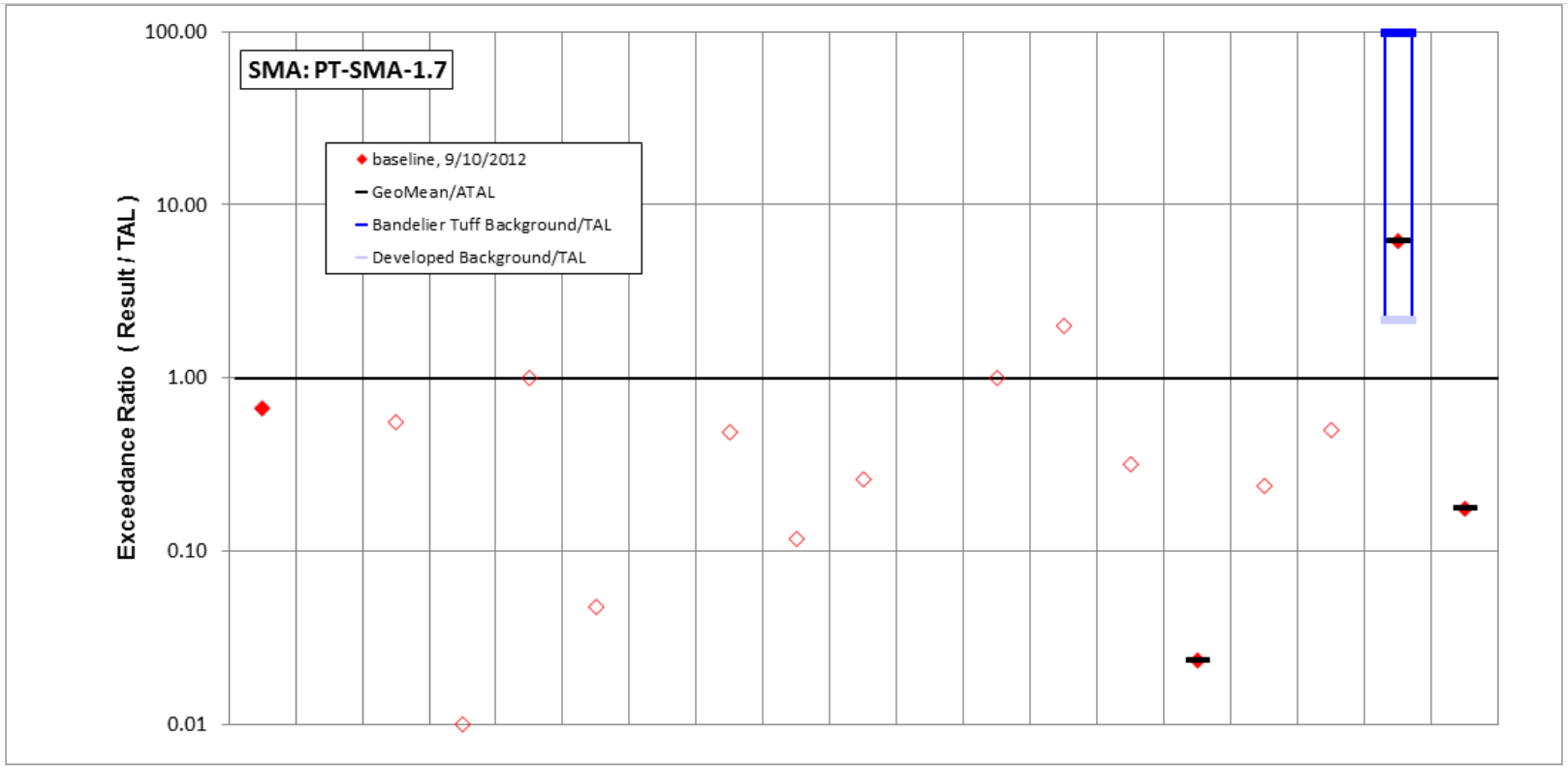


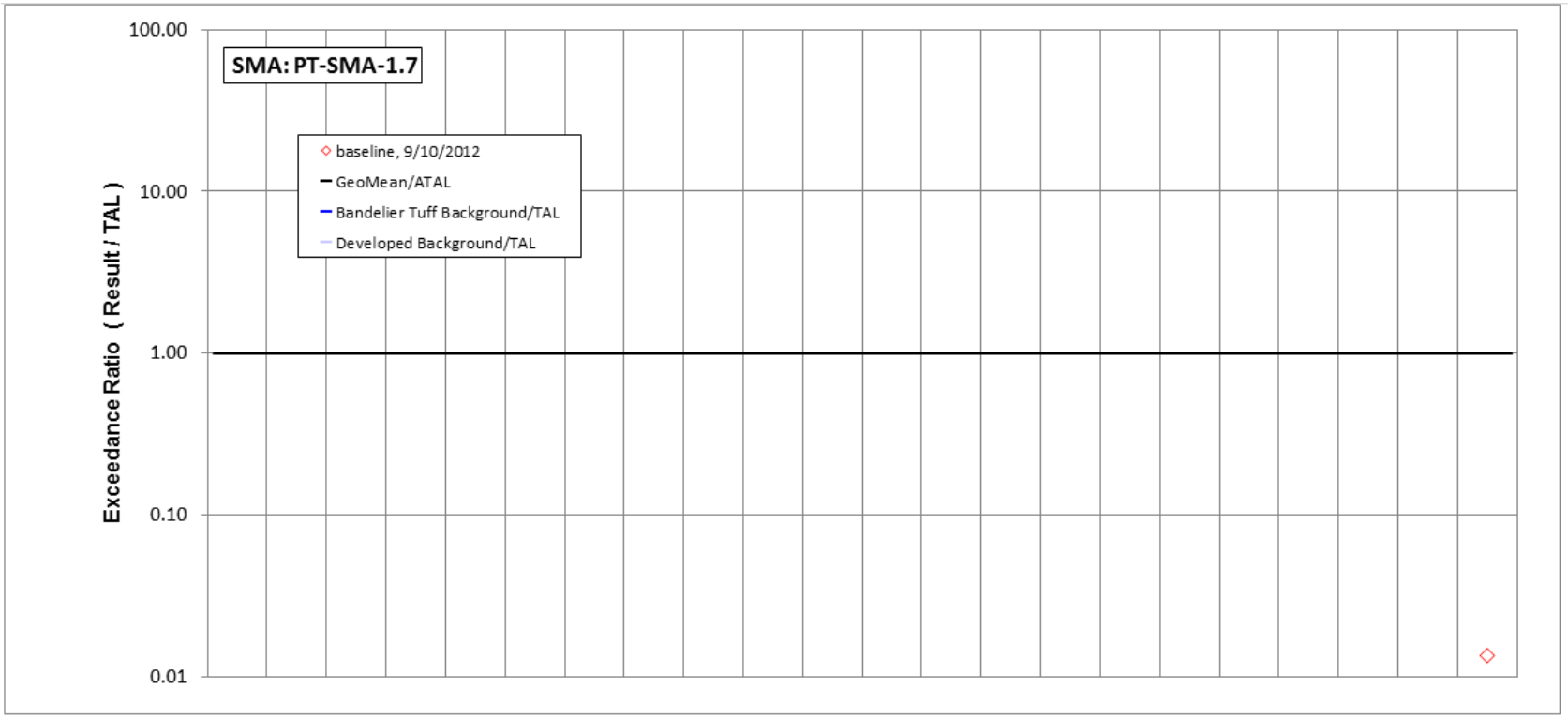
Figure 202-1 PT-SMA-1.7 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	**Silver**	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/10/2012 result	501	*3*	*5*	*50*	*1*	*10*	2.03	*2.09*	*2*	*0.2*	1.34	*5*	***1***	*2*	2.34	*10*	*0.005*	**92.6**	5.27
result / TAL	0.67	*0.005*	*0.56*	*0.01*	*1*	*0.048*	0.002	*0.49*	*0.12*	*0.26*	0.0079	*1*	***2***	*0.32*	0.023	*0.24*	*0.5*	**6.2**	0.18

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 202-2 Inorganic analytical results summary plot for PT-SMA-1.7



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-	-	ATAL
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	-	-	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
9/10/2012 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.27*	-	-	-	*0.27*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.001*	-	-	-	*0.014*

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 202-3 Organic analytical results summary plot for PT-SMA-1.7

203.0 PT-SMA-2: SWMU 36-003(b) and AOCs 15-008(f) and 36-004(e)

203.1 Site Descriptions

Three historical industrial activity areas are associated with I004, PT-SMA-2: Sites 36-003(b), 15-008(f), and 36-004(e).

SWMU 36-003(b) is a decommissioned septic system located at the west end of TA-36. The septic system consists of a septic tank (structure 36-0061) and its associated drainlines and outfall. The septic tank sits near the edge of Mesita del Potrillo, approximately 100 ft southwest of building 36-0055, the control bunker for the I-J Firing Site. The control bunker housed the electronics and instrumentation used in the operation of the I-J Firing Site [SWMU 36-004(e)] and also contained a toilet, sink, and water fountain, all of which were connected to the septic tank via a 4-in.-diameter clay-tile pipe. The septic tank is constructed of reinforced concrete with a capacity of 420 gal. The tank has a buried overflow pipe that previously discharged near the north rim of Potrillo Canyon. The overflow pipe was capped in 1989 to stop its discharge into the canyon. After the overflow pipe was capped, the septic tank continued to be used until the early 1990s when the tank was taken out of service. During that time, the tank contents were periodically removed and taken to a sanitary WWTP for treatment and disposal. The contents of the SWMU 36-003(b) septic tank were sampled in 1981, and the analytical data confirmed HE was not present. The 1996 VCA implemented at SWMU 36-003(b) included removing the septic tank contents, pressure-washing the tank, and filling the tank with expanding cement. The contents of the tank were disposed of as LLW at TA-54, Area G, and at the TA-50 RLWTF; no confirmation samples were collected.

Phase I Consent Order sampling is complete for SWMU 36-003(a). All detected constituent concentrations were below residential SSLs and SALs. Nature and extent will be reevaluated under the supplemental investigation report for Potrillo-Fence Canyons Aggregate Area, scheduled to be submitted to NMED in 2015. It is anticipated this Site will be recommended for corrective action complete and will be eligible for a COC under the Consent Order upon approval of the report.

AOC 15-008(f) consists of several sand mounds located next to I-J Firing Site [AOC 36-004(e)] at TA-15. I-J Firing Site is located on a mesa overlooking Potrillo Canyon and was originally located in TA-15 when it was constructed in 1948 but is now part of TA-36.

AOC 15-008(f) is deferred per Table IV-2 of the Consent Order; therefore, Consent Order sampling has not been conducted at the Site. However, Consent Order samples were collected in sediment catchment areas in the drainages downgradient of I-J Firing Site [AOC 36-004(e)], which includes AOC 15-008(f), to determine if contaminants are migrating from the Site. The migration of potential contaminants from AOCs 15-008(f) and 36-004(e) is limited to the drainage downgradient of the Site for most constituents and does not extend beyond Potrillo Canyon Reach PO-4. Detected contaminant concentrations in Consent Order drainage samples were below residential SSLs and SALs, except for uranium-238, which was detected above the residential SAL but below the industrial SAL in two samples from one location in the drainage downgradient of AOCs 15-008(f) and 36-004(e).

AOC 36-004(e) is I-J Firing Site located at the west end of TA-36 on Mesita del Potrillo along the north rim of Potrillo Canyon. I-J Firing Site consists of two firing points (I and J) and the control building (36-0055). The Site was constructed in 1948 and was located in TA-15 until 1981 when the boundary of TA-36 was expanded to encompass the portion of TA-15 that contained the I-J Firing Site. Shots at I-J Firing Site used up to 500 lb of HE and involved a variety of solid and liquid explosives and inorganic chemicals. According to former employees, significant amounts of DU were used at I-J Firing Site in

addition to small quantities of mercury and cadmium. Some shots were fired into iron, copper, or lead targets. Other metals used in shots included aluminum, antimony, various steels, lithium-magnesium alloys, and lithium hydride. In addition, hydrocarbons, argon, benzene, small amounts of mercury, cadmium, and beryllium were used in shots. All shots involving radioactive materials at I-J Firing Site were conducted in fully enclosed containment vessels. These vessels were removed from the I-J Firing Site for use at TA-15, although one was later returned to the I-J Firing Site. The returned vessel was identified in the 1990 SWMU report as AOC C-36-001 and was subsequently removed from the Site in 1994. Other activities conducted at I-J Firing Site included tests in which DU projectiles were fired into an embankment. This projectile test area was designated as AOC C-36-006(e) .

Investigation of AOC 36-004(e) is deferred per Table IV-2 of the Consent Order; therefore, Consent Order sampling has not been conducted at the Site. However, Consent Order samples were collected in sediment catchment areas in the drainages downgradient of the Site to determine if contaminants are migrating from the Site. The migration of potential contaminants from AOC 36-004(e) is limited to the drainage downgradient of the Site for most constituents and does not extend beyond Potrillo Canyon Reach PO-4. Detected constituent concentrations in Consent Order drainage samples were below residential SSLs and SALs, except for uranium-238, which was detected above the residential SAL but below the industrial SAL in two samples from one location in the drainage downgradient of the Site.

The project map (Figure 203-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

203.2 Control Measures

Road runoff discharges at the southern portion of the turnaround. Existing controls help to address the run-on generated from the pavement. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 203-1).

Table 203-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
I00402040011	Established Vegetation		X	X		B
I00403010009	Earthen Berm		X		X	CB
I00403120010	Rock Berm	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

203.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at PT-SMA-2. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

203.4 Inspections and Maintenance

RG262.4 recorded eight storm events at PT-SMA-2 during the 2013 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 203-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30917	5-8-2013
Storm Rain Event	BMP-33181	7-8-2013
Storm Rain Event	BMP-33690	7-22-2013
Storm Rain Event	BMP-34193	8-5-2013
Storm Rain Event	BMP-35644	9-20-2013
Annual Erosion Evaluation	COMP-36856	11-12-2013

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

Table 203-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-33978	Repair berm -0009 by reseeding and rematting as necessary.	8-1-2013	10 day(s)	Maintenance conducted in timely manner.

203.5 Compliance Status

The Sites associated with PT-SMA-2 are Moderate Priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 203-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 36-003(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
AOC 15-008(f)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
AOC 36-004(e)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

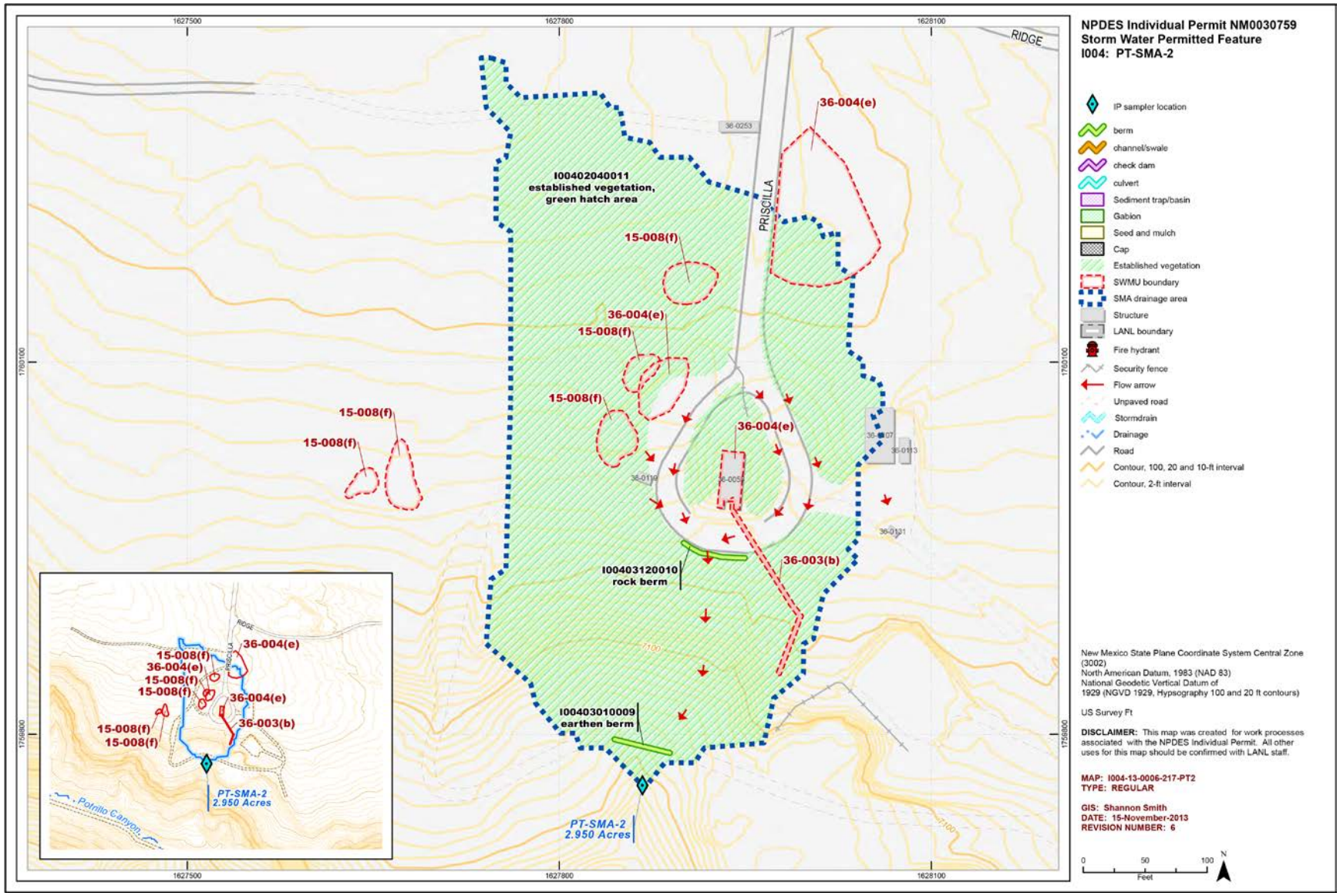


Figure 203-1 PT-SMA-2 location map

204.0 PT-SMA-2.01: AOCs C-36-001 and C-36-006(e)

204.1 Site Descriptions

Two historical industrial activity areas are associated with I004A, PT-SMA-2.01: Sites C-36-001 and C-36-006(e).

AOC C-36-001 is a former containment vessel that provided secondary containment for explosives tests at TA-36. The containment vessel was manufactured in 1970 and located at the PHERMEX test facility at TA-15. The containment vessel was later relocated to the I-J Firing Site and placed south of building 36-55, where it remained until 1983 when it was removed. The containment vessel consisted of a 19.5-ton steel sphere that was 12 ft in diameter. An explosive device was placed and detonated in a primary containment vessel which, in turn, was placed inside the AOC C-36-001 containment vessel. The explosion gases were vented through a filtration system that captured particulates and did not allow release of the test material. No specific location(s) exists for this site; the location is identified only as the general area south of building 36-55. In 1994, a VCA was implemented at AOC C-36-001 that involved decontamination and disposal of the vessel. The vessel was taken from TA-36 to building 15-233 for initial decontamination and was subsequently taken to the decontamination facility at TA-50 for further decontamination. It was then returned to TA-15 pending acceptance for disposal at TA-54, Area G. In October 1994, the containment vessel was disposed of at MDA G at TA-54. No confirmation samples were collected during the VCA.

The previous location(s) of the former containment vessel used at PHERMEX and the I-J Firing Site are not known and would have been impacted by historical and current firing site operations. Therefore, characterization of any releases from AOC C-36-001 will be accomplished by future investigations at the PHERMEX and I-J Firing Site. Investigation of both of these firing sites is deferred per Table IV-2 of the Consent Order.

AOC C-36-006(e) is a former projectile test area located within the southern portion of the I-J Firing Site [AOC 36-004(e)] along the north rim of Potrillo Canyon. AOC C-36-006(e) was formerly used for testing DU projectiles as part of I-J Firing Site activities. Projectiles were fired from a 120-mm gun into a nearby embankment. Although some projectiles were recovered after an experiment was completed, much of the projectile material remains on-site. Originally, the I-J Firing Site was located within the boundary of TA-15. In 1981, the boundary of TA-36 was expanded to include portions of TA-15. As part of this expansion, the area where I-J Firing Site was located was transferred to TA-36. Although the 1990 SWMU report addresses the I-J Firing Site as AOC 36-004(e), it addresses the nearby projectile test area (which was also part of the 1981 transfer to TA-36) as AOC 15-006(e). AOC 15-006(e) was renamed AOC C-36-006(e) in the OU 1086 work plan because the projectile test area was within the boundaries of TA-36 when the work plan was written.

Previous investigations conducted at I-J Firing Site, which encompasses AOC C-36-006(e), consisted of a surface radiological survey conducted in 1991 that identified areas of elevated radioactivity at the time of the survey. Numerous pieces of DU and oxidized DU were present around the site. Based on the presence of visible pieces of DU, an interim action plan was prepared in 1997 that called for removing visible pieces of DU from the firing site and surrounding area and installing storm water controls. However, the plan was never implemented.

AOC C-36-006(e) is encompassed by the I-J Firing Site, which is deferred for investigation per Table IV-2 of the Consent Order. However, Consent Order samples were collected in sediment catchment areas in the drainages downgradient of the Site to determine if contaminants are migrating from the Site, which

includes the I-J Firing Site. Concentrations of detected inorganic chemicals and organic chemicals and radionuclide activities decreased in the drainages downgradient of the Site and were not detected or not detected above BVs in samples collected from the bottom of the drainage below the Site. All detected concentrations and activities are below residential SSLs and SALs.

The project map (Figure 204-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

204.2 Control Measures

An unpaved access road located in the southern portion of the area has the potential to generate run-on to this SMA. Control measures are implemented to mitigate any influences from this potential run-on source. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 204-1).

Enhanced controls were installed and certified on August 3, 2012, and submitted to EPA on August 27, 2012, as part of corrective action. Photographs of the enhanced controls are available at http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 204-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
I004A02040005	Established Vegetation		X	X		B
I004A03010004	Earthen Berm		X		X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

204.3 Storm Water Monitoring

AOCs C-36-001 and C-36-006(e) are monitored within PT-SMA-2.01. Following the installation of baseline control measures, a baseline confirmation sample was collected on August 18, 2011 (Figures 204-2 and 204-3). Inorganic analytical results from this baseline sample yielded one TAL exceedance:

- Gross-alpha activity of 295 pCi/L (ATAL is 15 pCi/L).

This exceedance was evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

AOC C-36-001:

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this Site. Consent Order sampling has not been conducted; the location of the former containment vessel is not known. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from

the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

AOC C-36-006(e):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this Site. Consent Order sampling has not been conducted; the location of the former containment vessel is not known. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

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 Figures 204-2 and 204-3. 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 Figures 204-2 and 204-3.

The SMA receives runoff from industrially developed (PHERMEX and I-J Firing Sites) areas and undeveloped areas. The concentration gross-alpha radioactivity detected in the SMA sample was above the BV for runoff from developed areas and below the BV for runoff from undeveloped areas. These results are consistent with the land use within the SMA drainage area.

All the analytical results for these samples are reported in the 2011 Annual Report.

204.4 Inspections and Maintenance

RG262.4 recorded eight storm events at PT-SMA-2.01 during the 2013 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 204-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30918	5-8-2013
Storm Rain Event	BMP-33182	7-9-2013
Storm Rain Event	BMP-33691	7-22-2013
Storm Rain Event	BMP-34194	8-5-2013
Storm Rain Event	BMP-35645	9-20-2013
Annual Erosion Evaluation	COMP-36857	11-12-2013

No maintenance activities were conducted at PT-SMA-2.01 in 2013.

204.5 Compliance Status

The Sites associated with PT-SMA-2.01 are Moderate Priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 204-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC C-36-001	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 08-03-2012
AOC C-36-006(e)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 08-03-2012

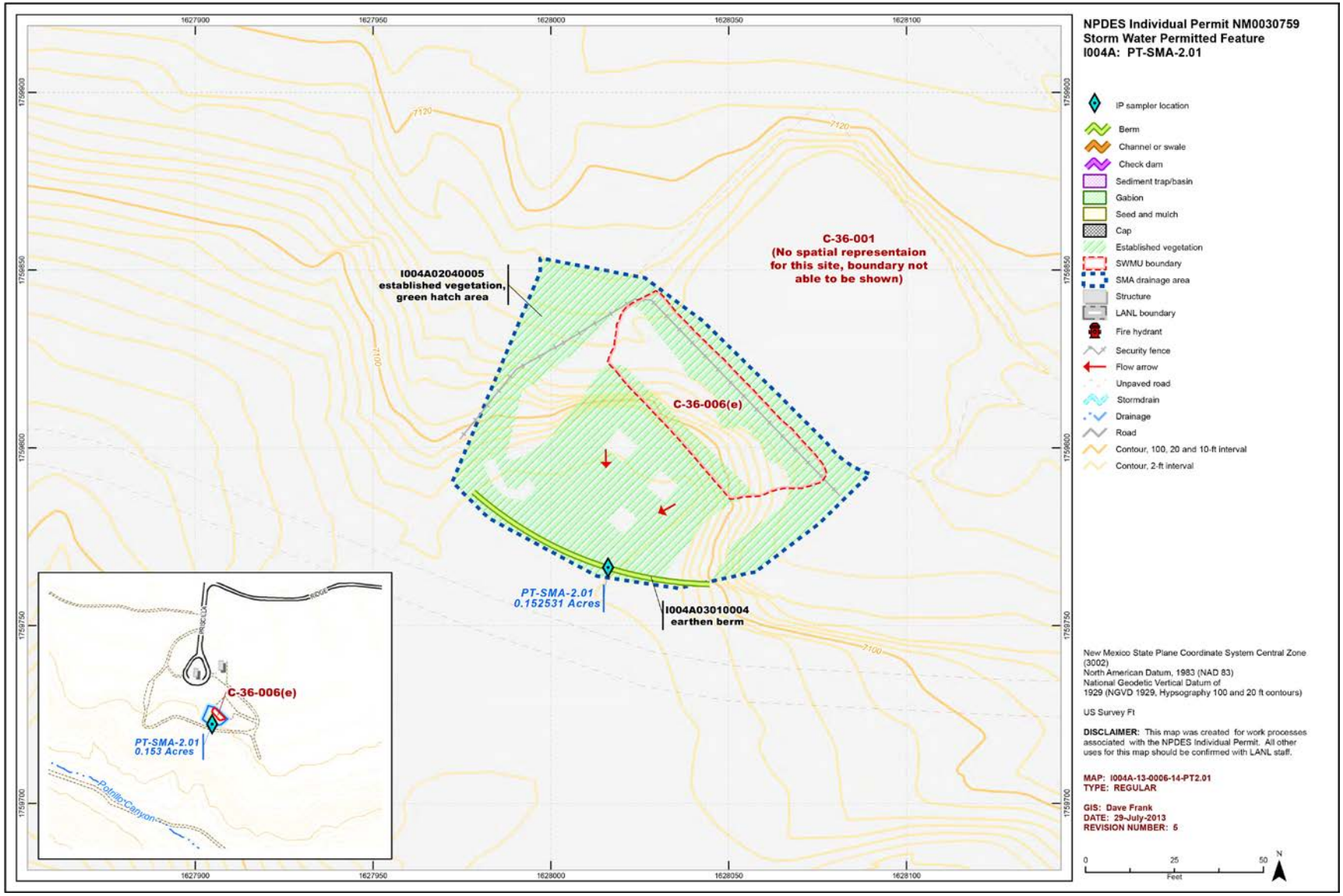
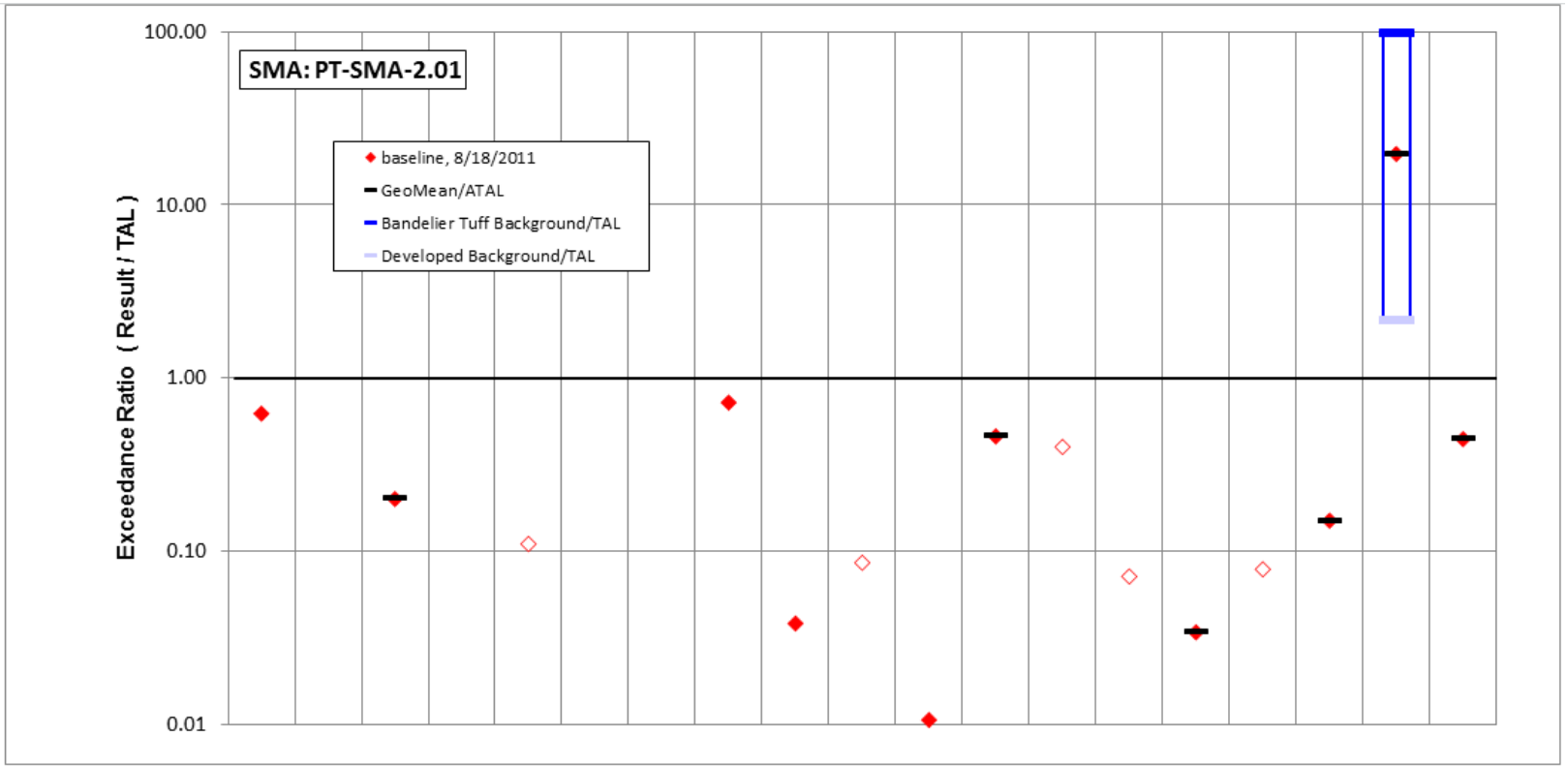


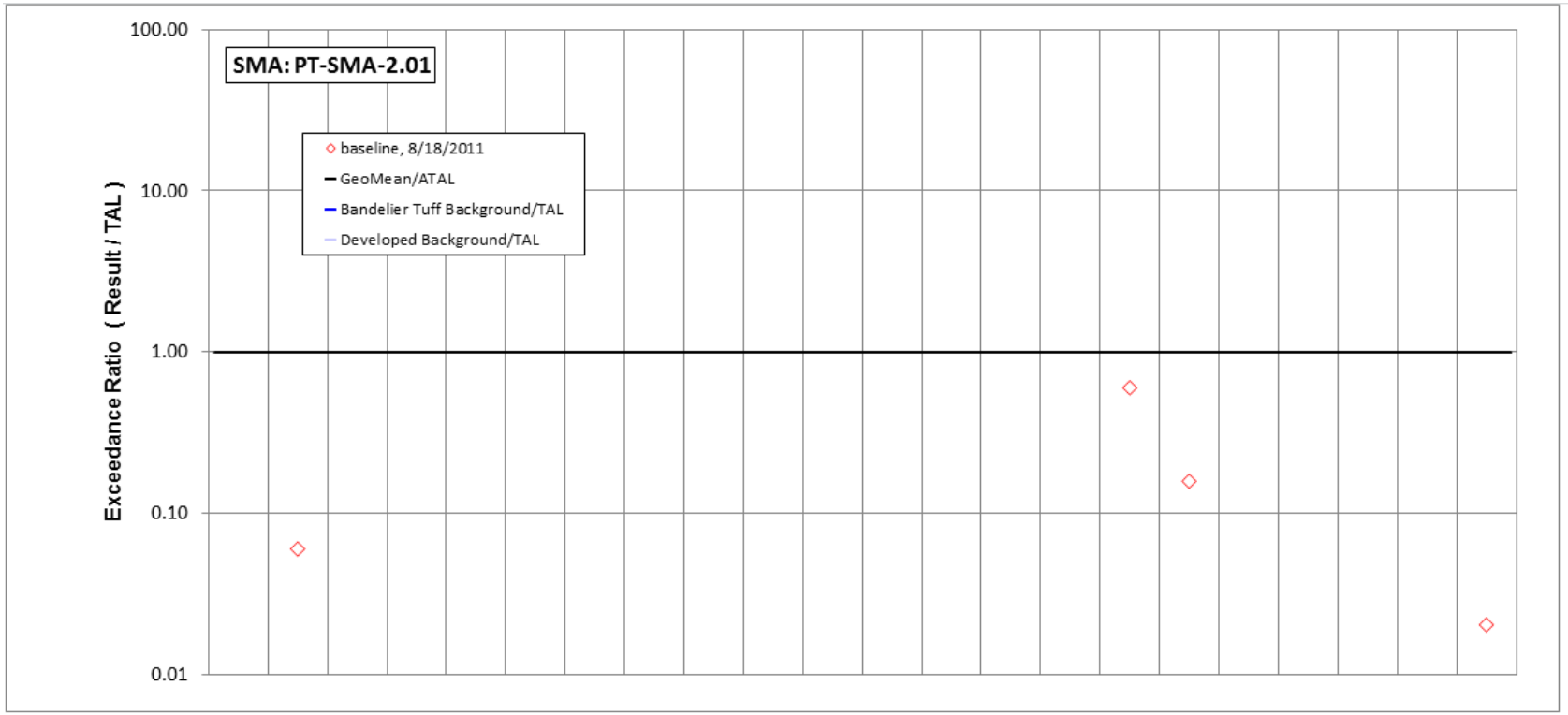
Figure 204-1 PT-SMA-2.01 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
8/18/2011 result	467	1.8	1.8	16.6	*0.11*	*2*	3.5	3.1	0.65	*0.066*	1.8	2.3	*0.2*	*0.45*	3.4	*3.3*	0.0015	**295**	13.3
result / TAL	0.62	0.0028	0.2	0.0033	*0.11*	*0.01*	0.0035	0.72	0.038	*0.086*	0.011	0.46	*0.4*	*0.071*	0.034	*0.079*	0.15	**20**	0.44

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 204-2 Inorganic analytical results summary plot for PT-SMA-2.01



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	ATAL	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	MTAL	ATAL	-	-	-	ATAL
std value	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5	19	200	-	-	-	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
8/18/2011 result	-	*0.3*	-	-	-	-	-	-	-	-	-	-	-	-	-	*3*	*3*	*0.406*	-	-	-	*0.406*
result / TAL	-	*0.06*	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.6*	*0.16*	*0.002*	-	-	-	*0.02*

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 204-3 Organic analytical results summary plot for PT-SMA-2.01

205.0 PT-SMA-3: SWMU 36-006 and AOC 36-004(a)

205.1 Site Descriptions

Two historical industrial activity areas are associated with I005, PT-SMA-3: Sites 36-006 and 36-004(a).

SWMU 36-006 consists of a former surface disposal area that was located on the southern slope of Potrillo Canyon, approximately 600 ft north of the Eenie Firing Site [AOC 36-004(a)] at TA-36. SWMU 36-006 was used from 1955 to 1970 to dispose of cables, metal, concrete, and other similar debris from the TA-36 firing sites. The debris covered an area approximately 75 ft wide that extended approximately 100 ft down the south canyon slope. The remainder of the debris was scattered laterally 300 ft along the south canyon slope. This debris was dumped into the canyon from trucks on the canyon rim. Although the TA-36 firing sites were still active, SWMU 36-006 was not used as a surface disposal area after 1996. Firing site personnel removed most of the debris between 1999 and 2006. All remaining debris was removed from the SWMU 36-006 surface disposal area during the 2010 Consent Order investigation.

Phase I Consent Order sampling is complete for SWMU 36-006. All detected constituents in Consent Order confirmation samples were below residential SSLs and SALs. SWMU 36-006 will be recommended for corrective action complete in the supplemental investigation report for Potrillo and Fence Canyons Aggregate Area, to be submitted to NMED in 2015. SWMU 36-006 will be eligible for a COC upon approval of the report by NMED.

AOC 36-004(a) is the active Eenie Firing Site located at TA-36 on Mesita del Potrillo on the rim of Potrillo Canyon. AOC 36-004(a) consists of the impact area, a control bunker (building 36-0003), and a make-up building (36-0004) that contains a storage area. Construction of the Eenie Firing Site began in 1949 and was completed in 1951. Materials used in experimental shots include lead oxide, mercury, copper, nickel, brass, DU, and nitroglycerine. Other activities conducted at the Site include shoulder-mounted projectiles fired into targets in the southern portion of the firing site.

Investigation of AOC 36-004(a) is deferred per Table IV-2 of the Consent Order; therefore, Consent Order sampling has not been conducted at the Site. However, Consent Order samples were collected in sediment catchment areas in the drainage downgradient of the Site to determine if contaminants are migrating from the Site. The migration of potential contaminants from AOC 36-004(a) is limited to the drainage below AOC 36-004(a) for most constituents and does not extend beyond Potrillo Canyon Reach PO-4. All detected constituents in samples collected in the drainage downgradient of AOC 36-004(a) were below residential SSLs and SALs.

The project map (Figure 205-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

205.2 Control Measures

Run-on to this Permitted Feature may originate from the unpaved access road located in the southern portion of the area. Natural channels divert a portion of this potential run-on influence to the west away from the SMA. Installed control measures serve to moderate storm water flow across the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 205-1).

Table 205-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
I00502040009	Established Vegetation		X	X		B
I00503020008	Base Course Berm	X			X	B
I00503060011	Straw Wattles	X			X	B
I00503060012	Straw Wattles	X			X	B
I00504040005	Culvert	X		X		CB
I00504060004	Rip Rap	X		X		CB
I00504060007	Rip Rap	X		X		B
I00506010006	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

205.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at PT-SMA-3. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

205.4 Inspections and Maintenance

RG267.4 recorded seven storm events at PT-SMA-3 during the 2013 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 205-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30919	5-8-2013
Storm Rain Event	BMP-33190	7-15-2013
Storm Rain Event	BMP-34206	8-5-2013
Storm Rain Event	BMP-35657	9-20-2013
Storm Rain Event	BMP-37137	11-13-2013
Annual Erosion Evaluation	COMP-36858	11-13-2013

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

Table 205-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-34646	Install straw wattles along edge of PRS 36-006. Install wattles around inlet of storm drain leading to PRS 36-006.	8-13-2013	8 day(s)	Maintenance conducted in timely manner.
BMP-37178	Install new straw wattles outside of existing wattles -0010. Wattles -0010 will be retired when work is completed.	11-25-2013	66 day(s)	Maintenance conducted as soon as practicable.
BMP-37181	Repair wattle Asset ID I00503060011 by retrenching and/or backfilling undercut.	11-25-2013	66 day(s)	Maintenance conducted as soon as practicable.

205.5 Compliance Status

The Sites associated with PT-SMA-3 are Moderate Priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 205-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 36-006	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
AOC 36-004(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

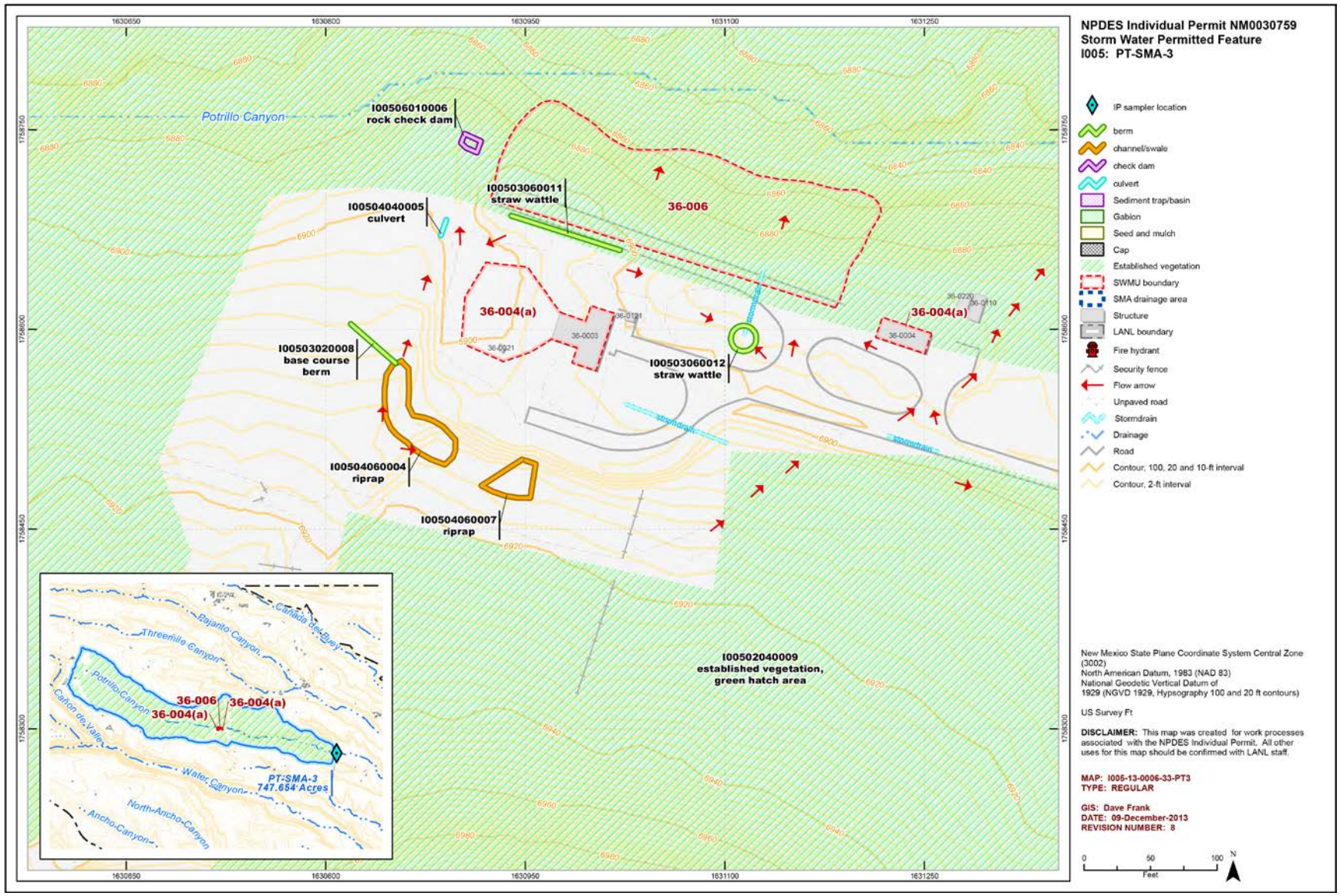


Figure 205-1 PT-SMA-3 location map

206.0 PT-SMA-4.2: SWMU 36-004(d)

206.1 Site Descriptions

One historical industrial activity area is associated with I007, PT-SMA-4.2: Site 36-004(d).

SWMU 36-004(d) consists of the active Lower Slobbovia Firing Site and the inactive Skunk Works Firing Site, located in Potrillo Canyon, and three former burn pits located on the mesa top above Potrillo Canyon at TA-36. The Lower Slobbovia Firing Site consists of two active firing points and a control building (36-0012). One of the firing points (structure 36-0013) was constructed in 1950 and is located on top of an approximately 200-ft-diameter sand and dirt pad. The control building (36-0012) was constructed into the side of the pad. The second firing point consisted of a wooden tower (structure 36-0120) constructed in 1986 at the northwest end of a 1000-ft-long sled track for conducting drop tests. Shots fired at the Lower Slobbovia Firing Site primarily involved HE. Less than 2% of the shots involved significant amounts of metal (e.g., DU, lead, copper, aluminum, and steel). The largest shot fired at Lower Slobbovia used 5000 to 6000 lb of HE. In addition, underground tests, buried to approximately 100 ft, were conducted at this Site.

The Skunk Works Firing Site, located approximately 0.5 mi northwest of the Lower Slobbovia Firing Site, was used to conduct small-explosives experiments during the 1950s. These experiments involved gas (acetylene and oxygen), liquid (tetranitromethane), and solid explosives. Beryllium and radioactive materials were not used at the Site. Structures at the Skunk Works Firing Site included a 5- × 5.5- × 5-ft belowgrade structure that previously served as a battery storage room and two buildings (36-0044 and 36-0045) that were moved to the Site from TA-15. All the structures have been removed. The Skunk Works firing pad was located next to building 36-0045. A shallow depression, located approximately 100 ft farther up the canyon, was also used as a firing pad. The burn pits were used for burning and disposal of test debris before MDA AA (SWMU 36-001) was established in the mid-1960s. These pits are located on Mesita del Potrillo approximately 4000 ft west of the Lower Slobbovia control building (36-0012). The largest pit is a bermed enclosure located north of Potrillo Road and is approximately 40 ft in diameter. Two smaller areas are located south of Potrillo Road. Debris was transported by truck from TA-36 firing sites to the pits, placed in the pits, and burned. The debris consisted of wood, nails, other metal fragments, plastics, and sand contaminated with barium, uranium, and HE.

Investigation of SWMU 36-004(d) is deferred per Table IV-2 of the Consent Order; therefore, Consent Order sampling has not been conducted at the Site. However, Consent Order samples were collected in sediment catchment areas in the drainages downgradient of all portions of the Site to determine if contaminants are migrating from the Site. The migration of potential contaminants from SWMU 36-004(d) is limited to the drainages below SWMU 36-004(d) for most constituents and does not extend beyond Potrillo Canyon Reach PO-4 or Fence Canyon Reach F-3. All detected constituents in samples collected in drainages downgradient of SWMU 36-004(d) were below residential SSLs and SALs.

The project map (Figure 206-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

206.2 Control Measures

Installed control measures serve to control run-on sources from impervious areas surrounding this SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 206-1).

Table 206-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
I00702040008	Established Vegetation		X	X		B
I00703120007	Rock Berm		X		X	B
I00704040005	Culvert	X		X		CB
I00704060002	Rip Rap		X	X		CB

CB: Certified baseline control measure.
B: Additional baseline control measure.
EC: Enhanced control measure.

206.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at PT-SMA-4.2. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

206.4 Inspections and Maintenance

RG267.4 recorded seven storm events at PT-SMA-4.2 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 206-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30920	5-8-2013
Storm Rain Event	BMP-33191	7-9-2013
Storm Rain Event	BMP-33700	7-22-2013
Storm Rain Event	BMP-34207	8-5-2013
Storm Rain Event	BMP-35658	9-19-2013
Storm Rain Event	BMP-37138	11-13-2013
Annual Erosion Evaluation	COMP-36859	11-13-2013

No maintenance activities were conducted at PT-SMA-4.2 in 2013.

206.5 Compliance Status

The Site associated with PT-SMA-4.2 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 206-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 36-004(d)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

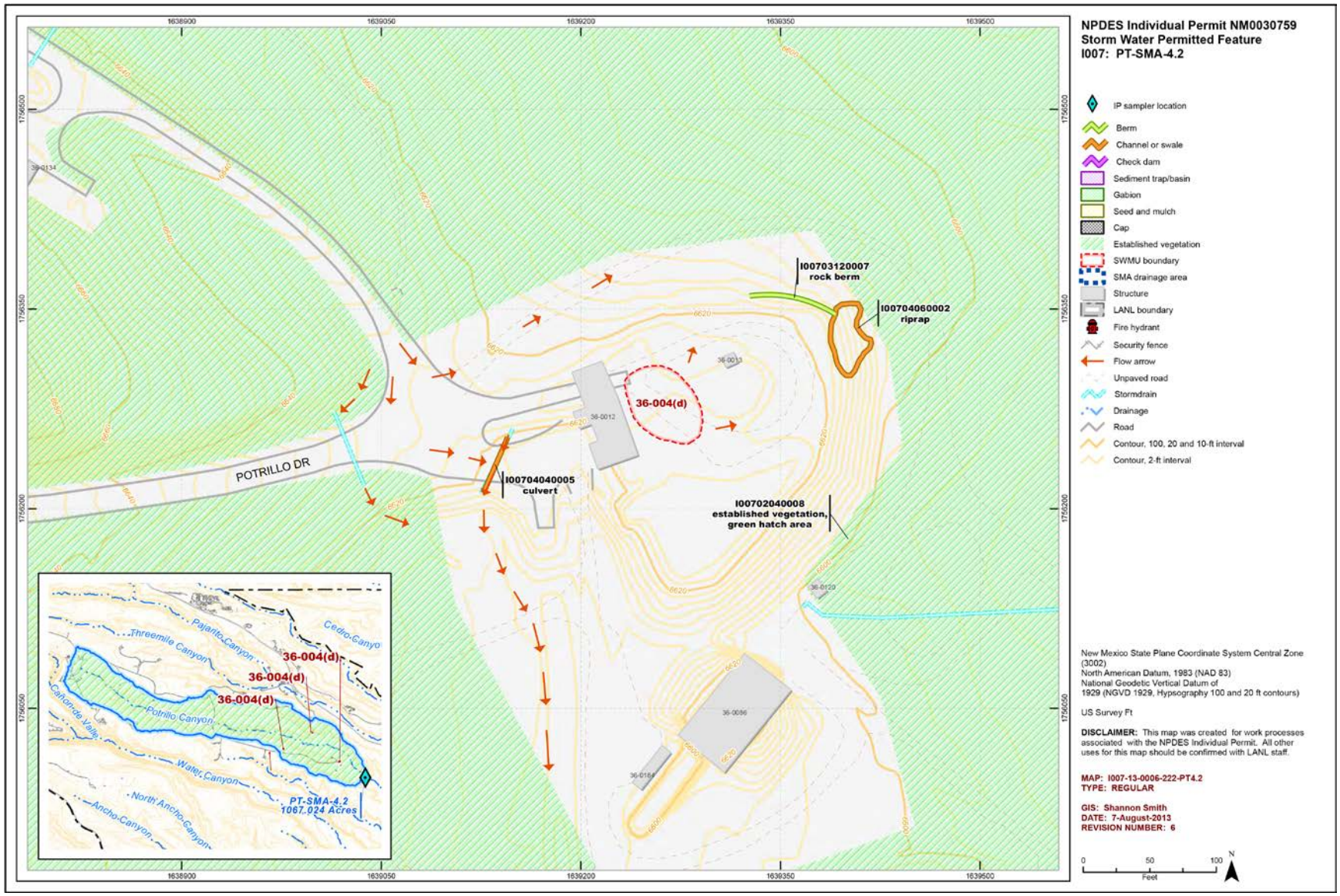


Figure 206-1 PT-SMA-4.2 location map

207.0 W-SMA-1: SWMUs 16-017(j)-99, 16-026(v), and 16-026(c2)

207.1 Site Descriptions

Three historical industrial activity areas are associated with W001, W-SMA-1: Sites 16-017(j)-99, 16-026(v), and 16-026(c2).

SWMU 16-017(j)-99 is a former HE magazine (structure 16-63) at TA-16. The magazine was a 24- × 26- × 9-ft wood-framed structure surrounded by an earthen berm on three sides and the top. The magazine was built in 1945 to store HE and was removed in 1998. This SWMU was originally designated as part of SWMU 16-017, a group of 24 structures in central TA-01. In 1999, SWMU 16-017 was separated into 24 SWMUs, each consisting of a single structure.

Consent Order sampling has not yet been conducted at SWMU 16-017(j)-99; the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. No investigations were conducted at the Site before the Consent Order went into effect in 2005.

SWMU 16-026(v) is a former NPDES-permitted outfall (05A072) that served decommissioned analytical chemistry laboratory building 16-460 at TA-16. The outfall is located approximately 60 ft southeast of the building and received effluent from a sump [SWMU 16-003(c)], building floor drains, steam-cup drains, sink drains, and a drinking fountain. The outfall was plugged in 1992. It was removed from the NPDES permit effective September 19, 1997.

Consent Order sampling has not yet been conducted at SWMU 16-026(v); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. However, decision-level data are available from the 1995 RFI.

SWMU 16-026(c2) is consists of the two outfalls that served chemical storage building 16-462 at TA-16. The outfalls are located approximately 30 ft southeast of the building. Floor troughs within 16-462 drain to 6-in.-diameter VCP drainlines that exit the south and southeast side of the building. Effluent flowed from the drainlines southeast to a drainage ditch. Building 16-462 was built in 1952 to store chemicals for use in the analytical chemistry laboratory (building 16-460). All drains at building 16-462 were plugged in 1991. There is no record of chemical spills in building 16-462.

Consent Order sampling has not yet been conducted at SWMU 16-026(c2); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. No investigations were conducted at the Site before the Consent Order went into effect in 2005.

The project map (Figure 207-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

207.2 Control Measures

Run-on contributions to this SMA may originate from the paved and unpaved access roads in proximity to the SMA. Buildings in the area may also provide additional contributions. Control measures function to manage and moderate storm water flow across this area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 207-1). Enhanced controls were installed and certified on June 4, 2013, as part of corrective action. Photographs of the enhanced controls are available at http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 207-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W00102040019	Established Vegetation		X	X		B
W00103010014	Earthen Berm	X			X	EC
W00103010015	Earthen Berm	X			X	EC
W00104060011	Rip Rap	X		X		CB
W00104060017	Rip Rap		X	X		EC
W00105030016	Sand Filter		X		X	EC
W00106010008	Rock Check Dam		X		X	CB
W00106010012	Rock Check Dam	X			X	EC
W00106010013	Rock Check Dam	X			X	EC
W00108020018	Rock Cap			X		EC

CB: Certified baseline control measure.
B: Additional baseline control measure.
EC: Enhanced control measure.

207.3 Storm Water Monitoring

SWMUs 16-017(j)-99, 16-026(c2), and 16-026(v) are monitored within W-SMA-1. Following the installation of baseline control measures, two baseline storm water samples were collected on August 3, 2011, and September 9, 2011 (Figure 207-2). Analytical results from these samples yielded two TAL exceedances:

- Aluminum concentrations of 918 µg/L and 1410 µg/L (MTAL is 750 µg/L), and
- Gross-alpha activity of 50.7 pCi/L (ATAL is 15 pCi/L).

Following the installation of enhanced control measures at W-SMA-1, a corrective action storm water sample was collected on September 12, 2013 (Figure 207-2). Analytical results from this corrective action monitoring sample yielded two TAL exceedances:

- Aluminum concentration of 1010 µg/L (MTAL is 750 µg/L), and
- Gross-alpha activity of 314 pCi/L (ATAL is 15 pCi/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 16-017(j)-99:

- Aluminum is not known to be associated with industrial materials historically managed at this Site. No investigations have been conducted at this Site.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this Site. No investigations have been conducted at this Site. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

SWMU 16-026(c2):

- Aluminum is not known to be associated with industrial materials historically managed at this Site. No investigations have been conducted at this Site.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this Site. No investigations have been conducted at this Site. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

SWMU 16-026(v):

- Aluminum is not known to be associated with industrial materials historically managed at this Site. Aluminum was detected in one of nine shallow RFI samples at a concentration equivalent to the tuff BV.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this Site. Shallow RFI samples were not analyzed for gross-alpha radioactivity or alpha-emitting radionuclides because they are not potential contaminants at this Site. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.


W-SMA-1, Rock Check Dam, W00106010002 (photo ID 7594-5r)

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 207-2. 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 207-2.

Monitoring location W-SMA-1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as locations with 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 for storm water containing sediments derived from Bandelier Tuff is 2210 µg/L and the aluminum background storm water UTL for storm water run-on from a developed urban landscape is 245 µg/L. The two results from 2011 and the result from 2013 are between these values.

- Gross alpha—The gross-alpha 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 urban landscape is 32.5 pCi/L. The result from 2013 is between these two values and the geometric mean of both gross-alpha results from 2011 is below both of these values.

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

The monitoring station for W-SMA-1 has been relocated. The new location of the sampler is positioned below all controls and will provide a more representative sample of storm water discharge from the SMA. Sampler coordinates and the SMA drainage area are updated in Attachment 4.

207.4 Inspections and Maintenance

RG253 recorded seven storm events at W-SMA-1 during the 2013 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 207-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Construction	COMP-30565	1-3-2013
Construction	COMP-30566	1-10-2013
Construction	COMP-30567	1-17-2013
Construction	COMP-30568	1-24-2013
Construction	COMP-30569	1-31-2013
Construction	COMP-30570	2-7-2013
Construction	COMP-30573	2-14-2013
Construction	COMP-30575	2-20-2013
Construction	COMP-30586	2-28-2013
Construction	COMP-30651	3-5-2013
Enhanced Control Measure Verifications	BMP-30655	3-26-2013
Annual Erosion Evaluation	COMP-30851	5-7-2013
Storm Rain Event	BMP-33650	7-18-2013
Storm Rain Event	BMP-34289	8-7-2013
Storm Rain Event	BMP-35604	9-19-2013
Annual Erosion Evaluation	COMP-36790	10-30-2013
TAL Exceedance	COMP-37079	10-30-2013

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

Table 207-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-36921	Replace rock displaced by water flow. Use rock on site	11-21-2013	63 day(s)	Maintenance conducted as soon as practicable.

207.5 Compliance Status

The Sites associated with W-SMA-1 are Moderate Priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 207-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 16-017(j)-99	Corrective Action Initiated	Enhanced Control Corrective Action Monitoring	LANL, June 4, 2013, "Certification of Installation of Enhanced Control Measures for Five Site Monitoring Areas (2M-SMA-2, M-SMA-1.22, S-SMA-3.53, STRM-SMA-1.05, W-SMA-1)"
SWMU 16-026(c2)	Corrective Action Initiated	Enhanced Control Corrective Action Monitoring	LANL, June 4, 2013, "Certification of Installation of Enhanced Control Measures for Five Site Monitoring Areas (2M-SMA-2, M-SMA-1.22, S-SMA-3.53, STRM-SMA-1.05, W-SMA-1)"
SWMU 16-026(v)	Corrective Action Initiated	Enhanced Control Corrective Action Monitoring	LANL, June 4, 2013, "Certification of Installation of Enhanced Control Measures for Five Site Monitoring Areas (2M-SMA-2, M-SMA-1.22, S-SMA-3.53, STRM-SMA-1.05, W-SMA-1)"

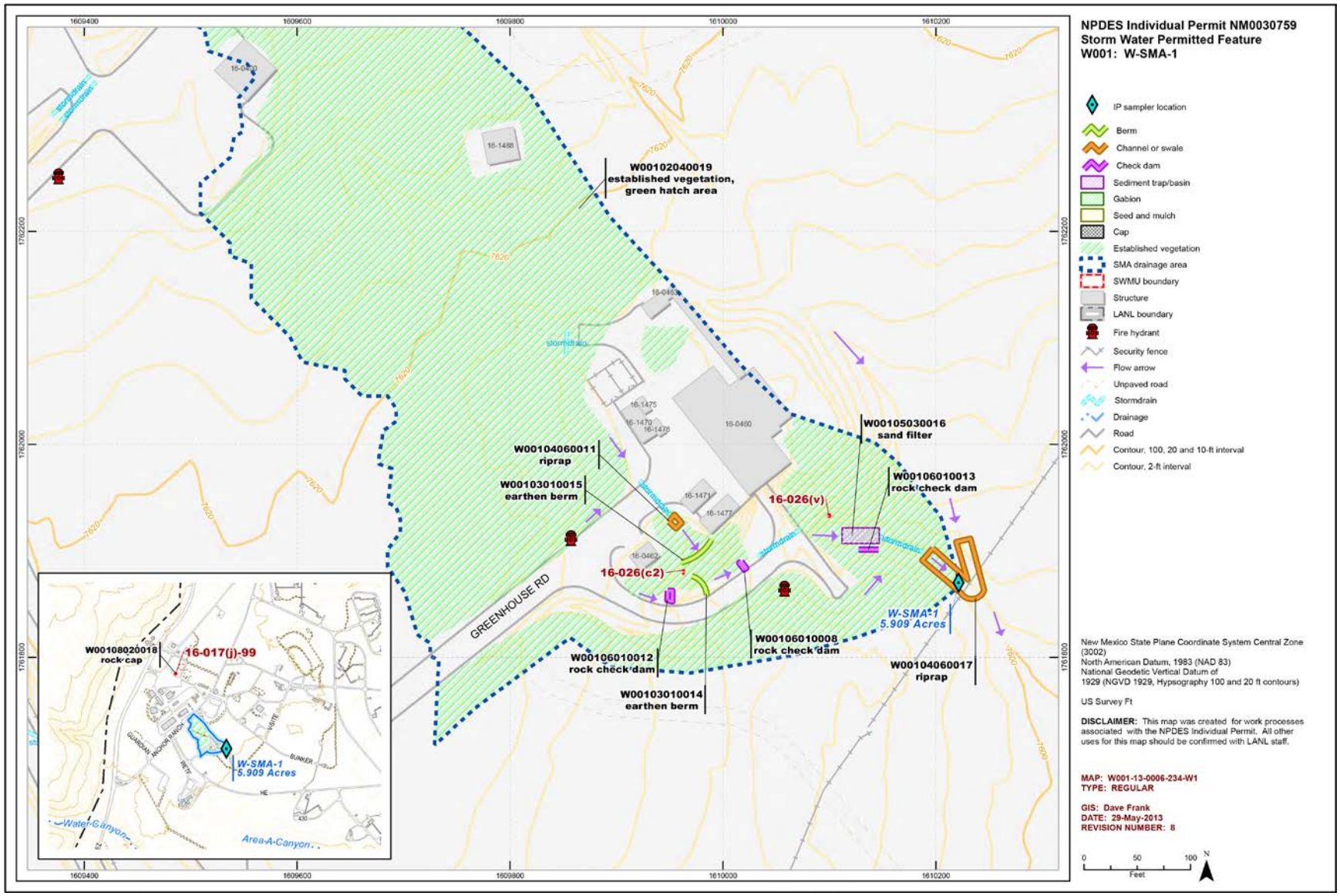
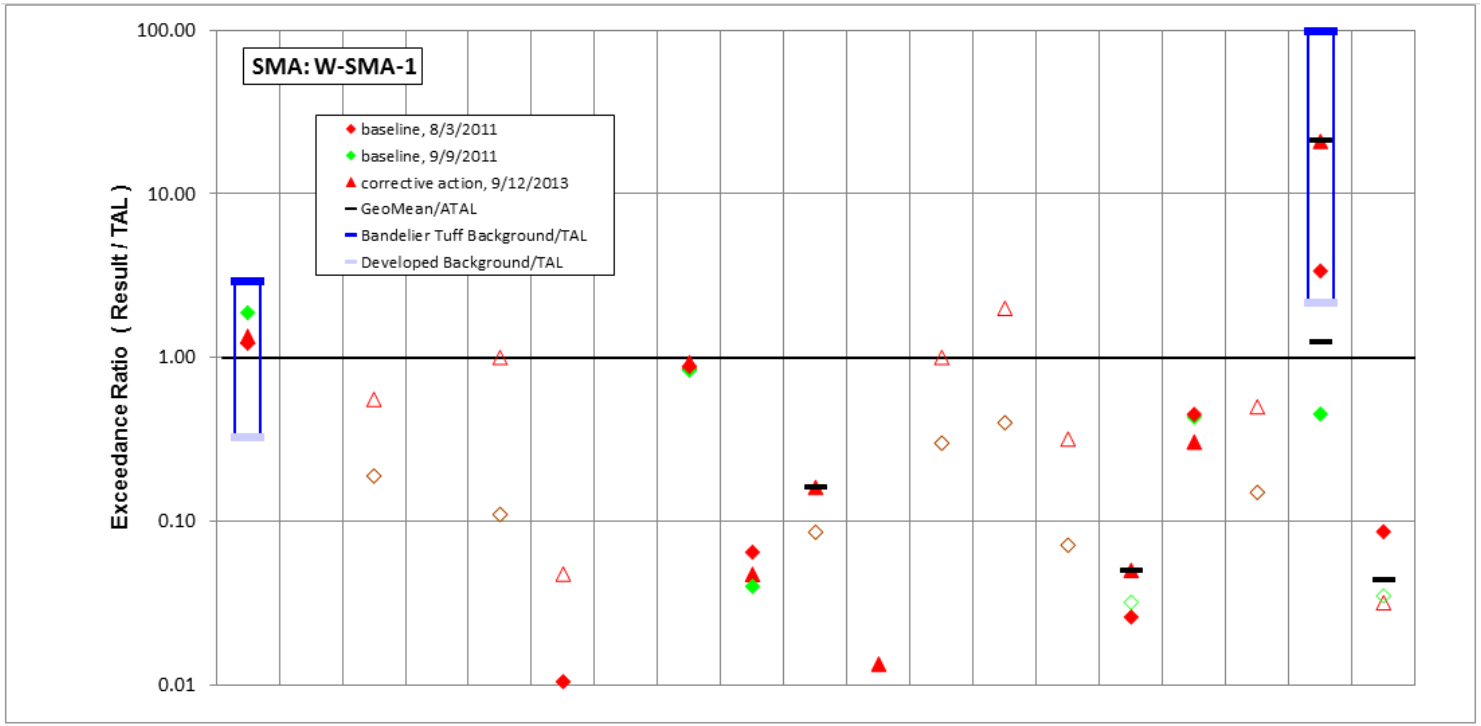


Figure 207-1 W-SMA-1 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	**Silver**	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/12/2013 result	**1010**	*3*	*5*	18.8	*1*	*10*	1.45	4.01	0.806	*0.124*	2.28	*5*	***1***	*2*	5.01	12.8	*0.005*	**314**	*0.953*
result / TAL	**1.3**	*0.005*	*0.56*	0.0038	*1*	*0.048*	0.0014	0.93	0.047	*0.16*	0.013	*1*	***2***	*0.32*	0.05	0.3	*0.5*	**21**	*0.032*
9/9/2011 result	**1410**	*1*	*1.7*	*15*	*0.11*	*2*	3.7	3.6	0.68	*0.066*	1.6	*1.5*	*0.2*	*0.45*	*3.2*	18.2	*0.002*	6.78	*1.05*
result / TAL	**1.9**	*0.002*	*0.19*	*0.003*	*0.11*	*0.01*	0.0037	0.84	0.04	*0.086*	0.0094	*0.3*	*0.4*	*0.071*	*0.032*	0.43	*0.15*	0.45	*0.035*
8/3/2011 result	**918**	*1*	*1.7*	*15*	*0.11*	2.2	2.4	3.8	1.1	*0.066*	1.6	*1.5*	*0.2*	*0.45*	2.6	18.9	*0.002*	**50.7**	2.59
result / TAL	**1.2**	*0.002*	*0.19*	*0.003*	*0.11*	0.01	0.0024	0.88	0.065	*0.086*	0.0094	*0.3*	*0.4*	*0.071*	0.026	0.45	*0.15*	**3.4**	0.086

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 207-2 Inorganic analytical results summary plot for W-SMA-1

208.0 W-SMA-1.5: SWMUs 16-026(b2) and 16-028(d)

208.1 Site Descriptions

Two historical industrial activity areas are associated with W002, W-SMA-1.5: Sites 16-026(b2) and 16-028(d).

SWMU 16-026(b2) is an outfall that served decommissioned small-machine (millwright) shop located in room 138 of building 16-202 at TA-16. The outfall is located approximately 135 ft southeast of building 16-202 and daylighted in the drainage ditch along Anchor Ranch Road. The outfall received overflow from an oil/water separator, which consisted of a 3- × 3- × 3-ft cement pit located below floor level. The separator was installed in 1952, when building 16-202 was built and remains in place. By 1977, room 138 was no longer used as shop and use of the separator ceased. The building has been used for administrative offices since 1995.

Consent Order sampling has not yet been conducted at SWMU 16-026(b2); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. No investigations were conducted at the Site before the Consent Order went into effect in 2005.

SWMU 16-028(d) is a former NPDES-permitted outfall (04A083) located at TA-16, approximately 80 ft southeast of building 16-202. The outfall formerly served a decommissioned machine shop in building 16-202 and connected to the building through an 8-in.-diameter VCP. The outfall received noncontact cooling water and wash water from two floor drains, effluent from two non-HE sumps, discharge from two sink drains, and rainwater from 16 roof drains. In 1995, building 16-202 was converted to office space, and the drainlines within the building were modified so the outfall receives only storm water from the building's roof drains. The outfall was removed from the NPDES permit effective September 19, 1997.

Consent Order sampling has not yet been conducted at SWMU 16-028(d); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. No investigations were conducted at the Site before the Consent Order went into effect in 2005.

The project map (Figure 208-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

208.2 Control Measures

Most of the potential run-on at this SMA originates from the paved areas and roof drainage from building 16-0202. Control measures serve to mitigate influences from these run-on sources. Runoff controls function to reduce the sediment loading and reduce the velocity of potential runoff from the area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 208-1).

Enhanced controls were installed and certified on September 25, 2012, and submitted to EPA on October 25, 2012, as part of corrective action. Photographs of the enhanced controls are available at http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 208-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W00202040017	Established Vegetation		X	X		B
W00203010015	Earthen Berm		X		X	EC
W00203060004	Straw Wattles	X			X	CB
W00203060005	Straw Wattles	X			X	CB
W00204060007	Rip Rap		X	X		CB
W00204070002	Vegetated Swale		X	X		CB
W00204070003	Vegetated Swale		X	X		CB
W00205020013	Sediment Basin		X		X	EC
W00205020014	Sediment Basin		X		X	EC
W00206010008	Rock Check Dam	X			X	CB
W00206010009	Rock Check Dam	X			X	CB
W00206010010	Rock Check Dam		X		X	CB
W00206010011	Rock Check Dam		X		X	CB
W00206010016	Rock Check Dam		X		X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

208.3 Storm Water Monitoring

SWMUs 16-026(b2) and 16-028(d) are monitored within W-SMA-1.5. Following the installation of baseline control measures, two baseline storm water samples were collected on August 3, 2011, and September 1, 2011 (Figure 208-2). Analytical results from these samples yielded three TAL exceedances:

- Copper concentration of 9.7 µg/L (MTAL is 4.3 µg/L),
- Zinc concentration of 49.3 µg/L (MTAL is 42 µg/L), and
- Gross-alpha activity of 22 pCi/L (ATAL is 15 pCi/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 16-026(b2):

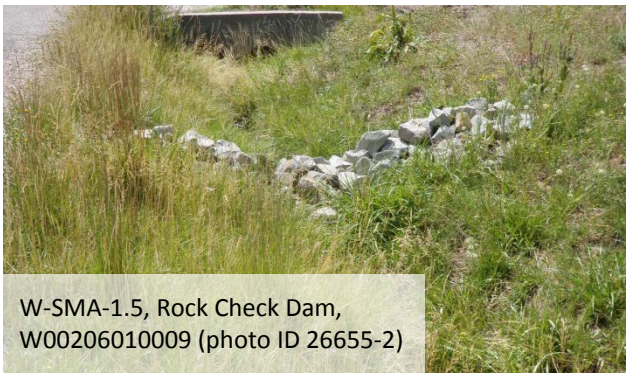
- Copper may have been associated with industrial materials historically managed at this Site. No investigations have been conducted at this Site.
- Zinc is not known to be associated with industrial materials historically managed at this Site. No investigations have been conducted at this Site.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this Site. No investigations have been conducted at this Site. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA.

Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

SWMU 16-028(d):

- Copper may have been associated with industrial materials historically managed at this Site. No investigations have been conducted at this Site.
- Zinc is not known to be associated with industrial materials historically managed at this Site. No investigations have been conducted at this Site.
- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this Site. No investigations have been conducted at this Site. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

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 208-2. 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 208-2.



W-SMA-1.5, Rock Check Dam, W00206010009 (photo ID 26655-2)

Monitoring location W-SMA-1.5 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as locations with sediment derived from Bandelier Tuff. Metals including copper and zinc 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 for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L, and the copper background storm water UTL for storm water run-on from a developed urban landscape is 32.3 µg/L. The result from 2011 is between these values.
- Zinc—The zinc UTL for storm water containing sediments derived from Bandelier Tuff is 109 µg/L, and the zinc background storm water UTL for storm water run-on from a developed urban landscape is 1120 µg/L. The result from 2011 is less than both of these values.
- Gross alpha—The gross-alpha 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 urban landscape is 32.5 pCi/L. The gross-alpha results from 2011 are less than both of these values.

All the analytical results for these samples are reported in the 2011 Annual Report.

208.4 Inspections and Maintenance

RG253 recorded seven storm events at W-SMA-1.5 during the 2013 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 208-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30852	5-7-2013
Storm Rain Event	BMP-33651	7-24-2013
Storm Rain Event	BMP-34290	8-7-2013
Storm Rain Event	BMP-35605	9-19-2013
Annual Erosion Evaluation	COMP-36791	10-30-2013

No maintenance activities were conducted at W-SMA-1.5 in 2013.

208.5 Compliance Status

The Sites associated with W-SMA-1.5 are Moderate Priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 208-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 16-026(b2)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 09-25-2012
SWMU 16-028(d)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 09-25-2012

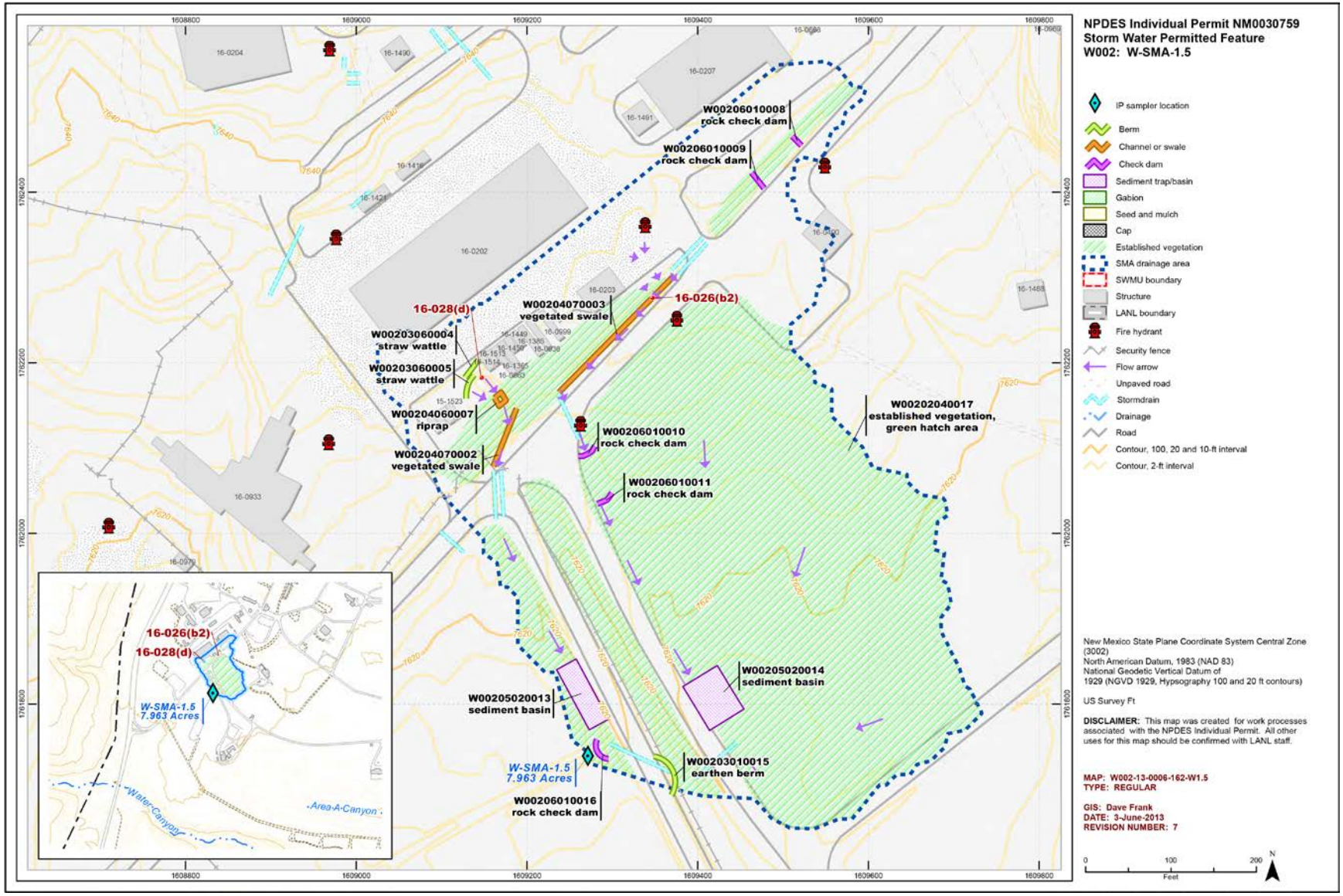
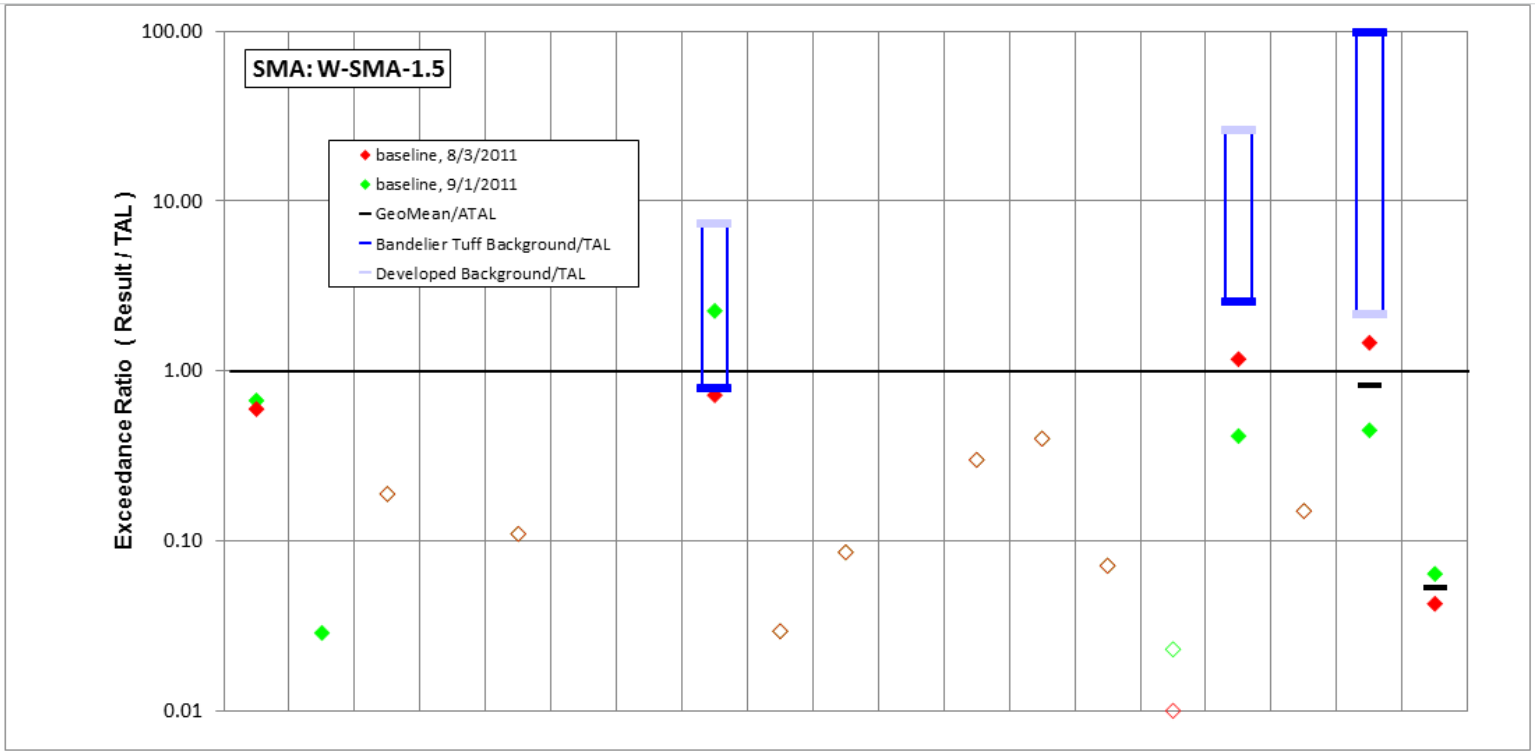


Figure 208-1 W-SMA-1.5 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	**Zinc**	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/1/2011 result	503	18.4	*1.7*	*15*	*0.11*	*2*	3.2	**9.7**	*0.5*	*0.066*	0.83	*1.5*	*0.2*	*0.45*	*2.3*	17.4	*0.002*	6.72	1.92
result / TAL	0.67	0.029	*0.19*	*0.003*	*0.11*	*0.01*	0.0032	**2.3**	*0.029*	*0.086*	0.0049	*0.3*	*0.4*	*0.071*	*0.023*	0.41	*0.15*	0.45	0.064
8/3/2011 result	448	3.4	*1.7*	*15*	*0.11*	*2*	1.8	3.1	*0.5*	*0.066*	0.91	*1.5*	*0.2*	*0.45*	*1*	**49.3**	*0.002*	**22**	1.28
result / TAL	0.6	0.0053	*0.19*	*0.003*	*0.11*	*0.01*	0.0018	0.72	*0.029*	*0.086*	0.0054	*0.3*	*0.4*	*0.071*	*0.01*	**1.2**	*0.15*	**1.5**	0.043

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 208-2 Inorganic analytical results summary plot for W-SMA-1.5

209.0 W-SMA-2.05: SWMU 16-028(e)

209.1 Site Descriptions

One historical industrial activity area is associated with W003, W-SMA-2.05: Site 16-028(e).

SWMU 16-028(e) is a formerly NPDES-permitted outfall (04A091) that served materials testing laboratory building 16-450 at TA-16. The outfall was located southeast of building 16-450 and received discharges through a drainline from an HE sump [SWMU 16-029(g)]. The outfall discharged outside the security fence at the edge of Water Canyon. The sump was removed in 1997, and the drainline to the outfall was plugged but left in place. The outfall was removed from the NPDES permit effective September 19, 1997.

Consent Order sampling has not yet been conducted at SWMU 16-028(e); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. However, decision-level data are available from the 1995 RFI.

The project map (Figure 209-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

209.2 Control Measures

There are run-on contributions from area parking lots, roof drains, and access roads at this SMA. Existing controls serve to divert pavement run-on and to reduce sediment migration associated with Site runoff. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 209-1).

Enhanced controls were installed and certified on September 25, 2012, and submitted to EPA on October 25, 2012, as part of corrective action. Photographs of the enhanced controls are available at http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 209-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W00302040010	Established Vegetation		X	X		B
W00303010007	Earthen Berm		X		X	EC
W00303010008	Earthen Berm		X		X	EC
W00306010009	Rock Check Dam		X		X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

209.3 Storm Water Monitoring

SWMU 16-028(e) is monitored within W-SMA-2.05. Following the installation of baseline control measures, a baseline storm water sample was collected on August 21, 2011 (Figure 209-2). Analytical results from this sample yielded one TAL exceedance:

- Aluminum concentration of 1240 µg/L (MTAL is 750 µg/L).

This exceedance was evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 16-028(e):

- Aluminum is not known to be associated with industrial materials historically managed at this Site. Aluminum was detected above the tuff BV in 1 of 10 shallow RFI samples at a concentration 1.4 times the tuff BV.

W-SMA-2.05, Rock Check Dam, W00306010005 (photo ID 26805-5)

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 209-2. 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 209-2.

Monitoring location W-SMA-2.05 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as locations with 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.

- Aluminum—The aluminum UTL for storm water containing sediments derived from Bandelier Tuff is 2210 µg/L and the aluminum background storm water UTL for storm water run-on from a developed urban landscape is 245 µg/L. The 2011 result is between these values.

All the analytical results for these samples are reported in the 2011 Annual Report.

209.4 Inspections and Maintenance

RG253 recorded seven storm events at W-SMA-2.05 during the 2013 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 209-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30858	5-7-2013
Storm Rain Event	BMP-33652	7-18-2013
Storm Rain Event	BMP-34291	8-7-2013
Storm Rain Event	BMP-35606	9-19-2013
Annual Erosion Evaluation	COMP-36797	10-30-2013

No maintenance activities were conducted at W-SMA-2.05 in 2013.

209.5 Compliance Status

The Site associated with W-SMA-2.05 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 209-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 16-028(e)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 09-25-2012

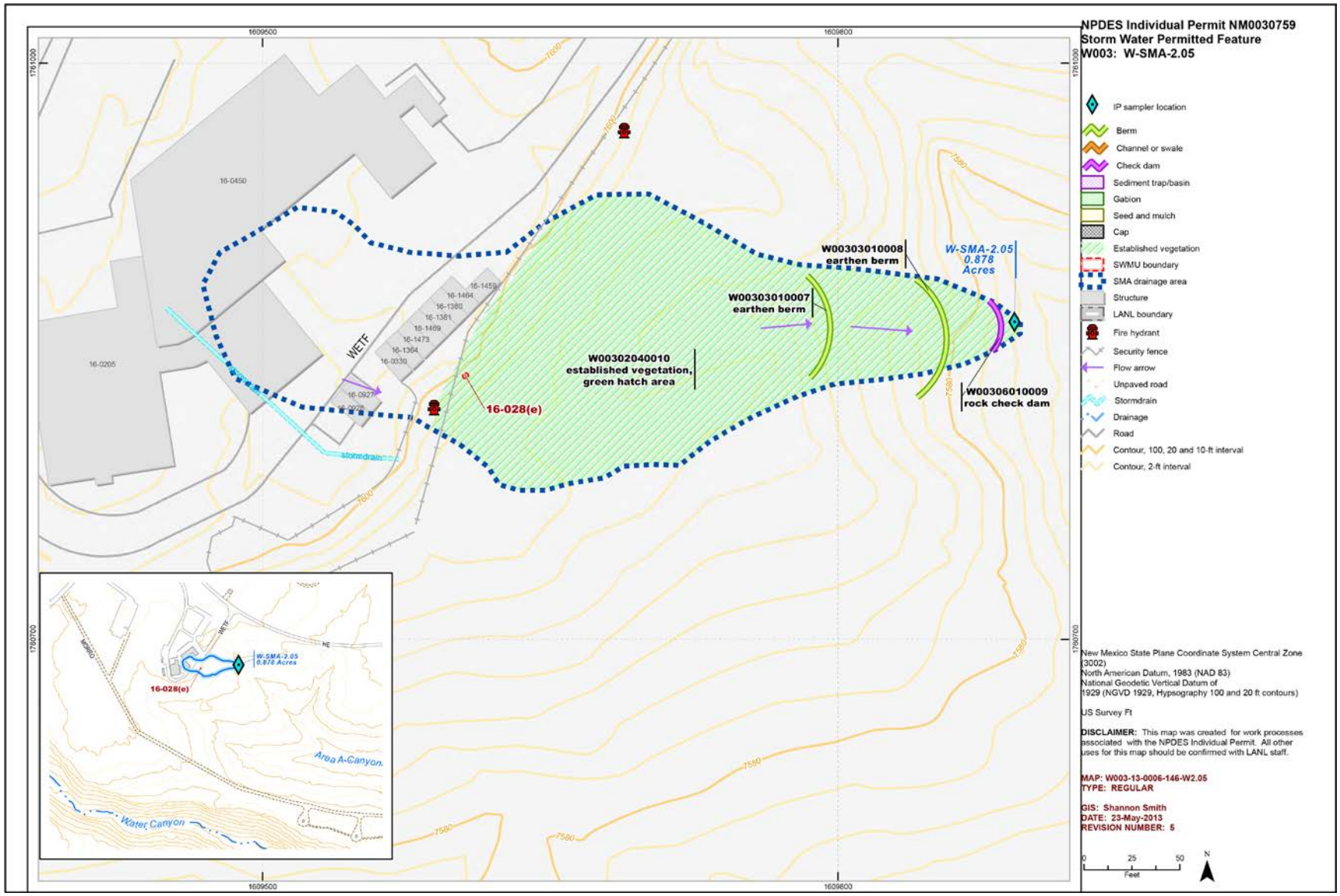
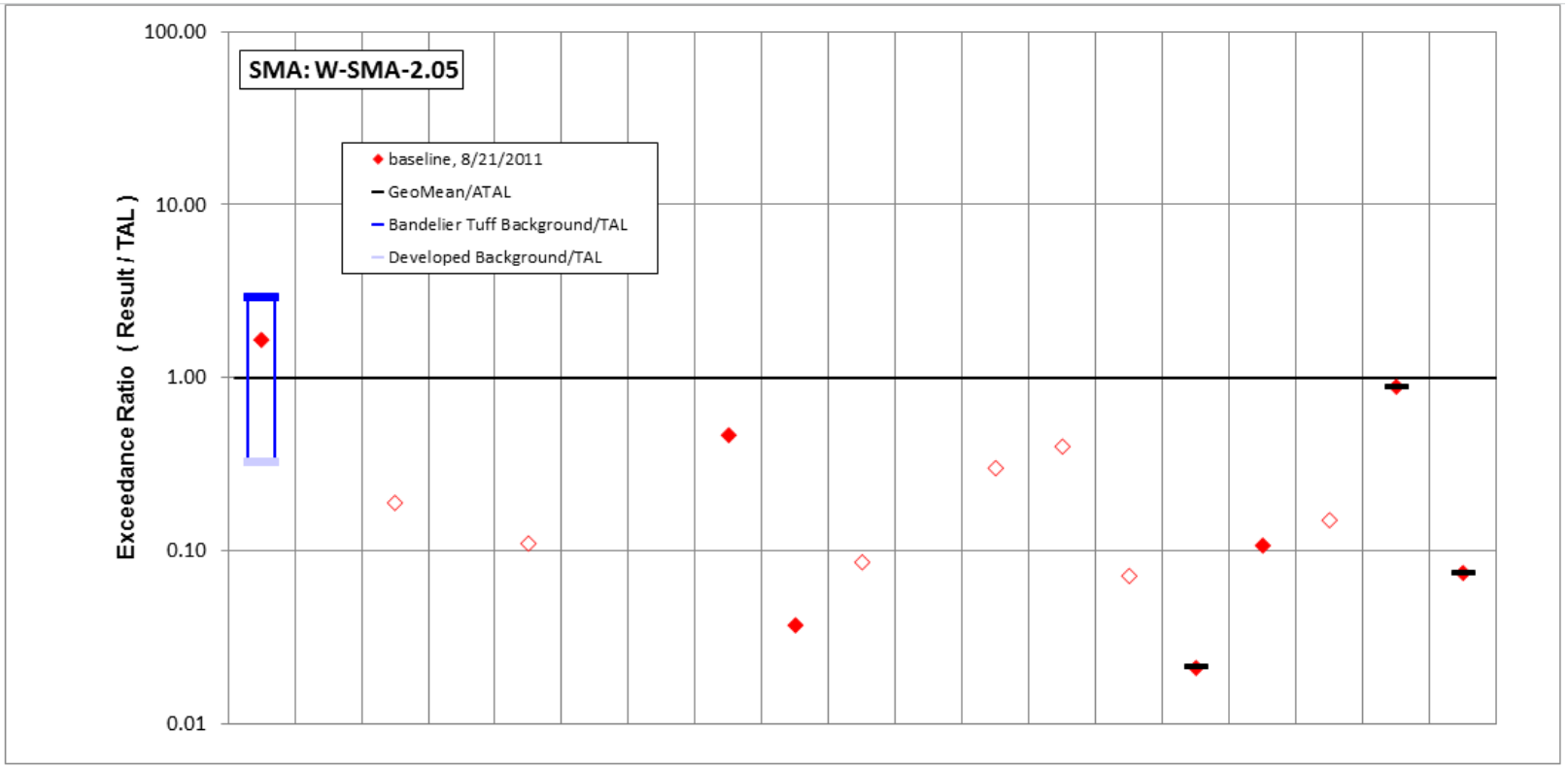


Figure 209-1 W-SMA-2.05 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
8/21/2011 result	**1240**	*1*	*1.7*	17.4	*0.11*	*2*	*4.2*	2	0.63	*0.066*	*1.4*	*1.5*	*0.2*	*0.45*	2.1	4.5	*0.002*	13.3	2.23
result / TAL	**1.7**	*0.002*	*0.19*	0.0035	*0.11*	*0.01*	*0.004*	0.47	0.037	*0.086*	*0.008*	*0.3*	*0.4*	*0.071*	0.021	0.11	*0.15*	0.89	0.074

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 209-2 Inorganic analytical results summary plot for W-SMA-2.05

210.0 W-SMA-3.5: SWMU 16-026(y)

210.1 Site Descriptions

One historical industrial activity area is associated with W004, W-SMA-3.5: Site 16-026(y).

SWMU 16-026(y) is a former outfall that served building 16-411. The outfall drainline consists of a 4-in.-diameter VCP that exits the west side of building 16-411, then turns south to terminate at a discharge point on the hill slope of Water Canyon. The discharge point is located south of a double security fence at the edge of Water Canyon. Building 16-411 was constructed in 1951 and used for the assembly of finished HE components. The outfall received discharges from an equipment room floor drain, a sink, roof drains, a water fountain, and an eyewash station. In the 1990s, the roof drains were rerouted to a separate outfall, and all other drains were either plugged or rerouted to a holding tank.

Consent Order investigations have not yet begun at SWMU 16-026(y); the Site will sampled during the future Upper Water Canyon Aggregate Area investigation. Decision-level data are not available for the Site.

The project map (Figure 210-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

210.2 Control Measures

Potential run-on sources at this SMA include run-on from paved roads and possibly roof drainage associated with structure 16-0411. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 210-1).

Table 210-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W00402040008	Established Vegetation		X	X		B
W00403060004	Straw Wattles	X			X	CB
W00403060005	Straw Wattles	X			X	CB
W00403060006	Straw Wattles	X			X	CB
W00404060003	Rip Rap		X	X		CB
W00406010007	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

210.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at W-SMA-3.5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

210.4 Inspections and Maintenance

RG257 recorded eight storm events at W-SMA-3.5 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 210-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30859	5-7-2013
Storm Rain Event	BMP-33041	7-11-2013
Storm Rain Event	BMP-33461	7-17-2013
Storm Rain Event	BMP-33961	7-30-2013
Storm Rain Event	BMP-34605	8-20-2013
Storm Rain Event	BMP-35626	9-19-2013
Annual Erosion Evaluation	COMP-36798	10-31-2013

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

Table 210-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-37193	Rebuild rock check dam W00406010007 spillway with existing native rock	11-21-2013	21 day(s)	Maintenance conducted in timely manner.
BMP-37194	Modify rip rap W00404060003 by adding angular rock to entire area of -0003.	12-6-2013	36 days(s)	Maintenance conducted as soon as practicable.

210.5 Compliance Status

The Site associated with W-SMA-3.5 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 210-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 16-026(y)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

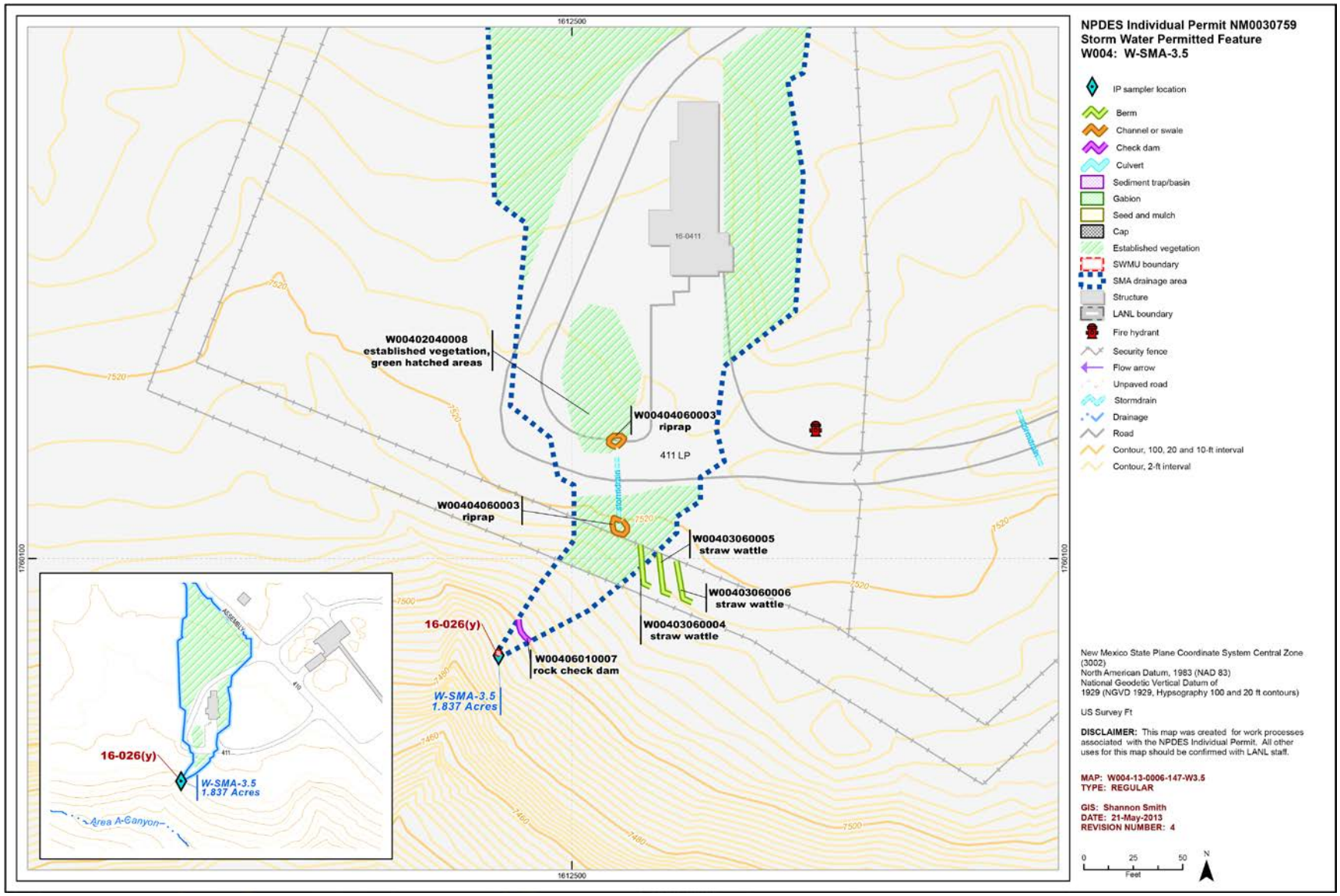


Figure 210-1 W-SMA-3.5 location map

211.0 W-SMA-4.1: SWMU 16-003(a)

211.1 Site Descriptions

One historical industrial activity area is associated with W005, W-SMA-4.1: Site 16-003(a).

SWMU 16-003(a) is an HE sump and an inactive former NPDES-permitted outfall (05A053) that served assembly building 16-410. The concrete subsurface sump is located on the exterior southeast wall of the building and measured 12 ft long × 4 ft wide × 5 ft high. The sump served floor, roof, and equipment drains and removed suspended HE solids from process water before it was discharged to the outfall, located approximately 320 ft southeast of the building. The sump was installed in the early 1950s and modified in 1966 to improve its effectiveness and to reduce HE handling. The outfall was plugged in 1992 and removed from the NPDES permit effective January 14, 1998. The sump remains active and is pumped out on a regular basis.

Consent Order investigations have not yet begun at SWMU 16-003(a); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation.

The project map (Figure 211-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

211.2 Control Measures

The potential for run-on contributions to this SMA is minimal. The terrain is rolling and storm water discharge is greatly reduced by this topographical feature and existing vegetation. The access road is graded away from the drainage channel diverting run-on from the paved area away from the SMA. Planned controls are to fortify sediment retention associated with potential runoff from this SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 211-1).

Table 211-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W00502040006	Established Vegetation		X	X		B
W00503060002	Straw Wattles		X		X	CB
W00503060005	Straw Wattles	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

211.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at W-SMA-4.1. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

211.4 Inspections and Maintenance

RG257 recorded eight storm events at W-SMA-4.1 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 211-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30860	5-7-2013
Storm Rain Event	BMP-33042	7-11-2013
Storm Rain Event	BMP-33462	7-17-2013
Storm Rain Event	BMP-33962	7-30-2013
Storm Rain Event	BMP-34606	8-20-2013
Storm Rain Event	BMP-35627	9-24-2013
Annual Erosion Evaluation	COMP-36799	10-31-2013

No maintenance activities were conducted at W-SMA-4.1 in 2013.

211.5 Compliance Status

The Site associated with W-SMA-4.1 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 211-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 16-003(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

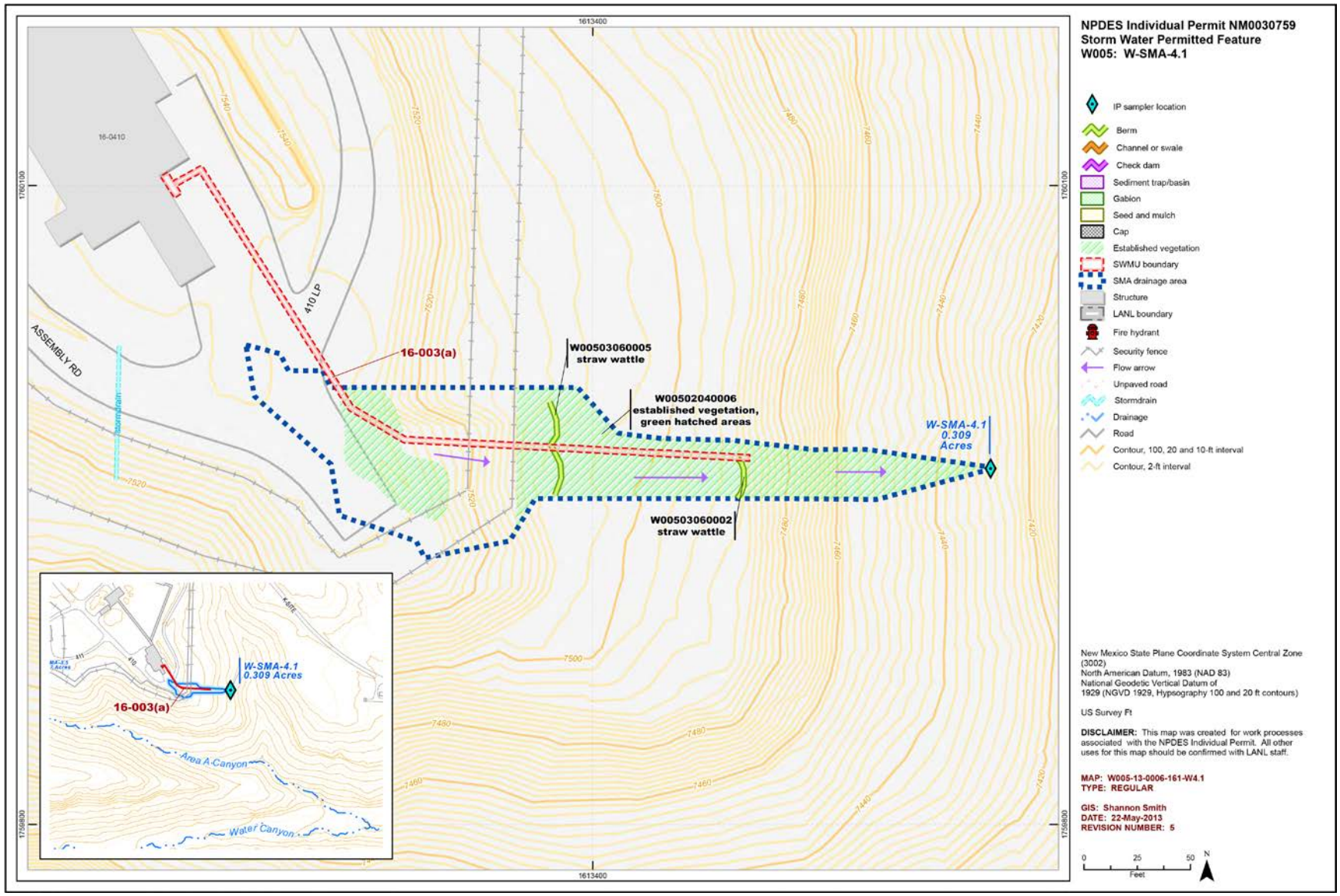


Figure 211-1 W-SMA-4.1 location map

212.0 W-SMA-5: SWMUs 16-001(e), 16-003(f), 16-026(b), 16-026(c), 16-026(d), and 16-026(e)

212.1 Site Descriptions

Six historical industrial activity areas are associated with W006, W-SMA-5: Sites 16-001(e), 16-003(f), 16-026(b), 16-026(c), 16-026(d), and 16-026(e).

SWMU 16-001(e) is an inactive dry well located at TA-16 approximately 170 ft east of HE processing building 16-306. Constructed in the 1980s, the dry well never functioned properly because it drained to impermeable tuff (Qbt 4). Eventually, the dry well was filled with soil and capped with concrete.

Consent Order Phase I investigation sampling is complete. The current Consent Order Phase II investigation work plan identified the collection of 22 samples at 9 locations and the removal of an isolated area of elevated HE at a depth of 0 to 4 ft from the surface for SWMU 16-026(e).

SWMU 16-003(f) consists of two HE sumps at TA-16 that served building 16-304. The sumps discharged to an outfall. Building 16-304 was a plastics and plastic-component development and production facility. Polycarbonate components were fabricated using injection-molding machines. Other components were made using hydraulic presses. Large high-temperature ovens were used to dry-mold powders and to cure thermoset plastics. Solvents also were used at building 16-304. By 1993, solvents were containerized and sent off-site for disposal, and HE operations in the building had ceased.

Consent Order Phase I investigation sampling is complete. This Site is expected to be eligible for a COC through the Consent Order supplemental investigation report process.

SWMU 16-026(b) is an inactive outfall located to the east of a resthouse (building 16-307). The outfall formerly received discharge from two HE sumps [SWMU 16-029(a)] located near the exterior southeast wall of the resthouse. The outfall discharged to Water Canyon. The sumps were plugged in 1990–1991. The resthouse was used to store molds and materials for plastics development and also previously housed a solvent disassembly tank used to remove HE from test devices.

Consent Order Phase I investigation sampling is complete. This Site is expected to be eligible for a COC through the Consent Order supplemental investigation report process.

W-SMA-5, Rock Check Dam, W00606010003 (photo ID 8531-07r)

SWMU 16-026(c) is an inactive outfall located at TA-16 to the south of a resthouse (building 16-305). The outfall previously received discharge from two HE sumps [SWMU 16-029(b)] located near the exterior southwest wall of the resthouse. The outfall discharged to Water Canyon. One soil sample was taken from the outfall at structure 16-305 in 1970. Analytical results showed no TNT, RDX, or HMX, although some unknown HE decomposition products may have been present at low levels. The sumps were plugged in 1990–1991. The resthouse was used to store chemicals and solvents for plastics development and production and was also used for filament winding of developmental weapons components.

Consent Order Phase I investigation sampling is complete. This Site is expected to be eligible for a COC through the Consent Order supplemental investigation report process.

SWMU 16-026(d) is an inactive outfall located to the southeast of a resthouse (building 16-303). The outfall formerly received discharge from two HE sumps [SWMU 16-029(c)] located on the exterior southwest wall of the resthouse. Potential contaminants were HE, inorganic chemicals, and organic chemicals. The outfall discharged to Martin Spring Canyon. Two samples were taken at the SWMU 16-026(d) outfall in 1970. Samples showed elevated levels of HMX and/or RDX and TNT. The sumps were plugged in 1990–1991.

Consent Order Phase I investigation sampling is complete. This Site is expected to be eligible for a COC through the Consent Order supplemental investigation report process.

SWMU 16-026(e) is an inactive outfall located to the south of building 16-301. The outfall formerly received discharge from two HE sumps [SWMU 16-029(d)] located on the exterior west side of building 16-301. The outfall discharged to Martin Spring Canyon. Building 16-301 originally housed mock-HE processing operations and stored raw materials that were used to prepare mock HE. Building 16-301 was later used as an environmental testing laboratory for research into the effects of temperature, pressure, and humidity on weapons and components. The sumps were plugged in 1990–1991.

Consent Order Phase I investigation sampling is complete. This Site is expected to be eligible for a COC through the Consent Order supplemental investigation report process.

The project map (Figure 212-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

212.2 Control Measures

There are multiple potential sources of run-on to the SMA. Run-on originating east of K-Site road feeds a culvert that discharges into the channel in SWMU 16-026(c). Additionally, run-on from the facilities and the paved areas in the western portion of the SMA contribute run-on to the area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 212-1).

Table 212-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W00602040029	Established Vegetation		X	X		B
W00603060030	Straw Wattles	X			X	B
W00604040011	Culvert	X		X		CB
W00604060006	Rip Rap	X		X		CB
W00606010003	Rock Check Dam		X		X	CB
W00606010012	Rock Check Dam		X		X	CB
W00606010013	Rock Check Dam		X		X	CB
W00606010014	Rock Check Dam		X		X	CB
W00606010015	Rock Check Dam		X		X	CB
W00606010017	Rock Check Dam		X		X	CB
W00606010021	Rock Check Dam		X		X	B
W00606010022	Rock Check Dam		X		X	B
W00606010023	Rock Check Dam		X		X	B
W00606010024	Rock Check Dam		X		X	B
W00606010025	Rock Check Dam	X			X	B
W00606010026	Rock Check Dam	X			X	B
W00606010027	Rock Check Dam	X			X	B
W00606010028	Rock Check Dam		X		X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

212.3 Storm Water Monitoring

SWMUs 16-001(e), 16-003(f), 16-026(b), 16-026(c), 16-026(d), and 16-026(e) are monitored within W-SMA-5. Following the installation of baseline control measures, a baseline storm water sample was collected on July 3, 2012 (Figures 212-2 and 212-3). Analytical results from this sample yielded one TAL exceedance:

- Copper concentration of 6.28 µg/L (MTAL is 4.3 µg/L).

This exceedance was evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 16-001(e):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above the soil BV in shallow (i.e., less than 3 ft bgs) Consent Order samples. Copper was detected above BV in 2 of 4 shallow samples with a maximum concentration 1.9 times the soil BV.

SWMU 16-003(f):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was not detected above BV in one shallow Consent Order soil sample collected at the Site.

SWMU 16-026(b):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was not detected above BVs in 8 shallow Consent Order and RFI soil, sediment, and tuff samples.

SWMU 16-026(c):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil, sediment, and tuff BVs in shallow Consent Order and RFI samples. Copper was detected above BVs in 5 of 13 shallow samples with a maximum concentration 3.8 times sediment BV.

SWMU 16-026(d):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected above soil and tuff BVs in shallow Consent Order and RFI samples. Copper was detected above the BVs in 3 of 16 shallow soil and tuff samples with a maximum concentration 4.5 times soil BV.

SWMU 16-026(e):

- Copper is not known to be associated with industrial materials historically managed at the Site. Copper was detected only slightly above soil and tuff BVs in shallow Consent Order and RFI samples. Copper was detected above the BVs in 3 of 19 shallow soil and tuff samples with a maximum concentration above BV 1.7 times the tuff BV.

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 Figures 212-2 and 212-3. 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 Figures 212-2 and 212-3.

Monitoring location W-SMA-5 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as locations with 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.

- Copper—The copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L, and the copper background storm water UTL for storm water run-on from a developed urban landscape is 32.3 µg/L. The result from 2012 is between these values.

All the analytical results for these samples are reported in the 2012 Annual Report.

212.4 Inspections and Maintenance

RG257 recorded eight storm events at W-SMA-5 during the 2013 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 212-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30861	5-7-2013
Storm Rain Event	BMP-33043	7-3-2013
Storm Rain Event	BMP-33463	7-24-2013
Storm Rain Event	BMP-34607	8-20-2013
Storm Rain Event	BMP-35628	9-24-2013
Annual Erosion Evaluation	COMP-36800	10-31-2013

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

Table 212-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-37036	Rebuild rock check dam W00606010028 with native rock and reshape spillway.	11-26-2013	63 day(s)	Maintenance conducted as soon as practicable.
BMP-37195	Repair rock check dam W00606010013 by building up spillway with existing rock on site.	11-26-2013	26 day(s)	Maintenance conducted in timely manner.
BMP-37196	Install new straw wattle in area north of culvert W00606010011 to divert run on. Rake out rills and apply seed to area north of culvert -0011 (see attached map).	11-26-2013	16 day(s)	Maintenance conducted in timely manner.

212.5 Compliance Status

The Sites associated with W-SMA-5 are Moderate Priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 212-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 16-001(e)	Corrective Action Initiated	Corrective Action Initiated	Initiated 09-18-2012
SWMU 16-003(f)	Corrective Action Initiated	Corrective Action Initiated	Initiated 09-18-2012
SWMU 16-026(b)	Corrective Action Initiated	Corrective Action Initiated	Initiated 09-18-2012
SWMU 16-026(c)	Corrective Action Initiated	Corrective Action Initiated	Initiated 09-18-2012
SWMU 16-026(d)	Corrective Action Initiated	Corrective Action Initiated	Initiated 09-18-2012
SWMU 16-026(e)	Corrective Action Initiated	Corrective Action Initiated	Initiated 09-18-2012

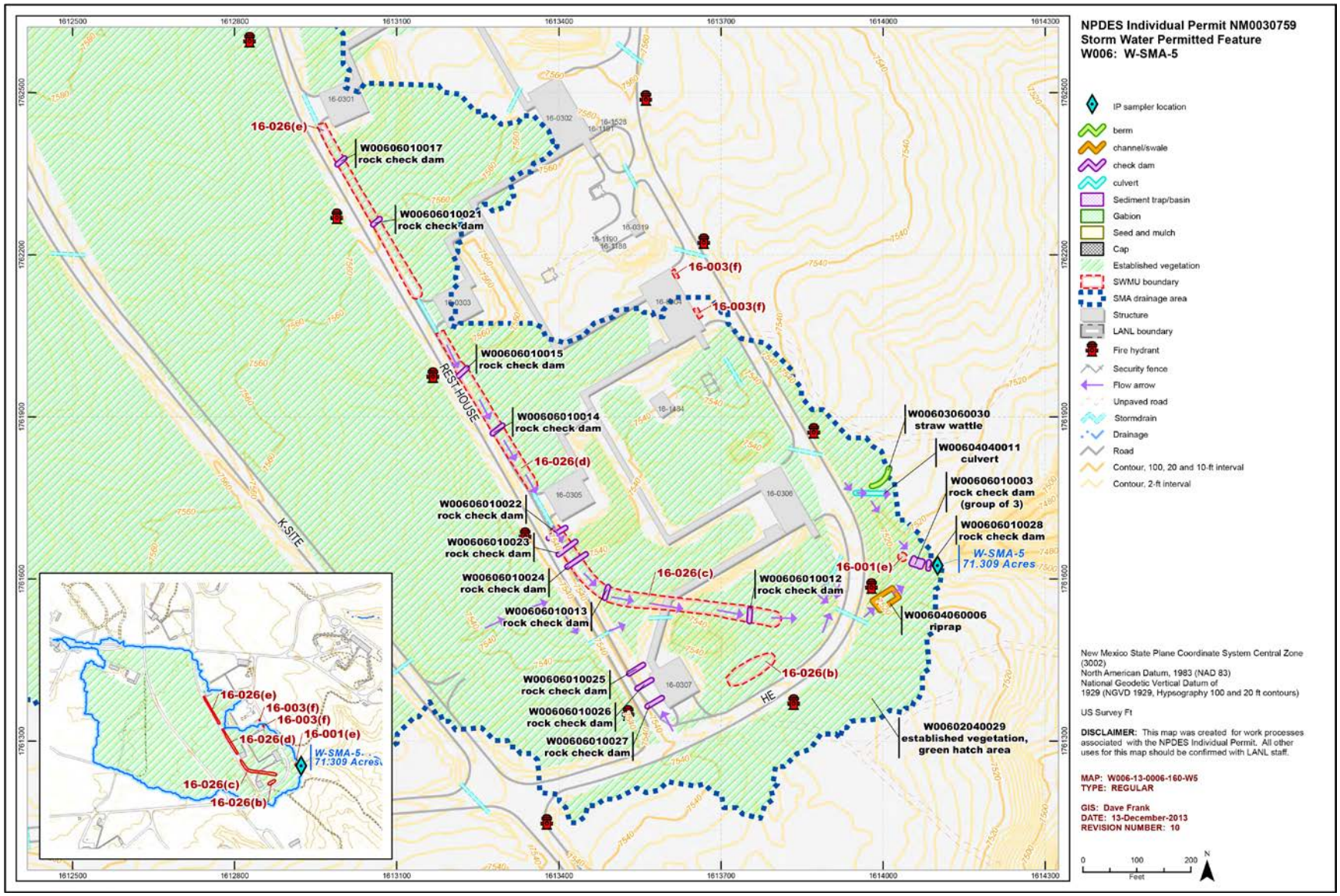
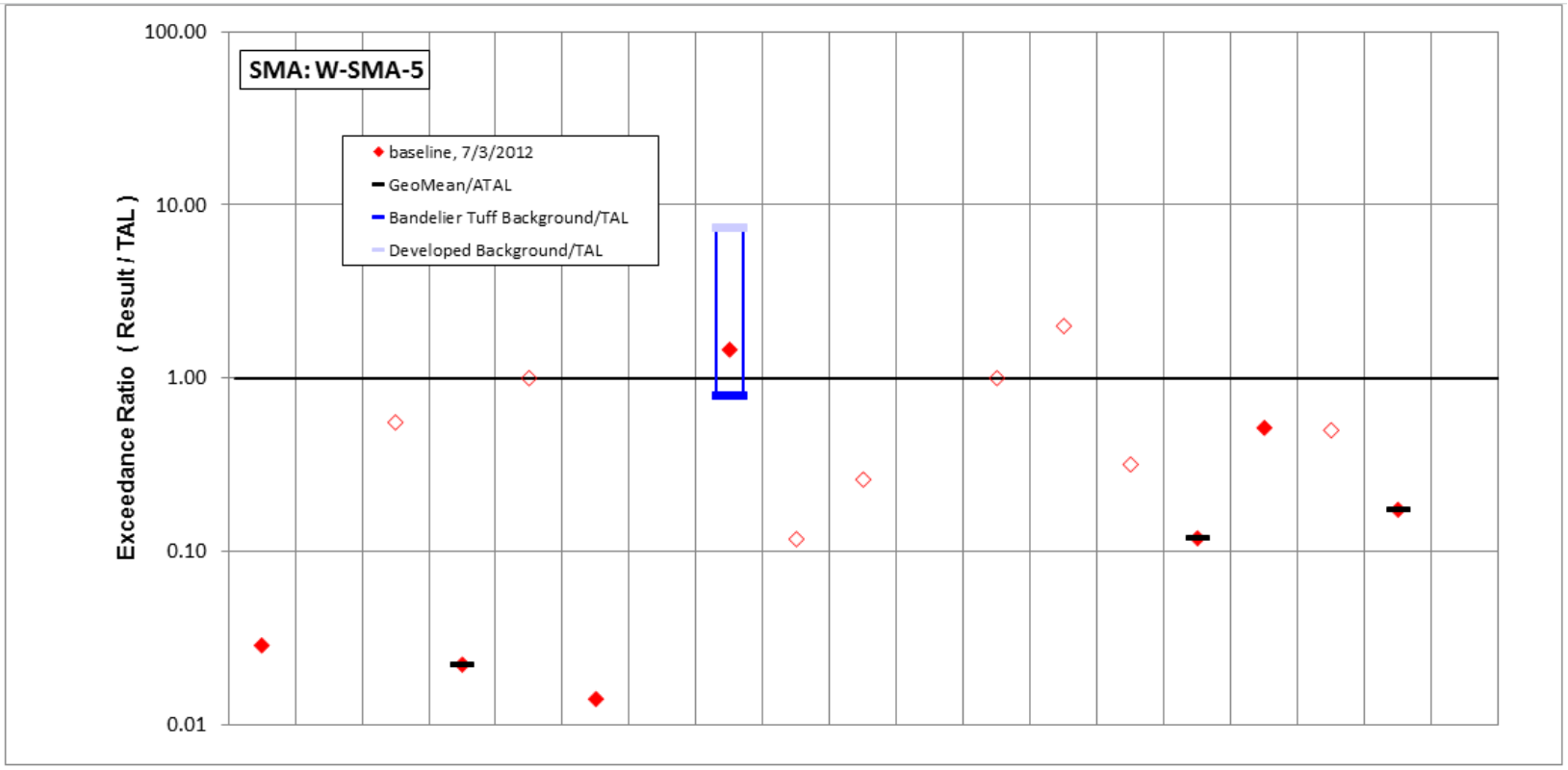


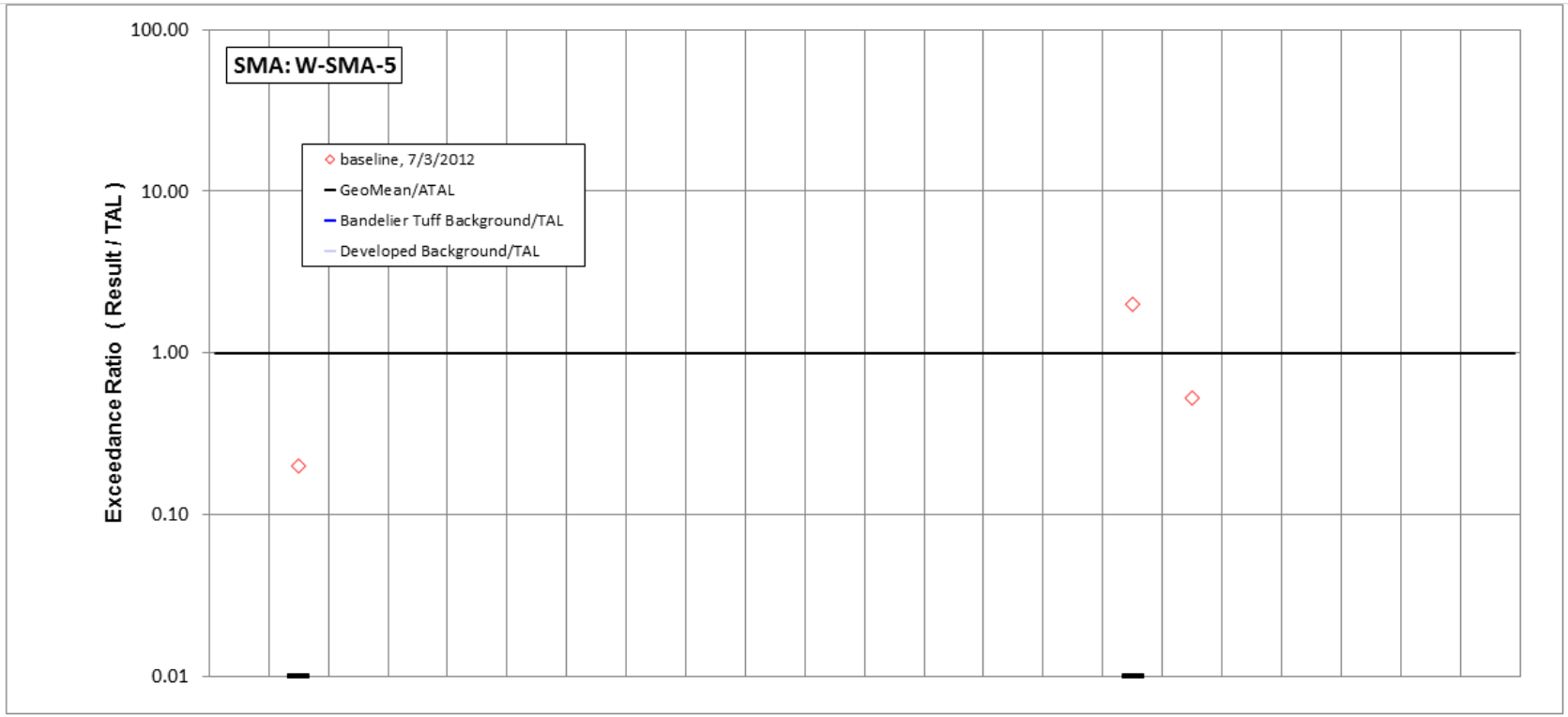
Figure 212-1 W-SMA-5 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	Lead	Mercury	Nickel	Selenium	**Silver**	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
7/3/2012 result	21.5	*3*	*5*	111	*1*	2.95	*5*	**6.28**	*2*	*0.2*	0.533	*5*	***1***	*2*	11.9	21.7	*0.005*	2.61	*0.224*
result / TAL	0.029	*0.005*	*0.56*	0.022	*1*	0.014	*0.005*	**1.5**	*0.12*	*0.26*	0.0031	*1*	***2***	*0.32*	0.12	0.52	*0.5*	0.17	*0.008*

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 212-2 Inorganic analytical results summary plot for W-SMA-5



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	**Hexachlorobenzene**	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	ATAL	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	MTAL	-	-	-	-	-
std value	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5	19	-	-	-	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
7/3/2012 result	-	*1*	-	-	-	-	-	-	-	-	-	-	-	-	-	***10***	*10*	-	-	-	-	-
result / TAL	-	*0.2*	-	-	-	-	-	-	-	-	-	-	-	-	-	***2***	*0.53*	-	-	-	-	-

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 212-3 Organic analytical results summary plot for W-SMA-5

213.0 W-SMA-6: SWMU 11-001(c)

213.1 Site Descriptions

One historical industrial activity area is associated with W007, W-SMA-6: Site 11-001(c).

SWMU 11-001(c) is a former firing pit located at TA-16, northwest of former building 16-370 near the edge of Water Canyon. According to the 1990 SWMU report, the firing pit was similar in construction to Firing Pit 11-0014, which was a 37-ft semicircular wall that was 12.5 ft high and 4.5 ft thick. The SWMU 11-001(c) firing pit was first used in 1944. The date when use of the firing pit ceased is not documented; however, it would have been before construction of building 16-370 in the 1953. An RFI and a VCA were conducted in 1995 and 1996, respectively. However, during preparation of the Upper Water Canyon Aggregate Area investigation work plan, it was determined from engineering drawing R-126 that samples from the RFI and VCA were collected from the wrong location. The firing pit was actually located northwest of the area that was sampled.

Consent Order sampling has not yet been conducted at SWMU 11-001(c); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. Decision-level are not available from the 1995 RFI or 1996 VCA.

The project map (Figure 213-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

213.2 Control Measures

There are no run-on sources at this SMA, and runoff from the area is minimal. Existing controls serve to capture sediment and moderate runoff. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 213-1).

Table 213-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W00701010007	Seed and Wood Mulch			X		B
W00702040004	Established Vegetation		X	X		B
W00703060005	Straw Wattles		X		X	B
W00703060006	Straw Wattles		X		X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

213.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at W-SMA-6. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

The monitoring station for W-SMA-6 has been relocated. The new location of the sampler is positioned below all controls and will provide a more representative sample of storm water discharge from the SMA. Sampler coordinates and the SMA drainage area are updated in Attachment 4.

213.4 Inspections and Maintenance

RG257 recorded eight storm events at W-SMA-6 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 213-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30862	5-7-2013
Storm Rain Event	BMP-33044	7-10-2013
Storm Rain Event	BMP-33464	7-17-2013
Storm Rain Event	BMP-33964	7-30-2013
Storm Rain Event	BMP-34608	8-20-2013
Storm Rain Event	BMP-35629	9-25-2013
Annual Erosion Evaluation	COMP-36801	10-30-2013

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

Table 213-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-33130	Install straw wattles to the west of new PRS boundary as shown on attached map. PRS boundary is marked in field with pin flags. Third wattle installed near sampler as per B. Schilling instruction see map. Install seed and greenwaste mulch on all bare areas inside the PRS and between the PRS and sampler location as marked on attached map.	7-22-2013	20 day(s)	Maintenance conducted in timely manner.

213.5 Compliance Status

The Site associated with W-SMA-6 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 213-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 11-001(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

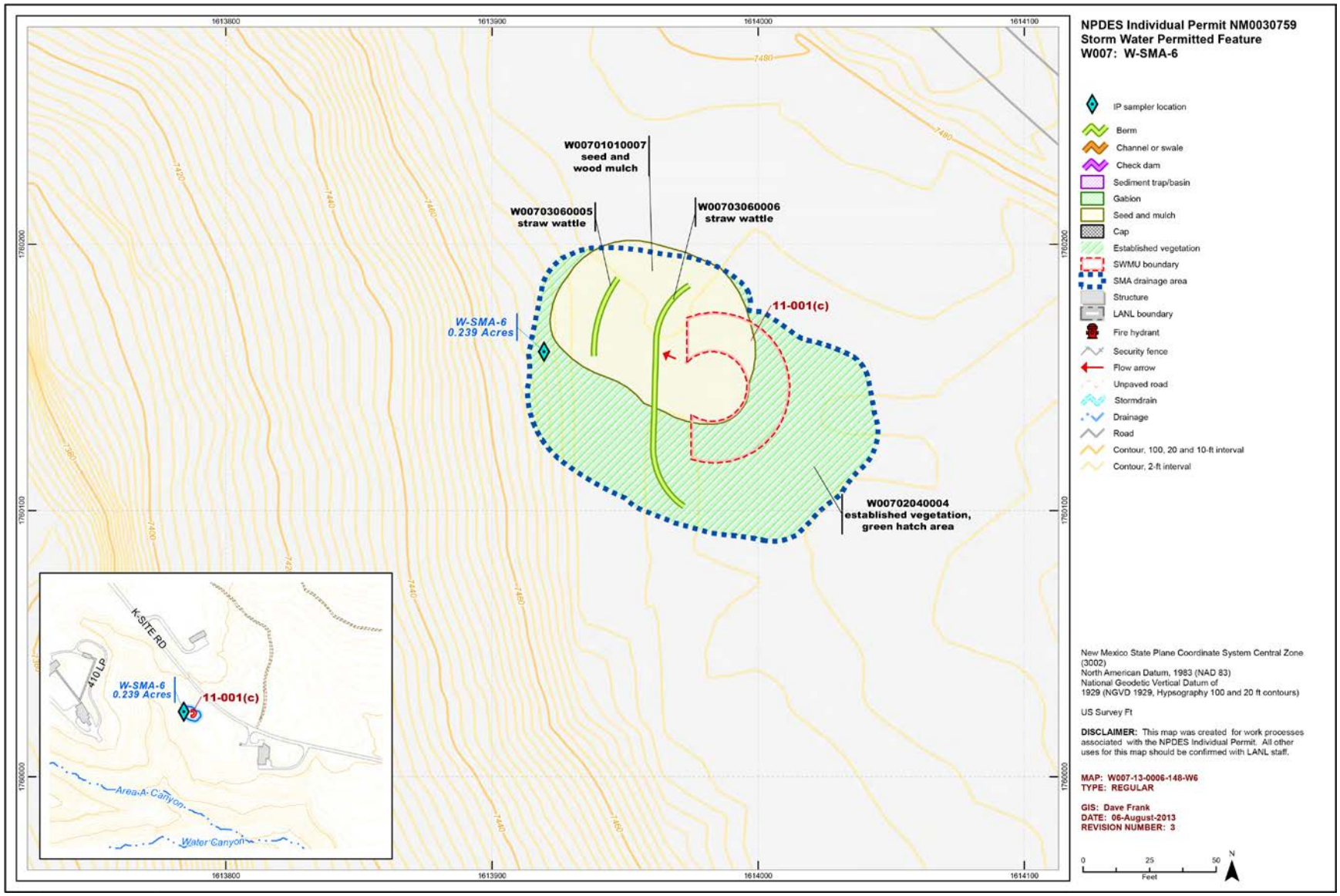


Figure 213-1 W-SMA-6 location map

214.0 W-SMA-7: SWMU and 16-029(e)

214.1 Site Descriptions

One historical industrial activity areas is associated with W008, W-SMA-7: Site 16-029(e).

SWMU 16-029(e) consists of an HE sump and formerly NPDES-permitted outfall (05A159) that served HE equipment assembly building 16-360. The sump is a 12- × 4- × 5-ft subsurface reinforced concrete structure located on the exterior southeast side of the building. The sump received wash water from historical cleaning activities and discharged southeast to the outfall through a 6-in.-diameter drainline. The sump outlet was plugged in the early 1990s; the outfall was removed from the NPDES permit effective August 16, 1995.

Consent Order sampling has not yet been conducted at SWMU 16-029(e); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation.

The project map (Figure 214-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

214.2 Control Measures

Run-on contributions from the developed areas do not greatly impact this SMA. Run-on from the southern side of building 16-0360 infiltrates the soil south of the parking area. Run-on from the eastern side of the building roof drains to the north of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 214-1).

Table 214-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W00801010022	Seed and Wood Mulch			X		B
W00802040014	Established Vegetation		X	X		B
W00803060010	Straw Wattles	X			X	CB
W00803060017	Straw Wattles	X			X	B
W00803060018	Straw Wattles	X			X	B
W00803060019	Straw Wattles		X		X	B
W00803060020	Straw Wattles		X		X	B
W00803060021	Straw Wattles		X		X	B
W00806010001	Rock Check Dam		X		X	CB
W00806010003	Rock Check Dam		X		X	CB
W00806010004	Rock Check Dam		X		X	CB
W00806010015	Rock Check Dam		X		X	B
W00806010016	Rock Check Dam		X		X	B
W00808040023	Metal Cap	X				B

CB: Certified baseline control measure.
B: Additional baseline control measure.
EC: Enhanced control measure.

214.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at W-SMA-7. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

214.4 Inspections and Maintenance

RG257 recorded eight storm events at W-SMA-7 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 214-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30863	5-7-2013
Storm Rain Event	BMP-33045	7-11-2013
Storm Rain Event	BMP-33465	7-17-2013
Storm Rain Event	BMP-33965	7-30-2013
Storm Rain Event	BMP-34609	8-20-2013
Storm Rain Event	BMP-35630	9-19-2013
Annual Erosion Evaluation	COMP-36802	10-30-2013

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

Table 214-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-33131	Install at least 2 rock check dams in channel south of culvert as indicated on attached map. Install 3 lines of straw wattles on the east side of building 16-0360 as indicated on attached map. 5 wattles installed as per B. Schilling instruction see map. Install seed and greenwaste mulch between new straw wattles.	7-22-2013	20 day (s)	Maintenance conducted in timely manner.
BMP-37007	Remove wood debris from all rock check dams.	11-21-2013	63 day(s)	Maintenance conducted as soon as practicable.
BMP-37096	Add angular rock to build up height and extend both ends. W00806010001. Rock Check Dam [W00806010003] Add angular rock to build up height and extend both ends. Rock Check Dam [W00806010004] Add angular rock to build up height and extend both ends. Rock Check Dam [W00806010015] Add angular rock to build up height and extend both ends. Rock Check Dam [W00806010016] Add angular rock to build up height and extend both ends.	12-10-2013	41 day(s)	Maintenance conducted as soon as practicable.

214.5 Compliance Status

The Site associated with W-SMA-7 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 214-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 16-026(h2)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

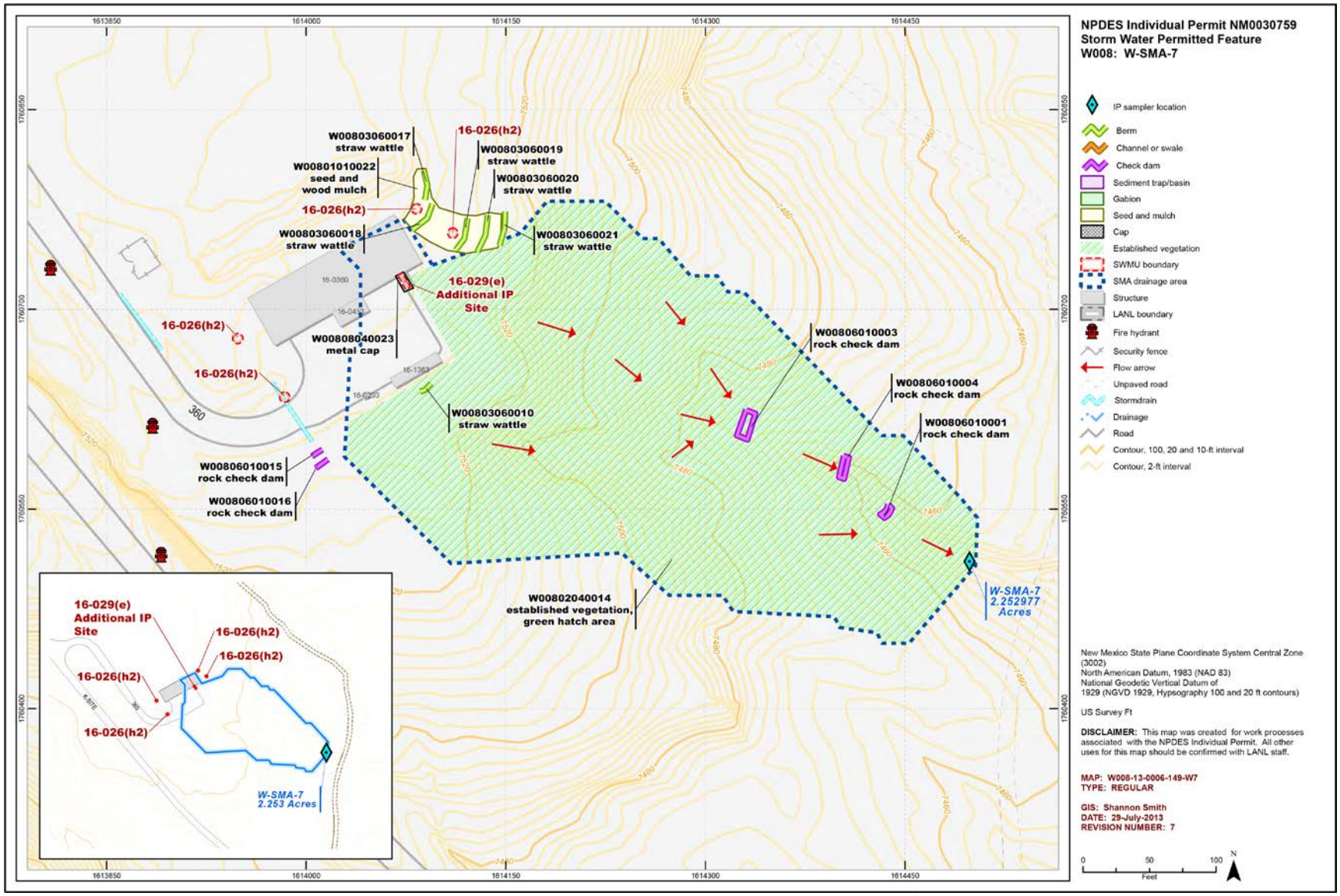


Figure 214-1 W-SMA-7 location map

215.0 W-SMA-7.8: SWMU 16-031(a)

215.1 Site Descriptions

One historical industrial activity area is associated with W009, W-SMA-7.8: Site 16-031(a).

SWMU 16-031(a) is an outfall that served a former cooling tower (building 16-372) at TA-16. The outfall discharged approximately 150 ft south of the cooling tower at the edge of Water Canyon. The outfall drainline was a 6-in.-diameter VCP that originated from a drain inside the southeast corner of the cooling tower. The cooling tower served building 16-370, a barium nitrate–grinding facility and metal-forming shop. The cooling tower was built in 1953 and burned down during the Cerro Grande fire in 2000. The concrete foundation remains in place.

Consent Order investigations have not yet begun at SWMU 16-031(a); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. Decision-level data are not available for the Site.

The project map (Figure 215-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

215.2 Control Measures

There is a potential for run-on from the paved areas north of the SMA. Existing controls manage run-on and sediment migration. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 215-1).

Table 215-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W00902040009	Established Vegetation		X	X		B
W00903010004	Earthen Berm	X			X	CB
W00904060003	Rip Rap	X		X		CB
W00906010001	Rock Check Dam	X			X	CB
W00906010005	Rock Check Dam	X			X	CB
W00906010006	Rock Check Dam	X			X	CB
W00906010007	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

215.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at W-SMA-7.8. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

215.4 Inspections and Maintenance

RG257 recorded eight storm events at W-SMA-7.8 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 215-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30864	5-7-2013
Storm Rain Event	BMP-33046	7-11-2013
Storm Rain Event	BMP-33466	7-17-2013
Storm Rain Event	BMP-33966	7-30-2013
Storm Rain Event	BMP-34610	8-20-2013
Storm Rain Event	BMP-35631	9-19-2013
Annual Erosion Evaluation	COMP-36803	10-30-2013

No maintenance activities were conducted at W-SMA-7.8 in 2013.

215.5 Compliance Status

The Site associated with W-SMA-7.8 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 215-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 16-031(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

W-SMA-7.8, Rock Check Dam, W00906010005 (photo ID 7801-4r)

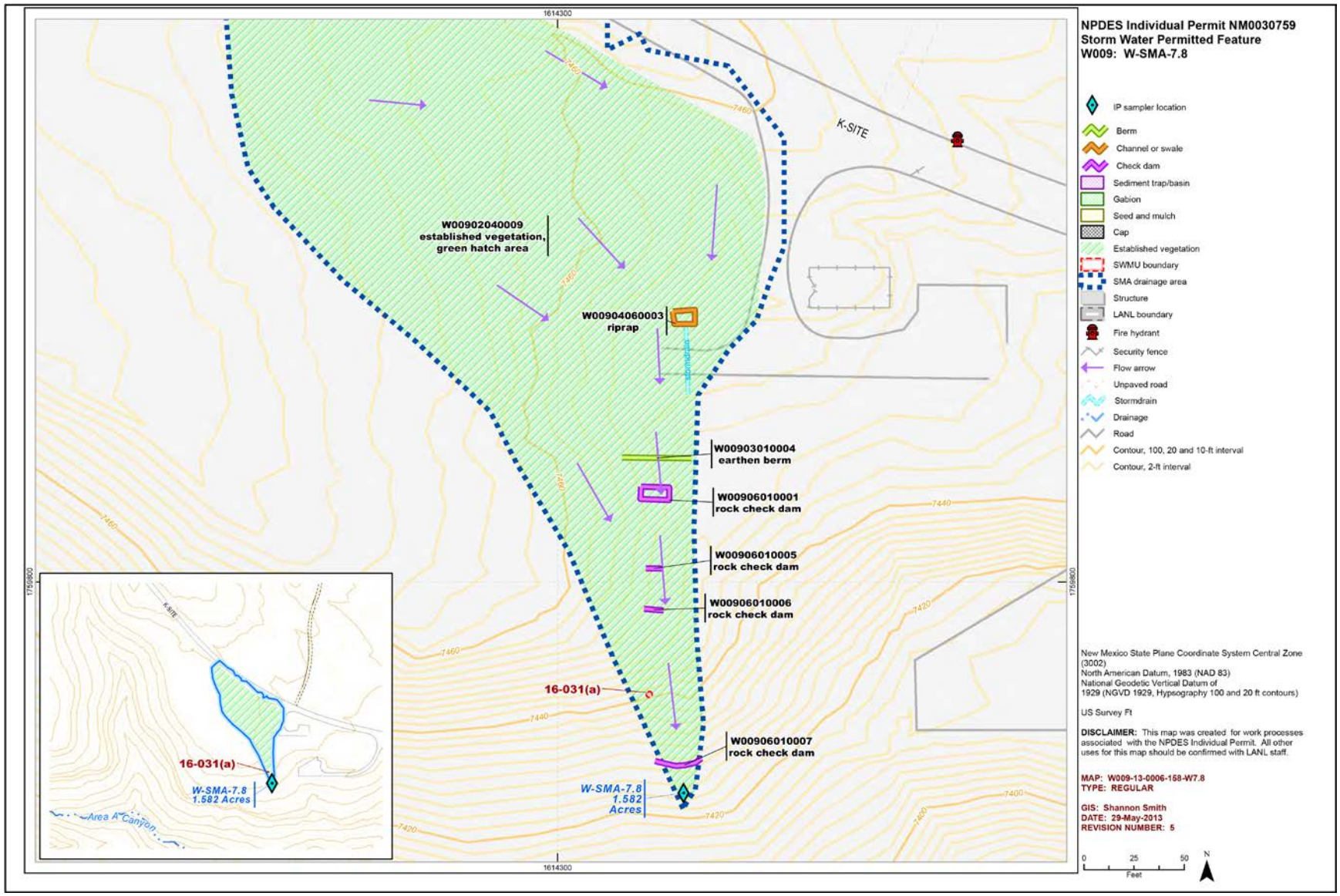


Figure 215-1 W-SMA-7.8 location map

216.0 W-SMA-7.9: SWMU 16-006(c)

216.1 Site Descriptions

One historical industrial activity area is associated with W010, W-SMA-7.9: Site 16-006(c).

SWMU 16-006(c) is an inactive septic system located just west of former building 16-370. The septic system served building 16-370 and consisted of a 1200-gal. concrete septic tank (structure 16-371) and outfall drainline. The 1990 SWMU report states the septic tank discharged to a drain field. However, engineering drawings verify that a drain field was never constructed. The tank was constructed in 1953 and served floor drains and bathrooms on the third floor of building 16-370. Associated drainlines connect to a manhole (structure 16-813), which drained to the septic tank. The outlet line drained to an outfall approximately 260 ft south of the septic tank. The outfall discharged at the edge of Water Canyon. After the drainline was plugged in 1992, the tank was pumped regularly during the time building 16-370 remained operational until 2000. Building 16-370 underwent partial D&D in 2004; only a portion of the wall and the concrete slab remain.

Consent Order investigations have not yet begun at SWMU 16-006(c); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation.

The project map (Figure 216-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

216.2 Control Measures

There are no run-on sources at this SMA. Existing controls manage runoff and sediment migration. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 216-1).

Table 216-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W01002040004	Established Vegetation		X	X		B
W01006010003	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

216.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at W-SMA-7.9. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

216.4 Inspections and Maintenance

RG257 recorded eight storm events at W-SMA-7.9 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 216-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30865	5-7-2013
Storm Rain Event	BMP-33036	7-11-2013
Storm Rain Event	BMP-33456	7-17-2013
Storm Rain Event	BMP-33956	7-30-2013
Storm Rain Event	BMP-34600	8-20-2013
Storm Rain Event	BMP-35621	9-25-2013
Annual Erosion Evaluation	COMP-36804	10-30-2013

No maintenance activities were conducted at W-SMA-7.9 in 2013.

216.5 Compliance Status

The Site associated with W-SMA-7.9 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 216-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 16-006(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

W-SMA-7.9, Permanent Vegetation, W01002020002 (photo ID 8796-2r)

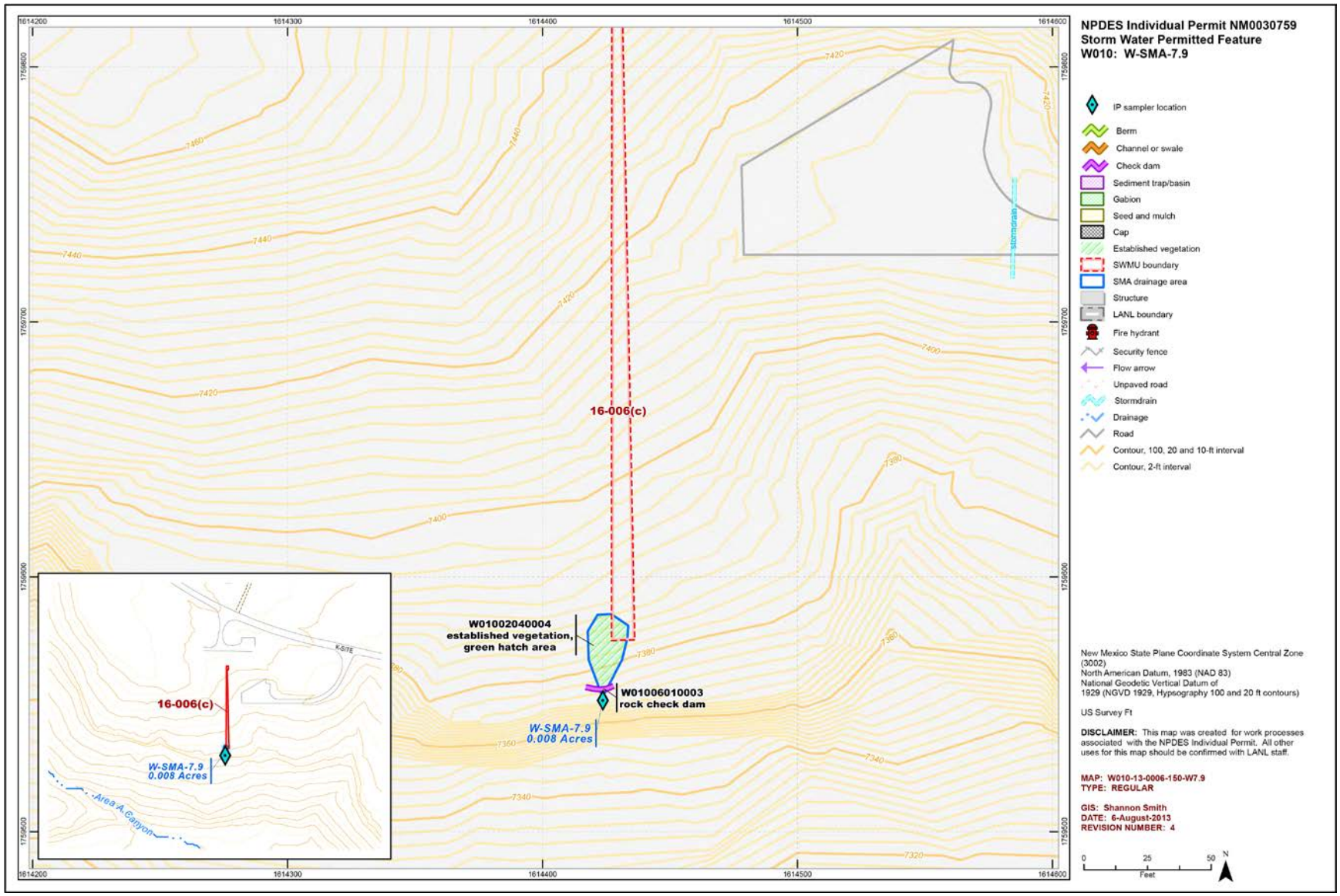


Figure 216-1 W-SMA-7.9 location map

217.0 W-SMA-8: SWMUs 16-016(g) and 16-028(b)

217.1 Site Descriptions

Two historical industrial activity areas are associated with W011, W-SMA-8: Sites 16-016(g), and 16-028(b).

SWMU 16-016(g) is a surface disposal area associated with former building 16-370. Debris includes cans and pipes that were distributed over a 20-ft-diameter area and located in a drainage ditch approximately 60 ft south of the building. Building 16-370 was constructed in 1953 as a barium nitrate–grinding facility and later converted to a metal-forming shop for steel and aluminum. Building 16-370 was demolished in March 2005. HE was never used in the building. The surface disposal area lies in the drainage ditch shared by both SWMUs 16-026(a) and 16-028(b). Field observations indicated the debris was construction debris and not operational waste.

Consent Order sampling has not yet been conducted at SWMU 16-016(g); the Site will be sampled during the future Upper Water Canyon Aggregate Area investigation. No previous investigations have been conducted at the Site.

SWMU 16-028(b) is a formerly NPDES-permitted outfall (04A092) that served former building 16-370. The outfall is located approximately 50 ft south of building 16-370. The outfall drainline consists of a 6-in. VCP that exits building 16-370 from its west side and daylights in Water Canyon. The outfall formerly received effluent from 29 floor drains, an eyewash station, a drinking fountain, and a sink. Building 16-370 was built in 1953 as a barium nitrate–grinding facility. In the late 1950s, it was converted to a metal-forming shop for steel and aluminum. Building 16-370 was demolished in March 2005. All drains that discharged to the outfall were plugged in the 1990s. The outfall was removed from the NPDES permit effective January 14, 1998. In July 2000, as part of the post–Cerro Grande fire recovery, debris removal, mulching, and permanent seeding were conducted at this Site as BMPs. Straw wattles were also installed to stabilize the Site and to prevent storm water run-on and runoff.

Consent Order sampling has not yet been conducted at SWMU 16-028(b); the Site will sampled during the future Upper Water Canyon Aggregate Area investigation. However, decision-level data are available from the 1998 investigation.

The project map (Figure 217-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

217.2 Control Measures

There is the potential for run-on from the facility pad and the paved access road east of former building footprint. Existing controls moderate run-on at this SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 217-1).

Table 217-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W01102040009	Established Vegetation		X	X		B
W01103010007	Earthen Berm	X			X	B
W01103020008	Base Course Berm	X			X	B
W01106010002	Rock Check Dam		X		X	CB
W01106010006	Rock Check Dam	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced controls installation and certification are being planned for the end of 2014 as part of corrective action.

217.3 Storm Water Monitoring

SWMUs 16-016(g) and 16-028(b) are monitored within W-SMA-8. Following the installation of baseline control measures, a baseline storm water sample was collected on September 12, 2013 (Figures 217-2 and 217-3). Analytical results from this sample yielded two TAL exceedances:

- Aluminum concentration of 823 µg/L (MTAL is 750 µg/L),
- Copper concentrations of 28.1 µg/L (MTAL is 4.3 µg/L),

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 16-016(g):

- Aluminum may have been associated with industrial materials historically managed at this Site. No soil data are available to evaluate whether the Site is a potential source of the TAL exceedances.
- Copper may have been associated with industrial materials historically managed at this Site. No soil data are available to evaluate whether the Site is a potential source of the TAL exceedances.

SWMU 16-028(b):

- Aluminum is not known to be associated with industrial materials historically managed at this Site. Aluminum was not detected above the soil BV in the single shallow sample collected during the 1998 investigation.
- Copper may have been associated with industrial materials historically managed at this Site. Copper was detected at a concentration 32 times the soil BV in the single shallow sample collected during the 1998 investigation.

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 Figures 217-2 and 217-3. 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 Figures 217-2 and 217-3.

Monitoring location W-SMA-8 receives storm water run-on from the SWMU 16-016(g) surface disposal area and from landscapes containing sediment derived from Bandelier Tuff.

- Aluminum—The aluminum UTL from developed urban 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 2013 is between these two values.
- Copper—The copper UTL from developed urban 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.

All the analytical results for these samples are reported in the 2013 Annual Report.

217.4 Inspections and Maintenance

RG257 recorded eight storm events at W-SMA-8 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 217-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30866	5-7-2013
Storm Rain Event	BMP-33037	7-11-2013
Storm Rain Event	BMP-33457	7-17-2013
Storm Rain Event	BMP-33957	7-30-2013
Storm Rain Event	BMP-34601	8-20-2013
Storm Rain Event	BMP-35622	9-25-2013
Annual Erosion Evaluation	COMP-36805	10-30-2013
TAL Exceedance	COMP-36889	10-30-2013

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

Table 217-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-37098	Repair earthen berm W01103010007 by removing matting from damaged area(s). Add clean fill to damaged area(s). Apply seed and matting to repaired area(s). Apply seed and mulch to any area disturbed by maintenance activities.	12-18-2013	84 day(s)	Maintenance conducted as soon as practicable.
BMP-37099	Repair base course berm W01103020008 by adding base course to all damaged/breached areas.	12-18-2013	49 day(s)	Maintenance conducted as soon as practicable.

217.5 Compliance Status

The Sites associated with W-SMA-8 are Moderate Priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 217-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 16-016(g)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-25-13
SWMU 16-028(b)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-25-13

W-SMA-8, Rock Check Dam, W01106010006 (photo ID 7806-1r)

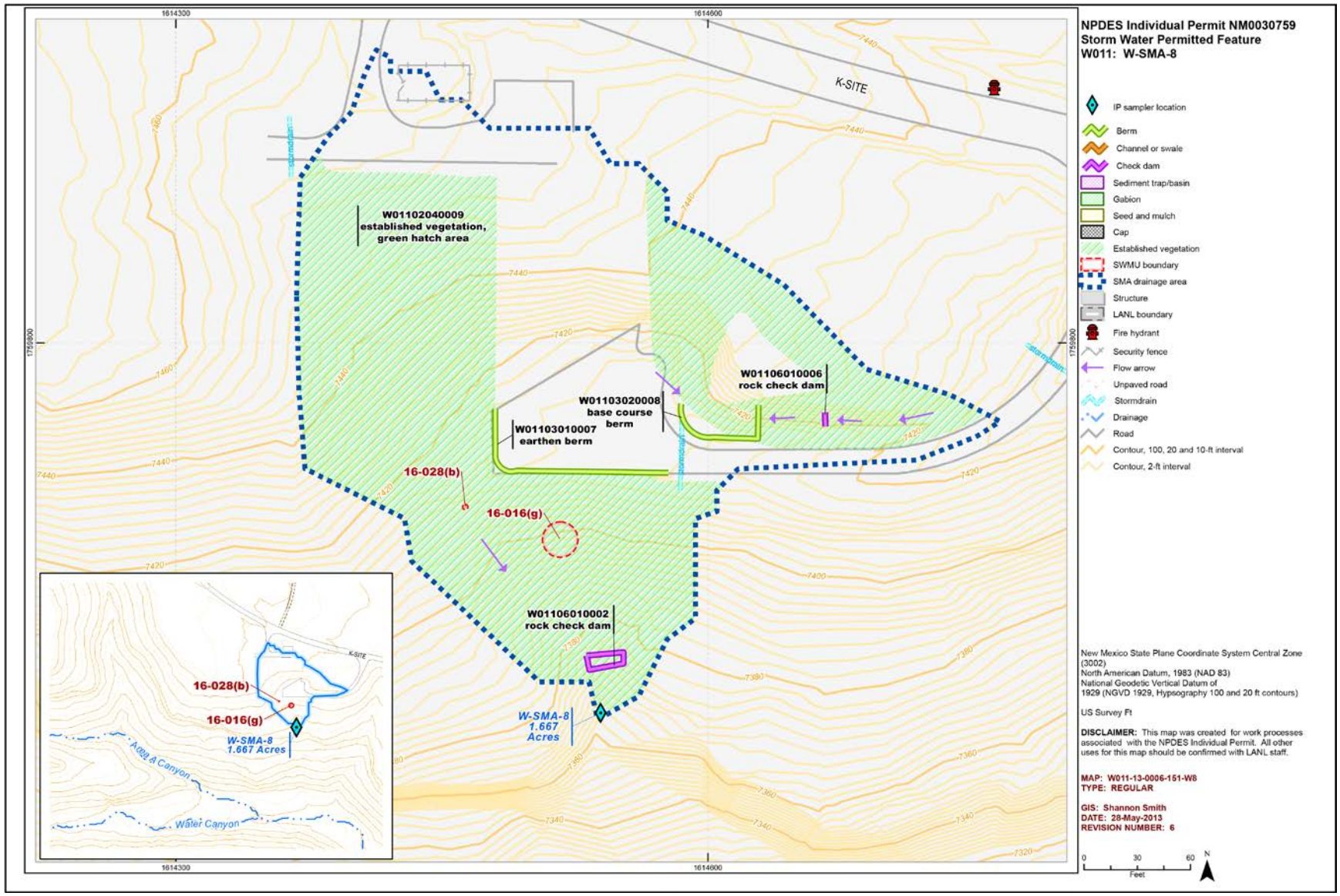
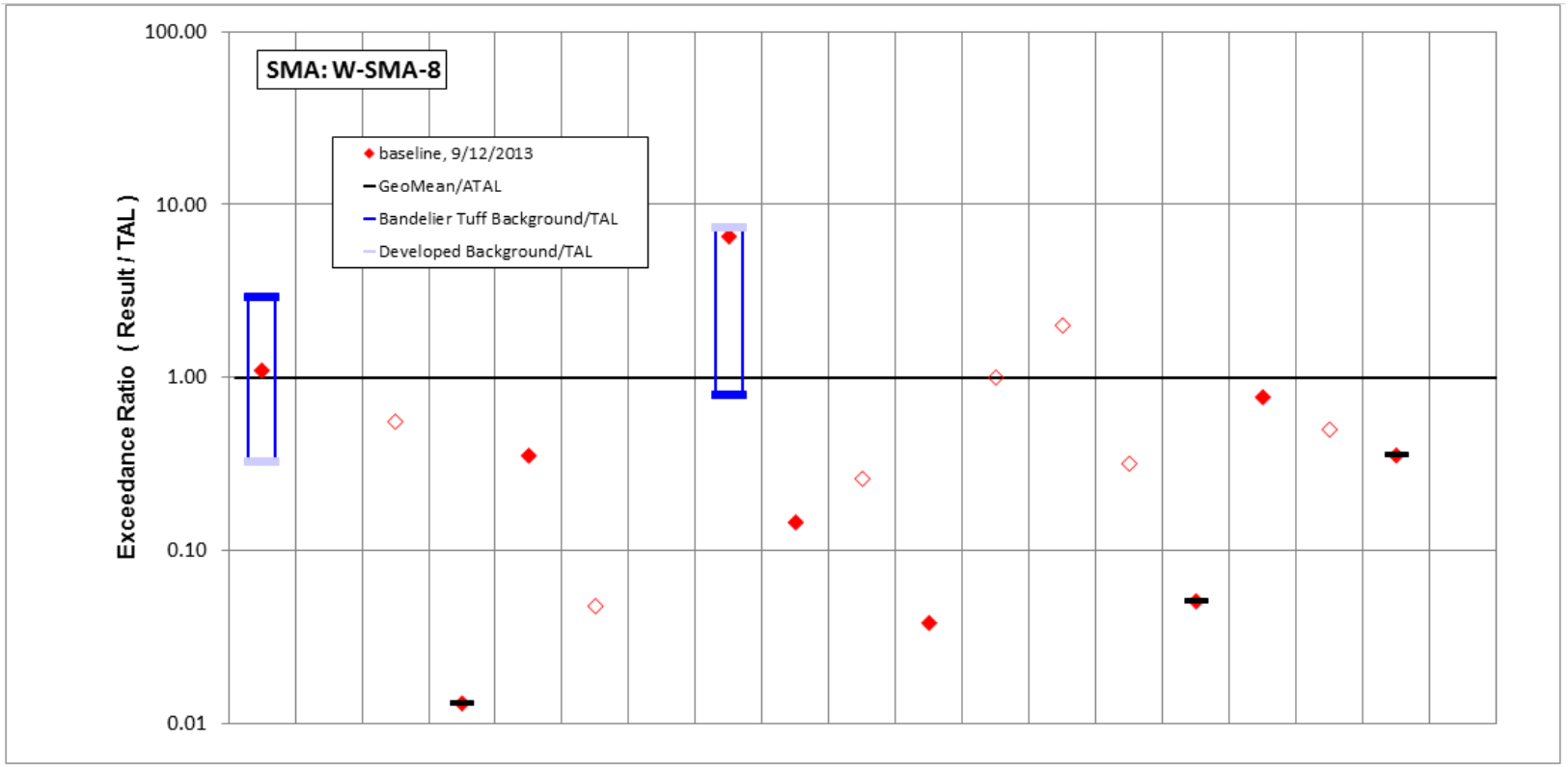


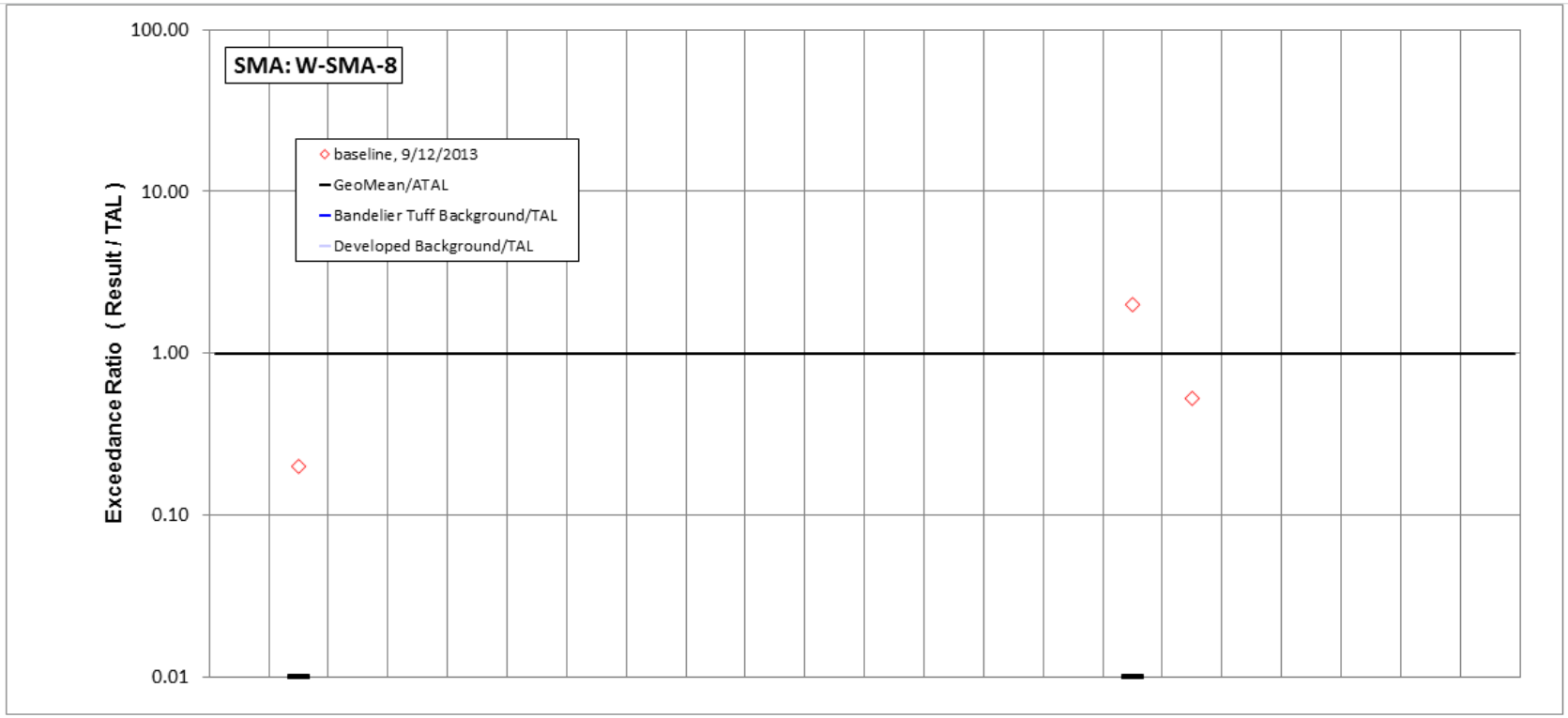
Figure 217-1 W-SMA-8 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	Lead	Mercury	Nickel	Selenium	**Silver**	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/12/2013 result	**823**	*3*	*5*	65.2	0.353	*10*	1.19	**28.1**	2.47	*0.2*	6.47	*5*	***1***	*2*	5.08	32.3	*0.005*	5.31	-
result / TAL	**1.1**	*0.005*	*0.56*	0.013	0.35	*0.048*	0.0012	**6.5**	0.15	*0.26*	0.038	*1*	***2***	*0.32*	0.051	0.77	*0.5*	0.35	-

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 217-2 Inorganic analytical results summary plot for W-SMA-8



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	**Hexachlorobenzene**	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	ATAL	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	MTAL	-	-	-	-	-
std value	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5	19	-	-	-	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
9/12/2013 result	-	*1*	-	-	-	-	-	-	-	-	-	-	-	-	-	***10***	*10*	-	-	-	-	-
result / TAL	-	*0.2*	-	-	-	-	-	-	-	-	-	-	-	-	-	***2***	*0.53*	-	-	-	-	-

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 217-3 Organic analytical results summary plot for W-SMA-8

218.0 W-SMA-8.7: SWMUs 13-001, 13-002, 16-004(a), 16-026(j2), 16-029(h), and 16-035

218.1 Site Descriptions

Six historical industrial activity areas are associated with W012, W-SMA-8.7: Sites 13-001, 13-002, 16-004(a), 16-026(j2), 16-029(h), and 16-035.

SWMU 13-001 is an inactive firing site located east of former building 16-340. The firing site is associated with firing activities conducted at P-Site (former TA-13). The area contains shrapnel and debris, including firing cables, lead balls, and chunks of steel and copper.

Phase I Consent Order sampling is complete for SWMU 13-001. All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs, except for two detections of arsenic in two subsurface tuff samples. SWMU 13-001 will be recommended for corrective action complete in the supplemental investigation report for S-Site Aggregate Area, to be submitted to NMED in 2015. SWMU 13-001 will be eligible for a COC upon approval of the report by NMED.

SWMU 13-002 is an inactive surface disposal area located east of former building 16-340. The disposal area contains debris and shrapnel associated with firing activities conducted at P-Site (former TA-13). A portion of the TA-16 WWTP [Consolidated Unit 16-004(a)-99] is located above the southern tip of the surface disposal area.

Phase I Consent Order sampling is complete for SWMU 13-002. All detected inorganic and organic chemical concentrations from Consent Order samples were below residential SSLs. SWMU 13-002 will be recommended for corrective action complete in the supplemental investigation report for S-Site Aggregate Area, to be submitted to NMED in 2015. SWMU 13-002 will be eligible for a COC upon approval of the report by NMED.

SWMU 16-004(a) is the inactive Imhoff tank (structure 16-530) that was used for sewage treatment at the TA-16 sanitary WWTP. The structure is approximately 20 × 35 ft with a total area of 700 ft^2 and a depth of 22 ft. The tank was taken out of service in 1992. Located southeast of the former TA-16-340 Complex and north of the communitor (a cutting device for sewage solids), the Imhoff tank received effluent that flowed over a weir into a dosing siphon. Any sludge that may have collected in the tank was digested it was discharged to drying beds [SWMUs 16-004(d) and 16-004(f)]. The tank had an emergency overflow pipe that discharged onto a slope northeast of the tank.

SWMU 16-004(a) was investigated under the Consent Order and recommended for corrective action complete. NMED did not concur and directed the Laboratory to conduct additional sampling. Existing data for this Site will be reevaluated using the supplemental investigation report process to determine if additional sampling is warranted and whether a COC can be requested.

SWMU 16-026(j2) consists of the former outfall from a former HE sump [SWMU 16-029(f)] associated with a former resthouse (structure 16-345) located on the 340-Line at TA-16. The resthouse and sump were constructed in 1952 and served as a HE storage facility for former building 16-340. The sump was located on the southeast exterior wall and received discharge generated during cleaning activities. The outfall received effluent from the sump and discharged southeast of the sump location. The resthouse, sump, and associated drainlines were all removed in 2005.

SWMU 16-026(j2) was investigated under the Consent Order and recommended for corrective action complete. NMED approved the investigation report but required the Laboratory to conduct additional surface water and groundwater sampling for the TA-16-340 Complex as well as to maintain the BMPs.

SWMU 16-029(h) consists of an inactive outfall and two inactive/former drainlines (one known and one suspected) from the HE sump [AOC 16-003(p)], located on the south side of former building 16-478. The known drainline exits the southeast corner of the sump and extends 80 ft east of the sump to the rim of Cañon de Valle. This drainline discharged directly into Cañon de Valle before the drainline was plugged in 1987. A second drainline is alleged to be present. The second drainline is reportedly a French drain that extends south of the sump. Former building 16-478 was used as a bunker, utility room, control room, and high-speed machining room for tests on experimental HE. When the building was removed in 2005, the sump was left in place. During the investigation activities conducted in 2009–2010, no evidence of the French drain was found.

Phase I Consent Order sampling is complete for SWMU 16-029(h). All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs, except for two detections of arsenic in two subsurface tuff samples. SWMU 16-029(h) will be recommended for corrective action complete in the supplemental investigation report for S-Site Aggregate Area, to be submitted to NMED in 2015. SWMU 16-029(h) will be eligible for a COC upon approval of the report by NMED.

SWMU 16-035 is an area of potential soil contamination located approximately 200 ft east of former building 16-340. The soil contamination is associated with a former control bunker (former structure 13-2 renumbered to 16-476). The control bunker was one of several buildings constructed at TA-13 in 1944 to support the Manhattan Project. Former TA-13 was built in 1944 to support the HE project of the Manhattan Project and has been used since then for a variety of Laboratory activities. It was principally designed as a site for counter–x-ray diagnostics of HE lens configurations. Activities that supported the diagnostics included operating counter–x-ray equipment, HE assembly, and research in the magnetic method program. The control bunker was removed during D&D activities in 2005.

SWMU 16-035 was investigated under the Consent Order and recommended for additional sampling to define extent. Existing data for these Sites will be reevaluated using the supplemental investigation report.

The project map (Figure 218-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

218.2 Control Measures

There is potential run-on from the paved road located in the northwest portion of SMA that is discharged through the culvert. There is also the potential for run-on from the paved parking area located in the southern portion of the SMA, next to structure 16-0531. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 218-1).

Table 218-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W01202040011	Established Vegetation		X	X		B
W01203060010	Straw Wattles		X		X	CB
W01206010006	Rock Check Dam		X		X	CB
W01206010007	Rock Check Dam		X		X	CB
W01206010008	Rock Check Dam	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

218.3 Storm Water Monitoring

SWMUs 13-001, 13-002, 16-004(a), 16-026(j2), 16-029(h), and 16-035 are monitored within W-SMA-8.7. Following the installation of baseline control measures, a baseline storm water sample was collected on September 12, 2013 (Figures 218-2 and 218-3). Analytical results from this sample yielded one TAL exceedance:

- Aluminum concentration of 1920 µg/L (MTAL is 750 µg/L)

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 13-001:

- Information for this Site has not been summarized.

SWMU 13-002:

- Information for this Site has not been summarized.

SWMU 16-004(a):

- Aluminum is not known to be associated with industrial materials historically managed at this Site. Samples collected during the 2010 Consent Order investigation were all deep (i.e., greater than 22 ft bgs) samples collected beneath the bottom of the Imhoff tank. No shallow sample data are available for this site.

SWMU 16-026(j2):

- Aluminum is not known to have been associated with industrial materials historically managed at this Site. Aluminum was detected above sediment and tuff BVs in 2 of 14 shallow soil, sediment, and tuff samples collected during 2005 and 2008 Consent Order investigations. Aluminum was detected at a maximum concentration 2 times the sediment BV.

SWMU 16-029(h):

- Information for this Site has not been summarized.

SWMU 16-035:

- Aluminum is not known to be associated with industrial materials historically managed at this Site. Aluminum was not detected above BVs in 29 shallow (i.e., less than 3 ft bgs) soil and tuff samples collected during the 2010 Consent Order investigation.

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 Figures 218-2 and 218-3. 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 Figures 218-2 and 218-3.

Monitoring location W-SMA-8.7 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.

- Aluminum—The aluminum UTL from developed urban 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 2013 is between these two values.

All the analytical results for these samples are reported in the 2013 Annual Report.

218.4 Inspections and Maintenance

RG257 recorded eight storm events at W-SMA-8.7 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 218-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30867	5-3-2013
Storm Rain Event	BMP-33038	7-3-2013
Storm Rain Event	BMP-33458	7-17-2013
Storm Rain Event	BMP-33958	8-1-2013
Storm Rain Event	BMP-34602	8-20-2013
Storm Rain Event	BMP-35623	9-25-2013
Annual Erosion Evaluation	COMP-36806	10-31-2013
TAL Exceedance	COMP-36890	10-31-2013

No maintenance activities were conducted at W-SMA-8.7 in 2013.

218.5 Compliance Status

The Sites associated with W-SMA-8.7 are Moderate Priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 218-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 13-001	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-25-13
SWMU 13-002	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-25-13
SWMU 16-004(a)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-25-13
SWMU 16-026(j2)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-25-13
SWMU 16-029(h)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-25-13
SWMU 16-035	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-25-13

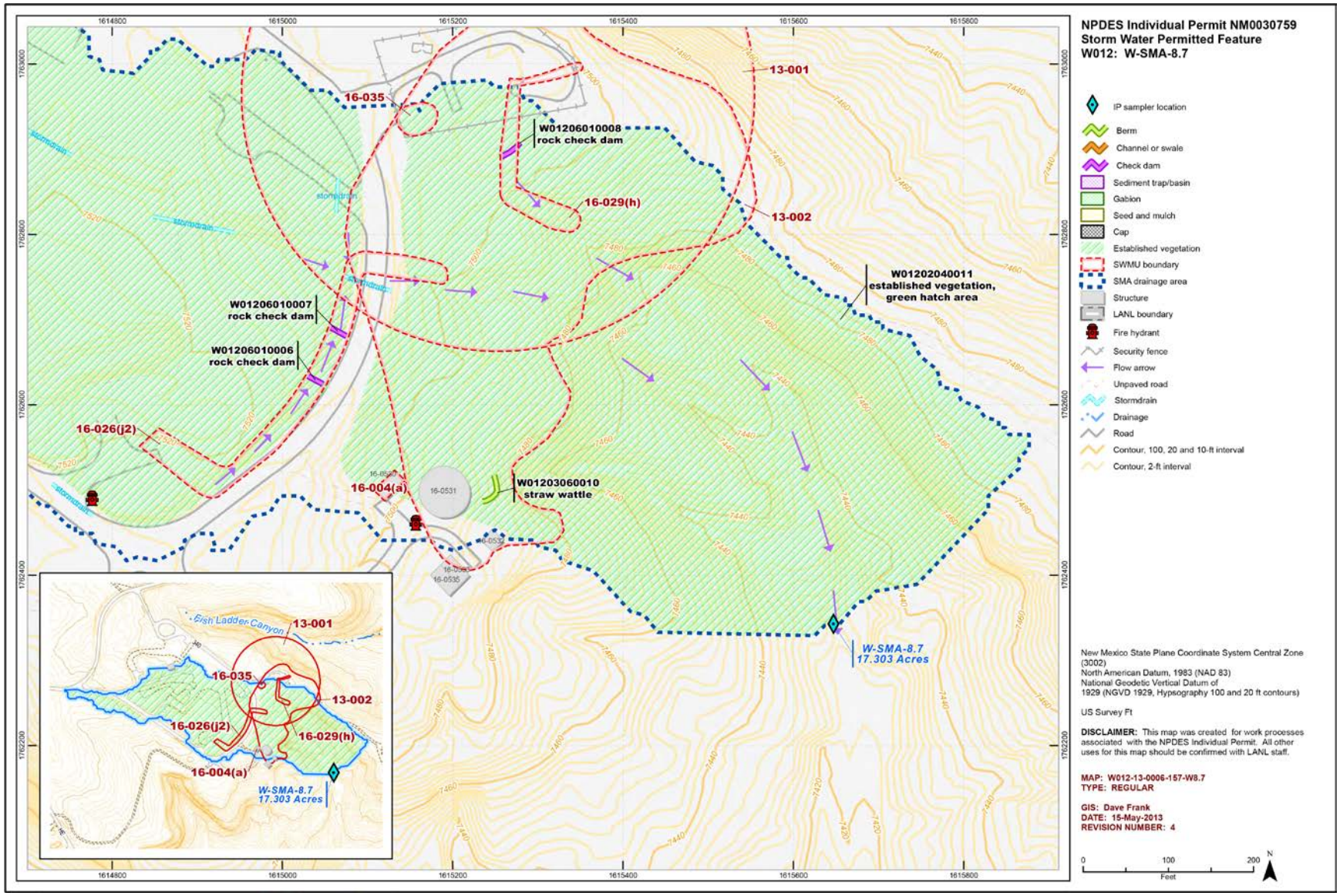
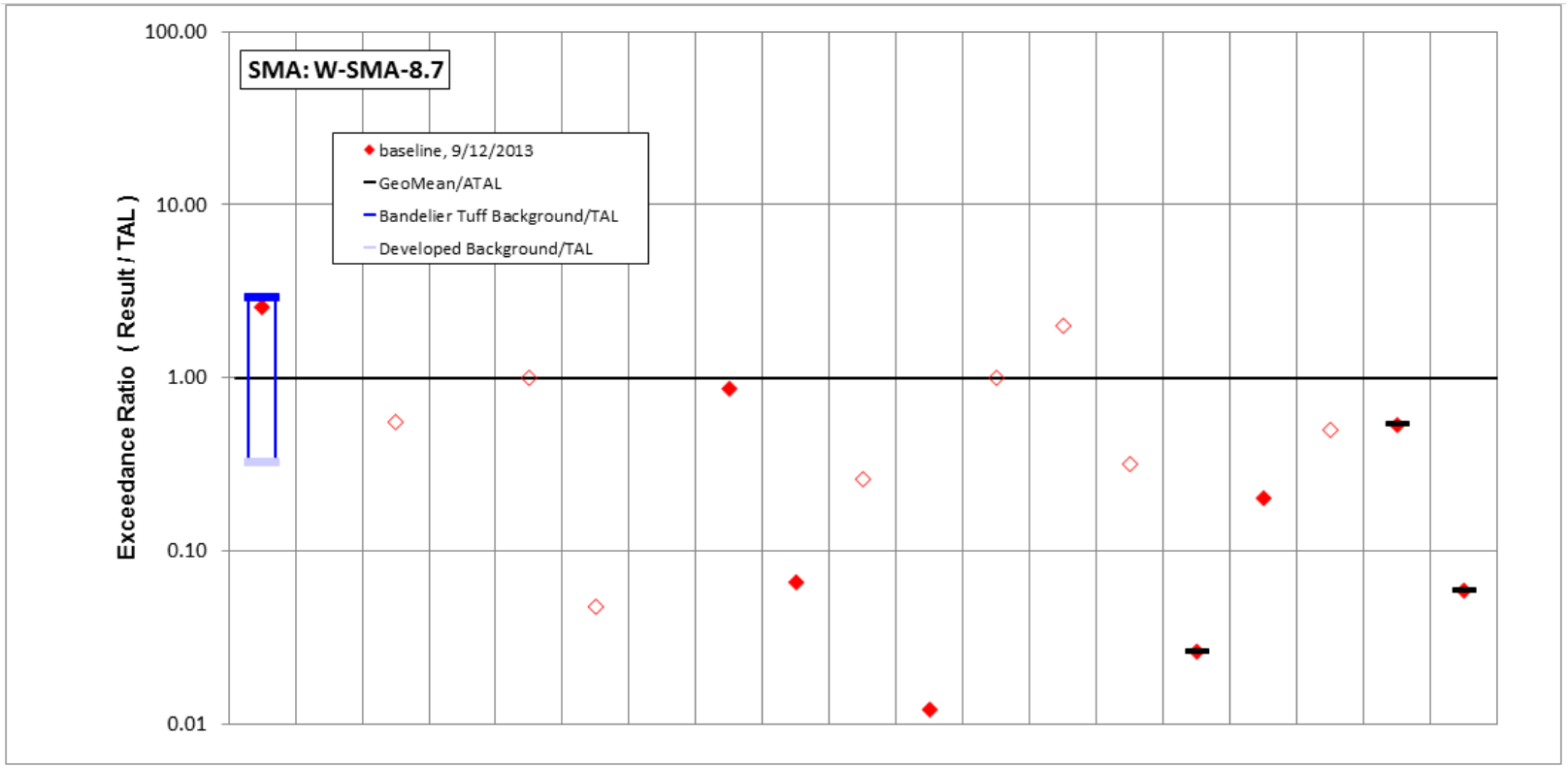


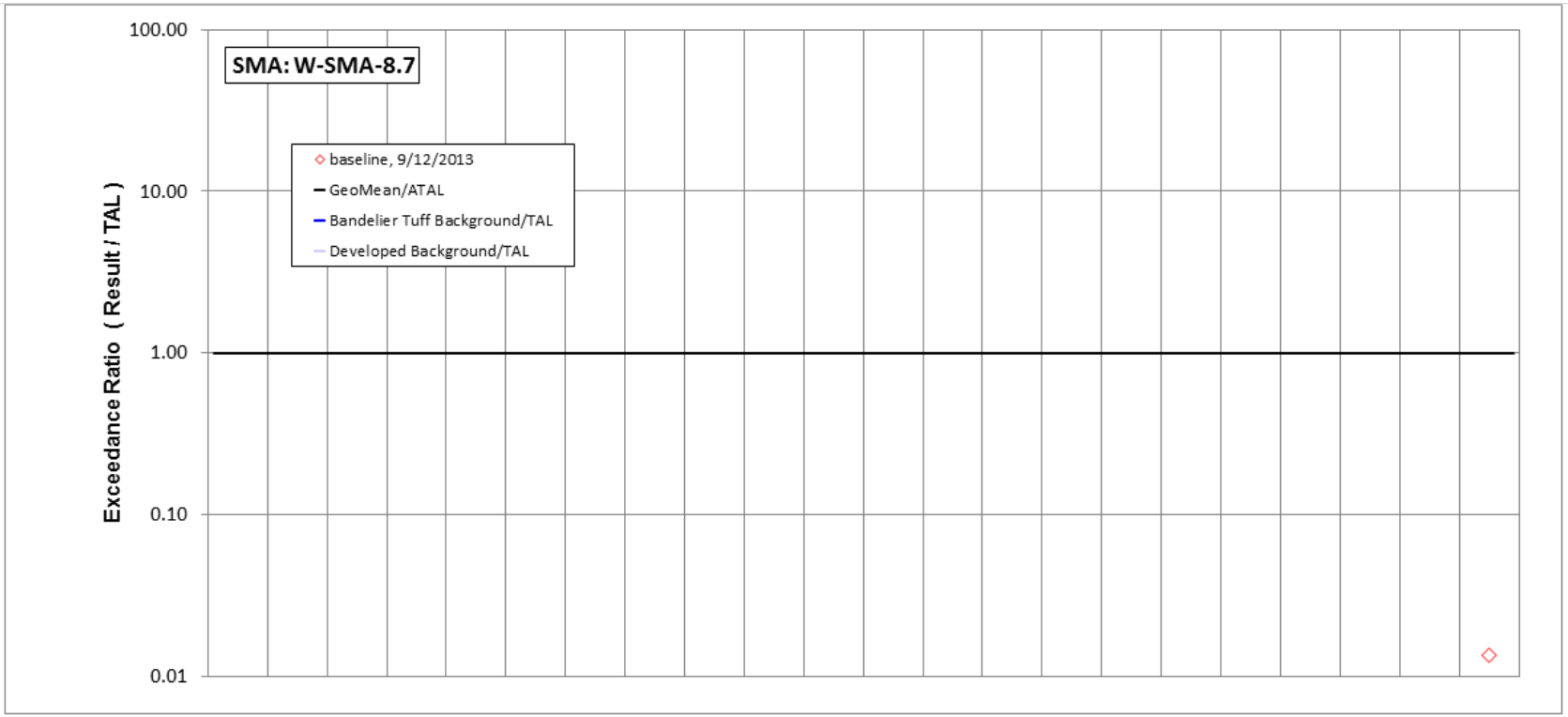
Figure 218-1 W-SMA-8.7 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	**Silver**	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/12/2013 result	**1920**	*3*	*5*	16.1	*1*	*10*	1.32	3.72	1.12	*0.2*	2.06	*5*	***1***	*2*	2.62	8.47	*0.005*	8	1.77
result / TAL	**2.6**	*0.005*	*0.56*	0.0032	*1*	*0.048*	0.0013	0.87	0.066	*0.26*	0.012	*1*	***2***	*0.32*	0.026	0.2	*0.5*	0.53	0.059

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 218-2 Inorganic analytical results summary plot for W-SMA-8.7



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-	-	ATAL
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	-	-	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
9/12/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.27*	-	-	-	*0.27*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.001*	-	-	-	*0.014*

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 218-3 Organic analytical results summary plot for W-SMA-8.7

219.0 W-SMA-8.71: SWMU 16-004(c)

219.1 Site Descriptions

One historical industrial activity area is associated with W012A, W-SMA-8.71: Site 16-004(c).

SWMU 16-004(c) is the inactive clarifier or final tank (structure 16-532) used for sewage treatment at the former TA-16 sanitary WWTP. The structure is approximately 20 × 20 ft with a total area of 400 ft^2. The clarifier was located southeast of the trickling filter. The clarifier received discharge from the trickling filter; water flowed through an outlet in the clarifier and discharged to formerly NPDES-permitted outfall EPA-SSS03S and eventually into a tributary of Water Canyon. At full capacity, structure 16-532 could manage 117,600 gal./d. The formerly NPDES-permitted outfall (EPA-SSS03S) for the WWTP was monitored for inorganic chemicals, organic chemicals, and pesticides. Effluent was monitored bimonthly for radionuclides and standard parameters for wastewater systems (e.g., biological oxygen demand, chemical oxygen demand, and total dissolved solids). The former TA-16 sanitary WWTP was constructed in 1953 and was decommissioned in 1992; some of the concrete foundations remain in place.

Phase I Consent Order sampling is complete for SWMU 16-004(c). All detected inorganic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs/SALs. SWMU 16-004(c) will be recommended for corrective action complete in the supplemental investigation report for S-Site Aggregate Area, to be submitted to NMED in 2015. SWMU 16-004(c) will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 219-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

219.2 Control Measures

There is the potential for run-on from the paved access road near the SWMU. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 219-1).

Enhanced controls were installed and certified on November 27, 2012, and submitted to EPA on December 13, 2012, as part of corrective action. Photographs of the enhanced controls are available at http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 219-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W012A02040006	Established Vegetation		X	X		B
W012A03010004	Earthen Berm		X		X	EC
W012A03010005	Earthen Berm	X			X	EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

219.3 Storm Water Monitoring

SWMU 16-004(c) is monitored within W-SMA-8.71. Following the installation of baseline control measures, a baseline confirmation sample was collected on August 21, 2011 (Figure 219-2). Inorganic analytical results from this baseline sample yielded one TAL exceedance:

- Gross-alpha activity of 15.8 pCi/L (ATAL is 15 pCi/L).

Following the installation of enhanced control measures at W-SMA-8.71, a corrective action storm water sample was collected on September 13, 2013 (Figure 219-2). Analytical results from this corrective action monitoring sample yielded three TAL exceedances:

- Copper concentrations of 19.8 µg/L (MTAL is 4.3 µg/L),
- Mercury concentration of 1.51 µg/L (ATAL is 0.77 µg/L), and
- Zinc concentration of 55.4 µg/L (MTAL is 42 µg/L).

This exceedance was evaluated by comparing the results from soil samples collected at the Site during Consent Order investigations with the storm water TAL exceedance to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 16-004(c):

- Copper is not known to be associated with industrial materials historically managed at this Site. No shallow Consent Order samples were collected from this Site; potential contamination expected in the subsurface (i.e., greater than 20 ft bgs). However, copper was not detected above BVs in any of the subsurface Consent Order samples collected at SWMU 16-004(c).
- Mercury is not known to be associated with industrial materials historically managed at this Site. No shallow Consent Order samples were collected from this Site; potential contamination expected in the subsurface (i.e., greater than 20 ft bgs). However, mercury was not detected above BVs in any of the subsurface Consent Order samples collected at SWMU 16-004(c).
- Zinc is not known to be associated with industrial materials historically managed at this Site. No shallow Consent Order samples were collected from this Site; potential contamination expected in the subsurface (i.e., greater than 20 ft bgs). However, zinc was not detected above BVs in any of the subsurface Consent Order samples collected at SWMU 16-004(c).

Based on the Site history (no surface contamination) and Consent Order sampling data (no detects of TAL exceedance constituents), the Site is unlikely a source of the TAL exceedances.

The TAL exceedance was 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 219-2. 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 219-2.

Monitoring location W-SMA-8.71 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as locations with sediment derived from Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Copper—The copper UTL from developed urban 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.
- Mercury—The mercury UTLs from undisturbed Bandelier Tuff and from developed urban landscape background storm water run-on were not calculated because the number of detected values was not sufficient to permit calculation of the UTL values in the baseline metals background study. Therefore, no comparison to mercury background values in storm water could be made.
- Zinc—The zinc UTL from developed urban landscape storm water run-on is 1120 µg/L; the zinc UTL for background storm water containing sediment derived from Bandelier Tuff is 109 µg/L. The zinc result from 2013 is less than these two values.

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

219.4 Inspections and Maintenance

RG257 recorded eight storm events at W-SMA-8.71 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 219-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30868	5-3-2013
Storm Rain Event	BMP-33047	7-3-2013
Storm Rain Event	BMP-33467	7-17-2013
Storm Rain Event	BMP-33967	8-1-2013
Storm Rain Event	BMP-34611	8-20-2013
Storm Rain Event	BMP-35632	9-19-2013
Annual Erosion Evaluation	COMP-36807	10-31-2013
TAL Exceedance	COMP-37080	10-31-2013

No maintenance activities were conducted at W-SMA-8.71 in 2013.

219.5 Compliance Status

The Site associated with W-SMA-8.71 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 219-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 16-004(c)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 11-27-2012

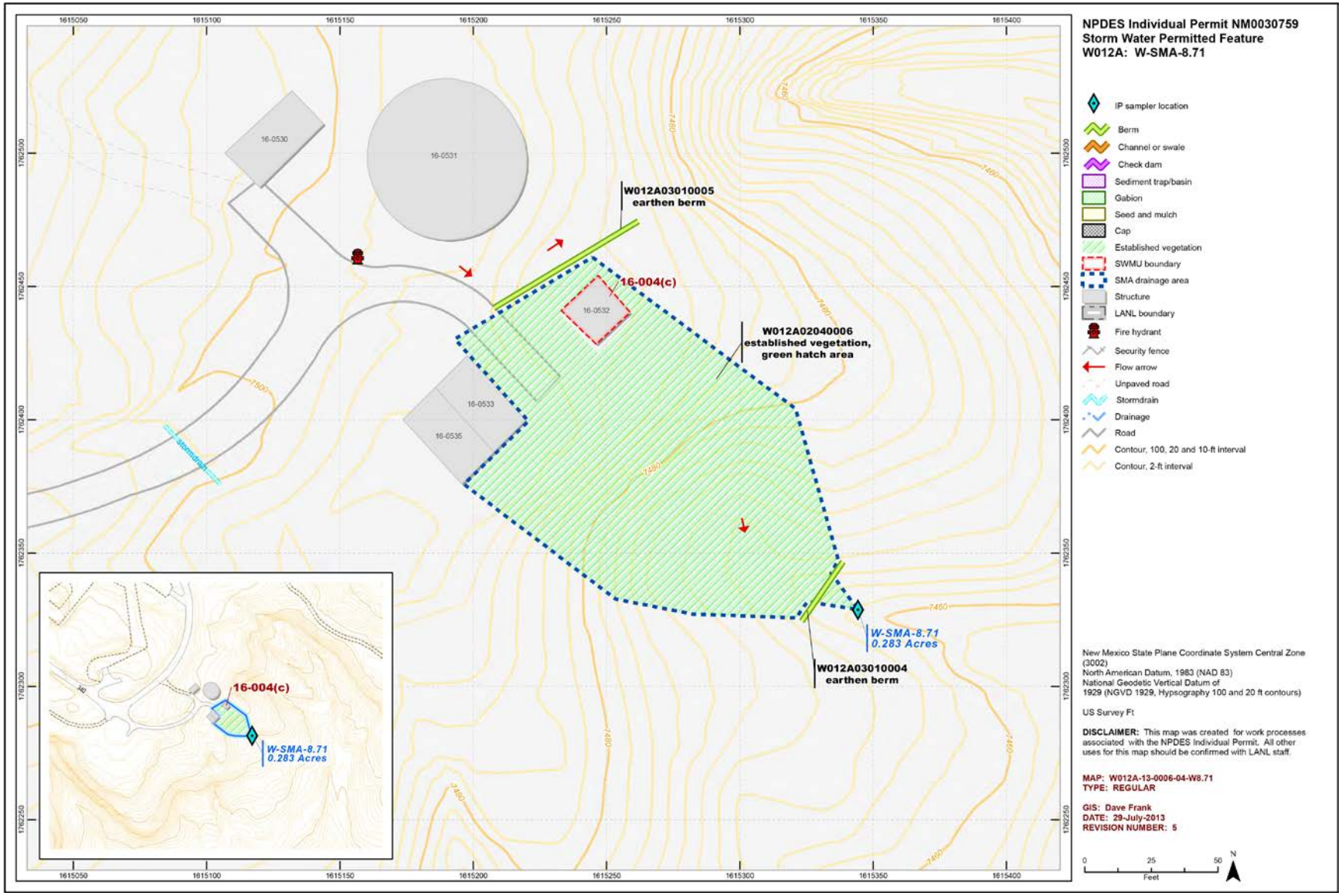
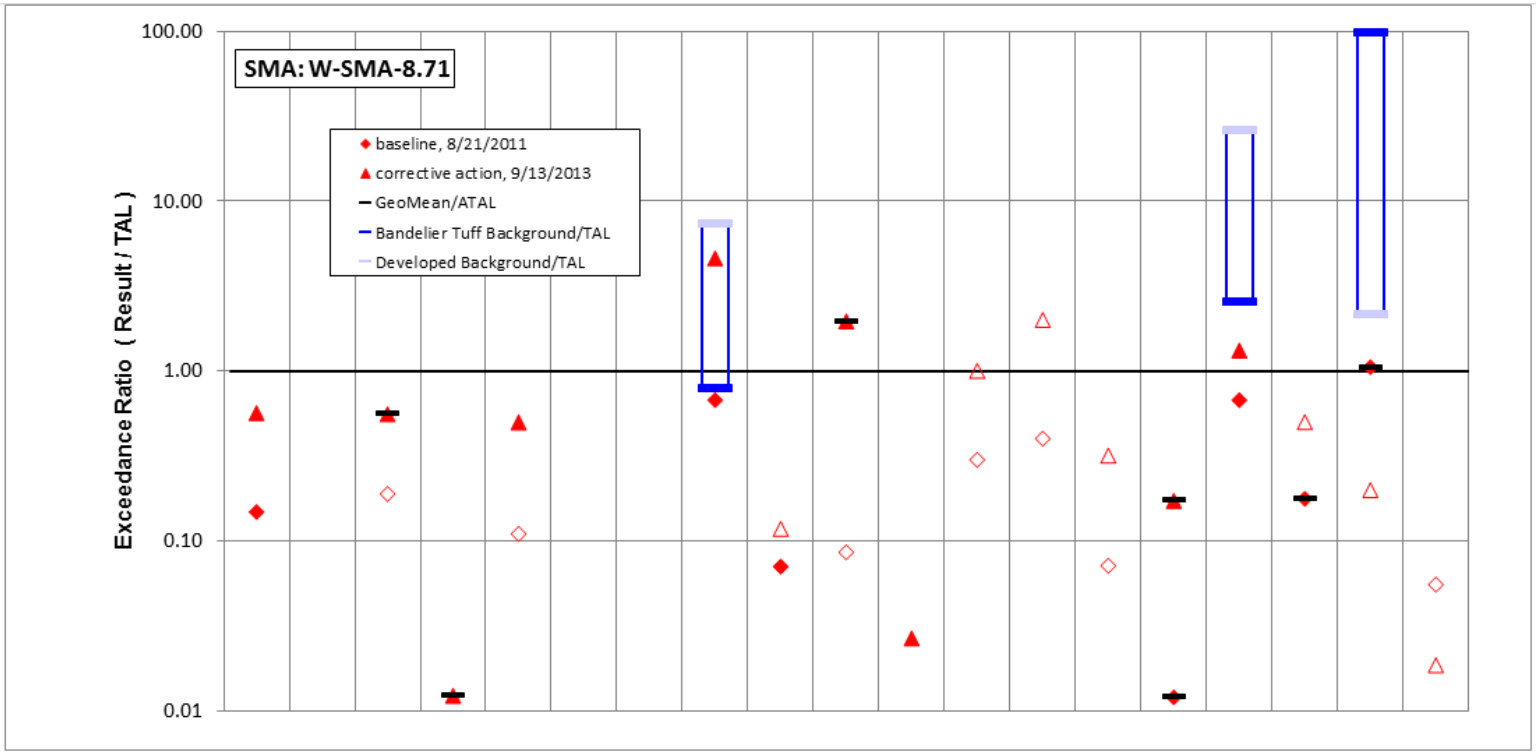


Figure 219-1 W-SMA-8.71 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	Lead	**Mercury**	Nickel	Selenium	**Silver**	Thallium	Vanadium	**Zinc**	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/13/2013 result	424	1.34	5.01	61.3	0.499	2	1.06	**19.8**	*2*	**1.51**	4.54	*5*	***1***	*2*	17.2	**55.4**	*0.005*	*2.99*	*0.557*
result / TAL	0.57	0.0021	0.56	0.012	0.5	0.0095	0.0011	**4.6**	*0.12*	**2**	0.027	*1*	***2***	*0.32*	0.17	**1.3**	*0.5*	*0.2*	*0.019*
8/21/2011 result	111	*1*	*1.7*	15.5	*0.11*	*2*	2	2.9	1.2	*0.066*	0.92	*1.5*	*0.2*	*0.45*	1.2	28.3	0.0018	**15.8**	*1.66*
result / TAL	0.15	*0.002*	*0.19*	0.0031	*0.11*	*0.01*	0.002	0.67	0.071	*0.086*	0.0054	*0.3*	*0.4*	*0.071*	0.012	0.67	0.18	**1.1**	*0.055*

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 219-2 Inorganic analytical results summary plot for W-SMA-8.71

220.0 W-SMA-9.05: AOC 16-030(g)

220.1 Site Descriptions

One historical industrial activity area is associated with W013, W-SMA-9.05: Site 16-030(g).

AOC 16-030(g) is a former NPDES-permitted outfall (05A052) located south of building 16-380 at TA-16. The outfall received effluent from a sump [SWMU 16-003(m)], two roof drains, a steam-heating system, and a drop inlet from a parking lot and discharged to Water Canyon. The outfall was removed from the NPDES permit in 1993. The sump and the steam-heating system discharge lines have been plugged, and the outfall currently receives only roof drain and parking lot runoff.

Consent Order investigations have not yet begun at AOC 16-030(g); the Site will sampled during the future Upper Water Canyon Aggregate Area investigation.

The project map (Figure 220-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

220.2 Control Measures

A small amount of paved parking contributes run-on to the Site. This run-on source is adequately handled by existing controls. A much larger run-on source from the access road is diverted around this SMA. These controls are critical to effectively managing runoff from the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 220-1).

Table 220-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W01302040013	Established Vegetation		X	X		B
W01303010003	Earthen Berm	X			X	CB
W01303010010	Earthen Berm		X		X	B
W01303010011	Earthen Berm		X		X	B
W01304010004	Earthen Channel/Swale	X		X		CB
W01306010001	Rock Check Dam		X		X	CB
W01306010012	Rock Check Dam		X		X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

220.3 Storm Water Monitoring

AOC 16-030(g) is monitored within W-SMA-9.05. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figures 220-2 and 220-3). Analytical results from this sample yielded no TAL exceedances. Baseline confirmation is complete for W-SMA-9.05 and the associated AOC 16-030(g) because all applicable sampling results are below the applicable MTAL or ATAL. No further sampling is required for W-SMA-9.05 for the remaining period of the IP.

220.4 Inspections and Maintenance

RG257 recorded eight storm events at W-SMA-9.05 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 220-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30869	5-7-2013
Storm Rain Event	BMP-33035	7-3-2013
Storm Rain Event	BMP-33455	7-17-2013
Storm Rain Event	BMP-33955	7-30-2013
Storm Rain Event	BMP-34599	8-20-2013
Storm Rain Event	BMP-35620	9-25-2013
Annual Erosion Evaluation	COMP-36808	10-30-2013

No maintenance activities were conducted at W-SMA-9.05 in 2013.

220.5 Compliance Status

The Site associated with W-SMA-9.05 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 220-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 16-030(g)	Baseline Monitoring Extended	Baseline Confirmation Complete	No Comment

W-SMA-9.05, Earthen Berm, W01303010003 (photo ID 7805-2r)

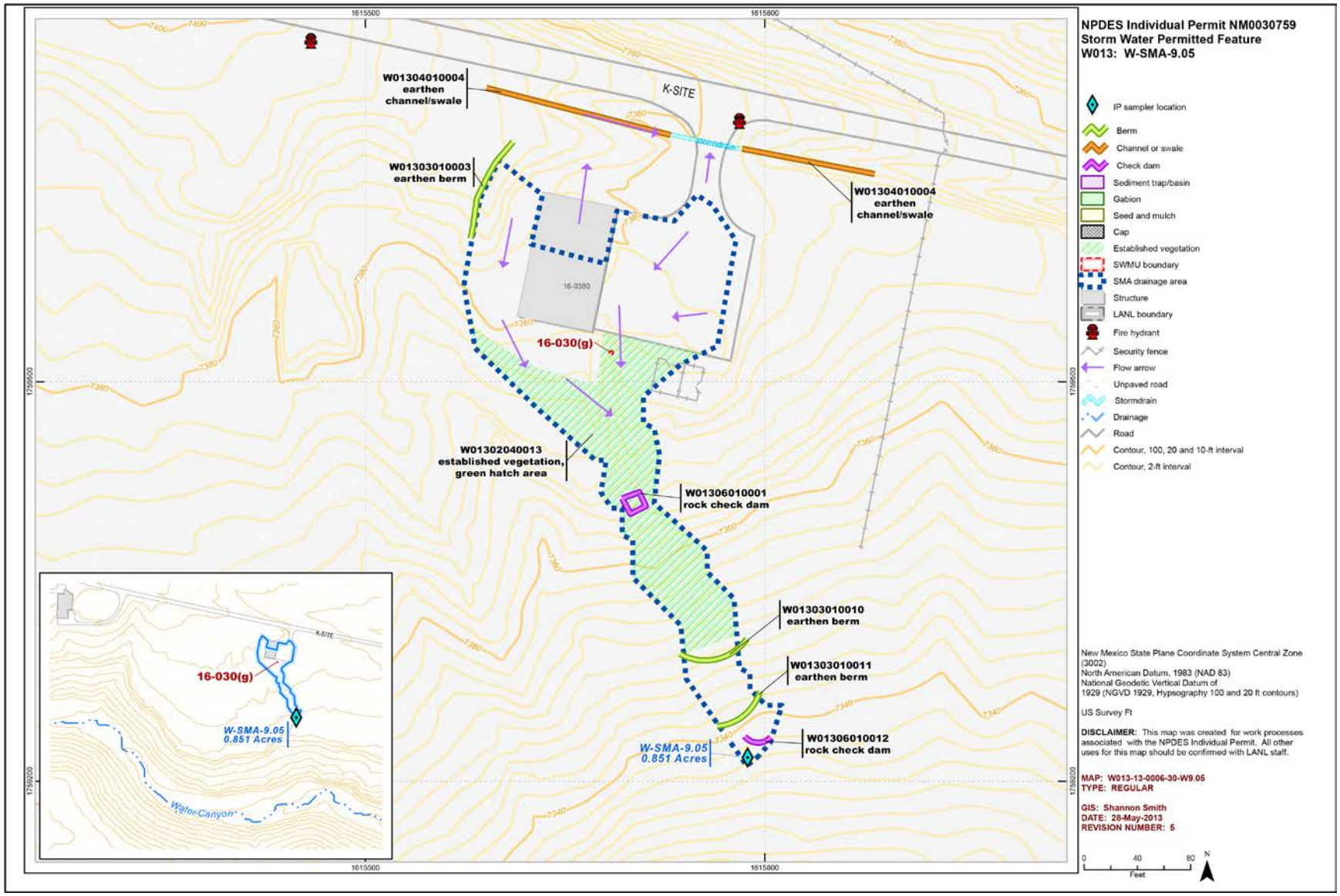
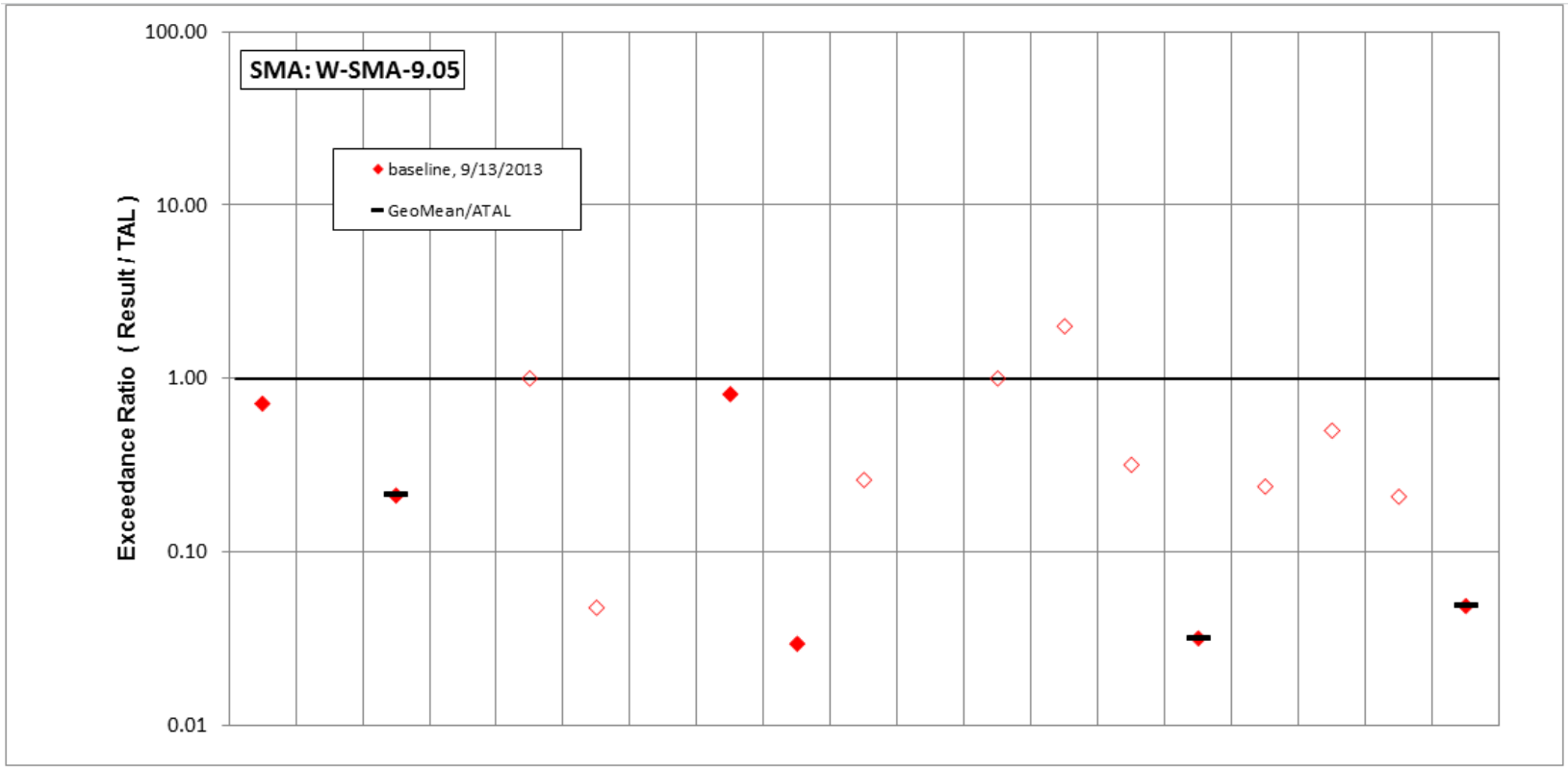


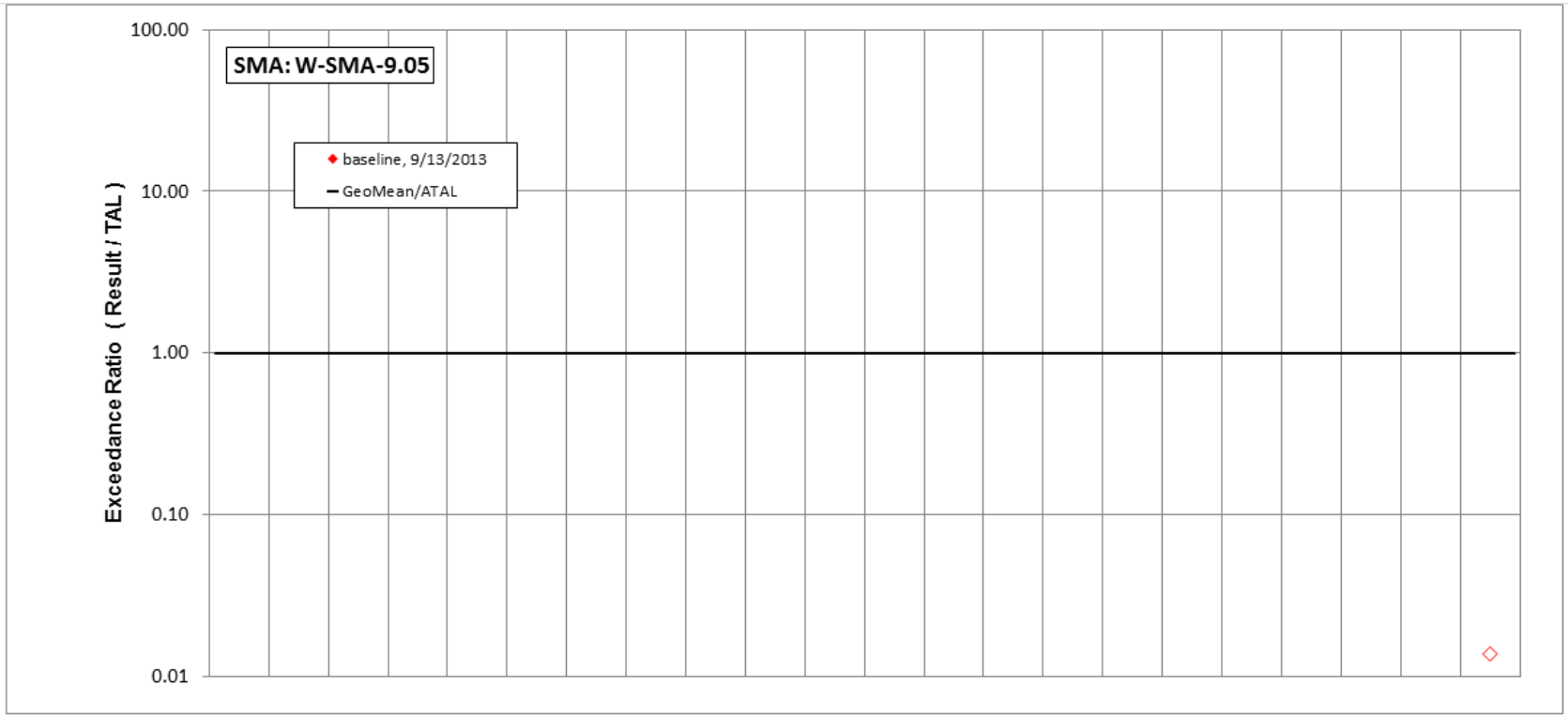
Figure 220-1 W-SMA-9.05 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	**Silver**	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/13/2013 result	537	*3*	1.9	26.8	*1*	*10*	*5*	3.49	0.501	*0.2*	1.66	*5*	***1***	*2*	3.17	*10*	*0.005*	*3.12*	1.46
result / TAL	0.72	*0.005*	0.21	0.0054	*1*	*0.048*	*0.005*	0.81	0.029	*0.26*	0.0098	*1*	***2***	*0.32*	0.032	*0.24*	*0.5*	*0.21*	0.049

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 220-2 Inorganic analytical results summary plot for W-SMA-9.05



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-	-	ATAL
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	-	-	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
9/13/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.847	-	-	-	*0.275*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.004	-	-	-	*0.014*

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 220-3 Organic analytical results summary plot for W-SMA-9.05

221.0 W-SMA-9.5: AOC 11-012(c)

221.1 Site Descriptions

One historical industrial activity area is associated with W014, W-SMA-9.5: Site 11-012(c).

AOC 11-012(c) is an area of potential surface-soil contamination associated with the footprint of former storage magazine 11-9 and is located approximately 500 ft west of building 11-4 at TA-11. Constructed of wood, the 16-ft square by 9-ft high magazine 11-9 was built in 1945 and was destroyed by intentional burning in 1960.

AOC 11-012(c) is deferred per Table IV-2 of the Consent Order; therefore, Consent Order sampling has not been conducted at the Site. No investigations were conducted before the Consent Order went into effect in March 2005.

The project map (Figure 221-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

221.2 Control Measures

The unpaved access road bisecting the SMA is the highest point in the area. As a consequence, there is very little run-on contribution from this area. Runoff from the access road flows to the north. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 221-1).

Table 221-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W01402040008	Established Vegetation		X	X		B
W01403010006	Earthen Berm	X			X	B
W01403010007	Earthen Berm	X			X	B
W01403060002	Straw Wattles		X		X	CB
W01403060003	Straw Wattles		X		X	CB

CB: Certified baseline control measure.
B: Additional baseline control measure.
EC: Enhanced control measure.

221.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at W-SMA-9.5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

221.4 Inspections and Maintenance

RG257 recorded eight storm events at W-SMA-9.5 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 221-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30870	5-7-2013
Storm Rain Event	BMP-33039	7-3-2013
Storm Rain Event	BMP-33459	7-18-2013
Storm Rain Event	BMP-33959	7-31-2013
Storm Rain Event	BMP-34603	8-16-2013
Storm Rain Event	BMP-35624	9-20-2013
Annual Erosion Evaluation	COMP-36809	10-29-2013

No maintenance activities were conducted at W-SMA-9.5 in 2013.

221.5 Compliance Status

The Site associated with W-SMA-9.5 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 221-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 11-012(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

W-SMA-9.5, Straw Wattles, W01403060002 (photo ID 10874-4r)

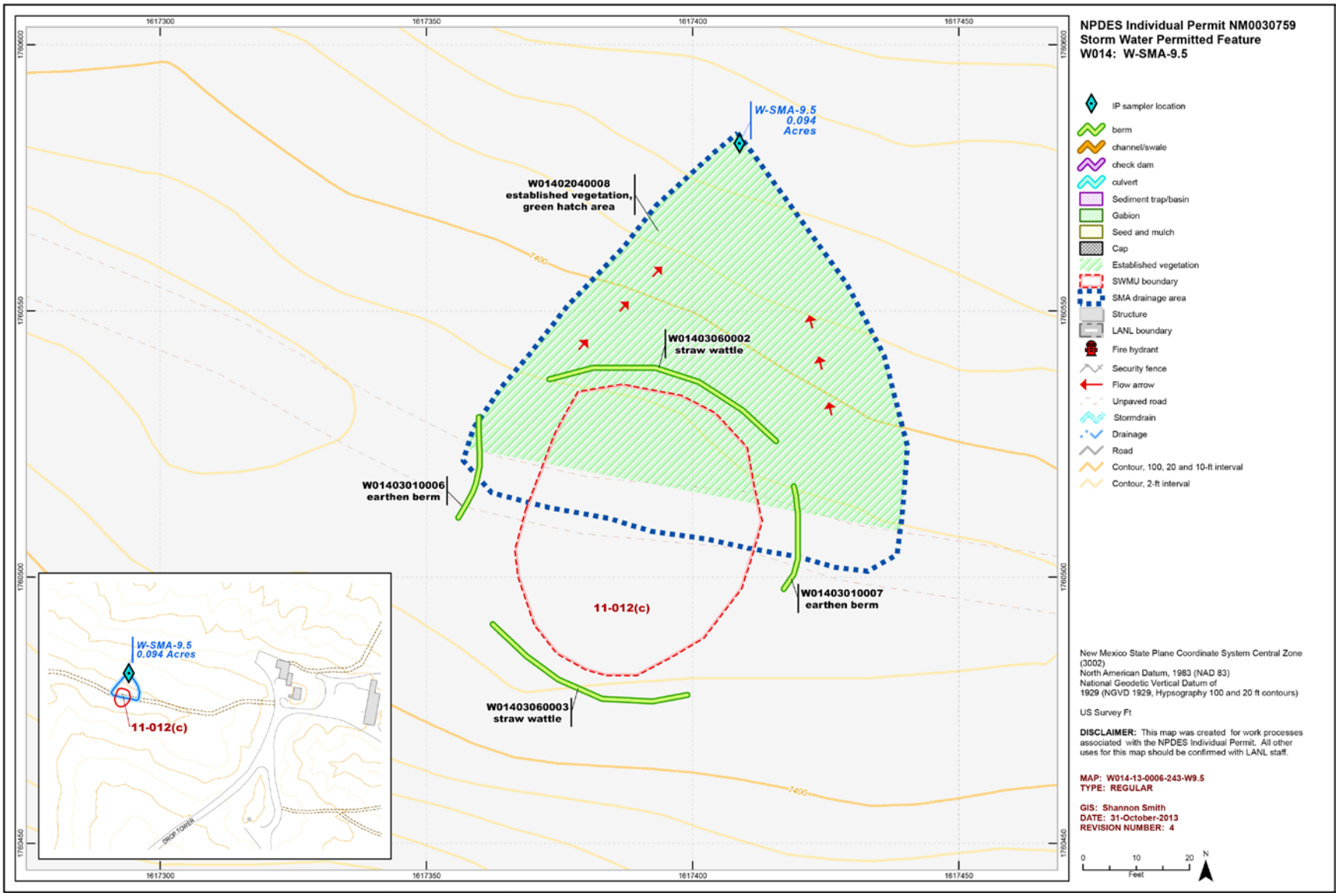


Figure 221-1 W-SMA-9.5 location map

222.0 W-SMA-9.7: SWMUs 11-011(a) and 11-011(b)

222.1 Site Descriptions

Two historical industrial activity areas are associated with W015, W-SMA-9.7: Sites 11-011(a) and 11-011(b).

SWMU 11-011(a) is an inactive NPDES-permitted outfall (EPA-03A130) located at TA-11 north of the K-Site complex and approximately 6 ft northeast of the Electrodynamics Vibration Test Facility (building 11-30), which housed water-cooled electronic equipment. Potential contaminants are organic chemicals. The outfall consisted of a 2-in. pipe that discharged northward to a tributary of Water Canyon. The outfall received untreated cooling tower blowdown from building 11-30. This outfall was removed from the NPDES permit during the 2013 permit renewal.

Consent Order Phase I investigation sampling is complete at this Site.

SWMU 11-011(b) is an outfall located at TA-11 north of the Electrodynamics Vibration Test Facility (building 11-30). The inactive outfall consists of a 3-in. pipe that extends about 10 in. beyond the side of a hill. The outfall received discharges from floor drains in building 11-30 from the early 1960s to 1990.

A report prepared by Santa Fe Engineering stated the only potential discharges from floor drains would be deionized water and residual HE potentially released from containers processed on shakers in the building.

Consent Order Phase I investigation sampling is complete at this Site.

The project map (Figure 222-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

222.2 Control Measures

Run-on to the SMA primarily originates in the paved areas around building 11-0030 as well as from the building's roof. Existing controls moderate this run-on source. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 222-1).

Table 222-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W01502040008	Established Vegetation		X	X		B
W01503060009	Straw Wattles		X		X	B
W01503060010	Straw Wattles		X		X	B
W01503060011	Straw Wattles	X			X	B
W01503060012	Straw Wattles	X			X	B
W01503060014	Straw Wattles	X			X	B
W01506030004	Juniper Bales	X			X	CB
W01506030005	Juniper Bales	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

222.3 Storm Water Monitoring

SWMUs 11-011(a) and 11-011(b) are monitored within W-SMA-9.7. Following the installation of baseline control measures, a baseline storm water sample was collected on September 13, 2013 (Figure 222-2). Analytical results from this sample yielded one TAL exceedance:

- Copper concentrations of 9.74 µg/L (MTAL is 4.3 µg/L),

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 11-011(a):

- Copper is not known to have been associated with industrial materials historically managed at the Site. Copper was detected above BV in 4 of 10 shallow (i.e., less than 3 ft bgs) 2010 Consent Order soil samples at a maximum concentration 6.6 times the soil BV.

SWMU 11-011(b):

- Copper is not known to have been associated with industrial materials historically managed at the Site. Copper was detected above BVs in 2 of 11 shallow 2010 Consent Order soil samples at a maximum concentration 5.1 times 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 222-2. 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 222-2.

Monitoring location W-SMA-9.7 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.

- Copper—The copper UTL from developed urban 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.

All the analytical results for these samples are reported in the 2013 Annual Report.

222.4 Inspections and Maintenance

RG257 recorded eight storm events at W-SMA-9.7 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 222-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30871	5-7-2013
Storm Rain Event	BMP-33048	7-3-2013
Storm Rain Event	BMP-33468	7-18-2013
Storm Rain Event	BMP-33968	7-31-2013
Storm Rain Event	BMP-34612	8-16-2013
Storm Rain Event	BMP-35633	9-20-2013
Annual Erosion Evaluation	COMP-36810	10-29-2013
TAL Exceedance	COMP-37081	10-29-2013

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

Table 222-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-31884	Install wattles at top of slope where juniper bale is placed in channel between buildings 56 & 30. Installation location is marked with white & blue flagging.	7-18-2013	72 day(s)	Maintenance conducted as soon as practicable.
BMP-31885	Install new straw wattle to replace existing wattle -0002. Wattle -0002 will be retired when work is completed. Install new straw wattle to replace existing wattle -0007. Wattle -0007 will be retired when work is completed.	7-18-2013	72 day(s)	Maintenance conducted as soon as practicable.
BMP-34537	Install straw wattles where potential flow can occur west of juniper bales -0005 and north of the space between buildings 11-0056 and 11-0030. See attached map for reference.	8-14-2013	14 day(s)	Maintenance conducted in timely manner.
BMP-36926	Install new straw wattle upgradient of existing wattle -0013. Wattle -0013 will be retired when work is completed.	11-25-2013	66 day(s)	Maintenance conducted as soon as practicable.

222.5 Compliance Status

The Sites associated with W-SMA-9.7 are Moderate Priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 222-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 11-011(a)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-30-13
SWMU 11-011(b)	Baseline Monitoring Extended	Corrective Action Initiated	Initiated 10-30-13

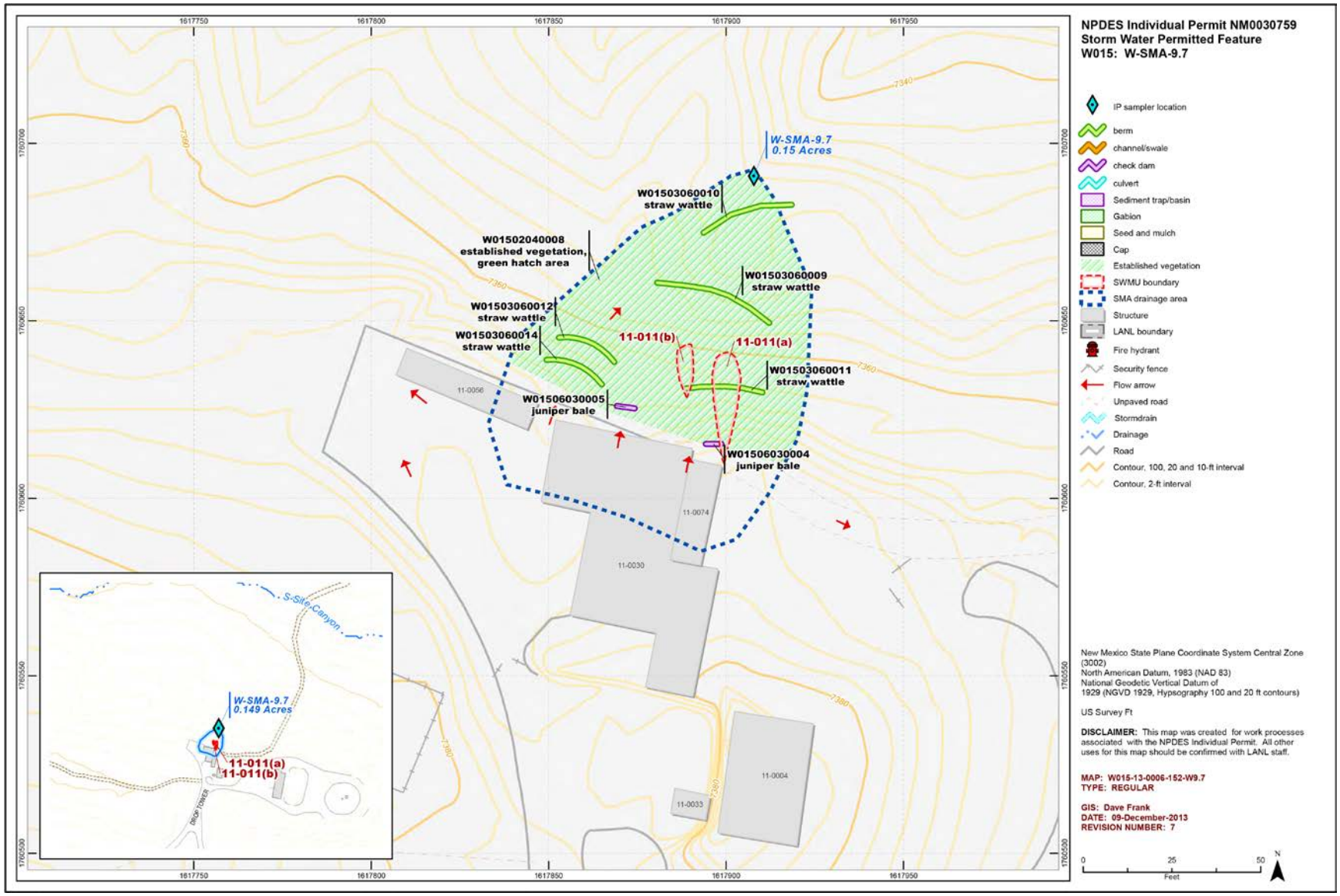
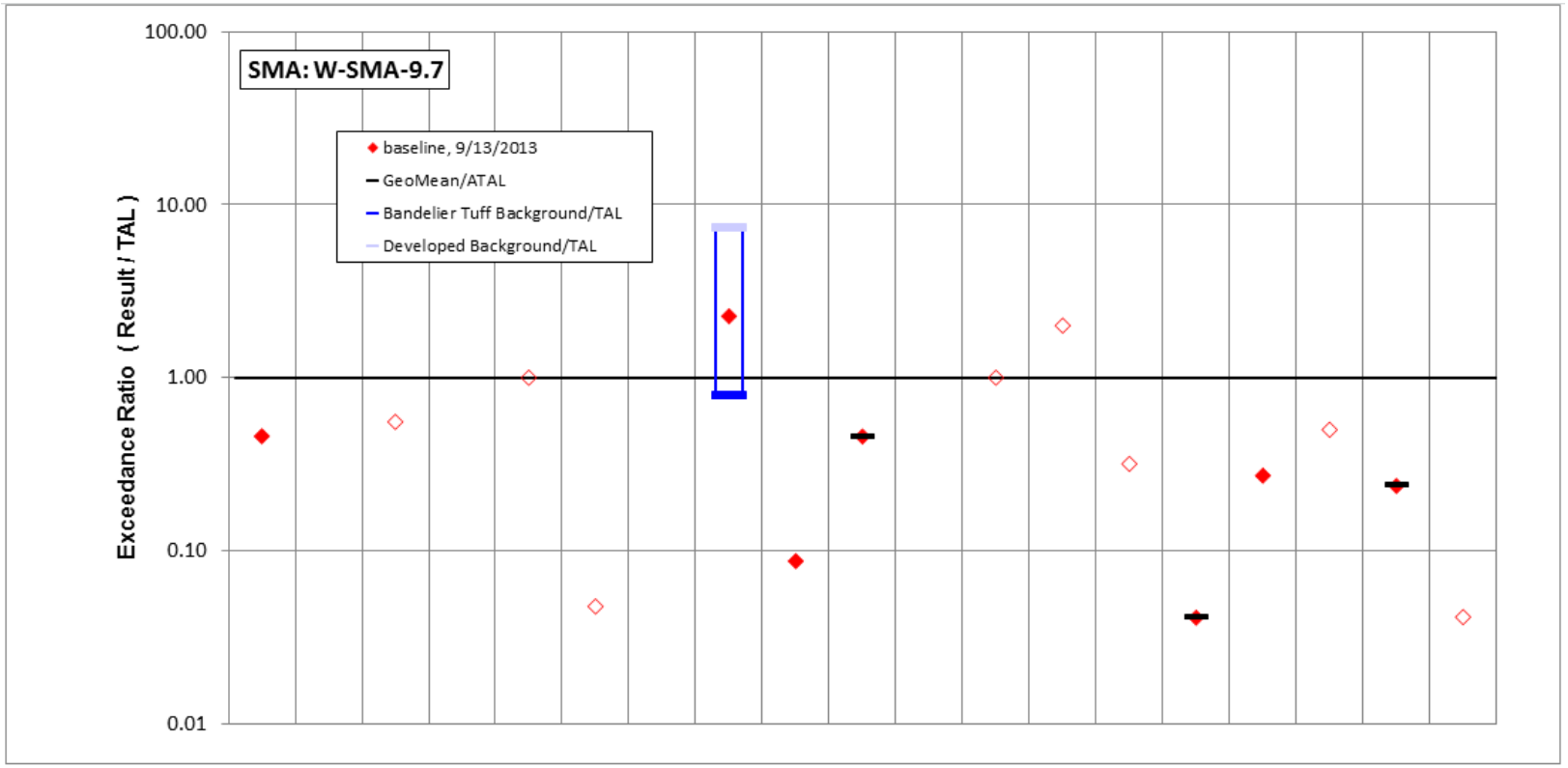


Figure 222-1 W-SMA-9.7 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	Lead	Mercury	Nickel	Selenium	**Silver**	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/13/2013 result	344	*3*	*5*	43.2	*1*	*10*	*5*	**9.74**	1.48	0.352	0.738	*5*	***1***	*2*	4.1	11.4	*0.005*	3.55	*1.24*
result / TAL	0.46	*0.005*	*0.56*	0.0086	*1*	*0.048*	*0.005*	**2.3**	0.087	0.46	0.0043	*1*	***2***	*0.32*	0.041	0.27	*0.5*	0.24	*0.041*

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 222-2 Inorganic analytical results summary plot for W-SMA-9.7

223.0 W-SMA-9.8: SWMU 11-005(c)

223.1 Site Descriptions

One historical industrial activity area is associated with W016, W-SMA-9.8: Site 11-005(c).

SWMU 11-005(c) is a former outfall with a capped drainline north of the former Betatron Building (11-2) at TA-11. The drainline was installed in 1944 and served a sink, a hot water heater, and a floor drain. The outfall discharged to a slightly sloped area consisting of fill from an adjacent roadbed. The drainline was capped before the drop tower complex was constructed in 1956. Building 11-2 was used as a control room for the drop tower and is currently vacant.

Phase I Consent Order sampling is complete for SWMU 11-005(c). All detected constituent concentrations were below residential SSLs and SALs. Nature and extent will be reevaluated under the supplemental investigation report for S-Site Aggregate Area, to be submitted to NMED in late 2014 or early 2015. It is anticipated this Site will be recommended for corrective action complete and will be eligible for a COC under the Consent Order upon approval of the report.

The project map (Figure 223-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

223.2 Control Measures

The primary source of run-on to this SMA is from the paved areas around building 11-0024 and possibly the building's roof drains. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 223-1).

Table 223-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W01602040012	Established Vegetation		X	X		B
W01603020007	Base Course Berm	X			X	CB
W01603060010	Straw Wattles		X		X	CB

CB: Certified baseline control measure.
B: Additional baseline control measure.
EC: Enhanced control measure.

223.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at W-SMA-9.8. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

223.4 Inspections and Maintenance

RG257 recorded eight storm events at W-SMA-9.8 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 223-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30872	5-7-2013
Storm Rain Event	BMP-33049	7-3-2013
Storm Rain Event	BMP-33469	7-18-2013
Storm Rain Event	BMP-33969	7-31-2013
Storm Rain Event	BMP-34613	8-16-2013
Storm Rain Event	BMP-35634	9-20-2013
Annual Erosion Evaluation	COMP-36811	10-29-2013

No maintenance activities were conducted at W-SMA-9.8 in 2013.

223.5 Compliance Status

The Site associated with W-SMA-9.8 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 223-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 11-005(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

W-SMA-9.8, Base Course Berm, W01603020007 (photo ID 10876-2r)

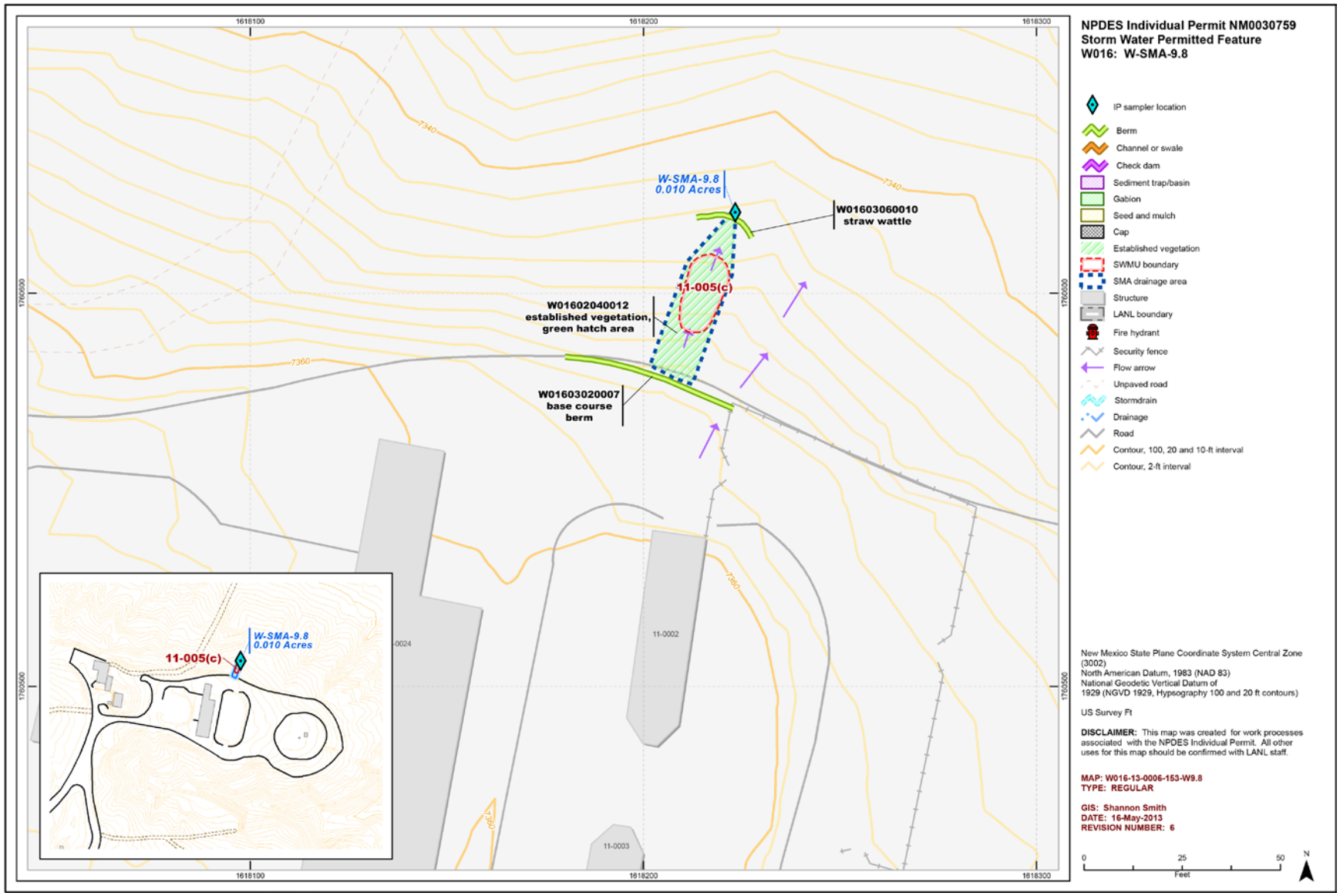


Figure 223-1 W-SMA-9.8 location map

224.0 W-SMA-9.9: SWMU 11-006(b)

224.1 Site Descriptions

One historical industrial activity area is associated with W017, W-SMA-9.9: Site 11-006(b).

SWMU 11-006(b) is one of three inactive catch basins and a former NPDES-permitted outfall (located EPA 05A069) at TA-11 near the drop tower complex. The SWMU 11-006(b) catch basin is located on the north side of the drop tower complex and consists of a concrete basin (structure 11–50) measuring 6 × 4 × 2 ft, equipped with an overflow drain. Historically, SWMU 11-006(b) received washdown water from the concrete pad and asphalt apron at the base of the drop tower via an HE sump [SWMU 11-006(a)]. Any HE particles remaining in the washdown water after it exited the sump were further filtered out in the catch basin. After exiting the catch basin, the remaining wash water was channeled to a drainage and the NPDES-permitted outfall on the northeast side of the catch basin. Waste collected from the catch basin was disposed of at the TA-16 Burning Ground. The outfall was removed from the NPDES permit in May 1998 after drop tower activities ceased. The drop tower underwent D&D in 2004. Currently, the catch basin is capped and sealed; however, the outfall still receives storm water runoff. Any runoff collected in the concrete pad and asphalt apron is now diverted to the other two catch basins associated with the former drop tower.

Phase I Consent Order sampling is complete for SWMU 11-006(b). All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs/SALs. SWMU 11-006(b) will be recommended for corrective action complete in the supplemental investigation report for S-Site Aggregate Area, to be submitted to NMED in 2015. SWMU 11-006(b) will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 224-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

224.2 Control Measures

The curbing located south of the SMA moderates run-on to the Site. Existing controls work to stabilize, promote vegetative growth, and manage sediment migration at the Site. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 224-1).

Enhanced controls were installed and certified on June 27, 2012, and submitted to EPA on July 25, 2012, as part of corrective action. Photographs of the enhanced controls are available at http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 224-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W01702040022	Established Vegetation		X	X		B
W01703010017	Earthen Berm	X			X	EC
W01703010018	Earthen Berm		X		X	EC
W01703010019	Earthen Berm		X		X	EC
W01703010020	Earthen Berm		X		X	EC
W01703090001	Curbing	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

224.3 Storm Water Monitoring

SWMU 11-006(b) is monitored within W-SMA-9.9. Following the installation of baseline control measures, a baseline storm water sample was collected on August 21, 2011 (Figure 224-2). Analytical results from this sample yielded two TAL exceedances:

- Aluminum concentration of 962 µg/L (MTAL is 750 µg/L) and
- Gross-alpha activity of 95.9 pCi/L (ATAL is 15 pCi/L).

Following the installation of enhanced control measures at W-SMA-9.9, a corrective action storm water sample was collected on September 13, 2013 (Figure 224-2). Analytical results from this corrective action monitoring sample yielded one TAL exceedance:

- Gross-alpha activity of 74.4 pCi/L (ATAL is 15 pCi/L).

Corrective action has resulted in a decrease in aluminum concentrations detected in storm water samples collected at W-SMA-9.9.

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 11-006(b):

- Alpha-emitting radionuclides are not known to be associated industrial materials historically managed at the Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241 and plutonium and uranium isotopes, which are alpha-emitting radionuclides. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

Based on the Site history and Consent Order sampling data, the Site is unlikely a source of the TAL exceedance.

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 224-2. 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 224-2. The SMA receives runoff from industrially developed areas and from undeveloped areas.

- 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 urban landscape is 32.5 pCi/L. The 2013 gross-alpha result is between these two values.

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

224.4 Inspections and Maintenance

RG257 recorded eight storm events at W-SMA-9.9 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 224-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30873	5-7-2013
Storm Rain Event	BMP-33050	7-3-2013
Storm Rain Event	BMP-33470	7-18-2013
Storm Rain Event	BMP-33970	7-31-2013
Storm Rain Event	BMP-34614	8-16-2013
Storm Rain Event	BMP-35635	9-20-2013
Annual Erosion Evaluation	COMP-36812	10-29-2013
TAL Exceedance	COMP-37084	10-29-2013

No maintenance activities were conducted at the W-SMA-9.9 in 2013.

224.5 Compliance Status

The Site associated with W-SMA-9.9 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 224-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 11-006(b)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 06-27-2012

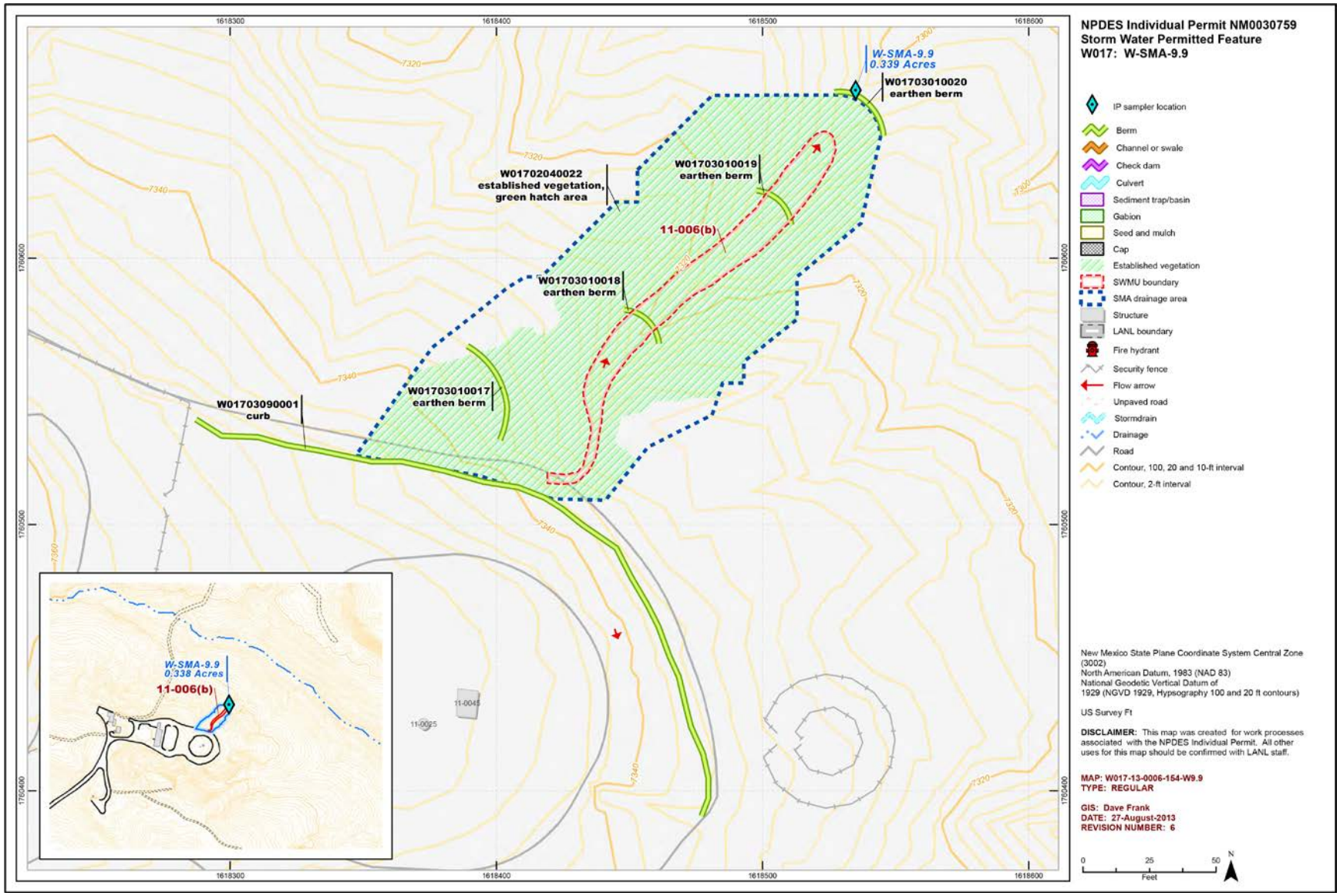
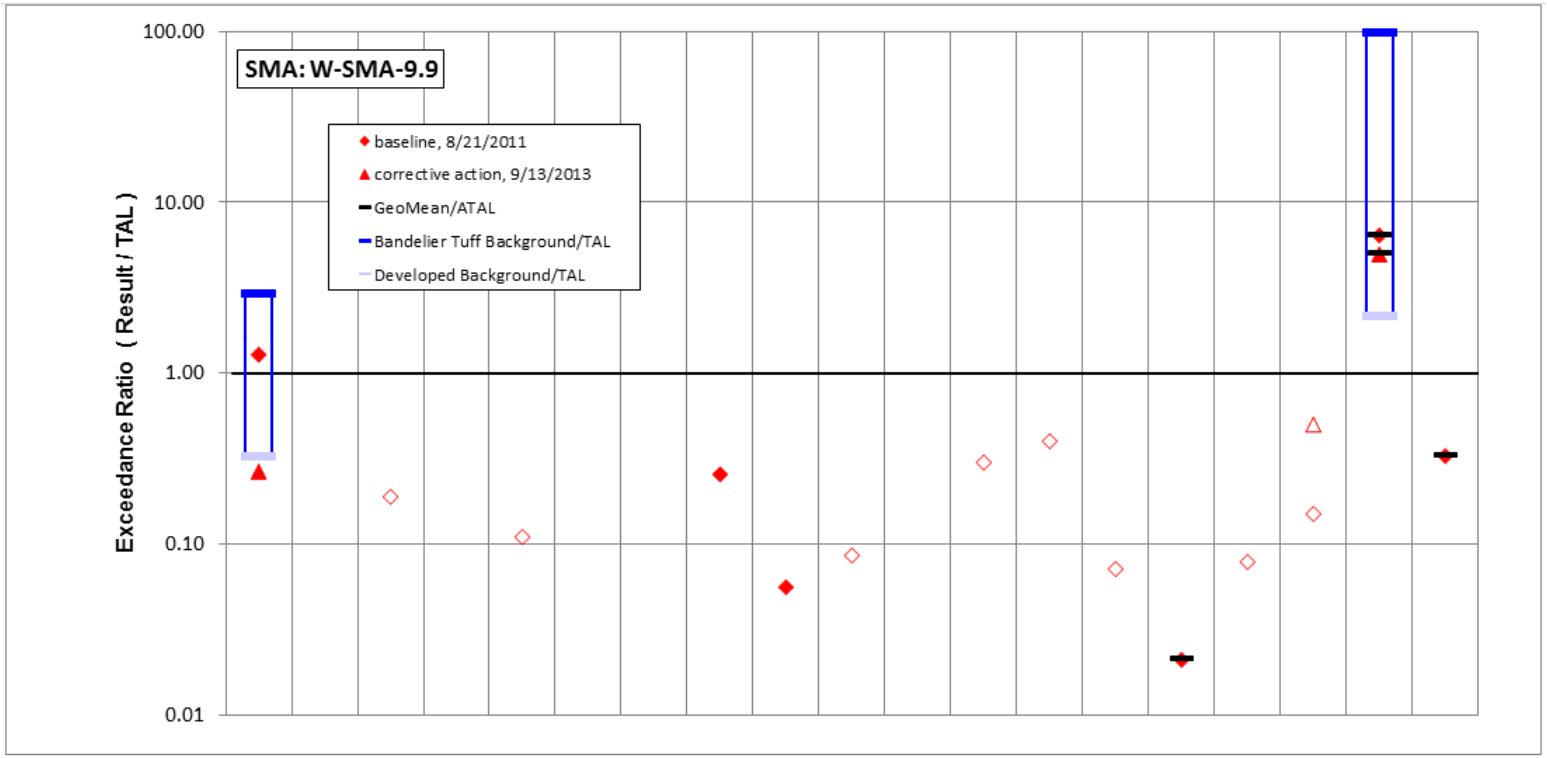


Figure 224-1 W-SMA-9.9 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/13/2013 result	199	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.005*	**74.4**	-
result / TAL	0.27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.5*	**5**	-
8/21/2011 result	**962**	*1*	*1.7*	*15*	*0.11*	*2*	*4.4*	1.1	0.95	*0.066*	*1.2*	*1.5*	*0.2*	*0.45*	2.1	*3.3*	*0.002*	**95.9**	9.82
result / TAL	**1.3**	*0.002*	*0.19*	*0.003*	*0.11*	*0.01*	*0.004*	0.26	0.056	*0.086*	*0.007*	*0.3*	*0.4*	*0.071*	0.021	*0.079*	*0.15*	**6.4**	0.33

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 224-2 Inorganic analytical results summary plot for W-SMA-9.9

225.0 W-SMA-10: SWMUs 11-002, 11-005(a), 11-005(b), 11-006(c), 11-006(d), and 11-011(d) and AOC 11-003(b)

225.1 Site Descriptions

Seven historical industrial activity areas are associated with W018, W-SMA-10, Sites: 11-002, 11-003(b), 11-005(a), 11-005(b), 11-006(c), 11-006(d), and 11-011(d).

SWMU 11-002 is a 30-ft-diameter burning area located east of the drop tower at the edge of its asphalt apron. Beginning in 1948, this area was used as an experimental burning area for components on or in assembled configurations with HE, propellants, and jet fuel. HE and propellant burns were conducted directly on the sand pad, and jet fuel was burned within an open-top steel containment tank. Burning activities continued through 1992.

SWMU 11-002 is deferred per Table IV-2 of the Consent Order; therefore, Consent Order sampling has not been conducted at the Site. No investigations were conducted before the Consent Order went into effect in 2005.

SWMU 11-005(a) is an active septic system located at TA-11 approximately 70 ft southwest of building 11-24. This septic system consists of a septic tank (structure 11-20), associated drainlines from buildings 11-1 and 11-4, and a tile drain field that extends to an outfall on a sloped area to the south of the septic tank. The septic system began operation in 1944. The drainline from building 11-1 has been plugged. Currently, discharge to the septic system comes only from a restroom in building 11-4. Building 11-1 is currently a storage area for electrical equipment but was originally used as a control building for the Betatron Facility (building 11-2) and the Cloud Chamber (building 11-3). Building 11-4 is currently the control building for the Vibration-Test Facility (building 11-30), although it was historically used as a machine shop and photoprocessing facility. A memorandum from 1950 indicated a mercury spill occurred in building 11-4; however, the location, source, and extent of the spill are not known. The outflow drainline from SWMU 11-005(a) was plugged in 1992; since that time the septic tank has been pumped out on a regular basis.

Phase I Consent Order sampling is complete for SWMU 11-005(a). All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs/SALs. SWMU 11-005(a) will be recommended for corrective action complete in the supplemental investigation report for S-Site Aggregate Area, to be submitted to NMED in 2015. SWMU 11-005(a) will be eligible for a COC upon approval of the report by NMED.

SWMU 11-005(b) is an active septic system located at TA-11, approximately 70 ft south of building 11-3. This septic system consists of a septic tank (structure 11-43), an outlet drainline to an outfall to the south of the septic tank, and a drain field west of the drainline. The septic system serves restrooms added to the exterior of building 11-3 and was tied to a floor drain in the test room of building 11-3 until 1992 when the drain was plugged. Engineering drawings confirm the drainline for floor drains in building 11-24 was tied into the septic tank in 1992. Building 11-24 houses an office and light machine shop.

Phase I Consent Order sampling is complete for SWMU 11-005(b). All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs/SALs. SWMU 11-005(b) will be recommended for corrective action complete in the supplemental investigation report for S-Site Aggregate Area to be submitted to NMED in 2015. SWMU 11-005(b) will be eligible for a COC upon approval of the report by NMED.

SWMU 11-006(c) is one of three catch basins and its associated outfall located at TA-11 near the drop tower complex. The SWMU 11-006(c) catch basin is located on the southeast side of the drop tower complex and consists of a concrete basin (structure 11-51) measuring 6 × 4 × 2 ft and a former NPDES-permitted outfall (EPA05A096) that discharged into Water Canyon. Historically, SWMU 11-006(c) received washdown water from the concrete pad and asphalt apron at the base of the drop tower via an HE sump [SWMU 11-006(a)]. Any HE particles remaining in the washdown water after it exited the sump were further filtered out in the catch basin. After exiting the catch basin, the remaining washdown water flowed through an asphalt-lined drainage channel to a natural drainage channel and the NPDES-permitted outfall. HE waste collected from the catch basin was disposed of at the TA-16 Burning Ground. The outfall was removed from the NPDES permit in May 1998 after drop tower operations ceased and discharges to the drainage channels stopped. Any storm water runoff collected in the catch basin since 1998 is pumped to the SWMU 11-006(d) basin.

Phase I Consent Order sampling is complete for SWMU 11-006(c). All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs/SALs. SWMU 11-006(c) will be recommended for corrective action complete in the supplemental investigation report for S-Site Aggregate Area, to be submitted to NMED in 2015. SWMU 11-006(c) will be eligible for a COC upon approval of the report by NMED.

SWMU 11-006(d) is one of three catch basins and its associated outfall located at TA-11 near the drop tower complex. The SWMU 11-006(d) catch basin is located on the south side of the drop tower complex and consists of a concrete basin (structure 11–52) measuring 6 × 4 × 2 ft and a former NPDES-permitted outfall (EPA05A097) that discharged to Water Canyon. Historically, SWMU 11-006(d) received washdown water from the concrete pad and asphalt apron at the base of the drop tower via an HE sump [SWMU 11-006(a)]. Any HE particles remaining in the washdown water after it exited the sump were further filtered out in the catch basin. After exiting the catch basin, the remaining washdown water flowed through an asphalt-lined drainage to a natural drainage channel and then east into Water Canyon. HE waste collected from the catch basin was disposed of at the burning grounds at TA-16. Since drop tower operations ceased in 1998, this catch basin has collected only storm water runoff that drains to the outfall.

Phase I Consent Order sampling is complete for SWMU 11-006(d). All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs/SALs. SWMU 11-006(d) will be recommended for corrective action complete in the supplemental investigation report for S-Site Aggregate Area, to be submitted to NMED in 2015. SWMU 11-006(d) will be eligible for a COC upon approval of the report by NMED.

SWMU 11-011(d) is an outfall located at TA-11 south of building 11-24, the air gun facility. The outfall consisted of a 4-in. steel pipe tied to floor drains the air gun facility. Originally, operations at building 11-24 consisted of acceleration and impact tests on full-scale warhead mockups. After World War II, building 11-24 was converted to an office and light machine shop. The drainline was tied into the SWMU 11-005(d) septic tank in 1992 and all discharges to the outfall ceased.

Phase I Consent Order sampling is complete for SWMU 11-011(d). All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order samples were below residential SSLs/SALs. SWMU 11-011(d) will be recommended for corrective action complete in the supplemental investigation report for S-Site Aggregate Area, to be submitted to NMED in 2015. SWMU 11-011(d) will be eligible for a COC upon approval of the report by NMED.

AOC 11-003(b) is a former mortar impact area used as a target by the decommissioned air gun facility (building 11-24). This AOC is located immediately adjacent to the inactive drop tower complex at TA-11 (K-Site). The air gun facility was completed in 1956. The gun was used to launch experimental packages into targets located south of building 11-24. The targets, located 150 ft to 250 ft south of building 11-24, were 12-ft^2-, 12-in.-thick concrete slabs set in line with the gun bore. Firing into the targets tested various weapons packages designed to withstand extremes of acceleration and deceleration. Some devices contained HE and DU. On a single occasion in 1972, an impact test involved an inert mockup consisting of a 12-in.-diameter, hollow-steel sphere filled with steel or lead ball bearings suspended in a graphite matrix. The sphere fractured upon impact, potentially leaving behind 0.5-in.-diameter steel or lead balls.

AOC 11-003(b) is deferred per Table IV-2 of the Consent Order; therefore, Consent Order sampling has not been conducted at the Site. No investigations were conducted before the Consent Order went into effect in 2005.

The project map (Figure 225-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

225.2 Control Measures

There is the potential for run-on to the SMA from the paved road west of the drop tower. There is also the potential for run-on from roofs of area buildings and the drop tower structure itself. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 225-1).

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 http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 225-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W01802040025	Established Vegetation		X	X		B
W01803010022	Earthen Berm		X		X	EC
W01803010023	Earthen Berm		X		X	EC
W01803010024	Earthen Berm		X		X	EC
W01803040010	Asphalt Berm	X			X	CB
W01803040016	Asphalt Berm	X			X	CB
W01803090002	Curbing	X			X	CB
W01804060004	Rip Rap			X		CB
W01804060013	Rip Rap	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

225.3 Storm Water Monitoring

SWMUs 11-002, 11-005(a), 11-005(b), 11-006(c), 11-006(d), and 11-011(d) and AOC 11-003(b) are monitored within W-SMA-10. Following the installation of baseline control measures, a baseline confirmation sample was collected on August 21, 2011 (Figure 225-2). Inorganic analytical results from this baseline sample yielded one TAL exceedance:

- Gross-alpha activity of 106 pCi/L (ATAL is 15 pCi/L).

This exceedance was evaluated by comparing the result from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 11-002:

- Alpha-emitting radionuclides are not known to be associated industrial materials historically managed at the Site. No investigations have been conducted at this Site. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

Based on the Site history and sampling data, the Site is unlikely a source of the TAL exceedance.

SWMU 11-005(a):

- Alpha-emitting radionuclides are not known to be associated industrial materials historically managed at the Site. Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241 and plutonium and uranium isotopes, which are alpha-emitting radionuclides. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

Based on the Site history and Consent Order sampling data, SWMU 11-005(a) is an unlikely source of the TAL exceedance

SWMU 11-005(b):

- Alpha-emitting radionuclides are not known to be associated industrial materials historically managed at the Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241 and plutonium and uranium isotopes, which are alpha-emitting radionuclides. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

Based on the Site history and Consent Order sampling data, SWMU 11-005(b) is unlikely a source of the TAL exceedance.

SWMU 11-006(c):

- Alpha-emitting radionuclides are not known to be associated industrial materials historically managed at the Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241 and plutonium and uranium isotopes, which are alpha-emitting radionuclides. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

Based on the Site history and Consent Order sampling data, SWMU 11-006(c) is unlikely a source of the TAL exceedance.

SWMU 11-006(d):

- Alpha-emitting radionuclides are not known to be associated industrial materials historically managed at the Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241 and plutonium and uranium isotopes, which are alpha-emitting radionuclides. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

Based on the Site history and Consent Order sampling data, SWMU 11-006(d) is unlikely a source of the TAL exceedance.

SWMU 11-011(d):

- Alpha-emitting radionuclides are not known to be associated industrial materials historically managed at the Site. Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241 and plutonium and uranium isotopes, which are alpha-emitting radionuclides. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

Based on the Site history and Consent Order sampling data, SWMU 11-011(d) is unlikely a source of the TAL exceedance.

AOC 11-003(b):

- Alpha-emitting radionuclides are not known to be associated industrial materials historically managed at the Site. No investigations have been conducted at this Site. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

Based on the Site history, AOC 11-003(b) is unlikely a source of the TAL exceedance.

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 225-2. 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 225-2.

Monitoring location W-SMA-10 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as locations with 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 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 urban landscape is 32.5 pCi/L. The gross-alpha result from 2011 is between these two values.

All the analytical results for these samples are reported in the 2011 Annual Report.

225.4 Inspections and Maintenance

RG257 recorded eight storm events at W-SMA-10 during the 2013 season. These rain events triggered five post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

Table 225-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30853	5-7-2013
Storm Rain Event	BMP-33040	7-3-2013
Storm Rain Event	BMP-33460	7-18-2013
Storm Rain Event	BMP-33960	7-31-2013
Storm Rain Event	BMP-34604	8-16-2013
Storm Rain Event	BMP-35625	9-20-2013
Annual Erosion Evaluation	COMP-36792	10-29-2013

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

Table 225-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-31887	Remove rebar. Replace with wooden stakes as necessary. Remove excess matting material stored on pavement at west end of curb -0002. RCT scanned material 5/7/13.	7-31-2013	85 day(s)	Maintenance conducted as soon as practicable.
BMP-37095	Repair spillway of berm W01803010023 by removing woody debris. Reassemble rip rap on backside of berm spillway. Rock is on site and has migrated approx. 15 ft downstream. Assess spillway on berm-0024.	12-2-2013	34 day(s)	Maintenance conducted as soon as practicable.

225.5 Compliance Status

The Sites associated with W-SMA-10 are Moderate Priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 225-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 11-002	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 08-23-2012
SWMU 11-005(a)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 08-23-2012
SWMU 11-005(b)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 08-23-2012
SWMU 11-006(c)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 08-23-2012
SWMU 11-006(d)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 08-23-2012
SWMU 11-011(d)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 08-23-2012
AOC 11-003(b)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 08-23-2012

W-SMA-10, Permanent Vegetation, W01802010009 (photo ID 26065-5)

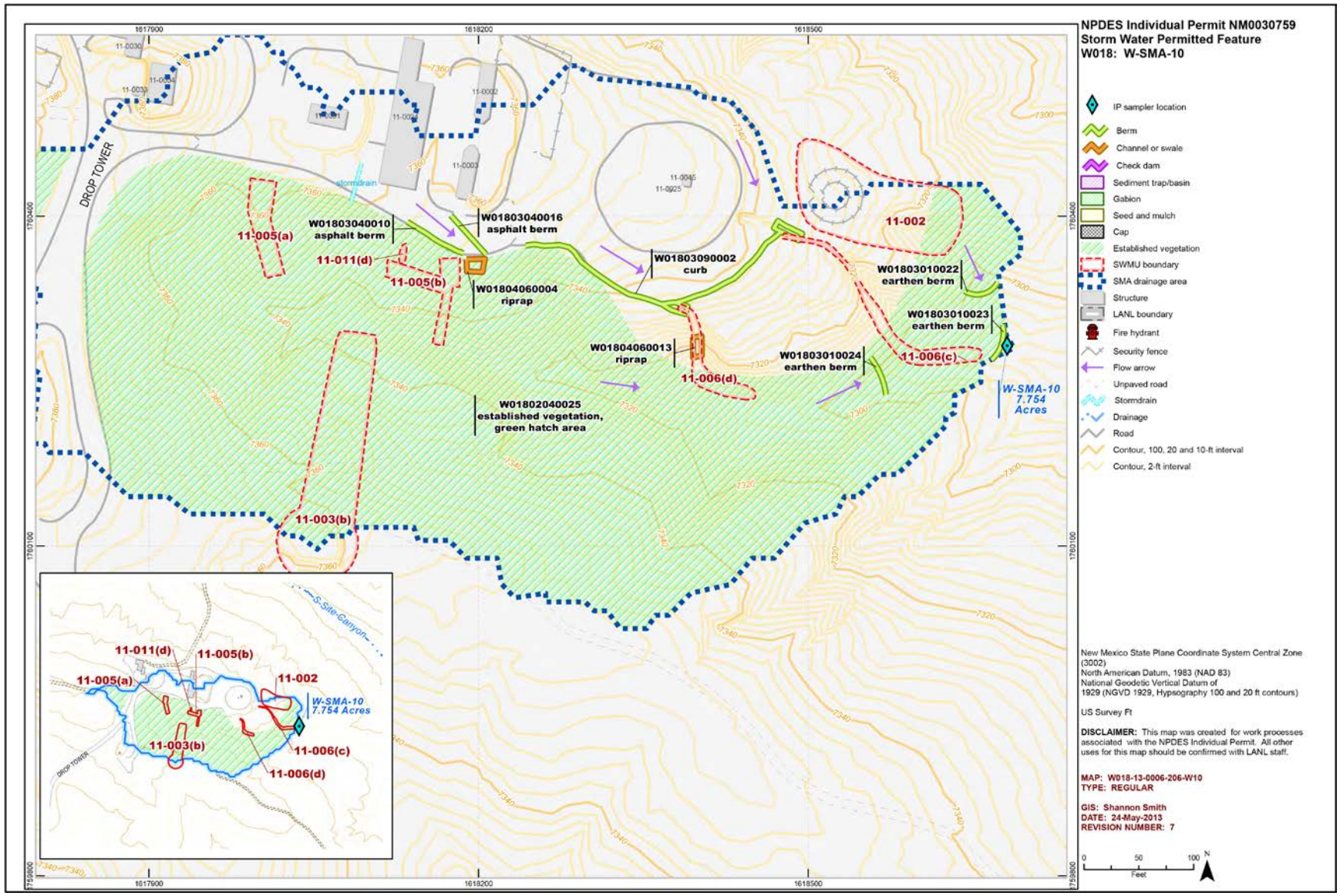
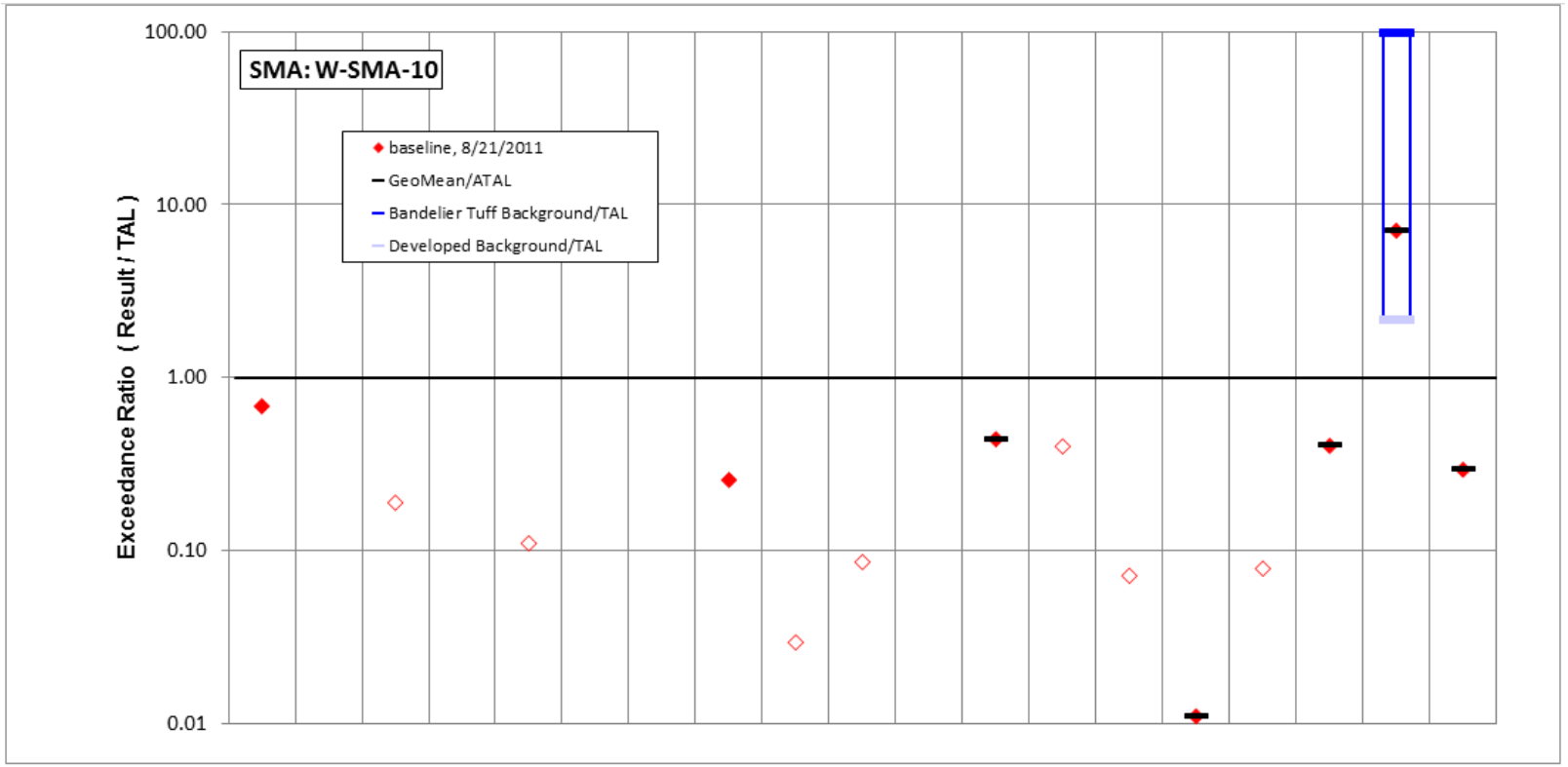


Figure 225-1 W-SMA-10 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
8/21/2011 result	512	*1*	*1.7*	*15*	*0.11*	*2*	*3.4*	1.1	*0.5*	*0.066*	*0.72*	2.2	*0.2*	*0.45*	1.1	*3.3*	0.004	**106**	8.79
result / TAL	0.68	*0.002*	*0.19*	*0.003*	*0.11*	*0.01*	*0.003*	0.26	*0.029*	*0.086*	*0.004*	0.44	*0.4*	*0.071*	0.011	*0.079*	0.4	**7.1**	0.29

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 225-2 Inorganic analytical results summary plot for W-SMA-10

226.0 W-SMA-11.7: AOC 49-008(c)

226.1 Site Descriptions

One historical industrial activity area is associated with W019, W-SMA-11.7: Site 49-008(c).

AOC 49-008(c) consists of an area of potentially contaminated soil from historical radiochemistry operations and small-scale containment experiments at Area 11 within the northern portion of the MDA AB NES boundary at TA-49. Area 11 is approximately 220 × 300 ft. Activities conducted at Area 11 from 1959 to 1961 supported hydronuclear experiments conducted elsewhere at TA-49. Radiochemistry operations were conducted in a former laboratory and change house (former building 49-15) that was the main structure at Area 11. Other structures included a small storage building, latrines, and butane and propane tanks. The former building 49-15 laboratory was used to analyze samples collected during experiments in the experimental shafts at Areas 2, 2A, 2B, and 4. Laboratory processes included sample dissolution in acids (nitric, hydrochloric, hydrofluoric, sulfuric, and perchloric) and solvent extraction using methyl isobutyl ketone, ammonium hydroxide, and sodium hydroxide. Wastes generated during radiochemical operations were typically collected in containers and taken to radioactive waste disposal facilities elsewhere at the Laboratory. Interim waste storage boxes were stored south of former building 49-15. Small-scale containment experiments were conducted in 13 underground shafts located on the west side of Area 11. These shafts were drilled to a depth of 12 ft and lined with 10-in.-diameter steel casing. HE was placed in the shafts, which were backfilled to contain the explosions. Small amounts of irradiated uranium-238 tracer were used in some experiments. The structures in Area 11 were decontaminated and removed in 1970 and 1971. Radiological contamination was detected in sinks, ducts, and hoods in former building 49-15. Contaminated debris was removed and disposed of at TA-54 and uncontaminated debris (approximately 2160 ft^3) was taken to the open-burning/landfill area at Area 6 (SWMU 49-004).

During the 1987 soil and vegetation radiological-screening survey of TA-49, 22 surface samples were collected from within Area 11, and 20 vegetation samples were collected within and around Area 11. The samples were analyzed for radionuclides, and the results showed radionuclides at background levels for most sampling locations; however, elevated levels of americium-241 and plutonium and uranium isotopes were present in a sample from a location next to the east corner of former building 49-15, possibly where the sink drain was located. Vegetation samples showed no elevated radioactivity.

Phase I Consent Order sampling is complete for AOC 49-008(c). All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order and RFI samples were below residential SSLs and SALs. AOC 49-008(c) will be recommended for corrective action complete in the supplemental investigation report for TA-49 Sites inside the NES boundary, to be submitted to NMED in 2015. AOC 49-008(c) will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 226-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

226.2 Control Measures

There are no significant run-on concerns at this SMA. The access road is banked away from the SMA and the surrounding area is undeveloped. Existing controls manage sediment migration associated with any storm water discharge from this SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 226-1).

Enhanced controls were installed and certified on October 23, 2012, and submitted to EPA on October 25, 2012, as part of corrective action. Photographs of the enhanced controls are available at http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 226-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W01902040052	Established Vegetation		X	X		B
W01903010040	Earthen Berm	X			X	B
W01903010041	Earthen Berm		X		X	EC
W01903010042	Earthen Berm		X		X	EC
W01903010043	Earthen Berm		X		X	EC
W01903010044	Earthen Berm		X		X	EC
W01903010045	Earthen Berm		X		X	EC
W01903010046	Earthen Berm		X		X	EC
W01903010047	Earthen Berm		X		X	EC
W01903010048	Earthen Berm		X		X	EC
W01903010049	Earthen Berm		X		X	EC
W01903010050	Earthen Berm		X		X	EC
W01904010051	Earthen Channel/Swale	X		X		EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

226.3 Storm Water Monitoring

AOC 49-008(c) is monitored within W-SMA-11.7. Following the installation of baseline control measures, a baseline storm water sample was collected on September 1, 2011 (Figure 226-2). Analytical results from this sample yielded two TAL exceedances:

- Aluminum concentration of 1020 µg/L (MTAL is 750 µg/L), and
- Gross-alpha activity of 38.1 pCi/L (ATAL is 15 pCi/L).

Following the installation of enhanced control measures at W-SMA-11.7, a corrective action storm water sample was collected on September 13, 2013 (Figure 226-2). Analytical results from this corrective action monitoring sample yielded one TAL exceedance:

- Gross-alpha activity of 39.6 pCi/L (ATAL is 15 pCi/L).

Corrective action has resulted in a decrease in aluminum concentrations detected in storm water samples collected at W-SMA-11.7.

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

AOC 49-008(c):

- Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at SWMU 49-008(c). Shallow Consent Order and RFI samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241 and plutonium and uranium isotopes, which are alpha-emitting radionuclides. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

Site history and Consent Order sampling results indicate the Site is unlikely a source of the TAL exceedance.

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 226-2. 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 226-2.

W-SMA-11.7 receives runoff from former industrially developed and undeveloped areas.

- 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 urban landscape is 32.5 pCi/L. The 2013 gross-alpha result is between these two values.

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

226.4 Inspections and Maintenance

RG262.4 recorded eight storm events at W-SMA-11.7 during the 2013 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 226-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30854	5-9-2013
Storm Rain Event	BMP-33183	7-24-2013
Storm Rain Event	BMP-34195	8-8-2013
Storm Rain Event	BMP-35646	9-20-2013
Annual Erosion Evaluation	COMP-36793	10-28-2013
TAL Exceedance	COMP-37082	10-28-2013

No maintenance activities were conducted at W-SMA-11.7 in 2013.

226.5 Compliance Status

The Site associated with W-SMA-11.7 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 226-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
AOC 49-008(c)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 10-23-2012

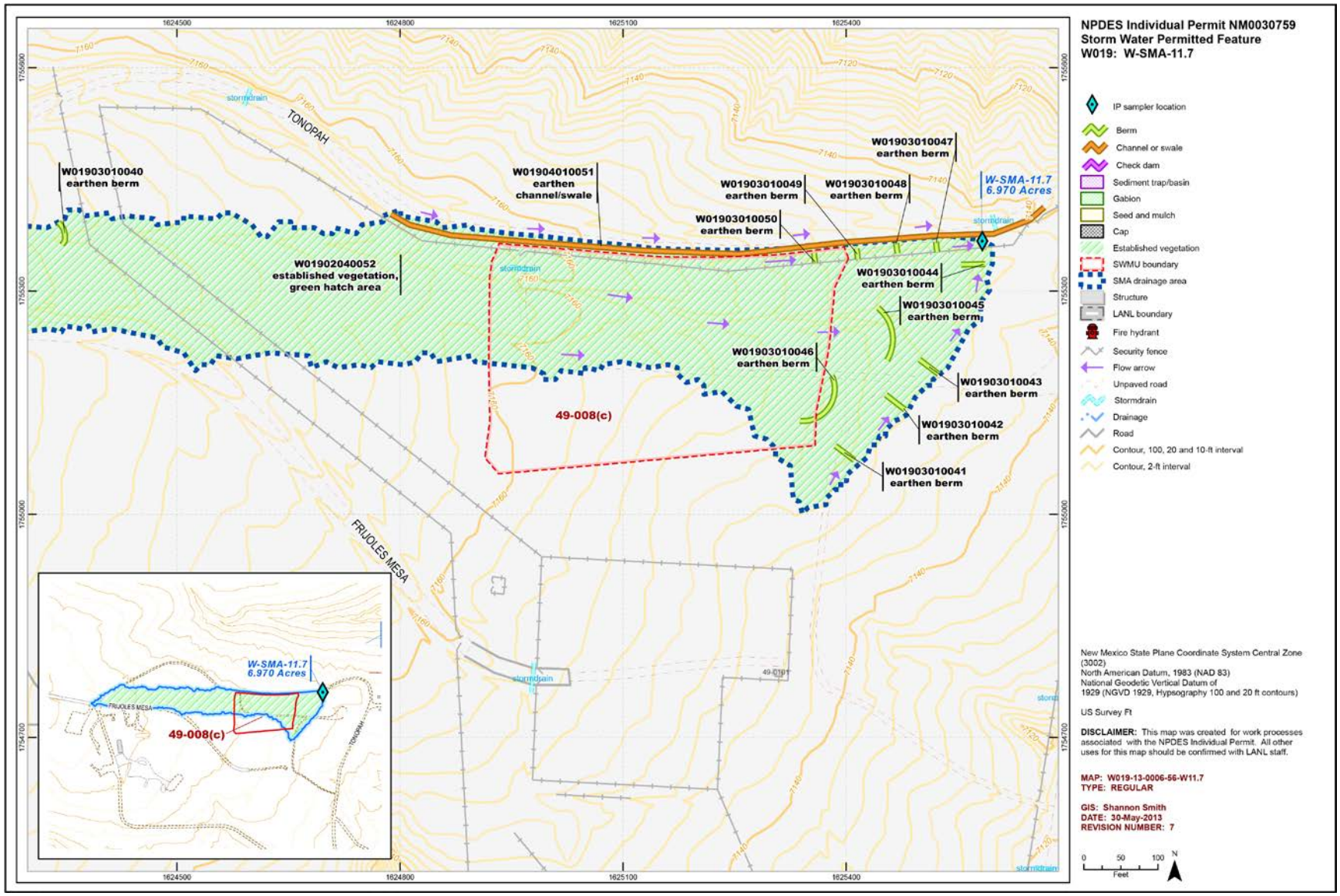
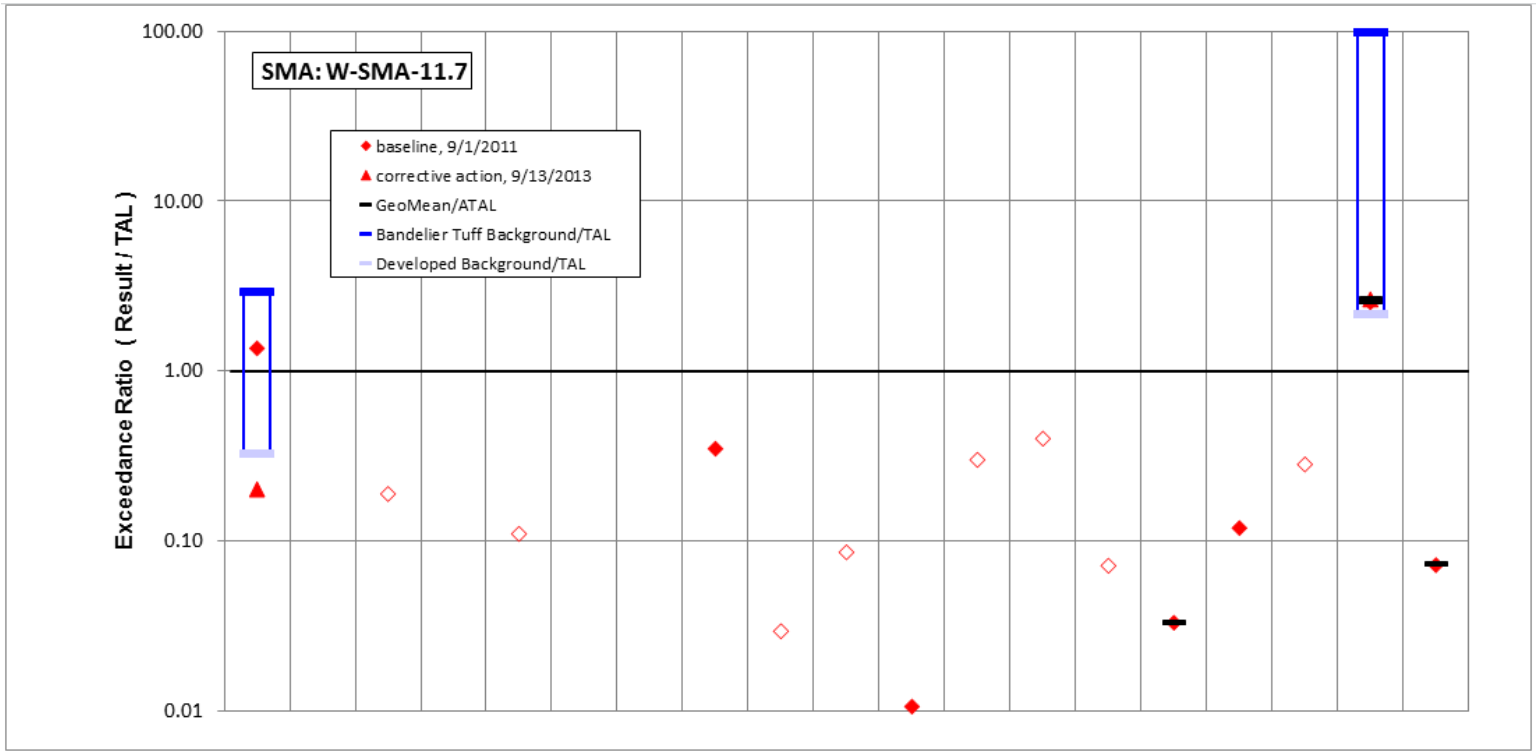


Figure 226-1 W-SMA-11.7 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/13/2013 result	151	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**39.6**	-
result / TAL	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2.6**	-
9/1/2011 result	**1020**	*1*	*1.7*	*15*	*0.11*	*2*	2.5	1.5	*0.5*	*0.066*	1.8	*1.5*	*0.2*	*0.45*	3.3	5	*0.003*	**38.1**	2.16
result / TAL	**1.4**	*0.002*	*0.19*	*0.003*	*0.11*	*0.01*	0.0025	0.35	*0.029*	*0.086*	0.011	*0.3*	*0.4*	*0.071*	0.033	0.12	*0.28*	**2.5**	0.072

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 226-2 Inorganic analytical results summary plot for W-SMA-11.7

227.0 W-SMA-12.05: SWMU 49-001(g)

227.1 Site Descriptions

One historical industrial activity area is associated with W020, W-SMA-12.05: Site 49-001(g).

SWMU 49-001(g) is an area of contaminated surface soil at TA-49, north and east of MDA AB, resulting from the transport of surface and near-surface radionuclide contamination associated with an historical release from shaft 2-M at Area 2 (MDA AB). SWMU 49-001(g) is the area of highest runoff and erosion potential, located on a slope that runs from the mesa-top portion of the MDA AB NES north to the bottom of Water Canyon. Erosion-control BMPs were installed at the Site in 1999 and are routinely inspected and maintained.

Phase I Consent Order sampling is complete for SWMU 49-001(g). All detected constituents in Consent Order samples were below residential SSLs and SALs. SWMU 49-001(g) will be recommended for corrective action complete in the supplemental investigation report for TA-49 Sites inside the NES boundary, to be submitted to NMED in 2015. SWMU 49-001(g) will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 227-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

227.2 Control Measures

Run-on enters the SMA from the unpaved access road on the southern border of the SMA. Existing controls are to mitigate impacts from this run-on source. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 227-1).

Table 227-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W02002040018	Established Vegetation		X	X		B
W02003010015	Earthen Berm		X		X	B
W02003010016	Earthen Berm		X		X	B
W02003010017	Earthen Berm		X		X	B
W02004060002	Rip Rap	X		X		CB
W02006010001	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

227.3 Storm Water Monitoring

Through calendar year 2013, storm water flow has not been sufficient for full-volume sample collection at W-SMA-12.05. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

227.4 Inspections and Maintenance

RG262.4 recorded eight storm events at W-SMA-12.05 during the 2013 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 227-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30855	5-9-2013
Storm Rain Event	BMP-33186	7-16-2013
Storm Rain Event	BMP-34198	8-7-2013
Storm Rain Event	BMP-35649	9-19-2013
Annual Erosion Evaluation	COMP-36794	10-28-2013

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

Table 227-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-33827	Repair matting on berm W02003010016 as necessary.	7-30-2013	14 day(s)	Maintenance conducted in timely manner.

227.5 Compliance Status

The Site associated with W-SMA-12.05 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 227-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 49-001(g)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

W-SMA-12.05, Rip Rap, W02004060002 (photo ID 8516-1r)

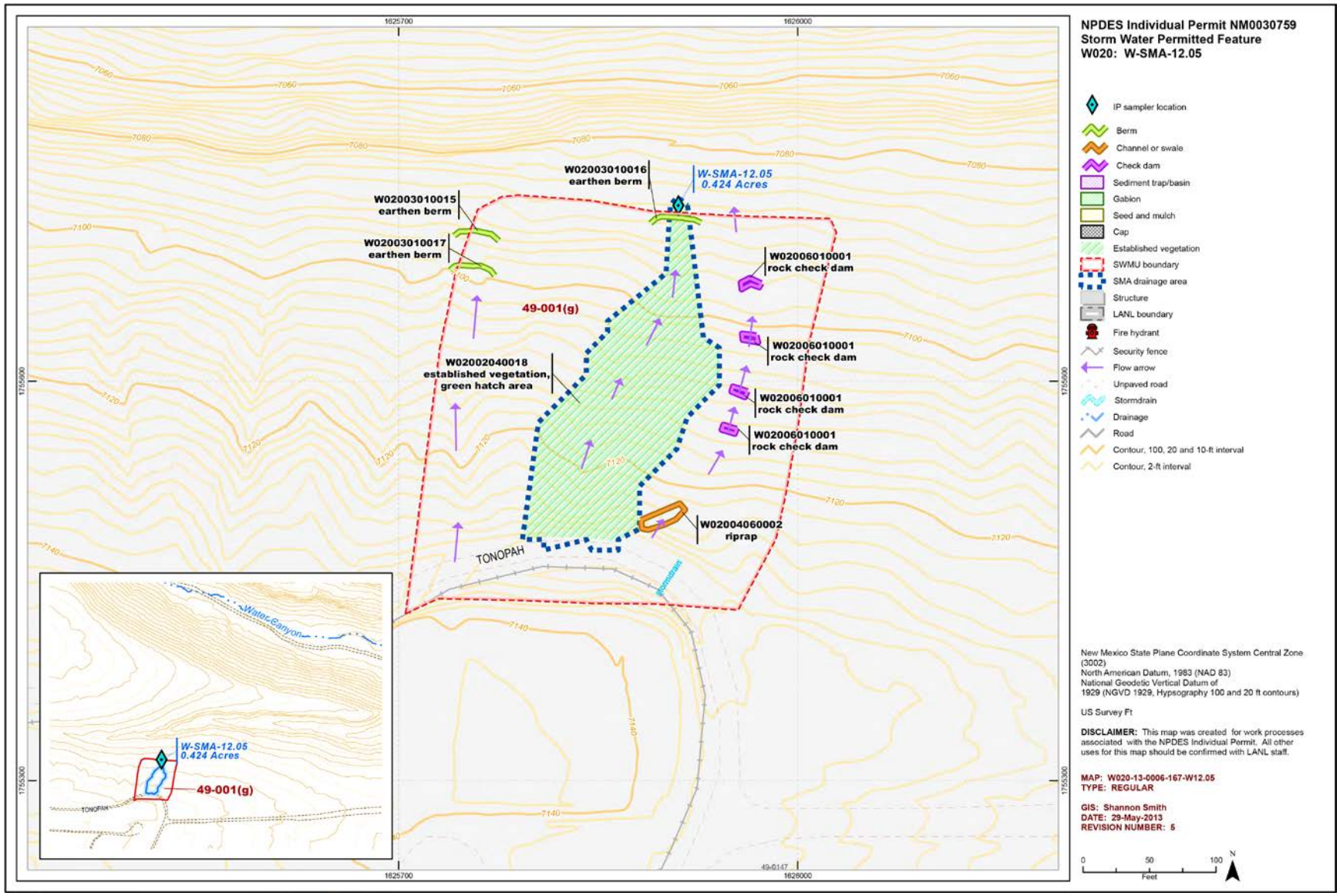


Figure 227-1 W-SMA-12.05 location map

228.0 W-SMA-14.1: SWMU 15-014(l) and AOC 15-004(h)

228.1 Site Descriptions

Two historical industrial activity areas are associated with W021, W-SMA-14.1: Sites 15-014(l), and 15-004(h).

SWMU 15-014(l) is a drainline and formerly permitted outfall (EPA 03A028) for a cooling tower (structure 15-202) located within the PHERMEX facility in TA-15. This drainline and outfall received blowdown discharge from the cooling tower that was built in 1961. It is not known if the outfall is still active.

SWMU 15-014(l) will be included in the future Consent Order Lower Water/Indio Canyons Aggregate Area investigation. No investigations were conducted at SWMU 15-014(l) before the Consent Order went into effect in 2005.

AOC 15-004(h) is inactive Firing Site H located west of the PHERMEX facility at TA-15. Firing Site H is located approximately 100 ft north of the power control building for PHERMEX (structure 15-185). This firing site was built in 1948 and included an instrument chamber (structure 15-17) and a camera chamber (structure 15-92) and was used for explosives testing. The exact nature of the materials used during tests is not known but are believed to include DU, beryllium, lead, and HE. Firing site operations were discontinued in 1953. The surface of the Site was reportedly regraded in 1992. The camera chamber (structure 15-92) remains on-site.

AOC 15-004(h) will be included in the future Consent Order Lower Water/Indio Canyons Aggregate Area investigation. No investigations were conducted at AOC 15-004(h) before the Consent Order went into effect in 2005.

The project map (Figure 228-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

228.2 Control Measures

There is the potential for significant run-on from paved access roads, parking areas, and roof drainage at this SMA. Existing controls manage sediment migration from the Sites within the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 228-1).

Enhanced controls were installed and certified on September 25, 2012, and submitted to EPA on October 25, 2012, as part of corrective action. Photographs of the enhanced controls are available at http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 228-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W02102040021	Established Vegetation		X	X		B
W02103010016	Earthen Berm		X		X	EC
W02103010017	Earthen Berm		X		X	EC
W02103010018	Earthen Berm		X		X	EC
W02103010019	Earthen Berm		X		X	EC
W02103010020	Earthen Berm	X			X	EC
W02104060014	Rip Rap	X		X		CB
W02106010008	Rock Check Dam	X			X	CB
W02106010009	Rock Check Dam	X			X	CB
W02106010010	Rock Check Dam	X			X	CB
W02106010011	Rock Check Dam	X			X	CB
W02106010012	Rock Check Dam		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

228.3 Storm Water Monitoring

SWMU 15-014(l) and AOC 15-004(h) are monitored within W-SMA-14.1. Following the installation of baseline control measures, two baseline storm water samples were collected on July 25, 2011, and August 18, 2011 (Figures 228-2 and 228-3). Analytical results from these samples yielded two TAL exceedances:

- Copper concentrations of 20 µg/L and 42.6 µg/L (MTAL is 4.3 µg/L), and
- Zinc concentration of 49.3 µg/L (MTAL is 42 µg/L).

Following the installation of enhanced control measures at W-SMA-14.1, a corrective action storm water sample was collected on September 13, 2013 (Figures 228-2 and 228-3). Analytical results from this corrective action monitoring sample yielded one TAL exceedance:

- Gross-alpha activity of 38.7 pCi/L (ATAL is 15 pCi/L).

Corrective action has resulted in a decrease in copper and zinc concentrations detected in storm water samples collected at W-SMA-14.1.

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 15-014(l):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this Site. No investigations have been conducted at this Site. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA.

Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

AOC 15-004(h):

- Alpha-emitting radionuclides are known to have been associated with industrial materials historically managed at this Site. No investigations have been conducted at this Site. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

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 Figures 228-2 and 228-3. 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 Figures 228-2 and 228-3.

W-SMA-14.1, Rock Check Dam, W02106010012 (photo ID 25735-4)

Monitoring location W-SMA-14.1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as locations with sediment derived from Bandelier Tuff. Metals including copper and zinc are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff.

- 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 urban landscape is 32.5 pCi/L. The 2013 gross-alpha result is between these two values.

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

228.4 Inspections and Maintenance

RG262.4 recorded eight storm events at W-SMA-14.1 during the 2013 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 228-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30856	4-3-2013
Storm Rain Event	BMP-33184	7-10-2013
Storm Rain Event	BMP-33693	7-22-2013
Storm Rain Event	BMP-34196	8-5-2013
Storm Rain Event	BMP-35647	9-24-2013
Annual Erosion Evaluation	COMP-36795	11-4-2013
TAL Exceedance	COMP-37083	11-4-2013

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

Table 228-3 Maintenance during 2013

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-36931	Repair rock check dam W02106010008 by adding angular rock to extend east end. Remove needlecast and pine cones from rock check dam.	12-6-2013	73 day(s)	Maintenance conducted as soon as practicable.
BMP-36932	Repair rock check dam W02106010009 by adding angular rock to extend east end. Remove needlecast and pine cones.	12-6-2013	73 day(s)	Maintenance conducted as soon as practicable.
BMP-36933	Remove needle cast and pine cones from rock check dam W02106010012	12-6-2013	73 day(s)	Maintenance conducted as soon as practicable.
BMP-36934	Add angular rock to downstream side of spillway on berm W02103010016 to replace displaced rock. Relevel rock on spillway as needed.	12-6-2013	73 day(s)	Maintenance conducted as soon as practicable.
BMP-36935	Repair fabric on spillway as needed. Add angular rock to spillway on berm W02103010018 to replace displaced rock. Relevel rock on spillway as needed.	12-6-2013	73 day(s)	Maintenance conducted as soon as practicable.

228.5 Compliance Status

The Sites associated with W-SMA-14.1 are Moderate Priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 228-4 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 15-014(l)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 09-25-2012
AOC 15-004(h)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 09-25-2012

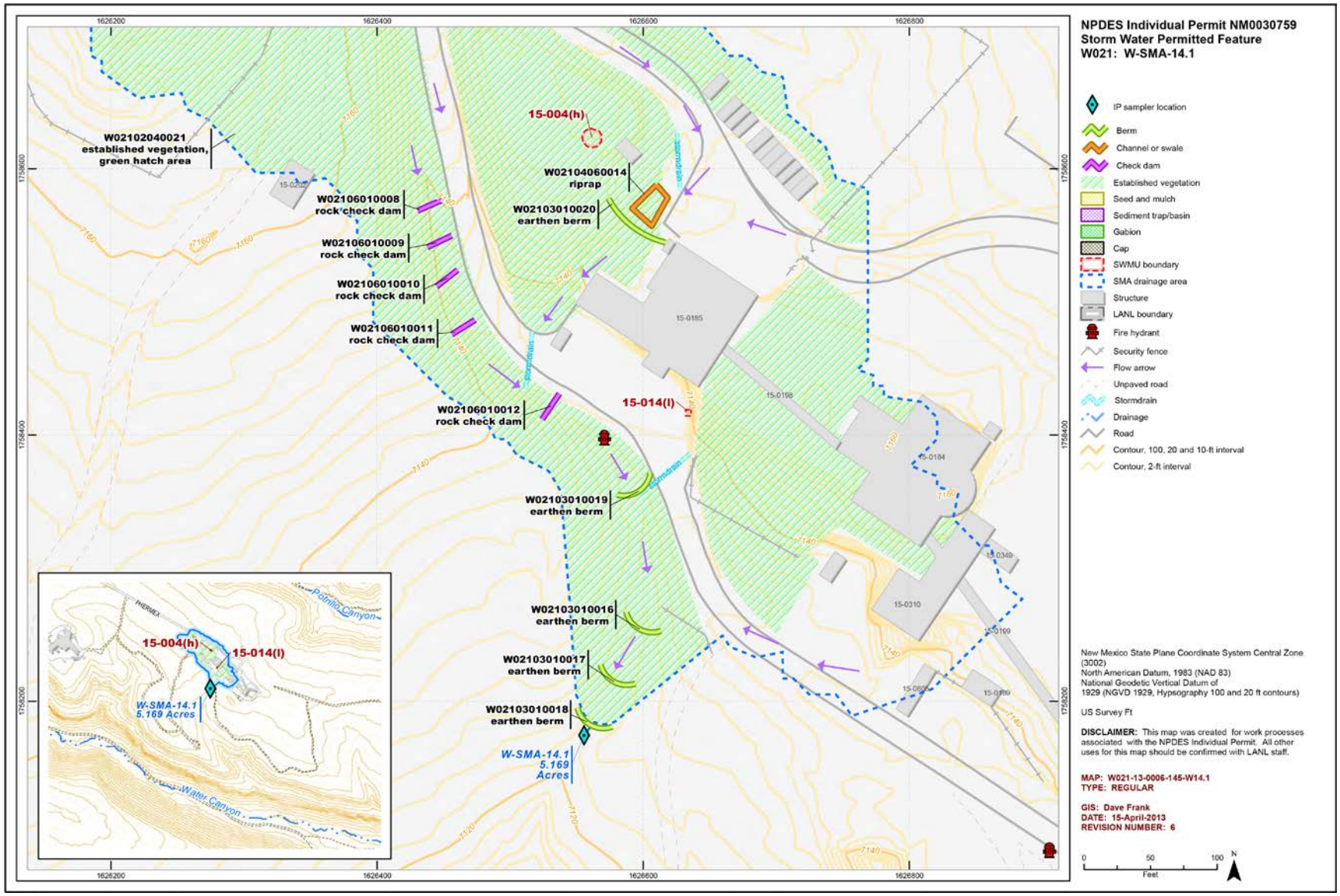
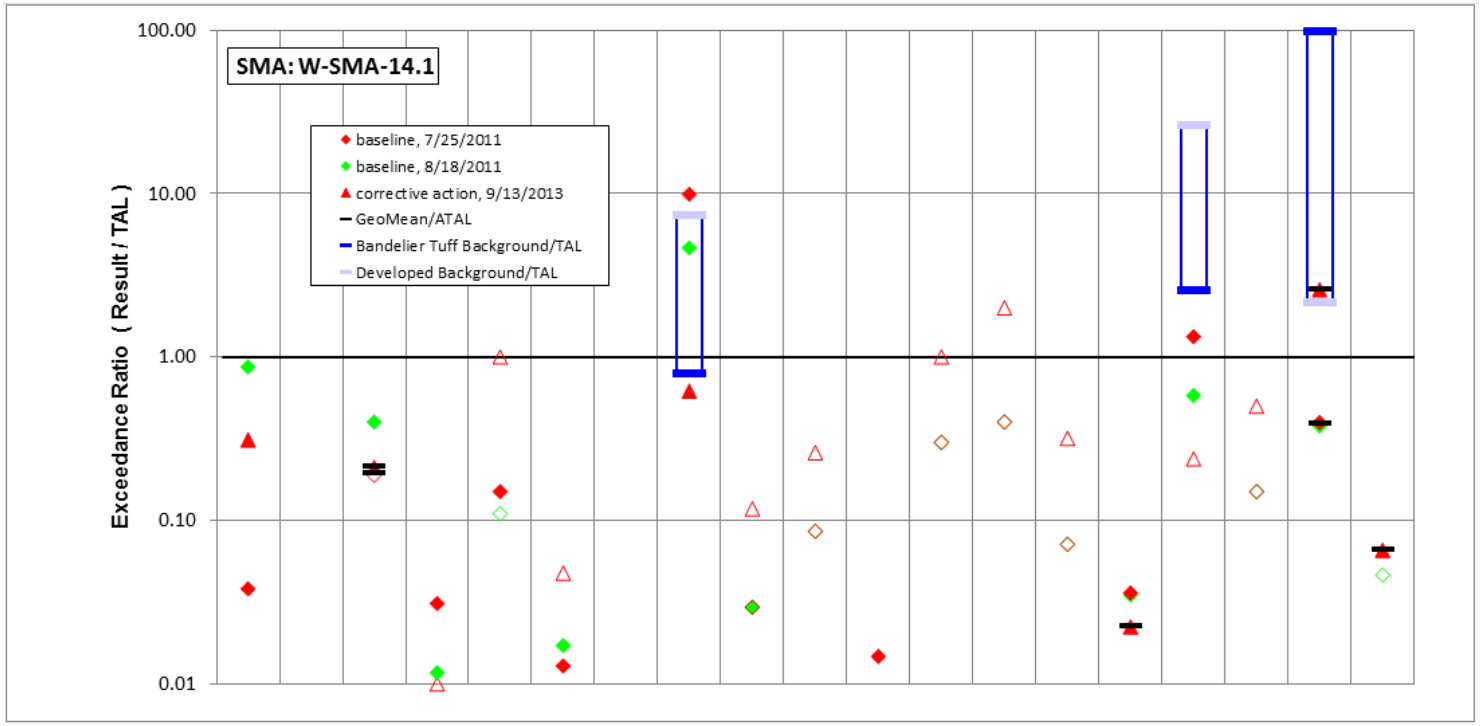


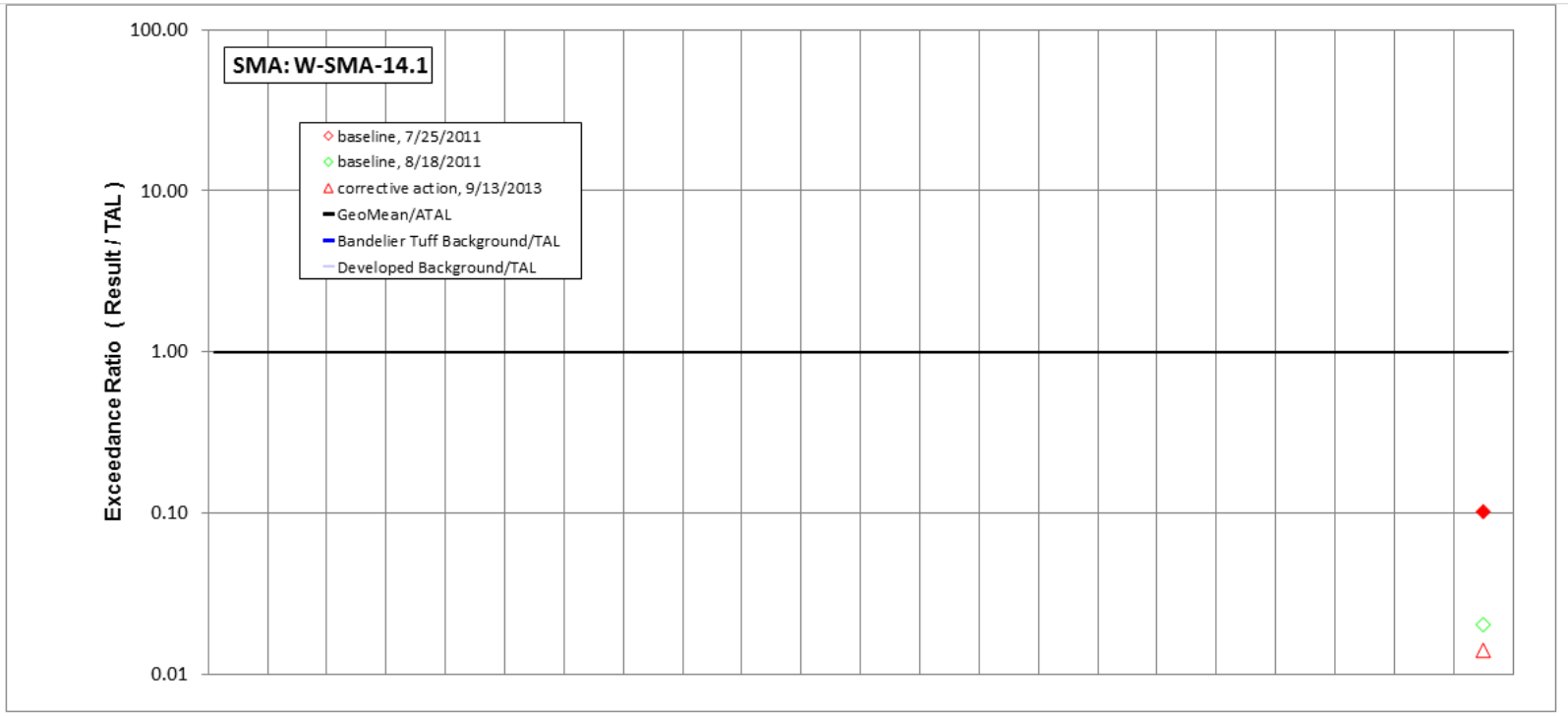
Figure 228-1 W-SMA-14.1 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	**Copper**	Lead	Mercury	Nickel	Selenium	**Silver**	Thallium	Vanadium	**Zinc**	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/13/2013 result	233	*3*	1.9	*50*	*1*	*10*	5	2.66	*2*	*0.2*	0.569	5	***1***	*2*	2.23	*10*	*0.005*	**38.7**	1.97
result / TAL	0.31	*0.005*	0.21	*0.01*	*1*	*0.048*	*0.005*	0.62	*0.12*	*0.26*	0.0033	*1*	***2***	*0.32*	0.022	*0.24*	*0.5*	**2.6**	0.066
8/18/2011 result	652	1.1	3.6	58.5	*0.11*	3.6	*1*	**20**	0.5	*0.066*	1.5	*1.5*	*0.2*	*0.45*	3.5	24.4	*0.002*	5.68	*1.39*
result / TAL	0.87	0.0017	0.4	0.012	*0.11*	0.017	*0.001*	**4.7**	0.029	*0.086*	0.0088	*0.3*	*0.4*	*0.071*	0.035	0.58	*0.15*	0.38	*0.046*
7/25/2011 result	28.6	*1*	*1.7*	155	0.15	2.7	1.8	**42.6**	*0.5*	*0.066*	2.5	*1.5*	*0.2*	*0.45*	3.6	**55.9**	*0.002*	5.96	*0.258*
result / TAL	0.038	*0.002*	*0.19*	0.031	0.15	0.013	0.0018	**9.9**	*0.029*	*0.086*	0.015	*0.3*	*0.4*	*0.071*	0.036	**1.3**	*0.15*	0.4	*0.009*

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 228-2 Inorganic analytical results summary plot for W-SMA-14.1



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-	-	ATAL
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	-	-	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
9/13/2013 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.281*	-	-	-	*0.281*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.001*	-	-	-	*0.014*
8/18/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.406*	-	-	-	*0.406*
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.002*	-	-	-	*0.02*
7/25/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.406*	-	-	-	2.04
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*0.002*	-	-	-	0.1

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 228-3 Organic analytical results summary plot for W-SMA-14.1

229.0 W-SMA-15.1: SWMU 49-005(a)

229.1 Site Descriptions

One historical industrial activity area is associated with W022, W-SMA-15.1: Site 49-005(a).

SWMU 49-005(a) is an inactive landfill located east of Area 10. The landfill, described as a small pit, was constructed north of the road that runs east from Area 10 and is approximately 50 ft to 100 ft northeast of the Area 10 experimental chamber and shafts (AOC 49-002). SWMU 49-005(a) was constructed in 1984 as a disposal area for nonradiologically contaminated debris generated during the 1984 general surface cleanup of TA-49.

Phase I Consent Order sampling is complete for SWMU 49-005(a). All detected inorganic and organic chemical concentrations and radionuclide activities from Consent Order and RFI samples were below residential SSLs and SALs. SWMU 49-005(a) will be recommended for corrective action complete in the supplemental investigation report for the TA-49 Sites outside the NES boundary, to be submitted to NMED in 2015. SWMU 49-005(a) will be eligible for a COC upon approval of the report by NMED.

The project map (Figure 229-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php.

229.2 Control Measures

There is no run-on to this SMA and no evidence of runoff. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 229-1).

Enhanced controls were installed and certified on October 23, 2012, and submitted to EPA on October 25, 2012, as part of corrective action. Photographs of the enhanced controls are available at http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php.

Table 229-1 Active Control Measures

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
W02202040006	Established Vegetation		X	X		B
W02203010004	Earthen Berm	X			X	EC
W02203010005	Earthen Berm		X		X	EC

CB: Certified baseline control measure.
B: Additional baseline control measure.
EC: Enhanced control measure.

229.3 Storm Water Monitoring

SWMU 49-005(a) is monitored within W-SMA-15.1. Following the installation of baseline control measures, a baseline confirmation sample was collected on September 1, 2011 (Figure 229-2). Inorganic analytical results from this baseline sample yielded one TAL exceedance:

- Gross-alpha activity of 33.2 pCi/L (ATAL is 15 pCi/L).

This exceedance was evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

SWMU 49-005(a):

- Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at SWMU 49-005(a). Shallow Consent Order samples were not analyzed for gross-alpha radioactivity but were analyzed for americium-241 and plutonium and uranium isotopes, which are alpha-emitting radionuclides. Any alpha-emitting radionuclides associated with the Site are exempt from regulation under the CWA. Although these radionuclides may be associated with the gross-alpha radioactivity detected in the IP sample, they are excluded from the definition of adjusted gross-alpha radioactivity and would not be the source of the TAL exceedance.

Based on the Site history and Consent Order sampling data, the Site is unlikely a source of the TAL exceedance.

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 229-2. 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 229-2.

W-SMA-15.1 receives runoff from portions of the inactive landfill and from undeveloped areas. 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 urban landscape is 32.5 pCi/L. The 2011 gross-alpha result is between these two values.

All the analytical results for these samples are reported in the 2011 Annual Report.

229.4 Inspections and Maintenance

RG262.4 recorded eight storm events at W-SMA-15.1 during the 2013 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 229-2 Control Measure Inspections during 2013

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-30857	5-9-2013
Storm Rain Event	BMP-33185	7-16-2013
Storm Rain Event	BMP-34197	8-7-2013
Storm Rain Event	BMP-35648	9-19-2013
Annual Erosion Evaluation	COMP-36796	10-28-2013

No maintenance activities were conducted at W-SMA-15.1 in 20123.

229.5 Compliance Status

The Site associated with W-SMA-15.1 is a Moderate Priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

Table 229-3 Compliance Status during 2013

Site	Compliance Status on Jan 1, 2013	Compliance Status on Dec 31, 2013	Comments
SWMU 49-005(a)	Enhanced Control Corrective Action Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 10-23-2012

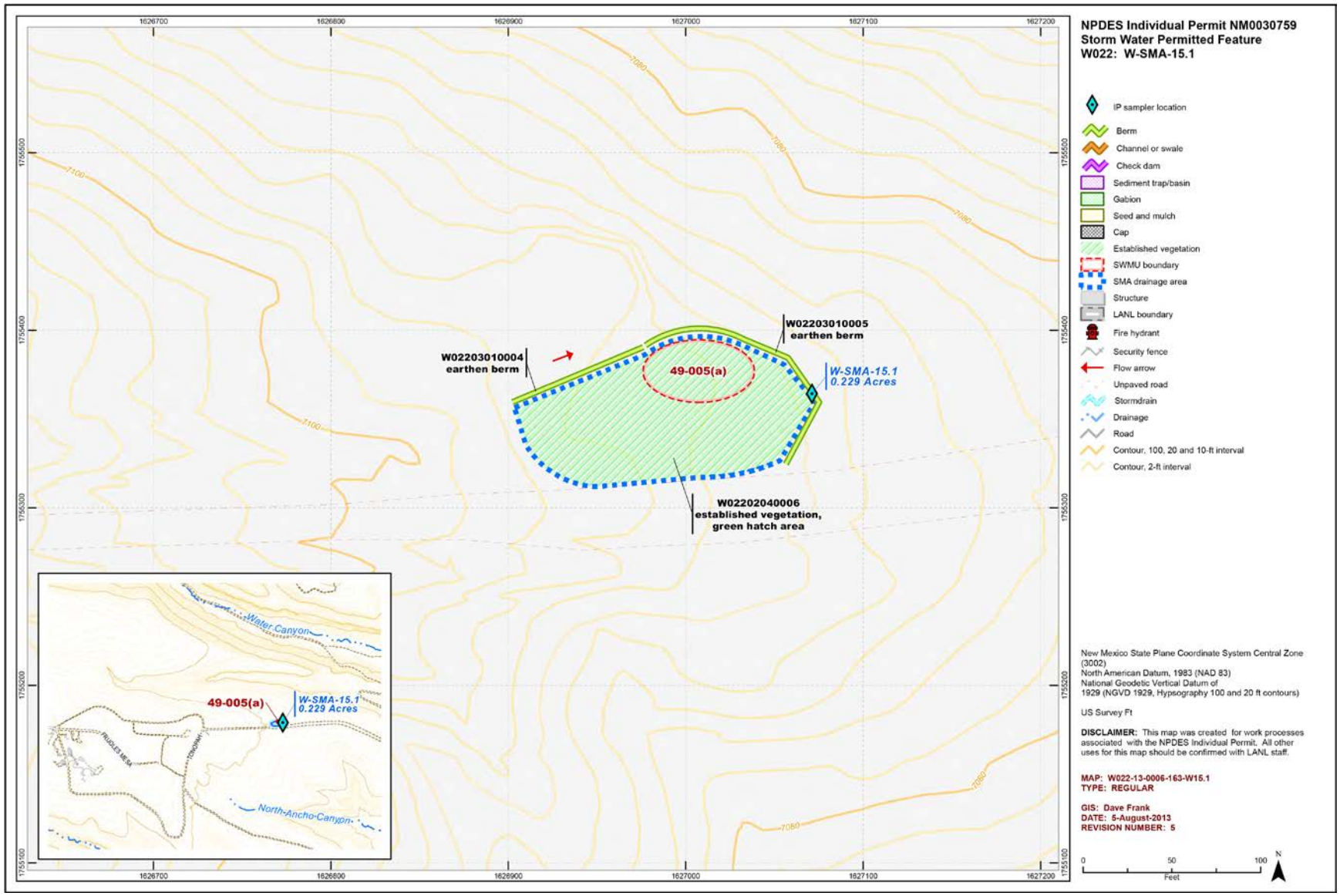
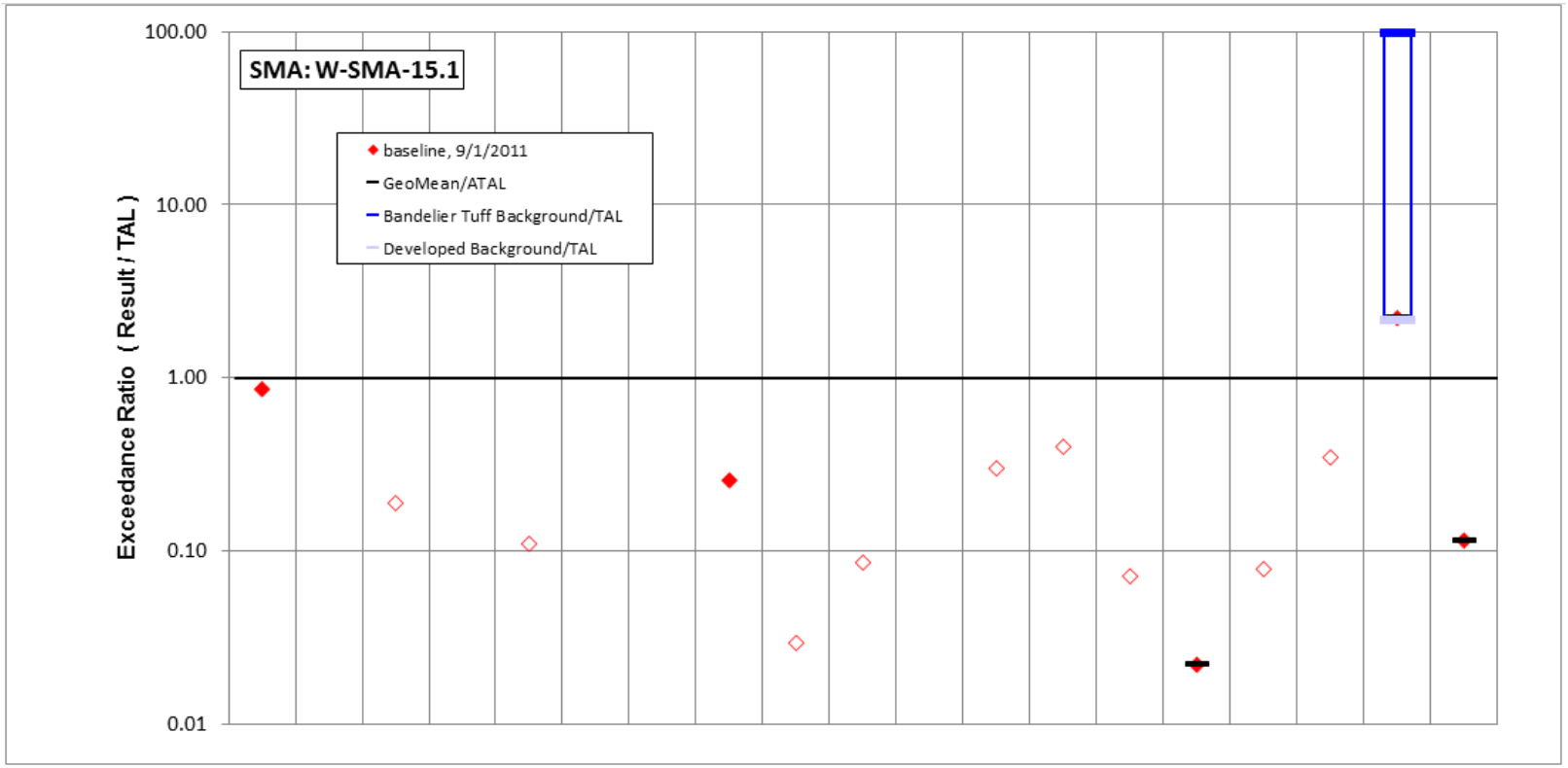


Figure 229-1 W-SMA-15.1 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	**Gross alpha**	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/1/2011 result	645	*1*	*1.7*	*15*	*0.11*	*2*	3.1	1.1	*0.5*	*0.066*	0.87	*1.5*	*0.2*	*0.45*	2.2	*3.3*	*0.003*	**33.2**	3.45
result / TAL	0.86	*0.002*	*0.19*	*0.003*	*0.11*	*0.01*	0.0031	0.26	*0.029*	*0.086*	0.0051	*0.3*	*0.4*	*0.071*	0.022	*0.079*	*0.35*	**2.2**	0.12

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 229-2 Inorganic analytical results summary plot for W-SMA-15.1

Attachment 1
Amendments

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V4.605	2/15/2013	W-SMA-11.7	Errata - Correct control measures purpose in SDPPP tables for earthen channel/swale W01904010051 from runoff to Run-on and erosion control. No map update necessary.	E	CCN - 30557
V4.606	7/11/2013	W-SMA-1	Retire Control - Lifecycle Expired - Control ID: W00104060001	T	CCN - 30666
V4.607	7/11/2013	W-SMA-1	Retire Control - Lifecycle Expired - Control ID: W00106010002	T	CCN - 30666
V4.608	7/11/2013	W-SMA-1	Retire Control - Lifecycle Expired - Control ID: W00106010003	T	CCN - 30666
V4.609	7/11/2013	W-SMA-1	Retire Control - Lifecycle Expired - Control ID: W00106010009	T	CCN - 30666
V4.610	7/11/2013	W-SMA-1	Retire Control - Lifecycle Expired - Control ID: W00106010010	T	CCN - 30666
V4.611	7/11/2013	W-SMA-1	New Control - Corrective Action - Control ID: W00106010012	T	CCN - 30666
V4.612	7/11/2013	W-SMA-1	New Control - Corrective Action - Control ID: W00103010014	T	CCN - 30666
V4.613	7/11/2013	W-SMA-1	New Control - Corrective Action - Control ID: W00103010015	T	CCN - 30666
V4.614	7/11/2013	W-SMA-1	New Control - Corrective Action - Control ID: W00105030016	T	CCN - 30666
V4.615	7/11/2013	W-SMA-1	New Control - Corrective Action - Control ID: W00106010013	T	CCN - 30666
V4.616	7/11/2013	W-SMA-1	New Control - Corrective Action - Control ID: W00104060017	T	CCN - 30666
V4.617	7/11/2013	W-SMA-1	New Control - Corrective Action - Control ID: W00108020018	T	CCN - 30666
V4.618	7/11/2013	W-SMA-1	Minor Sampler Adjustment, Updated Coordinates in Attach D.	T	CCN - 30666
V4.619	7/11/2013	W-SMA-1	Map Revision - (R7)	T	CCN - 30666
V4.620	5/14/2013	CDV-SMA-6.02	Site Boundary Modification	T	CCN - 31219
V4.621	5/14/2013	CDV-SMA-6.02	Map Revision - (R6)	T	CCN - 31219
V4.622	5/14/2013	W-SMA-7	Site Boundary Modification	T	CCN - 30383
V4.623	5/14/2013	W-SMA-7	Map Revision - (R6)	T	CCN - 30383
V4.624	5/24/2013	PT-SMA-1.7	Retire Control - Damaged and/or Replaced - Control ID: I00302010001	T	CCN - 31228
V4.625	5/24/2013	PT-SMA-1.7	New Control - Routine/Replacement - Control ID: I00302040017	T	CCN - 31228

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V4.626	5/24/2013	PT-SMA-1.7	Map Revision - (R8)	T	CCN - 31228
V4.627	5/24/2013	CDV-SMA-9.05	Retire Control - Damaged and/or Replaced - Control ID: V01602010001	T	CCN - 31235
V4.628	5/24/2013	CDV-SMA-9.05	New Control - Routine/Replacement - Control ID: V01602040005	T	CCN - 31235
V4.629	5/24/2013	CDV-SMA-9.05	Map Revision - (R3)	T	CCN - 31235
V4.630	5/24/2013	CDV-SMA-8.5	Retire Control - Damaged and/or Replaced - Control ID: V01502010001	T	CCN - 31229
V4.631	5/24/2013	CDV-SMA-8.5	New Control - Routine/Replacement - Control ID: V01502040006	T	CCN - 31229
V4.632	5/24/2013	CDV-SMA-8.5	Map Revision - (R3)	T	CCN - 31229
V4.633	5/24/2013	W-SMA-14.1	Retire Control - Damaged and/or Replaced - Control ID: W02102010001	T	CCN - 31230
V4.634	5/24/2013	W-SMA-14.1	Retire Control - Lifecycle Expired - Control ID: W02103060003	T	CCN - 31230
V4.635	5/24/2013	W-SMA-14.1	Retire Control - Lifecycle Expired - Control ID: W02103060004	T	CCN - 31230
V4.636	5/24/2013	W-SMA-14.1	Retire Control - Lifecycle Expired - Control ID: W02103060005	T	CCN - 31230
V4.637	5/24/2013	W-SMA-14.1	Retire Control - Lifecycle Expired - Control ID: W02103060006	T	CCN - 31230
V4.638	5/24/2013	W-SMA-14.1	Retire Control - Lifecycle Expired - Control ID: W02103060007	T	CCN - 31230
V4.639	5/24/2013	W-SMA-14.1	New Control - Routine/Replacement - Control ID: W02102040021	T	CCN - 31230
V4.640	5/24/2013	W-SMA-14.1	Map Revision - (R6)	T	CCN - 31230
V4.641	7/19/2013	CDV-SMA-1.45	Retire Control - Damaged and/or Replaced - Control ID: V00402020001	T	CCN - 31768
V4.642	7/19/2013	CDV-SMA-1.45	New Control - Routine/Replacement - Control ID: V00402040005	T	CCN - 31768
V4.643	7/19/2013	CDV-SMA-1.45	Map Revision - (R4)	T	CCN - 31768
V4.644	7/29/2013	W-SMA-8.71	Retire Control - Damaged and/or Replaced - Control ID: W012A02010001	T	CCN - 31782
V4.645	7/29/2013	W-SMA-8.71	New Control - Routine/Replacement - Control ID: W012A02040006	T	CCN - 31782
V4.646	7/29/2013	W-SMA-8.71	Map Revision - (R5)	T	CCN - 31782
V4.647	7/24/2013	CDV-SMA-1.2	Retire Control - Damaged and/or Replaced - Control ID: V00102010002	T	CCN - 31784
V4.648	7/24/2013	CDV-SMA-1.2	Retire Control - Lifecycle Expired - Control ID: V00101010003	T	CCN - 31784
V4.649	7/24/2013	CDV-SMA-1.2	Retire Control - Lifecycle Expired - Control ID: V00101010004	T	CCN - 31784

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V4.650	7/24/2013	CDV-SMA-1.2	New Control - Routine/Replacement - Control ID: V00102040012	T	CCN - 31784
V4.651	7/24/2013	CDV-SMA-1.2	Map Revision - (R7)	T	CCN - 31784
V4.652	7/19/2013	CDV-SMA-1.3	Retire Control - Damaged and/or Replaced - Control ID: V00202010001	T	CCN - 31785
V4.653	7/19/2013	CDV-SMA-1.3	New Control - Routine/Replacement - Control ID: V00202040003	T	CCN - 31785
V4.654	7/19/2013	CDV-SMA-1.3	Map Revision - (R4)	T	CCN - 31785
V4.655	8/7/2013	CDV-SMA-2.5	Retire Control - Damaged and/or Replaced - Control ID: V00902010012	T	CCN - 31787
V4.656	8/7/2013	CDV-SMA-2.5	Retire Control - Lifecycle Expired - Control ID: V00903060019	T	CCN - 31787
V4.657	8/7/2013	CDV-SMA-2.5	Retire Control - Lifecycle Expired - Control ID: V00903060020	T	CCN - 31787
V4.658	8/7/2013	CDV-SMA-2.5	Retire Control - Lifecycle Expired - Control ID: V00903060021	T	CCN - 31787
V4.659	8/7/2013	CDV-SMA-2.5	Retire Control - Lifecycle Expired - Control ID: V00903060026	T	CCN - 31787
V4.660	8/7/2013	CDV-SMA-2.5	Retire Control - Lifecycle Expired - Control ID: V00903060027	T	CCN - 31787
V4.661	8/7/2013	CDV-SMA-2.5	New Control - Routine/Replacement - Control ID: V00902040029	T	CCN - 31787
V4.662	8/7/2013	CDV-SMA-2.5	Map Revision - (R7)	T	CCN - 31787
V4.663	7/24/2013	CDV-SMA-2.41	Retire Control - Damaged and/or Replaced - Control ID: V00802010005	T	CCN - 31788
V4.664	7/24/2013	CDV-SMA-2.41	New Control - Routine/Replacement - Control ID: V00802040015	T	CCN - 31788
V4.665	7/24/2013	CDV-SMA-2.41	Map Revision - (R7)	T	CCN - 31788
V4.666	5/24/2013	CDV-SMA-2.42	Retire Control - Damaged and/or Replaced - Control ID: V008A02010001	T	CCN - 31824
V4.667	5/24/2013	CDV-SMA-2.42	Retire Control - Lifecycle Expired - Control ID: V008A03060012	T	CCN - 31824
V4.668	5/24/2013	CDV-SMA-2.42	New Control - Routine/Replacement - Control ID: V008A02040020	T	CCN - 31824
V4.669	5/24/2013	CDV-SMA-2.42	Map Revision - (R9)	T	CCN - 31824
V4.670	8/12/2013	CDV-SMA-4	Retire Control - Damaged and/or Replaced - Control ID: V01102010001	T	CCN - 31833
V4.671	8/12/2013	CDV-SMA-4	New Control - Routine/Replacement - Control ID: V01102040006	T	CCN - 31833
V4.672	8/12/2013	CDV-SMA-4	Map Revision - (R5)	T	CCN - 31833
V4.673	8/16/2013	W-SMA-3.5	Retire Control - Damaged and/or Replaced - Control ID: W00402010002	T	CCN - 31867

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V4.674	8/16/2013	W-SMA-3.5	New Control - Routine/Replacement - Control ID: W00402040008	T	CCN - 31867
V4.675	8/16/2013	W-SMA-3.5	Map Revision - (R4)	T	CCN - 31867
V4.676	8/16/2013	W-SMA-2.05	Retire Control - Damaged and/or Replaced - Control ID: W00302010001	T	CCN - 31869
V4.677	8/16/2013	W-SMA-2.05	Retire Control - Damaged and/or Replaced - Control ID: W00302020002	T	CCN - 31869
V4.678	8/16/2013	W-SMA-2.05	New Control - Routine/Replacement - Control ID: W00302040010	T	CCN - 31869
V4.679	8/16/2013	W-SMA-2.05	Retire Control - Lifecycle Expired - Control ID: W00306010004	T	CCN - 31869
V4.680	8/16/2013	W-SMA-2.05	Retire Control - Lifecycle Expired - Control ID: W00306010005	T	CCN - 31869
V4.681	8/16/2013	W-SMA-2.05	Map Revision - (R5)	T	CCN - 31869
V4.682	5/24/2013	W-SMA-9.5	Retire Control - Damaged and/or Replaced - Control ID: W01402010001	T	CCN - 31871
V4.683	5/24/2013	W-SMA-9.5	New Control - Routine/Replacement - Control ID: W01402040008	T	CCN - 31871
V4.684	5/24/2013	W-SMA-9.5	Map Revision - (R3)	T	CCN - 31871
V4.685	8/27/2013	W-SMA-9.9	Retire Control - Damaged and/or Replaced - Control ID: W01702010002	T	CCN - 31873
V4.686	8/27/2013	W-SMA-9.9	New Control - Routine/Replacement - Control ID: W01702040022	T	CCN - 31873
V4.687	8/27/2013	W-SMA-9.9	Retire Control - Lifecycle Expired - Control ID: W01701060021	T	CCN - 31873
V4.688	8/27/2013	W-SMA-9.9	SMA Boundary Modification	T	CCN - 31873
V4.689	8/27/2013	W-SMA-9.9	Map Revision - (R6)	T	CCN - 31873
V4.690	5/29/2013	W-SMA-10	Retire Control - Damaged and/or Replaced - Control ID: W01802010009	T	CCN - 31874
V4.691	5/29/2013	W-SMA-10	New Control - Routine/Replacement - Control ID: W01802040025	T	CCN - 31874
V4.692	5/29/2013	W-SMA-10	Map Revision - (R7)	T	CCN - 31874
V4.693	5/29/2013	W-SMA-9.05	Retire Control - Damaged and/or Replaced - Control ID: W01302010002	T	CCN - 31875
V4.694	5/29/2013	W-SMA-9.05	New Control - Routine/Replacement - Control ID: W01302040013	T	CCN - 31875
V4.695	5/29/2013	W-SMA-9.05	Map Revision - (R5)	T	CCN - 31875
V4.696	5/29/2013	W-SMA-8	Retire Control - Damaged and/or Replaced - Control ID: W01102010003	T	CCN - 31876
V4.697	5/29/2013	W-SMA-8	Retire Control - Damaged and/or Replaced - Control ID: W01102020004	T	CCN - 31876

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V4.698	5/29/2013	W-SMA-8	New Control - Routine/Replacement - Control ID: W01102040009	T	CCN - 31876
V4.699	5/29/2013	W-SMA-8	Map Revision - (R6)	T	CCN - 31876
V4.700	5/30/2013	W-SMA-7.8	Retire Control - Damaged and/or Replaced - Control ID: W00902010002	T	CCN - 31878
V4.701	5/30/2013	W-SMA-7.8	New Control - Routine/Replacement - Control ID: W00902040009	T	CCN - 31878
V4.702	5/30/2013	W-SMA-7.8	Map Revision - (R5)	T	CCN - 31878
V4.703	5/24/2013	W-SMA-5	Retire Control - Damaged and/or Replaced - Control ID: W00602010009	T	CCN - 31877
V4.704	5/24/2013	W-SMA-5	New Control - Routine/Replacement - Control ID: W00602040029	T	CCN - 31877
V4.705	5/24/2013	W-SMA-5	Retire Control - Lifecycle Expired - Control ID: W00603060001	T	CCN - 31877
V4.706	5/24/2013	W-SMA-5	Retire Control - Lifecycle Expired - Control ID: W00603060019	T	CCN - 31877
V4.707	5/24/2013	W-SMA-5	Map Revision - (R9)	T	CCN - 31877
V4.708	5/24/2013	CDV-SMA-7	Retire Control - Damaged and/or Replaced - Control ID: V01302010001	T	CCN - 31883
V4.709	5/24/2013	CDV-SMA-7	New Control - Routine/Replacement - Control ID: V01302040008	T	CCN - 31883
V4.710	5/24/2013	CDV-SMA-7	Map Revision - (R3)	T	CCN - 31883
V4.711	8/7/2013	W-SMA-7.9	Retire Control - Damaged and/or Replaced - Control ID: W01002020002	T	CCN - 31880
V4.712	8/7/2013	W-SMA-7.9	New Control - Routine/Replacement - Control ID: W01002040004	T	CCN - 31880
V4.713	8/7/2013	W-SMA-7.9	SMA Boundary Modification	T	CCN - 31880
V4.714	8/7/2013	W-SMA-7.9	Map Revision - (R4)	T	CCN - 31880
V4.715	6/4/2013	W-SMA-12.05	Retire Control - Damaged and/or Replaced - Control ID: W02002010003	T	CCN - 31996
V4.716	6/4/2013	W-SMA-12.05	New Control - Routine/Replacement - Control ID: W02002040018	T	CCN - 31996
V4.717	6/4/2013	W-SMA-12.05	Map Revision - (R5)	T	CCN - 31996
V4.718	6/4/2013	W-SMA-11.7	Retire Control - Damaged and/or Replaced - Control ID: W01902010001	T	CCN - 32007
V4.719	6/4/2013	W-SMA-11.7	New Control - Routine/Replacement - Control ID: W01902040052	T	CCN - 32007
V4.720	6/4/2013	W-SMA-11.7	Map Revision - (R7)	T	CCN - 32007
V4.721	7/31/2013	F-SMA-2	Retire Control - Lifecycle Expired - Control ID: F00102010002	T	CCN - 32010

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V4.722	7/31/2013	F-SMA-2	New Control - Routine/Replacement - Control ID: F00102040018	T	CCN - 32010
V4.723	7/31/2013	F-SMA-2	Retire Control - Lifecycle Expired - Control ID: F00101040016	T	CCN - 32010
V4.724	7/31/2013	F-SMA-2	Map Revision - (R8)	T	CCN - 32010
V4.725	6/18/2013	PT-SMA-2	Retire Control - Damaged and/or Replaced - Control ID: I00402010005	T	CCN - 32011
V4.726	6/18/2013	PT-SMA-2	New Control - Routine/Replacement - Control ID: I00402040011	T	CCN - 32011
V4.727	6/18/2013	PT-SMA-2	Map Revision - (R5)	T	CCN - 32011
V4.728	7/29/2013	PT-SMA-2.01	Retire Control - Damaged and/or Replaced - Control ID: I004A02010001	T	CCN - 32012
V4.729	7/29/2013	PT-SMA-2.01	New Control - Routine/Replacement - Control ID: I004A02040005	T	CCN - 32012
V4.730	7/29/2013	PT-SMA-2.01	Map Revision - (R5)	T	CCN - 32012
V4.731	8/7/2013	PT-SMA-0.5	Retire Control - Damaged and/or Replaced - Control ID: I00102010001	T	CCN - 32013
V4.732	8/7/2013	PT-SMA-0.5	New Control - Routine/Replacement - Control ID: I00102040009	T	CCN - 32013
V4.733	8/7/2013	PT-SMA-0.5	Retire Control - Lifecycle Expired - Control ID: I00101010005	T	CCN - 32013
V4.734	8/7/2013	PT-SMA-0.5	Map Revision - (R4)	T	CCN - 32013
V4.735	6/4/2013	PT-SMA-1	Retire Control - Damaged and/or Replaced - Control ID: I00202010002	T	CCN - 32014
V4.736	6/4/2013	PT-SMA-1	New Control - Routine/Replacement - Control ID: I00202040034	T	CCN - 32014
V4.737	6/4/2013	PT-SMA-1	Map Revision - (R7)	T	CCN - 32014
V4.738	6/4/2013	PT-SMA-1	Errata - Correct coding on map for rock berms I00203120012-0013 and earth berms I00203010023-0024/	E	CCN - 32014
V4.739	5/29/2013	CDV-SMA-8	Retire Control - Damaged and/or Replaced - Control ID: V01402020001	T	CCN - 32015
V4.740	5/29/2013	CDV-SMA-8	Retire Control - Damaged and/or Replaced - Control ID: V01402030002	T	CCN - 32015
V4.741	5/29/2013	CDV-SMA-8	New Control - Routine/Replacement - Control ID: V01402040009	T	CCN - 32015
V4.742	5/29/2013	CDV-SMA-8	Map Revision - (R5)	T	CCN - 32015
V4.743	6/18/2013	W-SMA-8.7	Retire Control - Damaged and/or Replaced - Control ID: W01202010004	T	CCN - 32042
V4.744	6/18/2013	W-SMA-8.7	Retire Control - Damaged and/or Replaced - Control ID: W01202020002	T	CCN - 32042
V4.745	6/18/2013	W-SMA-8.7	New Control - Routine/Replacement - Control ID: W01202040011	T	CCN - 32042

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V4.746	6/18/2013	W-SMA-8.7	Retire Control - Lifecycle Expired - Control ID: W01203020009	T	CCN - 32042
V4.747	6/18/2013	W-SMA-8.7	Map Revision - (R4)	T	CCN - 32042
V4.748	5/24/2013	W-SMA-9.8	Retire Control - Damaged and/or Replaced - Control ID: W01602010005	T	CCN - 31872
V4.749	5/24/2013	W-SMA-9.8	New Control - Routine/Replacement - Control ID: W01602040012	T	CCN - 31872
V4.750	5/24/2013	W-SMA-9.8	Retire Control - Lifecycle Expired - Control ID: W01603060011	T	CCN - 31872
V4.751	5/24/2013	W-SMA-9.8	Retire Control - Lifecycle Expired - Control ID: W01604060003	T	CCN - 31872
V4.752	5/24/2013	W-SMA-9.8	Map Revision - (R6)	T	CCN - 31872
V4.753	5/30/2013	W-SMA-1	Retire Control - Damaged and/or Replaced - Control ID: W00102020004	T	CCN - 32071
V4.754	5/30/2013	W-SMA-1	Retire Control - Damaged and/or Replaced - Control ID: W00102010005	T	CCN - 32071
V4.755	5/30/2013	W-SMA-1	New Control - Routine/Replacement - Control ID: W00102040019	T	CCN - 32071
V4.756	5/30/2013	W-SMA-1	Map Revision - (R8)	T	CCN - 32071
V4.757	5/24/2013	CDV-SMA-2	Retire Control - Damaged and/or Replaced - Control ID: V00602020005	T	CCN - 32142
V4.758	5/24/2013	CDV-SMA-2	Retire Control - Damaged and/or Replaced - Control ID: V00602010004	T	CCN - 32142
V4.759	5/24/2013	CDV-SMA-2	New Control - Routine/Replacement - Control ID: V00602040013	T	CCN - 32142
V4.760	5/24/2013	CDV-SMA-2	Retire Control - Lifecycle Expired - Control ID: V00601010011	T	CCN - 32142
V4.761	5/24/2013	CDV-SMA-2	Map Revision - (R5)	T	CCN - 32142
V4.762	6/18/2013	CDV-SMA-1.7	Retire Control - Damaged and/or Replaced - Control ID: V00502010003	T	CCN - 32160
V4.763	6/18/2013	CDV-SMA-1.7	New Control - Routine/Replacement - Control ID: V00502040016	T	CCN - 32160
V4.764	6/18/2013	CDV-SMA-1.7	Map Revision - (R6)	T	CCN - 32160
V4.765	6/18/2013	PT-SMA-4.2	Retire Control - Damaged and/or Replaced - Control ID: I00702010001	T	CCN - 32161
V4.766	6/18/2013	PT-SMA-4.2	Retire Control - Damaged and/or Replaced - Control ID: I00702020006	T	CCN - 32161
V4.767	6/18/2013	PT-SMA-4.2	New Control - Routine/Replacement - Control ID: I00702040008	T	CCN - 32161
V4.768	6/18/2013	PT-SMA-4.2	Map Revision - (R5)	T	CCN - 32161
V4.769	6/18/2013	PT-SMA-3	New Control - Routine/Replacement - Control ID: I00502040009	T	CCN - 32297

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V4.770	6/18/2013	PT-SMA-3	Map Revision - (R6)	T	CCN - 32297
V4.771	5/24/2013	W-SMA-4.1	Retire Control - Damaged and/or Replaced - Control ID: W00502010001	T	CCN - 31868
V4.772	5/24/2013	W-SMA-4.1	New Control - Routine/Replacement - Control ID: W00502040006	T	CCN - 31868
V4.773	5/24/2013	W-SMA-4.1	Retire Control - Lifecycle Expired - Control ID: W00503060003	T	CCN - 31868
V4.774	5/24/2013	W-SMA-4.1	Retire Control - Lifecycle Expired - Control ID: W00503060004	T	CCN - 31868
V4.775	5/24/2013	W-SMA-4.1	Map Revision - (R5)	T	CCN - 31868
V4.776	6/18/2013	W-SMA-1.5	Retire Control - Damaged and/or Replaced - Control ID: W00202010001	T	CCN - 32072
V4.777	6/18/2013	W-SMA-1.5	New Control - Routine/Replacement - Control ID: W00202040017	T	CCN - 32072
V4.778	6/18/2013	W-SMA-1.5	Map Revision - (R7)	T	CCN - 32072
V4.779	7/31/2013	W-SMA-7	Retire Control - Damaged and/or Replaced - Control ID: W00802010002	T	CCN - 32650
V4.780	7/31/2013	W-SMA-7	Retire Control - Damaged and/or Replaced - Control ID: W00802020009	T	CCN - 32650
V4.781	7/31/2013	W-SMA-7	Retire Control - Lifecycle Expired - Control ID: W00803060011	T	CCN - 32650
V4.782	7/31/2013	W-SMA-7	Retire Control - Lifecycle Expired - Control ID: W00803060012	T	CCN - 32650
V4.783	7/31/2013	W-SMA-7	Retire Control - Lifecycle Expired - Control ID: W00803060013	T	CCN - 32650
V4.784	7/31/2013	W-SMA-7	New Control - Routine/Replacement - Control ID: W00802040014	T	CCN - 32650
V4.785	7/31/2013	W-SMA-7	New Control - Augment Existing - Control ID: W00806010015	T	CCN - 32650
V4.786	7/31/2013	W-SMA-7	New Control - Augment Existing - Control ID: W00806010016	T	CCN - 32650
V4.787	7/31/2013	W-SMA-7	New Control - Augment Existing - Control ID: W00803060017	T	CCN - 32650
V4.788	7/31/2013	W-SMA-7	New Control - Augment Existing - Control ID: W00803060018	T	CCN - 32650
V4.789	7/31/2013	W-SMA-7	New Control - Augment Existing - Control ID: W00803060019	T	CCN - 32650
V4.790	7/31/2013	W-SMA-7	New Control - Augment Existing - Control ID: W00803060020	T	CCN - 32650
V4.791	7/31/2013	W-SMA-7	New Control - Augment Existing - Control ID: W00803060021	T	CCN - 32650
V4.792	7/31/2013	W-SMA-7	New Control - Augment Existing - Control ID: W0081010022	T	CCN - 32650
V4.793	7/31/2013	W-SMA-7	New Control - Augment Existing - Control ID: W00808040023	T	CCN - 32650

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V4.794	7/31/2013	W-SMA-7	Map Revision - (R7)	T	CCN - 32650
V4.795	8/7/2013	CDV-SMA-3	Retire Control - Damaged and/or Replaced - Control ID: V01002010003	T	CCN - 31830
V4.796	8/7/2013	CDV-SMA-3	New Control - Routine/Replacement - Control ID: V01002040013	T	CCN - 31830
V4.797	8/7/2013	CDV-SMA-3	Map Revision - (R8)	T	CCN - 31830
V4.798	7/19/2013	CDV-SMA-2.51	Retire Control - Damaged and/or Replaced - Control ID: V009A02010001	T	CCN - 31789
V4.799	7/19/2013	CDV-SMA-2.51	Retire Control - Damaged and/or Replaced - Control ID: V009A02020002	T	CCN - 31789
V4.800	7/19/2013	CDV-SMA-2.51	New Control - Routine/Replacement - Control ID: V009A02040029	T	CCN - 31789
V4.801	7/19/2013	CDV-SMA-2.51	Retire Control - Lifecycle Expired - Control ID: V009A03060007	T	CCN - 31789
V4.802	7/19/2013	CDV-SMA-2.51	Retire Control - Lifecycle Expired - Control ID: V009A03060008	T	CCN - 31789
V4.803	7/19/2013	CDV-SMA-2.51	Retire Control - Lifecycle Expired - Control ID: V009A03060009	T	CCN - 31789
V4.804	7/19/2013	CDV-SMA-2.51	Retire Control - Lifecycle Expired - Control ID: V009A03060010	T	CCN - 31789
V4.805	7/19/2013	CDV-SMA-2.51	Retire Control - Lifecycle Expired - Control ID: V009A03060011	T	CCN - 31789
V4.806	7/19/2013	CDV-SMA-2.51	Retire Control - Lifecycle Expired - Control ID: V009A03060019	T	CCN - 31789
V4.807	7/19/2013	CDV-SMA-2.51	Retire Control - Lifecycle Expired - Control ID: V009A03060020	T	CCN - 31789
V4.808	7/19/2013	CDV-SMA-2.51	Retire Control - Lifecycle Expired - Control ID: V009A03060021	T	CCN - 31789
V4.809	7/19/2013	CDV-SMA-2.51	Retire Control - Lifecycle Expired - Control ID: V009A03060022	T	CCN - 31789
V4.810	7/19/2013	CDV-SMA-2.51	Retire Control - Lifecycle Expired - Control ID: V009A03060023	T	CCN - 31789
V4.811	7/19/2013	CDV-SMA-2.51	Retire Control - Lifecycle Expired - Control ID: V009A03060024	T	CCN - 31789
V4.812	7/19/2013	CDV-SMA-2.51	Retire Control - Lifecycle Expired - Control ID: V009A03060025	T	CCN - 31789
V4.813	7/19/2013	CDV-SMA-2.51	Retire Control - Lifecycle Expired - Control ID: V009A03060026	T	CCN - 31789
V4.814	7/19/2013	CDV-SMA-2.51	Retire Control - Lifecycle Expired - Control ID: V009A03060027	T	CCN - 31789
V4.815	7/19/2013	CDV-SMA-2.51	Map Revision - (R6)	T	CCN - 31789
V4.816	7/19/2013	CDV-SMA-2.3	Retire Control - Damaged and/or Replaced - Control ID: V00702010004	T	CCN - 32293
V4.817	7/19/2013	CDV-SMA-2.3	Retire Control - Damaged and/or Replaced - Control ID: V00702020001	T	CCN - 32293

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V4.818	7/19/2013	CDV-SMA-2.3	New Control - Routine/Replacement - Control ID: V00702040021	T	CCN - 32293
V4.819	7/19/2013	CDV-SMA-2.3	Retire Control - Lifecycle Expired - Control ID: V00703060011	T	CCN - 32293
V4.820	7/19/2013	CDV-SMA-2.3	Retire Control - Lifecycle Expired - Control ID: V00703060012	T	CCN - 32293
V4.821	7/19/2013	CDV-SMA-2.3	Retire Control - Lifecycle Expired - Control ID: V00703060017	T	CCN - 32293
V4.822	7/19/2013	CDV-SMA-2.3	Map Revision - (R11)	T	CCN - 32293
V4.823	8/7/2013	W-SMA-15.1	Retire Control - Damaged and/or Replaced - Control ID: W02202010002	T	CCN - 32003
V4.824	8/7/2013	W-SMA-15.1	New Control - Routine/Replacement - Control ID: W02202040006	T	CCN - 32003
V4.825	8/7/2013	W-SMA-15.1	Minor Sampler Adjustment, Updated Coordinates in Attach D.	T	CCN - 32003
V4.826	8/7/2013	W-SMA-15.1	SMA Boundary Modification	T	CCN - 32003
V4.827	8/7/2013	W-SMA-15.1	Map Revision - (R5)	T	CCN - 32003
V4.828	7/31/2013	W-SMA-9.7	Retire Control - Damaged and/or Replaced - Control ID: W01502010001	T	CCN - 31886
V4.829	7/31/2013	W-SMA-9.7	New Control - Routine/Replacement - Control ID: W01502040008	T	CCN - 31886
V4.830	7/31/2013	W-SMA-9.7	New Control - Augment Existing - Control ID: W01503060009	T	CCN - 31886
V4.831	7/31/2013	W-SMA-9.7	New Control - Augment Existing - Control ID: W01503060010	T	CCN - 31886
V4.832	7/31/2013	W-SMA-9.7	New Control - Augment Existing - Control ID: W01503060011	T	CCN - 31886
V4.833	7/31/2013	W-SMA-9.7	New Control - Augment Existing - Control ID: W01503060012	T	CCN - 31886
V4.834	7/31/2013	W-SMA-9.7	New Control - Augment Existing - Control ID: W01503060014	T	CCN - 31886
V4.835	7/31/2013	W-SMA-9.7	Retire Control - Lifecycle Expired - Control ID: W01503060002	T	CCN - 31886
V4.836	7/31/2013	W-SMA-9.7	Retire Control - Lifecycle Expired - Control ID: W01503060007	T	CCN - 31886
V4.837	7/31/2013	W-SMA-9.7	Map Revision - (R5)	T	CCN - 31886
V4.838	8/7/2013	CDV-SMA-6.01	Retire Control - Damaged and/or Replaced - Control ID: V01202010002	T	CCN - 31832
V4.839	8/7/2013	CDV-SMA-6.01	New Control - Routine/Replacement - Control ID: V01202040013	T	CCN - 31832
V4.840	8/7/2013	CDV-SMA-6.01	Map Revision - (R6)	T	CCN - 31832
V4.841	8/16/2013	CDV-SMA-6.02	Retire Control - Damaged and/or Replaced - Control ID: V012A02010001	T	CCN - 33938

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V4.842	8/16/2013	CDV-SMA-6.02	SMA Boundary Modification	T	CCN - 33938
V4.843	8/16/2013	CDV-SMA-6.02	New Control - Augment Existing - Control ID: V012A03060007	T	CCN - 33938
V4.844	8/16/2013	CDV-SMA-6.02	Minor Sampler Adjustment, Updated Coordinates in Attach D.	T	CCN - 33938
V4.845	8/16/2013	CDV-SMA-6.02	Map Revision - (R7)	T	CCN - 33938
V4.846	8/15/2013	W-SMA-6	Site Boundary Modification	T	CCN - 34333
V4.847	8/15/2013	W-SMA-6	Minor Sampler Adjustment, Updated Coordinates in Attach D.	T	CCN - 34333
V4.848	8/15/2013	W-SMA-6	SMA Boundary Modification	T	CCN - 34333
V4.849	8/15/2013	W-SMA-6	Retire Control - Damaged and/or Replaced - Control ID: W00702010001	T	CCN - 34333
V4.850	8/15/2013	W-SMA-6	Retire Control - Damaged and/or Replaced - Control ID: W00702020002	T	CCN - 34333
V4.851	8/15/2013	W-SMA-6	Retire Control - Lifecycle Expired - Control ID: W00703060003	T	CCN - 34333
V4.852	8/15/2013	W-SMA-6	New Control - Routine/Replacement - Control ID: W00702040004	T	CCN - 34333
V4.853	8/15/2013	W-SMA-6	New Control - Augment Existing - Control ID: W00703060005	T	CCN - 34333
V4.854	8/15/2013	W-SMA-6	New Control - Augment Existing - Control ID: W00703060006	T	CCN - 34333
V4.855	8/15/2013	W-SMA-6	New Control - Augment Existing - Control ID: W00701010007	T	CCN - 34333
V4.856	8/15/2013	W-SMA-6	Map Revision - (R3)	T	CCN - 34333
V4.857	8/12/2013	PT-SMA-4.2	Retire Control - Lifecycle Expired - Control ID: I00706010004	T	CCN - 32162
V4.858	8/12/2013	PT-SMA-4.2	Retire Control - Lifecycle Expired - Control ID: I00704060003	T	CCN - 32162
V4.859	8/12/2013	PT-SMA-4.2	Map Revision - (R6)	T	CCN - 32162
V4.860	8/16/2013	CDV-SMA-6.01	Retire Control - Damaged and/or Replaced - Control ID: V01203060011	T	CCN - 34832
V4.861	8/16/2013	CDV-SMA-6.01	Retire Control - Damaged and/or Replaced - Control ID: V01203060012	T	CCN - 34832
V4.862	8/16/2013	CDV-SMA-6.01	New Control - Routine/Replacement - Control ID: V01203060014	T	CCN - 34832
V4.863	8/16/2013	CDV-SMA-6.01	New Control - Routine/Replacement - Control ID: V01203060015	T	CCN - 34832
V4.864	8/16/2013	CDV-SMA-6.01	Map Revision - (R7)	T	CCN - 34832
V4.865	8/16/2013	PT-SMA-3	New Control - Augment Existing - Control ID: I00503060010	T	CCN - 34922

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V4.866	8/16/2013	PT-SMA-3	New Control - Augment Existing - Control ID: I00503060011	T	CCN - 34922
V4.867	8/16/2013	PT-SMA-3	Map Revision - (R7)	T	CCN - 34922
V4.868	8/16/2013	W-SMA-9.7	New Control - Augment Existing - Control ID: W01503060012	T	CCN - 34923
V4.869	8/16/2013	W-SMA-9.7	New Control - Augment Existing - Control ID: W01503060013	T	CCN - 34923
V4.870	8/16/2013	W-SMA-9.7	Map Revision - (R6)	T	CCN - 34923
V4.871	8/30/2013	CDV-SMA-3	SMA Boundary Modification	T	CCN - 34704
V4.872	8/30/2013	CDV-SMA-3	Map Revision - (R9)	T	CCN - 34704
V4.873	11/5/2013	CDV-SMA-6.01	Retire Control - Lifecycle Expired - Control ID: V01203130004	T	CCN - 34420
V4.874	11/5/2013	CDV-SMA-6.01	Retire Control - Lifecycle Expired - Control ID: V01203130005	T	CCN - 34420
V4.875	11/5/2013	CDV-SMA-6.01	New Control - Augment Existing - Control ID: V01203010016	T	CCN - 34420
V4.876	11/5/2013	CDV-SMA-6.01	Retire Control - Lifecycle Expired - Control ID: V01203060014	T	CCN - 34420
V4.877	11/5/2013	CDV-SMA-6.01	Map Revision - (R8)	T	CCN - 34420
V4.878	8/30/2013	CDV-SMA-4	SMA Boundary Modification	T	CCN - 35098
V4.879	8/30/2013	CDV-SMA-4	Minor Sampler Adjustment, Updated Coordinates in Attach D.	T	CCN - 35098
V4.880	8/30/2013	CDV-SMA-4	Retire Control - Lifecycle Expired - Control ID: V01103120002	T	CCN - 35098
V4.881	8/30/2013	CDV-SMA-4	Retire Control - Lifecycle Expired - Control ID: V01106010003	T	CCN - 35098
V4.882	8/30/2013	CDV-SMA-4	Retire Control - Lifecycle Expired - Control ID: V01101010005	T	CCN - 35098
V4.883	8/30/2013	CDV-SMA-4	Retire Control - Lifecycle Expired - Control ID: V01102040006	T	CCN - 35098
V4.884	8/30/2013	CDV-SMA-4	New Control - Augment Existing - Control ID: V01104060007	T	CCN - 35098
V4.885	8/30/2013	CDV-SMA-4	New Control - Augment Existing - Control ID: V01103010008	T	CCN - 35098
V4.886	8/30/2013	CDV-SMA-4	New Control - Augment Existing - Control ID: V01106010009	T	CCN - 35098
V4.887	8/30/2013	CDV-SMA-4	Map Revision - (R6)	T	CCN - 35098
V4.888	8/29/2013	CDV-SMA-6.02	Errata - Corrected installation date of control V012A0306007 which made incorrectly during implementation of work order BMP-31965	E	CCN - 30476
V4.889	10/31/2013	W-SMA-9.5	Map Revision - (R4)	T	CCN - 36981

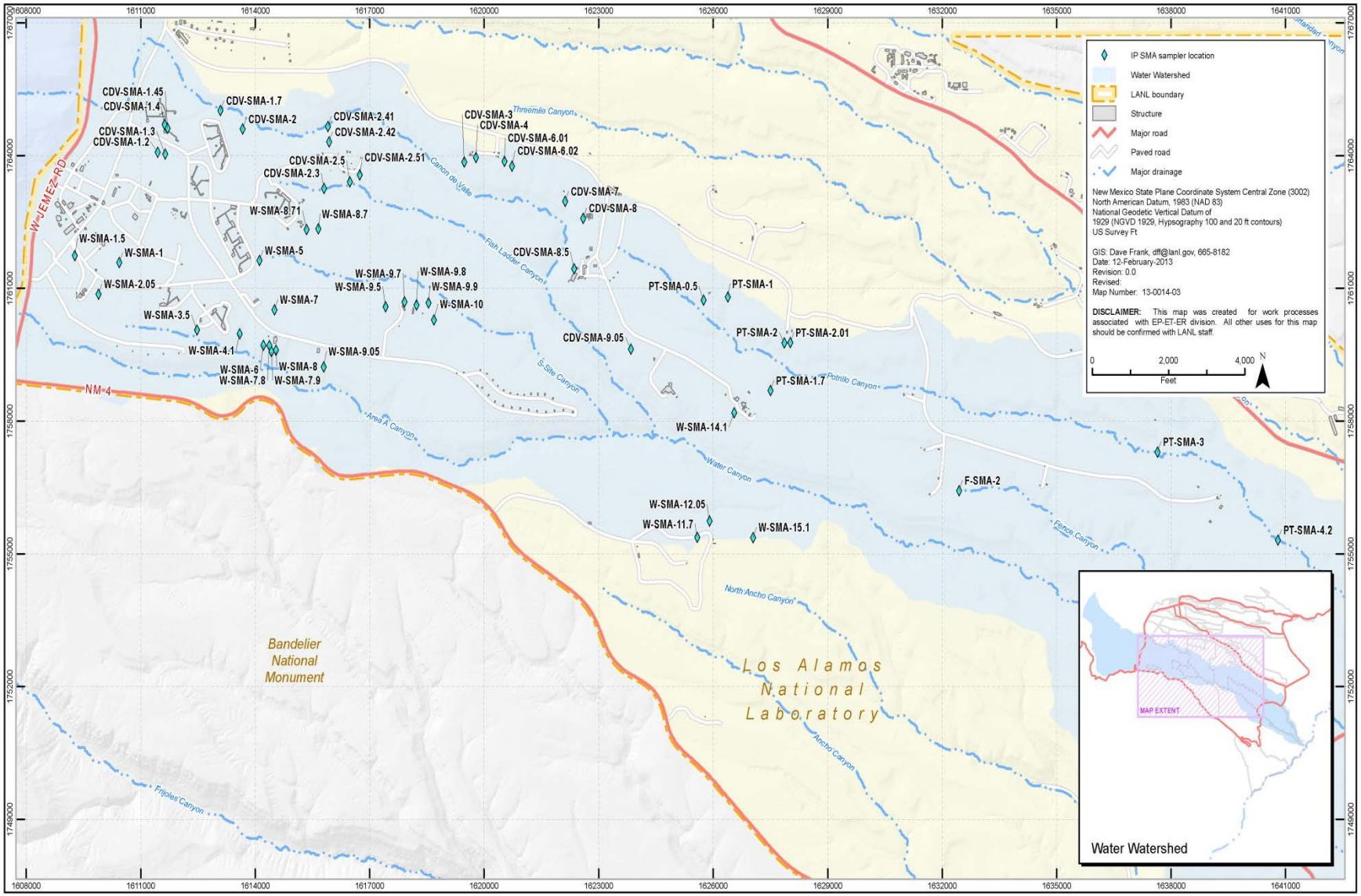
Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V4.890	11/6/2013	W-SMA-9.05	Change to SDPPP - Baseline monitoring is complete, no TALs exceeded.	T	CCN - 37141
V4.891	11/6/2013	CDV-SMA-1.2	Change to SDPPP - Baseline monitoring is complete, no TALs exceeded.	T	CCN - 37144
V4.892	11/8/2013	CDV-SMA-6.01	SMA Boundary Modification	T	CCN - 37240
V4.893	11/8/2013	CDV-SMA-6.01	Map Revision - (R9)	T	CCN - 37240
V4.894	11/20/2013	PT-SMA-2	Map Revision - (R6)	T	CCN - 37282
V4.895	11/20/2013	F-SMA-2	Map Revision - (R9)	T	CCN - 37286
V4.896	11/20/2013	CDV-SMA-2.3	Retire Control - Damaged and/or Replaced - Control ID: V00703060007	T	CCN - 37305
V4.897	11/20/2013	CDV-SMA-2.3	New Control - Routine/Replacement - Control ID: V00703060022	T	CCN - 37305
V4.898	11/20/2013	CDV-SMA-2.3	Retire Control - Damaged and/or Replaced - Control ID: V00703060018	T	CCN - 37305
V4.899	11/20/2013	CDV-SMA-2.3	New Control - Routine/Replacement - Control ID: V00703060023	T	CCN - 37305
V4.900	11/20/2013	CDV-SMA-2.3	Map Revision - (R12)	T	CCN - 37305
V4.901	11/20/2013	CDV-SMA-1.4	New Control - Augment Existing - Control ID: V00303060077	T	CCN - 37307
V4.902	11/20/2013	CDV-SMA-1.4	New Control - Augment Existing - Control ID: V00303060078	T	CCN - 37307
V4.903	11/20/2013	CDV-SMA-1.4	New Control - Augment Existing - Control ID: V00303060079	T	CCN - 37307
V4.904	11/20/2013	CDV-SMA-1.4	New Control - Augment Existing - Control ID: V00303060080	T	CCN - 37307
V4.905	11/20/2013	CDV-SMA-1.4	New Control - Augment Existing - Control ID: V00303060081	T	CCN - 37307
V4.906	11/20/2013	CDV-SMA-1.4	Map Revision - (R11)	T	CCN - 37307
V4.907	3/17/2014	All Sections	Change to SDPPP - Updated storm water results section for each SMA in the SDPPP volume that had a storm water sample collected in 2013.	T	
V4.908	3/28/2014	PT-SMA-0.5	Map Revision - (R6)	T	CCN - 38033
V4.909	4/2/2014	CDV-SMA-8	Map Revision - (R7)	T	CCN - 38038
V4.910	4/9/2014	All Sections	Change to SDPPP - Updated AOC and SWMU (Site) descriptions in the SDPPP volume to the most recent updated versions prepared for the Permit Renewal.	T	
V4.911	4/9/2014	Attachment 1	Change to SDPPP - Updated amendments to SDPPP completed in 2013.	D	

Attachment 1, Amendments (continued)

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V4.912	4/9/2014	Attachment 3	Change to SDPPP - Updated precipitation data collected in 2013.	T	
V4.913	4/9/2014	Attachment 4	Change to SDPPP - Updated changes to SMA and Site characteristics made in 2013.	T	
V4.914	4/9/2014	Attachment 5	Change to SDPPP - Updated sampling plan for samples to be collected in 2014.	T	

Attachment 2
Vicinity Map



Attachment 3
Precipitation Network

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG253	April 9, 2013	0.22	0.06	105
RG253	April 10, 2013	0.29	0.16	85
RG253	May 9, 2013	0.01	0.01	5
RG253	May 10, 2013	0.11	0.09	40
RG253	May 15, 2013	0.06	0.05	15
RG253	June 5, 2013	0.01	0.01	5
RG253	June 14, 2013	0.21	0.1	55
RG253	June 29, 2013	0.09	0.07	35
RG253	June 30, 2013	0.23	0.19	45
RG253	July 2, 2013	0.24	0.12	65
RG253	July 3, 2013	0.01	0.01	5
RG253	July 5, 2013	0.12	0.03	40
RG253	July 6, 2013	0.06	0.01	30
RG253	July 7, 2013	0.19	0.1	55
RG253	July 8, 2013	0.01	0.01	5
RG253	July 11, 2013	0.14	0.13	30
RG253	July 12, 2013	0.43	0.28	85
RG253	July 13, 2013	0.67	0.57	65
RG253	July 14, 2013	0.1	0.07	35
RG253	July 15, 2013	0.03	0.02	15
RG253	July 19, 2013	0.01	0.01	5
RG253	July 20, 2013	0.03	0.02	15
RG253	July 21, 2013	0.04	0.02	20
RG253	July 22, 2013	0.14	0.13	30
RG253	July 23, 2013	0.05	0.04	20
RG253	July 25, 2013	0.38	0.15	85
RG253	July 26, 2013	0.45	0.33	85
RG253	July 28, 2013	0.01	0.01	5
RG253	August 1, 2013	0.29	0.19	70
RG253	August 2, 2013	0.03	0.02	15
RG253	August 4, 2013	0.66	0.24	195
RG253	August 5, 2013	0.51	0.5	35
RG253	August 6, 2013	0.02	0.02	10
RG253	August 9, 2013	0.01	0.01	5
RG253	August 10, 2013	0.01	0.01	5

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG253	August 13, 2013	0.01	0.01	5
RG253	August 14, 2013	0.03	0.02	15
RG253	August 17, 2013	0.05	0.03	20
RG253	August 18, 2013	0.04	0.03	15
RG253	August 19, 2013	0.05	0.03	20
RG253	August 20, 2013	0.22	0.21	30
RG253	September 2, 2013	0.07	0.03	30
RG253	September 3, 2013	0.05	0.03	25
RG253	September 10, 2013	1.48	0.18	600
RG253	September 12, 2013	2.4	0.28	630
RG253	September 13, 2013	2.59	1.19	335
RG253	September 14, 2013	0.22	0.06	90
RG253	September 17, 2013	0.58	0.35	75
RG253	September 18, 2013	0.11	0.07	45
RG253	September 22, 2013	0.69	0.18	120
RG253	September 27, 2013	0.07	0.04	35
RG253	October 10, 2013	0.39	0.13	135
RG253	October 11, 2013	0.01	0.01	5
RG253	October 13, 2013	0.1	0.07	40
RG253	October 15, 2013	0.04	0.02	20
RG253	October 16, 2013	0.42	0.17	105
RG253	October 24, 2013	0.36	0.1	140
RG253	October 25, 2013	0.02	0.01	10
RG253	October 29, 2013	0.03	0.02	15
RG253	October 30, 2013	0.01	0.01	5
RG253	October 31, 2013	0.04	0.02	20
RG253	November 4, 2013	0.5	0.11	205
RG253	November 5, 2013	0.02	0.01	10
RG257	April 9, 2013	0.33	0.06	155
RG257	April 10, 2013	0.3	0.19	75
RG257	April 18, 2013	0.02	0.01	10
RG257	May 9, 2013	0.04	0.02	20
RG257	May 10, 2013	0.04	0.03	20
RG257	May 15, 2013	0.04	0.02	15
RG257	June 5, 2013	0.01	0.01	5
RG257	June 14, 2013	0.13	0.07	45
RG257	June 29, 2013	0.06	0.05	20

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG257	June 30, 2013	0.36	0.28	45
RG257	July 2, 2013	0.23	0.15	55
RG257	July 3, 2013	0.01	0.01	5
RG257	July 4, 2013	0.02	0.02	10
RG257	July 5, 2013	0.13	0.09	40
RG257	July 6, 2013	0.05	0.01	25
RG257	July 7, 2013	0.06	0.04	30
RG257	July 8, 2013	0.01	0.01	5
RG257	July 11, 2013	0.31	0.3	35
RG257	July 12, 2013	0.8	0.72	60
RG257	July 13, 2013	0.34	0.23	70
RG257	July 14, 2013	0.14	0.1	35
RG257	July 15, 2013	0.02	0.01	10
RG257	July 20, 2013	0.01	0.01	5
RG257	July 21, 2013	0.02	0.01	10
RG257	July 22, 2013	0.26	0.25	30
RG257	July 25, 2013	0.26	0.11	65
RG257	July 26, 2013	0.38	0.24	95
RG257	July 28, 2013	0.01	0.01	5
RG257	August 1, 2013	0.14	0.07	45
RG257	August 2, 2013	0.12	0.11	15
RG257	August 4, 2013	0.4	0.15	135
RG257	August 5, 2013	0.27	0.25	40
RG257	August 8, 2013	0.02	0.02	10
RG257	August 9, 2013	0.11	0.08	25
RG257	August 12, 2013	0.01	0.01	5
RG257	August 13, 2013	0.02	0.01	10
RG257	August 14, 2013	0.07	0.03	30
RG257	August 17, 2013	0.01	0.01	5
RG257	August 18, 2013	0.2	0.15	45
RG257	August 20, 2013	0.01	0.01	5
RG257	August 24, 2013	0.01	0.01	5
RG257	August 25, 2013	0.02	0.02	10
RG257	August 30, 2013	0.17	0.15	40
RG257	September 2, 2013	0.04	0.03	20
RG257	September 3, 2013	0.02	0.02	10
RG257	September 8, 2013	0.1	0.08	40

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG257	September 11, 2013	0.03	0.02	15
RG257	September 12, 2013	2.2	0.28	570
RG257	September 13, 2013	2.63	1.33	340
RG257	September 14, 2013	0.18	0.05	80
RG257	September 17, 2013	0.43	0.34	50
RG257	September 18, 2013	0.07	0.04	30
RG257	September 22, 2013	0.68	0.16	125
RG257	September 27, 2013	0.05	0.04	25
RG257	October 10, 2013	0.32	0.15	105
RG257	October 11, 2013	0.01	0.01	5
RG257	October 13, 2013	0.11	0.04	50
RG257	October 15, 2013	0.08	0.04	35
RG257	October 16, 2013	0.32	0.12	105
RG257	October 17, 2013	0.01	0.01	5
RG257	October 24, 2013	0.35	0.09	150
RG257	October 25, 2013	0.02	0.01	10
RG257	October 29, 2013	0.03	0.02	15
RG257	October 30, 2013	0.04	0.02	20
RG257	October 31, 2013	0.01	0.01	5
RG257	November 4, 2013	0.6	0.13	230
RG257	November 5, 2013	0.04	0.01	20
RG262.4	April 8, 2013	0.02	0.02	10
RG262.4	April 9, 2013	0.24	0.05	120
RG262.4	April 10, 2013	0.26	0.05	130
RG262.4	April 18, 2013	0.02	0.01	10
RG262.4	May 9, 2013	0.01	0.01	5
RG262.4	May 10, 2013	0.06	0.05	25
RG262.4	May 15, 2013	0.06	0.04	20
RG262.4	May 20, 2013	0.01	0.01	5
RG262.4	June 14, 2013	0.06	0.03	30
RG262.4	June 29, 2013	0.04	0.04	10
RG262.4	June 30, 2013	0.36	0.24	65
RG262.4	July 2, 2013	0.14	0.06	45
RG262.4	July 3, 2013	0.08	0.08	10
RG262.4	July 4, 2013	0.02	0.02	10
RG262.4	July 5, 2013	0.39	0.34	45
RG262.4	July 6, 2013	0.04	0.02	20

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG262.4	July 7, 2013	0.03	0.03	15
RG262.4	July 8, 2013	0.01	0.01	5
RG262.4	July 9, 2013	0.11	0.11	15
RG262.4	July 11, 2013	0.02	0.02	10
RG262.4	July 12, 2013	0.48	0.4	50
RG262.4	July 13, 2013	0.24	0.15	60
RG262.4	July 14, 2013	0.29	0.27	30
RG262.4	July 21, 2013	0.07	0.06	25
RG262.4	July 22, 2013	0.03	0.03	15
RG262.4	July 23, 2013	0.03	0.02	15
RG262.4	July 25, 2013	0.57	0.46	70
RG262.4	July 26, 2013	0.29	0.14	90
RG262.4	July 27, 2013	0.01	0.01	5
RG262.4	July 28, 2013	0.01	0.01	5
RG262.4	July 31, 2013	0.03	0.02	15
RG262.4	August 1, 2013	0.09	0.02	45
RG262.4	August 2, 2013	0.1	0.07	30
RG262.4	August 4, 2013	0.66	0.26	190
RG262.4	August 8, 2013	0.08	0.06	30
RG262.4	August 14, 2013	0.01	0.01	5
RG262.4	August 18, 2013	0.23	0.21	35
RG262.4	August 24, 2013	0.01	0.01	5
RG262.4	August 25, 2013	0.02	0.01	10
RG262.4	August 30, 2013	0.01	0.01	5
RG262.4	September 1, 2013	0.01	0.01	5
RG262.4	September 2, 2013	0.09	0.09	30
RG262.4	September 3, 2013	0.02	0.02	10
RG262.4	September 8, 2013	0.2	0.17	45
RG262.4	September 11, 2013	0.03	0.02	15
RG262.4	September 12, 2013	2.03	0.27	475
RG262.4	September 13, 2013	2.27	0.98	335
RG262.4	September 14, 2013	0.97	0.33	195
RG262.4	September 17, 2013	0.1	0.07	25
RG262.4	September 18, 2013	0.01	0.01	5
RG262.4	September 22, 2013	0.33	0.1	120
RG262.4	September 27, 2013	0.01	0.01	5
RG262.4	October 9, 2013	0.02	0.02	10

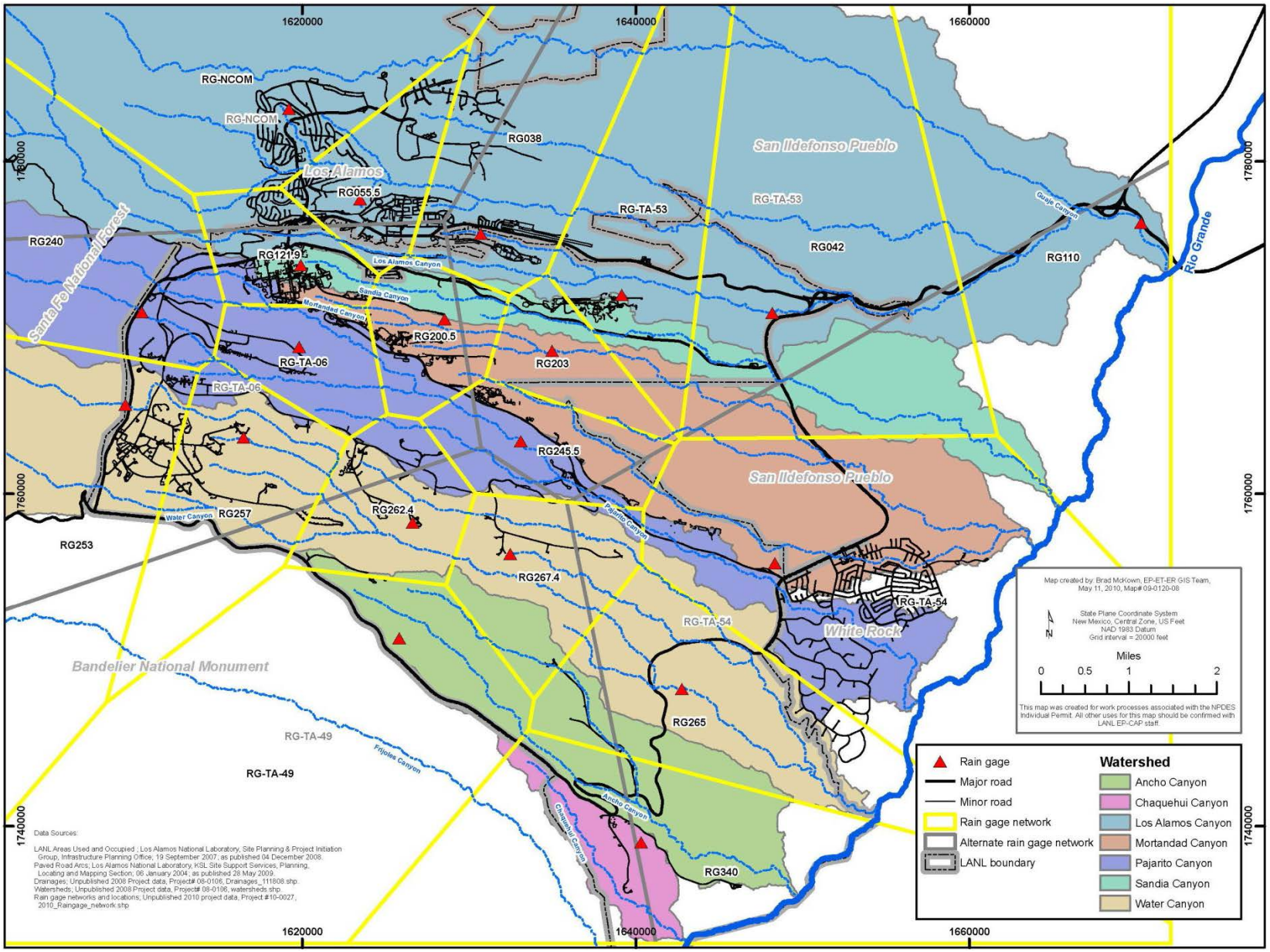
Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG262.4	October 10, 2013	0.28	0.1	105
RG262.4	October 13, 2013	0.1	0.04	40
RG262.4	October 15, 2013	0.25	0.07	110
RG262.4	October 16, 2013	0.13	0.05	65
RG262.4	October 24, 2013	0.4	0.14	150
RG262.4	October 25, 2013	0.02	0.02	10
RG262.4	October 29, 2013	0.02	0.01	10
RG262.4	October 30, 2013	0.02	0.02	10
RG262.4	October 31, 2013	0.01	0.01	5
RG262.4	November 4, 2013	0.71	0.15	250
RG262.4	November 5, 2013	0.01	0.01	5
RG267.4	April 8, 2013	0.03	0.03	15
RG267.4	April 9, 2013	0.13	0.03	65
RG267.4	April 10, 2013	0.19	0.06	95
RG267.4	April 18, 2013	0.01	0.01	5
RG267.4	May 9, 2013	0.02	0.02	10
RG267.4	May 10, 2013	0.07	0.05	30
RG267.4	May 15, 2013	0.03	0.01	15
RG267.4	June 14, 2013	0.17	0.15	30
RG267.4	June 29, 2013	0.04	0.04	15
RG267.4	June 30, 2013	0.26	0.15	45
RG267.4	July 2, 2013	0.08	0.06	35
RG267.4	July 3, 2013	0.03	0.03	10
RG267.4	July 5, 2013	0.35	0.3	45
RG267.4	July 6, 2013	0.02	0.01	10
RG267.4	July 7, 2013	0.02	0.02	10
RG267.4	July 9, 2013	0.21	0.2	30
RG267.4	July 11, 2013	0.08	0.07	20
RG267.4	July 12, 2013	0.37	0.35	40
RG267.4	July 13, 2013	0.06	0.05	20
RG267.4	July 14, 2013	0.2	0.2	20
RG267.4	July 15, 2013	0.01	0.01	5
RG267.4	July 21, 2013	0.13	0.11	40
RG267.4	July 23, 2013	0.06	0.03	30
RG267.4	July 25, 2013	0.63	0.45	75
RG267.4	July 26, 2013	0.35	0.23	85
RG267.4	July 28, 2013	0.03	0.01	15

Attachment 3, Precipitation Network (continued)

Rain Gage	Date	Total (in.)	Intensity (in./30 min)	Duration (min)
RG267.4	July 31, 2013	0.02	0.02	10
RG267.4	August 1, 2013	0.08	0.02	40
RG267.4	August 2, 2013	0.07	0.05	30
RG267.4	August 4, 2013	0.49	0.15	155
RG267.4	August 5, 2013	0.04	0.04	15
RG267.4	August 8, 2013	0.11	0.08	30
RG267.4	August 13, 2013	0.01	0.01	5
RG267.4	August 18, 2013	0.11	0.11	20
RG267.4	August 23, 2013	0.01	0.01	5
RG267.4	September 1, 2013	0.07	0.05	25
RG267.4	September 2, 2013	0.01	0.01	5
RG267.4	September 3, 2013	0.01	0.01	5
RG267.4	September 8, 2013	0.1	0.09	30
RG267.4	September 11, 2013	0.01	0.01	5
RG267.4	September 12, 2013	2.13	0.43	395
RG267.4	September 13, 2013	2.03	0.57	350
RG267.4	September 14, 2013	0.87	0.25	200
RG267.4	September 17, 2013	0.05	0.03	25
RG267.4	September 19, 2013	0.01	0.01	5
RG267.4	September 21, 2013	0.03	0.03	10
RG267.4	September 22, 2013	0.36	0.15	95
RG267.4	October 9, 2013	0.01	0.01	5
RG267.4	October 10, 2013	0.25	0.11	85
RG267.4	October 13, 2013	0.07	0.05	25
RG267.4	October 15, 2013	0.25	0.07	115
RG267.4	October 16, 2013	0.07	0.02	35
RG267.4	October 24, 2013	0.29	0.12	115
RG267.4	October 25, 2013	0.02	0.02	10
RG267.4	October 29, 2013	0.01	0.01	5
RG267.4	October 30, 2013	0.03	0.02	15
RG267.4	November 4, 2013	0.93	0.3	240
RG267.4	November 5, 2013	0.01	0.01	15

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^2)	Site Number	Site Drainage Area (ft^2)
Cañon de Valle	V001	CDV-SMA-1.2	1611432 (35.84835)	1764078 (-106.3478)	71,098.60	16-017(b)-99 16-029(k)	1,891.44 9,387.79
Cañon de Valle	V002	CDV-SMA-1.3	1611628 (35.848233)	1764036 (-106.34715)	5,081.36	16-017(a)-99 16-026(m)	0.00 1,979.83
Cañon de Valle	V003	CDV-SMA-1.4[1]	1611746 (35.850131)	1764727 (-106.346749)	753,588.00	16-020 16-026(l) 16-028(c) 16-030(c)	34,216.44 1.53 1,140.45 0.77
Cañon de Valle	V004	CDV-SMA-1.45	1611691 (35.84985)	1764622 (-106.346933)	745.98	16-026(i)	371.83
Cañon de Valle	V005	CDV-SMA-1.7	1613080 (35.850933)	1765018 (-106.34225)	6,008.01	16-019	6,107.99
Cañon de Valle	V006	CDV-SMA-2	1613663 (35.8498)	1764602 (-106.340283)	141,784.03	16-021(c)	17,396.36
Cañon de Valle	V007	CDV-SMA-2.3	1615798 (35.8461)	1763255 (-106.333067)	4,414,721.62	13-001 13-002 16-003(n) 16-003(o) 16-029(h) 16-031(h)	151,726.59 32,210.35 3,775.42 66,548.37 917.51 440.35
Cañon de Valle	V008	CDV-SMA-2.41	1615900 (35.849967)	1764662 (-106.332733)	105,008.00	16-018	40,161.61
Cañon de Valle	V008A	CDV-SMA-2.42	1615932 (35.849)	1764311 (-106.332617)	27,010.00	16-010(b)	17,216.77
Cañon de Valle	V009	CDV-SMA-2.5	1616475 (35.846517)	1763407 (-106.330783)	1,007,115.83	16-010(c) 16-010(d) 16-028(a)	25,089.01 28,219.01 11,573.35
Cañon de Valle	V009A	CDV-SMA-2.51	1616733 (35.846967)	1763567 (-106.329917)	130,340.52	16-010(i)	3,552.40
Cañon de Valle	V010	CDV-SMA-3	1619475 (35.847767)	1763859 (-106.320667)	14,716.22	14-009	2,592.95
Cañon de Valle	V011	CDV-SMA-4[1]	1619753 (35.847971)	1763933 (-106.319726)	5,924.16	14-010	79.93
Cañon de Valle	V012	CDV-SMA-6.01	1620528 (35.8478)	1763869 (-106.317117)	53,452.22	14-001(g) 14-006	67.47 239.62
Cañon de Valle	V012A	CDV-SMA-6.02[1]	1620774 (35.847745)	1763751 (-106.316283)	4,617.36	14-002(c) 14-002(d) 14-002(e)	390.13 16.61 20.92
Cañon de Valle	V013	CDV-SMA-7	1622123 (35.8453)	1762963 (-106.311733)	15,991.04	15-008(d)	391.32
Cañon de Valle	V014	CDV-SMA-8	1622591 (35.844267)	1762583 (-106.31015)	1,059,672.69	15-011(c)	0.00

Attachment 4, Physical Characteristics (continued)

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate (Latitude)	Sampler Y Coordinate (Longitude)	SMA Drainage Area (ft^2)	Site Number	Site Drainage Area (ft^2)
Cañon de Valle	V015	CDV-SMA-8.5	1622359 (35.841117)	1761436 (-106.310933)	6,183.46	15-014(a)	87.44
Cañon de Valle	V016	CDV-SMA-9.05	1623846 (35.836117)	1759616 (-106.3059)	85,514.04	15-007(b)	11,687.07
Fence	F001	F-SMA-2	1632447 (35.827333)	1756418 (-106.276883)	1,710,990.84	36-004(c)	8,461.12
Potrillo	I001	PT-SMA-0.5	1625751 (35.839183)	1760731 (-106.299483)	318,686.70	15-009(e) C-15-004	57.42 65.85
Potrillo	I002	PT-SMA-1	1626387 (35.83938)	1760802 (-106.297336)	174240	15-004(f) 15-008(a)	20,138.81 553.88
Potrillo	I003	PT-SMA-1.7	1627221 (35.833404)	1758627 (-106.294518)	82,807.56	15-006(a)	146.37
Potrillo	I004	PT-SMA-2	1627867 (35.836517)	1759759 (-106.29235)	128,520.54	15-008(f) 36-003(b) 36-004(e)	2,906.56 641.17 4,895.21
Potrillo	I004A	PT-SMA-2.01[1]	1627976.76 (35.836535)	1759680.16 (-106.291838)	6,644.25	C-36-001 C-36-006(e)	0.00 1,619.02
Potrillo	I005	PT-SMA-3	1637651 (35.829733)	1757290 (-106.259333)	32,567,818.38	36-004(a) 36-006	5,923.58 22,024.19
Potrillo	I007	PT-SMA-4.2	1640805 (35.824283)	1755302 (-106.248683)	46,479,584.84	36-004(d)	4,745.93
Water	W001	W-SMA-1[1]	1610435 (35.842278)	1761579 (-106.351884)	257,396.04	16-017(j)-99 16-026(c2) 16-026(v)	0.00 1.56 7.03
Water	W002	W-SMA-1.5	1609271 (35.841917)	1761739 (-106.355083)	346,851.64	16-026(b2) 16-028(d)	7.03 7.03
Water	W003	W-SMA-2.05	1609892 (35.839517)	1760865 (-106.353)	38,238.00	16-028(e)	7.03
Water	W004	W-SMA-3.5	1612463 (35.837283)	1760051 (-106.344317)	79,999.28	16-026(y)	4.98
Water	W005	W-SMA-4.1	1613587 (35.83705)	1759967 (-106.340517)	13,457.43	16-003(a)	608.81
Water	W006	W-SMA-5	1614101 (35.841617)	1761625 (-106.3388)	3,106,212.41	16-001(e) 16-003(f) 16-026(b) 16-026(c) 16-026(d) 16-026(e)	211.80 176.77 2,770.92 12,687.24 7,240.26 6,643.32
Water	W007	W-SMA-6[1]	1614205 (35.837590)	1759702 (-106.339400)	10,410.84	11-001(c)	1,308.69
Water	W008	W-SMA-7	1614499 (35.83855)	1760511 (-106.33745)	98,139.69	16-026(h2) 16-029(e)	22,572.70 48.00

Attachment 4, Physical Characteristics (continued)

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate (Latitude)	Sampler Y Coordinate (Longitude)	SMA Drainage Area (ft^2)	Site Number	Site Drainage Area (ft^2)
Water	W009	W-SMA-7.8	1614363 (35.836317)	1759695 (-106.3379)	68,927.10	16-031(a)	7.03
Water	W010	W-SMA-7.9	1614423 (35.83595)	1759563 (-106.3377)	293.51	16-006(c)	52.98
Water	W011	W-SMA-8	1614539 (35.836033)	1759592 (-106.3373)	72,474.70	16-016(g) 16-028(b)	312.57 7.03
Water	W012	W-SMA-8.7	1615647 (35.843583)	1762343 (-106.333583)	753,727.65	13-001 13-002 16-004(a) 16-026(j2) 16-029(h) 16-035	131,627.22 137,435.01 602.27 14,230.37 4,770.03 1,429.78
Water	W012A	W-SMA-8.71	1615273.3 (35.843552)	1762405.91 (-106.334599)	12,342.94	16-004(c)	335.04
Water	W013	W-SMA-9.05	1615787 (35.83502)	1759218 (-106.3331)	37,066.41	16-030(g)	7.03
Water	W014	W-SMA-9.5	1617409 (35.83875)	1760581 (-106.327633)	4,115.62	11-012(c)	929.46
Water	W015	W-SMA-9.7	1617908 (35.83905)	1760691 (-106.32595)	6,496.60	11-011(a) 11-011(b)	163.16 52.29
Water	W016	W-SMA-9.8	1618223 (35.838867)	1760621 (-106.324883)	444.31	11-005(c)	179.36
Water	W017	W-SMA-9.9	1618535 (35.838983)	1760663 (-106.323833)	13,987.15	11-006(b)	1,713.60
Water	W018	W-SMA-10	1618681 (35.837933)	1760282 (-106.323333)	337,409.32	11-002 11-003(b) 11-005(a) 11-005(b) 11-006(c) 11-006(d) 11-011(d)	6,848.23 8,878.77 1,769.64 1,723.33 2,115.86 1,343.42 96.85
Water	W019	W-SMA-11.7	1625583 (35.82445)	1755367 (-106.300033)	303,605.32	49-008(c)	84,627.27
Water	W020	W-SMA-12.05	1625910 (35.82545)	1755732 (-106.298933)	18,490.24	49-001(g)	18,378.50
Water	W021	W-SMA-14.1	1626602.93 (35.83215)	1758304.06 (-106.296763)	225,141.86	15-004(h) 15-014(l)	163.74 19.27
Water	W022	W-SMA-15.1	1627047 (35.824433)	1755361 (-106.2951)	1,624.22	49-005(a)	778.72

[1] Minor sampler movement.

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	Zinc	PCBs	High Explosives	SVOCs
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:200.8	EPA 1668A	SW8321	EPA 625
Order code	SW-IP-Gross Alpha	SW-Ra226/ Ra-228	SW-IP-Cyanide	SW-Metals-Dissolved	SW-Metals-Total	SW-IP-Al F	SW-IP-Cu F	SW-IP-Hg F	SW-IP-Zn F	SW-PCB-1668A-PQL	SW-HEXP-8330	SW-SVOC-625
Field prep code	UF	UF	UF	F	UF	F	F	F	F	UF	UF	UF
Preservation	HNO_3	HNO_3	NaOH, Ice	HNO_3	HNO_3	HNO_3	HNO_3	HNO_3	HNO_3	Ice	Ice	Ice, some analytes store in dark
Holding time (days)	180	180	14	180	180	180	180	180	180	365	7	7
Preferred volume (L)	2	2	1	0.5	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	0.25	1	0.77	1
Shipping container	Poly	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	Copper	Mercury	Zinc	PCBs	High Explosives	SVOCs
CDV-SMA-1.2	180	SS100421	BCComp												
CDV-SMA-1.3	181	SS100422	CAI												
CDV-SMA-1.4	182	SS130425	CAI												
CDV-SMA-1.45	183	SS090406	CAM5	X											
CDV-SMA-1.7	184	SS2547	CAI												
CDV-SMA-2	185	SS255	CAI												
CDV-SMA-2.3	186	SS080404	MEx	X	X	X	X	X							
CDV-SMA-2.41	187	SS090407	CAI												
CDV-SMA-2.42	188	SS090408	CAI												
CDV-SMA-2.5	189	SS090420	BCComp												
CDV-SMA-2.51	190	SS090409	CAI												
CDV-SMA-3	191	SS25605	CAM5	X										X	
CDV-SMA-4	192	SS130424	MEx	X	X	X	X	X						X	
CDV-SMA-6.01	193	SS090410	MEx	X	X	X	X	X						X	
CDV-SMA-6.02	194	SS130423	CAM5	X	X	X	X	X						X	
CDV-SMA-7	195	SS252625	CAI												
CDV-SMA-8	196	SS25630	MEx	X	X	X	X	X							X
CDV-SMA-8.5	197	SS090418	MEx	X	X	X	X	X							
CDV-SMA-9.05	198	SS090412	MEx	X	X	X	X	X							X
F-SMA-2	199	SS092401	CAI												
PT-SMA-0.5	200	SS26565	CAM5	X					X	X				X	X

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	Copper	Mercury	Zinc	PCBs	High Explosives	SVOCs
PT-SMA-1	201	SS124815	CAM5	X	X	X	X	X						X	X
PT-SMA-1.7	202	SS134817	CAI												
PT-SMA-2	203	SS2658	MEx	X	X	X	X	X						X	X
PT-SMA-2.01	204	SS124816	CAM5	X	X	X	X	X						X	X
PT-SMA-3	205	SS094807	MEx	X	X	X	X	X						X	
PT-SMA-4.2	206	SS094806	MEx	X	X	X	X	X						X	
W-SMA-1	207	SS133939	CAM5	X	X	X	X	X							
W-SMA-1.5	208	SS103928	CAM5							X		X			
W-SMA-2.05	209	SS093903	CAM5			X			X						
W-SMA-3.5	210	SS103929	MEx	X	X	X	X	X							
W-SMA-4.1	211	SS103930	MEx	X	X	X	X	X						X	
W-SMA-5	212	SS2528	CAI												
W-SMA-6	213	SS133940	MEx	X	X	X	X	X						X	
W-SMA-7	214	SS25243	MEx	X	X	X	X	X							
W-SMA-7.8	215	SS103931	MEx	X	X	X	X	X							
W-SMA-7.9	216	SS103932	MEx	X	X	X	X	X							X
W-SMA-8	217	SS2523	CAI												
W-SMA-8.7	218	SS103933	CAI												
W-SMA-8.71	219	SS123938	CAM5	X	X	X	X	X							
W-SMA-9.05	220	SS093914	BCComp												
W-SMA-9.5	221	SS093915	MEx	X	X	X	X	X							

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	Copper	Mercury	Zinc	PCBs	High Explosives	SVOCs
W-SMA-9.7	222	SS093916	CAI												
W-SMA-9.8	223	SS093917	MEx	X	X	X	X	X							
W-SMA-9.9	224	SS103934	CAM5	X		X			X						
W-SMA-10	225	SS25245	CAM5	X		X									
W-SMA-11.7	226	SS103935	CAM5	X					X						
W-SMA-12.05	227	SS093922	MEx	X	X	X	X	X						X	
W-SMA-14.1	228	SS123937	CAM5	X	X	X	X	X						X	
W-SMA-15.1	229	SS093927	CAM5	X											

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

CAI = Corrective Action Initiated: A sample was collected during baseline confirmation monitoring, and analytical results show at least one pollutant concentration is above TAL, resulting in initiation of corrective action.

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.

BCComp = Baseline Complete: All results for pollutants of concern at SMA are at or below the TALs, no further sampling is required at the SMA.